LAPIERRE

naturally innovative

DATACER

sugarbush automation

USER MANUAL

January 2024 | Version 03

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LAPIERRE

naturally innovative

Naturally innovative

A leader in equipment and products for the maple syrup industry, LAPIERRE EQUIPMENT distinguishes itself by its ability to innovate and develop high-performance solutions. This is what enables it to make significant changes in production techniques and processes in order to increase crop yield of high quality syrup.

LAPIERRE EQUIPMENT has a wealth of experience accumulated over three generations of maple syrup producers. These are also people driven by passion and a deep desire to help the industry evolve with the utmost respect for nature.

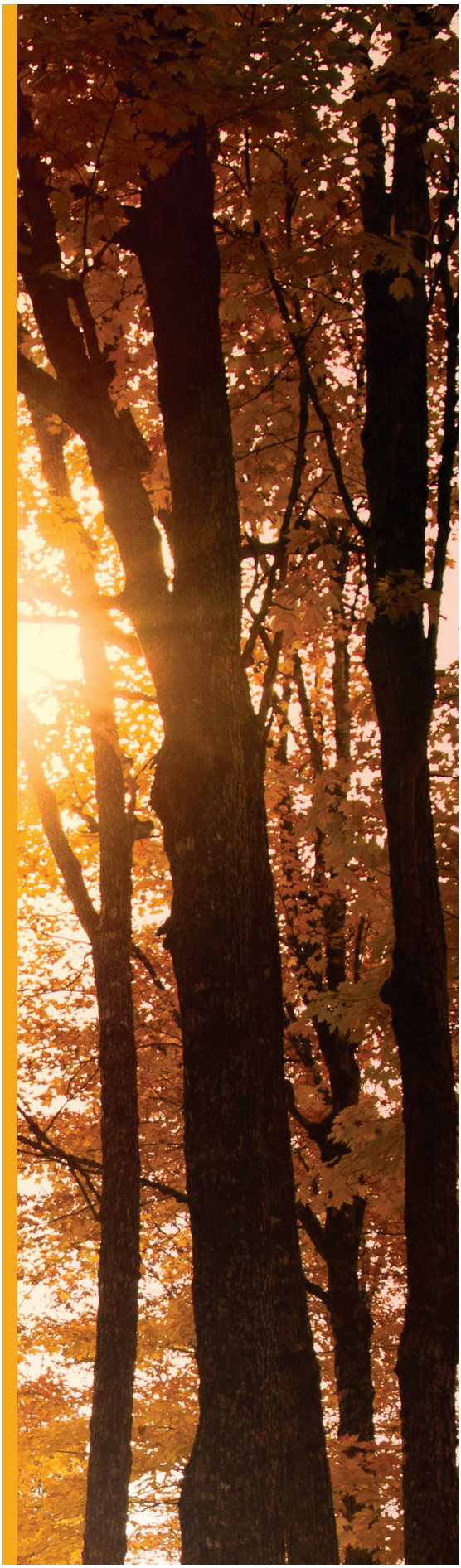
Honoured to serve your customers

LAPIERRE EQUIPMENT is honoured to actively assist maple syrup producers during the sugar season.

Today you have made a wise choice for at least two good reasons: the superior quality of our products and the exceptional quality of all our expert advisers in the region.

We sincerely appreciate your trust. And we will be happy to serve you again in your future equipment purchases, regardless of the size of your sugar bush.

Thank you!



Lapierre Equipment Inc.

99 Rue de l'Escale, Saint-Ludger (QC) Canada G0M 1W0

819 548.5454 | 1 833 548.5454 | info@elapierre.com

www.elapierre.com

1.1 Foreword

The entire Lapierre team welcomes you to the great family of DATACER™ users.

Your goal of optimizing your yield, your need to optimize your time and your desire to get through the sugaring-off period with peace of mind led us to develop the DATACER™ sugar bush monitoring and control system.

Season after season, we always improve our offer to better meet your needs in all simplicity. Furthermore, we ensure a service that meets your expectations thanks to our network of sales representatives and distributors available throughout Canada and the United States.

The entire LAPIERRE team wishes you the best for the upcoming sugar season!

This manual is divided into 5 main sections.

- Equipment description
- Equipment installation
- Interface settings
- System use
- Problems and solutions

Tables of contents will allow you to quickly find the page that interests you. Furthermore, you can return to the summary table of contents by clicking on the DATACER logo in the upper left-hand corner, regardless of the document page.

Throughout the manual you will find various pictograms to draw your attention to specific points.

Icon	Message
	Safety, danger for the user.
	Vigilance, step not to be forgotten for proper functioning and to avoid damage to the equipment.
	Tip, useful method to be aware of.

You will also find guidelines on the photos or screenshots to better follow the order of the steps and the vocabulary used.

Guideline	Message
1	Order of steps to follow.
1	Reference note explaining a specific concept.

Synthetic table of contents

Synthetic table of contents 4

Key steps following purchase 5

Detailed table of contents 6

List of figures 12

1. Equipment description 15

Understand the role and specifications of DATACER™ equipment. You will find a detailed description of each of the transmitters along with their sensors and respective peripherals.

2. Equipment Installation 43

Overview of the radio communication principles applied to the DATACER™ system to optimize system responsiveness. You will find all the essential information to correctly install each of your different transmitters, sensors and peripherals.

3. Interface settings 100

Summary of the vocabulary and data structure used in the interfaces to better understand how your DATACER™ system can adapt to your reality. You will also find all the necessary steps to set up the different interfaces before using the system's features.

4. System use 158

Main steps to follow for switching on and off the various equipment and devices, presentation of the interfaces, methods of accessing the DATACER™ interface, how to establish communication between the DATACER™ base and the other radio transmitters, and the meaning of the transmitters' LEDs. You will also find all the elements necessary for performing desired functions such as data visualization, as well as control and automation of the equipment.

5. Problems and solutions 238

The most frequently encountered problems, their probable causes, as well as the associated solutions. Do not hesitate to contact your LAPIERRE representative or distributor if you need assistance.

6. Appendices 248

Additional information.

Key steps following purchase

Here is a summary of the main steps to follow after purchasing your DATACER™ system.

1) Install your equipment according to the recommendations in the manual and your LAPIERRE advisor (see section 2 page 43).
2) Turn on the DATACER™ base (see section 4.1.1 page 161).
3) Access DATACER™ interface locally or remotely (see section 4.4 page 180).
4) Set up your interfaces before using the system features (see section 3 page 100).
5) Turn on your Transmitters (see sections 4.1.3 page 166 and 4.1.5 page 168).
6) Establish communication between all Transmitters in the network and the base (see section 4.1.6 page 169).
7) At the end of the season, shut down the DATACER™ base and the Transmitters according to the instructions in the manual (see section 4.3 page 175).

Detailed table of contents

1.1 Foreword 3
Synthetic table of contents 4
Key steps following purchase 5
Detailed table of contents 6
List of figures 12
1. Equipment description 15
1.1 Principle 16
1.2 DATACER™ base 16
1.3 Transmitters 19
1.3.1 Vacuum (V) 19
1.3.2 Sonar Tank Level (L) 21
1.3.3 Pressure (P) 22
1.3.4 Combined (V, L, P) 24
1.4 DATACER™ station 24
1.4.1 Vacuum pump start relay without drive 26
1.4.2 Connection for start/stop and speed variation of a vacuum pump with drive 27
1.4.3 Vacuum modulation valve 28
1.4.4 Emergency stop float at the Extractor 29
1.4.5 Water pump control 31
1.4.6 Drain valve 34
1.4.7 Air intake valve 34
1.4.8 Internal temperature sensor 35
1.4.9 External temperature sensor 36
1.4.10 Tank Level Sensor 36
1.4.11 Pressure sensor 37
1.5 Repeater 38
1.6 Connectors, adapters, cables and antennas 40
2. Equipment Installation 43
2.1 Radio communication principles applied to the DATACER™ system 45
2.1.1 Radio wave 45
2.1.2 Obstacles 46

2.1.3 Interference 48
2.1.4 Mesh network, paths and number of hops 48
2.2 DATACER™ base 51
2.3 Assigning or changing the channel of a radio transmitter 55
2.4 Vacuum transmitters (single, double and triple) 57
2.5 Tank level transmitters (L, LL, LLL) 63
2.6 Pressure transmitters (P, PP, PPP) 68
2.7 Combined transmitters (LV, LLV, PV, PPV, PLL, PLV) 73
2.8 DATACER™ station 75
2.8.1 Relay for vacuum pump start without drive 77
2.8.2 DATACER™ connection for start/stop and speed variation of a vacuum pump with drive 77
2.8.3 Vacuum modulation valve 81
2.8.4 Extractor emergency stop float 83
2.8.5 Water pump control 85
2.8.6 Drain valve 89
2.8.7 Air intake valve 89
2.8.8 Internal temperature sensor 91
2.8.9 External temperature sensor 91
2.8.10 Tank Level Sensor 94
2.8.11 Pressure sensor 94
2.8.12 Humidity Trap 95
2.9 Repeaters 96
2.9.1 Standard antenna repeater whip and alkaline batteries 96
2.9.2 Repeater without antenna and connected to power 96
2.10 Cable and antennas 96
3. Interface settings 100
3.1 Vocabulary and data structure 102
3.2 DATACER™ Interface 103
3.2.1 Accessing the Admin Menu 103
3.2.2 Selecting your language 104
3.2.3 Add or change the password to connect to the Administrator menu 105
3.2.4 Add or modify the username and password for remote connection 105

3.2.5 Add or modify the site name 106
3.2.6 Change units, vacuum/temperature color thresholds and synchronization speed 107
3.2.7 Activating the mobile or desktop view on a mobile device 108
3.2.8 Activate/deactivate the update feature 109
3.2.9 Add, modify, or delete a pumping station 110
3.2.10 Add, modify or delete a sector 111
3.2.11 Add, modify or delete a Transmitter 112
3.2.12 Address initialization of a Transmitter 114
3.2.13 Activate, Rename or Set up a Component 116
3.2.14 Alarms and notifications 128
3.2.15 Add or modify a web link 137
3.2.16 Maps 138
3.2.17 Save setting 142
3.2.18 Data archiving 143
3.2.19 Activate/deactivate connection to the Internet 144
3.2.20 Recovering access to the account in case of forgotten identifiers 147
3.3 DATACER™ station interface 149
3.3.1 Adding or modifying the automatic start and stop temperatures of the vacuum pump 149
3.3.2 Adding or modifying the vacuum levels to be reached at the Extractor for automatic modulation according to the outside temperature 150
3.3.3 Activating/deactivating the automatic opening of the Drain Valve according to the outside temperature 151
3.3.4 Activating/deactivating the automatic opening of the Drain Valve depending on the pressure in the discharge pipe 152
3.3.5 Deactivating the water pump automatically if the Drain Valve is open 153
3.3.6 Activate/deactivate the automatic opening temperatures of the air intake valve 154
3.3.7 Selecting the type of pressure sensor 156
3.3.8 Change the language and units 156
3.3.9 Enable/disable automatic screen saving 157
4. System use 158
4.1 Startup 161
4.1.1 Starting up the DATACER™ base 161
4.1.2 DATACER™ interface presentation 163

4.1.3 Starting up the DATACER™ station 166
4.1.4 DATACER™ station interface presentation 167
4.1.5 Switching on other radio transmitters 168
4.1.6 Establish communication between the DATACER™ base and all radio transmitters 169
4.2 Interpreting the colored LED indicators 170
4.2.1 Old version of LED indicator for Vacuum Transmitters, L, LL, LLL, P, PP, PPP, Combined Transmitters and DATACER™ station 171
4.2.2 New version of LED indicator light for Vacuum Transmitters 172
4.3 End of season shutdown 175
4.3.1 Shutting down the DATACER™ base 175
4.3.2 Shutting down the DATACER™ station 179
4.3.3 Stopping other radio transmitters 179
4.4 Accessing the DATACER™ interface 180
4.4.1 Locally directly on the computer of DATACER™ base 180
4.4.2 Locally from another computer without internet 180
4.4.3 Locally from a mobile device without internet 182
4.4.4 Remotely from another computer 186
4.4.5 Remotely from a mobile device 190
4.5 Viewing measurements 191
4.5.1 Factors that influence the vacuum level value measured by the Sensor 191
4.5.2 End of line vacuum level 192
4.5.3 Vacuum level at the Extractor 195
4.5.4 Tank Level 197
4.5.5 Pressure of a water pump or after the prefilters of a concentrator 199
4.5.6 External temperature at the line ends 200
4.5.7 Interior and exterior temperature of a pump station 201
4.6 Controlling the equipment locally 202
4.6.1 Starting/stopping a vacuum pump 202
4.6.2 Starting a water pump 204
4.6.3 Forcing the speed of a vacuum pump with a drive 205
4.6.4 Forcing the Modulation Valve Open 206
4.7 Controlling equipment remotely 207
4.7.1 Starting/stopping a vacuum pump 209

4.7.2 Forcing the speed of a vacuum pump with a drive 210
4.7.3 Forcing the Modulation Valve Open 211
4.7.4 Starting/stopping a water pump 211
4.7.5 Open/Close Drain Valve 213
4.8 Automate the control of your equipment 213
4.8.1 Temperature-dependent start/stop of a vacuum pump 214
4.8.2 Stop/restart the vacuum pump via the Float in the Humidity Trap (safety for the vacuum pump) 215
4.8.3 Modulation of the vacuum level at the Extractor according to the temperature .. 216
4.8.4 Modulation of the vacuum level at the Extractor according to a set vacuum value 218
4.8.5 Close the modulation valve if the water level in the Extractor exceeds a certain level (safety for the vacuum pump) 222
4.8.6 Start/stop a water pump according to a pond level by Electrodes 222
4.8.7 Open/close a Drain Valve depending on the outside temperature and/or the pressure of a pipe 223
4.8.8 Stop the water pump if the drain valve is open 224
4.8.9 Opening/closing the air intake valve depending on the outside temperature (safety for the vacuum pump) 224
4.9 Maps 225
4.10 Alarms and notifications 227
4.10.1 Viewing active alarms on the DATACER™ interface 227
4.10.2 Viewing notifications received by SMS or email 230
4.11 Graphs 231
4.11.1 Vacuum level and temperature 24 / 7 231
4.11.2 Tank level 24 / 7 232
4.11.3 Historical graph of vacuum level and temperature per day for a season 233
4.12 Updating the DATACER™ database software 236
5. Problems and solutions 238
5.1 Warning: No data for some or all of the components of these Transmitters 239
5.2 Data refresh time fluctuates randomly for Transmitters 239
5.3 Data refresh time fluctuates randomly for a group of Transmitters 240
5.4 Data refresh time increases for all Transmitters connected to a DATACER™ base 241
5.5 Tank level readings with an Ultrasonic Sensor are not consistent 241

5.6 Vacuum level reading = 0 inHg at line end and the exterior temperature read by the vacuum transmitter = -50˚C 242
5.7 Inconsistent tank level readings with pressure sensor 242
5.8 In automatic mode, vacuum pump starts/stops too often 243
5.9 I can't lower my vacuum differential in a line 243
5.10 Impossible to modulate my vacuum level only by varying the speed of my vacuum pump 243
5.11 Modulating valve position does not change 244
5.12 Return pump does not start when water touches flow electrode 244
5.13 Water pump does not start following a remote manual start request 245
5.14 Unable to connect remotely to the DATACER™ interface via datacer.online 246
6. Appendices 248
6.1 Equipment specifications 249
6.2 Reminders of the steps for seasonal opening and closing of the DATACER™ system. 250
6.3 Grounding an antenna 252
6.4 Summary of settings and use of control and automation functions 254
6.5 Meaning of the lights on the DATACER™ station 255
6.6 Industry Canada Regulatory Compliance Notice 256
6.7 Federal Communications Commission (FCC) Statement 256

List of figures

Figure 1 : Components of the DATACER™ base 17
Figure 2 : Interior view of a DATACER™ base 18
Figure 3 : Single vacuum transmitter 20
Figure 4 : Sonar tank level transmitter (L) 22
Figure 5 : Pressure transmitter (P) 23
Figure 6 : DATACER™ station 25
Figure 7 : Vacuum pump start relay without drive 27
Figure 8 : Connection for start/stop and speed variation of a vacuum pump with drive 28
Figure 9 : Vacuum modulation valve 29
Figure 10 : Emergency stop float at the horizontal extractor 30
Figure 11 : Emergency stop float at the vertical extractor 31
Figure 12 : Water pump control 32
Figure 13 : Water pump control electrodes 33
Figure 14 : Drain valve 34
Figure 15 : Air intake valve 35
Figure 16 : Internal temperature sensor 35
Figure 17 : External temperature sensor 36
Figure 18 : DATACER™ station sonar sensor 37
Figure 19 : DATACER™ station pressure sensor 38
Figure 20 : Battery powered repeater with omnidirectional whip antenna 39
Figure 21 : Battery powered repeater without antenna N connector female socket 39
Figure 22 : Connected repeaters without antenna N connector female socket 39
Figure 23 : N Connector male plug socket 40
Figure 24 : N Connector female socket 40
Figure 25 : Cable N connexion male plug socket – N male 41
Figure 26 : Cable N connexion female socket - N female 41
Figure 27 : N Connector male plug socket – N male 41
Figure 28 : White omnidirectional antenna and its mounting bracket 42
Figure 29 : Omnidirectional whip antenna and its N connector female socket 42
Figure 30 : Directional antenna N connector female socket 42
Figure 31 : Shape of a radio wave between 2 antennas in line of sight in longitudinal section (Fresnel zone) 45
Figure 32 : Table of theoretical orders of magnitude of the required obstacle-free heights (h) according to the distan ce (d) between the antennas 46
Figure 33 : Signal quality between 2 antennas depending on obstacles 46
Figure 34 : Mesh network with several paths or routes for each transmitter to the base 49
Figure 35 : Network with a bottleneck or overload that can limit data communication 49
Figure 36 : Comparison of the number of hops for different transmitters in a network 50
Figure 37 : Connected DATACER™ base 52
Figure 38 : Connecting the DATACER™ base to the UPS battery 55
Figure 39 : Finding your DATACER™ base channel number. Inside view of the DATACER™ base cover 56

Figure 40 : Jumper position on pins correspondence and transmitter channel number 57
Figure 41 : Sheet metal screws on wooden stake for installation of a vacuum transmitter 58
Figure 42 : Vacuum transmitter not properly installed 59
Figure 43 : Vacuum transmitter properly installed 59
Figure 44 : Vacuum transmitters installed in lower areas 60
Figure 45 : Vacuum transmitters installed on high points 60
Figure 46: Slope not adhered to with for one of the 5/16" pipes connected to the transmitter. 61
Figure 47: Slope adhered to for all 5/16" pipes connected to the transmitter. 61
Figure 48: Steady pipe slope 5/16" (7.94 mm) adhered to. 62
Figure 49: Steady pipe slope 5/16" (7.94 mm) and minimum height not adhered to 62
Figure 50 : Bevel cut 5/16" (7.94 mm) pipe for easy installation and removal from the transmitter vacuum port 63
Figure 51 : Tank level sonar sensor installed 64
Figure 52 : Ultrasonic sensor installation outline to measure a tank level 65
Figure 53: Ultrasonic tank level sensor not properly installed 66
Figure 54 : Sonar sensor connection for a single tank level transmitter (L) 67
Figure 55 : Interior view of a single tank level sonar (L) 67
Figure 56 : Sonar sensor connection for a double tank level transmitter (LL) 68
Figure 57 : Sonar sensor connection for a triple tank level transmitter (LLL) 68
Figure 58 : Screw-in pressure sensor installed 69
Figure 59 : Pressure sensor connection for a single pressure Transmitter (P) - Version 5 70
Figure 60 : Internal view of a single pressure transmitter (P) - version 5 71
Figure 61 : Connection of pressure sensors for a double pressure transmitter (PP) - version 5 .. 71
Figure 62 : Connection of pressure sensors for a triple pressure transmitter (PPP) - version 5... 72
Figure 63 : Connection of pressure sensors for a single pressure transmitter (P) - version 6 72
Figure 64 : Connection of pressure sensors for a double pressure transmitter (PP) - version 6 .. 73
Figure 65 : Connection of pressure sensors for a triple pressure transmitter (PPP) - version 6... 73
Figure 66 : Pressure sensor connection for a PV combined transmitter - version 6 74
Figure 67 : Pressure and sonar sensors connection for a PLV combined transmitter - version 6 74
Figure 68 : Connecting the 5/16" (7.94 mm) pipe to the extractor 75
Figure 69 : DATACER™ station connection of a device with a connector 76
Figure 70 : Vacuum pump start relay connection to the DATACER™ station 77
Figure 71 : Yaskawa V1000 drive connection to the DATACER™ station 78
Figure 72 : Main drives connection to the DATACER™ 78
Figure 73: Jumper and DIP switch positions on the main drives. 79
Figure 74 : Connection of a Yaskawa V1000 drive 79
Figure 75 : DIP switch position on MV040 Bush pump. 80
Figure 76: Jumper positions to be retained for TD350 Techtop drives 80
Figure 77 : Vacuum modulation valve installed 81
Figure 78 : Modulation valve connection to the DATACER™ station 82
Figure 79 : Horizontal extractor emergency float installed – extractor outside view 83
Figure 80 : Horizontal extractor emergency float installed – extractor inside view 84
Figure 81 : Extractor emergency stop float connection to the DATACER™ station 84
Figure 82 : Water pump control electrodes installed in a tank 85

Figure 83 : Electrodes connection in the water pump control 86
Figure 84 : Lovato relay default settings 87
Figure 85 : Water pump control connection to the DATACER™ station 88
Figure 86 : Drain valve installation diagram 89
Figure 87 : Drain valve connection to the DATACER™ station 89
Figure 88 : Air intake valve installed 90
Figure 89 : Air intake valve connection to the DATACER™ station 90
Figure 90 : Internal temperature sensor connection to the DATACER™ station 91
Figure 91: Exterior temperature sensor incorrectly installed. 92
Figure 92 : External temperature sensor installed 93
Figure 93 : External temperature sensor connection to the DATACER™ station 93
Figure 94 : Sonar tank level sensor connection to the DATACER™ station 94
Figure 95 : Pressure sensor connection to the DATACER™ station 94
Figure 96 : Humidity trap connection to the DATACER™ station 95
Figure 97 : Installation diagram of an antenna outside a building 97
Figure 98 : Antenna on a building improperly installed 98
Figure 99 : Antenna on a building properly installed 98
Figure 100 : Antenna Coax-seal option B or C 99
Figure 101 : Antenna Coax-seal option A 99
Figure 102 : Transmitter Coax-seal 99
Figure 103 : Data architecture in the DATACER™ system 102
Figure 104 : Transmitter address 114
Figure 105 : DATACER™ base radio LED indicator lights 162
Figure 106 : DATACER™ station radio LED indicator lights 166
Figure 107 : Transmitter radio LED indicator lights 168
Figure 108 : Significance of the vacuum level measurements on the interface (VAC1, VAC 2 and VAC 3) in relation to the position of the vacuum ports on a transmitter 194
Figure 109 : Example of notification sent by SMS if an alarm is triggered 230
Figure 110: Example of notification sent by email if an alarm is triggered 230

1. Equipment description

Understand the role and specifications of the DATACER™ equipment. You will find a detailed description of each of the transmitters along with their sensors and respective peripherals.

Below is a list of topics that are covered in this section.

1.1 Principle 16
1.2 DATACER™ base 16
1.3 Transmitters 19
1.3.1 Vacuum (V) 19
1.3.2 Sonar Tank Level (L) 21
1.3.3 Pressure (P) 22
1.3.4 Combined (V, L, P) 24
1.4 DATACER™ station 24
1.4.1 Vacuum pump start relay without drive 26
1.4.2 Connection for start/stop and speed variation of a vacuum pump with drive 27
1.4.3 Vacuum modulation valve 28
1.4.4 Emergency stop float at the Extractor 29
1.4.5 Water pump control 31
1.4.6 Drain valve 34
1.4.7 Air intake valve 34
1.4.8 Internal temperature sensor 35
1.4.9 External temperature sensor 36
1.4.10 Tank Level Sensor 36
1.4.11 Pressure sensor 37
1.5 Repeater 38
1.6 Connectors, adapters, cables and antennas 40

1.1 Principle

The DATACER™ system is a network of radio transmitters distributed throughout your sugar bush.

Each transmitter has a specific role. For example, measuring parameters, controlling and automating certain equipment, receiving alerts and analyzing your data.

All transmitters have a radio and an antenna to exchange information. The measurement of the different parameters is done thanks to sensors connected to the transmitters. Controls and automation are performed directly by the DATACER™ station or via its peripheral tools.

For technical specifications of DATACER™ transmitters, Sensors and DATACER™ Station peripherals see section 6.1 page 249.

1.2 DATACER™ base

The DATACER™ base is the main computer and radio master coordinator of the DATACER™ system.

Through the DATACER™ base interface, you will be able to consult your data from your various transmitters, set up your system according to your needs, remotely control your pumping station equipment, receive alerts and view historical data charts.

For installation instructions see section 2.2 page 51.

Figure 1 : Components of the DATACER™ base

1 Keyboard, monitor and mouse (USB emitter is located in the battery compartment of the mouse).

2 Connection cable between screen and base.

3 Screen power cord.

4 DATACER™ base.

5 DATACER™ router.

6 Ethernet cable to connect your Internet system to the DATACER™ Router.

7 Ethernet cable to connect the DATACER™ Router to the DATACER™ base.

8 Backup and overload protection battery (UPS).

Figure 2 : Interior view of a DATACER™ base

1. Alkaline D batteries that power the base transmitter in case of power failure.
2. Base computer named NUC.
3. USB key for data storage.

It is possible to access the DATACER™ base interface remotely from any Internet-connected device such as your cell phone, tablet or computer. This access is only possible if the DATACER™ base is connected to the Internet.

To do this, you need to get an Internet connection via an Ethernet cable to be connected directly into the DATACER™ Router. The DATACER™ base needs a minimum Internet speed of 1mbit/s and 10GB of data/month.

Data consumption may vary depending on the number of transmitters in your network and the number of instantaneous remote connections to the DATACER™ interface.

Several Internet solutions are available on the market:

- Residential Internet access.

Do not opt for a 900Mhz internet solution, as there is a risk of interference on the DATACER™ frequency band (902-928 MHz).

- Mobile Internet access point via an Internet or cellular provider.

The DATACER™ base can function without Internet if you do not need to consult your data remotely.

To reduce your data consumption when browsing the DATACER™ interface near the base, please set up your personal devices such as your cell phone, tablet or computer to connect directly to the base without going through the Internet (see section 4.4.2 page 180 et la section 4.4.3 page 182).

If your DATACER™ base is connected to the Internet, you can benefit from faster personalized support during the season.

1.3 Transmitters

The category we have called "Transmitters" contains all the radio transmitters that allow the measurement parameters via specific sensors.

The transmitters all have a similar structure including a radio, a standard whip antenna or antenna connector and a wired or battery power supply.

Below you will find the details of each with their respective Sensors.

1.3.1 Vacuum (V)

Vacuum Transmitters allow the measurement of the vacuum level at the end of the line or at the Extractor.

There are single, double and triple vacuum transmitters.

Each vacuum transmitter is also capable of measuring temperature.

The choice and number of single, double and triple transmitters is determined by the number, location and spacing of your line ends.

For installation instructions see section 2.4 page 57.

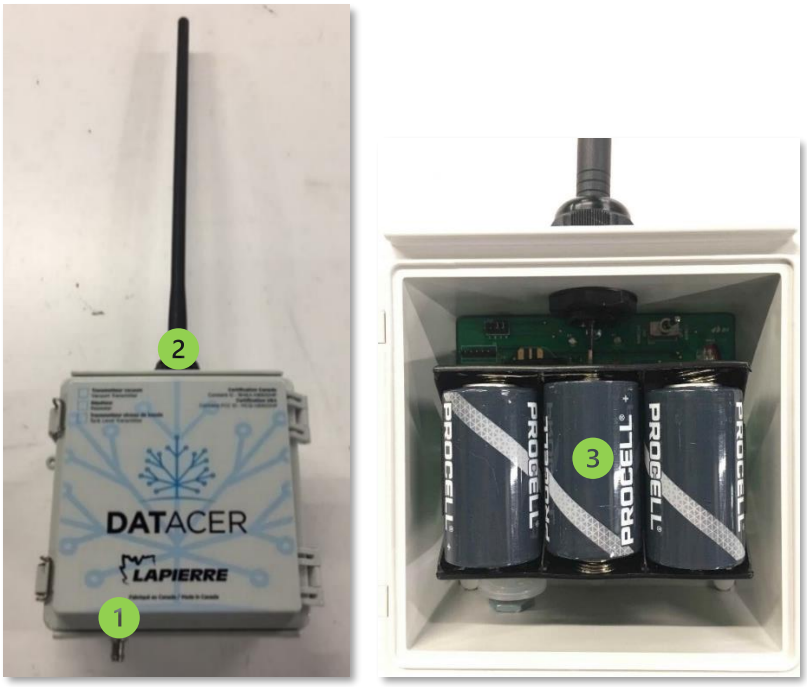
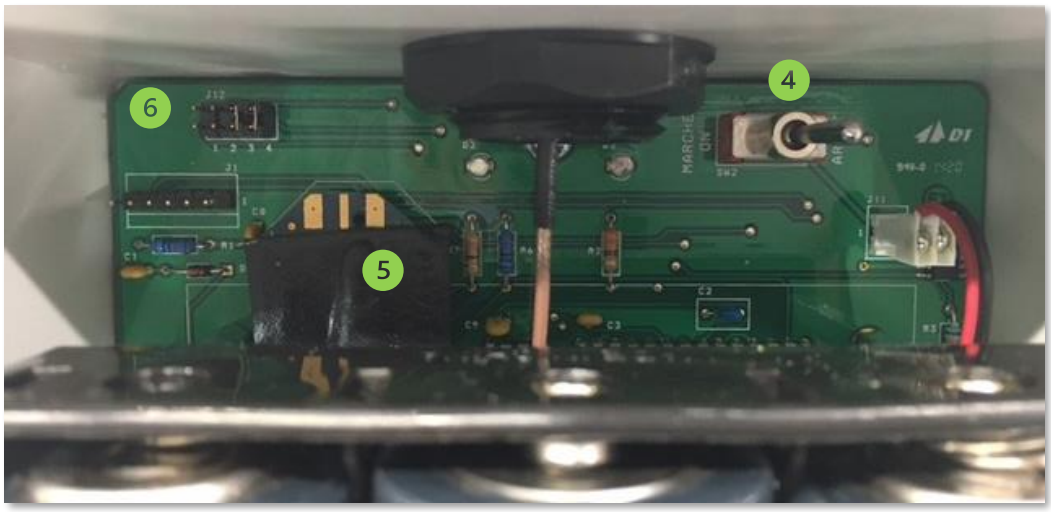
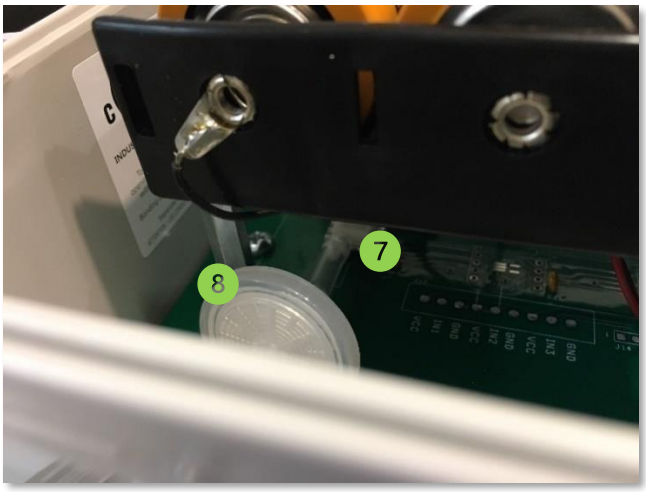


Figure 3 : Single vacuum transmitter





1. Hose connection 5/16 in. (7.94 mm).
2. Whip antenna.
3. Alkaline D batteries (3).
4. On/off switch.
5. Radio.
6. Jumpers for changing channels.
7. Vacuum level sensor.
8. Filter.

1.3.2 Sonar Tank Level (L)

Sonar tank level transmitters are used to measure the level of sap, concentrate or filtrate contained in an open-topped tank.

There are single, double and triple sonar tank level transmitters.

The measurement of the tank level is done with the sonar sensor which works by sending and listening to the reflection of an ultrasound on the water surface. As a result, the sonar sensor is positioned above the tank.

For installation instructions see section 2.5 page 63.

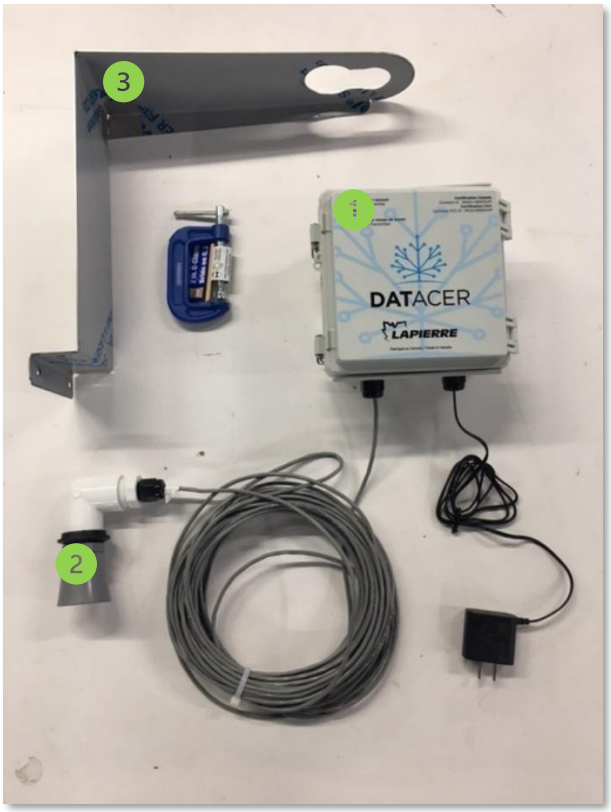


Figure 4 : Sonar tank level transmitter (L)

1 Tank level transmitter.

2 Sonar sensor.

3 Mounting bracket.

1.3.3 Pressure (P)

Pressure transmitters have two main functions in the system.

They can measure either water pump pressure or concentrator prefilters outlet pressure.

They also allow the measurement of water tank levels thanks to the pressure of the water column exerted on the sensor.

There are single, double and triple pressure transmitters. Depending on the required function, different sensors are available.

For installation instructions see section 2.6 page 68.

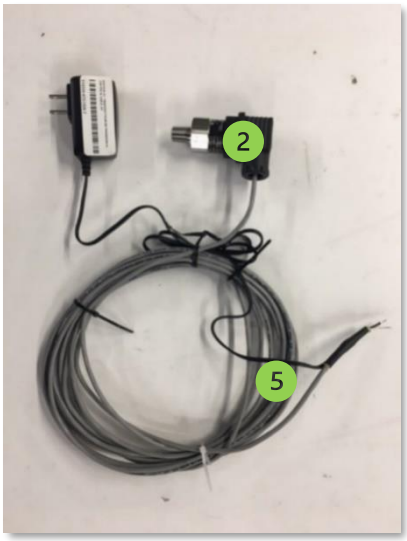
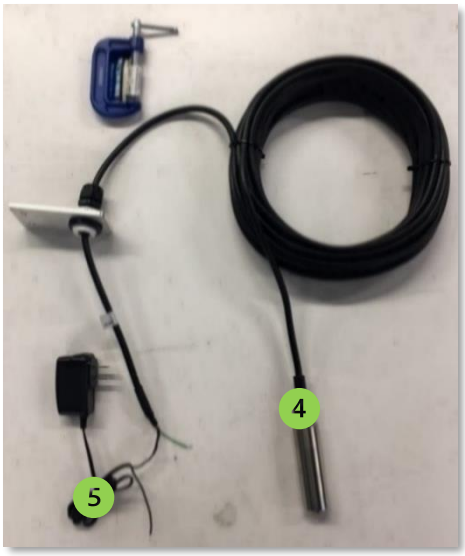


Figure 5 : Pressure transmitter (P)



1 Pressure transmitter.

2 Pressure sensor to measure pump pressures (0-150 psi, 0-300 psi) and tank levels (0-34ft) (0-10.36m). Connection to piping is ¼ in. MPT.

3 Pressure sensor to measure tank levels (0-100 in) (0-2.54 m). Connection to piping is ¼ in. MPT.

4 Submersible pressure sensor for measuring tank levels (0-10 ft) (0-3.05 m).

5 Wires that connect to the transmitter board.

1.3.4 Combined (V, L, P)

Combined transmitters are capable of measuring a combination of parameters. Several models are available:

LV, LLV, PV, PPV, PLL, PLV

- V: Vacuum level
- L: Tank level by sonar
- P: Pressure

For installation instructions see section 2.7 page 73.

1.4 DATACER™ station

DATACER™ station is the transmitter that allows you to control various equipment present in your pumping stations such as vacuum pumps, water pumps, vacuum modulation valves, drain valves and air intake valves.

When users want to control a remote device, the DATACER™ station receives commands from the base and transform them directly into actions on the pumping station equipment or device in question.

Furthermore, users can also set up the DATACER™ station to automate the pumping station equipment operation according to various parameters such as outdoor temperature, vacuum levels, pressure and others. The DATACER™ station is able to perform its automatic functions autonomously without a DATACER™ base.

Finally, the station can also measure different parameters such as:

- One vacuum level at the extractor.
- One tank level by sonar.
- One pressure.
- The inside and outside pumping station temperature.

The list of peripherals and sensors of the DATACER™ station are presented in the following pages.

You will find in the appendix each LED indicators meaning on the DATACER™ station (see section 6.5 page 255).

For installation instructions see section 2.8 page 75.

Figure 6 : DATACER™ station

1. DATACER™ station.
2. Hose connection 5/16 in. (7.94 mm).
3. Automatic-Off-Manual Switch: AUTO-OFF-MAN.
4. Grommet.
5. Touch screen.
6. Sensor and peripheral connections.
7. ON/OFF switch.
8. Jumper for changing channels.
9. Radio, channel and power LED indicators.
10. Radio.

1.4.1 Vacuum pump start relay without drive

The relay allows the station to start/stop a vacuum pump without a drive by a remote magnetic contactor or automatically depending on the outside temperature of the pumping station.

For installation instructions see section 2.8.1 page 77.

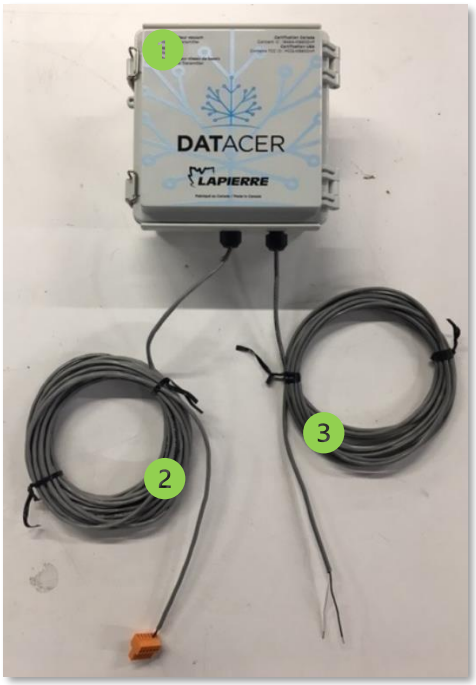


Figure 7 : Vacuum pump start relay without drive

1 Magnetic relay box.

2 Connector that plugs into the DATACER™ station.

3 Wires to be connected to the vacuum pump contactor.

The connection of the relay box to the vacuum pump contactor must be done by a qualified electrician. The work must be carried out in accordance with the local regulations in force.

1.4.2 Connection for start/stop and speed variation of a vacuum pump with drive

This connection allows the station to start/stop the vacuum pump remotely or automatically depending on the outdoor temperature of the pumping station.

You can also force the speed of the pump remotely or let it vary automatically according to the outside temperature or the set vacuum values you have determined.

This device is included with any purchase of a DATACER™ station.

If you want to modulate your vacuum level efficiently, also use a Modulation Valve (See section 1.4.3 page 28).

For installation instructions see section 2.8.2 page 77.

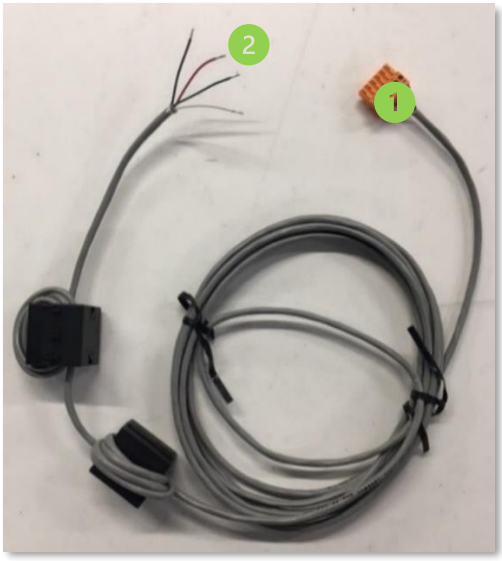


Figure 8 : Connection for start/stop and speed variation of a vacuum pump with drive

1 Connector that plugs into the DATACER™ station.

2 Wires to connect to the drive.

1.4.3 Vacuum modulation valve

The vacuum modulation valve allows the station to modulate the vacuum level at the extractor.

The valve is positioned between the pump and the extractor.

The regulation of the vacuum level at the extractor is achieved by the partial to total closing of the valve, which creates a restriction at the inlet of the vacuum pump and limits the air flow that can pass to the pump. This pressure drop is modulated by the position of the valve, which will adjust according to the given set point.

You can force the opening of the remote valve or let it vary automatically depending on the outside temperature or on the set vacuum values you have determined.

If you have a pump with a drive, this valve works in parallel with the pump speed variation and allows a more efficient modulation.

To take advantage of the automatic closing of this valve if the extractor overflows, please also order an emergency stop float (see section 1.4.4 page 29).

For installation instructions see section 2.8.3 page 81.

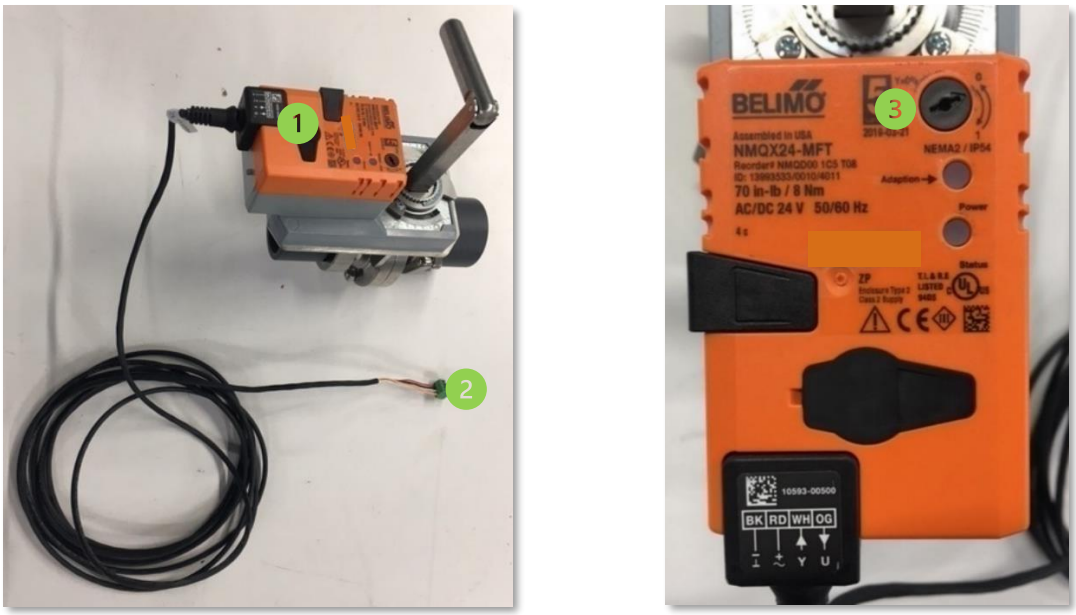


Figure 9 : Vacuum modulation valve

1 Belimo Modulating valve 2 in. (5.08 cm).

2 Connector that plugs into the DATACER™ station.

3 Opening direction selector switch 0-1.

1.4.4 Emergency stop float at the Extractor

The emergency stop float allows the station to automatically close the vacuum modulation valve when the sap level reaches a certain threshold in the Extractor.

Two models are available:

- Float for horizontal extractors.
- Float for vertical extractors.

For installation instructions see section 2.8.4 page 83.

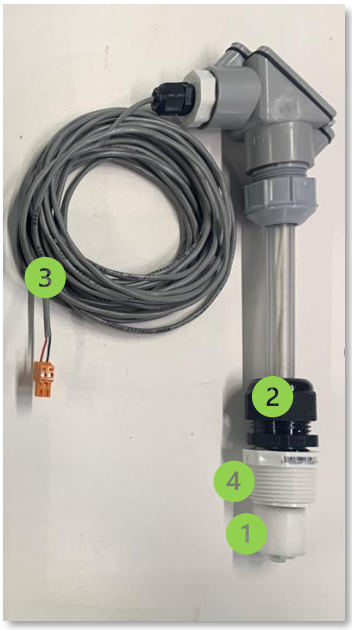


Figure 10 : Emergency stop float at the horizontal extractor

1. Float located inside the extractor.
2. Clamping ring to adjust the height of the float in the extractor.
3. Connector that plugs into the DATACER™ station.
4. 1 in. MPT threaded connection that screws onto the extractor.

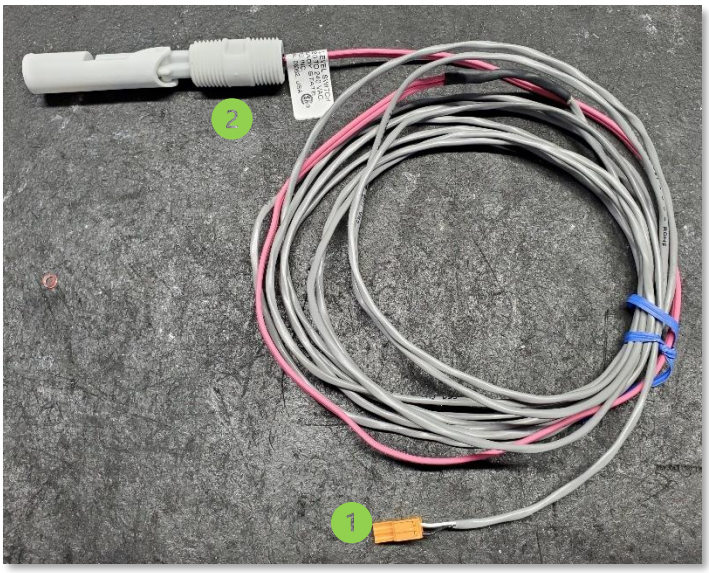


Figure 11 : Emergency stop float at the vertical extractor

1 Connector that plugs into the DATACER™ station.

2 ½ in. MPT threaded connection that screws onto the Extractor.

1.4.5 Water pump control

The water pump control allows to start/stop a transfer pump.

It comes with a set of 3 electrodes that are installed in the pump supply tank. One electrode is used for start, the second for stop and the third is used as a contact reference. With this pump control, you can control your pump remotely or automatically based on the levels of the electrodes.

The pump control must be chosen according to the pump power (2, 3 or 5 Hp) and the height of the tank (60 or 96 in.) (1.52 to 2.44 m).

For installation instructions see section 2.8.5 page 85.

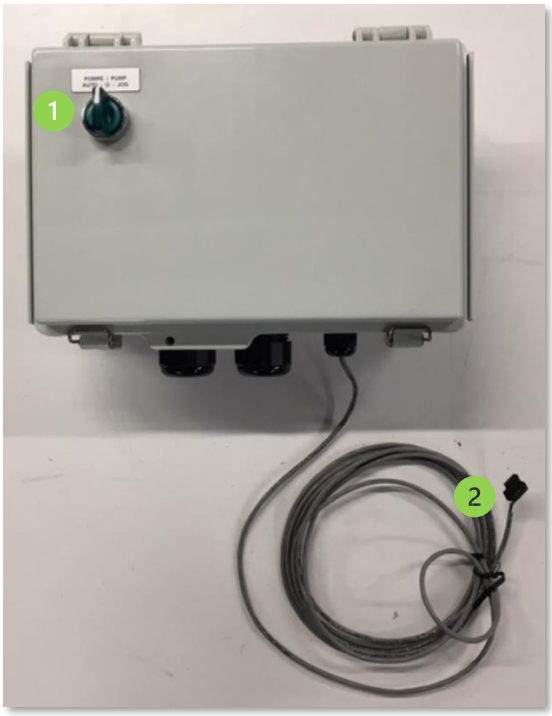


Figure 12 : Water pump control

1 Water pump control switch (AUTO-0-JOG).

2 Connector that plugs into the DATACER™ station.

The connection of the water pump control to the electric current must be done by a qualified electrician. The work must be carried out in accordance with the local regulations in force.

Figure 13 : Water pump control electrodes

3 Wires that connect to the water pump control.

4 Washer to prevent one electrode from coming into contact with another electrode or tank wall.

1.4.6 Drain valve

The drain valve allows the station to drain a sap pipe. This operation can be done either remotely or automatically depending on the outside temperature and/or the pressure of the pipe.

For installation instructions see section 2.8.6 page 89.

Figure 14 : Drain valve

1 Connector that plugs into the DATACER™ station.

2 1 in. FPT threaded connection that screws into the pipe.

1.4.7 Air intake valve

The Air Intake Valve allows the station to draw air into a vacuum pump to cool it down if the pump model in question is in danger of heating up and deteriorating at high vacuum. The valve opens and closes depending on the outside temperature.

For installation instructions see section 2.8.7 page 89.

Figure 15 : Air intake valve

1 Connector that plugs into the DATACER™ station.

2 1 in. FPT threaded connection that screws into the pipe.

1.4.8 Internal temperature sensor.

This sensor measures the temperature inside the pumping station.

This device is included with the purchase of a DATACER™ station.

For installation instructions see section 2.8.8 page 91.

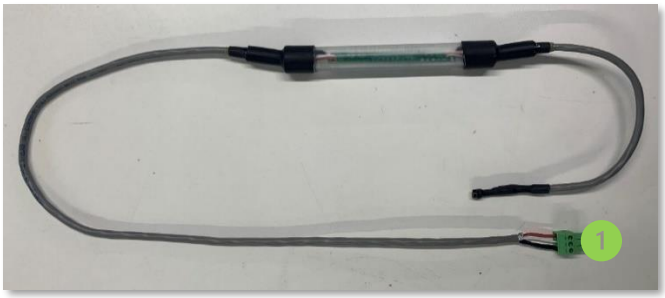


Figure 16 : Internal temperature sensor

1 Connector that plugs into the DATACER™ station.

1.4.9 External temperature sensor

This sensor measures the outside temperature of the pumping station.

This device is included with the purchase of a DATACER™.

For installation instructions see section 2.8.9 page 91.

Figure 17 : External temperature sensor

1 Connector that plugs into the DATACER™ station.

1.4.10 Tank Level Sensor

Allows you to measure the level of liquid in an open-top tank. This sensor is also found on the tank level transmitters L (see section 1.3.2 page 21).

For installation instructions see section 2.8.10 page 94.

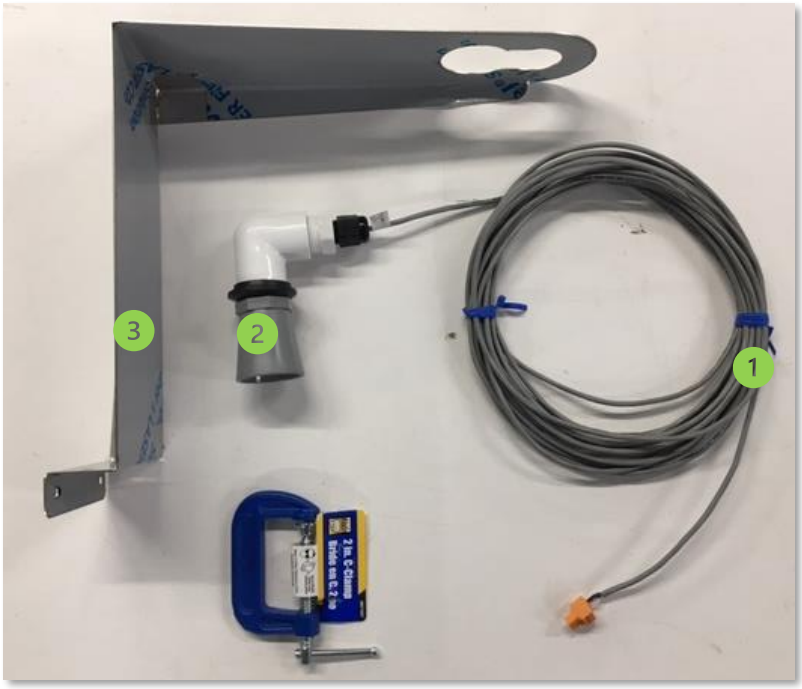


Figure 18 : DATACER™ station sonar sensor

1 Connector that plugs into the DATACER™ station.

2 Sonar sensor.

3 Mounting bracket.

1.4.11 Pressure sensor

The pressure sensor has two main functions:

- It can measure a water pump pressure or the concentrator prefilters outlet pressure.
- It also allows the measurement of water tank levels thanks to the pressure of the water column exerted on the sensor.

This sensor is also found on pressure transmitters P. See section 1.3.3 page 22 for more information on the types of sensors available.

For installation instructions see section 2.6 page **Erreur ! Signet non défini.**.

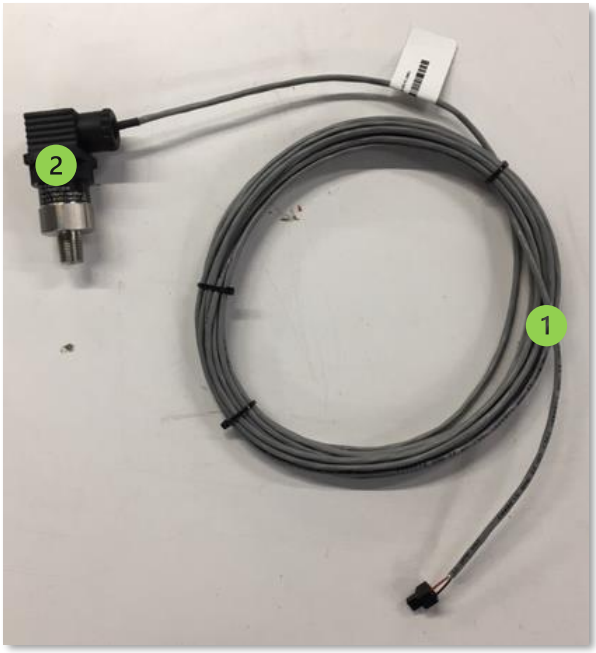


Figure 19 : DATACER™ station pressure sensor

1 Connector that plugs into the DATACER™ station.

2 ¼ in. MPT threaded connection that screws into the pipe.

1.5 Repeater

Repeaters are radio transmitters dedicated only to the radio signal transmission. They are used punctually to optimize the DATACER™ system radio communication quality. They allow to bypass a topographic obstacle or to diversify the communication path for a transmitter. For more information on the principles of radio communication see section 2.1 page 45.

Different types of repeaters are available:

- Standard repeaters with whip antenna and alkaline batteries (see Figure 20).
- Repeaters without antenna and alkaline batteries (see Figure 21)
- Repeaters without antenna connected to 120 V (see Figure 22).

Antenna-less repeaters allow several antenna combinations to fit the needs of each sugar bush.

Figure 20 : Battery powered repeater with omnidirectional whip antenna

Figure 21 : Battery powered repeater without antenna N connector female socket

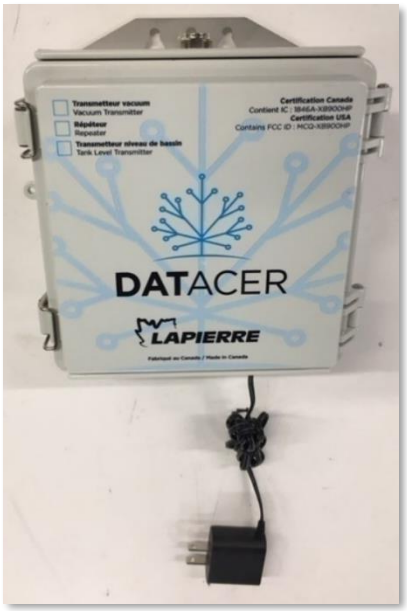


Figure 22 : Connected repeaters without antenna N connector female socket

1.6 Connectors, adapters, cables and antennas

The antennas allow to amplify the radio wave transmission and reception signal.

With the DATACER™ system, it is possible to change the type of antenna for transmitters equipped with an N connector. If the transmitter does not have an N connector then it is equipped with the omni-directional whip antenna, this is the case for vacuum transmitters (see Figure 3 page 20).

For more information on the principles of radio communication and the antenna ranges see section 2.1 page 45.

For installation instructions see section 2.10 page 96.

Figure 23 : N Connector male plug socket

Figure 24 : N Connector female socket

All radio transmitters must be operated with an antenna to avoid damage.

A cable is used in cases where it is necessary to raise the antenna above the transmitter. For example, when a transmitter is installed in a building and needs to communicate with others outside.

Different lengths of cable are available according to various needs.

It is recommended that the total cable length for a radio transmitter does not exceed 50 ft (15.24 m). Beyond this length, the transmission and reception signal strength is reduced.

Figure 25 : Cable N connexion male plug socket – N male

Figure 26 : Cable N connexion female socket - N female

Figure 27 : N Connector male plug socket – N male

2 types of antennas are available:

- Omnidirectional antennas.
- Directional antennas.

An omnidirectional antenna allows the transmitter to communicate 360 degrees, while a directional antenna allows signals to be transmitted and received in one direction only.

Directional antennas concentrate their signal in one direction only, which results in a better range. In addition, it should be noted that the effective range of an antenna is dependent on the obstacles encountered and the topography of the terrain.

Figure 28 : White omnidirectional antenna and its mounting bracket

Figure 29 : Omnidirectional whip antenna and its N connector female socket

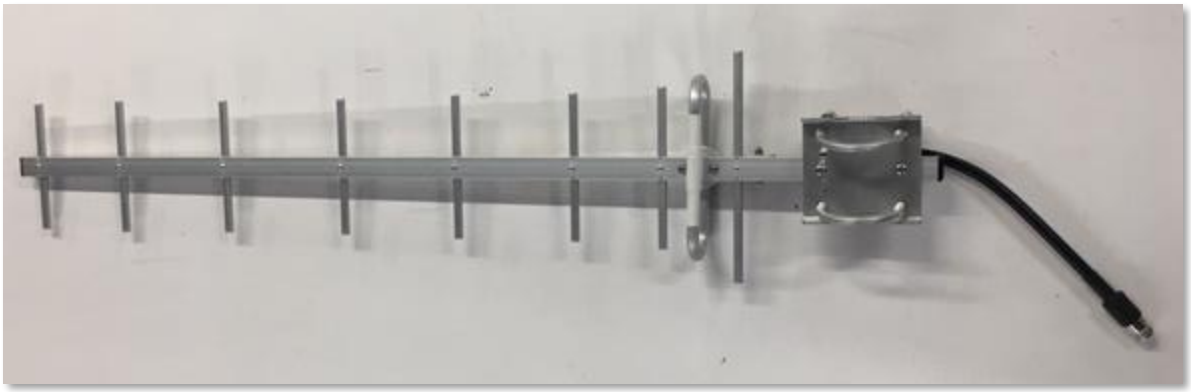


Figure 30 : Directional antenna N connector female socket

2. Equipment Installation

Overview of the radio communication principles applied to the DATACER™ system to optimize system responsiveness. You will find all the essential information to correctly install each of your different transmitters, sensors and peripherals.

Below is a list of the topics that are covered in this section.

2.1 Radio communication principles applied to the DATACER™ system 45
2.1.1 Radio wave 45
2.1.2 Obstacles 46
2.1.3 Interference 48
2.1.4 Mesh network, paths and number of hops 48
2.2 DATACER™ base 51
2.3 Assigning or changing the channel of a radio transmitter 55
2.4 Vacuum transmitters (single, double and triple) 57
2.5 Tank level transmitters (L, LL, LLL) 63
2.6 Pressure transmitters (P, PP, PPP) 68
2.7 Combined transmitters (LV, LLV, PV, PPV, PLL, PLV) 73
2.8 DATACER™ station 75
2.8.1 Relay for vacuum pump start without drive 77
2.8.2 DATACER™ connection for start/stop and speed variation of a vacuum pump with drive 77
2.8.3 Vacuum modulation valve 81
2.8.4 Extractor emergency stop float 83
2.8.5 Water pump control 85
2.8.6 Drain valve 89
2.8.7 Air intake valve 89
2.8.8 Internal temperature sensor 91
2.8.9 External temperature sensor 91
2.8.10 Tank Level Sensor 94
2.8.11 Pressure sensor 94
2.8.12 Humidity Trap 95
2.9 Repeaters 96
2.9.1 Standard antenna repeater whip and alkaline batteries 96
2.9.2 Repeater without antenna and connected to power 96

2.10 Cable and antennas..... 96

2.1 Radio communication principles applied to the DATACER™ system

Transmitters use radio waves to communicate information between them to the DATACER™ base. The base is the radio coordinator of the network.

Understanding the principles of radio communication will optimize your system's installation and therefore its responsiveness. Data refresh times and remote command execution times are shorter for well installed systems.

In this section you will find the different parameters that can influence radio communication.

Don't hesitate to ask your LAPIERRE consultant to help you analyze your land and plan for the right equipment.

2.1.1 Radio wave

Waves are transmitted and received by the transmitter antennas.

The theoretical shape of a radio wave in longitudinal section looks like an American football (called Fresnel zone). To propagate optimally, a radio wave must be able to spread completely without intercepting obstacles between point A and B (voir Figure 31). It is said that the antennas must be line-of-sight.

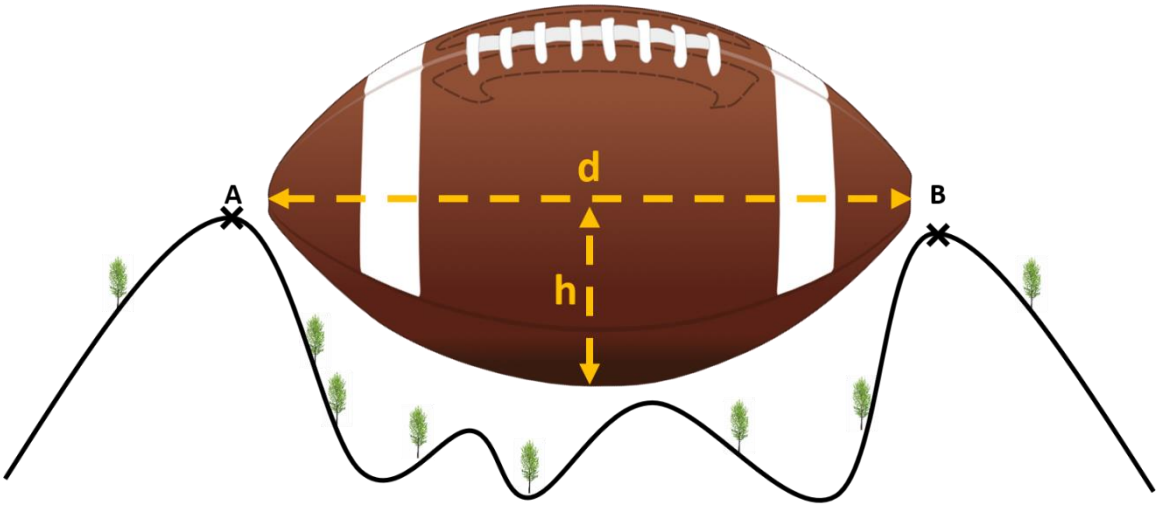


Figure 31 : Shape of a radio wave between 2 antennas in line of sight in longitudinal section (Fresnel zone)

The greater the distance (d) between an antenna (A) and an antenna (B), the greater the height (h) without obstacles must be to obtain a quality radio signal between the 2 transmitter antennas.

You will find in the following table the theoretical orders of magnitude of the necessary heights according to the distances to be covered for the DATACER™ waves.

Line-of-sight distance (d)	Theoretical height required without any obstacles (h)
15 km	35.55 m
5 km	20.4 m
2 km	12.9 m
1 km	9.12 m
0.5 km	6.45 m
0.1 km	2.89 m

Figure 32 : Table of theoretical orders of magnitude of the required obstacle-free heights (h) according to the distance (d) between the antennas

2.1.2 Obstacles

In maple bush conditions, the main obstacles encountered are hills, plateaus, mountains, woodland density and buildings. The presence of leaves on the trees attenuates the radio signal. A dense softwood forest can greatly reduce and even prevent radio communication.

Terrain profiles:

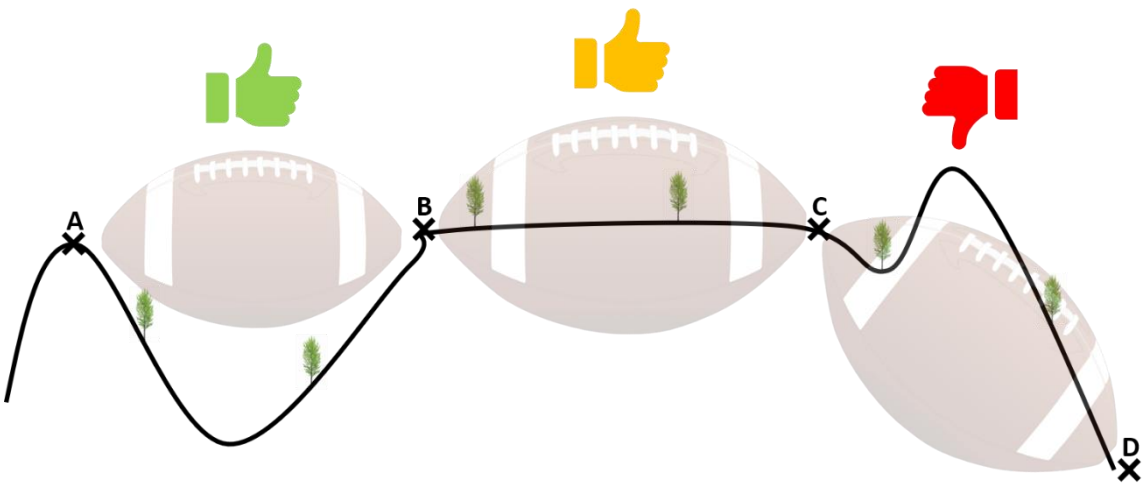


Figure 33 : Signal quality between 2 antennas depending on obstacles

Situation A - B : A concave terrain profile, without major obstacles

This is the ideal profile where the antennas are in line-of-sight. The radio signal quality is excellent, it is possible to make links up to more than 5 km. With an average tree density such a profile usually gives good signal quality up to 1 or 2 km.

Situation B - C : A rather flat terrain profile without major obstacles

This type of profile does not allow radio communication over long distances because most of the waves are absorbed by the ground or obstacles. With an average density of trees, it is possible to obtain a good signal quality up to 0.5 or 1 km if the transmitters are installed at a sufficient height.

Situation C - D: A convex terrain profile with major obstacles

All radio waves are absorbed by the ground. The signal quality is poor and it is not possible to establish a radio communication.

In addition to the topographic profile, it is important to note that the waves do not easily pass through the walls of a building, especially if it is made of metal. Metal acts as a mirror for the radio waves. This is why it is important to install antennas outside of buildings.

Types of antennas:

We offer 2 types of antennas to cover the different terrain needs (see section 1.6 page 40).

Omnidirectional:

Omnidirectional antennas provide 360 degree communication for distances up to 1 km in maple bush conditions. The range can be longer if there are no obstacles and the antennas are in line-of-sight.

Directional:

Directional antennas are used in specific cases where long ranges or signal strengthening in certain areas are required. These antennas allow communication in a particular direction over a longer distance.

What you need to remember to optimize radio communication:

- Install antennas high up so that the waves avoid as many obstacles and vegetation as possible.
- Add signal repeater(s) as needed to bypass major obstacles.
- Use a maximum of 50 ft (15.24 m) of cable for outdoor antennas.
- Choose the appropriate antenna for the desired function:
    - A directional antenna for long range in one direction.
    - An omnidirectional antenna for a limited range in all directions to see an entire area.

2.1.3 Interference

DATACER™ radio transmitters transmit in the 902-928 MHz frequency range.

If other communication devices are also transmitting in these same frequencies in the vicinity of the maple bush, the radio signal strength of the DATACER™ system may be greatly reduced. The interference may even prevent the DATACER™ system from operating.

Below you will find some equipment working with radio waves in the 900 Mhz range that may interfere with the DATACER™ system:

- A residential Internet tower.
- A cellular network tower.
- A residential Internet link to the sugar shack.
- A wireless alarm system.
- A portable walkie-talkie radio system.
- A camera system.

What to remember to minimize the impact of interference if it is not too strong:

- Ability to split your network into multiple networks to strengthen the signal locally.
- All types of interference in the 902-928 MHz band will degrade the quality of the DATACER™ network, whether the interference is continuous or sporadic.
- The only way to deploy a DATACER™ network in an interference environment is to move the transmitters closer together until the DATACER™ signal strength exceeds the interference.

2.1.4 Mesh network, paths and number of hops

DATACER™ radio transmitters operate in a mesh network. This means that each transmitter is able to exchange information with all the other transmitters in the network.

In a mesh network, it is important that as many transmitters as possible have different possible communication paths to the DATACER™ base. Maintaining at least two paths for a transmitter is essential to ensure a good transfer of information from each transmitter to the base and vice versa.

If the mesh configuration is not respected, some transmitters could become overloaded and not be able to relay the information to the base.

It is important to note that the DATACER™ base can manage a maximum of about 75 radio transmitters.

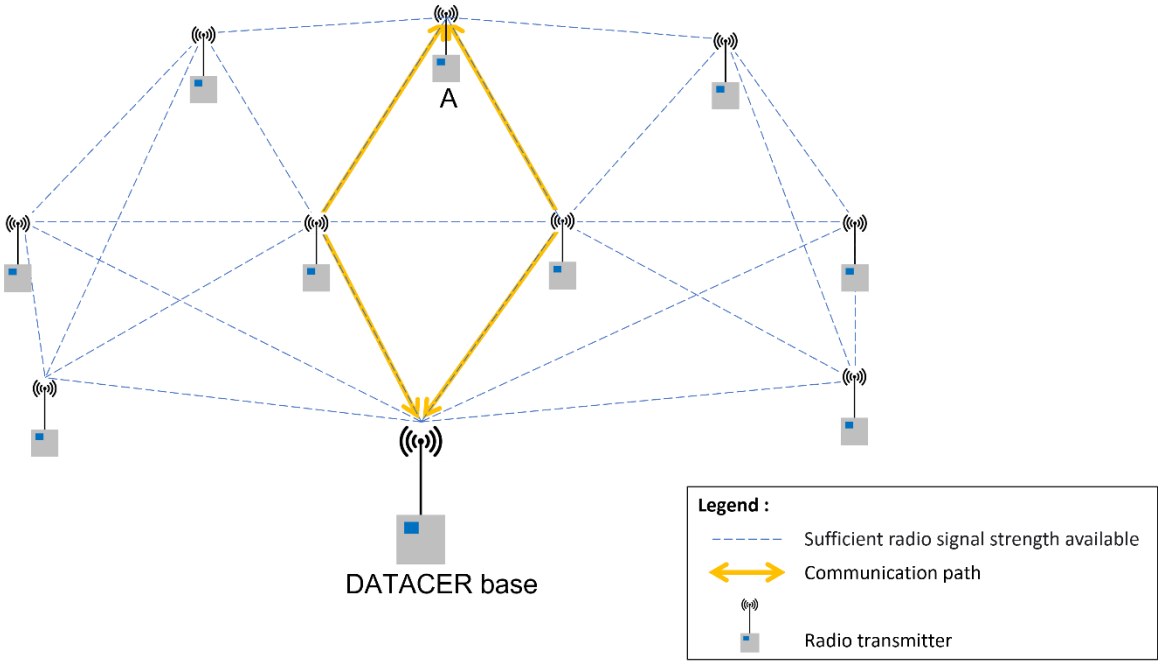


Figure 34 : Mesh network with several paths or routes for each transmitter to the base

In Figure 34 the mesh Network is well constructed. The signal is of good quality between transmitters. Most Transmitters have several paths available to communicate with the base. This is for example the case of transmitter A which has two paths.

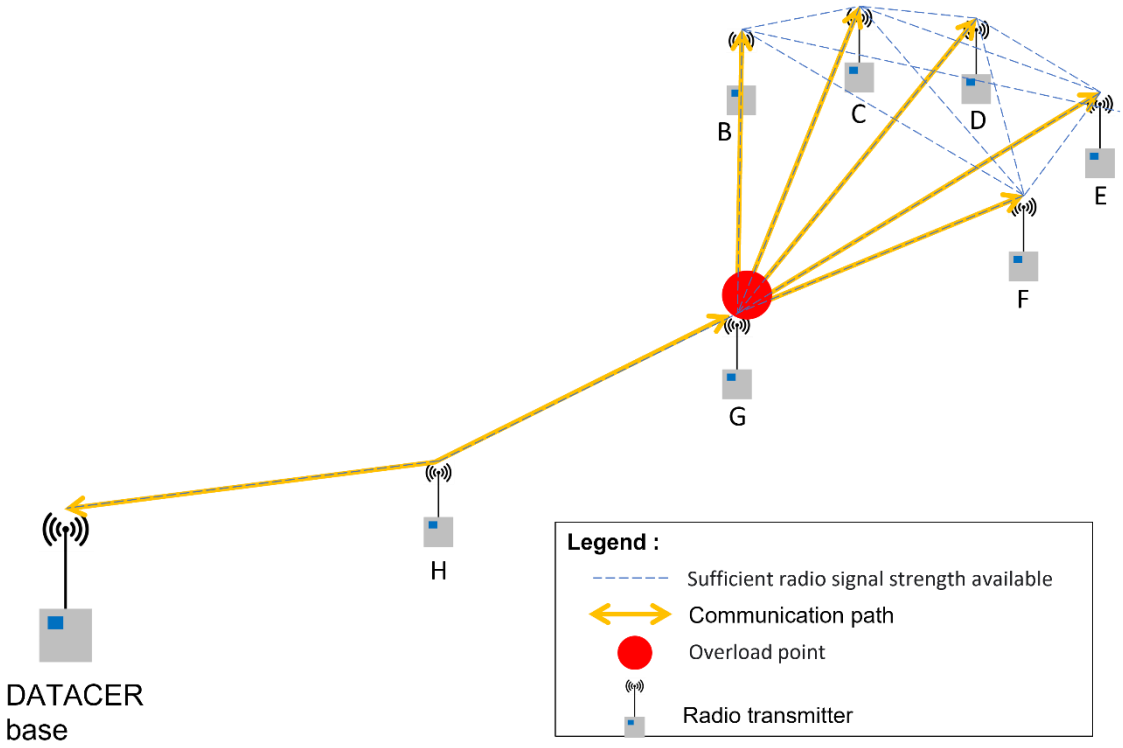


Figure 35 : Network with a bottleneck or overload that can limit data communication

In Figure 35, Transmitter G must receive radio communication from transmitters B through F. Transmitter G has only one Path to communicate with the base. Therefore, an overload point occurs on transmitter G.

This phenomenon of overload can occur when the communication of about 15 transmitters must pass through a single transmitter which itself has only one path to communicate with the base. The lower the quality of the signal between transmitter G and the base, the lower the number of communications that transmitter G can carry.

If signal strength is sufficient, a transmitter will always favor direct communication with the DATACER™ base. In this case, the communication only needs to make one hop to get to the base.

If the signal strength does not allow direct communication with the base, then the transmitter may choose to go through one or more visible transmitters. The chosen path will therefore have several hops. As far as possible, the hop number should be limited and should not exceed 6.

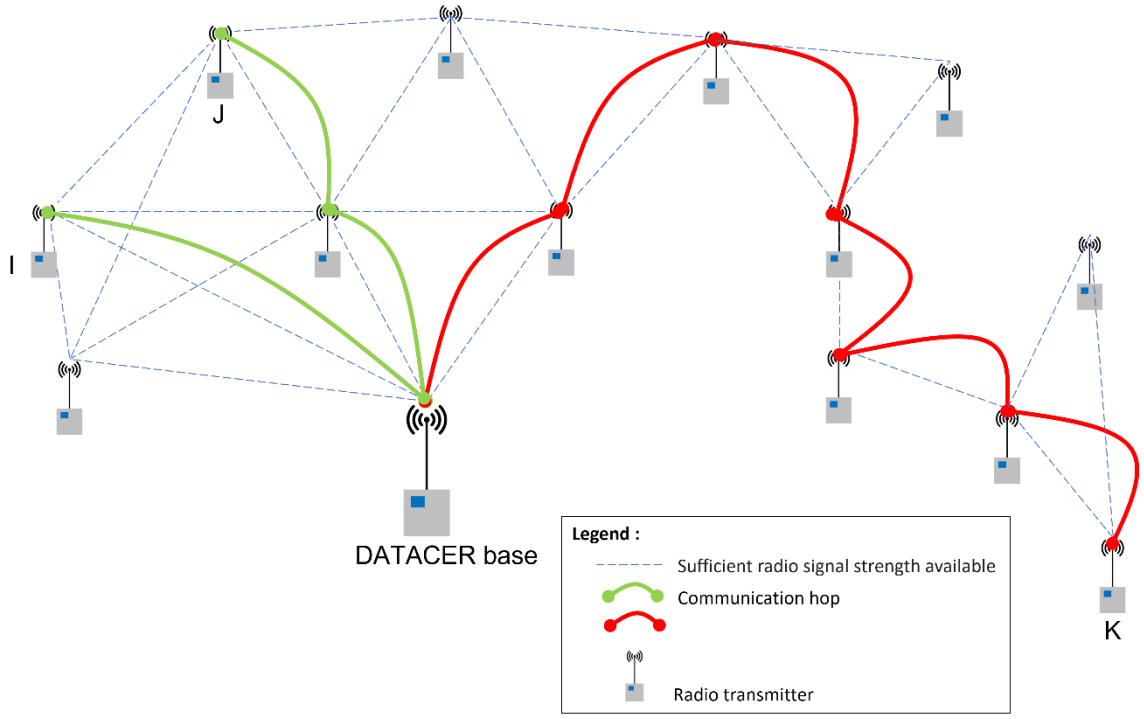


Figure 36 : Comparison of the number of hops for different transmitters in a network

In Figure 36, it is possible to view the hop number for 3 different transmitters. The transmitter K hop number is higher than transmitters I and J.

What you need to remember to optimize the proper transfer of data:

- Possibility of moving transmitters or add signal repeaters to diversify transmitter the paths.
- Possibility of splitting your network into several networks to reduce the hop number.

2.2 DATACER™ base

The DATACER™ base is usually installed in your sugar shack or in a building near your transmitter network.

To be installed away from any heat sources and water points.

Prerequisite: Install the antenna on the sugar shack (see section 2.10 page 96).

Connect the electrical cord of the UPS to 120 V power at least 8 hours before turning it on.

1. Connect the electrical cord of the UPS battery to 120 V.
2. Connect the antenna cable to the antenna and the base.

3. Connect the Ethernet cable from your router or Internet-providing equipment to the blue socket on the DATACER™ router.
4. Connect the DATACER™ router to the DATACER™ base. The Ethernet cable must be plugged into one of the yellow sockets.

Connecting additional equipment to the DATACER™ Router and changing its configurations requires prior evaluation by our technical team. Please contact us.

5. Connect the screen to the base with the VGA cable.
6. Plug the power cord into the screen.

7. Insert the mouse and keyboard transmitter into the base.
8. Connect the power cords from the screen, base computer (NUC), base transmitter and router to the UPS battery.

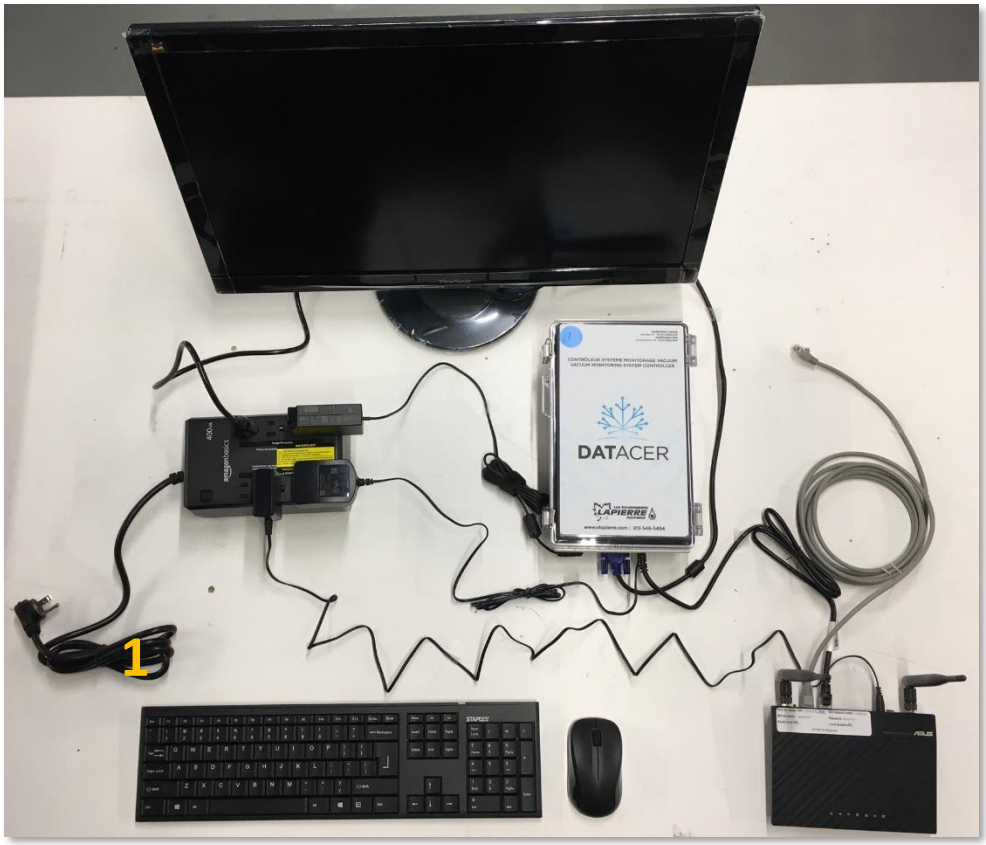


Figure 37 : Connected DATACER™ base

DATACER router
4
3

DATACER base seen from below
7
4
5
OPTICAL
HDMI
VGA

DATACER base screen seen from behind
5
ViewSonic
HDMI

1 Backup battery connection area.

⚠ It is important to connect the power cord of the base computer (NUC) to the battery backup part of the battery. In this way, the power supply to the NUC is maintained in the event of a power failure.

Here is how to connect your DATACER™ base to the UPS battery:

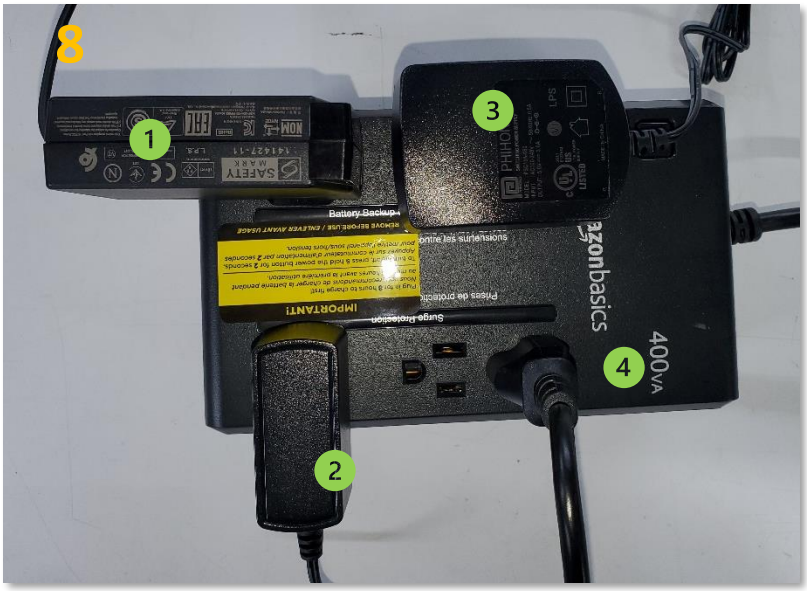


Figure 38 : Connecting the DATACER™ base to the UPS battery

1. Base computer power cord (NUC).
2. DATACER™ Router power cord.
3. Base Radio Transmitter Power Cord.
4. Electrical cord of the screen.

2.3 Assigning or changing the channel of a radio transmitter

Each DATACER™ system has its own radio channel. All radio transmitters in your system must be on the same channel as your DATACER™ base.

One or more jumpers installed on specific pins on each transmitter board allow to have up to 16 channels available.

1. Check and note the factory preset channel of your DATACER™ base.

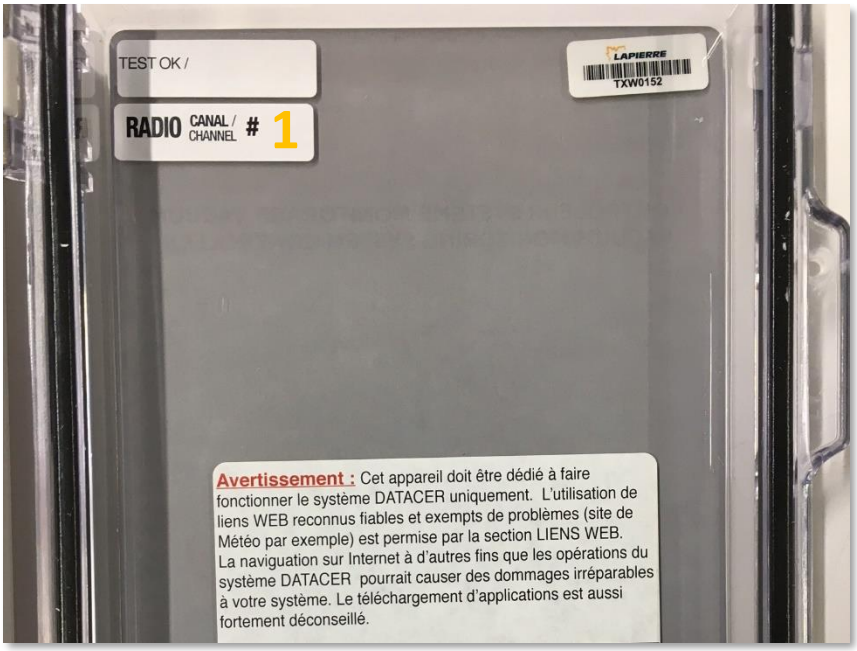
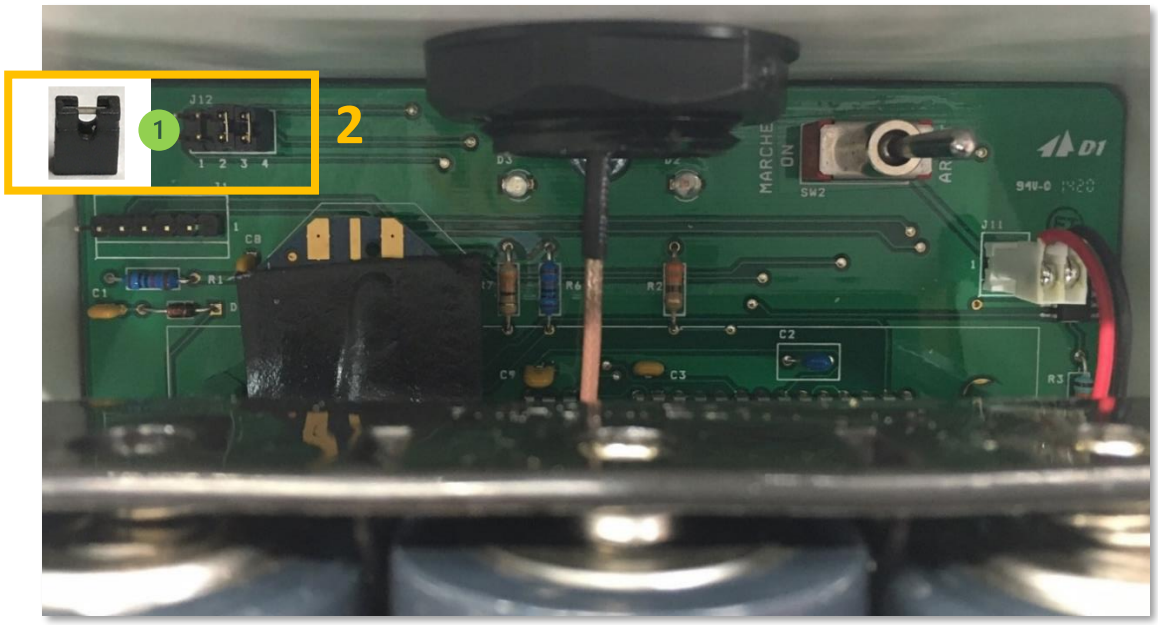


Figure 39 : Finding your DATACER™ base channel number. Inside view of the DATACER™ base cover

2. Position the jumper(s) on the transmitter board pins according to the combination that matches with the DATACER™ base channel.



1 Jumper

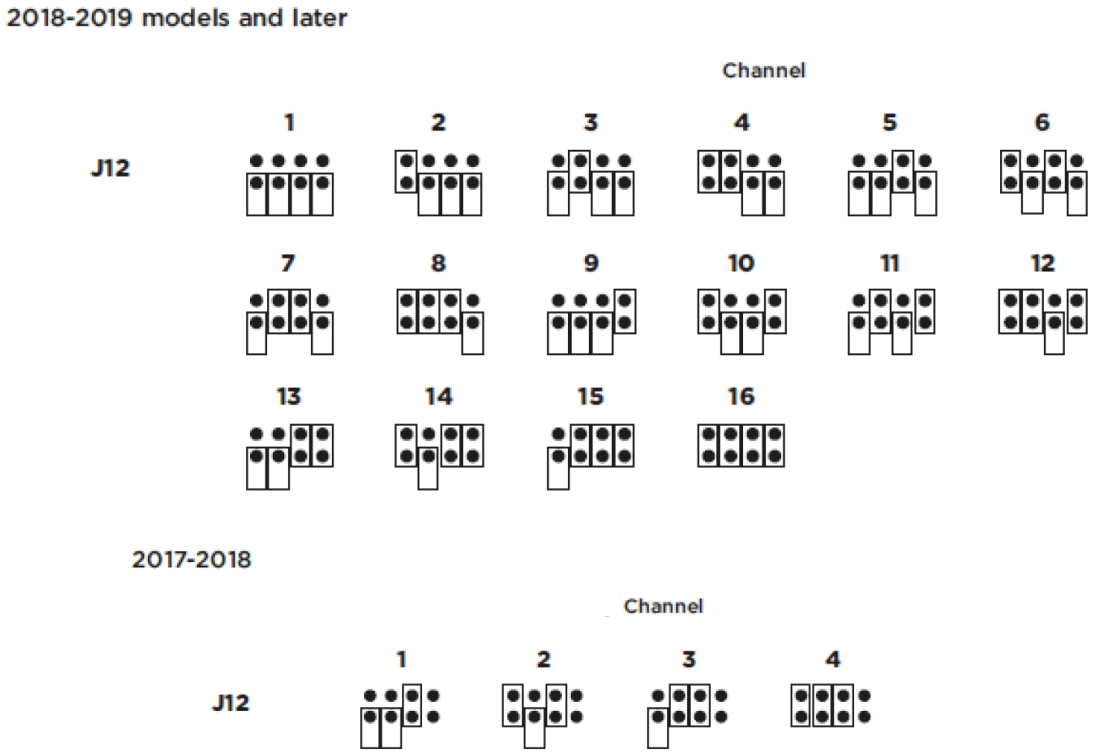


Figure 40 : Jumper position on pins correspondence and transmitter channel number

For DATACER™ stations, please ignore the fifth row of pins and follow the diagrams above.

2.4 Vacuum transmitters (single, double and triple)

1) Install the end of line vacuum transmitters on wooden stakes at least 8 ft (2.5 m) high. To do this, a ¼ in. (6.35 mm) sheet metal screw can be used on a 2 x 3 in. (5.08 x 7.62 cm) or 2 x 4 in. (5.08 x 10.16 cm) wooden stake.

Figure 41 : Sheet metal screws on wooden stake for installation of a vacuum transmitter

1 Example of ¼ in. (6.35 mm) sheet metal screws on a 2 x 3 in. (5.08 x 7.62 cm) or 2 x 4 in. (5.08 x 10.16 cm) wooden stake.

★ Install the antenna upright. The transmitter should be attached to the end of the wooden stake to clear the antenna 360 degrees for a minimum distance of 3 ft (1 m) (See Figure 43 below).

★ Installing vacuum transmitter on top of wooden stake is a possible way. You can also install your transmitters directly on the trunk of a tree, making sure that radio communication is optimal. See section 4.2 page 170 for more information.

Figure 42 : Vacuum transmitter not properly installed

Figure 43 : Vacuum transmitter properly installed

2) Position the Transmitters on the high points closest to their line ends.

In a sugar bush, maine lines are usually positioned in the lower areas of the land to optimize the downhill slope required for the 5/16 in. (7.94 mm) pipe.

In Figure 44 below, the transmitters are positioned right next to the end of the line. Because of the obstacles, the signal strength with neighboring transmitters will be weak. This installation method may affect the responsiveness of the system.

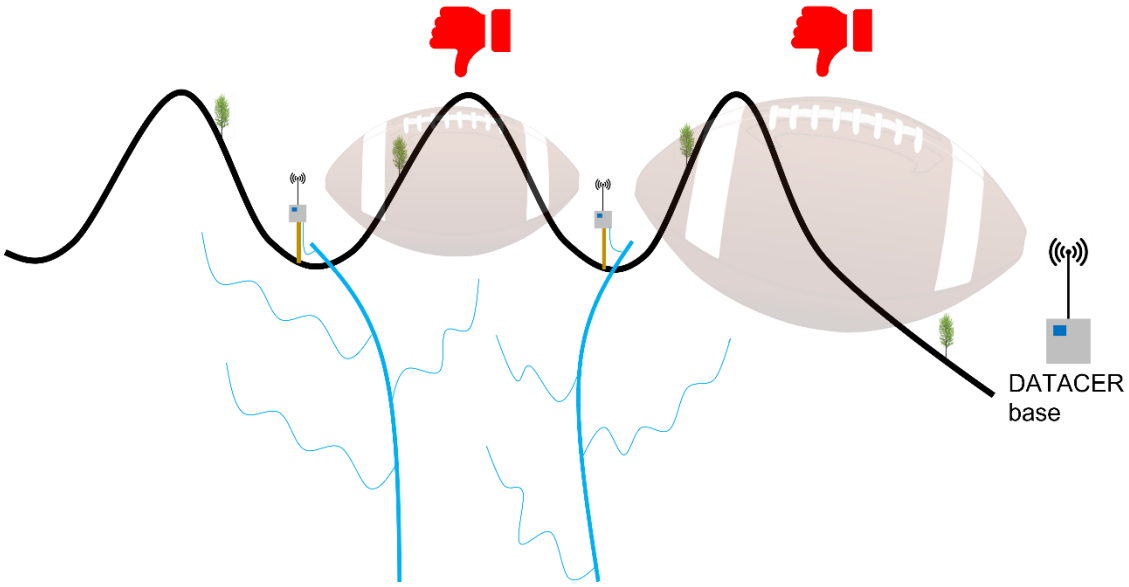


Figure 44 : Vacuum transmitters installed in lower areas

In Figure 45 below transmitters are positioned on high points to optimize signal strengths.

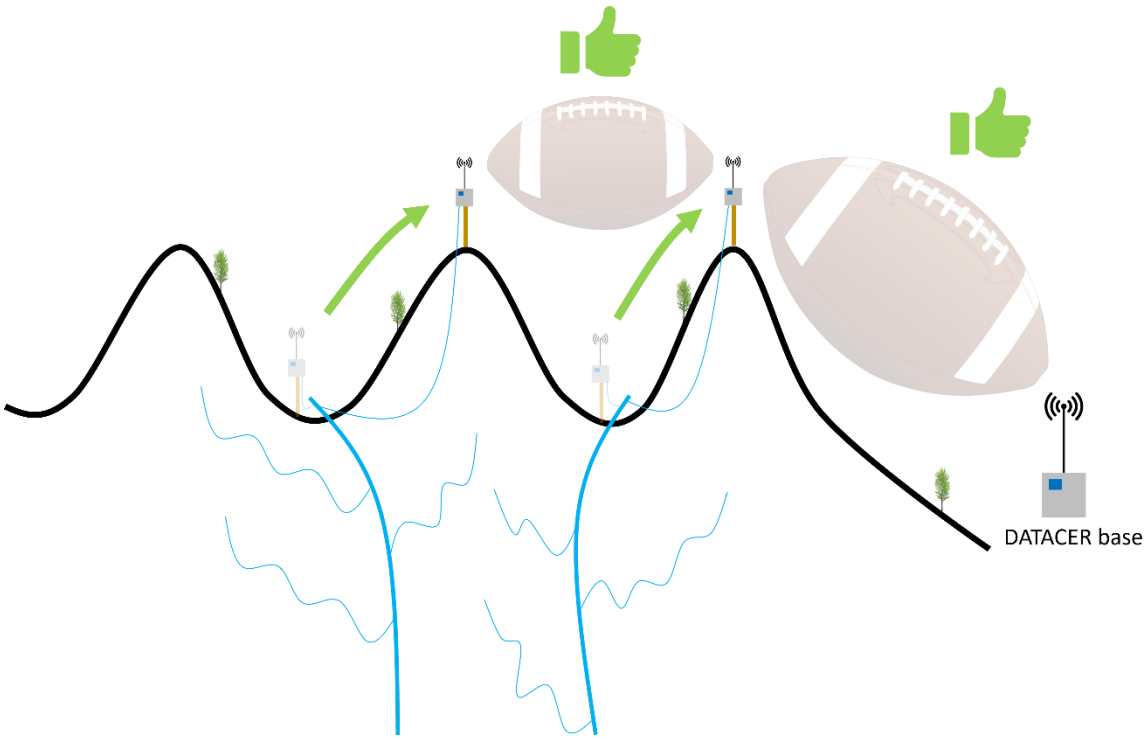


Figure 45 : Vacuum transmitters installed on high points

Position the transmitters on the high points of your terrain to optimize the responsiveness of your system. See section 2.1 page 45 for a reminder of the principles of radio communication applied to the DATACER™ system.

3) Connect the transmitter to the maine line end and keep a downward slope.

5/16 in. (7.94 mm) pipes connected to the line end must always slope downward from the transmitter to the line end. If the vacuum transmitter is a double or triple, then all pipes connected to the transmitter must comply with this recommendation.

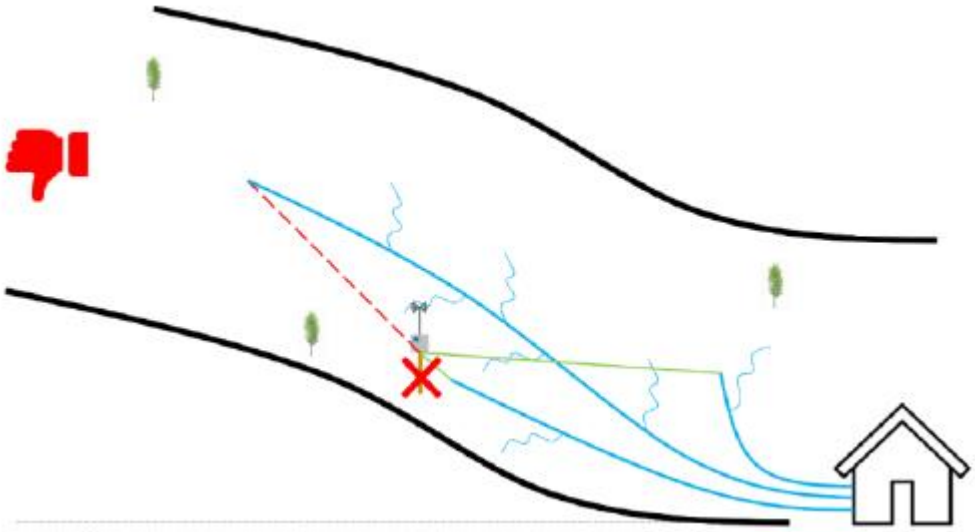


Figure 46: Slope not adhered to with for one of the 5/16" pipes connected to the transmitter.

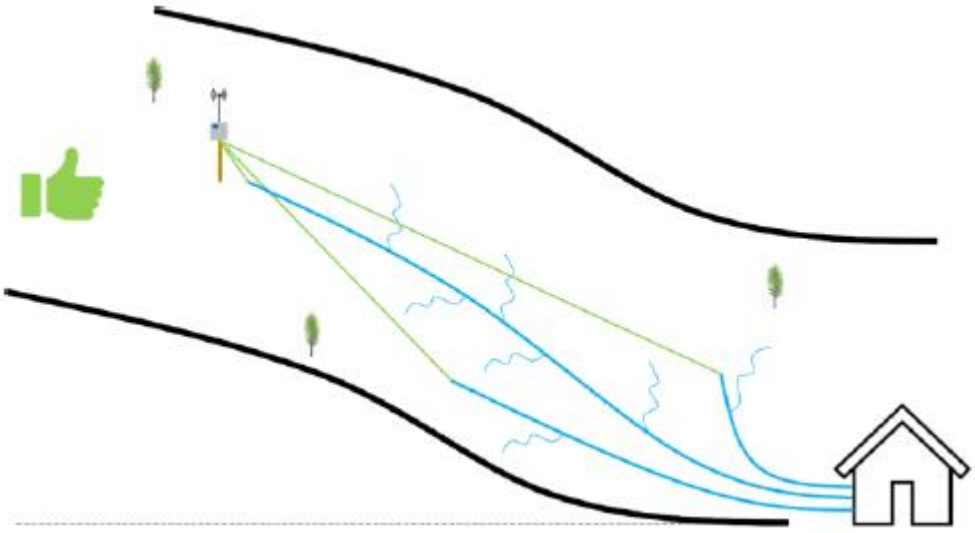


Figure 47: Slope adhered to for all 5/16" pipes connected to the transmitter.

Keeping the right slope will prevent sap from running up the 5/16 in. (7.94 mm) pipe to the transmitter. Sap build-up in the 5/16" (7.94 mm) pipe connected to the transmitter can distort the vacuum level reading and could eventually break the sensor if sap rises to it.

4) Allow a minimum height of 2 feet (60 cm) between the transmitter and the end of the line, regardless of the length of pipe unwound.

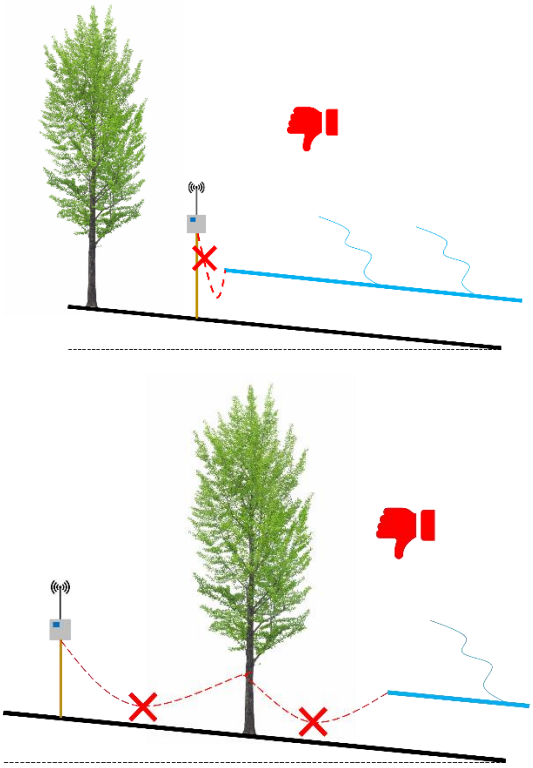


Figure 48: Steady pipe slope 5/16" (7.94 mm) adhered to.

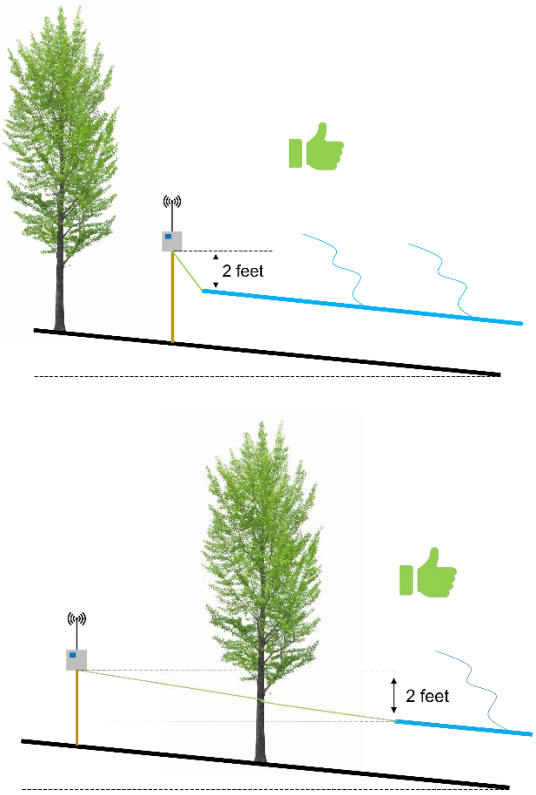


Figure 49: Steady pipe slope 5/16" (7.94 mm) and minimum height not adhered to

You can roll out as much 5/16 in. (7.94 mm) pipe as needed as long as you maintain the downward slope from the transmitter to the line end. If you are not sure, you can use a level to verify that slope is right.

For ease of installation and removal of the 5/16 in. (7.94 mm) pipe, we recommend to bevel cut the end of the pipe. Install the clamping ring to ensure a tight seal. The clamping ring acts as a plug at the end of the season.

Figure 50 : Bevel cut 5/16" (7.94 mm) pipe for easy installation and removal from the transmitter vacuum port

2.5 Tank level transmitters (L, LL, LLL)

Install the Transmitter in your pumping station away from all heat sources.

Connect the cable and antenna to the transmitter.

1) Install the stand above the tank, preferably in the center and at the opposite side (or at least 60 cm (24 in.)) from the liquid inlet (sap, concentrate or filtrate).

Figure 51 : Tank level sonar sensor installed

Leave at least 2 ft (60.96 cm) of space between the sensor and the ceiling. Refer to the outline below.

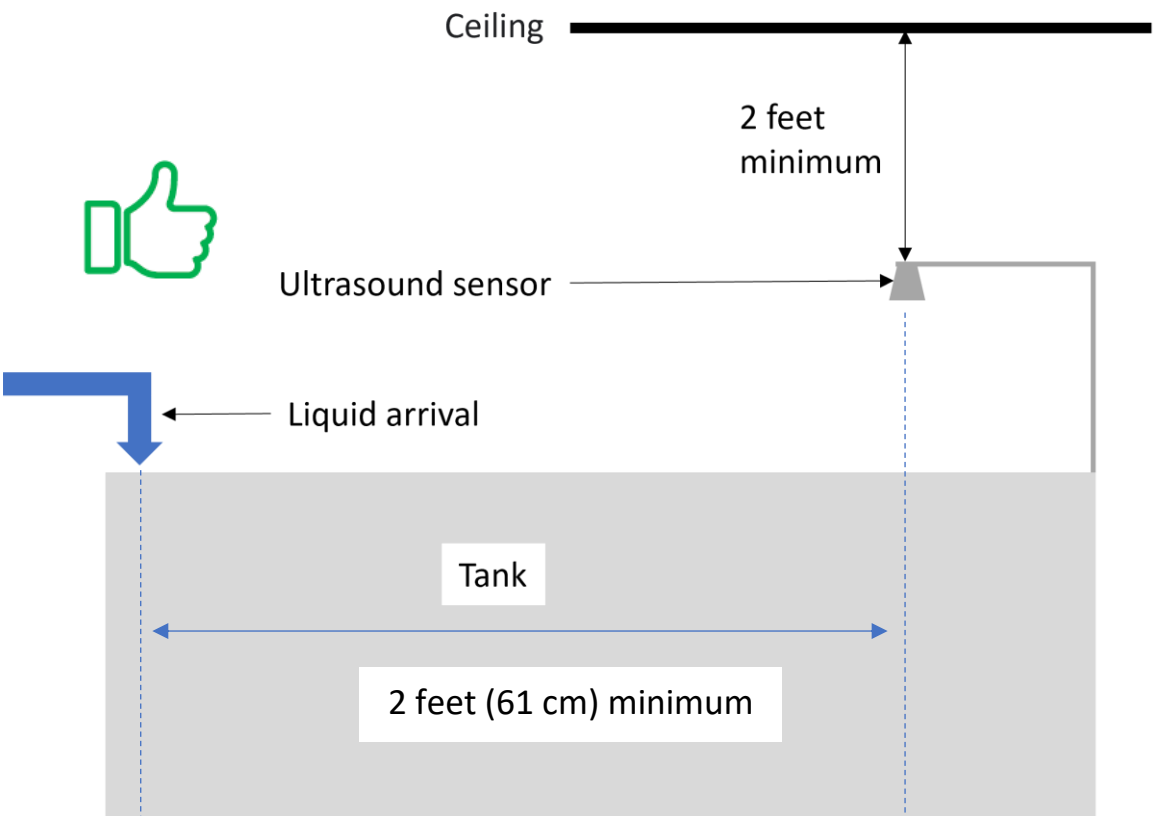


Figure 52 : Ultrasonic sensor installation outline to measure a tank level

In Figure 53 below, the sensor is installed incorrectly, as it is not centered in relation to the tank. Given that the bottom of the tank is convex, the sensor should be centered on the lowest part of the tank to be able to measure the full level amplitude. In addition, the sensor is positioned too close to the water inlet.

Figure 53: Ultrasonic tank level sensor not properly installed

2) Install the sensor on the bracket.

3) Connect the sensors wires to the transmitter board according to the outline below.

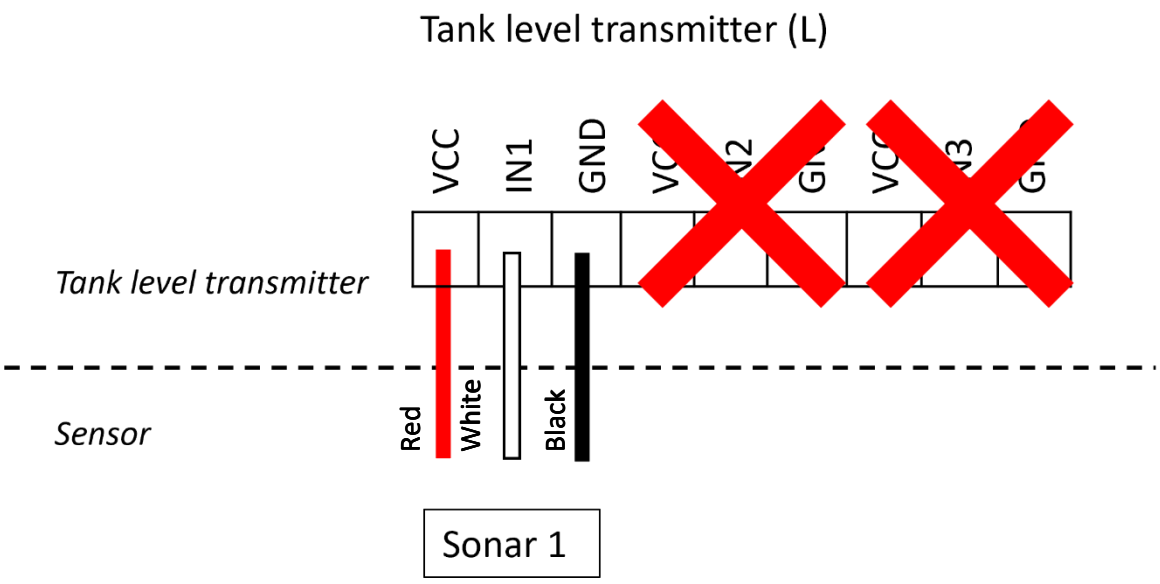


Figure 54 : Sonar sensor connection for a single tank level transmitter (L)

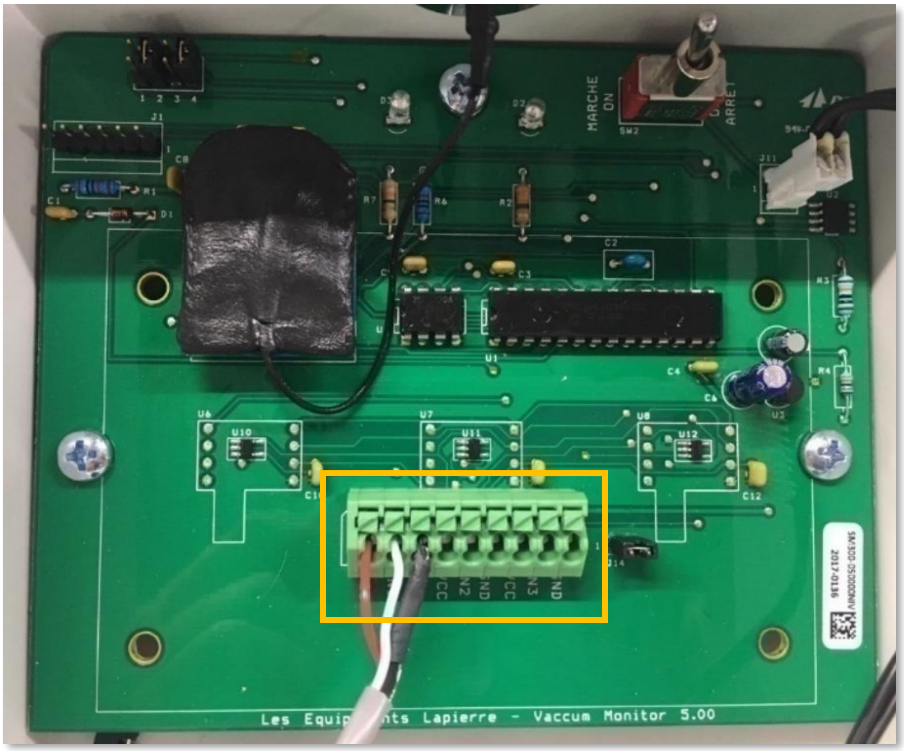


Figure 55 : Interior view of a single tank level sonar (L)

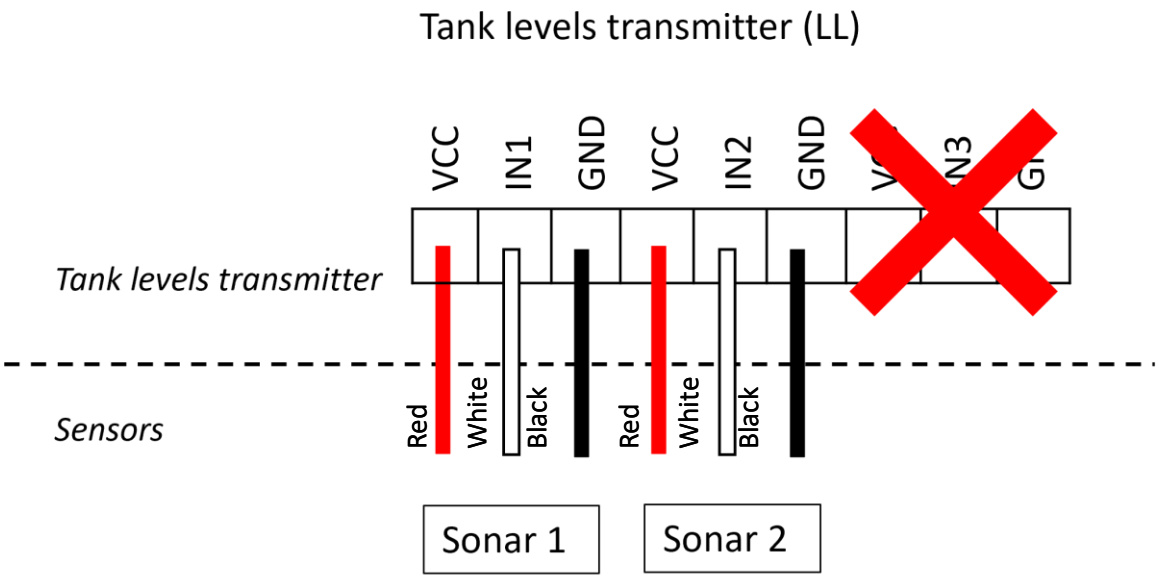


Figure 56 : Sonar sensor connection for a double tank level transmitter (LL)

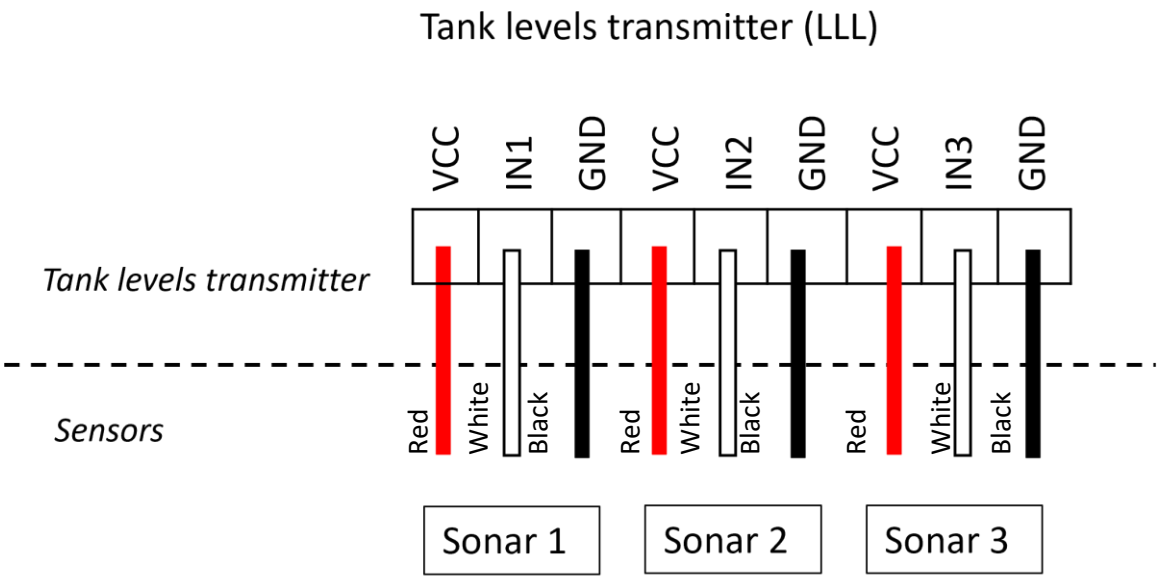


Figure 57 : Sonar sensor connection for a triple tank level transmitter (LLL)

4) Connect the electrical cord to 120 V.

2.6 Pressure transmitters (P, PP, PPP)

Install the transmitter in your pumping station away from all heat sources.

Connect the cable and antenna to the transmitter.

1) Install the pressure sensors.

Screw-in sensors:

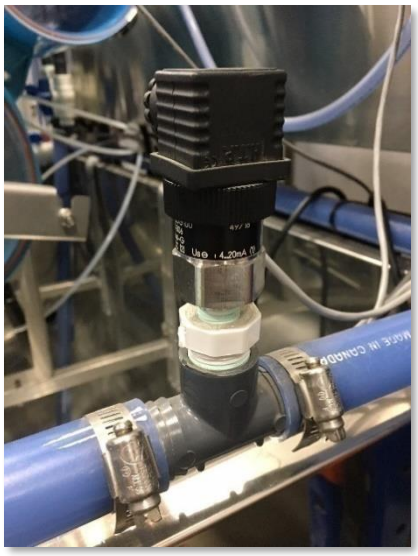


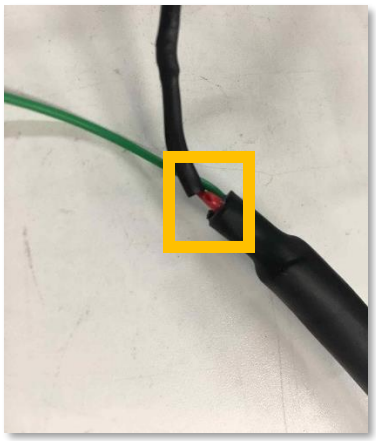
Figure 58 : Screw-in pressure sensor installed

If the pressure sensor is used to measure a tank level, it is recommended to install it on the discharge outlet opposite side to prevent pump starts from distorting the pressure measurement.

Submersible sensor:

The sensor should be supported and positioned vertically at the bottom of the tank to resist freezing of the liquid. The sensor should be centered on the lowest part of the tank to be able to measure the full level amplitude.

If the wires are extended, it is important to leave the red straw exposed.



2) Connect the sensors wires to the transmitter board according to the outline below.

Refer to the wiring diagram that matches the board version. Please refer to Figure 60 page 71 to locate the transmitter board version number.

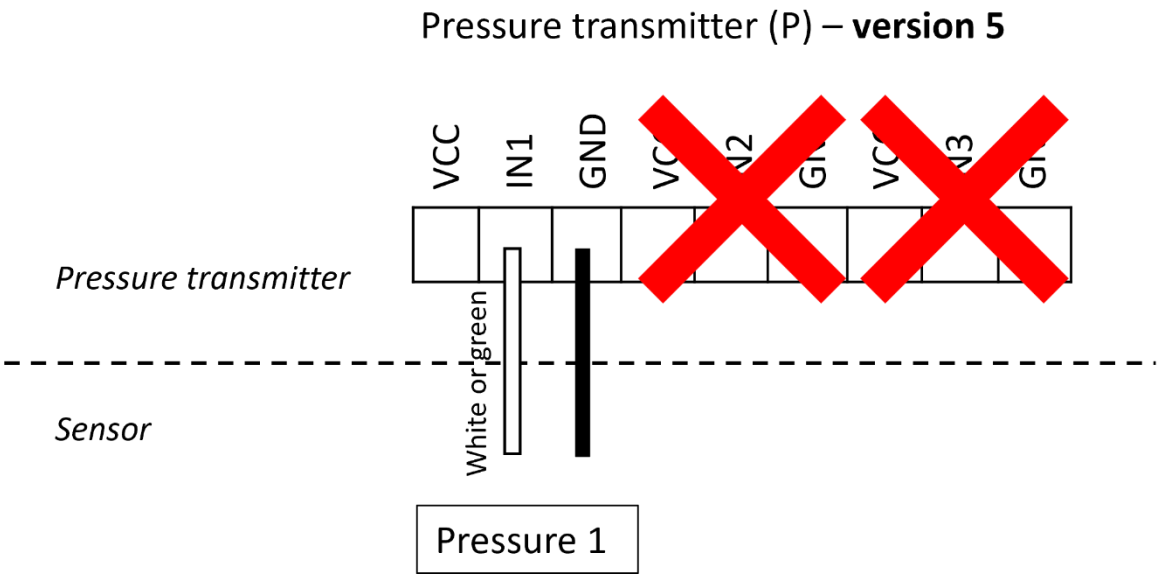


Figure 59 : Pressure sensor connection for a single pressure Transmitter (P) - Version 5

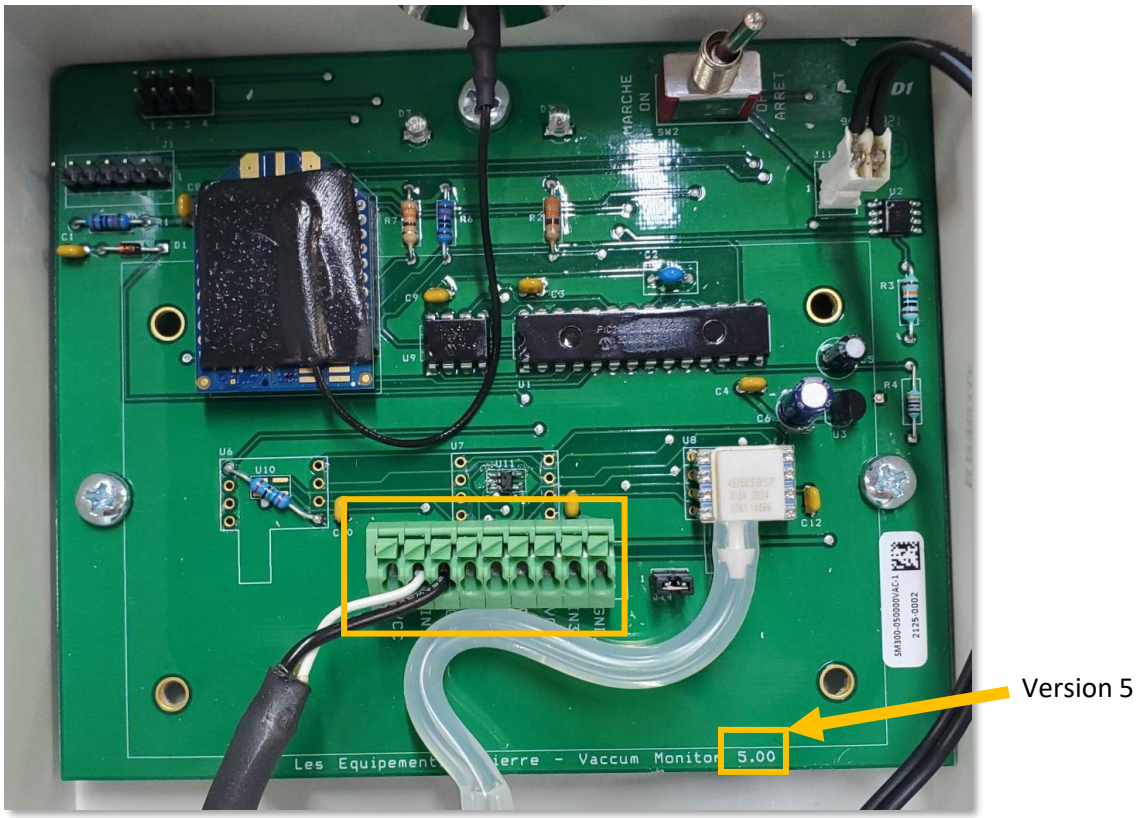


Figure 60 : Internal view of a single pressure transmitter (P) - version 5

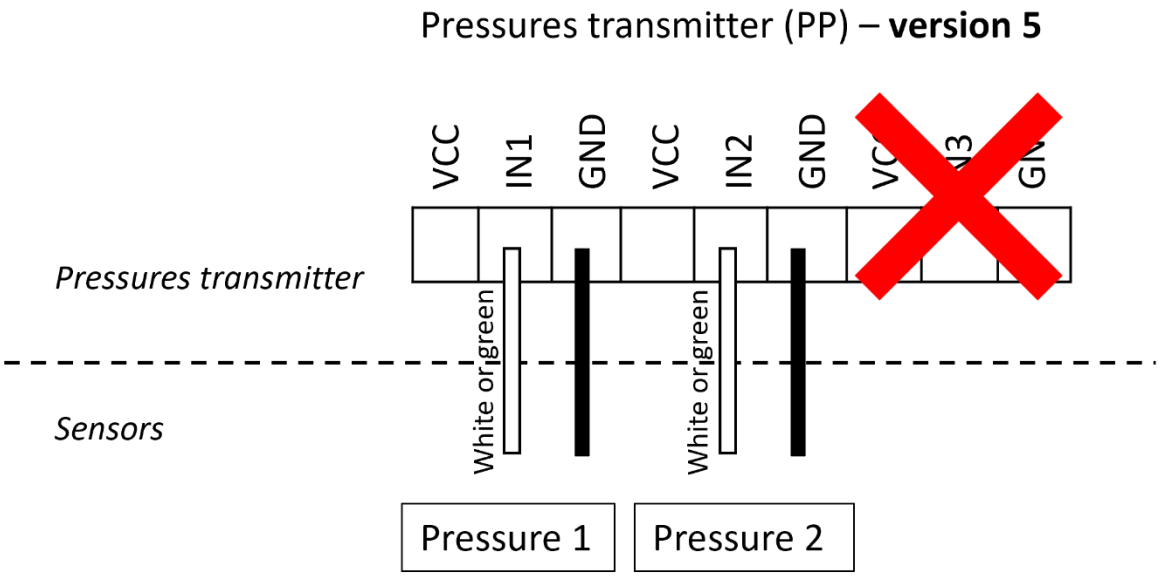


Figure 61 : Connection of pressure sensors for a double pressure transmitter (PP) - version 5

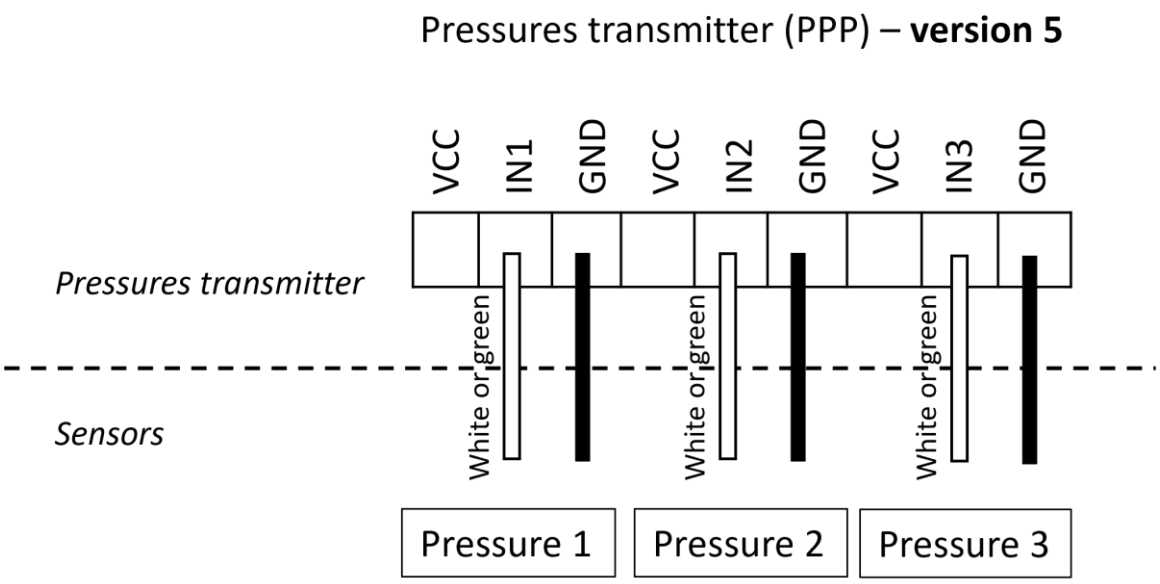


Figure 62 : Connection of pressure sensors for a triple pressure transmitter (PPP) - version 5

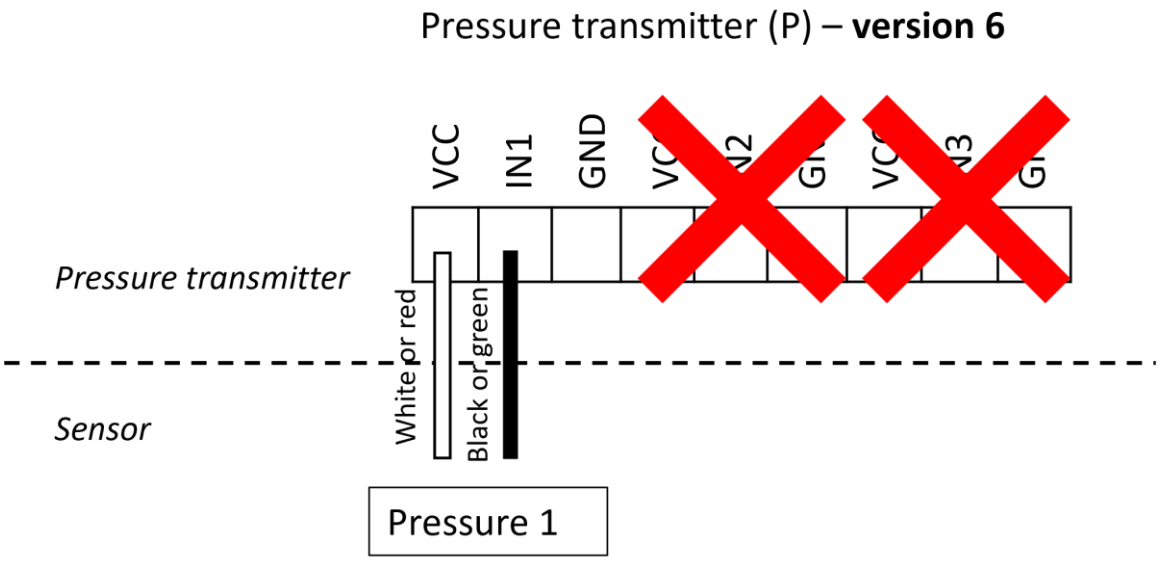


Figure 63 : Connection of pressure sensors for a single pressure transmitter (P) - version 6

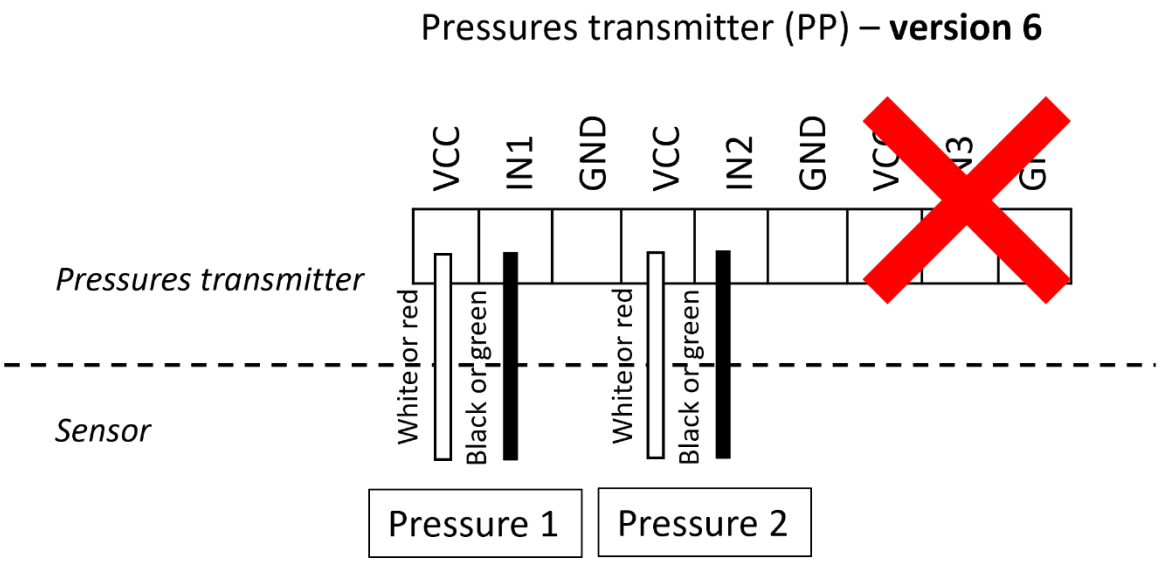


Figure 64 : Connection of pressure sensors for a double pressure transmitter (PP) - version 6

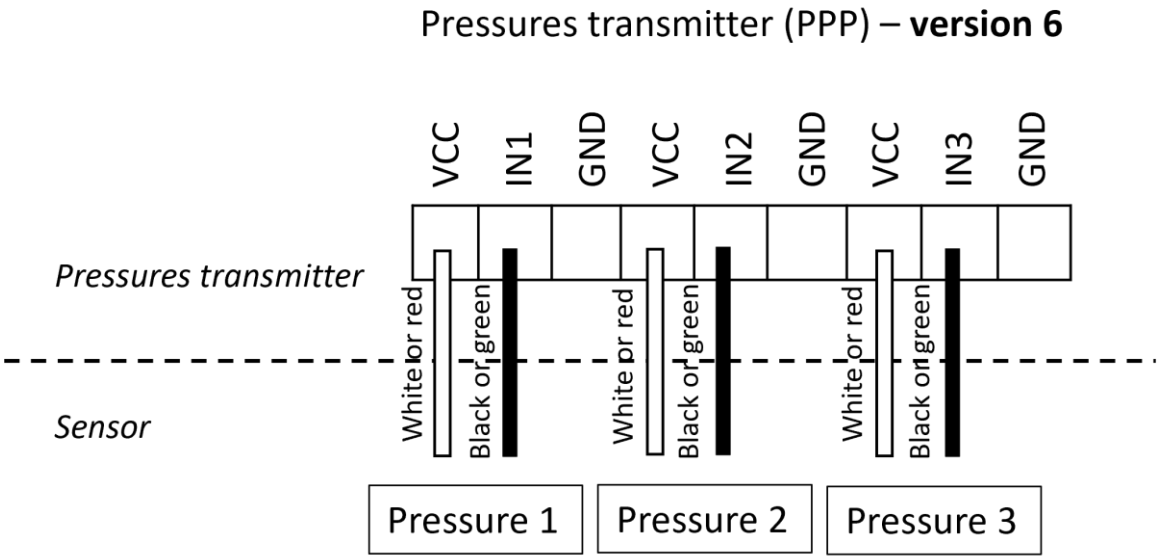


Figure 65 : Connection of pressure sensors for a triple pressure transmitter (PPP) - version 6

3) Connect the electrical cord to 110 V.

2.7 Combined transmitters (LV, LLV, PV, PPV, PLL, PLV)

1) Install the transmitter in your pumping station away from all heat sources.

2) Install the sonar and pressure Sensors in the same manner as the tank level and pressure transmitters (See section 2.5 page 63 and section 2.6 page 68).

The order in which the pressure sensors are connected to the board is also important for the PV, LV and PLV models. Please see the connection example for a PV and PLV transmitter version 6 below.

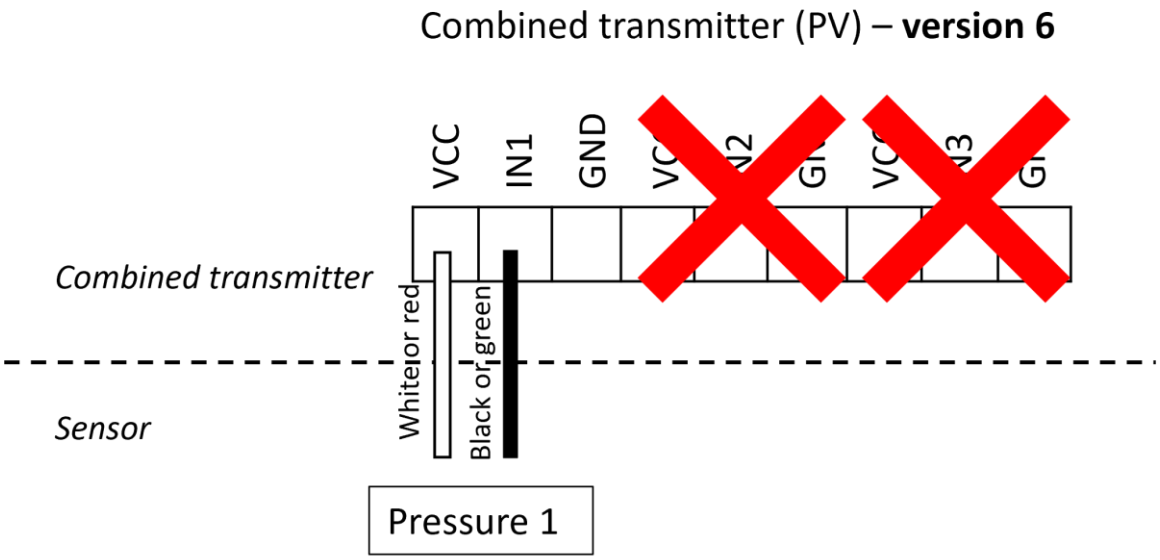


Figure 66 : Pressure sensor connection for a PV combined transmitter - version 6

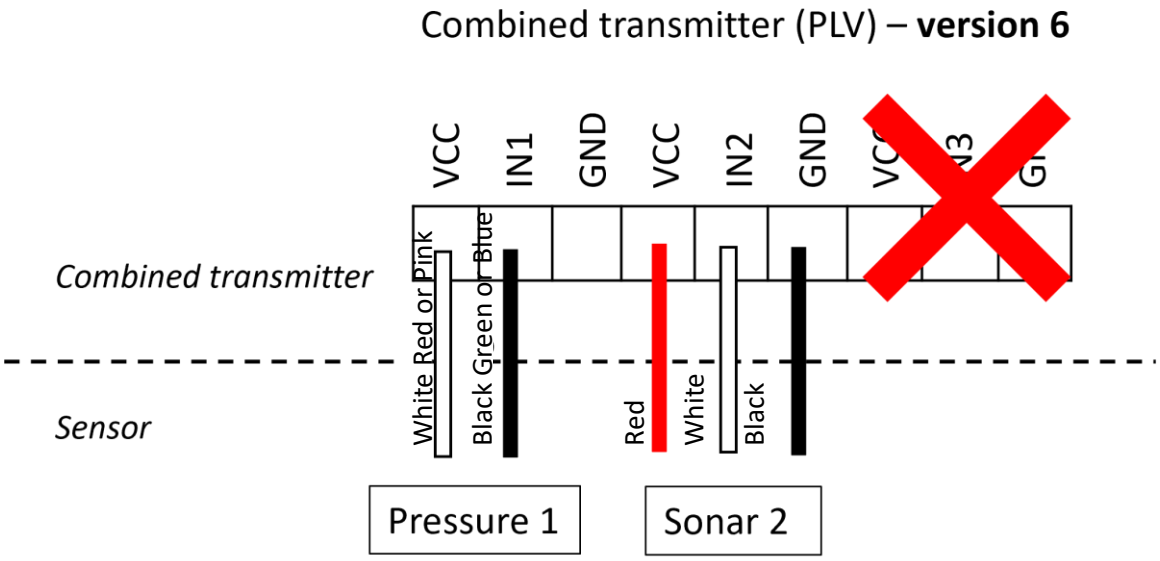


Figure 67 : Pressure and sonar sensors connection for a PLV combined transmitter - version 6

3) Connect the vacuum pipe on the extractor side.

The vacuum sensors of these transmitters are mainly used to measure the vacuum level at the extractor.

Figure 68 : Connecting the 5/16" (7.94 mm) pipe to the extractor

2.8 DATACER™ station

The DATACER™ station is installed in a pumping station.

1) Mount the station on a wall inside your pumping station.

The installation of the station must be 6.5 ft (2 m) away from any drives or powerful electric motors (vacuum pump) to avoid interference.

2) Attach the antenna on the roof top and connect the antenna to the DATACER™ station with the antenna cable.

Connect the cable and antenna to the station.

3) Install the sensors and other DATACER™ station peripherals on your pumping station equipment (see below).
4) Connect the peripherals to your DATACER™ station (see below).

1 Connections to connect sensors and peripheral tools.

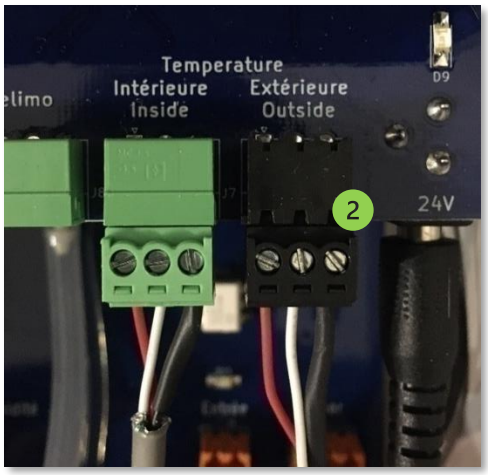


Figure 69 : DATACER™ station connection of a device with a connector

2 Example of plugged connectors, screws towards the top.

5) Connect the vacuum pipe to the DATACER™ station vacuum port (same method as Figure 50 page 63).
6) Connect the two electrical cords to 120 V.

Turn off the DATACER™ station (see section 4.3.2 page 179) and unplug both power adapters before connecting devices.

2.8.1 Relay for vacuum pump start without drive

1) Connect the relay box to the DATACER™ station.

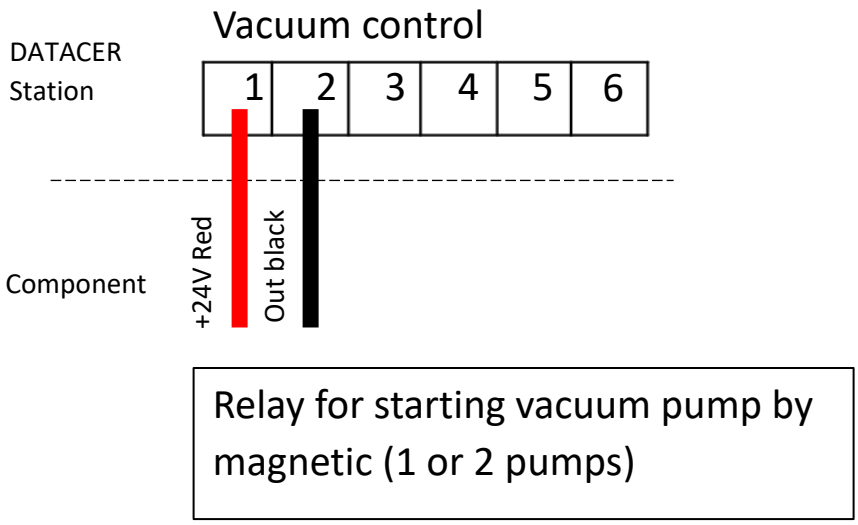


Figure 70 : Vacuum pump start relay connection to the DATACER™ station

2) Connect the relay box to the vacuum pump contactor

The relay box connection to the vacuum pump contactor must be done by a qualified electrician. The work must be carried out in accordance with the local regulations in force.

2.8.2 DATACER™ connection for start/stop and speed variation of a vacuum pump with drive

1) Disconnect the potentiometer wires from the drive and leave the original jumpers on the drive.
2) Connect the DATACER™ connection wires to the drive.
3) Connect the DATACER™ connection wires to the DATACER™ station.

If you have another drive model than the Yaskawa V1000, A1000, GA500, MV040 Bush, Techtop 20 or 350 please refer to your electrician for the connection to the DATACER™ station. The speed setpoint sent to the drive is a 2-10 V signal (white wire below). The station also provides a dry contact (normally open) to start the drive (red and black wire below).

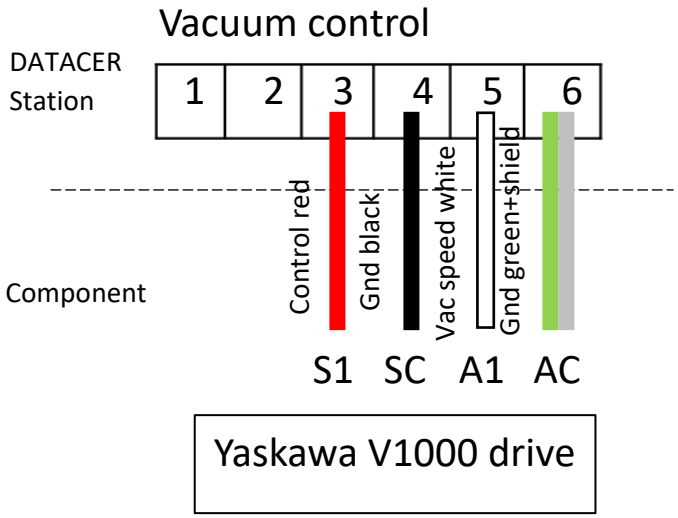


Figure 71 : Yaskawa V1000 drive connection to the DATACER™ station

		Wire positions on the DATACER™ station			
		3 Red	*4 Black*	*5 White*	*6 Green*
Wire positions on the drive	*V1000 - Yaskawa*	*S1*	*SC*	*A1*	*AC*
	A1000 - Yaskawa	*S1*	*SN*	*A1*	*AC*
	GA500 - Yaskawa	*S1*	*SN*	*A1*	*AC*
	Mink MV040 - Bush	*8*	*6*	*2*	*3*
	TD350 -Techtop	*S1*	*COM*	*AI1*	*GND*
	TD20 - Techtop	*S1*	*COM*	*AI2*	*GND*

Figure 72 : Main drives connection to the DATACER™

If the wire is extended, shield should not be connected to the drive.

The potentiometer wires must be removed on the drive side.

	Jumpers	DIP Switches
V1000 – Yaskawa	Keep HC – H1	N/A
A1000 – Yaskawa	Keep SP – SC	N/A
GA500 – Yaskawa	Keep SP – SC	N/A
Mink MV040 - Bush	Remove 6 - 8 and 1 - 2	SW1 position 0 SW2 position 1
TD350 – Techtop	Keep +24V - H1 Keep +24V - PW Keep +24V - H2 Keep +CME - COM	N/A
TD20 – Techtop	Keep +24V - PW	N/A

Figure 73: Jumper and DIP switch positions on the main drives.

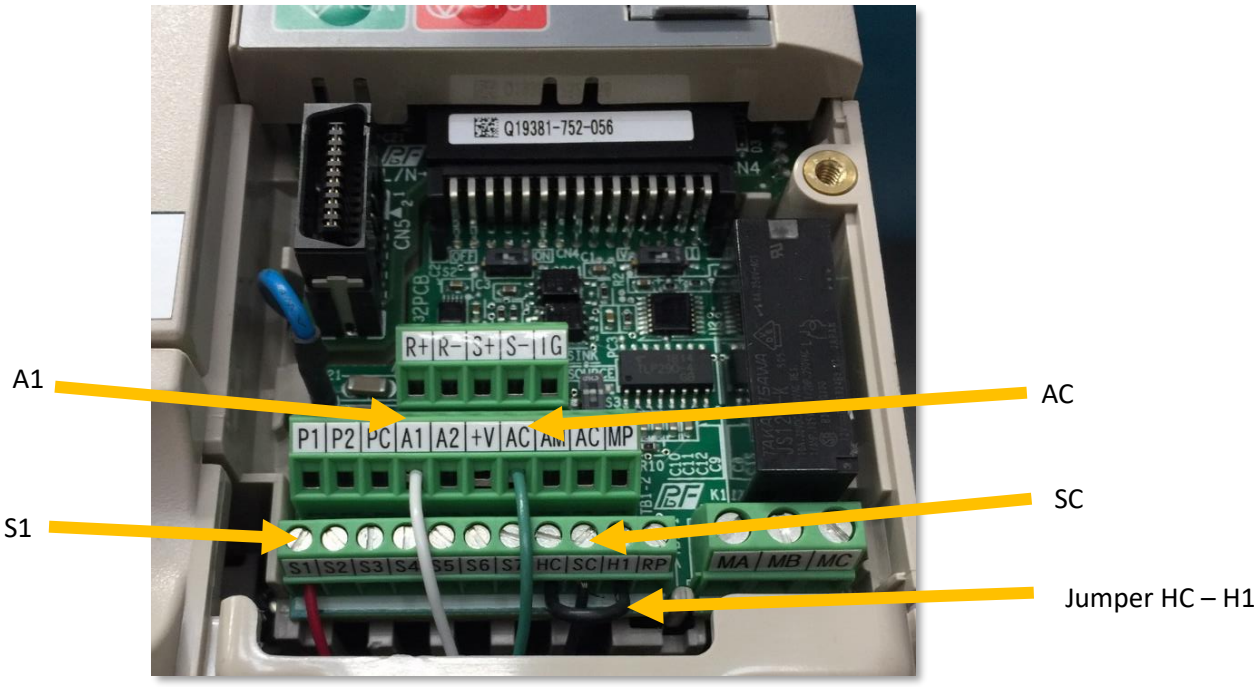


Figure 74 : Connection of a Yaskawa V1000 drive

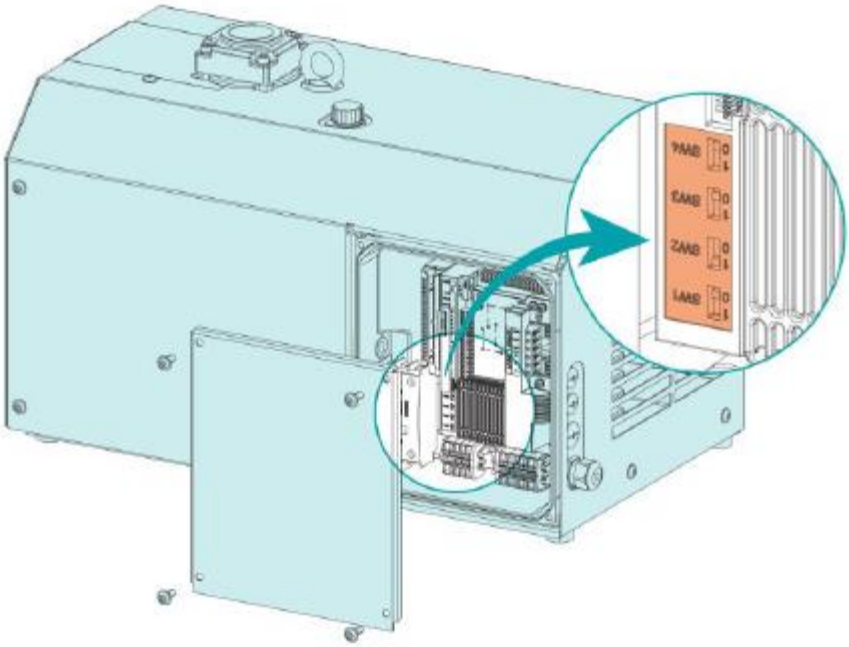


Figure 75 : DIP switch position on MV040 Bush pump.

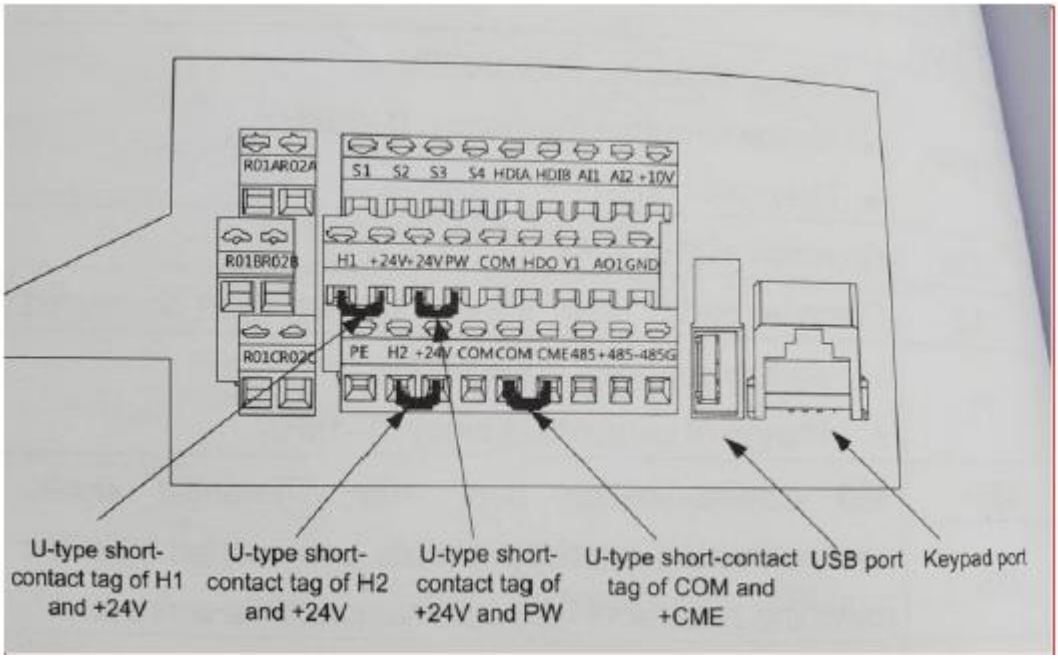


Figure 76: Jumper positions to be retained for TD350 Techtop drives

2.8.3 Vacuum modulation valve

1) Install the valve on the air pipe between your Extractor and your Humidity trap.

Figure 77 : Vacuum modulation valve installed

1 Extractor.

2 Humidity trap.

2) Set the selector switch to 0 position

3) Connect the valve to the DATACER™ station.

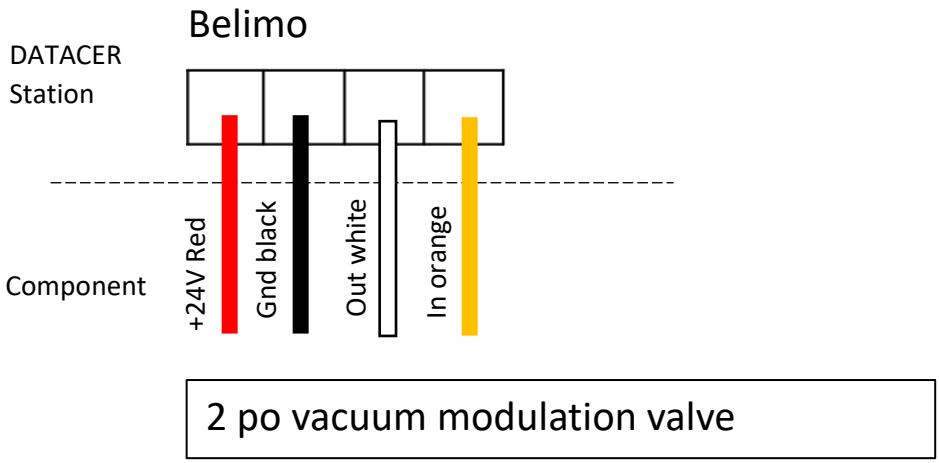


Figure 78 : Modulation valve connection to the DATACER™ station

2.8.4 Extractor emergency stop float

1) Install the float on your extractor. It is possible to adjust the float height on the horizontal extractor model thanks to the tightening ring.

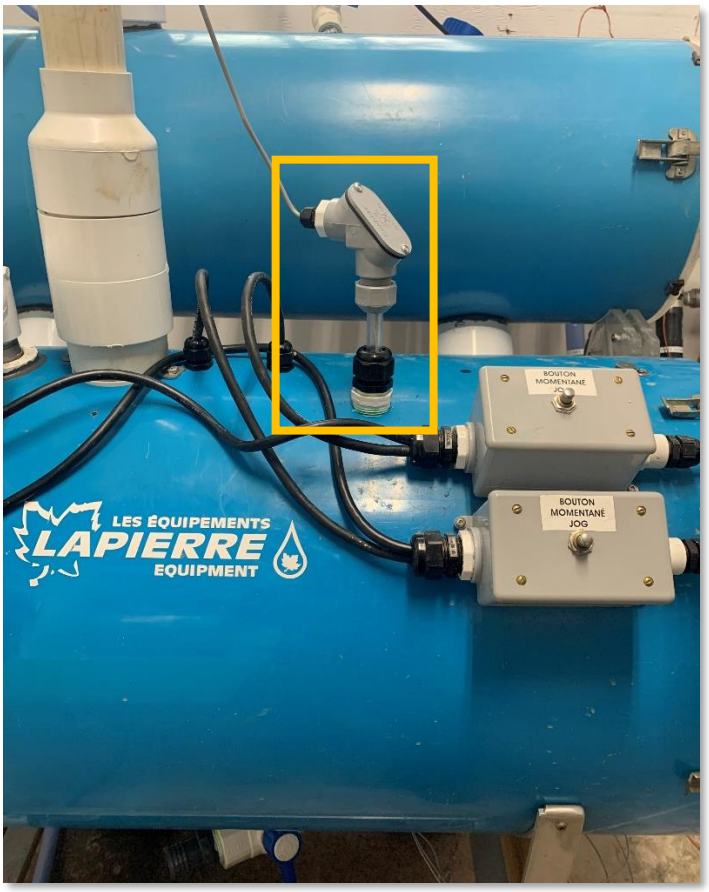


Figure 79 : Horizontal extractor emergency float installed – extractor outside view

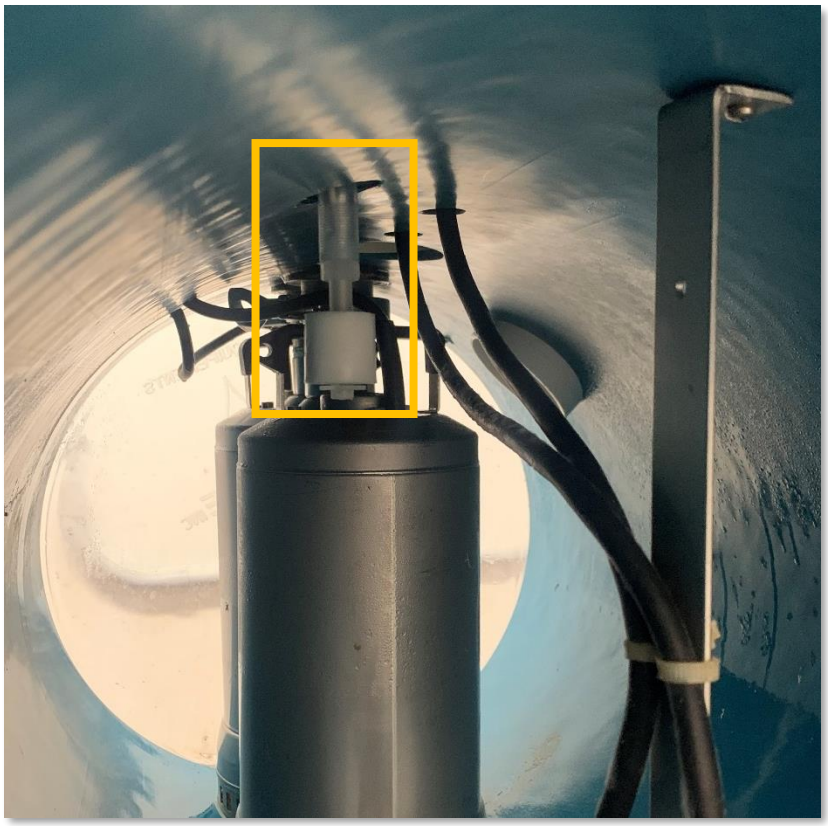


Figure 80 : Horizontal extractor emergency float installed – extractor inside view

2) Connect the float to the DATACER™ station.

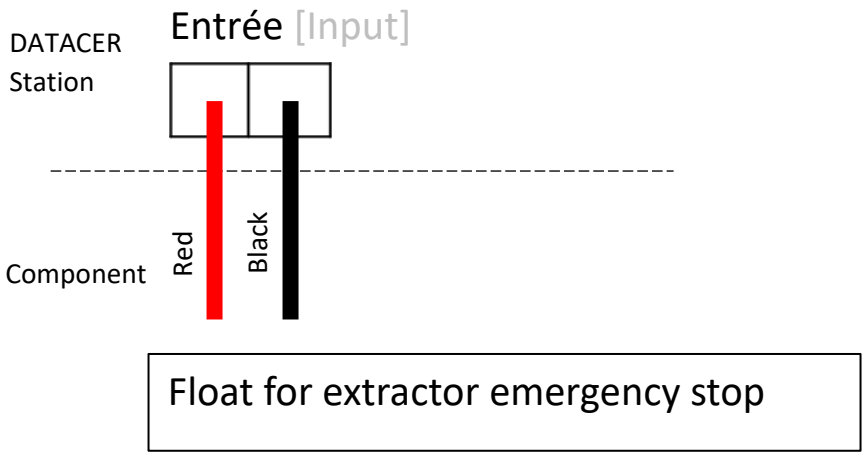


Figure 81 : Extractor emergency stop float connection to the DATACER™ station

Please operate the float manually to ensure that the modulating valve remains closed as long as the float is held in the upper position. If the valve opens instead of closing when the float is in the upper position, remove the white cylinder, swap it and install it again.

2.8.5 Water pump control

1) Install the electrodes in the tank

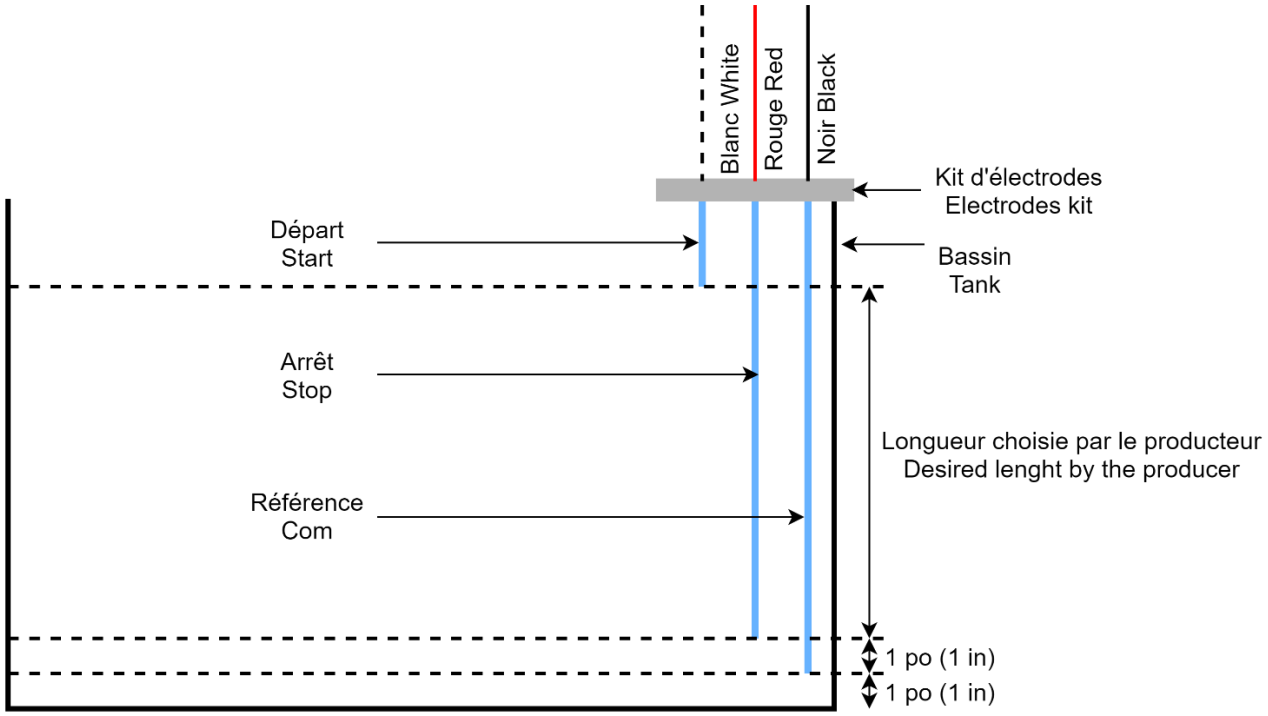


Figure 82 : Water pump control electrodes installed in a tank

Position the foam pucks properly (see Figure 13 page 33) to prevent the tip of the Electrodes from touching the tank walls.

It is possible to cut the electrodes to fit the height your tank.

2) Connect the electrodes to the pump control.

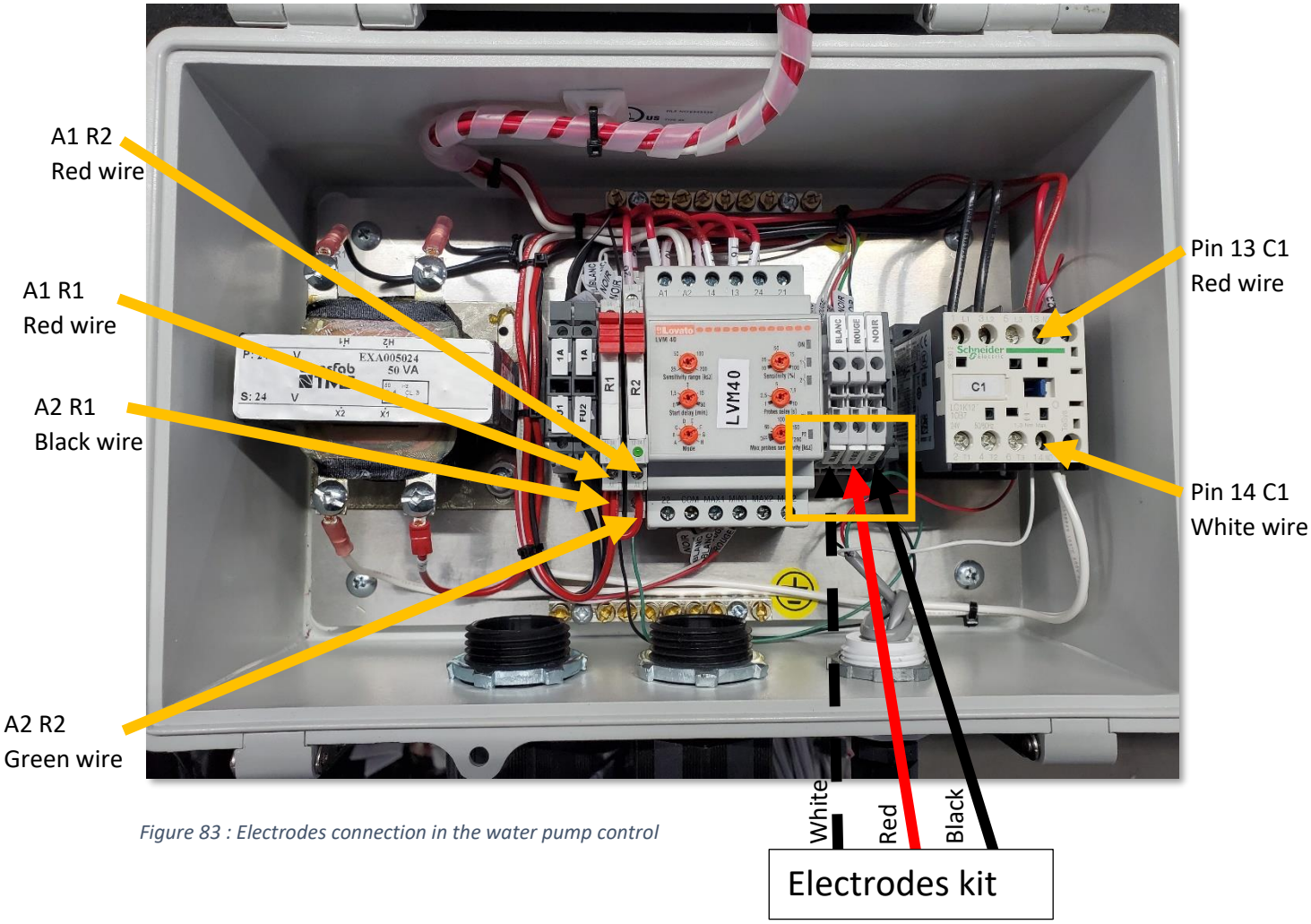


Figure 83 : Electrodes connection in the water pump control

The electrode kit cable (3 wires) comes with a shield. The black wire and shield must be connected to the connection marked "Black" on the pump control.

Figure 84 : Lovato relay default settings

Lovato relay selector switches	**Default position**
Sensitivity range (kΩ)	100
Start delay (min)	0
Mode	A
Sensitivity (%)	25
Probes delay (s)	1
Max probe sensitivity (kΩ)	OFF

1 If the pump does not start, increase the Sensitivity %. If the pump does not stop, decrease the Sensitivity %.

2 If the sensitivity setting (%) is not sufficient, then change the sensitivity range (kΩ). If the pump does not start, increase the sensitivity range (kΩ). If the pump does not stop, decrease the sensitivity range Sensitivity range (kΩ).

3) Connect the pump control to the DATACER™ station.

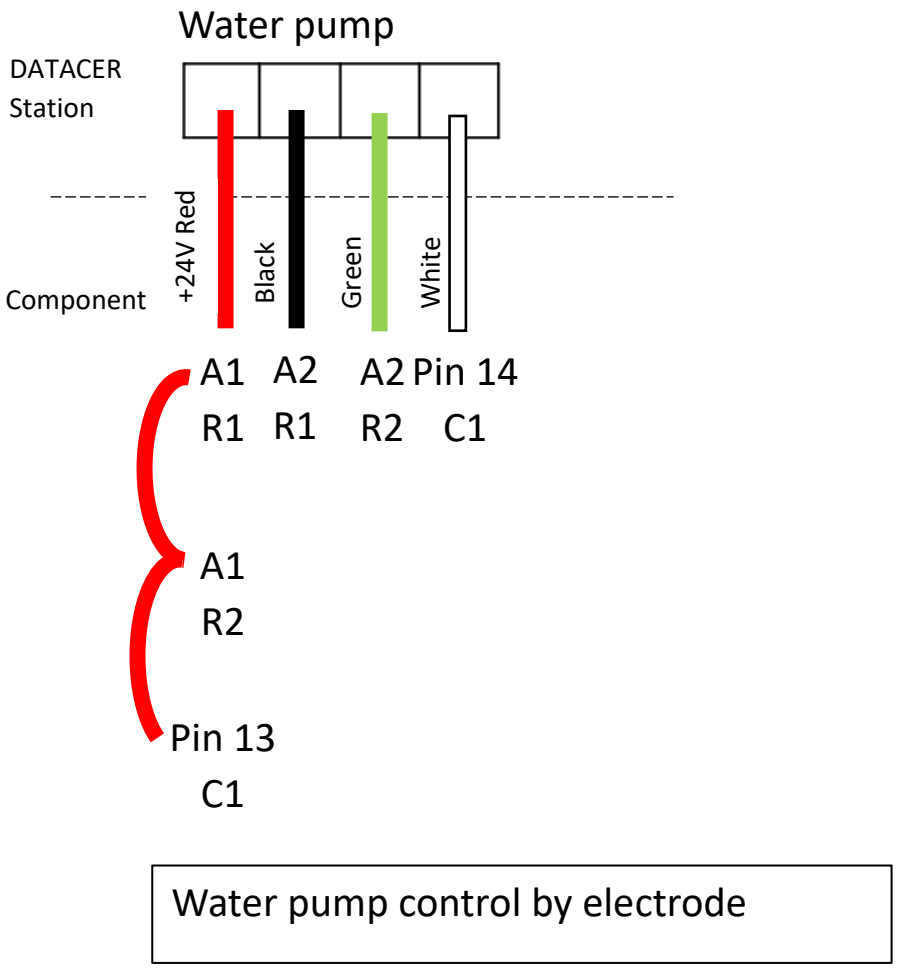


Figure 85 : Water pump control connection to the DATACER™ station

4) Connect the water pump control to the electric current.

The connection of the water pump control to the electric current must be done by a qualified electrician. The work must be carried out in accordance with the local regulations in force.

2.8.6 Drain valve

1) Valve installation.

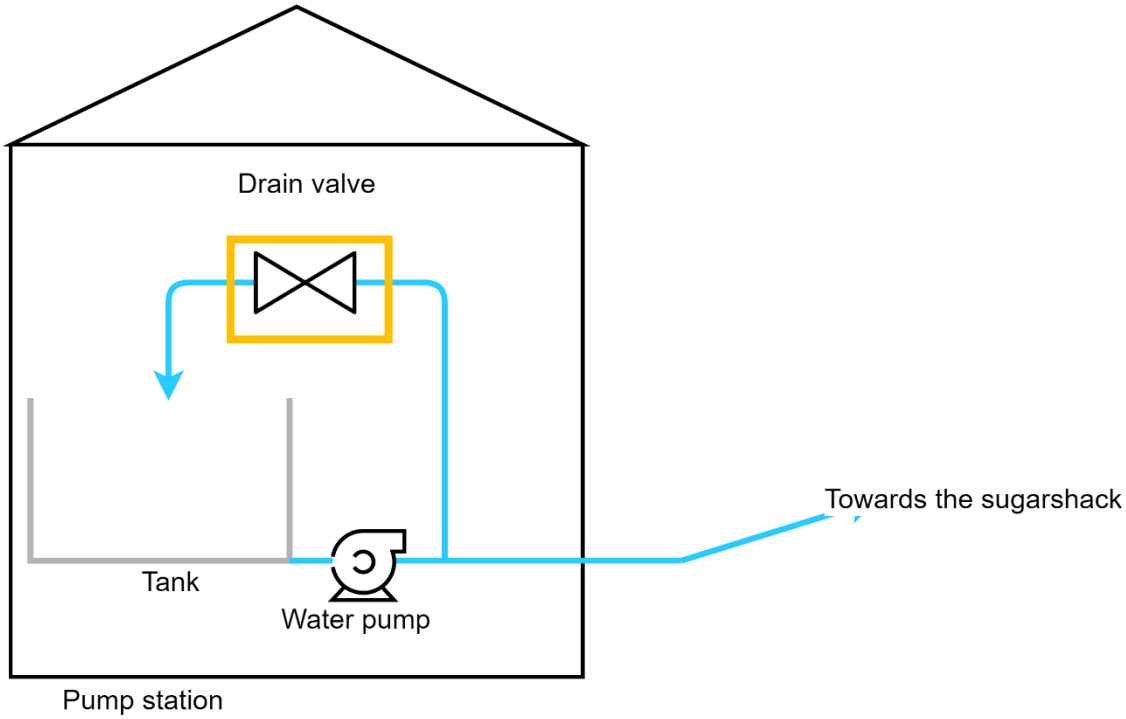


Figure 86 : Drain valve installation diagram

2) Connect the Drain valve to the DATACER™ station.

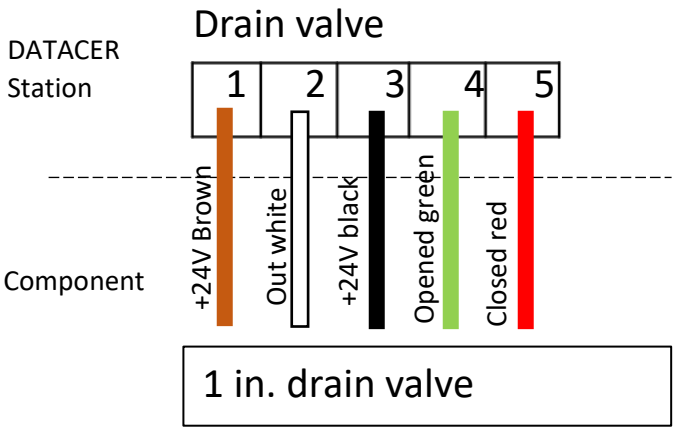


Figure 87 : Drain valve connection to the DATACER™ station

2.8.7 Air intake valve

1) Install the valve directly on the air inlet of the pump.

Figure 88 : Air intake valve installed

2) Connect the valve to the DATACER™ station.

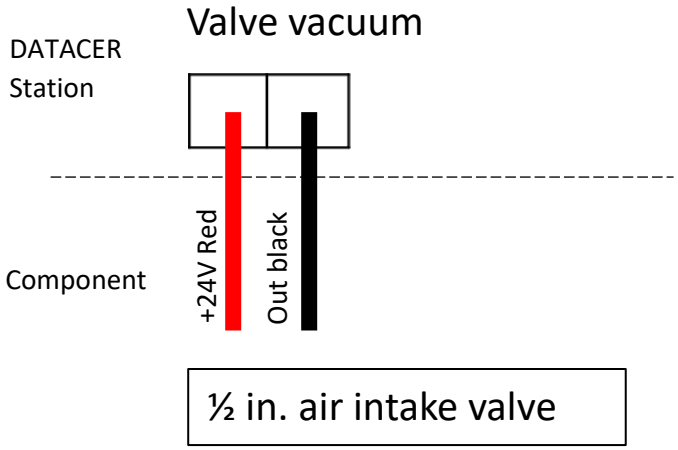


Figure 89 : Air intake valve connection to the DATACER™ station

2.8.8 Internal temperature sensor

1) Connect the sensor to the DATACER™ station.

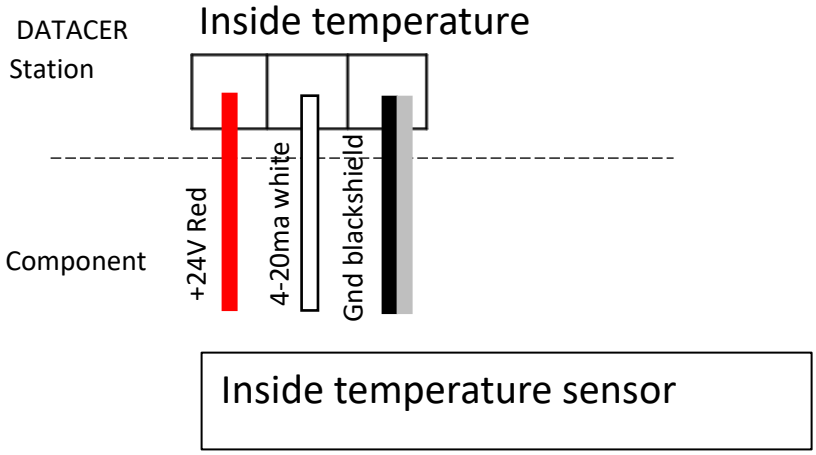


Figure 90 : Internal temperature sensor connection to the DATACER™ station

2.8.9 External temperature sensor

1) Install the sensor outside the station.

To optimize the accuracy and measurement's reliability, the sensor should be installed according to the following criteria:

- Facing north
- At least 6 ft (1.83 m) from walls
- At least 6 feet (1.83 m) above the ground (no obstacles, objects or branches below).
- Hanging from the top without anything above

The sensor must be kept away from all heat sources.

In Figure 91 below, the sensor is incorrectly installed, as it is positioned too close to the pumping station. Heat leaving the station through the door and the vacuum pump exhaust pipe can accumulate under the roof and directly influence the temperature reading.

Figure 91: Exterior temperature sensor incorrectly installed.

The sensor can be suspended from a master line or branch as long as the above criteria are met (e.g. Illustration Figure 92 below).

Figure 92 : External temperature sensor installed

2) Connect the sensor to the DATACER™ station.

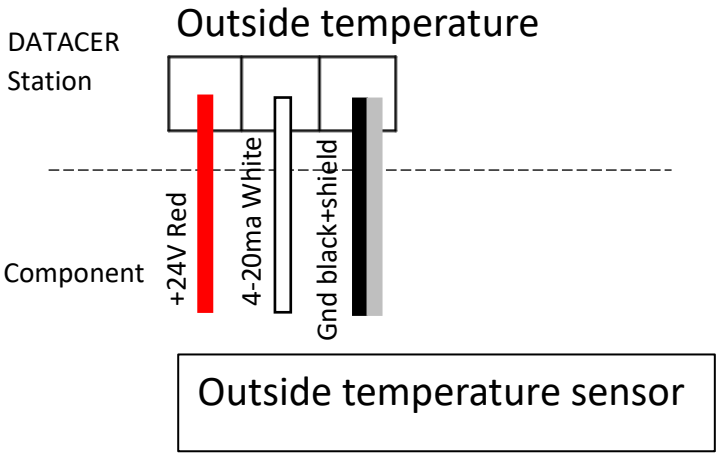


Figure 93 : External temperature sensor connection to the DATACER™ station

2.8.10 Tank Level Sensor

1) Install the bracket and sensor in the same way as for the tank level transmitters (see section 2.5 page 63).
2) Connect the sensor to the DATACER™ station.

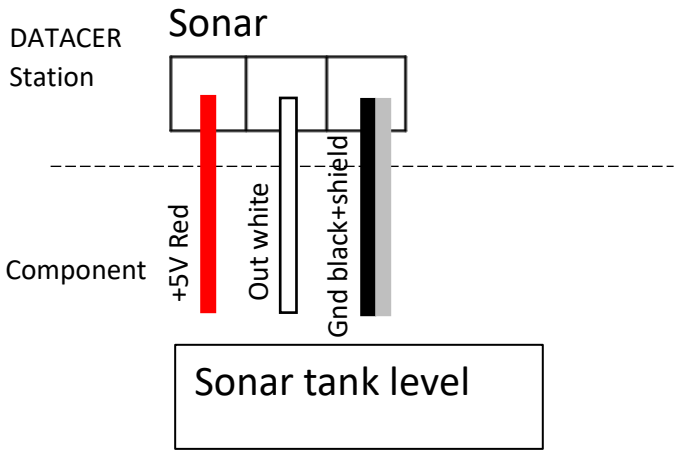


Figure 94 : Sonar tank level sensor connection to the DATACER™ station

2.8.11 Pressure sensor

1) Install the pressure sensor in the same way as for the pressure transmitters (see section 2.6 page 68).
2) Connect the pressure sensor to the DATACER™ station.

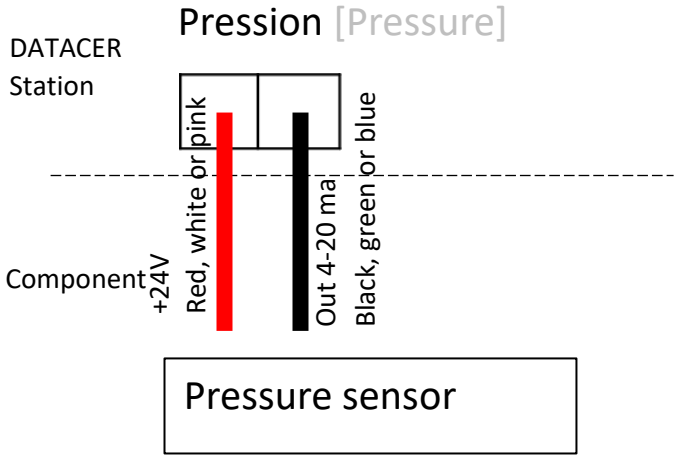


Figure 95 : Pressure sensor connection to the DATACER™ station

2.8.12 Humidity Trap

1) Connect your humidity trap to the DATACER™ station.

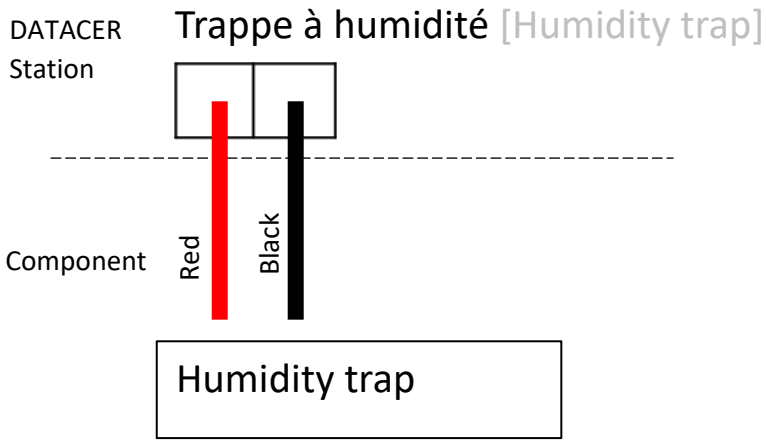


Figure 96 : Humidity trap connection to the DATACER™ station

2.9 Repeaters

2.9.1 Standard antenna repeater whip and alkaline batteries

Install the repeater on a wooden stake in the same way as for the vacuum transmitters (see section 2.4 page 57).

2.9.2 Repeater without antenna and connected to power

Install the repeater as a transmitter that goes into a station. See the installation of a tank level transmitter as an example (see section 2.5 page 63).

2.10 Cable and antennas

1) Firmly install a mast on the roof of the building. A mast preferably made of PVC, aluminum or steel.

The installation of the antenna must be solid to prevent it from oscillating in the wind.

2) Install the antenna support on the mast.
3) Install the antenna on the support on top of the mast. The antenna must meet these 3 criteria:
    - Be at least 3 ft (1 m) above the highest roof ridge of the building.
    - Be at least 16 feet (5m) above ground level.
    - Be clear of any object such as branches, trunks or metal parts within 3 ft (1 m).

An omnidirectional antenna is always installed at the end of the mast. If it is necessary to use a directional antenna on the same mast, the directional antenna can be positioned below the omnidirectional antenna.

For the orientation of the directional antennas it is important to respect the degree of orientation to point to the desired location.

4) Fix the cable all along the mast to the N connector of the transmitter inside the building

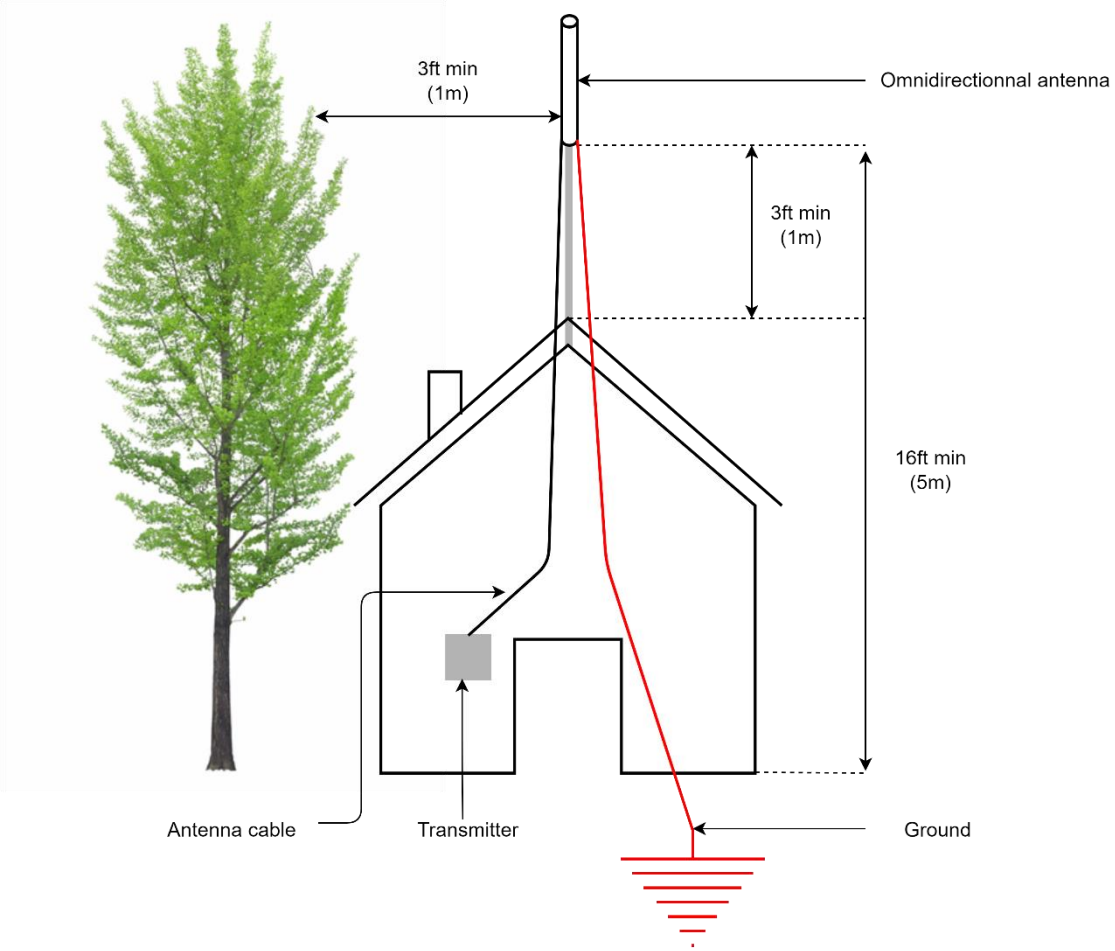


Figure 97 : Installation diagram of an antenna outside a building

It is recommended that the cable length for a radio transmitter not exceed 50 ft (15.24 m). Beyond this length, the transmission and reception signal strength are reduced.

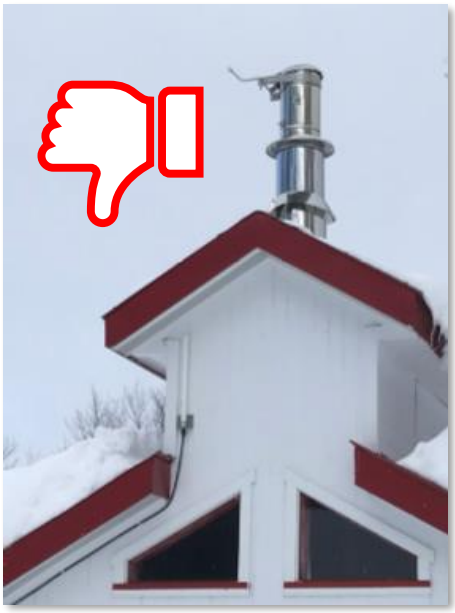


Figure 98 : Antenna on a building improperly installed

Figure 99 : Antenna on a building properly installed

Grounding of the antenna is important to avoid surge problems in case of lightning. See Appendix 6.3 page 252 for details.

5) Seal outdoor antenna connections with Coax-seal.

Wrap the Coax-seal strip around the connection and mold with your fingers to expel air and ensure a complete seal. See examples Figure 100, Figure 101 and Figure 102 below.

Seal all external connections on both the antenna and transmitter sides. A waterproof connection will prolong radio communication performance over the long term.

Antenna side:

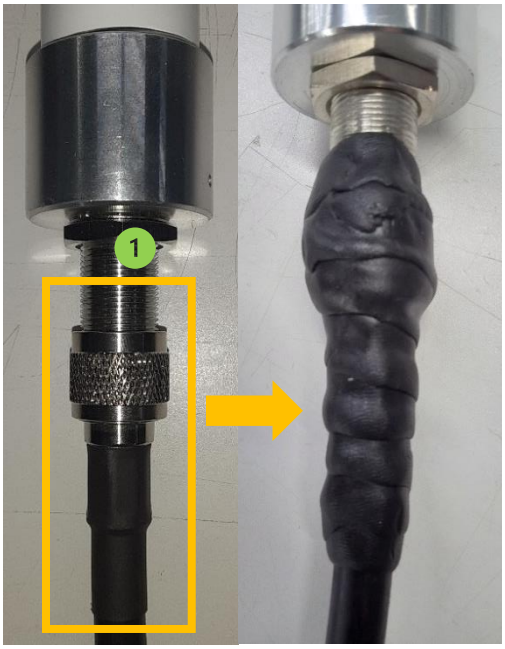


Figure 100 : Antenna Coax-seal option B or C

Figure 101 : Antenna Coax-seal option A

Transmitter side:

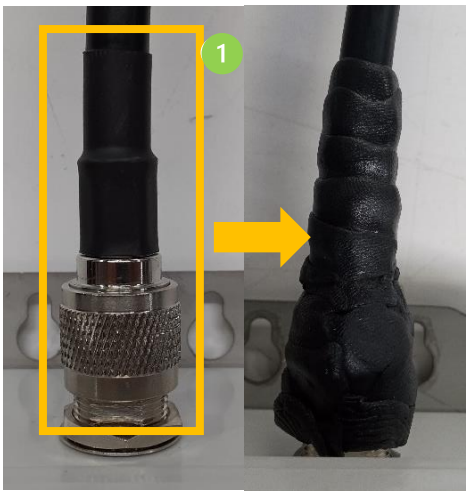


Figure 102 : Transmitter Coax-seal

1 Area to be covered with sealant

We recommend using the option B or C antennas for outdoor installations and reserve the option A antennas for indoor use.

3. Interface settings

Summary of the vocabulary and data structure used in the interfaces to better understand how your DATACER™ system can adapt to your reality. You will also find all the necessary steps to set up the different interfaces before using the system's features.

Below is a list of the topics that are covered in this section.

3.1 Vocabulary and data structure 102
3.2 DATACER™ Interface 103
3.2.1 Accessing the Admin Menu 103
3.2.2 Selecting your language 104
3.2.3 Add or change the password to connect to the Administrator menu 105
3.2.4 Add or modify the username and password for remote connection 105
3.2.5 Add or modify the site name 106
3.2.6 Change units, vacuum/temperature color thresholds and synchronization speed 107
3.2.7 Activating the mobile or desktop view on a mobile device 108
3.2.8 Activate/deactivate the update feature 109
3.2.9 Add, modify, or delete a pumping station 110
3.2.10 Add, modify or delete a sector 111
3.2.11 Add, modify or delete a Transmitter 112
3.2.12 Address initialization of a Transmitter 114
3.2.13 Activate, Rename or Set up a Component 116
3.2.14 Alarms and notifications 128
3.2.15 Add or modify a web link 137
3.2.16 Maps 138
3.2.17 Save setting 142
3.2.18 Data archiving 143
3.2.19 Activate/deactivate connection to the Internet 144
3.2.20 Recovering access to the account in case of forgotten identifiers 147
3.3 DATACER™ station interface 149
3.3.1 Adding or modifying the automatic start and stop temperatures of the vacuum pump 149
3.3.2 Adding or modifying the vacuum levels to be reached at the Extractor for automatic modulation according to the outside temperature 150

3.3.3 Activating/deactivating the automatic opening of the Drain Valve according to the outside temperature 151
3.3.4 Activating/deactivating the automatic opening of the Drain Valve depending on the pressure in the discharge pipe 152
3.3.5 Deactivating the water pump automatically if the Drain Valve is open 153
3.3.6 Activate/deactivate the automatic opening temperatures of the air intake valve 154
3.3.7 Selecting the type of pressure sensor 156
3.3.8 Change the language and units 156
3.3.9 Enable/disable automatic screen saving 157

3.1 Vocabulary and data structure

This synthesis will allow you to understand how to find your way in the DATACER™ interface architecture.

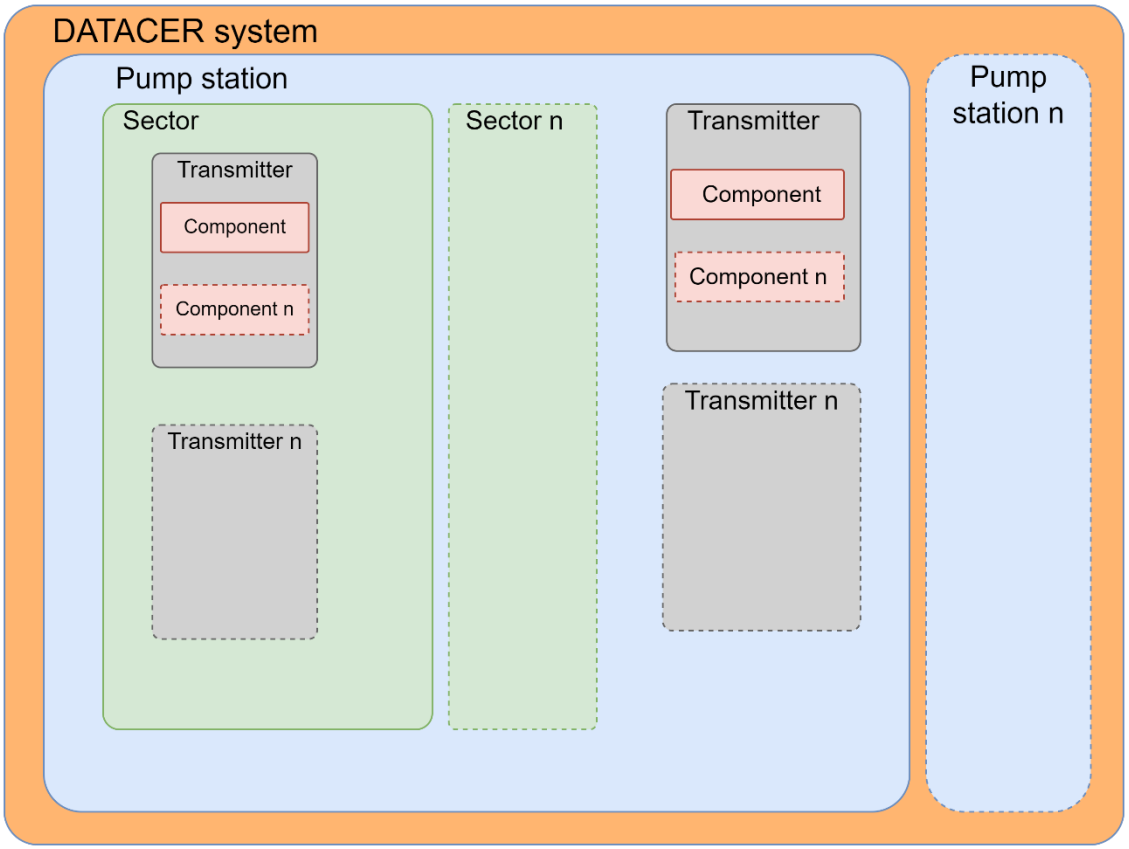


Figure 103 : Data architecture in the DATACER™ system

Pumping station. A pumping station can be attached to several sectors. A sector is attached to a pumping station. The pumping station is the building where you usually have your Extractors, Tanks, vacuum pump, water pump, and other equipment.

Sector. A sector is a set of lines in your sugar bush connected to only one extractor. On the other hand, an extractor can be the vacuum reference for one or more sectors linked to the same pumping station. A sector can belong to only one pumping station.

Transmitter. It is a box that always includes a radio, an antenna and the possibility of connecting sensors or other peripherals. A transmitter can be attached to a sector or a pumping station depending on its role. Vacuum transmitters are usually attached to a sector, while other transmitters are attached to a pumping station. A sector or pumping station can have multiple transmitters.

Component. A component is attached to a transmitter. A transmitter can have several components. A component can correspond to a sensor or a peripheral that is connected to a DATACER™ station.

Example 1: An LV transmitter has 2 Components, a Tank level and a vacuum level.

Example 2: A DATACER station has the following components, a Modulation Valve, Water Pump Control, Vacuum Level and Pressure Sensor.

Measured value. This is the numerical data of a Component that is displayed in the DATACER™ base interface or the DATACER™ station interface.

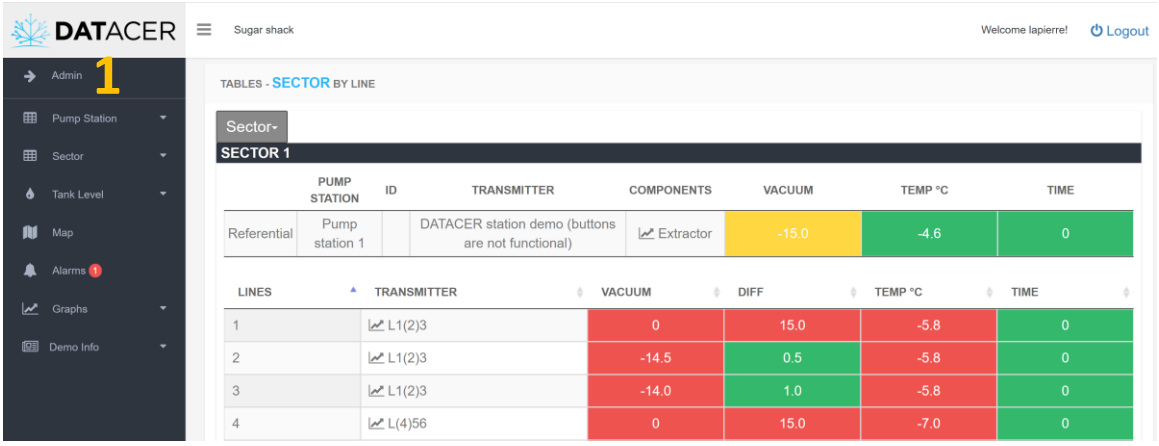
3.2 DATACER™ Interface

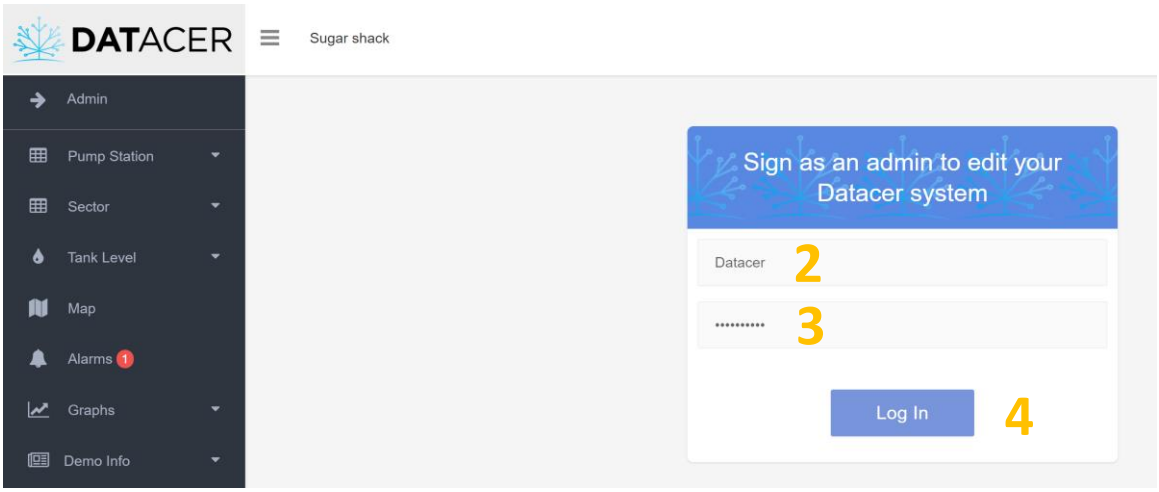
In this section you will find details of the settings available in the Admin menu of the DATACER™ interface.

Prerequisite: Turn on the DATACER™ base (see section 4.1.1 page 161).

3.2.1 Accessing the Admin Menu

1. Click on Admin.
2. Enter your User Name.
3. Enter your Password.
4. Click on Log In.

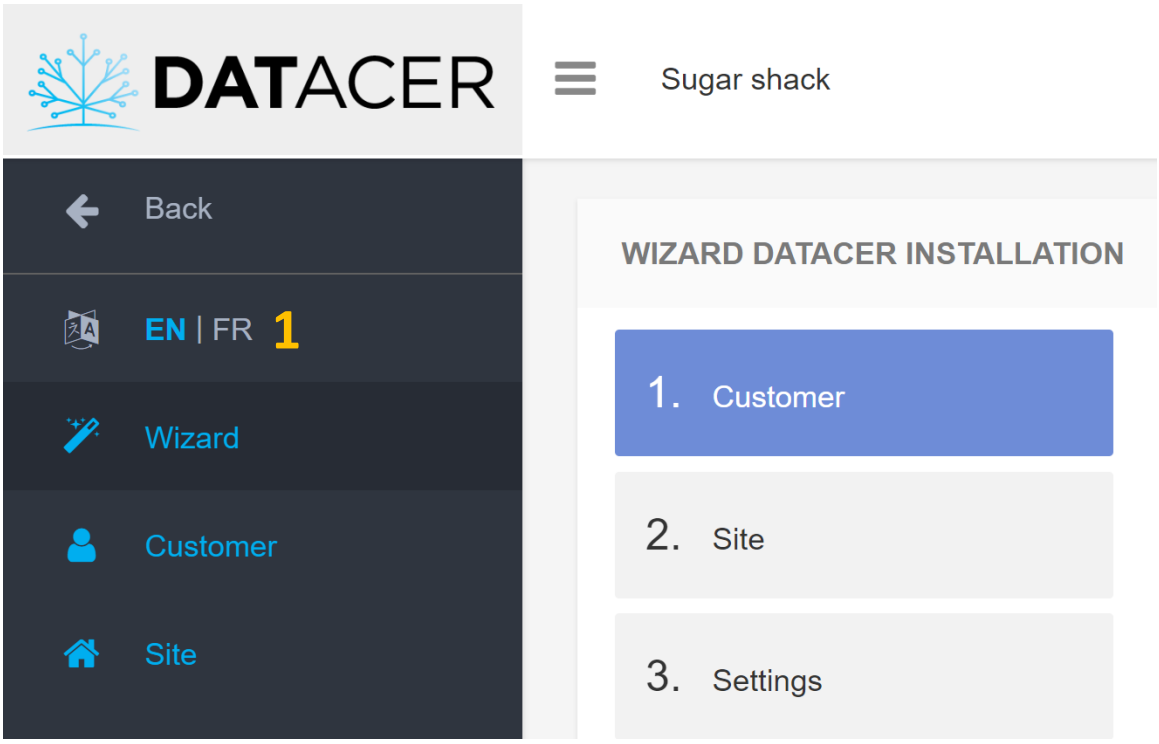




For security reasons, please change your admin password. Please refer to section 3.2.3 on page 105.

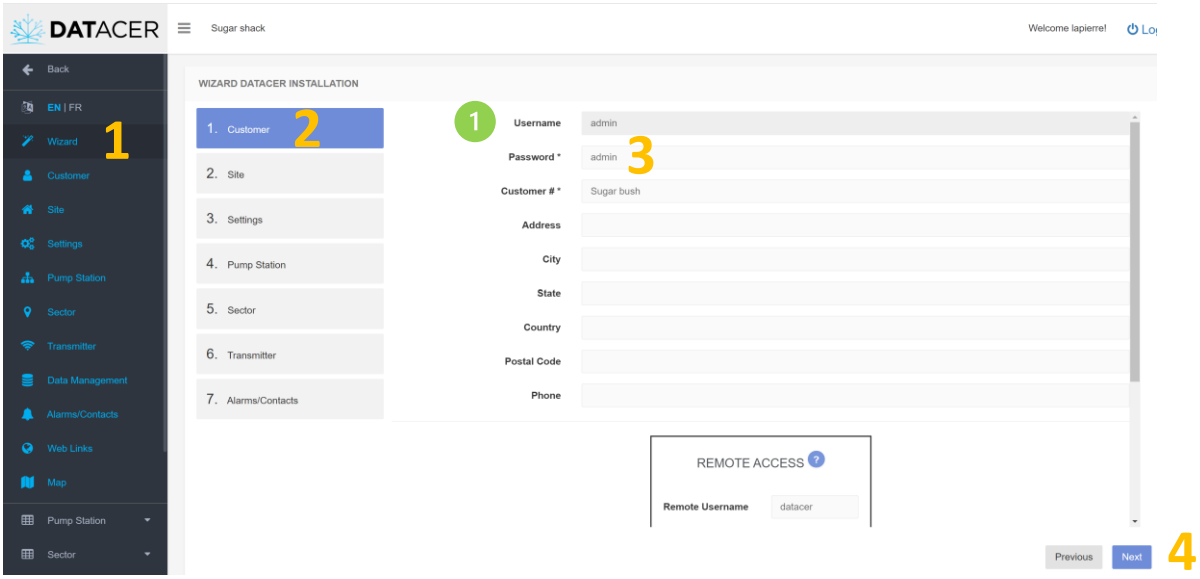
3.2.2 Selecting your language

1. Choose between EN for English or FR for French.



3.2.3 Add or change the password to connect to the Administrator menu

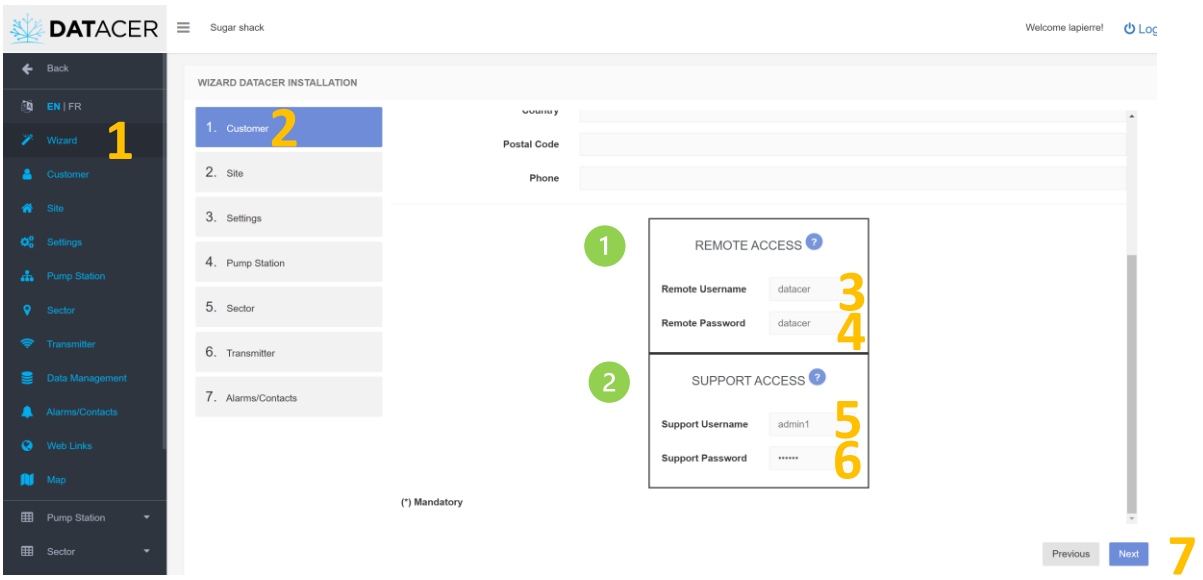
1. Click on Wizard.
2. Click on Customer.
3. Enter your password.
4. Click on next.



1 The username is set, you can only add or change the password.

3.2.4 Add or modify the username and password for remote connection

1. Click on Wizard.
2. Click on Customer.
3. Enter your User Name.
4. Enter your Password.
5. Enter your User Name.
6. Enter your Password.
7. Click on Next.



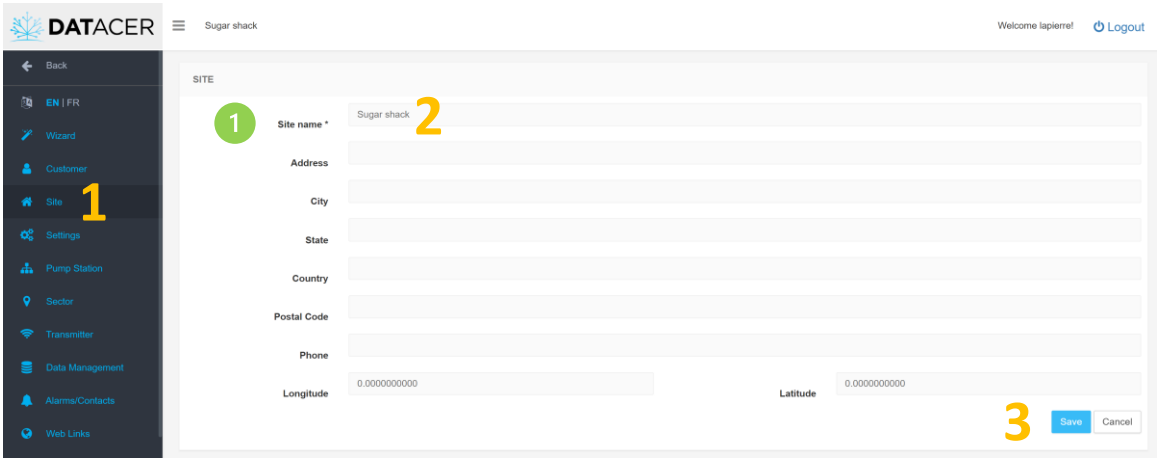
1 Your personal username and password to log in remotely on a cell phone, tablet or computer. We recommend that you keep these IDs to yourself.

2 The username and password that you can give to one of your employees or a trusted person.

★ If you want to remove the access to this person, you will only have to change the password.

3.2.5 Add or modify the site name

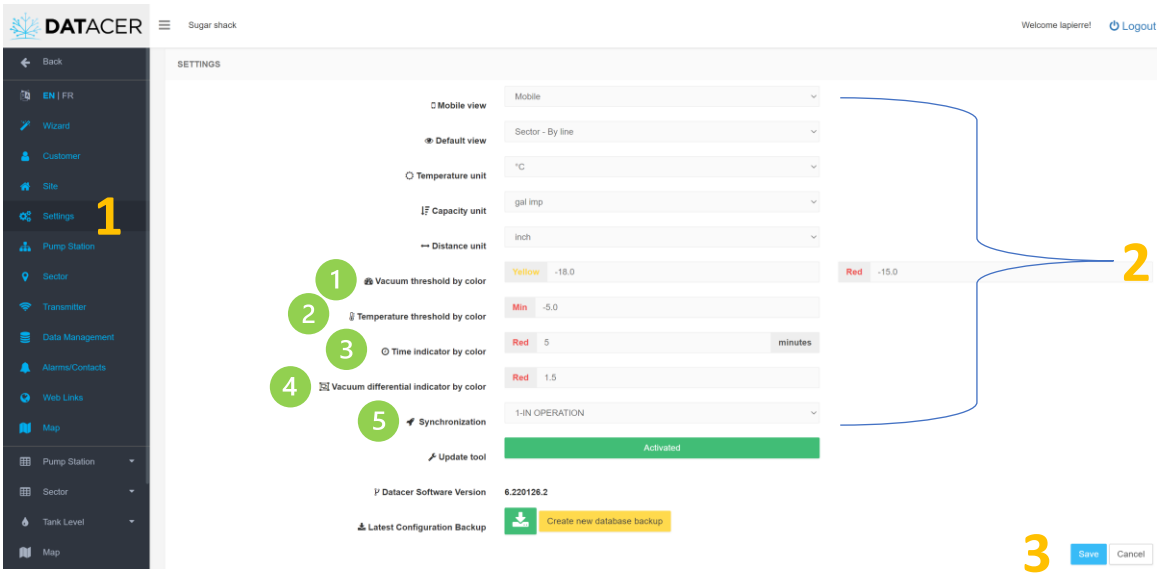
1. Click on Site.
2. Enter the Name of your site.
3. Click on Save.



1 The name of the site is the name of your sugar bush.

3.2.6 Change units, vacuum/temperature color thresholds and synchronization speed

1. Click on Settings.
2. Enter the Mobile View, Units, Color Thresholds, and the Syncronization Speed.
3. Click on Save.



1 If the vacuum level is less than or equal to -25 inHg (e.g. -26 inHg) then the box(es) affected by the Sensor(s) are displayed in green on the DATACER™ interface.

If the vacuum level is greater than -25 inHg (e.g. -24 inHg) then the box(es) affected by the Sensor(s) will be displayed in yellow on the DATACER™ interface.

If the vacuum level is greater than -15 inHg (e.g. -14 inHg) then the relevant box(es) will be displayed in red.

This note applies to all vacuum sensors of all lines and all Extractors.

If you wish to assign different thresholds for a particular line or Extractor, see section 3.2.13.3 page 119.

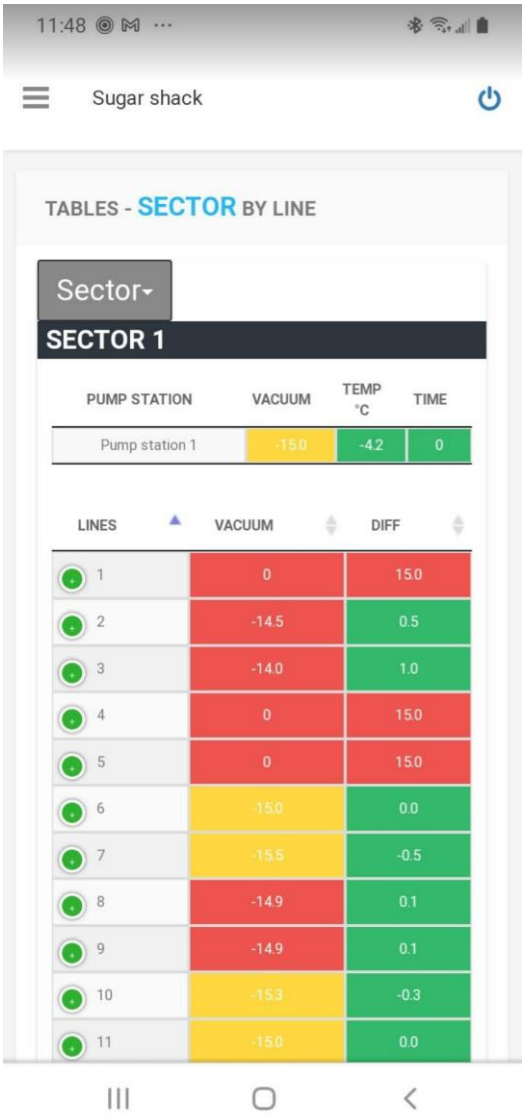
2 If the temperature is below -3°C (26.6 F), the relevant box(es) in the operating pages will be displayed in red.

3 If the data refresh time for a Transmitter is greater than 120 minutes, the relevant box(es) in the operating pages will be displayed in red.

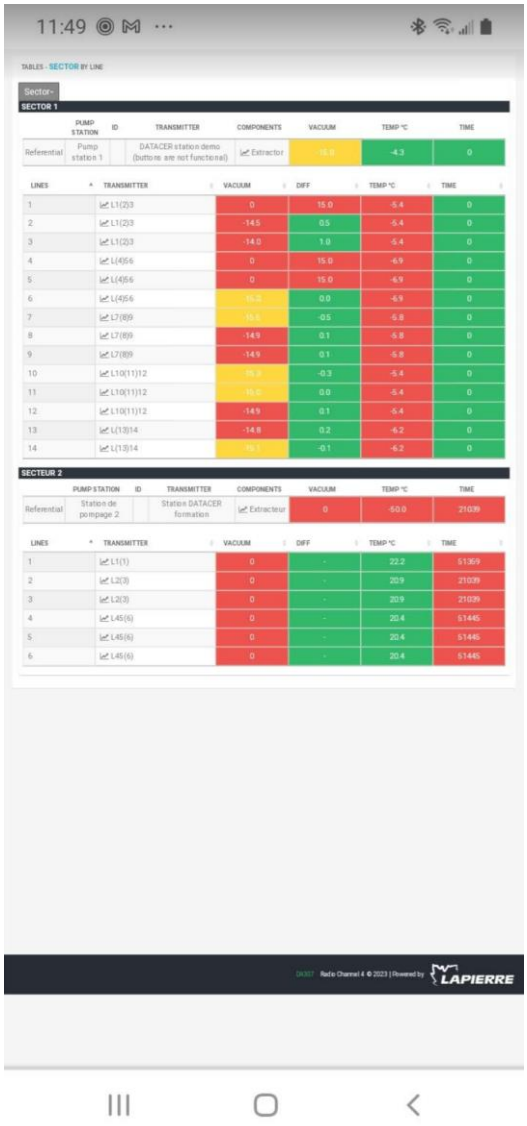
4 If the vacuum level difference between the Extractors and the end of lines in the same sector is greater than 5 inHg, the relevant box(es) in the operating pages will be displayed in red.

5 In the synchronization mode, "Operation" means normal speed, "Installation" means fast speed.

3.2.7 Activating the mobile or desktop view on a mobile device



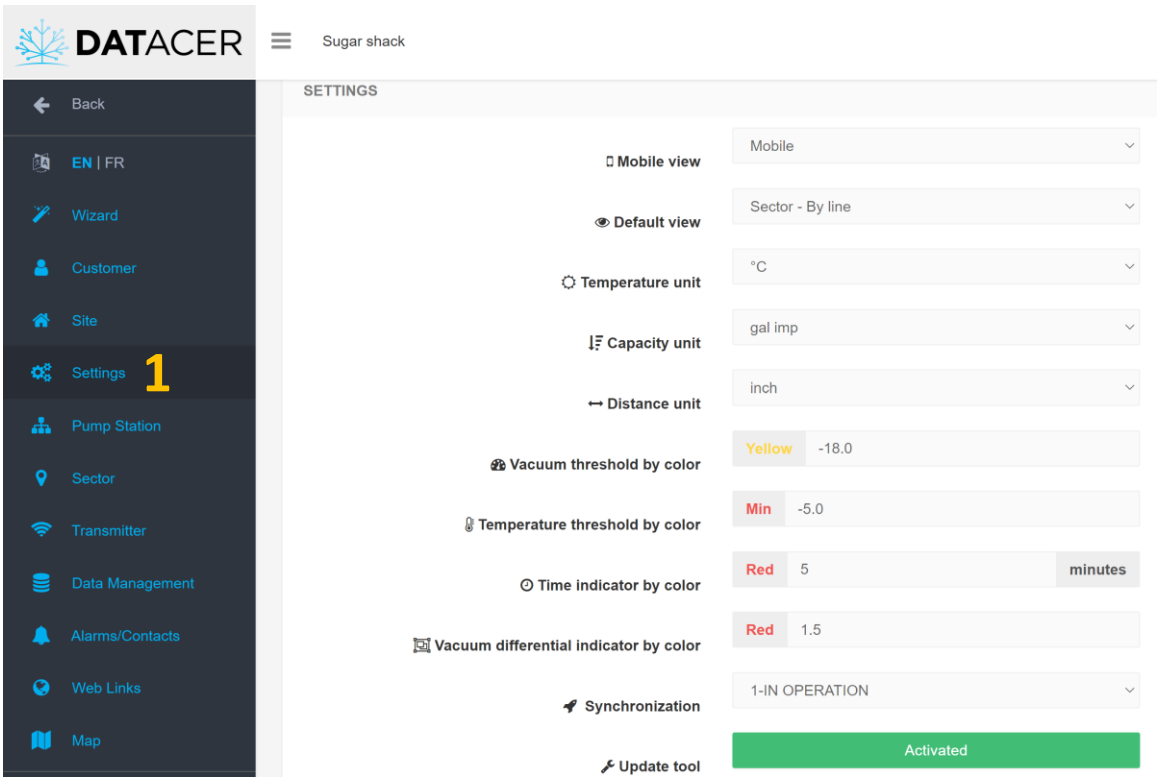
Mobile view

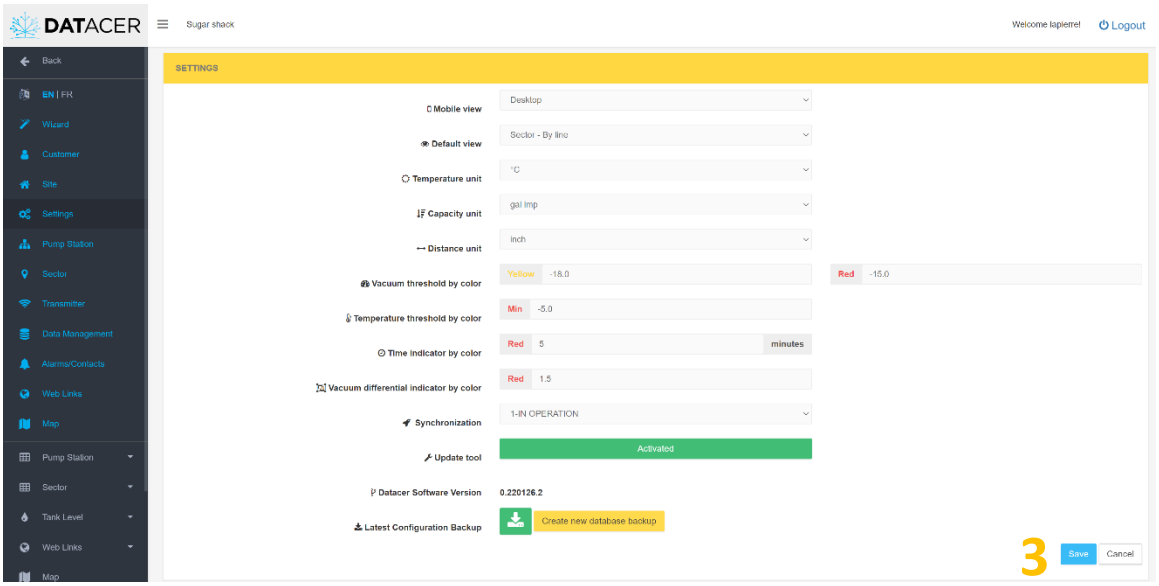


Desktop view

In Desktop mode it is possible to zoom in/out.

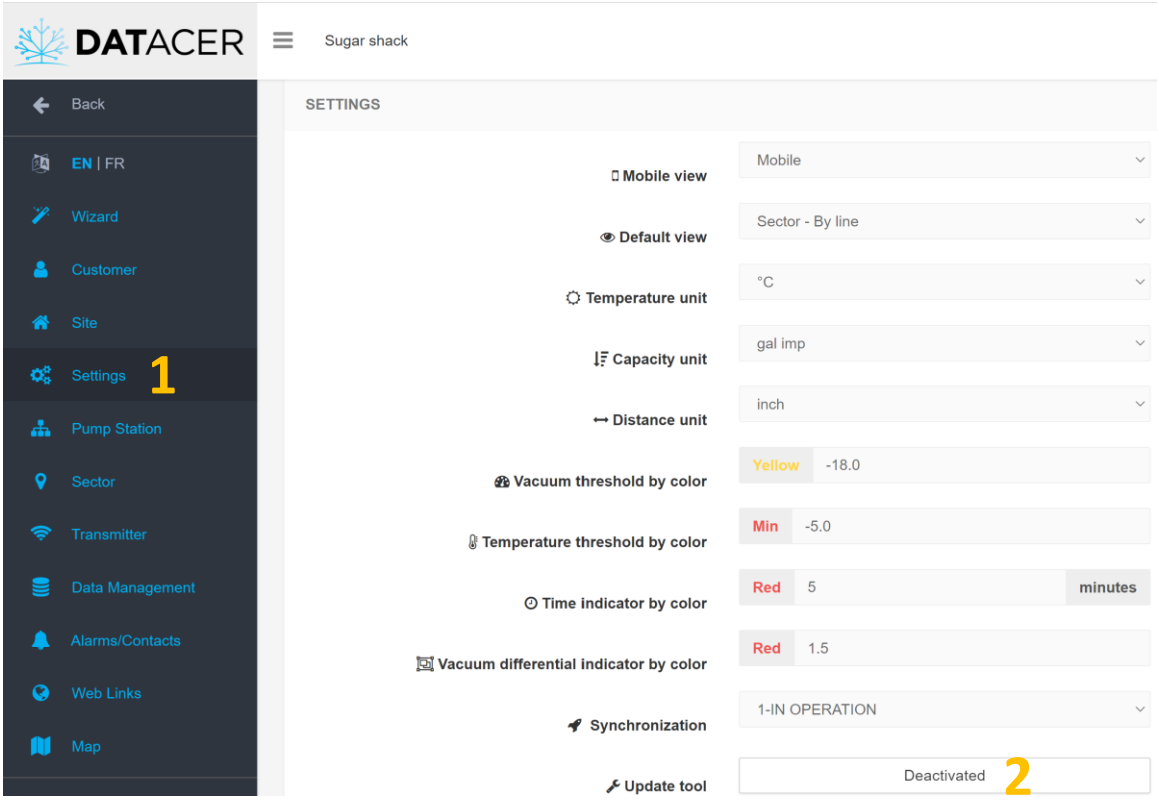
1. Click on "Settings"
2. Choose Mobile or Desktop mode
3. Click on "Save"





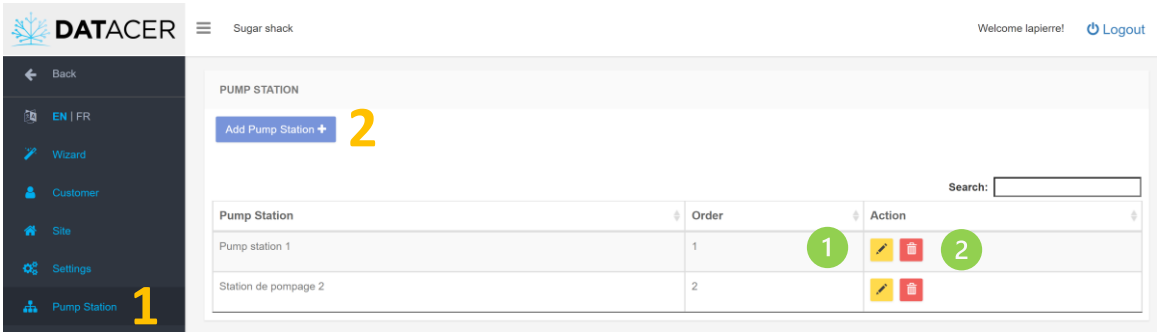
3.2.8 Activate/deactivate the update feature

1. Click on Settings.
2. Make sure that the update activation button is green and that the "Activated" notification appears on it. If not, click on the grey "Disabled" button to turn it green.



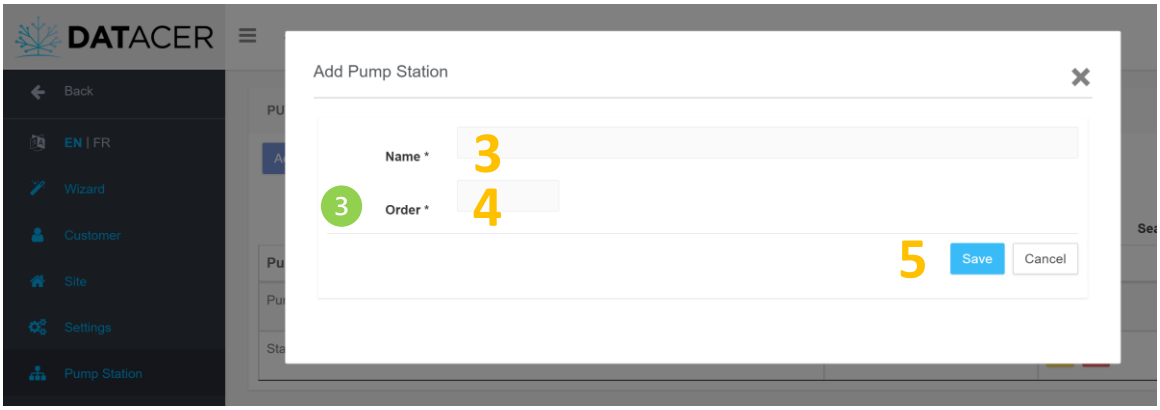
3.2.9 Add, modify, or delete a pumping station

1. Click on Pump station.
2. Click on Add Pump station.
3. Enter the Name of the Pump station.
4. Enter the Order.
5. Click on Save.



1 If you want to change the name of an existing pumping station, click on the yellow button of the corresponding station.

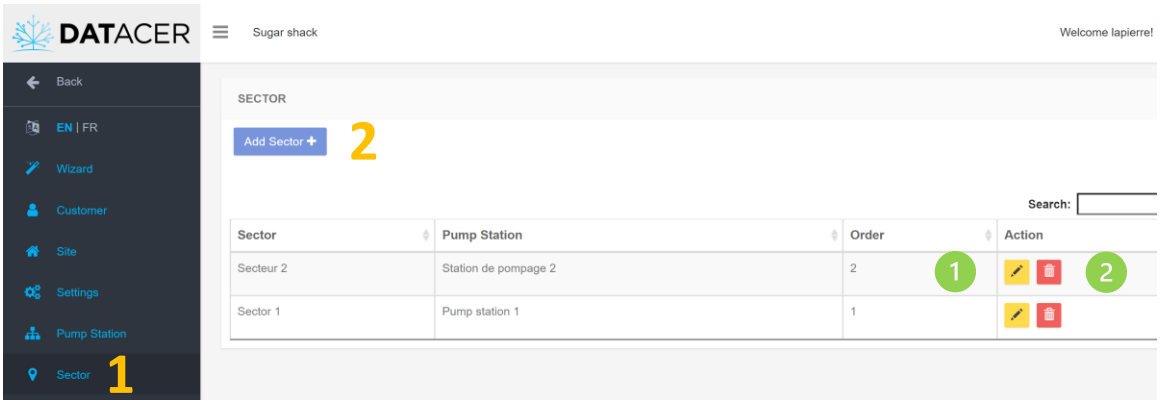
2 If you wish to delete an existing pumping station, click on the red button of the corresponding station.



3 It indicates the order in which the pumping station is displayed in the list.

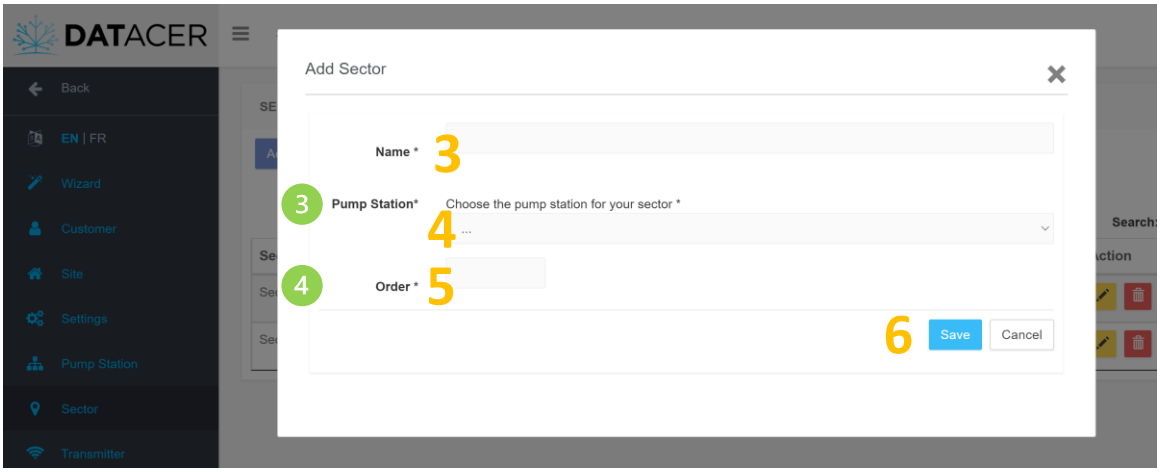
3.2.10 Add, modify or delete a sector

1. Click on Sector.
2. Click on Add Sector.
3. Enter the Sector Name.
4. Select which Pump Station the Sector is associated to.
5. Enter the order.
6. Click on Save.



1 If you want to change the name of an existing sector, click on the yellow button of the corresponding sector.

2 If you want to delete an existing sector, click on the red button of the corresponding sector.

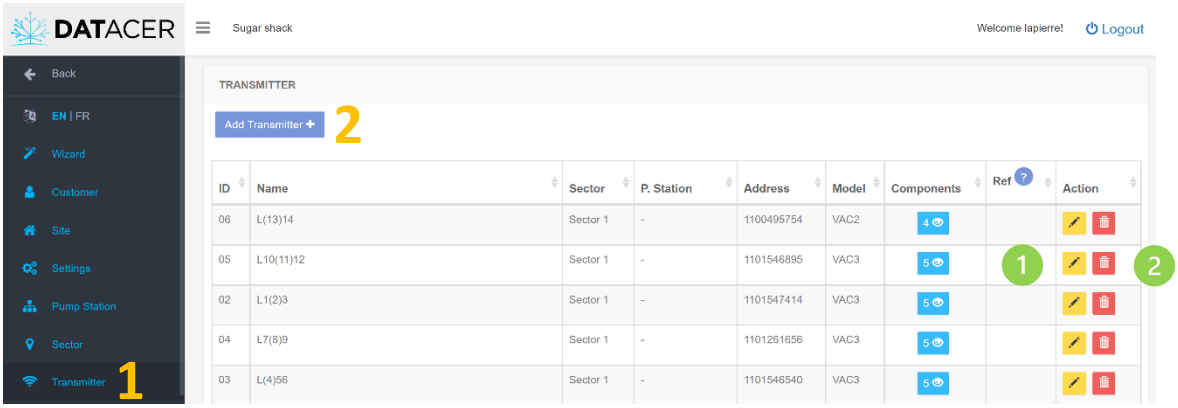


3 The station must have been previously added to the list. To add a pumping station, see section 3.2.9 page 110.

4 It indicates the order in which the sector is displayed in the list.

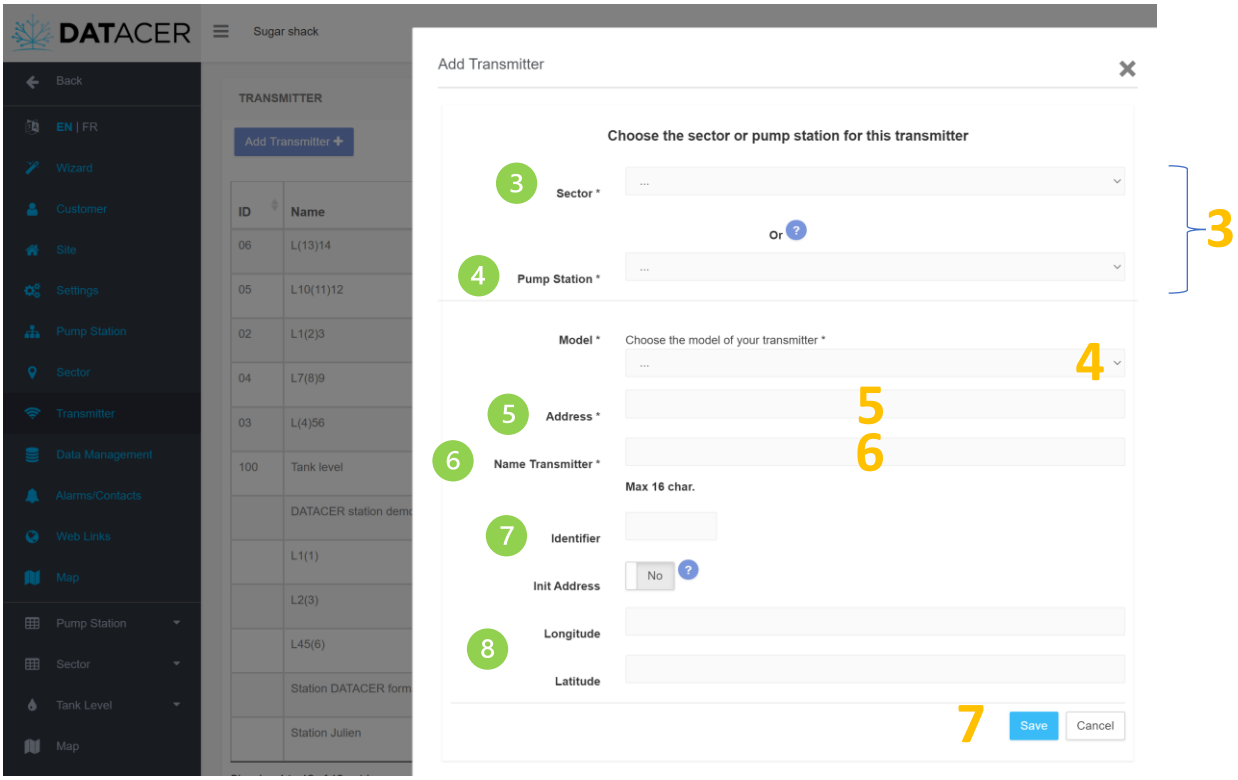
3.2.11 Add, modify or delete a Transmitter

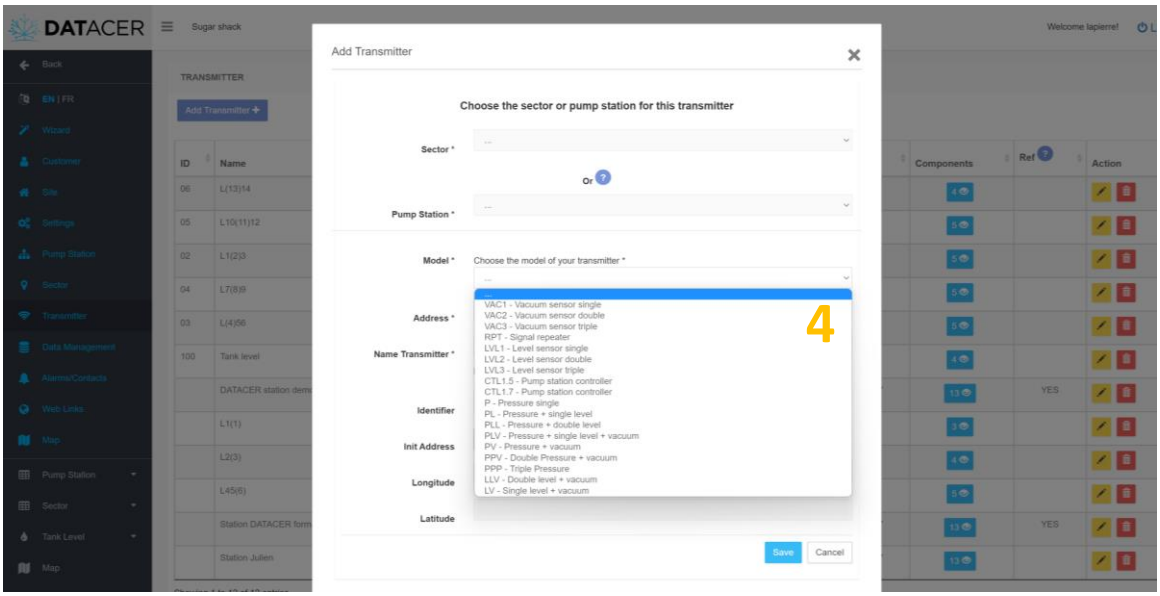
1. Click on Transmitter.
2. Click on Add Transmitter.
3. Select the Sector or Pump Station to which the Transmitter should be associated to.
4. Enter the Model from the list.
5. Enter the Address.
6. Enter the Transmitter Name.
7. Click on Save



1 If you wish to change the name or other information for an existing Transmitter, click on the yellow button of the corresponding Transmitter.

2 If you wish to delete an existing Transmitter, click on the red button of the corresponding Transmitter.





3 The sector must have been previously added to the list. See section 3.2.10 page 111 to add a sector.

4 The pumping station must have been previously added to the list. See section 3.2.9 page 110 to add a station.

5 The address corresponds to the 10 digits on the barcode label on the inside and outside of your Transmitter. Here is an example below.

Figure 104 : Transmitter address

6 Name the Transmitter using your own logic. For example, for a triple vacuum Transmitter, you could name it 12(3) because this Transmitter measures the vacuum on lines 1, 2 and 3. The 3 in brackets indicates that the Transmitter is positioned near line 3.

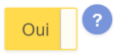
7 Allows you to assign a unique identifier if you wish. This is not mandatory.

8 Allows you to record the GPS coordinates of the Transmitter. This is not mandatory.

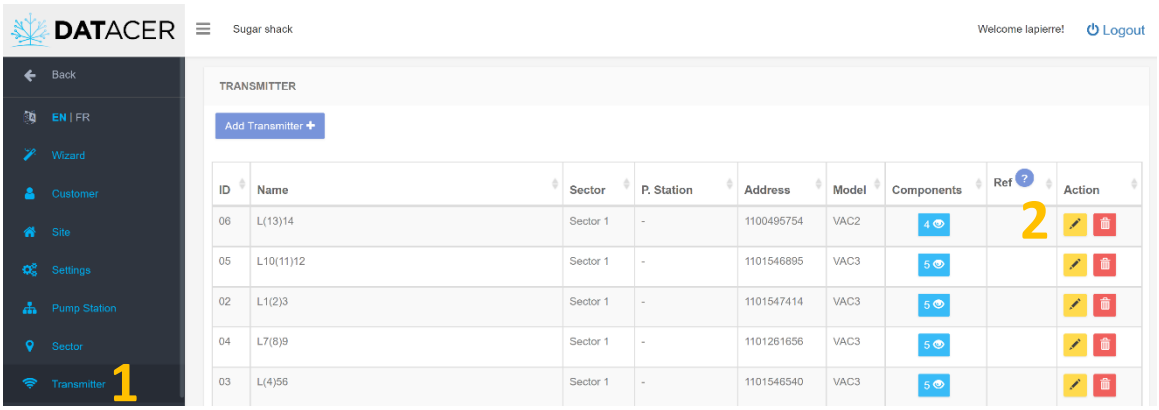
3.2.12 Address initialization of a Transmitter

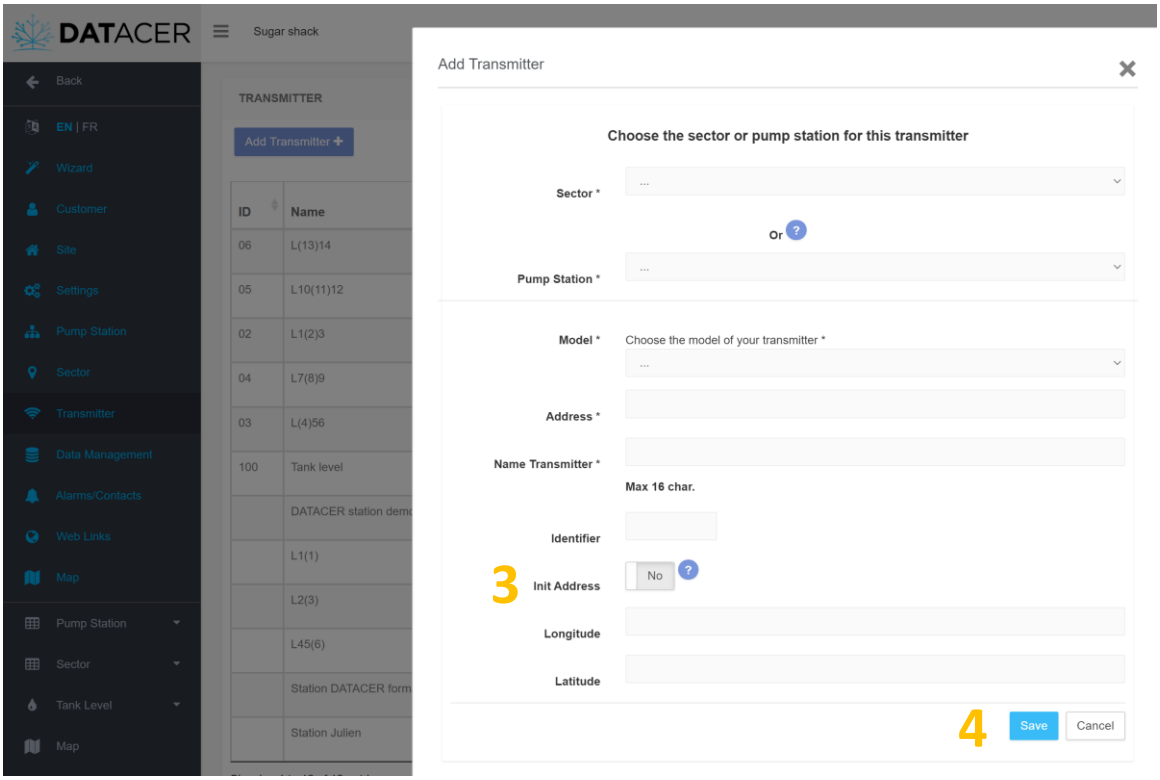
Address initialization of a Transmitter is used to reset the communication between the base and the related radio transmitter. The address initialization must be performed after adding a new Transmitter or after changing its address.

1. Click on Transmitter, you will access the list of Transmitters.
2. Click on the yellow button of the Transmitter for which you would like to perform an address initialization.
3. Click on the Address Initialization button "No" Init Adresse

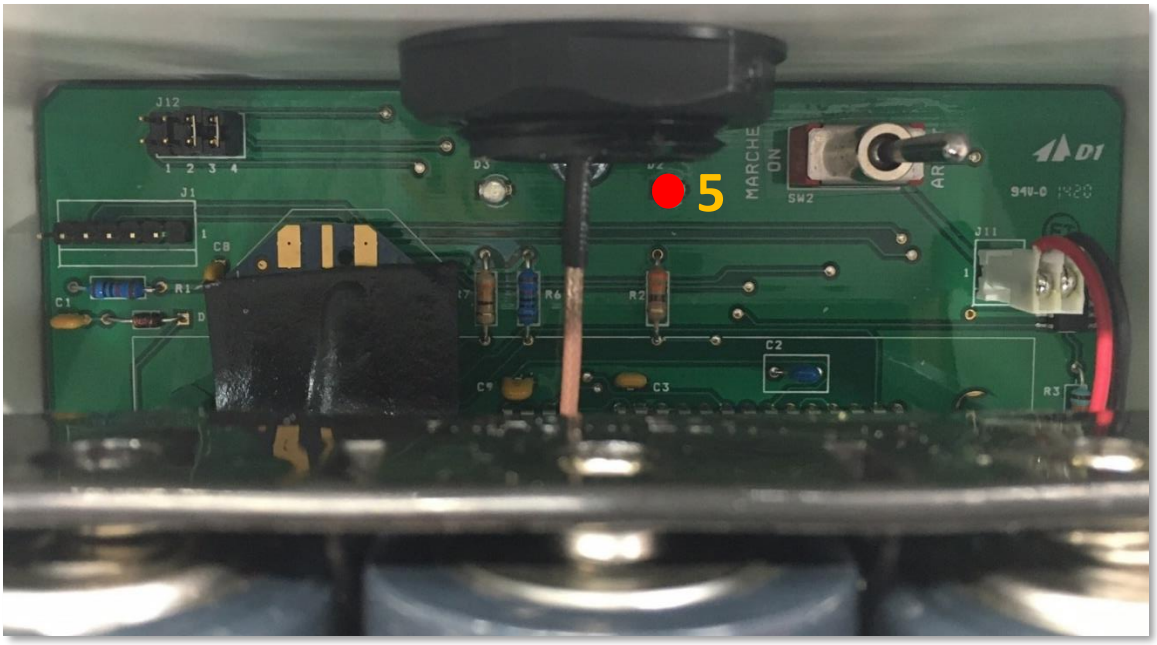
. The button then changes to "Yes" Init Adresse 

. The address initialization has been sent.
4. Click on Save.





5. A long red flash followed by two short flashes should appear on the transmitter LED channel. This indicates that initialization has been successful.



3.2.13 Activate, Rename or Set up a Component

Prerequisites: First you have to find out which Transmitter it is connected to. See section 3.1 page 102 for the definition of a Component.

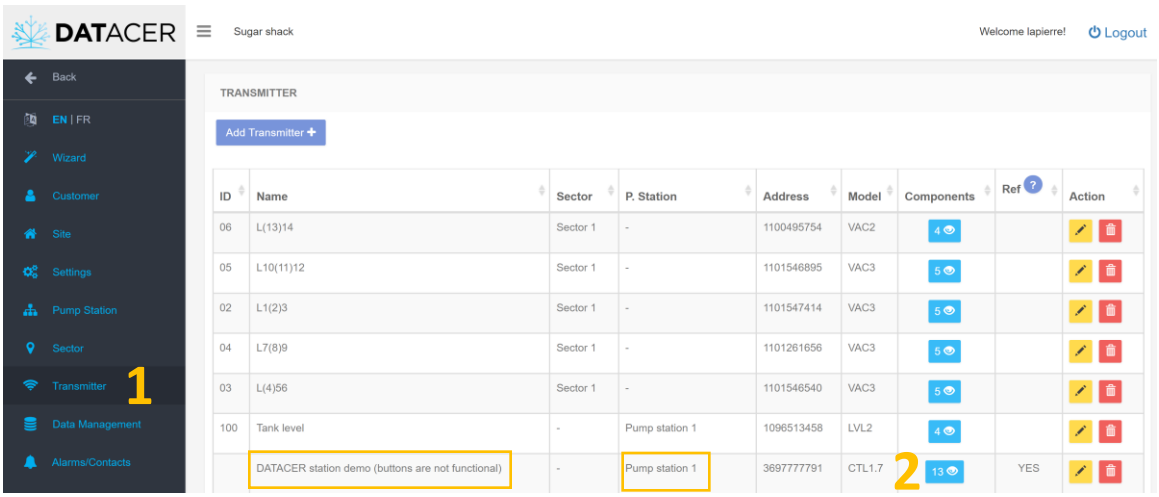
1) Click on Transmitter.
2) Click on the blue button 4 .

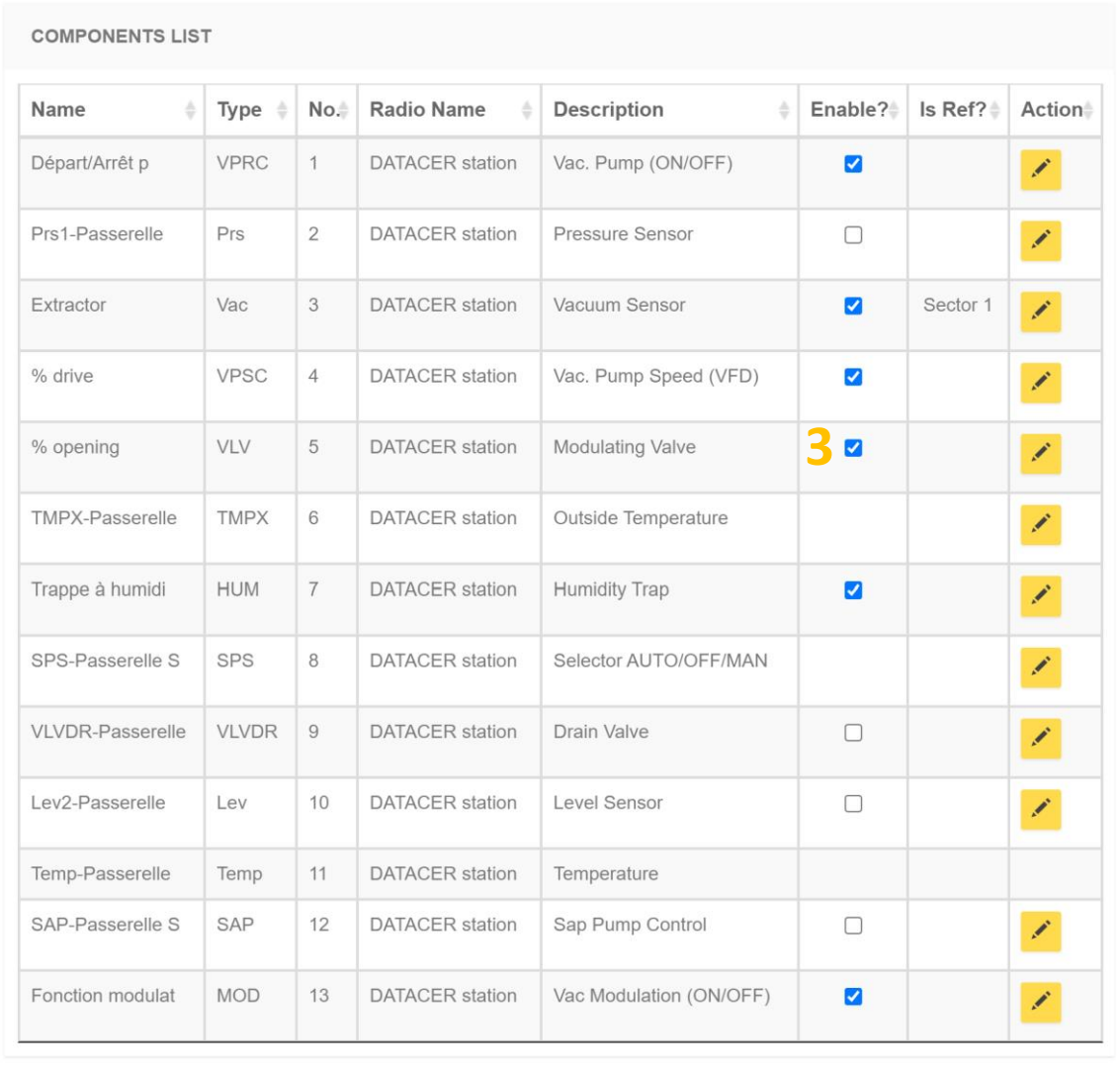
See the section below for an example of how to enable vacuum modulation through the Modulation Valve. You can apply this same method to all components of the DATACER™ station.

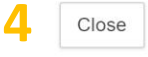
3.2.13.1 Activate vacuum level modulation at the Extractor via the Modulation Valve

In the example, the screen shows that the Modulation Valve is on an Extractor of the pumping station "Pump station 1" and that it is connected to the DATACER™ station "DATACER demo (buttons are not functional)"

1. Click on Transmitter.
2. Click on the blue button 4 .
3. Check the box to activate ☑ or disable ☐ the Component.
4. Click on Close.


DATACER
Sugar shack
Welcome lapierre!
Logout
Back
EN | FR
Wizard
Customer
Site
Settings
Pump Station
Sector
Transmitter
Data Management
Alarms/Contacts
1
TRANSMITTER
Add Transmitter
ID
Name
Sector
P. Station
Address
Model
Components
Ref
Action
06 L(13)14 Sector 1 - 1100495754 VAC2 4
05 L10(11)12 Sector 1 - 1101546895 VAC3 5
02 L1(2)3 Sector 1 - 1101547414 VAC3 5
04 L7(8)9 Sector 1 - 1101261656 VAC3 5
03 L(4)56 Sector 1 - 1101546540 VAC3 5
100 Tank level - Pump station 1 1096513458 LVL2 4
DATACER station demo (buttons are not functional) - Pump station 1 3697777791 CTL1.7 13 YES
2

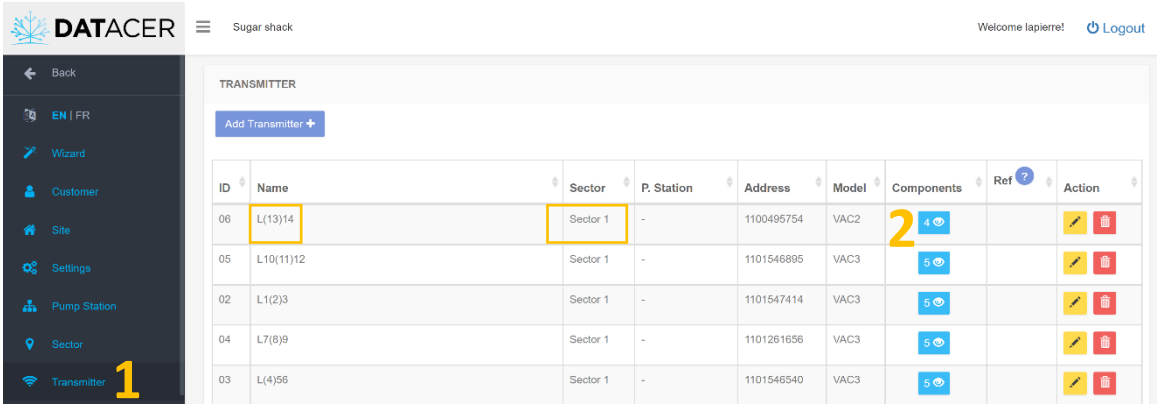

COMPONENTS LIST
Name
Type
No.
Radio Name
Description
Enable?
Is Ref?
Action
Départ/Arrêt p VPRC 1 DATACER station Vac. Pump (ON/OFF)
Prs1-Passerelle Prs 2 DATACER station Pressure Sensor
Extractor Vac 3 DATACER station Vacuum Sensor Sector 1
% drive VPSC 4 DATACER station Vac. Pump Speed (VFD)
% opening VLV 5 DATACER station Modulating Valve
3
TMPX-Passerelle TMPX 6 DATACER station Outside Temperature
Trappe à humidi HUM 7 DATACER station Humidity Trap
SPS-Passerelle S SPS 8 DATACER station Selector AUTO/OFF/MAN
VLVDR-Passerelle VLVDR 9 DATACER station Drain Valve
Lev2-Passerelle Lev 10 DATACER station Level Sensor
Temp-Passerelle Temp 11 DATACER station Temperature
SAP-Passerelle S SAP 12 DATACER station Sap Pump Control
Fonction modulat MOD 13 DATACER station Vac Modulation (ON/OFF)

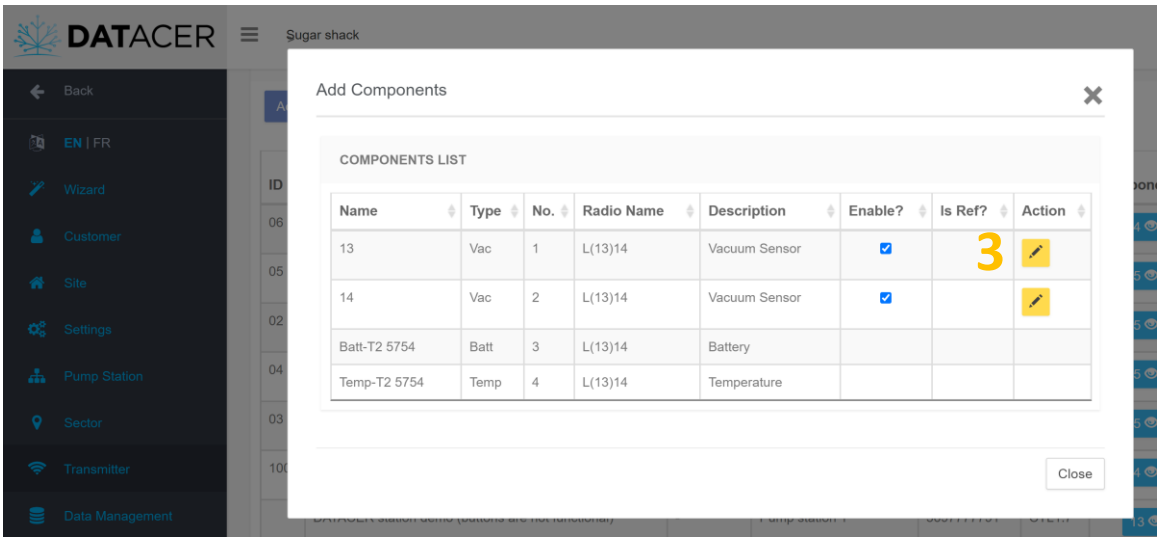

4
Close

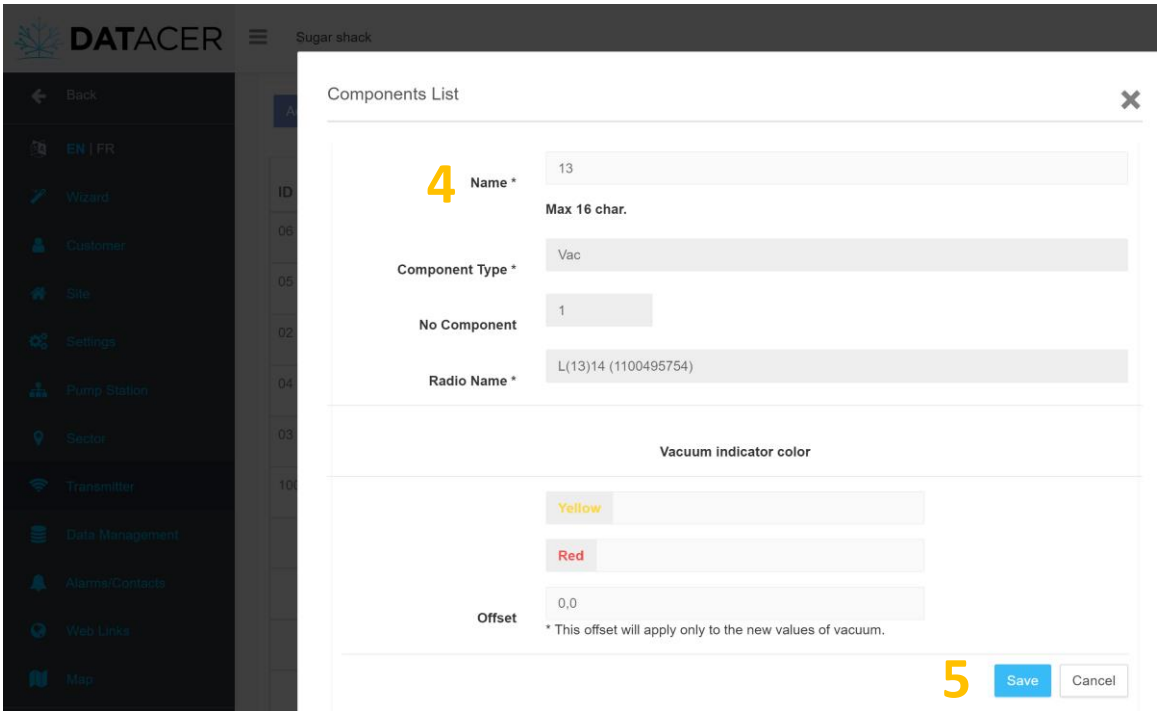
3.2.13.2 Renaming a line for a vacuum Transmitter

In the example, we change the name of line position 1 on the double vacuum Transmitter named "L(13)14" belonging to the " Sector 1" sector.

1. Click on Transmitter.
2. Click on the blue button of the vacuum Transmitter in question.
3. Click on the yellow button .
4. Modify the Name of the line.
5. Click on Save.

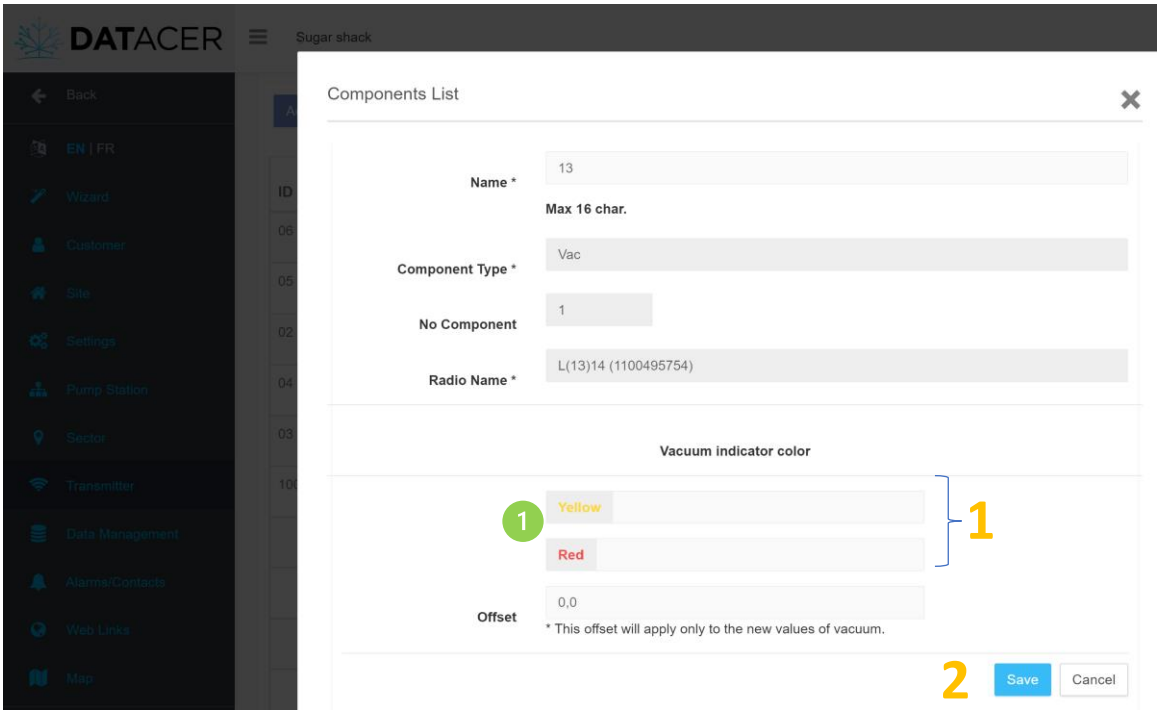






3.2.13.3 Changing Color Thresholds for a Vacuum Level Sensor

Start the same procedure as the previous section page 118 and fill in the desired threshold values for this vacuum measurement after step 4, then click on Save.

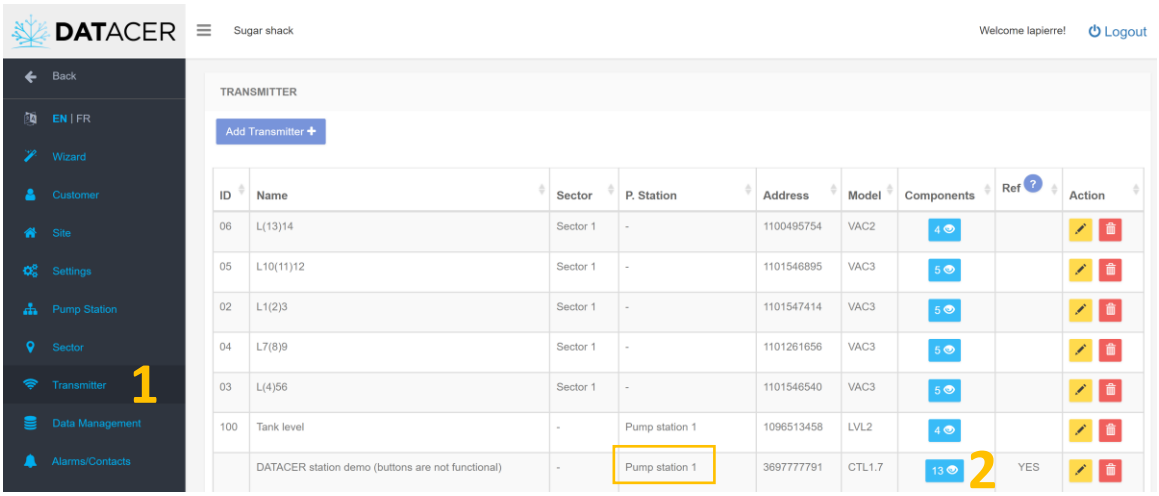


1 If the vacuum level is higher than the values determined in inHg for the related vacuum Sensor, then the relevant box(es) in the operating pages will be displayed in yellow or red depending on the current vacuum level.

3.2.13.4 Assigning the vacuum level of an Extractor as the reference for a sector

In the following example, we want to assign the vacuum level of the Extractor "Extractor", contained in the pumping station "Pump station 1", as the reference for sector 1.

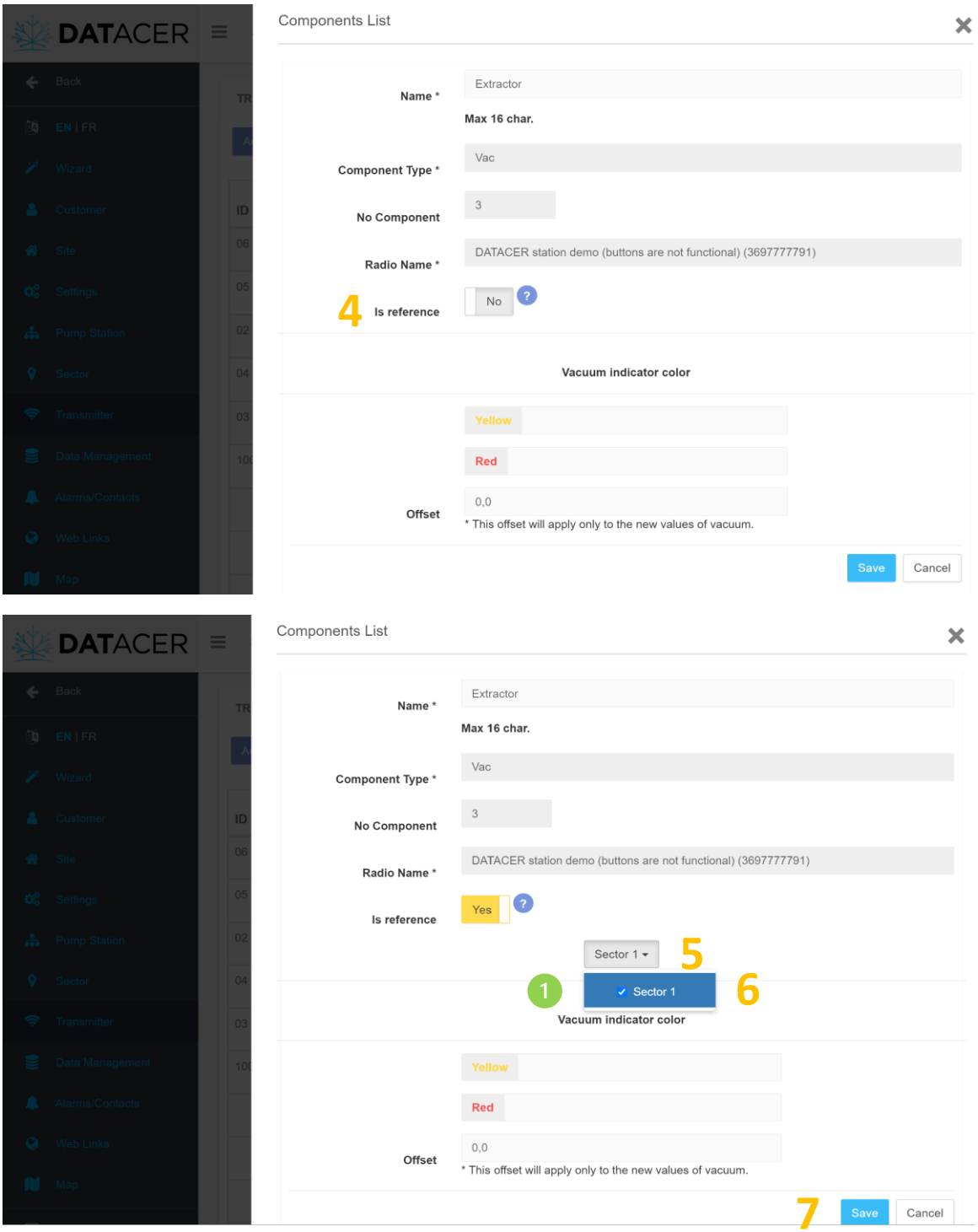
1. Click on Transmitter.
2. Click on the blue button 4 for the Transmitter that measures the vacuum at the related Extractor.
3. Click on the yellow button .
4. Click on the reference button Est “No" Est référence Non . It then switches to "Yes" Est référence Oui .
5. Click on the drop-down list.
6. Check the sector or sectors that are supplied by the Extractor in question.
7. Click on Save.



COMPONENTS LIST

Name	Type	No.	Radio Name	Description	Enable?	Is Ref?	Action
Départ/Arrêt p	VPRC	1	DATACER station	Vac. Pump (ON/OFF)	☑		✎
Prs1-Passerelle	Prs	2	DATACER station	Pressure Sensor	☐		✎
Extractor	Vac	3	DATACER station	Vacuum Sensor	☑	Sector 1	✎ 3
% drive	VPSC	4	DATACER station	Vac. Pump Speed (VFD)	☑		✎
% opening	VLV	5	DATACER station	Modulating Valve	☑		✎
TMPX-Passerelle	TMPX	6	DATACER station	Outside Temperature			✎
Trappe à humidi	HUM	7	DATACER station	Humidity Trap	☑		✎
SPS-Passerelle S	SPS	8	DATACER station	Selector AUTO/OFF/MAN			✎
VLVDR-Passerelle	VLVDR	9	DATACER station	Drain Valve	☐		✎
Lev2-Passerelle	Lev	10	DATACER station	Level Sensor	☐		✎
Temp-Passerelle	Temp	11	DATACER station	Temperature			
SAP-Passerelle S	SAP	12	DATACER station	Sap Pump Control	☐		✎
Fonction modulat	MOD	13	DATACER station	Vac Modulation (ON/OFF)	☑		✎

Close



1 To be able to display the sector list linked to the extractor, you must have previously indicated which sector(s) is(are) linked to that transmitter the pumping station containing the Transmitter - measuring the vacuum of the Extractor - is itself linked to one or more sectors. To assign a sector to a pumping station, see section 3.2.10 page 111.

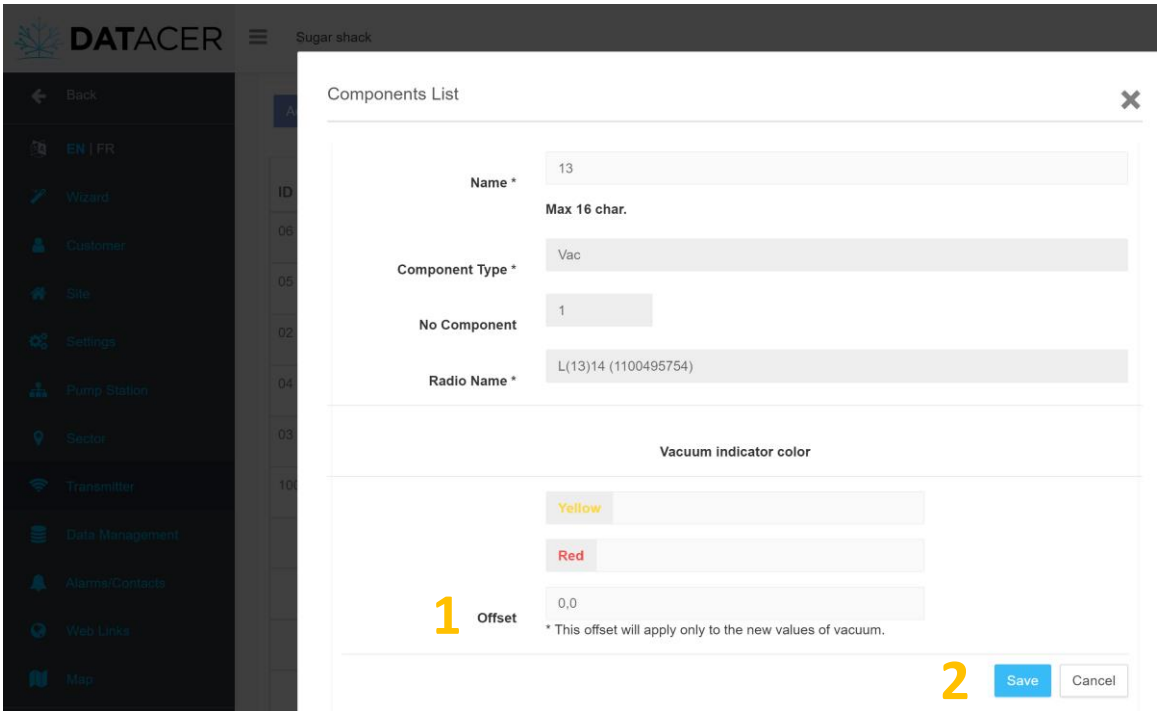
3.2.13.5 Correcting a vacuum level measurement Offset

The purpose of this function is to correct vacuum level differences resulting from various factors such as the difference in altitude between the Extractor and the end of the line. It does not allow to correct the error margin of the Sensor which, at the factory, is +/- 0,3 inHg compared to the measured value.

⚠ This feature should be used with caution. If you don't use it properly, then you could be masking certain defects in your system such as leaks, pressure drops in the system, undersized pipes, staking defects and others. We recommend that you discuss this with your LAPIERRE consultant to determine if this feature can be beneficial in your situation and what method to follow.

Carry out the same steps as in section 3.2.13.2 page 118 to step 3.

1. Add or subtract a vacuum level value in inHg in the Offset box to correct the Sensor measurement.
2. Click on Save.



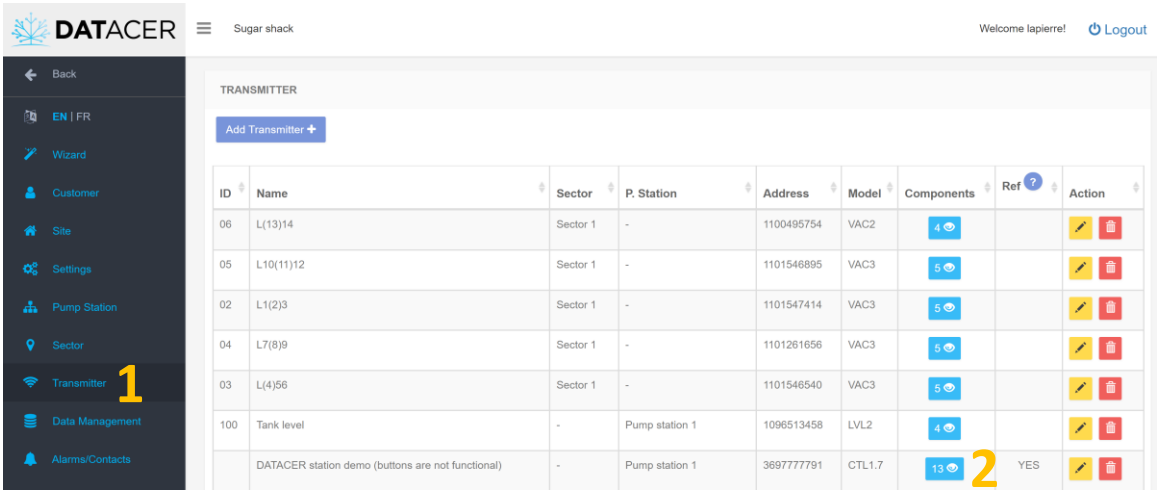
3.2.13.6 Setting up a Tank Level Sensor

In the example, we set up the Tank Level Sensor of Transmitter "Datacer station (buttons are not functional)" installed above the Tank "Lev2-passerelle".

1. Click on Transmitter.
2. Click on the blue button

for the Transmitter that measures the Tank level in question.
3. Click on the yellow button
.

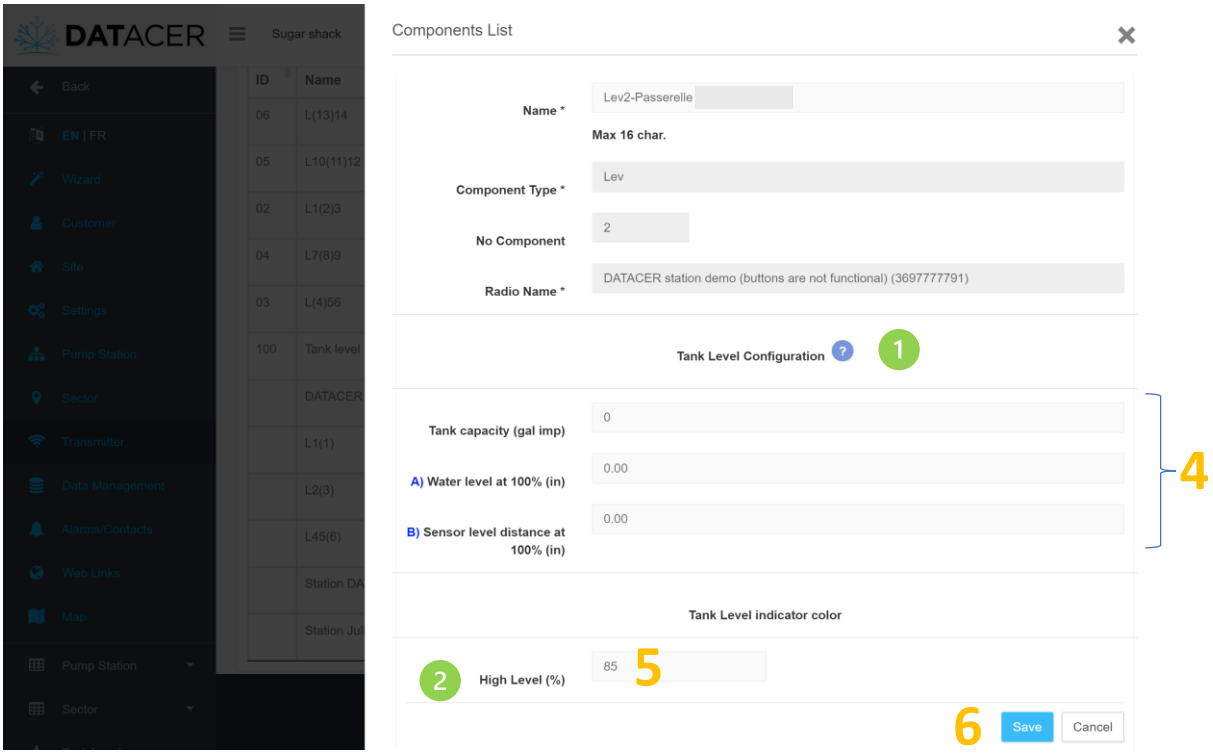
4. Enter the total volume of the Basin and the two lengths A and B in inches according to the diagram (see green note 1 below).
5. Enter the High level threshold in percent (%).
6. Click on Save.



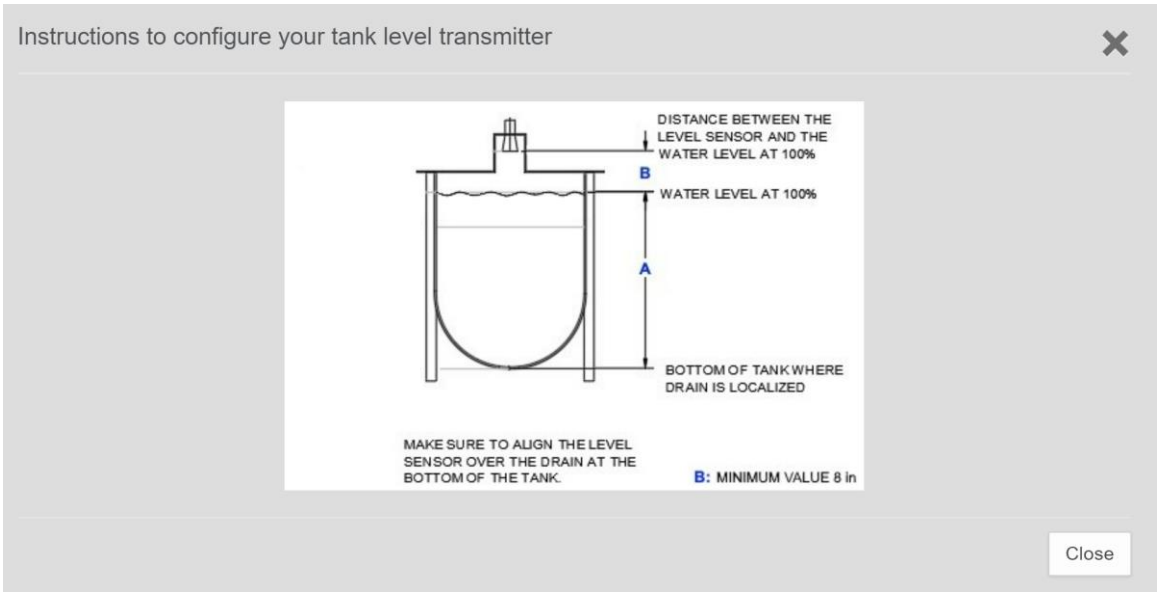
COMPONENTS LIST

Name	Type	No.	Radio Name	Description	Enable?	Is Ref?	Action
Départ/Arrêt p	VPRC	1	DATACER station	Vac. Pump (ON/OFF)	☑		
Prs1-Passerelle	Prs	2	DATACER station	Pressure Sensor	☐		
Extractor	Vac	3	DATACER station	Vacuum Sensor	☑	Sector 1	
% drive	VPSC	4	DATACER station	Vac. Pump Speed (VFD)	☑		
% opening	VLV	5	DATACER station	Modulating Valve	☑		
TMPX-Passerelle	TMPX	6	DATACER station	Outside Temperature			
Trappe à humidi	HUM	7	DATACER station	Humidity Trap	☑		
SPS-Passerelle S	SPS	8	DATACER station	Selector AUTO/OFF/MAN			
VLVDR-Passerelle	VLVDR	9	DATACER station	Drain Valve	☐		
Lev2-Passerelle	Lev	10	DATACER station	Level Sensor	☑		3
Temp-Passerelle	Temp	11	DATACER station	Temperature			
SAP-Passerelle S	SAP	12	DATACER station	Sap Pump Control	☐		
Fonction modulat	MOD	13	DATACER station	Vac Modulation (ON/OFF)	☑		

Close



1 To better understand the A and B distances to measure you can click on the question mark to view the diagram below.



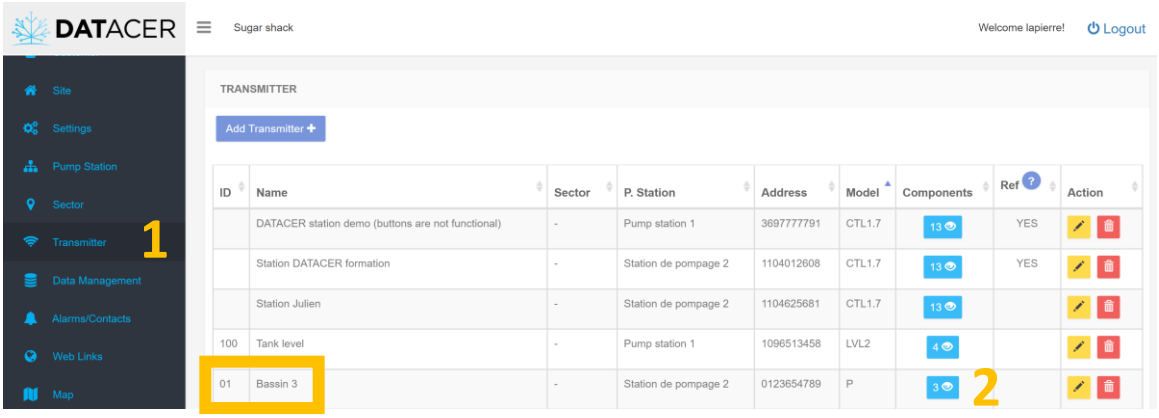
2 If the level is greater than or equal to the threshold, then the boxes corresponding to the measurement of this Tank level will be displayed in red in the DATACER™ interface.

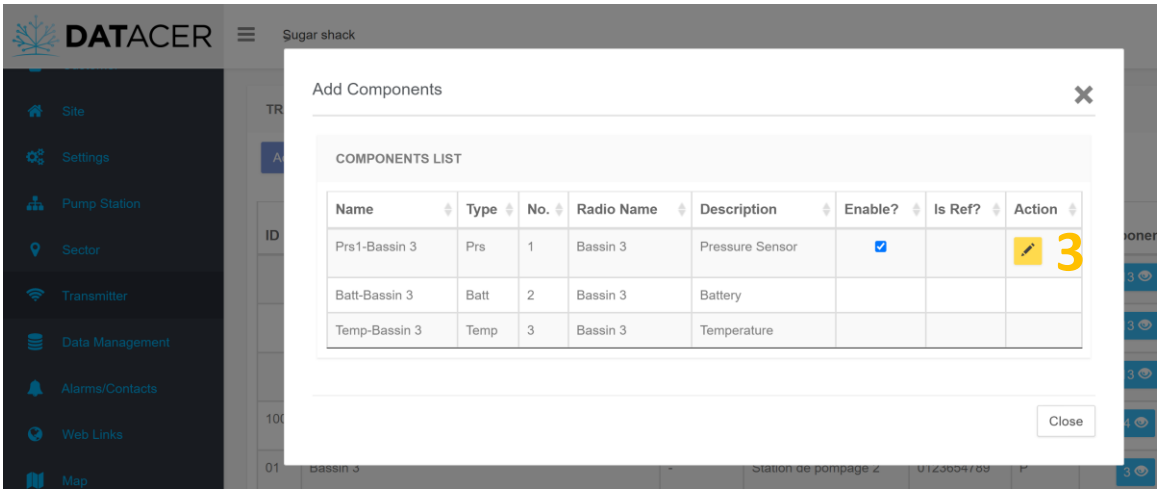
3.2.13.7 Configuration of a pressure sensor

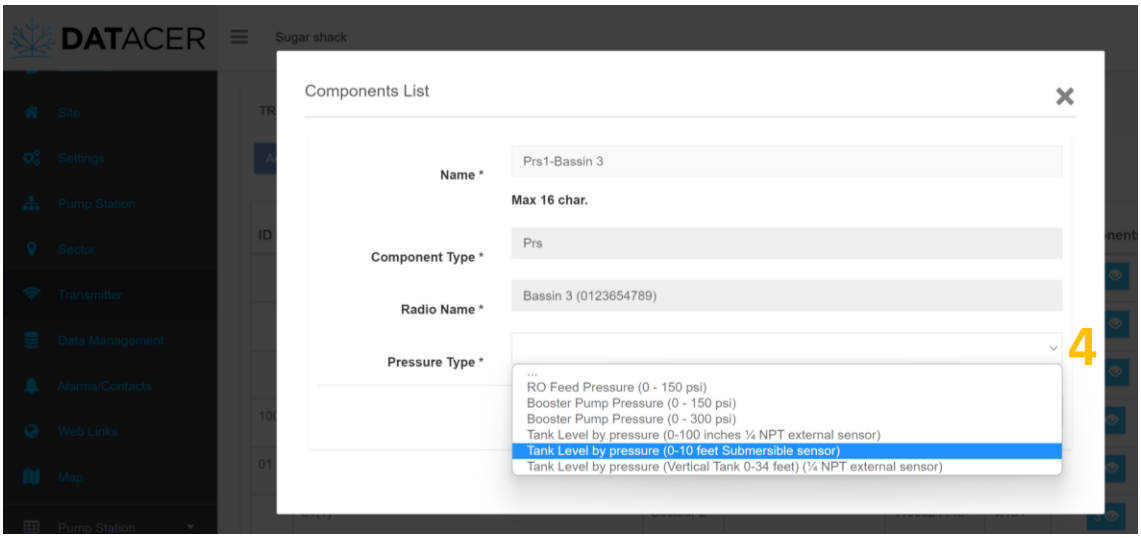
In the following example, we set up a 0-100 inch pressure sensor from the "Bassin 3" Transmitter installed on the “Prs1-Bassin 3" Tank.

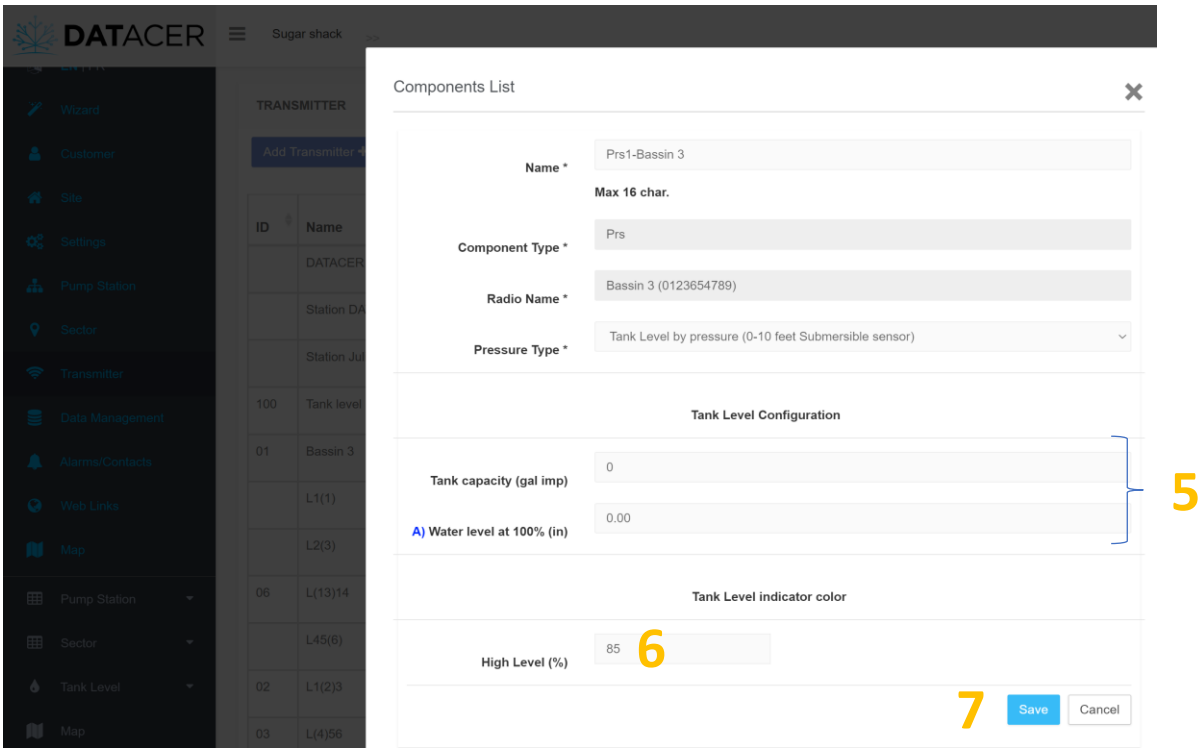
1. Click on Transmitter.
2. Click on the blue button

for the Pressure Transmitter that measures the level of the Tank in question.
3. Click on the yellow button .
4. Select a Pressure Sensor Type to measure a level.
5. Enter the total volume of the Tank and the A length in inches.
6. Enter the High level threshold in percent (%).
7. Click on Save.





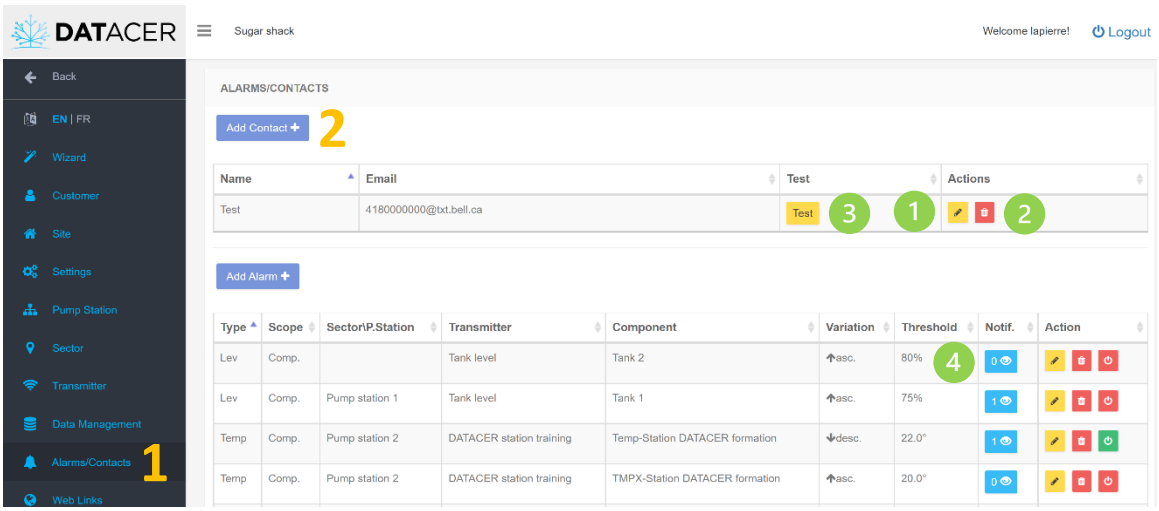




3.2.14 Alarms and notifications

3.2.14.1 Add, edit or delete a contact for email notifications

1. Click on Alarms/Contacts.
2. Click on Add Contact.
3. Enter the Name of the contact.
4. Enter the Email of the contact who should receive the notification.
5. Click on Save.

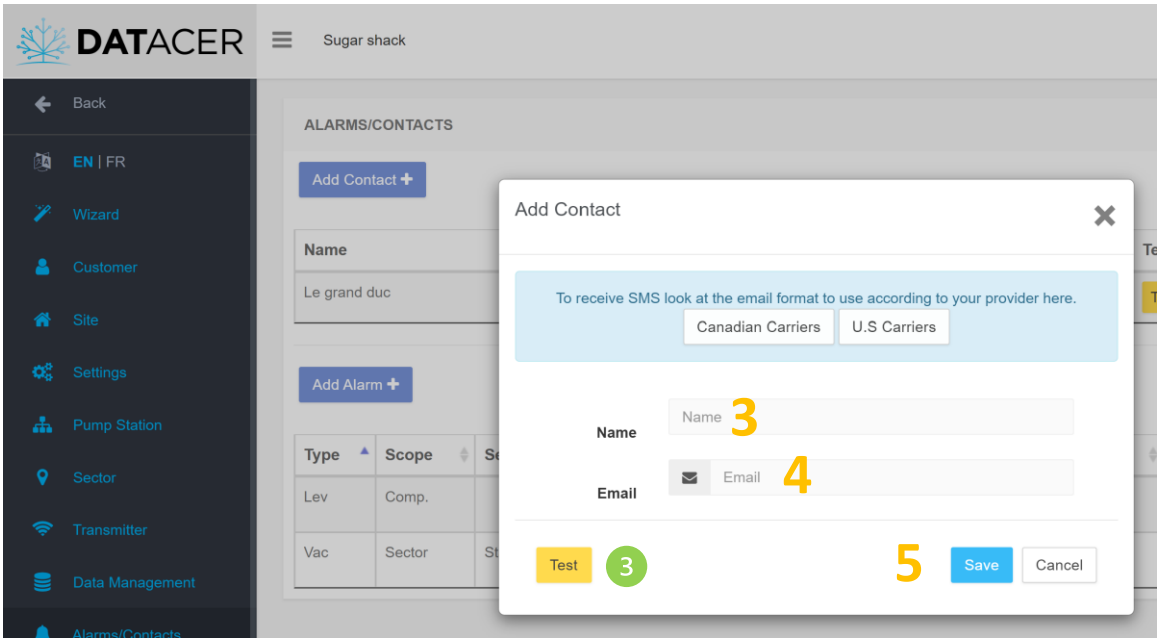


1 If you wish to modify an existing contact, click on the yellow button of the corresponding contact.

2 If you want to delete an existing contact, click on the red button of the corresponding contact.

3 If you want to send a test notification, you can click on this yellow button Test.

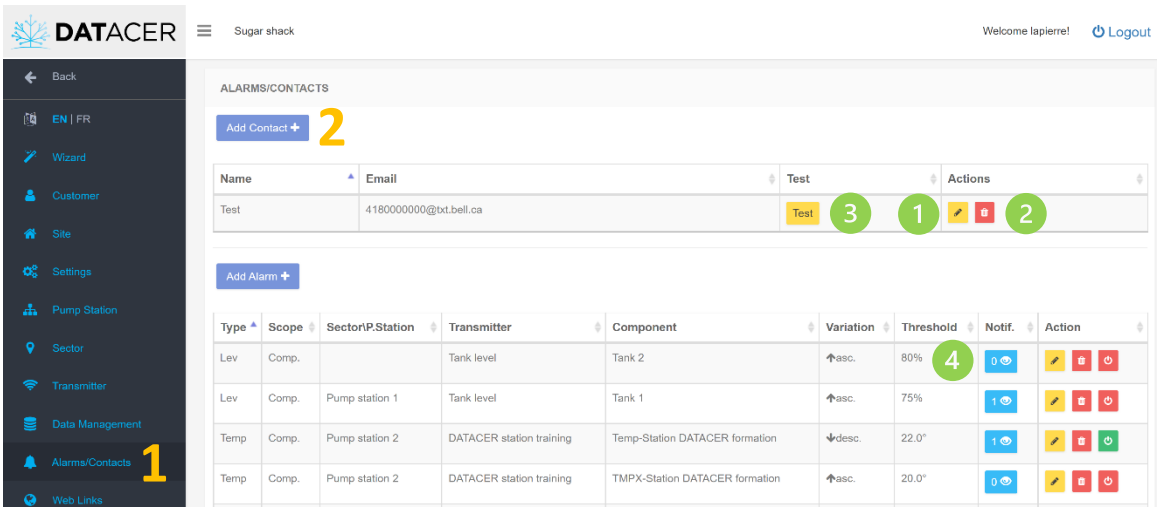
4 The blue button 1 allows you to view the list of contacts linked to the alarm for sending SMS or email notifications.



If you want to simultaneously receive an email and an SMS for the same alarm you must create two contacts, one with your email and the other with your cell phone number. You must attach them to the same alarm.

3.2.14.2 Add, modify or delete a contact for sending SMS notifications

1. Click on Alarms/Contacts.
2. Click on Add Contact.
3. Locate your cellular network provider in the list by clicking on Provider Canada or Providers U.S.
4. Enter the Name of the contact.
5. In the Email field, enter the 10-digit cell phone number of the contact, followed by the "@", and the rest of the address corresponding to the cell phone provider of the contact in question. In our example the number is 4180000000.
6. Click on Save.

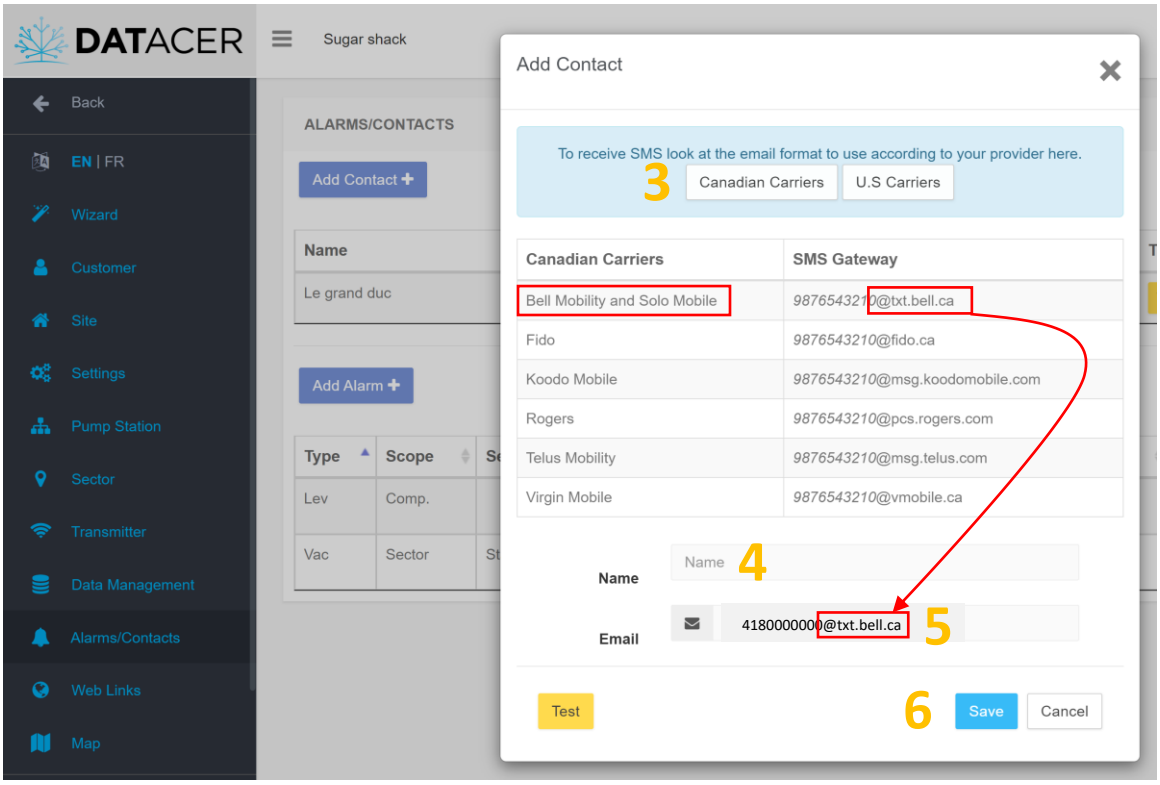


1 If you wish to modify an existing contact, click on the yellow button of the corresponding contact.

2 If you want to delete an existing contact, click on the red button of the corresponding contact.

3 If you want to send a test notification, you can click on this yellow button Test.

4 The blue button 1 allows you to view the list of contacts linked to the alarm for sending SMS or email notifications.

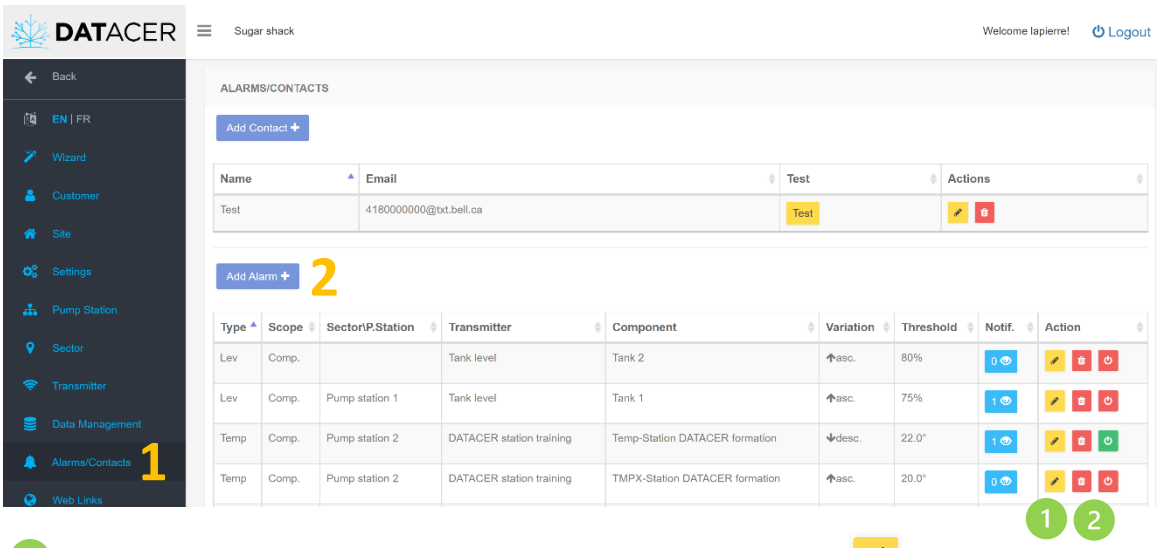


If you want to simultaneously receive an email and a SMS for the same alarm you have to create two contacts, one with your email and the other with your cell phone number. You must attach them to the same alarm.

3.2.14.3 Add, modify or delete an alarm

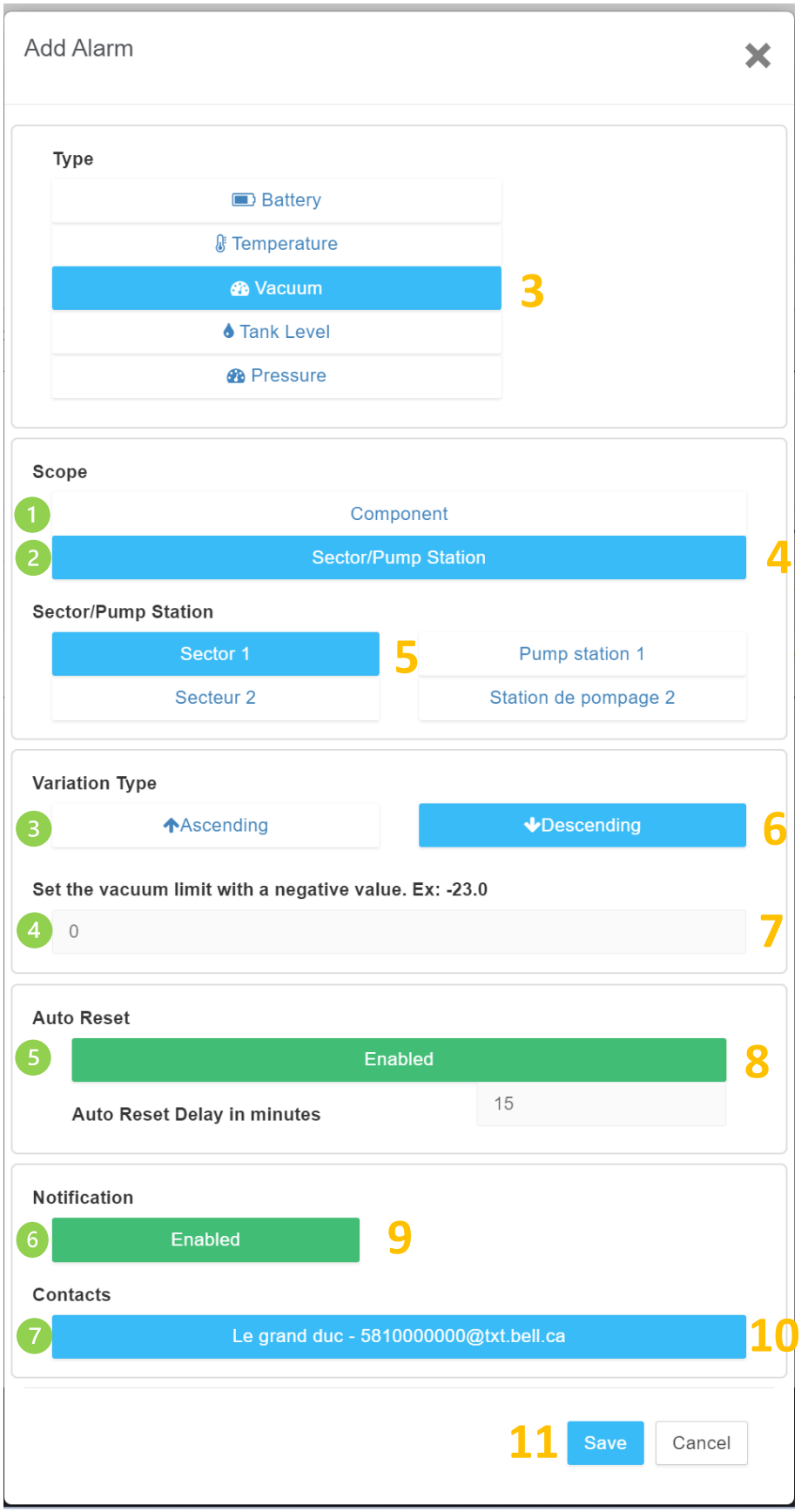
In our example, we add a descending vacuum level alarm for sector "Sector 1". The alarm is triggered if one of the vacuum levels in the sector is below -23 inHg, for example -22 inHg. The software does not take the sign into account.

1. Click on Alarms/Contacts.
2. Click on Add alarm.
3. Choose the Type of alarm.
4. Choose the scope.
5. Select the relevant Sector or Component.
6. Choose the Type of variation.
7. Enter the Vacuum Limit, i.e. the triggering threshold.
8. Enable or disable Auto Reset.
9. Enable or disable sending Notification (email/SMS).
10. Select or deselect the Contacts for sending SMS and/or emails.
11. Click on Save.



1 If you want to modify an existing alarm, click on the yellow button of the corresponding alarm.

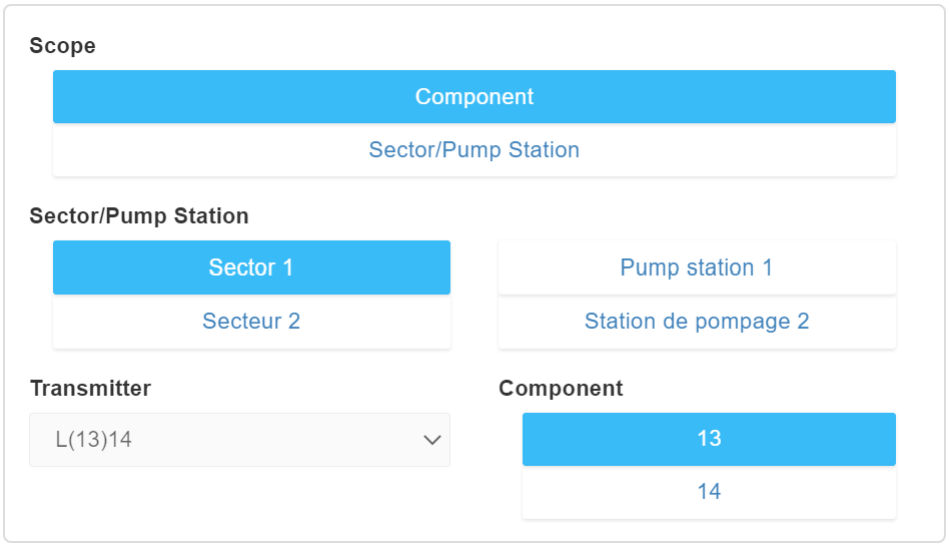
2 If you want to delete an existing alarm, click on the red button of the corresponding alarm.


Add Alarm
Type
Battery
Temperature
Vacuum
Tank Level
Pressure
3
Scope
1
Component
2
Sector/Pump Station
4
Sector/Pump Station
Sector 1
5
Pump station 1
Secteur 2
Station de pompage 2
Variation Type
3
Ascending
Descending
6
Set the vacuum limit with a negative value. Ex: -23.0
4
0
7
Auto Reset
5
Enabled
8
Auto Reset Delay in minutes
15
Notification
6
Enabled
9
Contacts
7
Le grand duc - 5810000000@txt.bell.ca
10
11
Save
Cancel

1 Component Scope

This is an alarm for a particular Transmitter Component. The alarm is triggered if the value measured by a Transmitter's Sensor exceeds the set threshold.

For example, an alarm for the "13" line of the "L(13)14" transmitter located in the "Sector 1", whose vacuum drops below the threshold of -23inHg.



2 Sector or pumping station scope

This is an alarm per sector or per pumping station. The alarm is triggered if any of the values measured in a sector or pumping station fall below the set threshold. For example, an alarm indicates the first line of the test sector has dropped below -23 inHg.

3 Type of variation

A rising alarm is triggered if the measured value is greater than or equal to the threshold. A falling alarm is triggered if the measured value is less than or equal to the threshold.

4 Threshold

It is the absolute value that will be compared to the measured value to determine if an alarm should be sent. An absolute value does not take the sign into account.

When you enter -23 inHg the software considers 23 inHg. So if the measured vacuum is -22 inHg and you have chosen "downward variation", an alarm will be sent because 22 inHg is lower than 23 inHg.

5 **Automatic reset**

This function allows you to automatically reset the alarm when it has been triggered after a certain time without having to intervene in the system. The alarm is no longer active until the reset time in minutes is over.

For example: you want to receive an alarm every time your Tank level drops below 70%. The timer allows time for the Tank to refill and exceed the alarm threshold. This alarm can then indicate that the water pump has started and the Tank is now emptying.

6 **Notification (email/SMS)**

This function allows you to activate or deactivate the sending of SMS or emails following the triggering of an alarm.

7 **Contact**

Represents the list of the contact(s) added for this alarm (see section 3.2.14.1 page 128 and section 3.2.14.2 page 130).

3.2.14.4 Enable/disable SMS /email notifications for an alarm

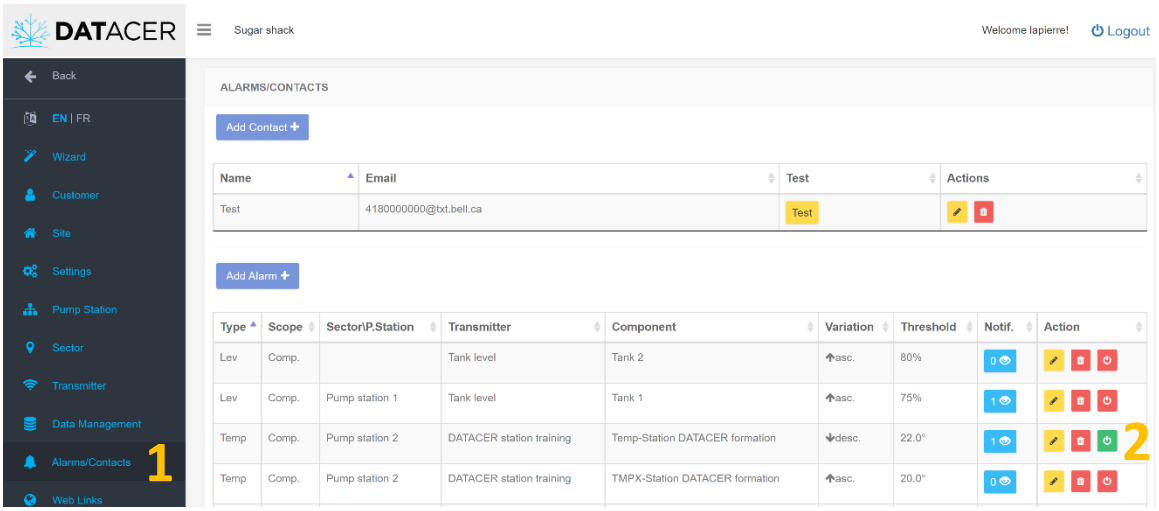
Refer to step 9 in section 3.2.14.3 on page 132.

3.2.14.5 Changing a contact for an alarm

Refer to step 10 in section 3.2.14.3 on page 132.

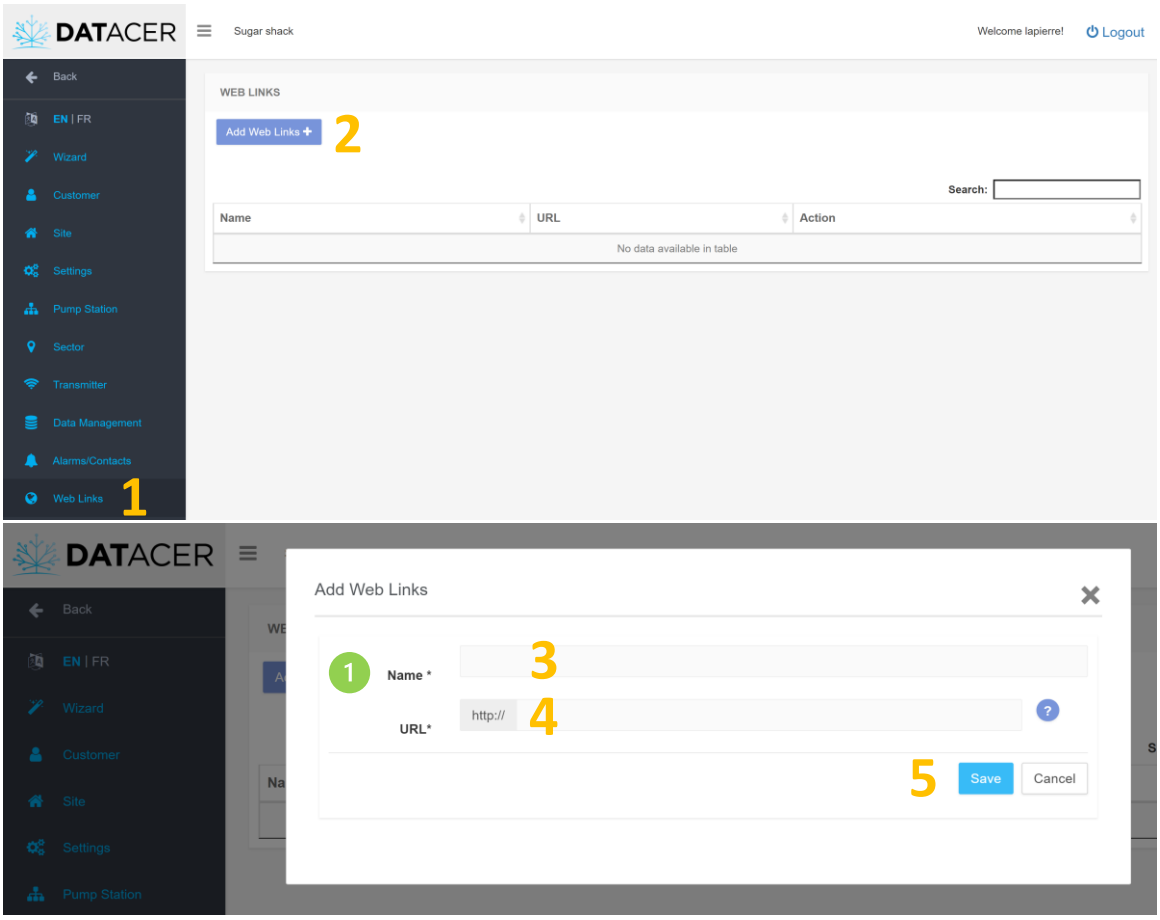
3.2.14.6 Enable or disable an alarm

1. Click on Alarms/Contacts.
2. Click on the enable or activation button.
   - The green button indicates that the alarm is activated or enabled.
   - The red button indicates that the alarm is deactivated or disabled.



3.2.15 Add or modify a web link

1. Click on Web Links.
2. Click on Add Web Links.
3. Enter the Name of the site.
4. Enter the URL, or the address.
5. Click on Save.

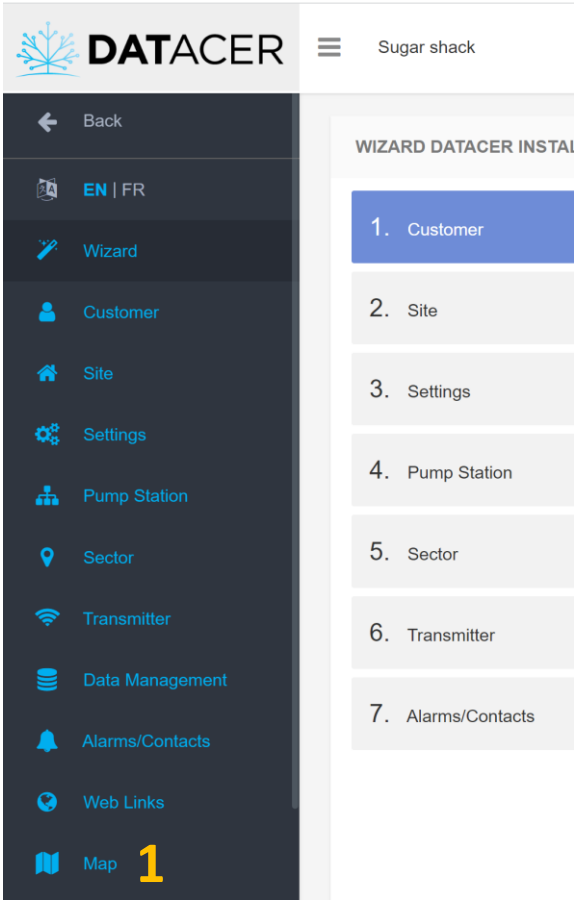


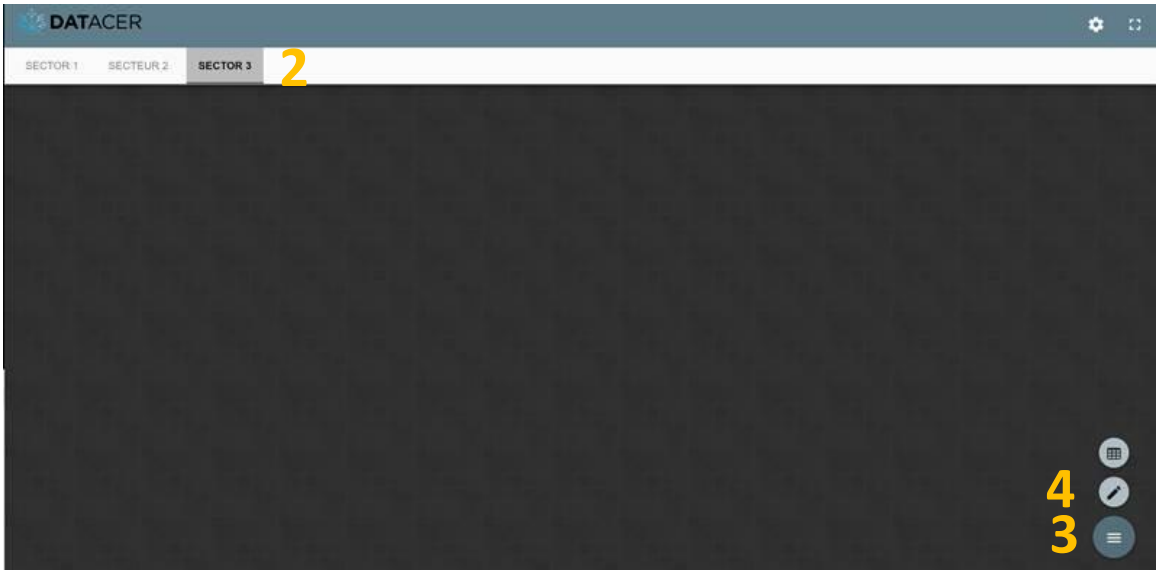
1 The name is displayed in the main user menu.

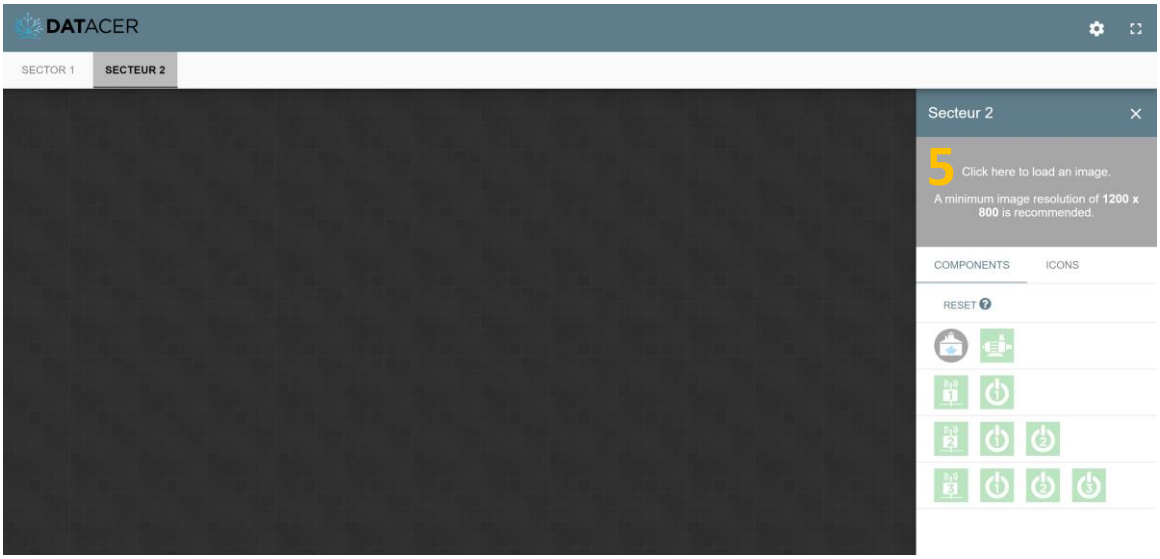
3.2.16 Maps

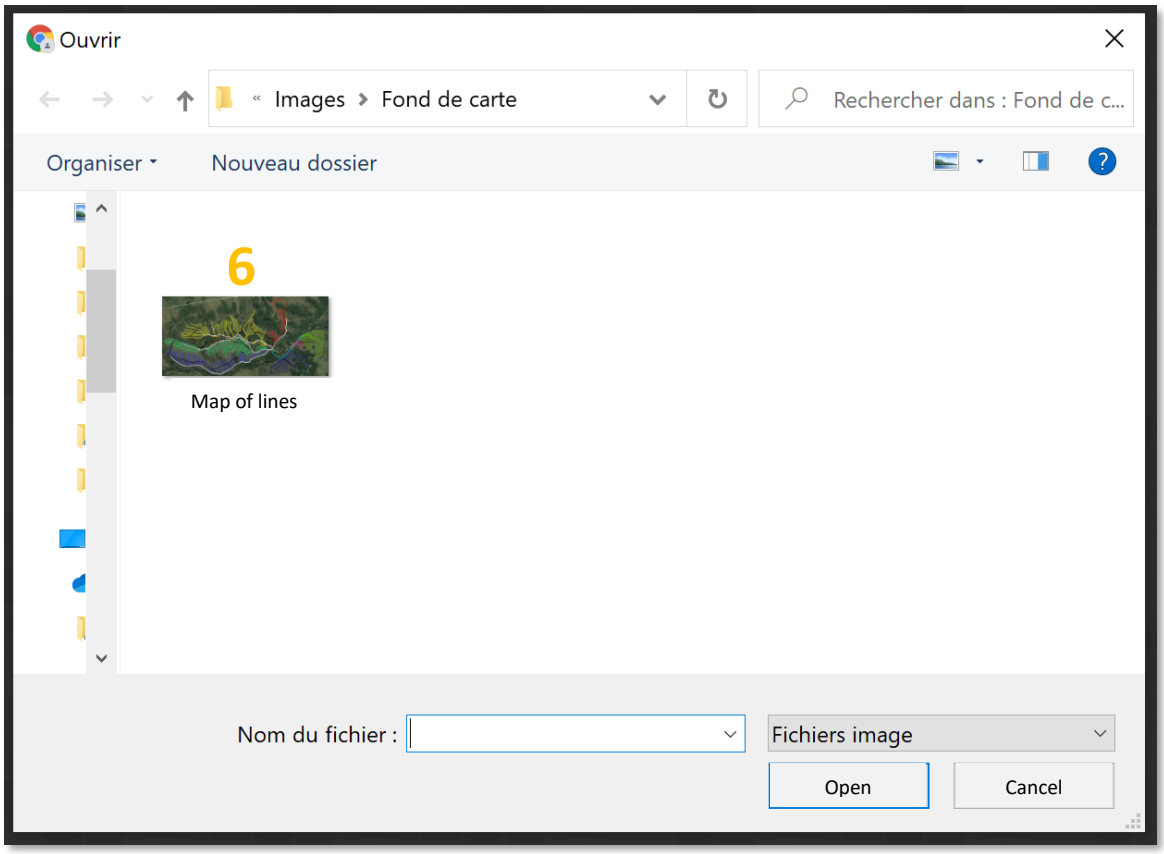
3.2.16.1 Add or modify a map

1. Click on Maps.
2. Select the sector by clicking on the corresponding tab at the top of the page.
3. Click on the menu icon .
4. Click on the edit sector button .
5. Click in the grey area to import a background map.
6. Select a background map from your files (maximum 2 Mo).
7. Click on Open.
8. Drag and drop the icons from the left to their precise location on the map. The icons turn grey when placed on the map.
9. Adjust the size of the icons if you wish.
10. Repeat from step 2 to map another area.
11. Close the windows when you have finished setting up your sector or area maps.

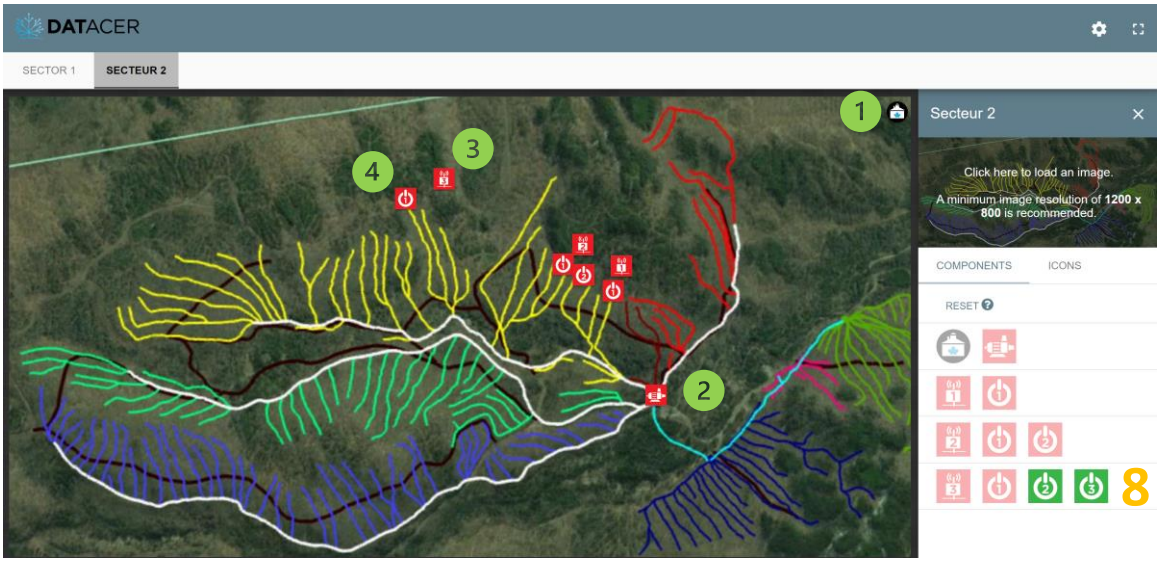



DATACER
SECTOR 1
SECTEUR 2
SECTOR 3
2
4
3


DATACER
SECTOR 1
SECTEUR 2
Secteur 2
5
Click here to load an image.
A minimum image resolution of 1200 x 800 is recommended.
COMPONENTS
ICONS
RESET



You can insert a photo of a hand-drawn plan of your lines on a sheet of paper.

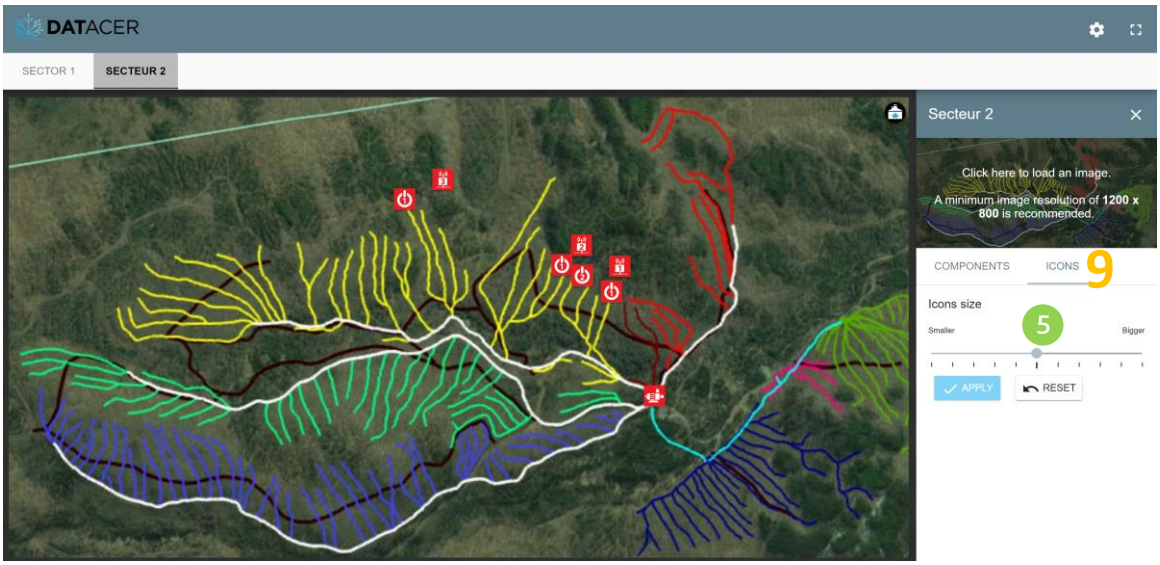


1 Corresponds to the sector.

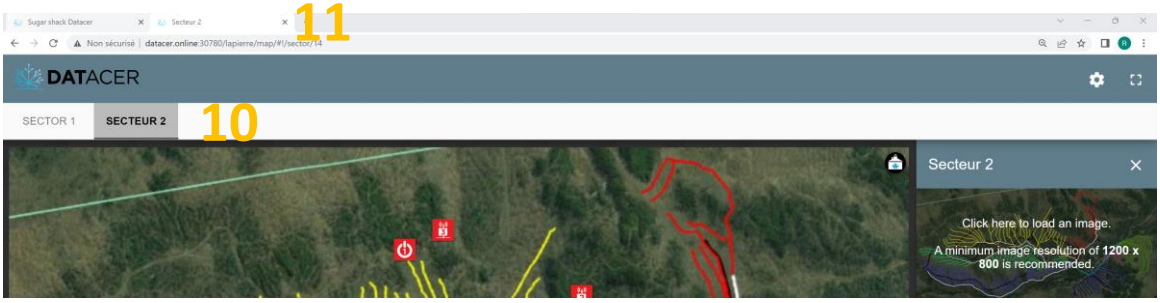
2 Corresponds to the pumping station.

3 Corresponds to a Transmitter.

4 Corresponds to a vacuum level sensor.

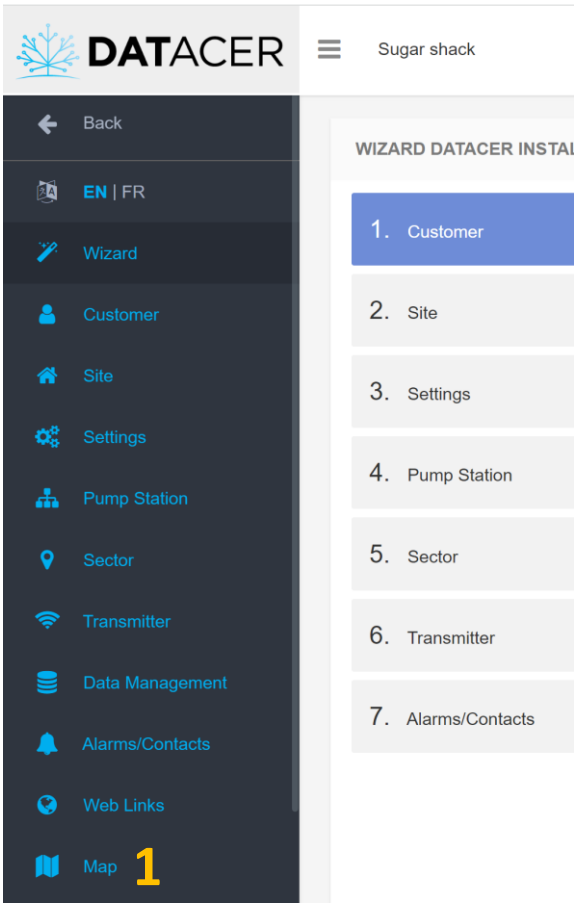


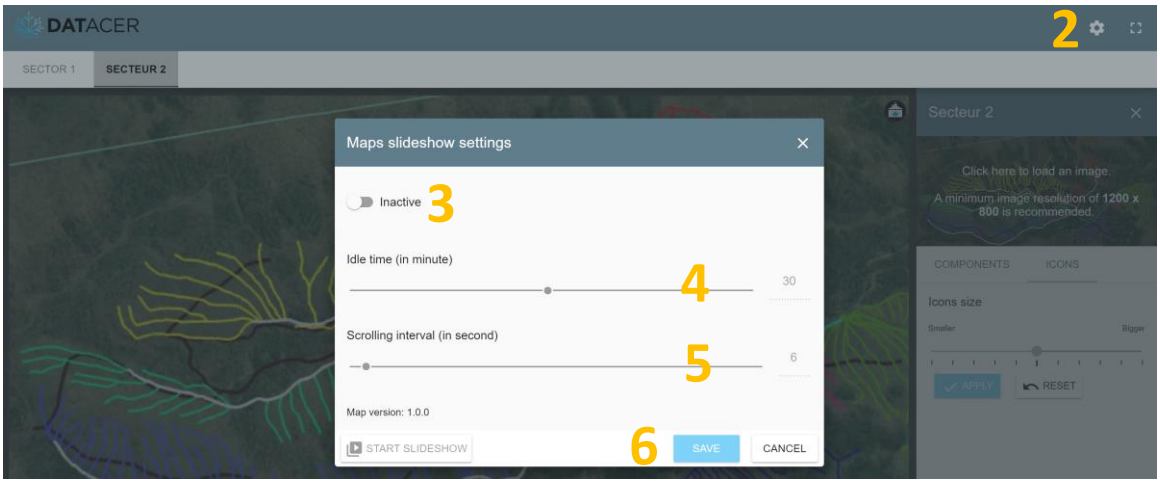
5 You can enlarge or reduce the size of the icons to fit your map background.



3.2.16.2 Enabling/Disabling Automatic Area or Sector Map Slideshow

1. Click on Maps.
2. Click on the slideshow button .
3. Activate the slideshow.
4. Enter the Inactivity time in minutes, i.e. the time without movement, click or use of the keyboard after which the slideshow will automatically start.
5. Enter the Scroll Interval in seconds that a sector or an area card is visible before.
6. Click on Save.



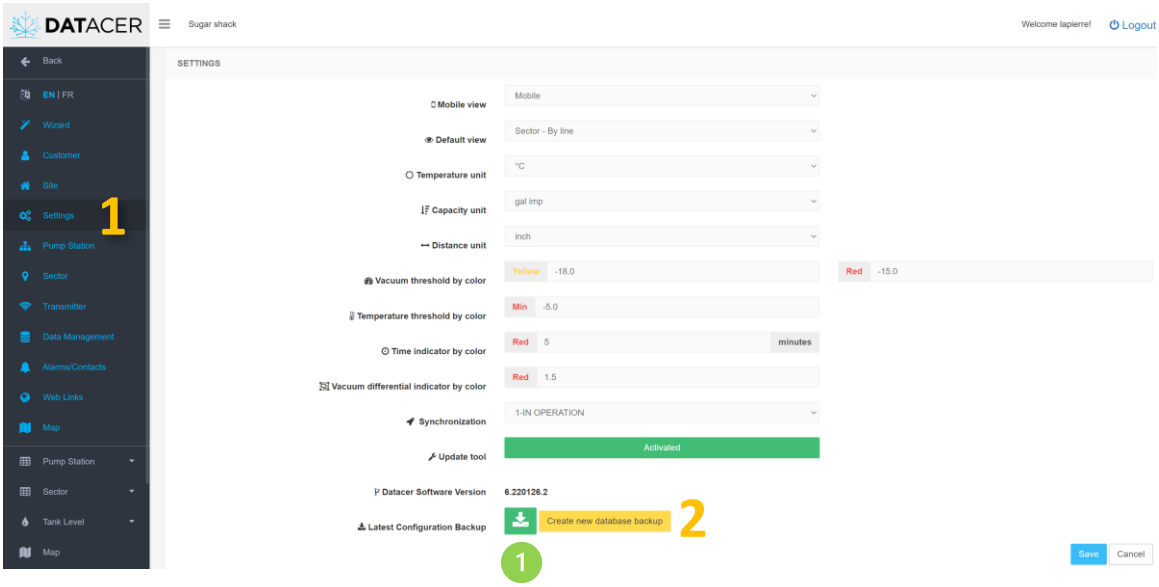


3.2.17 Save setting

We recommend that you make a manual backup of your settings once you have completed the initial setup of your system or when you have just made changes.

1. Click on Settings.
2. Click on Create a new backup.

This action saves all the settings of the DATACER™ base, in the same way that the automatic backup saves them every night at midnight (0h00).



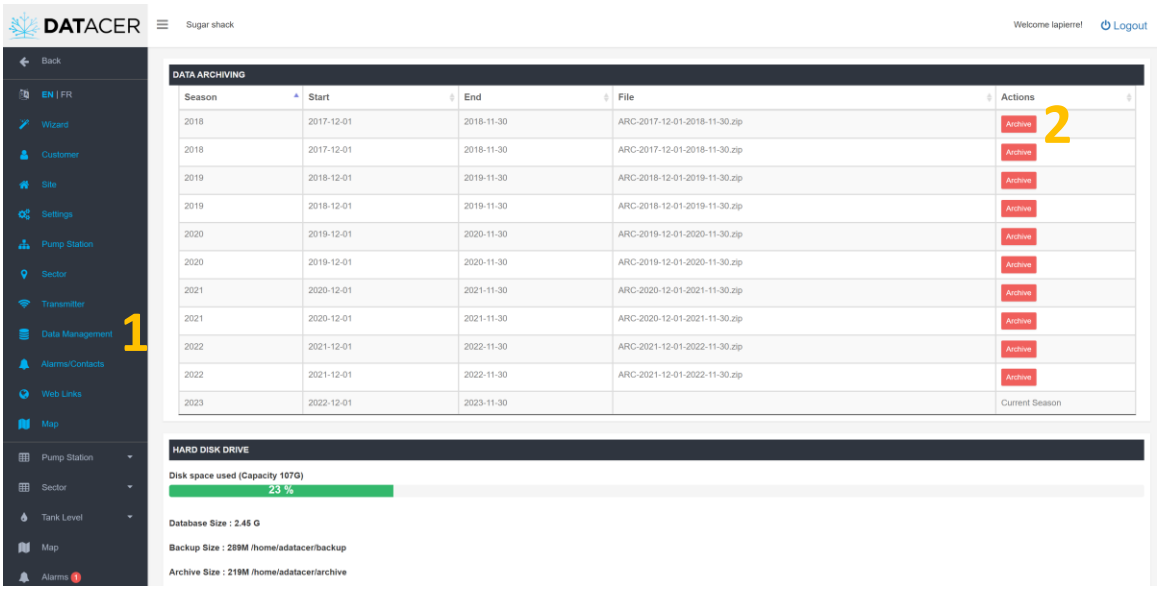
1 The green button is used to export a backup of your DATACER™ base settings in .sql format. This type of backup can allow the DATACER™ support team to restore your database settings on a new DATACER™ base

2 The backups of the last three days are kept on this USB key.

3.2.18 Data archiving

1. Click on "Data Management" and view the NUC disk space (base computer)

2. To save space, you can click on the red "Archive" button(s). This will extract the data, make a copy of the settings and copy everything to the backup USB stick. To find out where it is located, see preceding point 2 in the previous section.



You can archive one season at a time. An "Archive" button is available for each season. In the software a season starts on 1/12 and ends on 30/11.

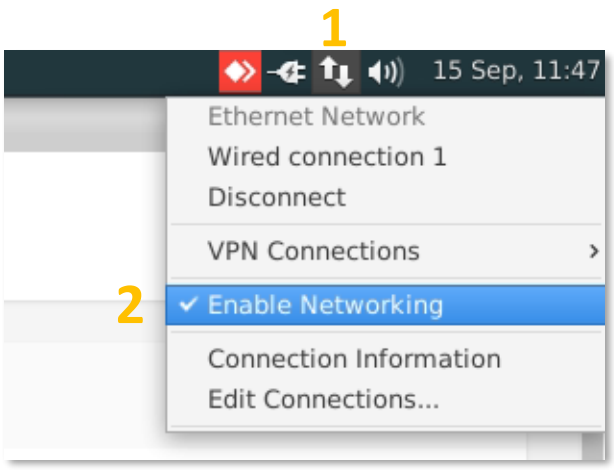
You can copy/paste the folders stored on the key to another storage space of your choice. For example: a computer, hard drive or other.

Archiving becomes necessary if more than 75% of the disk space of the DATACER™ base is taken.

3.2.19 Activate/deactivate connection to the Internet

Prerequisites: Be connected locally to the DATACER™ base (see section 4.4.1 page 180)

1. Click on the button with two white arrows in opposite directions located at the top right of your screen.
2. Make sure that the white check mark is in front of the "Enable Networking" label. If not, click on "Enable Networking" to activate connection to the Internet.

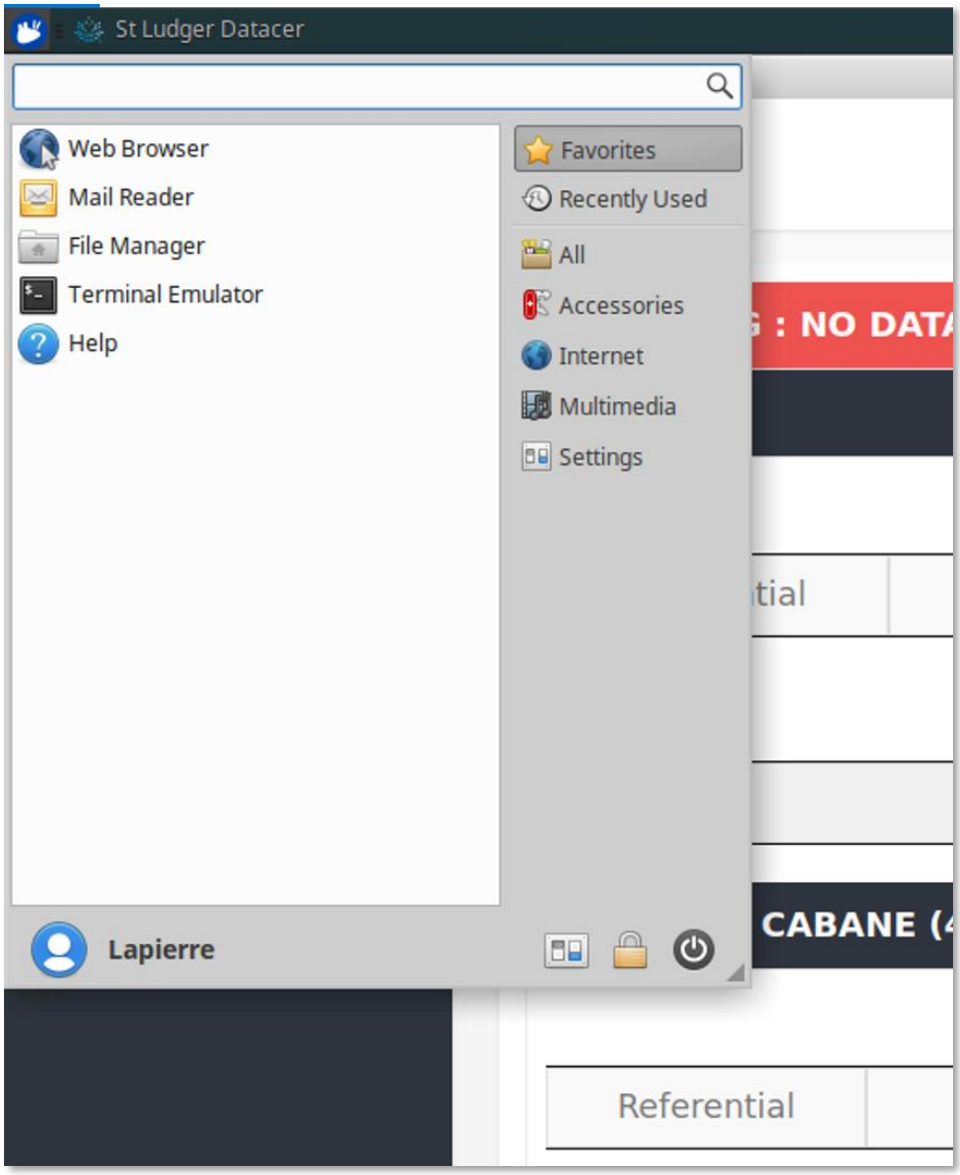


To check if the DATACER™ base is connected to the Internet you can try to open a web browser page and perform a search. If the search is successful then it confirms that the database is connected to the Internet.

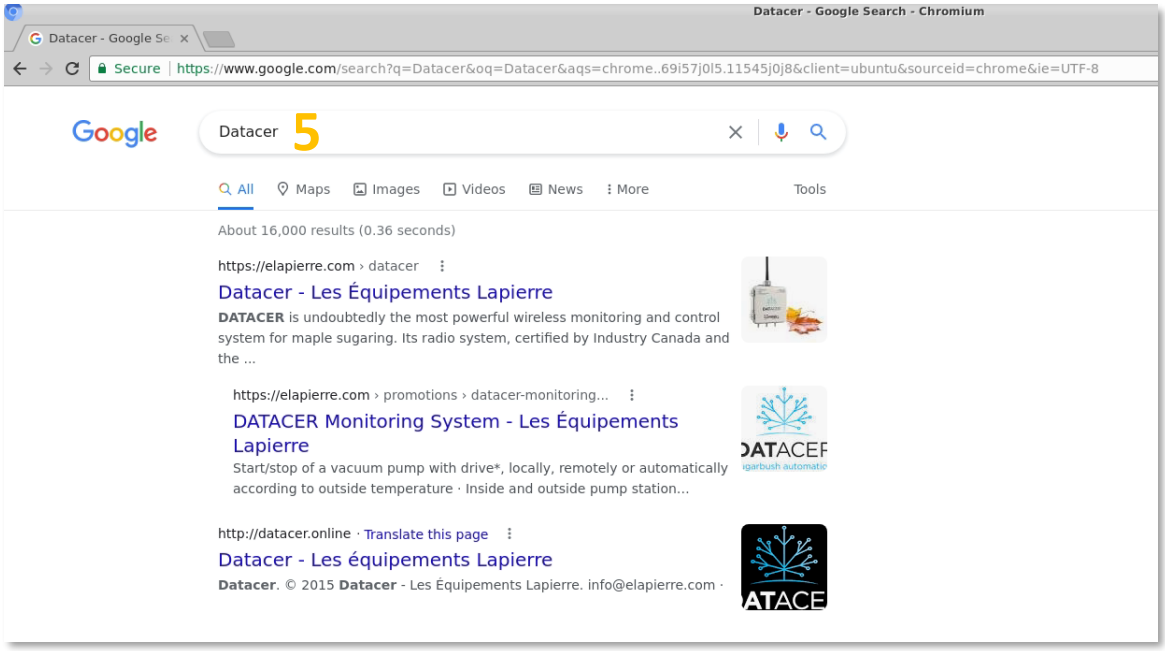
3. To open a web browser from the interface, click on the blue and white icon at the top left of your screen.
4. Click on "Web browser".

3

4

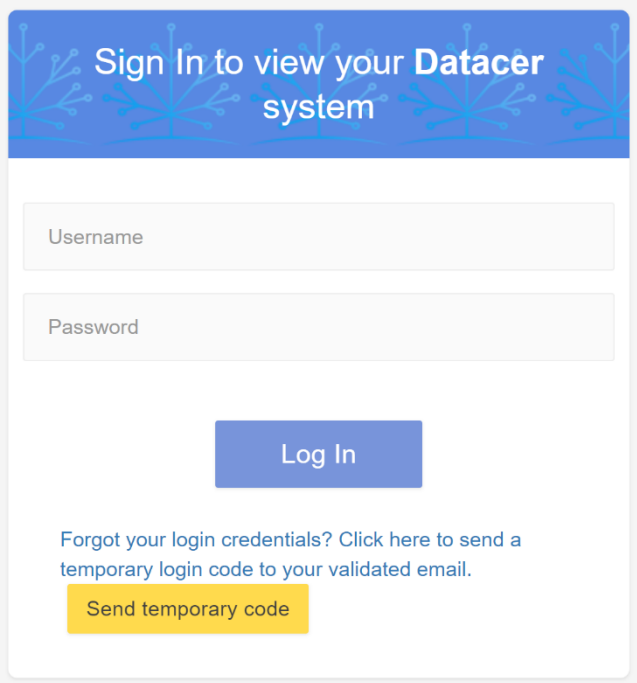

St Ludger Datacer
Web Browser
Mail Reader
File Manager
Terminal Emulator
Help
Favorites
Recently Used
All
Accessories
Internet
Multimedia
Settings
Lapierre
: NO DATA
tial
CABANE (
Referential

5. Enter the keywords of your search and press the "Enter" key on your keyboard.



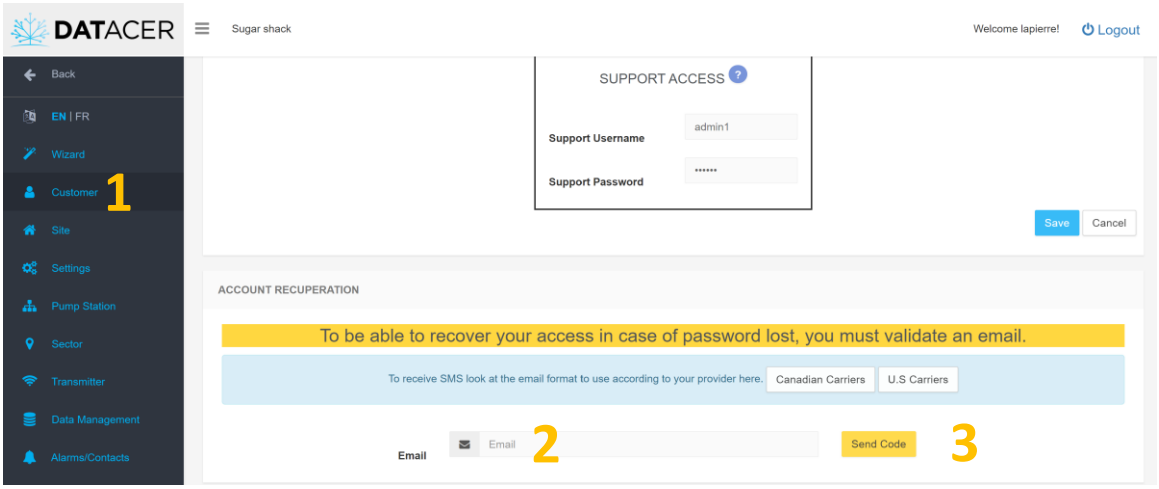
3.2.20 Recovering access to the account in case of forgotten identifiers

If you forget your login details, you will still be able to access your DATACER™.online account using a temporary code that you will receive either by email or by SMS, depending on what you have programmed (see method below).

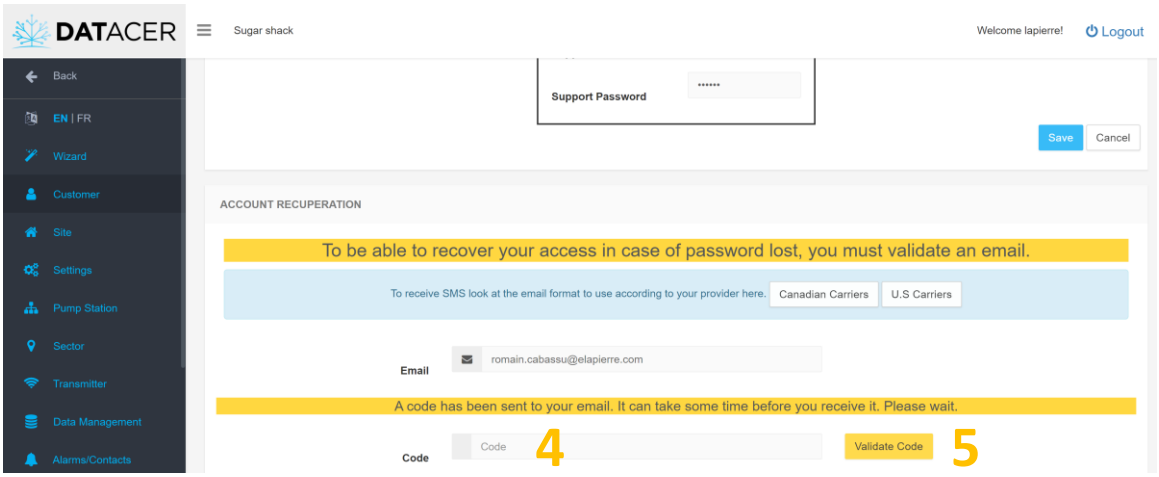


Prerequisites: Go to Admin mode.

1. Click on "Customer" in the left menu.
2. Enter your email or cell phone number on which you would like to receive a verification code. Both the email and cell phone number must be valid. Same method as described in section 3.2.14 page 128.
3. Click on "Send code".

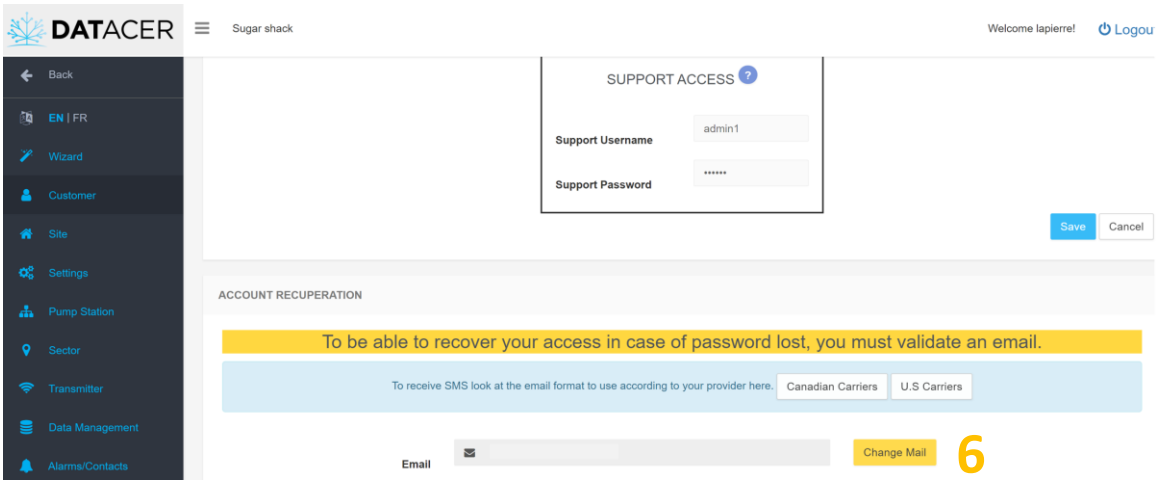


4. Enter the code you just received by email or SMS.
5. Click on "Validate code".



6. If you wish to change your email or cell phone number, click on "Change Email".

   The software will send you a new code to enter. Please return to step 3 above.



3.3 DATACER™ station interface

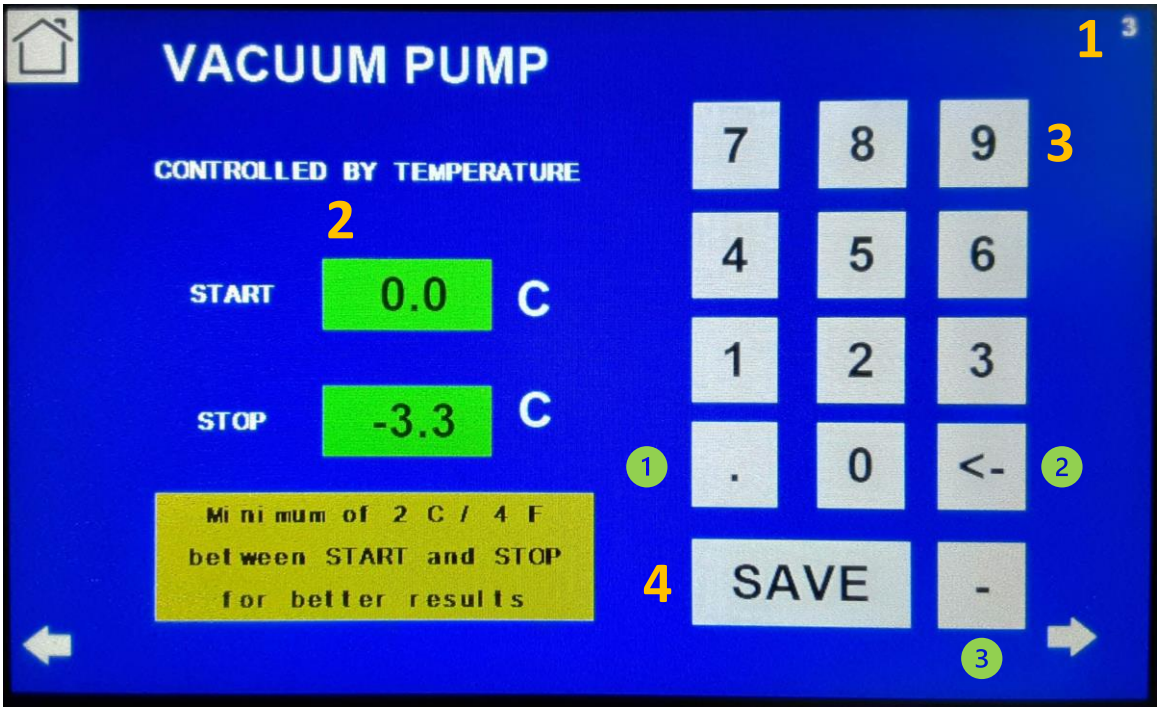
Prerequisites: Turn on the DATACER™ station (see section **Erreur ! Source du renvoi introuvable.** page 166).

In this section you will find details of the settings available in the interface of the DATACER™ station.

The automations based on temperature values (start/stop of the vacuum pump, opening/closing of the drain valve and modulation of the vacuum) use the outdoor temperature value read by the DATACER™ station as reference.

3.3.1 Adding or modifying the automatic start and stop temperatures of the vacuum pump

1. Go to page 3 of the interface.
2. Click in the green boxes to add or modify values.
3. Enter your desired temperature values via the keyboard on the right.
4. Click on Save.



1 Comma.

2 Clear the last values entered.

3 Negative sign.

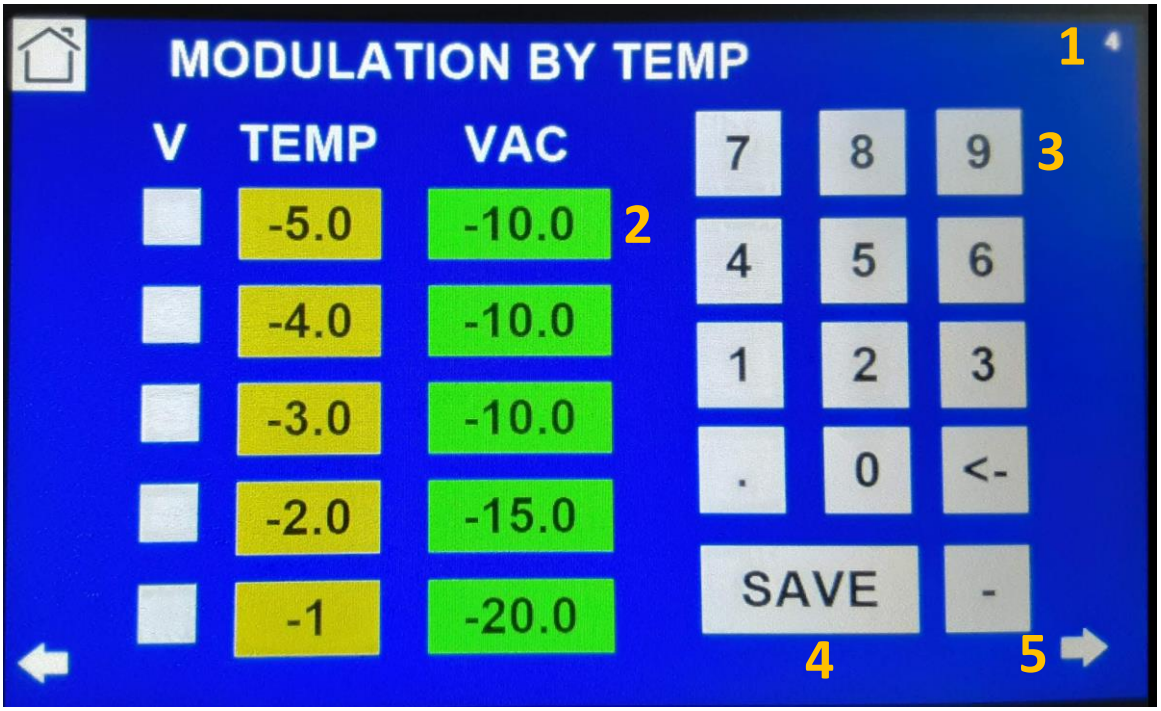
The vacuum pump starts when the outdoor temperature is above the "Start" threshold. The pump stops when the temperature is below the "Stop" threshold.

3.3.2 Adding or modifying the vacuum levels to be reached at the Extractor for automatic modulation according to the outside temperature

1. Go to page 4 of the interface.
2. Click in a green box to change the vacuum value to be reached according to the temperature indicated on the same line to its left.
3. Enter the desired vacuum level value via the keyboard on the right.

The vacuum values entered in the green boxes should be equal or increasing as the temperature warms.

4. Click on Save.
5. Click on the arrow on the right to move to the next page and return to step 2 above.

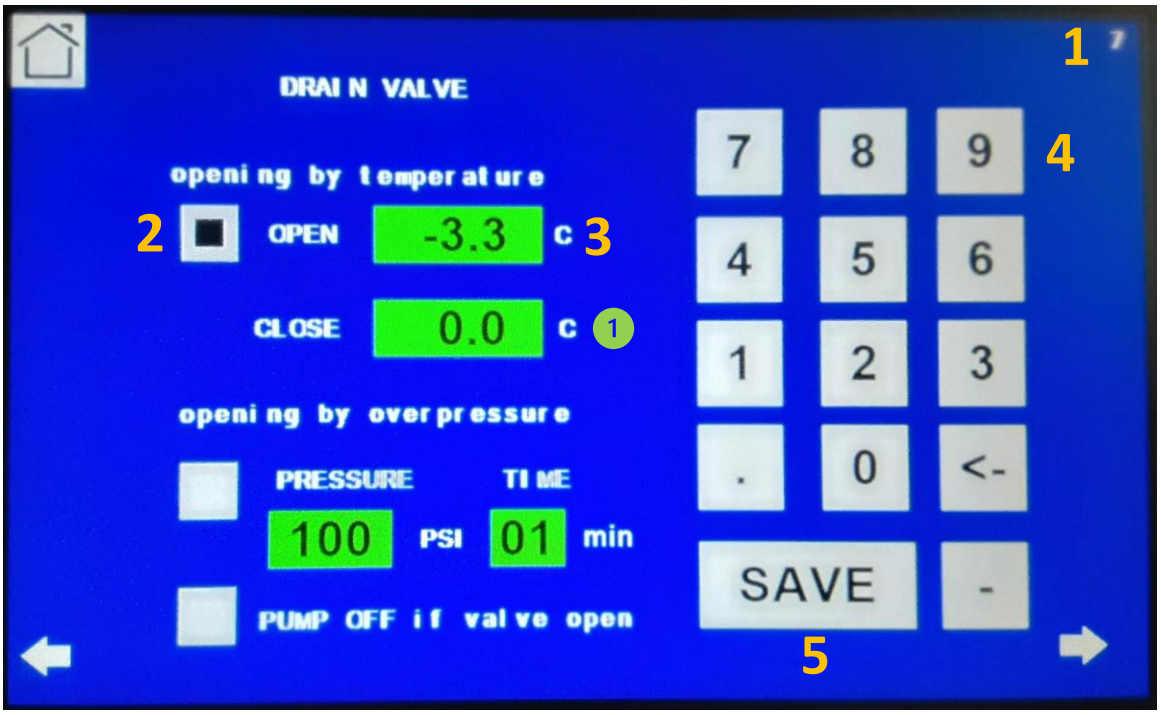


Each vacuum setpoint corresponds to a temperature interval. When the temperature threshold is reached, the vacuum setpoint changes.

According to the example shown in the table above, if the vacuum setpoint is -15 inHg, the temperature would have to get to -3°C for the setpoint to change to -10 inHg. Inversely, it would have to get to -1°C for the setpoint to change to -20 inHg.

3.3.3 Activating/deactivating the automatic opening of the Drain Valve according to the outside temperature

1. Go to page 7 of the station interface.
2. Check the box Open by temperature.
3. Click in a green box to change the temperature value.
4. Enter the desired temperature level value via the keyboard on the right.
5. Click on Save.



1 Leave a difference of at least 2°C or 4°F between the opening and closing temperature for proper operation.

The valve opens if the outdoor temperature is lower than the opening input temperature. The valve closes if the outdoor temperature is equal to or higher than the input closing temperature.

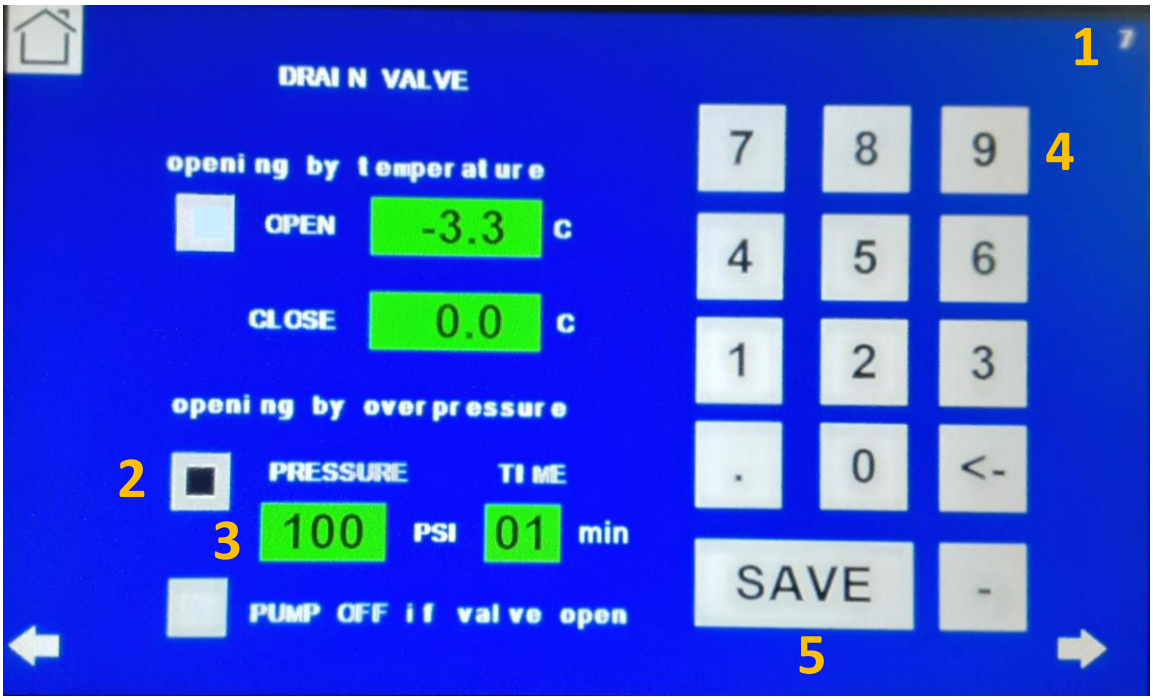
It is also possible to activate the overpressure opening at the same time (see section below).

3.3.4 Activating/deactivating the automatic opening of the Drain Valve depending on the pressure in the discharge pipe

1. Go to page 7 of the station interface.
2. Check the box Opening in overpressure.
3. Click in the green boxes to change the pressure value and the opening time.

"00 min" is an opening without duration, i.e. as long as the pressure exceeds the prescribed threshold, i.e. 100 psi and more in our example, the valve remains open. If the entered time is different from "00" then the valve closes after this time if the pressure is lower than the threshold, otherwise it remains open for the entered time.

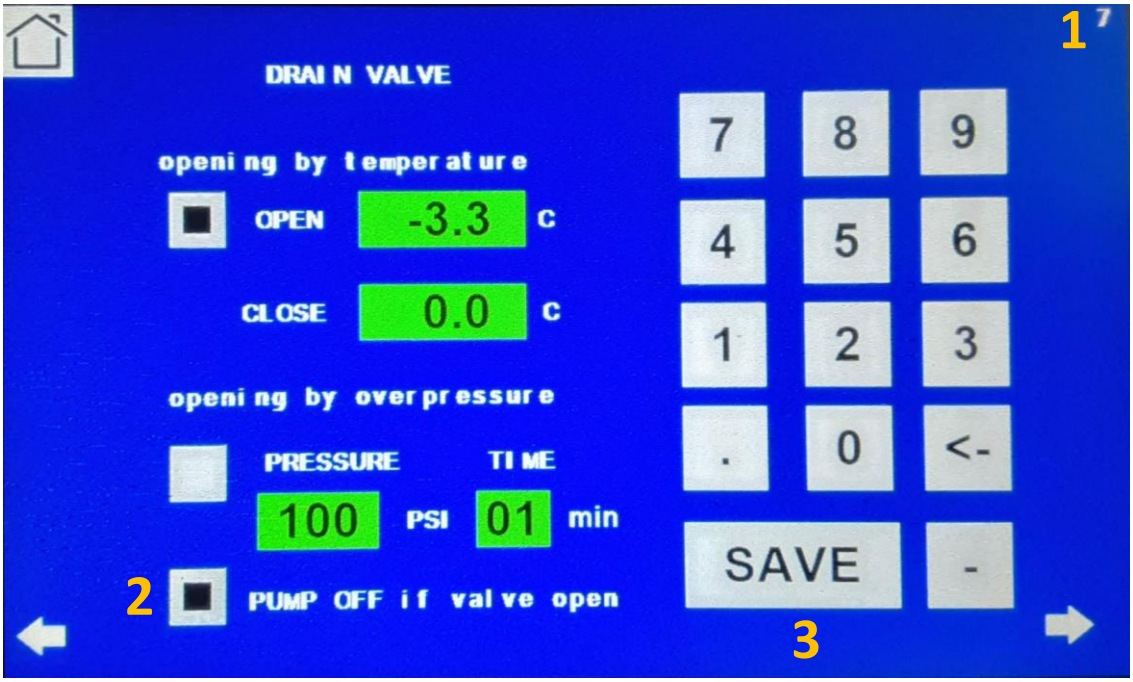
4. Enter the desired values via the keyboard on the right.
5. Click on Save.



It is also possible to activate the opening by temperature at the same time (see previous section).

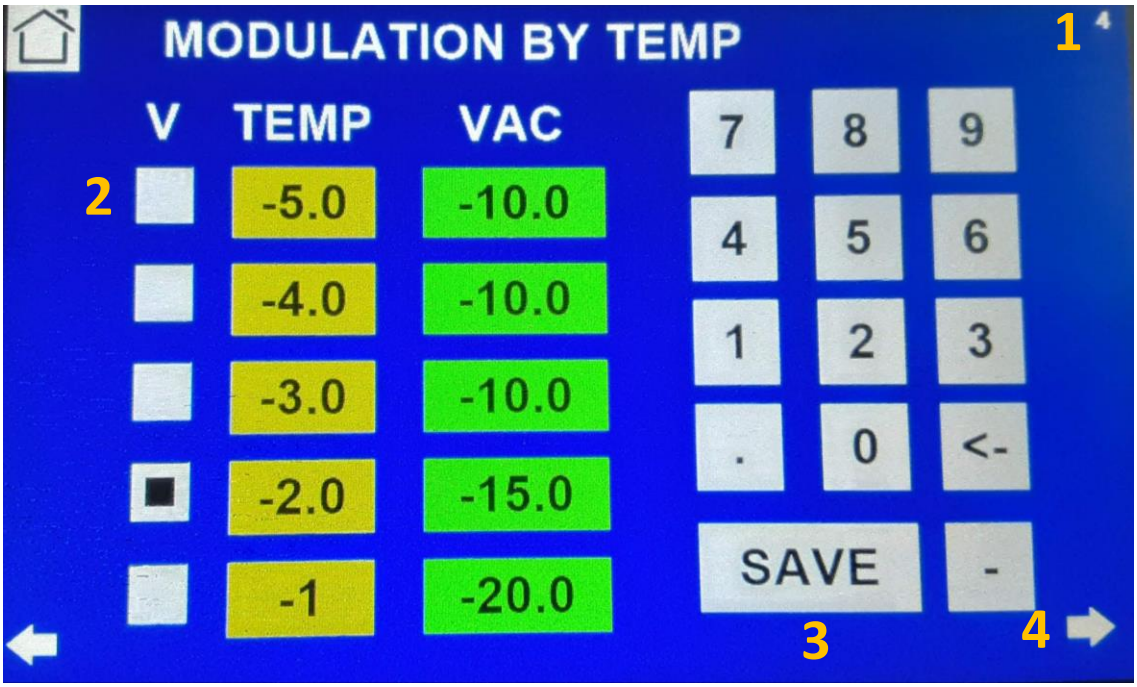
3.3.5 Deactivating the water pump automatically if the Drain Valve is open

1. Go to page 7 of the DATACER™ station interface.
2. Check Pump OFF if open.
3. Click on Save.



3.3.6 Activate/deactivate the automatic opening temperatures of the air intake valve

1. Go to page 4 of the DATACER™ station interface.
2. Check the box(es) where the valve should open according to the temperature indicated on the right, on the same line.
3. Click on Save to save.
4. Click on the right arrow to move to the next page and return to step 2 above.



If the station is equipped to modulate the vacuum level according to the temperature, you can then check the temperature boxes that correspond to a critical vacuum level for your pump, i.e. from the vacuum level where it risks to deteriorate.

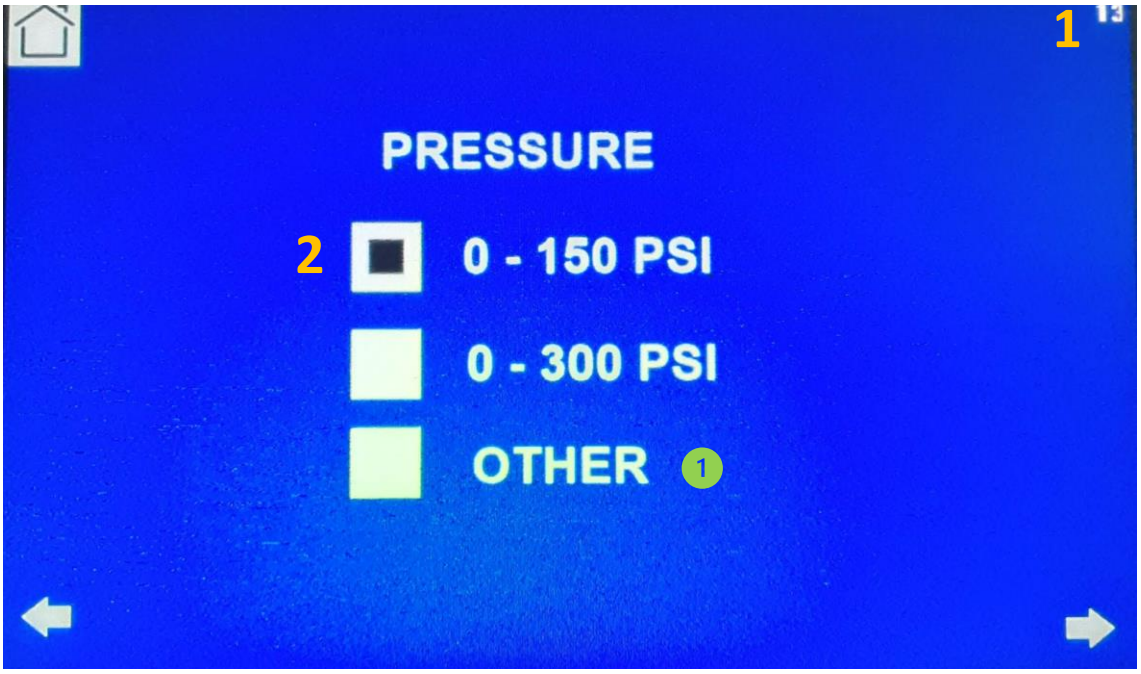
If the station is not used for automatic vacuum level modulation then the valve will still open according to the temperatures you have checked.

Each checked box corresponds to a temperature range.

According to the example shown in the screenshot above, the valve opens if the outdoor temperature is between -2.99 and -1.01°C.

3.3.7 Selecting the type of pressure sensor

1. Go to page 13 of the station.
2. Check the type of sensor connected to the station.



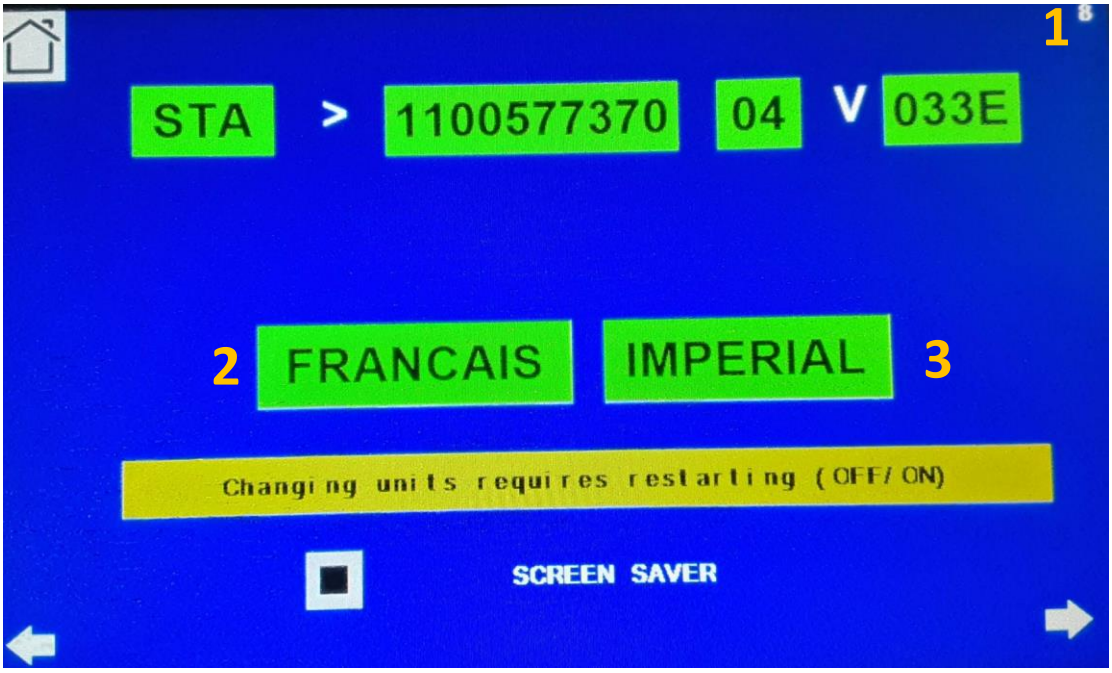
1 The 0-150 and 0-300 PSI pressure sensors are used to measure a water pump pressure or a pressure at the outlet of the prefilters of a concentrator.

Select OTHER SENSOR for Pressure Sensors that measure a Tank level (0-100 in., 0-34ft and 0-10ft submersible).

3.3.8 Change the language and units

1. Go to page 8 of the station interface.
2. Click on the language button to change from French to English or vice versa.
3. Click on the unit button to change from metric to imperial or vice versa.

A unit change requires a restart of the DATACER™ station.



3.3.9 Enable/disable automatic screen saving

1. Go to page 8 of the station interface.
2. Check or uncheck the Screen saver box. The screen will go to sleep after 15 minutes of inactivity.

4. System use

Main steps to follow for switching on and off the various equipment and devices, presentation of the interfaces, methods of accessing the DATACER™ interface, how to establish communication between the DATACER™ base and the other radio transmitters, and the meaning of the Transmitters' LEDs. You will also find all the elements necessary for performing desired functions such as data visualization, as well as control and automation of the equipment.

Below is a list of the topics that are covered in this section.

4.1 Startup 161
4.1.1 Starting up the DATACER™ base 161
4.1.2 DATACER™ interface presentation 163
4.1.3 Starting up the DATACER™ station 166
4.1.4 DATACER™ station interface presentation 167
4.1.5 Switching on other radio transmitters 168
4.1.6 Establish communication between the DATACER™ base and all radio transmitters 169
4.2 Interpreting the colored LED indicators 170
4.2.1 Old version of LED indicator for Vacuum Transmitters, L, LL, LLL, P, PP, PPP, Combined Transmitters and DATACER™ station 171
4.2.2 New version of LED indicator light for Vacuum Transmitters 172
4.3 End of season shutdown 175
4.3.1 Shutting down the DATACER™ base 175
4.3.2 Shutting down the DATACER™ station 179
4.3.3 Stopping other radio transmitters 179
4.4 Accessing the DATACER™ interface 180
4.4.1 Locally directly on the computer of DATACER™ base 180
4.4.2 Locally from another computer without internet 180
4.4.3 Locally from a mobile device without internet 182
4.4.4 Remotely from another computer 186
4.4.5 Remotely from a mobile device 190
4.5 Viewing measurements 191
4.5.1 Factors that influence the vacuum level value measured by the Sensor 191
4.5.2 End of line vacuum level 192
4.5.3 Vacuum level at the Extractor 195
4.5.4 Tank Level 197

4.5.5 Pressure of a water pump or after the prefilters of a concentrator 199
4.5.6 External temperature at the line ends 200
4.5.7 Interior and exterior temperature of a pump station 201
4.6 Controlling the equipment locally 202
4.6.1 Starting/stopping a vacuum pump 202
4.6.2 Starting a water pump 204
4.6.3 Forcing the speed of a vacuum pump with a drive 205
4.6.4 Forcing the Modulation Valve Open 206
4.7 Controlling equipment remotely 207
4.7.1 Starting/stopping a vacuum pump 209
4.7.2 Forcing the speed of a vacuum pump with a drive 210
4.7.3 Forcing the Modulation Valve Open 211
4.7.4 Starting/stopping a water pump 211
4.7.5 Open/Close Drain Valve 213
4.8 Automate the control of your equipment 213
4.8.1 Temperature-dependent start/stop of a vacuum pump 214
4.8.2 Stop/restart the vacuum pump via the Float in the Humidity Trap (safety for the vacuum pump) 215
4.8.3 Modulation of the vacuum level at the Extractor according to the temperature .. 216
4.8.4 Modulation of the vacuum level at the Extractor according to a set vacuum value 218
4.8.5 Close the modulation valve if the water level in the Extractor exceeds a certain level (safety for the vacuum pump) 222
4.8.6 Start/stop a water pump according to a pond level by Electrodes 222
4.8.7 Open/close a Drain Valve depending on the outside temperature and/or the pressure of a pipe 223
4.8.8 Stop the water pump if the drain valve is open 224
4.8.9 Opening/closing the air intake valve depending on the outside temperature (safety for the vacuum pump) 224
4.9 Maps 225
4.10 Alarms and notifications 227
4.10.1 Viewing active alarms on the DATACER™ interface 227
4.10.2 Viewing notifications received by SMS or email 230
4.11 Graphs 231

4.11.1 Vacuum level and temperature 24 / 7 231
4.11.2 Tank level 24 / 7 232
4.11.3 Historical graph of vacuum level and temperature per day for a season 233
4.12 Updating the DATACER™ database software 236

4.1 Startup

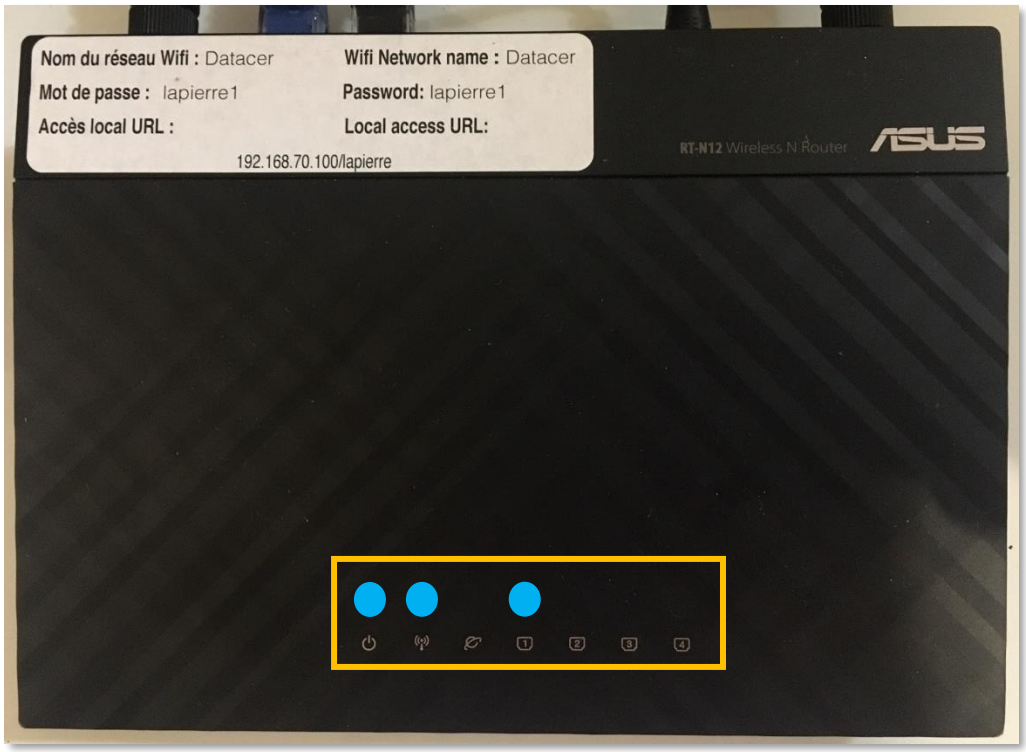
4.1.1 Starting up the DATACER™ base

Prerequisites:

- Ensure that the base is properly installed, and that all equipment is connected (see section 2.2 page 51).
- Check that your Internet service for which you pay a subscription (Router, hotspot cell) is turned on.
- Change the 3 D batteries in the base before the season starts (see Figure 2 page 18).

1. Turn on the UPS Battery by pressing the power button. The green light turns on.

2. Turn on the DATACER™ Router by pressing the power button. The LEDs will light up blue.



3. Turn on the DATACER™ base station radio transmitter by turning the switch to the ON position.

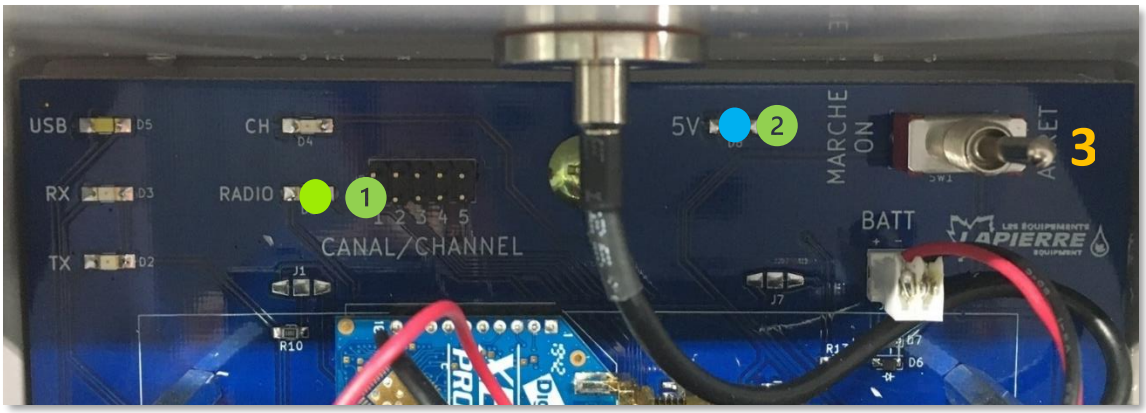


Figure 105 : DATACER™ base radio LED indicator lights

1 Green radio LED indicator light:

If the green LED on the radio goes out twice in less than two seconds, the base station is communicating with at least one other radio transmitter on the network.

The LED indicator light goes out twice every 14 seconds in operation mode and every 7 seconds in installation mode.

If the green LED on the radio stays on constantly, then the base is unable to communicate with any of the Radio Transmitters in the network.

2 Blue LED lights up when the Base Transmitter is powered on.

4. Turn on the base computer, called NUC, by pressing the on/off button. The light will change from orange to blue.

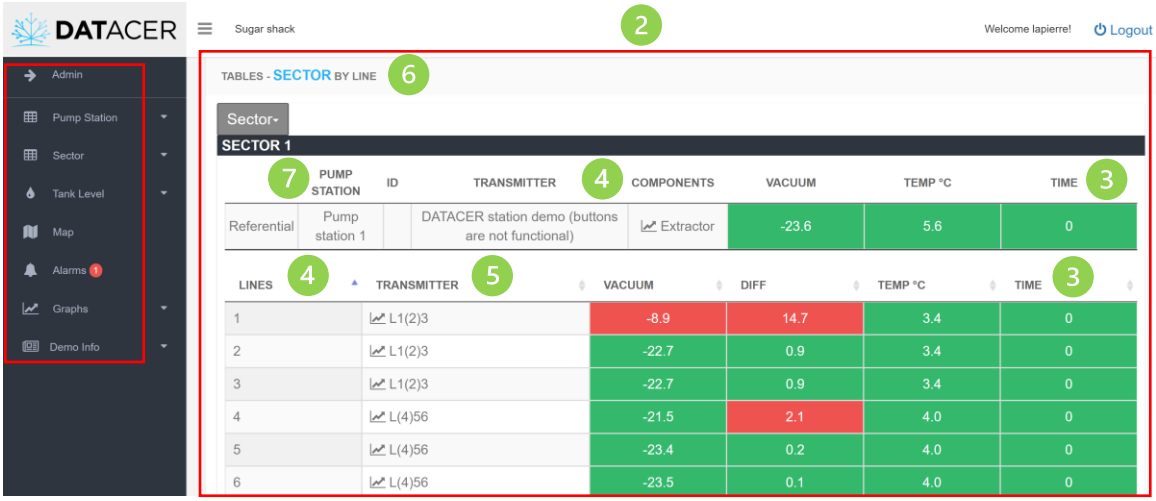
5. The screen lights up and you are taken to the default view of your local DATACER™ interface (see section **Erreur ! Source du renvoi introuvable.** page **Erreur ! Signet non défini.**).

4.1.2 DATACER™ interface presentation

The DATACER™ interface allows you to view the data of your sugar bush in the DATACER™ base.

It also allows you to use the remote control functions of your pumping station equipment. You can also analyze your historical data via graphs and view your alarms.

To learn about the different ways to access the DATACER™ interface, see section 4.4 page 180.



1 On the left is the main menu to access the different functions of the system.

Admin
The Admin tab is mainly used to set up your system according to your equipment (see section section 3.2.1 page 103).

Pumping station
The Pumping Station tab allows you to view the data measured by your DATACER™ stations and other Transmitters located in your pumping stations.

This tab also provides access to the control and automation functions of your pumping station equipment.

Sector
The Sector tab allows you to visualize your vacuum levels at the end of the lines and at your Extractors.

Tank Level
The Tank Level tab allows you to view your Tank levels in your pumping stations.

Web links
The Web Links tab allows you to access websites other than DATACER™.

Maps
The Maps tab allows you to view your data on maps by sector (see section 4.9 page 225).

Alarms
The Alarms tab allows you to view the list of active alarms according to what you have set up (see section 4.10 page 227).

Graphs
The Graphs tab allows you to view your historical vacuum levels according to temperatures for each day of the season (see section 4.11 page 231).

2 On the right you will find the information and functions corresponding to the selected main menu tab.

3 For all the data measured by the radio transmitters of your system, whatever the tab, you will find an indication of the refresh time in minutes (TIME). This time is the time it took for the system to retrieve the most recent data.

★ For all the measured indicators (vacuum, pressure, basin level, temperature) the colors of the boxes in the interface change according to the thresholds you have defined in Admin. To change the color thresholds see section 3.2.6 page 107.

4 COMPONENT: Name of the component, for example line or extractor.

5 TRANSMITTER: Name of the transmitter.

6 SECTOR: Name of the sector.

7 PUMPING STATION: Name of the pumping station.

★ See nomenclature in section 3.1 page 102 for more information on the data structure.

4.1.3 Starting up the DATACER™ station

Prerequisite: Ensure that the station is properly installed and that all equipment are connected (see section 2.8 page 75).

1. Turn the station ON using the switch.

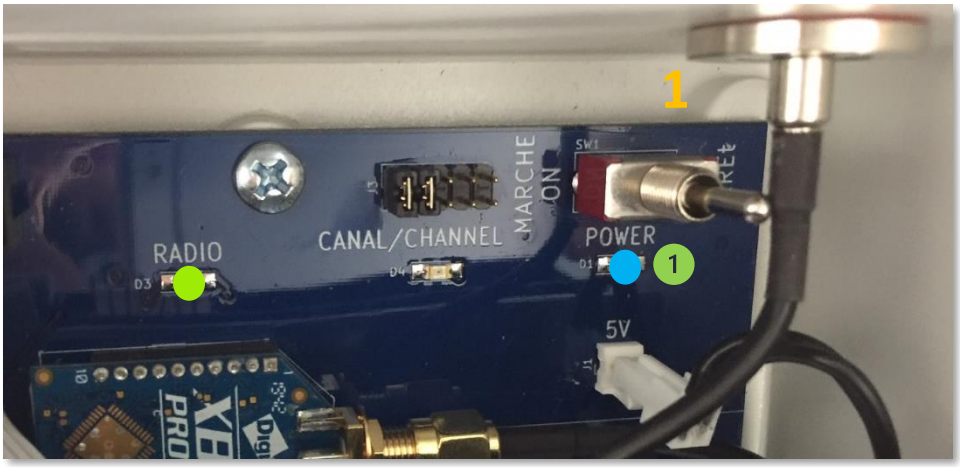
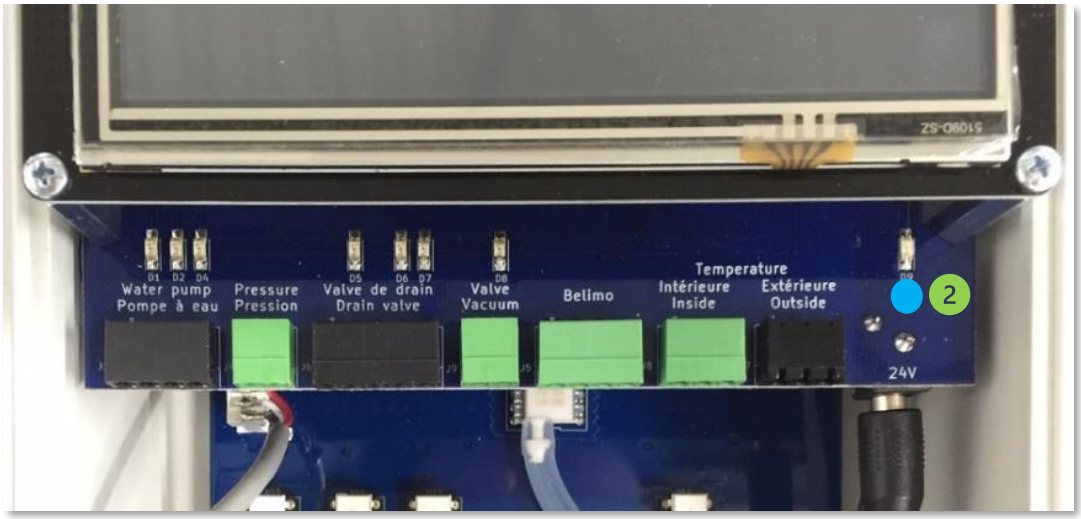


Figure 106 : DATACER™ station radio LED indicator lights

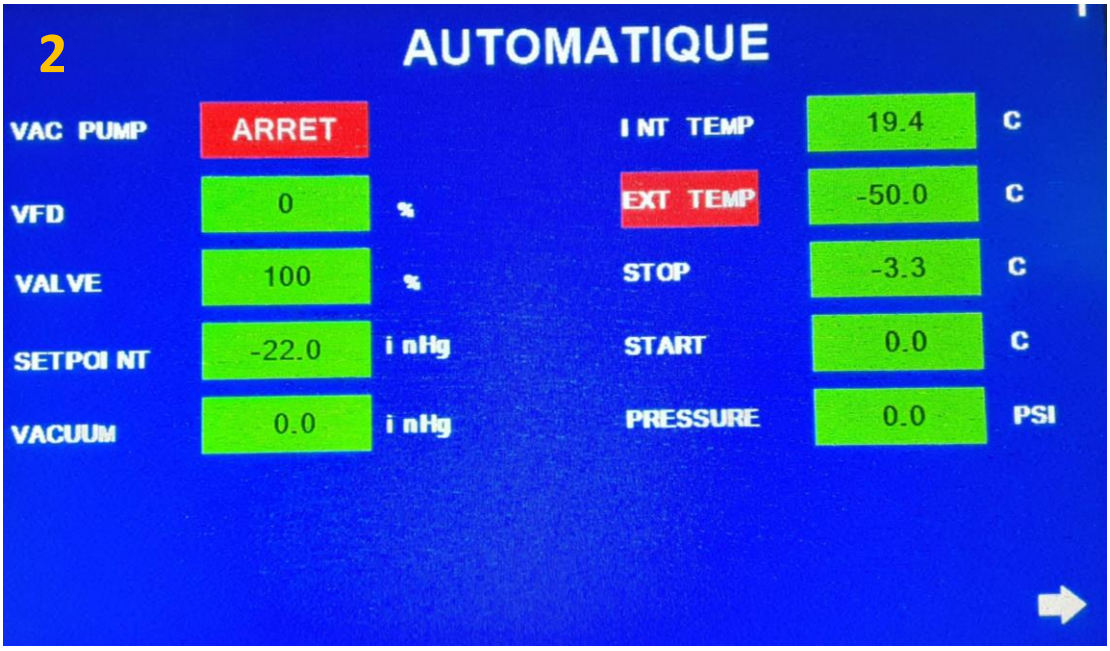
To understand the meaning of the radio and channel LED indicators please refer to section 4.2 page 170.

1 The LED on the main board lights up blue when the station is powered on.



2 The LED on the board below the display lights up blue when the station is powered on.

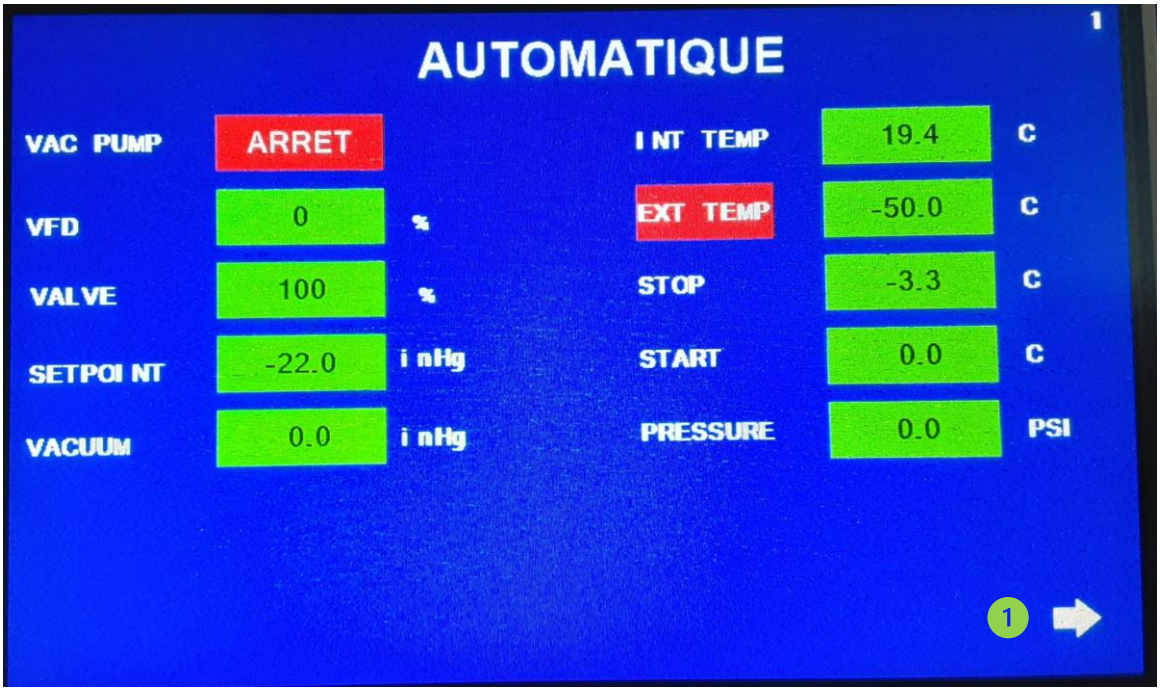
2. The station's screen lights up and you are taken to the first page of the station's interface.



4.1.4 DATACER™ station interface presentation

The interface of the DATACER™ station is touch-sensitive and allows you to visualize the data of some parameters measured in your pumping station by your DATACER™ station.

The measured values are on the first page of the interface. The automatic functions of the equipment connected to the station are all configurable on the DATACER™ station interface (see section 3.3 page 149).



1 The arrow allows access to other pages.

4.1.5 Switching on other radio transmitters

Prerequisites: Make sure the transmitter is properly installed and all equipment is connected (See sections 2.4, 2.5, 2.6 pages 57, 63 and 68).

1. Turn the transmitter ON using the power switch.
2. Ensure that the batteries are 95% or more charged.

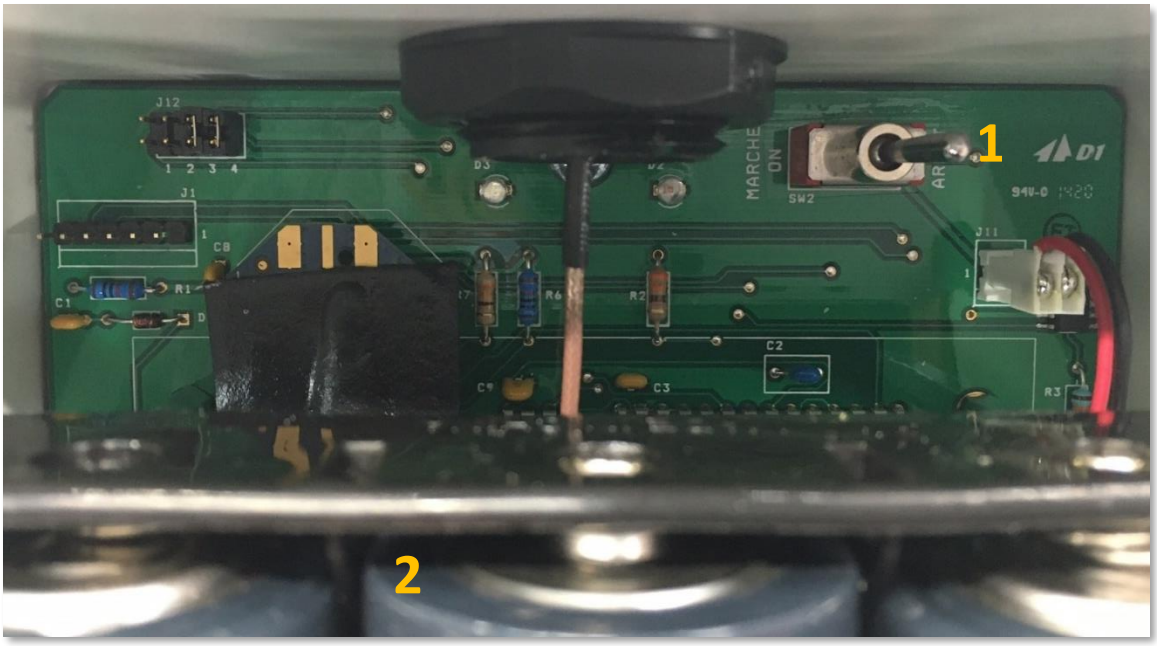
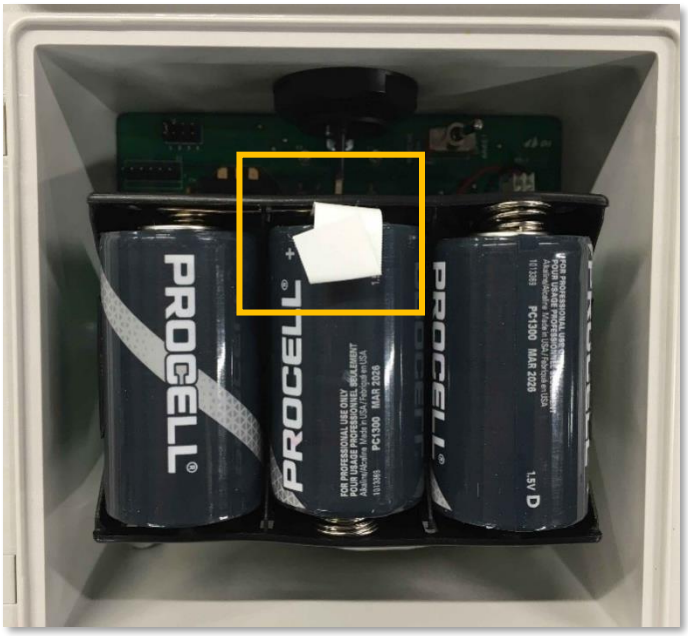


Figure 107 : Transmitter radio LED indicator lights

To understand the meaning of the radio and channel LED indicators please refer to section 4.2 page 170.



When first used, remove the white tab so that the batteries can make contact.

4.1.6 Establish communication between the DATACER™ base and all radio transmitters

Prerequisites:

- Make sure the DATACER™ base is turned on, the batteries are changed, and all equipment is plugged in (see section 2.2 page 51).
- Make sure that the batteries in the Transmitters are at over 90% capacity according to the view by sector/by Transmitter (see section 4.5.2 page 192) or that the power cords of the Transmitters or DATACER™ stations are connected.
- Make sure the Transmitters are on the same channel as the base (see section consulter la section 2.3 page 55) and that the 10-digit address has been entered during setup (see Figure 104 page 114).

1) Put the system in installation synchronization mode (see section 3.2.6 page 107).
2) Turn on the Transmitters that are connected to the power supply first, such as Repeaters, Tank Levels, DATACER™ stations and others. To turn on the Transmitters see sections 4.1.3, 4.1.5 pages 166 and 168.
3) Turn on all the battery-powered Transmitters and Repeaters by placing them in close proximity to the DATACER™ base. For example, you could put all the battery-powered Transmitters and Repeaters in the same room as the base. After 5 minutes, all the Transmitters should have communicated with the base and their refresh time should remain between 0 and 2 minute on the DATACER™ interface.

To understand the meaning of the radio and channel LED indicators please refer to section 4.2 page 170.

4) Proceed with the installation of the transmitters and repeaters on their respective wooden stakes in your sugar bush. We recommend that you install them starting from the closest to the furthest from the base. This will allow you to rebuild your Mesh Network (see section 2.1.4 page 48) in a progressive manner.

It is important to reposition the Transmitters in the same locations as the previous year so that the radio communication is the same and to measure the vacuum levels that correspond to your settings.

5) When all the above steps have been completed, leave the system running for one day. The next day check that the refresh times of all the transmitters are between 0 and 1 minute or in the same range as what you observed the previous year.

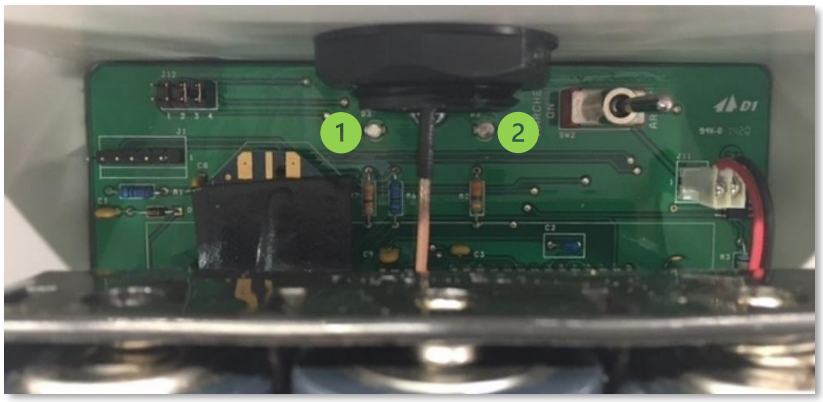
If you have added Transmitters compared to the previous year, it is possible that the times are different for the current year due to a modification of your Mesh Network (see section 2.1.4 page 48).

4.2 Interpreting the colored LED indicators

The LED indicators on the Transmitters inform the user of various Transmitter-related parameters such as synchronization status, signal strength, channel number, successful data communication and successful address initialization.

The interpretation of the LED indicators is different for each version, please refer to the correct section below.

- If the radio's LED light is flashing green only, please refer to section 4.2.1 page 171.
- If the radio's LED light can also flash yellow, red or blue, then please refer to section 4.2.2 page 172.



1 Radio LED indicator (left on the board)

2 Channel LED indicator (right on the board)

The right interpretation of the colored LED indicators helps optimize the position of the Transmitters on the field, improve the responsiveness of the system and reduce battery consumption.

4.2.1 Old version of LED indicator for Vacuum Transmitters, L, LL, LLL, P, PP, PPP, Combined Transmitters and DATACER™ station

Radio LED indicator light:

The duration of the flashes indicates whether or not the Transmitter is synchronized with the rest of the Mesh Network.

Green flashing	Transmitter synchronized with the Mesh Network?
Short 5 rapid, i.e. 5 flashes in less than 3 seconds.	Yes
Long Series of long flashes then turns off, i.e. on for 3 seconds every 5 seconds.	No

The frequency of a synchronized Transmitter's flash series depends on the synchronization mode. Every 7 seconds in installation mode and every 15 seconds in operation mode.

To verify that data communication from the Transmitter has taken place, please ensure that the data refresh time is 0-1 min on the DATACER™ interface.

Channel LED indicator light:

- On power-up, the number of **red** flashes equals the channel number of the Transmitter.
- A long **red** flash, followed by two short flashes, indicates that the address initialization has taken place.

Decision rules:

Observations Radio LED	**Explanation**	**Actions**
Green flashing **long**	Transmitter not synchronized	1) Turn on all Transmitters in the immediate vicinity of the base before deploying them. 2) Verify that the base channel is the same as the Transmitter channel. 3) Make sure the Transmitter is in close proximity to an already synchronized Transmitter. Turn the Transmitter off and on at the beginning of the flashing cycle of the already synchronized Transmitter. 4) Turn off/on the Base Transmitter.
Green flashing **short**, but the time on the interface does not indicate 0-1 min.	High traffic or low signal strength	1) Move the Transmitter towards the next Transmitter in the communication chain to increase the signal strength. 2) Move or add some Transmitters to create new Paths to the base. 3) Transmitter address initialization.

4.2.2 New version of LED indicator light for Vacuum Transmitters

Radio LED indicator light:

- The duration of the flashes indicates whether or not the Transmitter is synchronized with the rest of the Mesh Network.
- The color of the flashes indicates the signal strength between this Transmitter and the last one it communicated with in the network.

Flashing color	**Long** Series of long flashes then turns off, i.e. on for 3 seconds every 5 seconds. Transmitter is not synchronized.	**Short** 5 rapid, i.e. 5 flashes in less than 3 seconds. Transmitter is synchronized.
Yellow	Waiting for synchronization with the Mesh Network.	Waiting for the calculation of the signal strength.
Red		Poor
Green		Fair to Good
Blue		Excellent

The frequency of a synchronized Transmitter's flash series depends on the synchronization mode. Every 7 seconds in installation mode and every 15 seconds in operation mode.

Channel LED indicator light:

- On power-up, the number of **red** flashes equals the channel number of the Transmitter.
- A long **red** flash, followed by two short flashes, indicates that the address initialization has taken place.
- The LED light stays on **red**, indicating that the Transmitter is communicating its data to the base. In other words, the data refresh time is 0-1 min on the interface.

To ensure proper data communication throughout the season, please verify that the radio's LED light is flashing **blue** or **green** and that the channel's LED light stays on **red** for at least 1 minute in setup mode and 2 minutes in operation mode.

Decision rules:

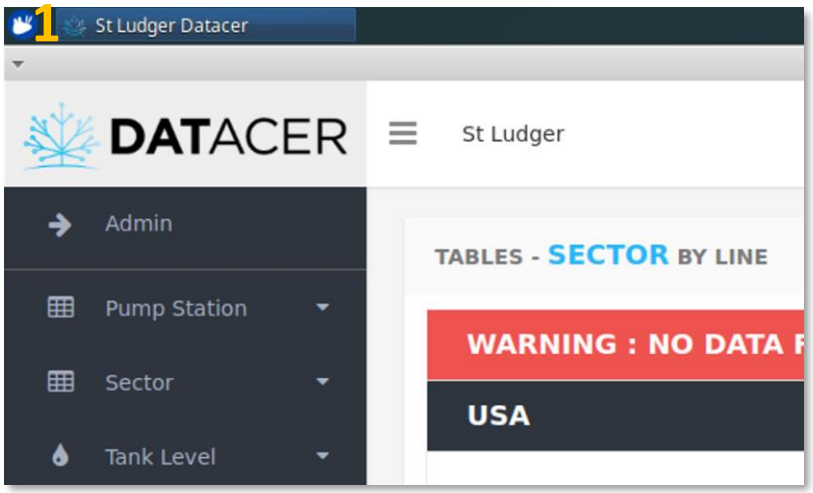
Observations		Explanation	Actions
Radio LED	Channel LED		
Yellow long		Transmitter is not synchronized	1) Turn on all Transmitters in the immediate vicinity of the base before deploying them. 2) Verify that the base's channel is the same as the Transmitter's channel. 3) Make sure the Transmitter is in close proximity to a Transmitter that is already synchronized. Turn the Transmitter off and on at the beginning of the flashing cycle of the already synchronized Transmitter. 4) Turn off/on the Transmitter of the base station.
Yellow short		Transmitter synchronized and waiting for signal strength calculation	1) Wait. The signal strength calculation may take up to 1 minute.
Red	Regardless of the observations	Poor signal strength	1) Move the Transmitter towards the next Transmitter in the communication chain to increase the signal strength.
Green	Remains off	Not initialized with the base Fair to good signal strength	1) Start Address initialization of the Transmitter. 2) Move the Transmitter towards the next Transmitter in the communication chain to increase the signal strength.
	On **red** intermittent	signal strength fair to good High traffic	1) Move or add some Transmitters to create new Paths to the base.
	On **red** constant	Fair to good signal strength Successful data communication	1) Acceptable, the Transmitter could be moved to **blue**, otherwise leave it in its original position. This Transmitter may be more sensitive to ambient noise and data communication may be intermittent.

Observation		Explication	Action
Radio LED	Channel LED		
Blue	Remains off	Signal strength excellent Not initialized with base	1) Start Transmitter address initialization.
	On **red** intermittent	Signal strength excellent High traffic	1) Move or add some Transmitters to create new Paths to the base.
	On **red** constant	Signal strength excellent Successful data communication	1) No action is required. Transmitter is perfectly installed.

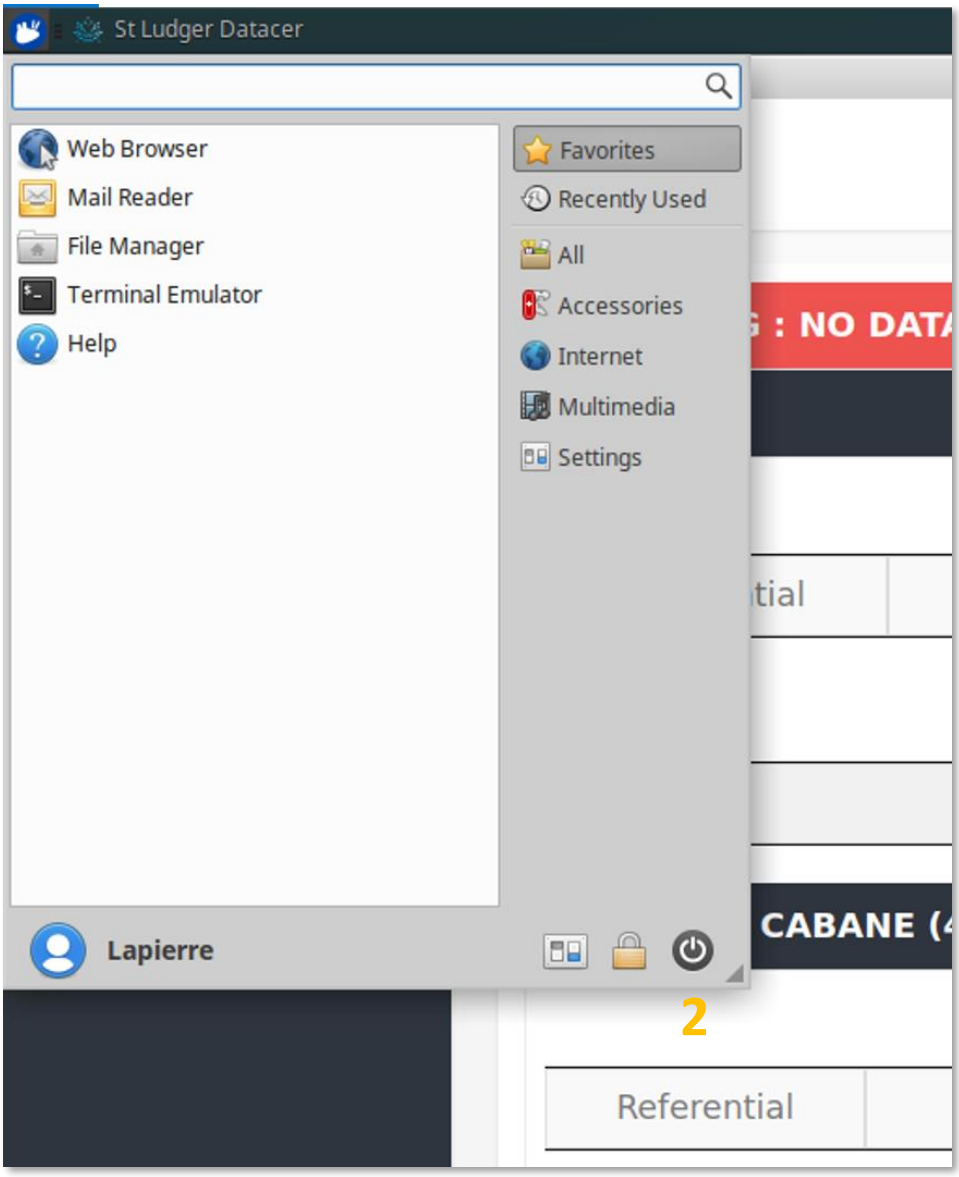
4.3 End of season shutdown

4.3.1 Shutting down the DATACER™ base

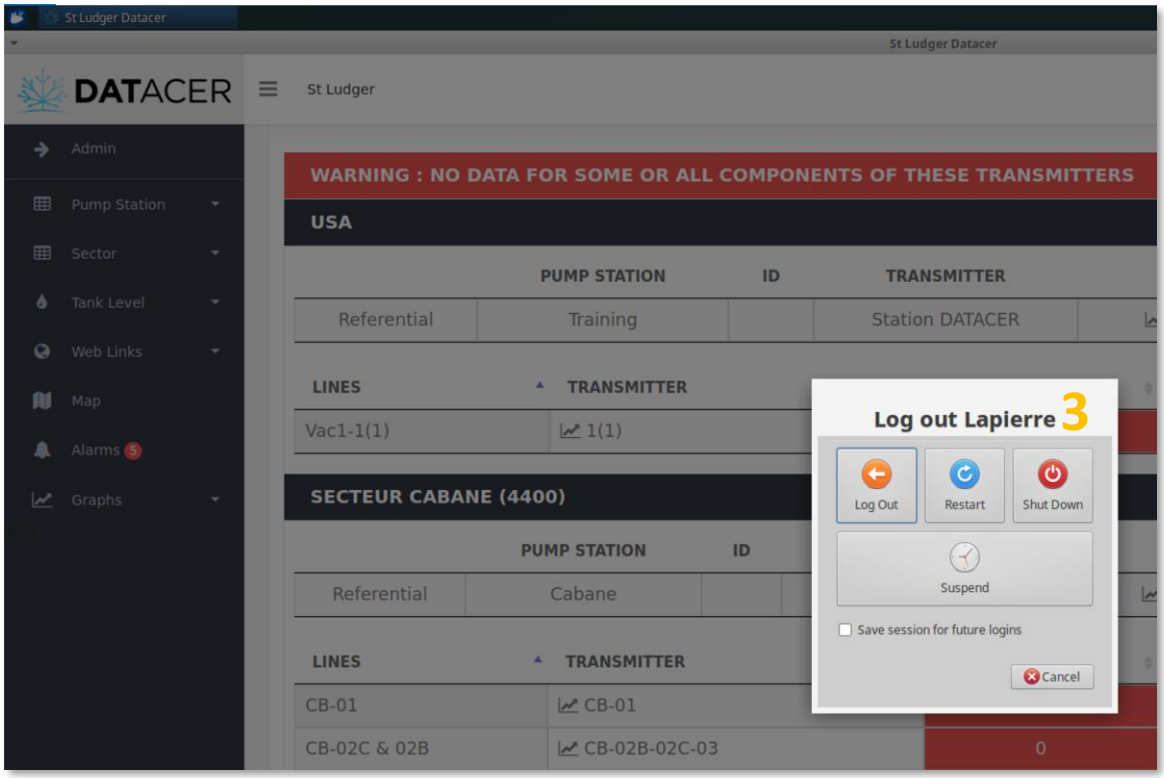
1. Click on the button at the top left of your screen. .



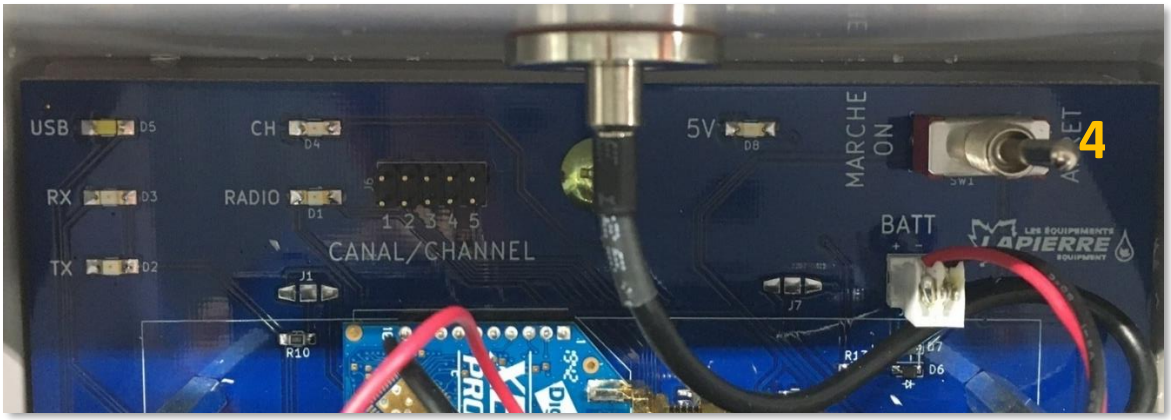
2. Click on the stop button. .



3. Click on the Shut down button.



4. Turn the Transmitter OFF from the base using the switch.



5. Turn off the Router by pressing the power button.

6. Turn off the overload battery by pressing the power button. The green LED should go out.

Leave the overload protection battery power cord connected to 120V to extend its life. You can, however, turn it off by holding down the power button until the green LED light goes out.

7. Disconnect the antenna cable.

We strongly recommend that you unplug the antenna cable connected to the Transmitter to avoid lightning damage to your equipment.

4.3.2 Shutting down the DATACER™ station

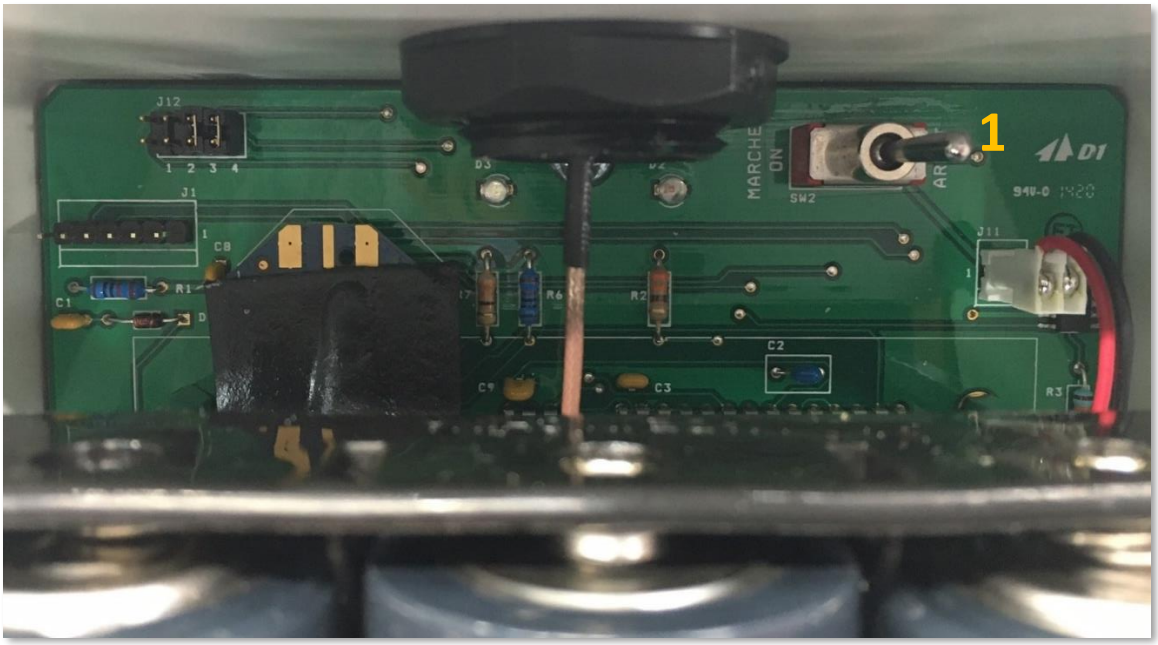
1. Turn OFF the station using the switch.

2. Unplug the electrical cords.
3. Disconnect the antenna cable.

⚠ We strongly recommend that you unplug the antenna cable connected to the Transmitter to avoid lightning damage to your equipment.

4.3.3 Stopping other radio transmitters

1) Turn the Transmitter OFF using the switch.



2) Disconnect the electrical cords or remove the batteries depending on the type of transmitter.
3) Disconnect the antenna cable for Transmitters with antenna cable.

We strongly recommend that you unplug the antenna cable connected to the Transmitter to avoid lightning damage to your equipment.

It is recommended that you take your Vacuum Transmitters out of the weather when the season is over to extend their life. Store in a cool, dry place. Leave transmitter doors ajar.

4.4 Accessing the DATACER™ interface

4.4.1 Locally directly on the computer of DATACER™ base

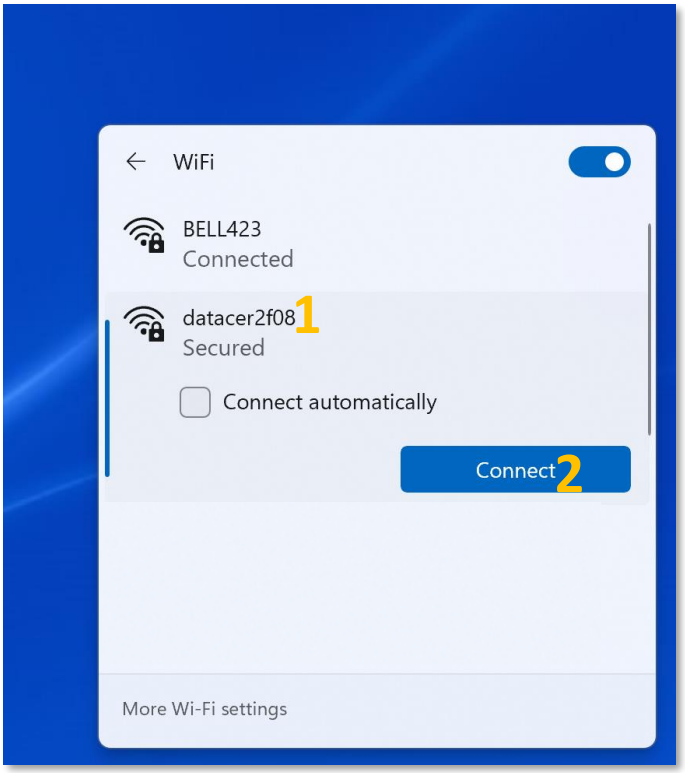
See section 4.1.1 page 161.

4.4.2 Locally from another computer without internet

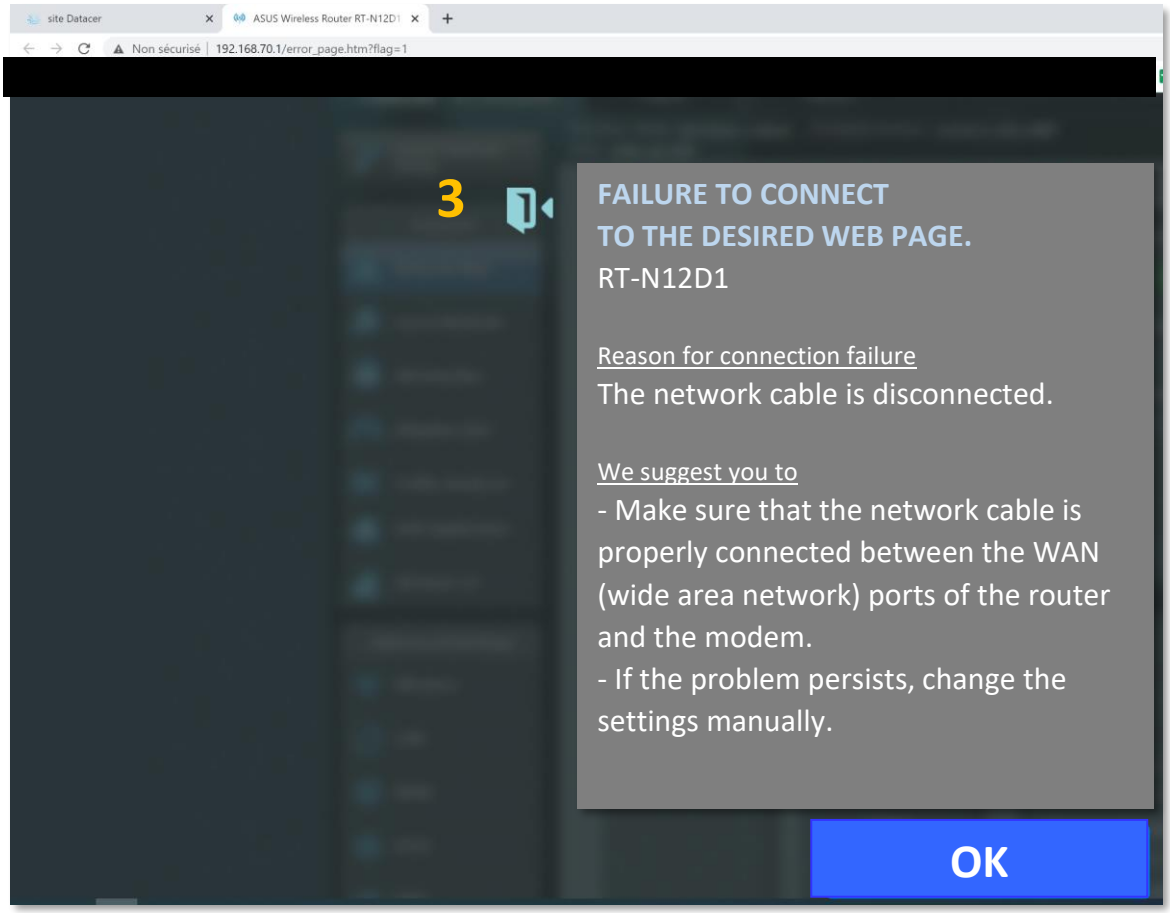
Prerequisites:

- Make sure the DATACER™ base is turned on and that all equipment is plugged in. (See section 2.2 page 51).
- Be within reach of the DATACER™ Router.

1. On your other computer, select the Wi-Fi network of the DATACER™ Router.
   The name of the network will be **datacerXXXX**. (XXXX: 4 digits or letters).
2. Click on Connect.
   Network name or network key name: datacer.
   Password: lapierre1.


WiFi
BELL423
Connected
datacer2f08
Secured
1
Connect automatically
Connect
2
More Wi-Fi settings

3. Ignore the following error message and close the page.



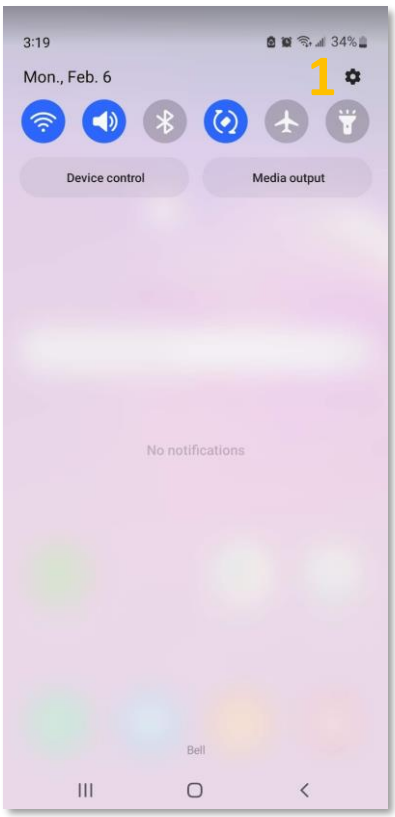
4. Open an Internet browser, Google Chrome is recommended. Enter the local connection address: **192.168.70.100/lapierre** and press Enter/Validate on your keyboard.

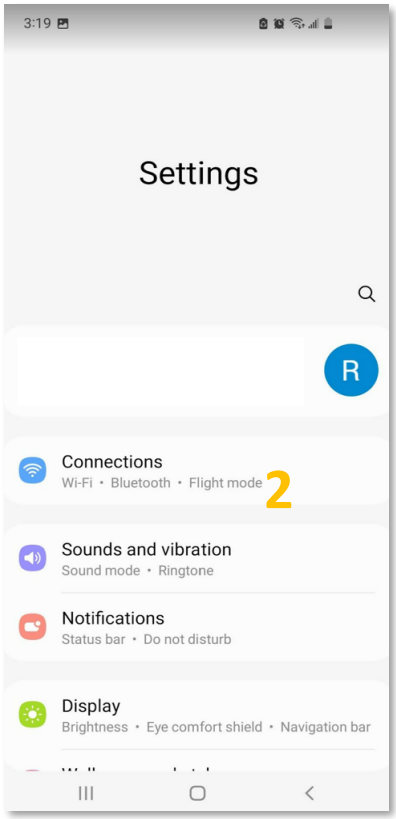
4.4.3 Locally from a mobile device without internet

Prerequisites:

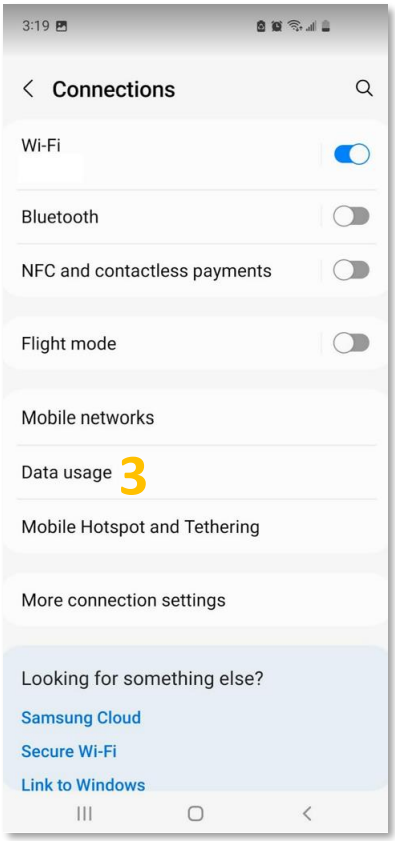
- Make sure the DATACER base is turned on and that all equipment is plugged in (See section 2.2 page 51).
- Be within reach of the DATACER™ Router.

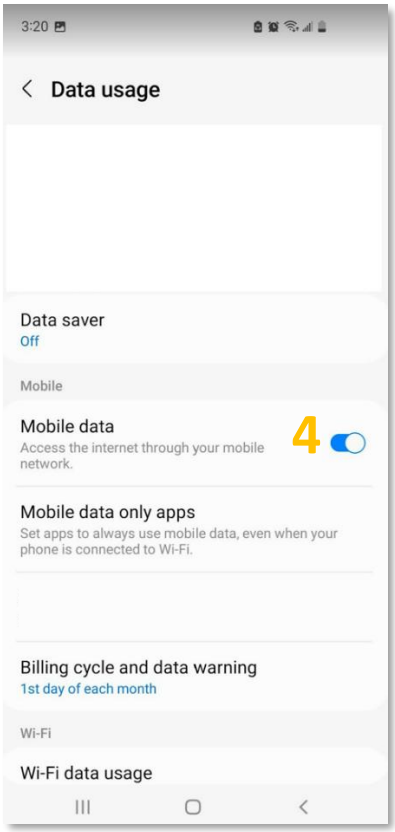
1. On your mobile device, turn off mobile data. For example on your Android cell phone, click on the Settings icon.
2. Click on Connections.





3. Click on Data Usage.
4. Disable Mobile Data, the blue button will change to grey.

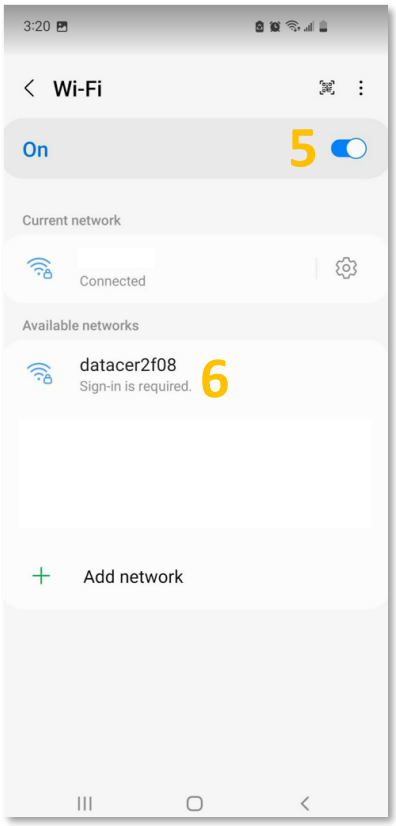




- Select the Wi-Fi network of the DATACER™ Router.

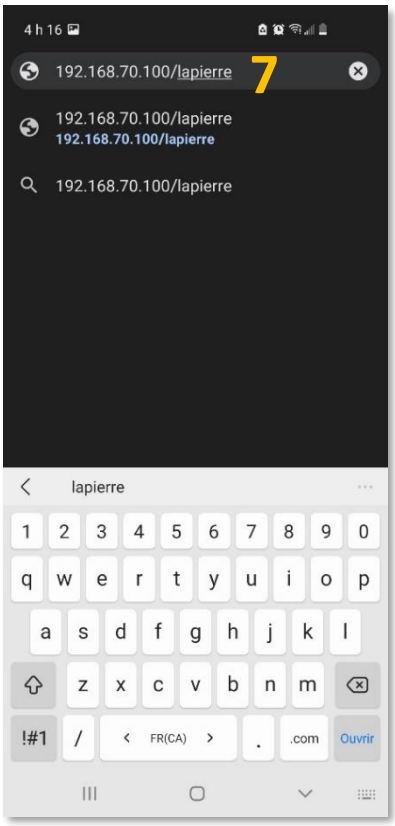
5. Enable Wi-Fi, the grey button will change to blue.
6. Select network **datacerXXXX**.

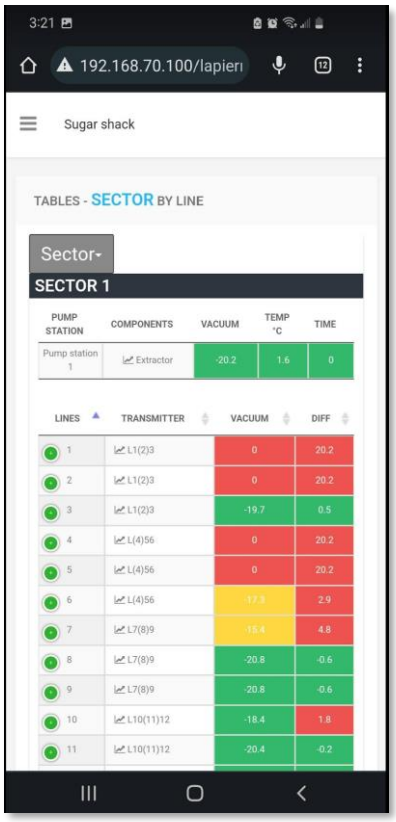
   Network name or network key name: datacer.
   Password: lapierre1.



7. Open a web browser page.
   Enter the local connection address in the address bar: **192.168.70.100/lapierre** and click on Enter/Validate.

⚠ We recommend using Google Chrome for mobile devices.



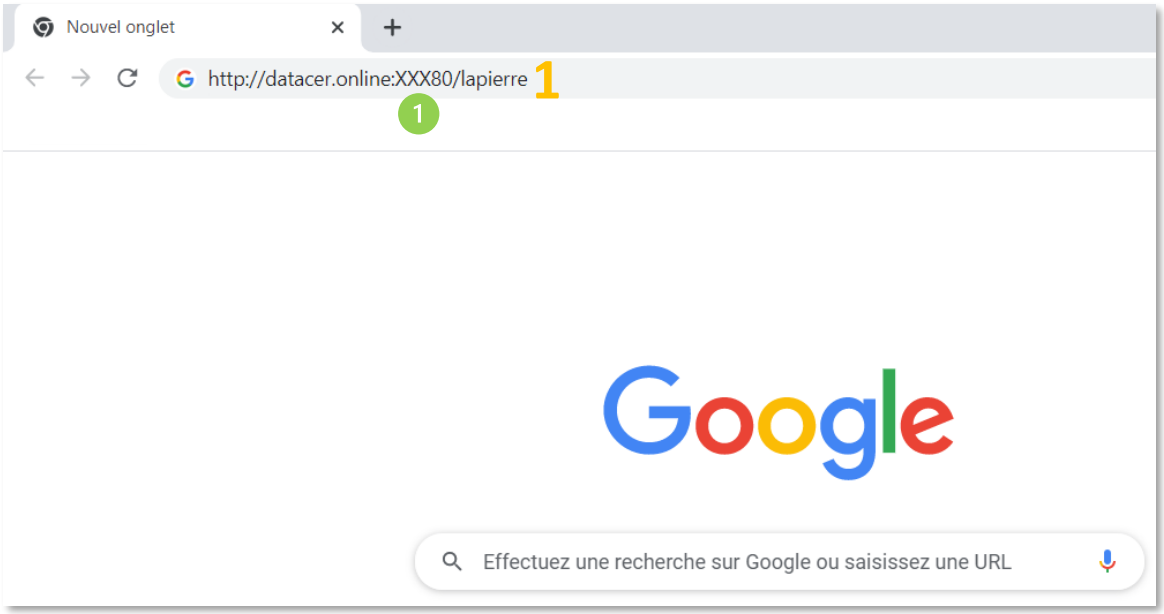


4.4.4 Remotely from another computer

Prerequisites:

- Make sure the DATACER™ base is turned on and that all equipment is plugged in (See section 2.2 page 51).
- The DATACER™ Router must be connected to the Internet.
- Make sure your other computer is also connected to the Internet (Wi-Fi network or Ethernet cable from your personal router).
- For the first connection, connect to the DATACER™ interface directly on the DATACER™ base computer. Create a username and password for a remote connection (see section 3.2.4 page 105).

1. Open an Internet browser page, Google Chrome is recommended. Enter the remote connection address.



The address is written on the label sticked to the DATACER™ base.

The XXX is a three-digit number that represents your system number. You will find it written on the DATACER™ base (see photo below).

Labels before January 2023:

Adress is: **datacer.online:XXX80/lapierre**

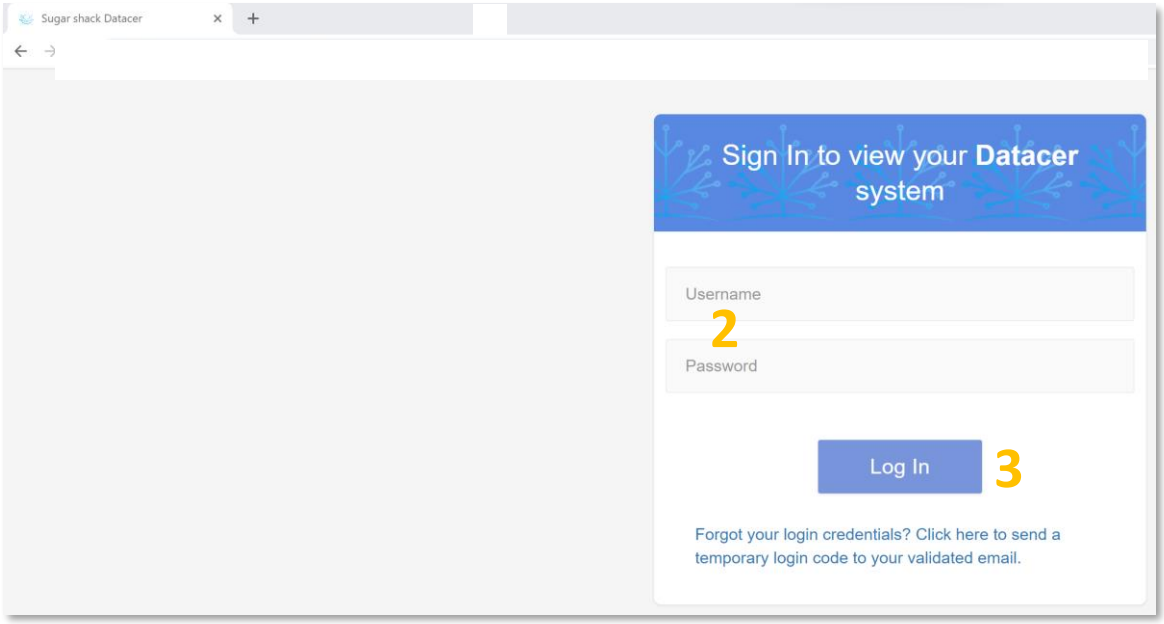
Labels after January 2023:

The XXXX is a four-digit number that represents your system number. You will find it written on the DATACER™ base (see photo below)

Adress is: **daXXXX.base.datacer.online**

Appuyer sur le bouton
pour départ / arrêt ordinateur
Maintenir enfoncé 5 secondes
pour un redémarrage.
Push button
on top to start / stop computer
Hold 5 seconds to reboot
Ordinateur arrêt
Computer off
Ordinateur marche
Computer on
Démarrage
instructions
vidéo
Startup
video
instructions
DATACER
Accès à distance / Remote access
a1048.base.datacer.online
Mot de passe / Password
Nom utilisateur Admin / Admin username
Mot de passe Admin / Admin password
Nom d'utilisateur distant / Remote Username
Mot de passe distant / Remote Password

2. Enter your username and password.



3. Click on Login.

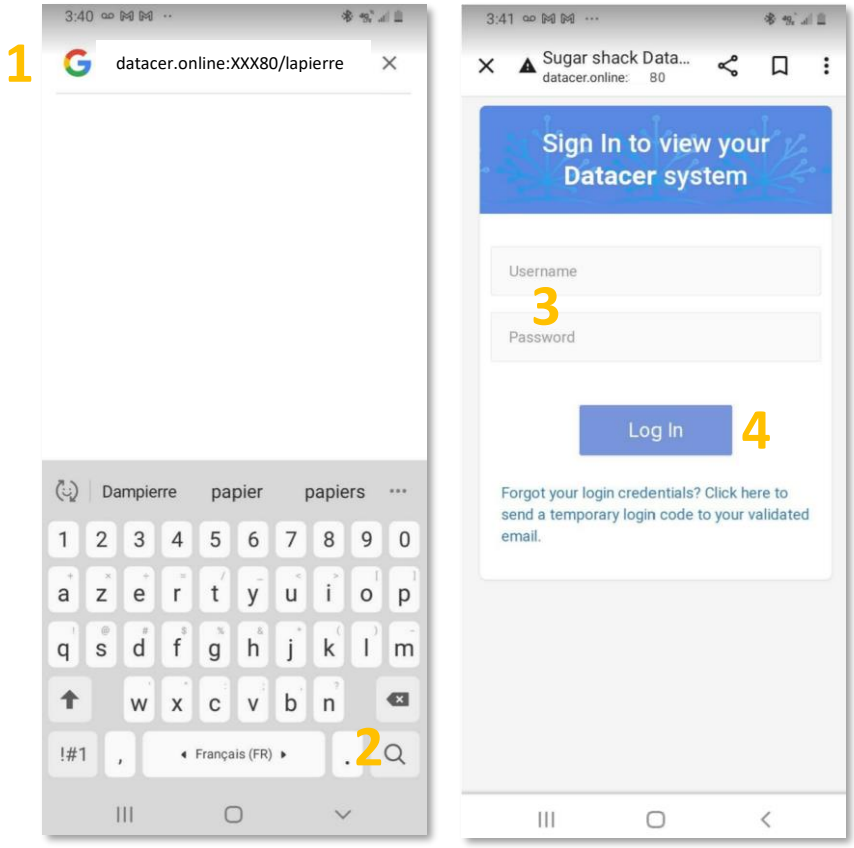
4.4.5 Remotely from a mobile device

Perequisites:

- Make sure the DATACER™ base is turned on and that all equipment is plugged in (See section 2.2 page 51).
- The DATACER™ Router must be connected to the Internet.
- Make sure your mobile device is also connected to the Internet (Wi-Fi network from your personal router or available mobile data).
- For the first connection, connect to the DATACER™ interface directly on the DATACER™ base computer. Create a username and password for a remote connection (see section 3.2.4 page 105).

1. Open an Internet browser page, Google Chrome is recommended. Enter the remote connection address. See section 4.4.4 page 186 to find connection address.

2. Click on Search.
3. Enter your Username and Password.
4. Click on Log In.



4.5 Viewing measurements

Prerequisites: For all the functions described below, make sure that the installation, setup and start-up of the base station and Transmitters have been carried out correctly (see the following sections: installation 2, settings 3 and startup 4.1 pages 43, 100 and 161).

4.5.1 Factors that influence the vacuum level value measured by the Sensor

Understanding the factors that influence the vacuum level values read by the Sensors allows you to better interpret the data from your system.

Diameter of the leak:

The larger the diameter of the leak, the greater the flow of air entering the pipe, the greater the pressure drop caused by the flow of air to the Extractor and the lower the vacuum.

Distance of the leak from the Extractor:

The further away the leak is from the Extractor, the greater the distance traveled by the air, the greater the pressure drop and the lower the vacuum.

Flow rate:

The flow rate can have an effect on the vacuum levels read at the end of the line.

Temperature:

Temperature has a direct physical effect on the vacuum sensor. DATACER™ vacuum sensors are calibrated for use from -10 to +85˚C. Within this temperature range, the actual vacuum level value is equal to the measured value plus or minus 0.3 inHg.

Atmospheric pressure:

As the atmospheric pressure increases, the vacuum increases.

Altitude:

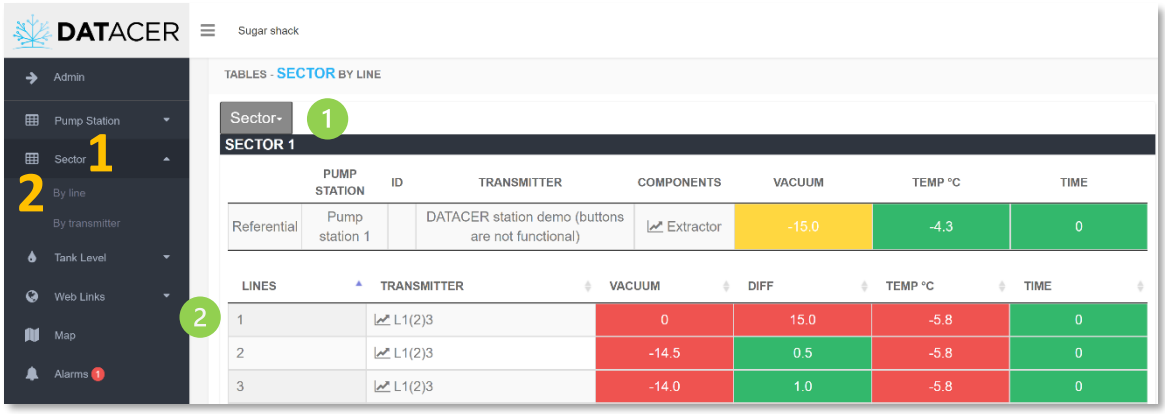
As the altitude increases, the atmospheric pressure decreases and the vacuum level decreases. It is assumed that a positive difference of 100 feet (30.48 m) between the position of the Vacuum Sensor connected to the end of the line and the one connected to the Extractor will cause a decrease in vacuum level of about 0.1 inHg.

Let's assume that the Vacuum Sensor connected to the Extractor is located at sea level (0 feet elevation) and that the Vacuum Transmitter is located at 100 ft (30.48 m) elevation. In addition, we consider that the vacuum readings are not influenced by the other factors listed above. In this case, if the vacuum level at the Extractor is equal to -25 inHg then the reading from the End of Line Vacuum Sensor will be -24.9 inHg.

If you wish to correct the vacuum level reading for a given Vacuum Sensor, please see section 3.2.13.5 page 122.

4.5.2 End of line vacuum level

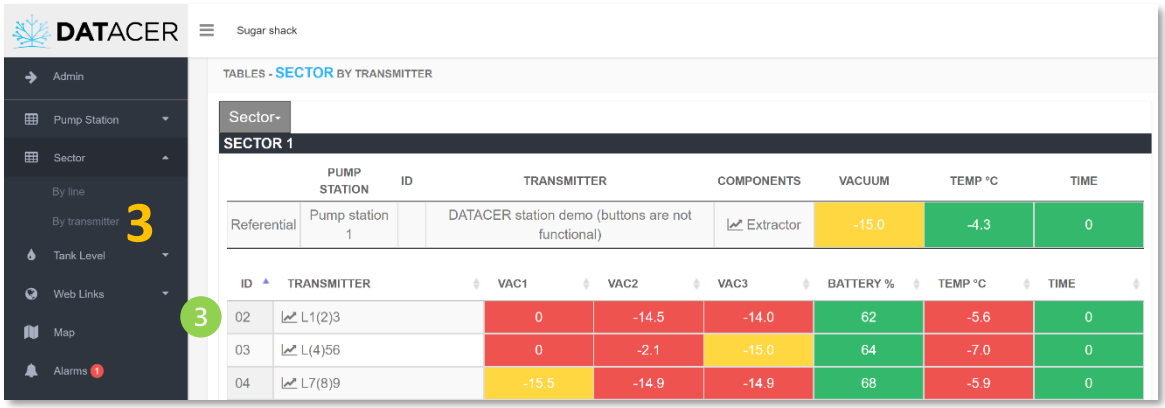
1. On the DATACER™ interface, click on Sector.
2. Click on view By line.
3. Or on view By Transmitter.



Sector view by line - vacuum at the end of line

1 The list of lines or Transmitters is always sorted by sector.

2 For each line, you have the name of the line (LINES) and the name of the Transmitter (TRANSMITTER) to which it is attached. You also have the measurement of the vacuum level (VACUUM), the difference in vacuum level between the Extractor and the end of the line (DIFF), a measurement of the outside temperature of the Transmitter in question (TEMP C) and a refreshment time for receiving the data in minutes (TIME)



Sector seen by Transmitter - vacuum at end of line

3 Transmitter (TRANSMITTER). The interface displays the measurement of the vacuum levels VAC1, VAC2 and VAC3 on a line depending on whether it is a single, double or triple vacuum Transmitter. You will also find the percentage of battery remaining (BATTERY %), a measurement of the outdoor temperature of the Transmitter in question (TEMP˚C) and a refreshment time of data reception in minutes (TIME)

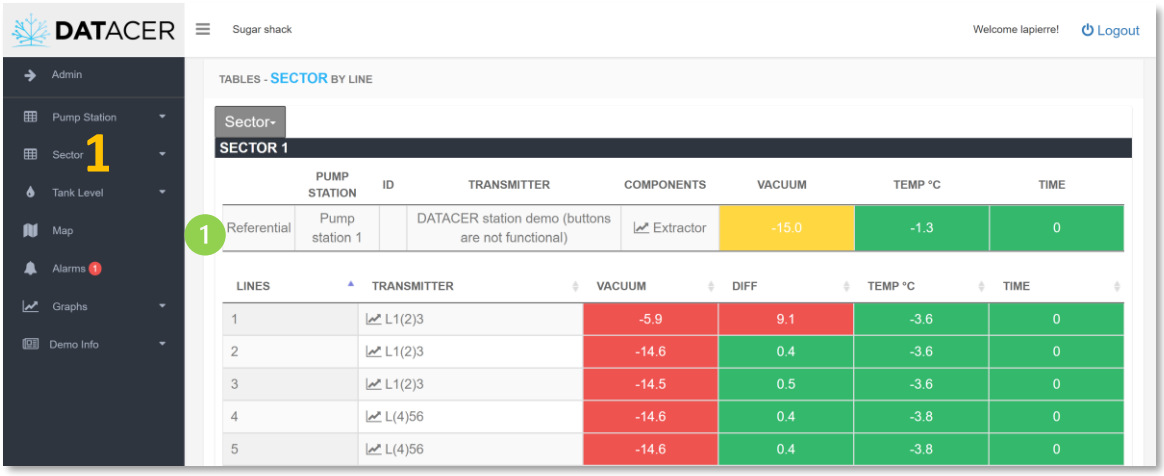
The order of the vacuum level measurements corresponds to the connection position of 5/16 in. (7.94 cm) tubing on the Transmitter vacuum seen from the front and antenna up. Thus, VAC1 is on the left, VAC2 in the center and VAC3 on the right.

Figure 108 : Significance of the vacuum level measurements on the interface (VAC1, VAC 2 and VAC 3) in relation to the position of the vacuum ports on a transmitter

4.5.3 Vacuum level at the Extractor

Method 1: Via the sector tab.

1. On the DATACER™ interface, click on Sector. Regardless of the Per Line or Per Transmitter view.



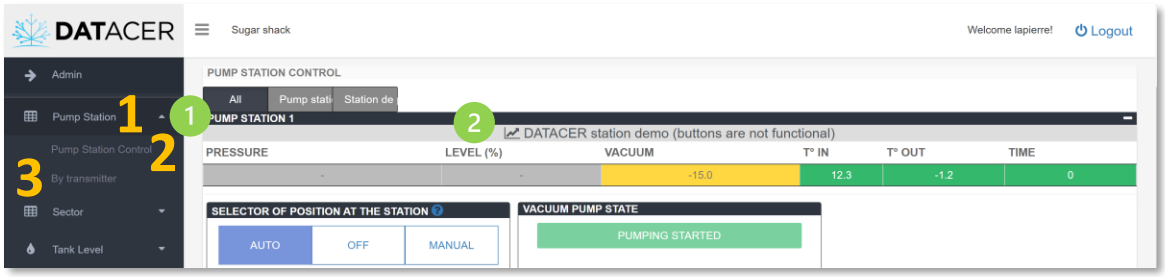
Sector seen by Transmitter - vacuum to Extractor

1 For each sector, you have the vacuum level of the Extractor referring to the sector (VACUUM) and the refreshment time for receiving the data in minutes (TIME). You are reminded of the name of the Component (COMPONENT), in this case the name of the Extractor, the name of the Transmitter to which the Component is attached (TRANSMITTER) and the name of the pumping station (PUMPING STATION) to which the Transmitter in question is linked.

On the interface you will be able to see the vacuum level of your Extractor if you have assigned an Extractor as reference for this sector (see section 3.2.13.4 page 120).

Method 2: Via the pumping station tab if the vacuum level is measured by a DATACER™ station or other transmitters with vacuum option in the pumping station.

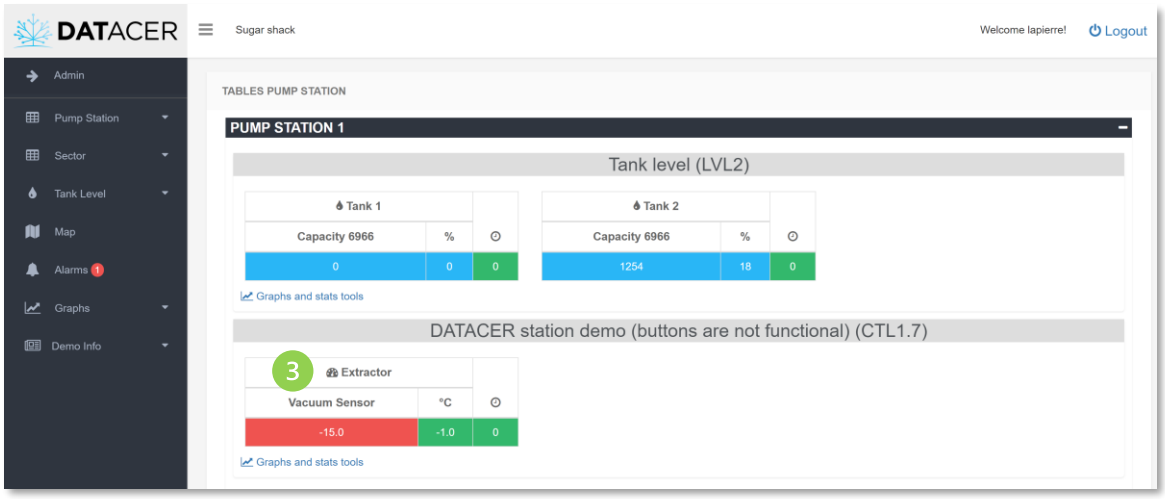
1. On the DATACER™ interface, click on Pump Station.
2. Click on Pump Station Control.
3. Or by Transmitter.



Pump station seen by pump station control - vacuum at the Extractor.

1 DATACER™ stations are sorted by pump station name.

2 For each DATACER™ station you will find a reminder of the name you have assigned to it in TRANSMITTER.



Pump station seen by Transmitter - vacuum at the Extractor

3 This view allows you to view the name of the Extractor. To change the name, see the method described in section 3.2.13.2 page 118.

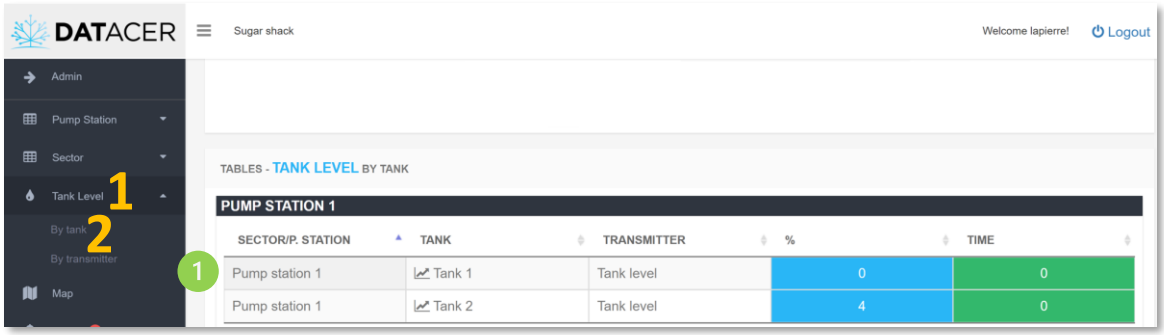
Method 3: Via the DATACER™ station interface if it is the DATACER™ station that measures the vacuum level of the Extractor.

4.5.4 Tank Level

Prerequisites: Make sure you have installed (see section 2.5 page 63) and configured your Transmitters. See section 3.2.13.6 page 123 to configure your sensor and section 3.2.13.7 page 127 for Pressure Sensors.

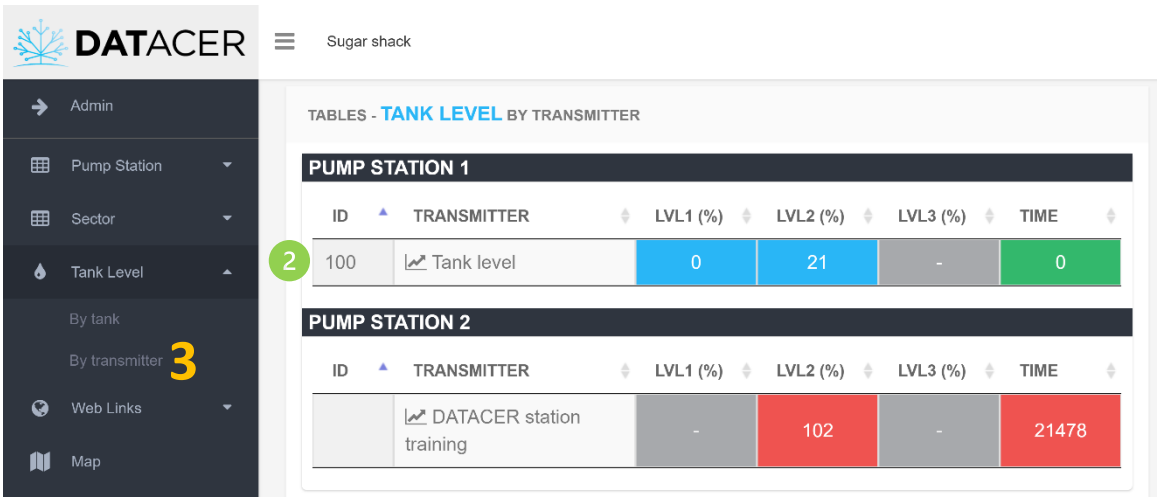
Method 1: Via Tank Levels

1. On the DATACER™ interface, click on Tank Level.
2. Click on View by Tank.
3. Or on by Transmitter.



ank level View by Tank - Tank level

1 For each Tank you have the value of the level in percentage (%), the name of the Tank (TANK LEVEL), the name of the Transmitter to which the Sensor is connected (TRANSMITTER) and the refreshment time for receiving the data (TIME).



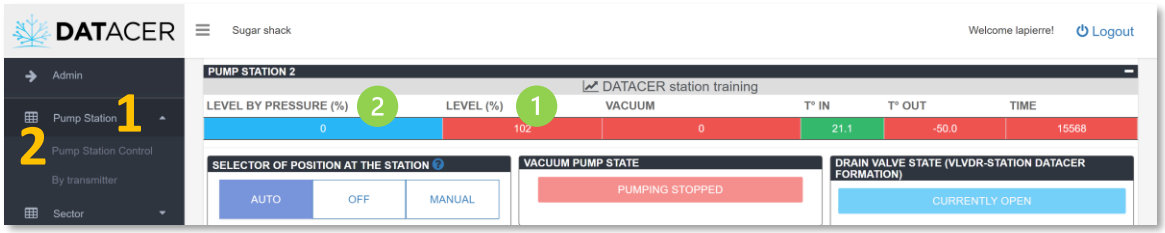
Tank level View by Transmitter - Tank level

2 For each Transmitter capable of measuring a Tank level (by sonar or by pressure). The interface displays the LVL1, LVL2 and LVL3 components depending on whether it is a single, double or triple Tank Level Transmitter.

★ If you are measuring two or three Tank levels on the same Transmitter, the order of the LVL1, LVL2 and LVL3 measurements follows the same logic as for the vacuum Transmitters (see Figure 108 page 194).

Method 2: Via pump station if the Tank level is measured with a DATACER™ station.

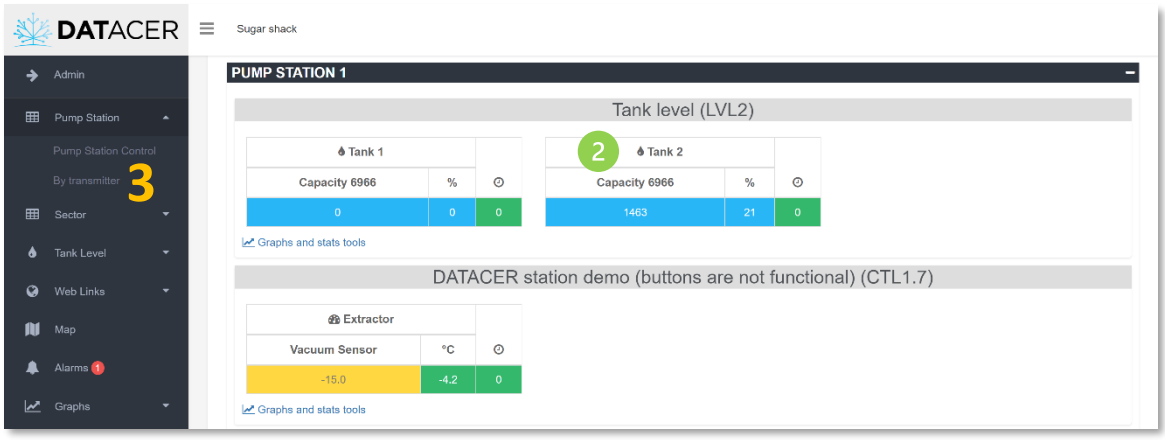
1. On the DATACER™ interface, click on Pump Station.
2. Click on View by Pump Station Control.
3. Or on by Transmitter.



Pump Station View by Pumping Station Control - Tank Level

1 LEVEL: Level by ultrasound sensor.

2 LEVEL BY PRESSURE: Level measured by a pressure sensor.



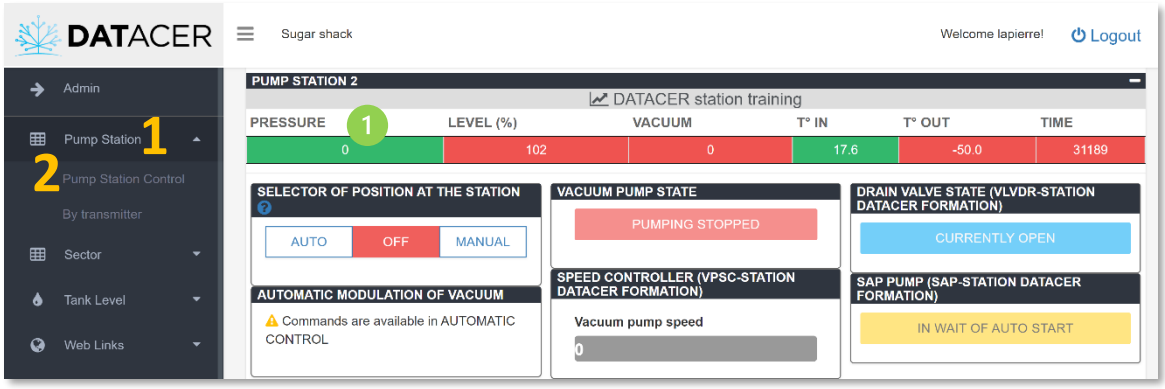
Pump Station Viewed by Transmitter - Tank Level

2 Corresponds to the name of the Tank.

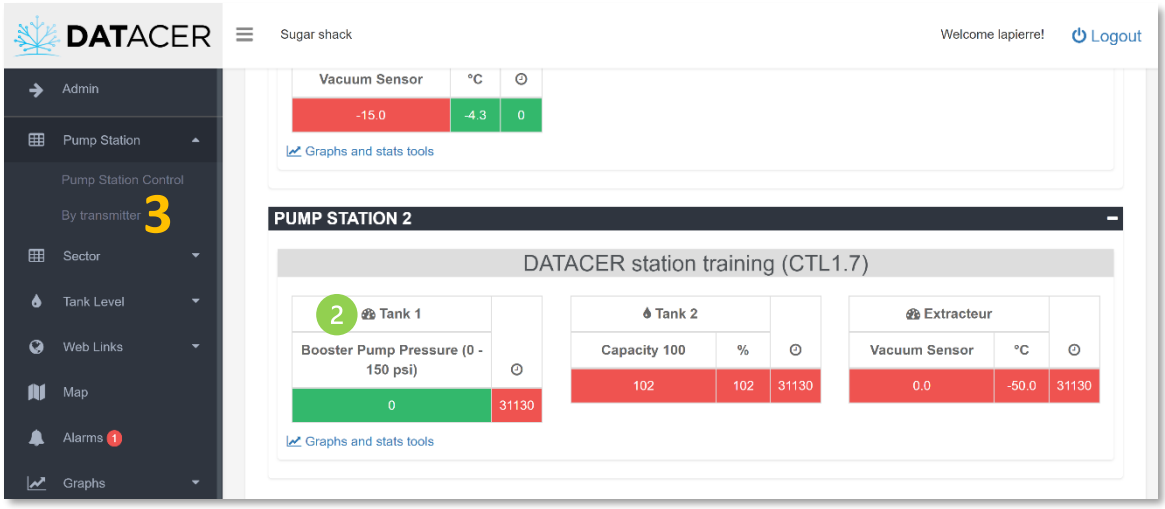
4.5.5 Pressure of a water pump or after the prefilters of a concentrator

Method 1: Via the pumping station tab if the Tank level is measured with a DATACER™ station.

1. On the DATACER™ interface, click on Pump Station.
2. Click on View by Pumping Station Control.
3. Or on by Transmitter.



1 The pressure value is in the PRESSURE column for the Pump Station Control view.



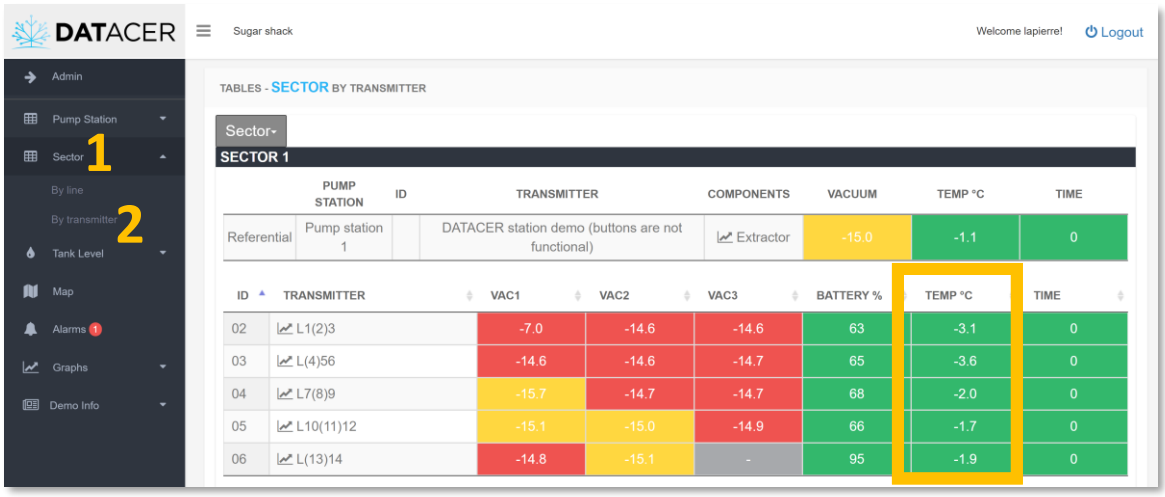
Pumping station view by Transmitter - Tank level by pressure

2 The pressure value is in the Pressure Component box for the view by Transmitter.

Method 2: Via the interface of the DATACER™ station if it is this Transmitter that measures the pressure.

4.5.6 External temperature at the line ends

1. On the DATACER™ interface, click on Sector.
2. Click on view by Transmitter.

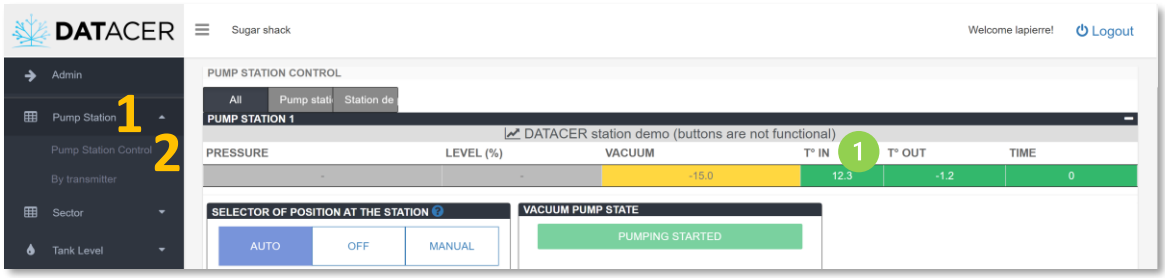


The external temperature is measured from a Sensor located inside the Transmitter. The Transmitter's exposure to sunlight may cause the temperature reading to increase.

4.5.7 Interior and exterior temperature of a pump station

Method 1: Via the pump station tab.

1. On the DATACER™ interface, click on Pump Station.
2. Click on the Pump station control.



1 The value of the interior temperature of the station corresponds to column T ˚IN, the exterior temperature at column T ˚OUT.

Method 2: Via the interface of the DATACER™ station.

4.6 Controlling the equipment locally

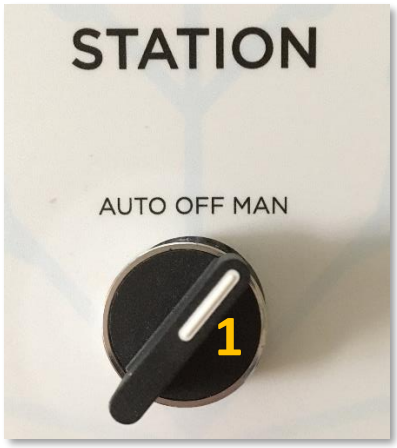
The DATACER™ station allows you to control some of your equipment locally in your pumping station if you wish.

Controls that use the station selector switch in the manual (MAN) position are to be used only for operations performed manually at the pumping station. In the manual (MAN) position, the DATACER™ station ignores remote controls and automatic controls such as start/stop temperature and vacuum modulation.

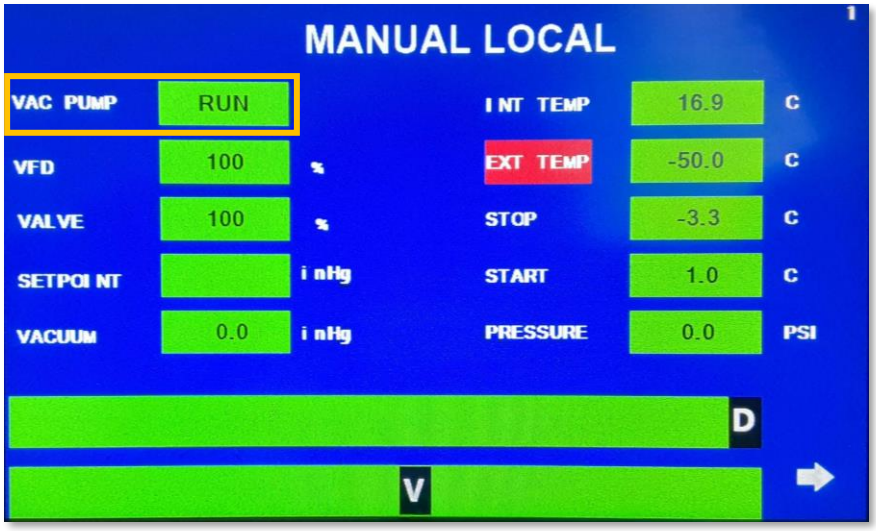
4.6.1 Starting/stopping a vacuum pump

This function allows the starting or stopping of the vacuum pump without any automatic function.

1. To force the start, turn the station Switch to the manual position (MAN).



The status of the vacuum pump on the interface then shows RUN.



2. To force the shutdown, turn the station selector switch to the OFF position.

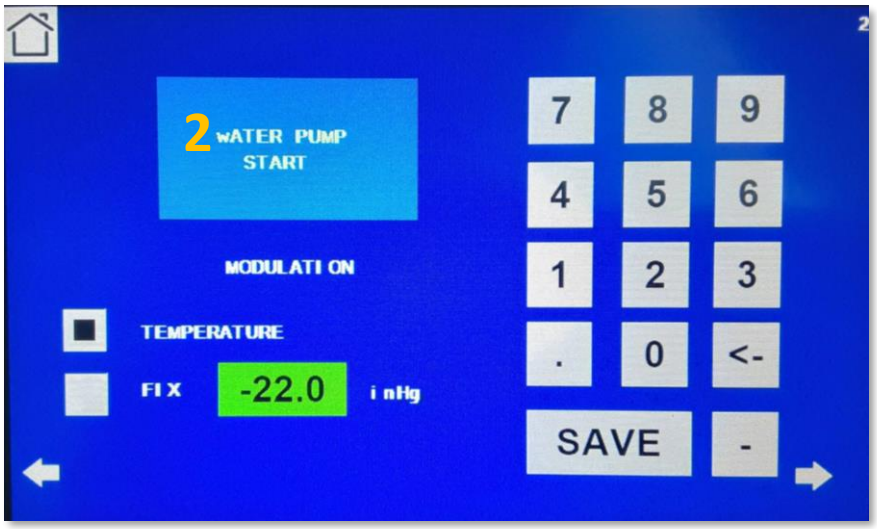
The status of the vacuum pump in the interface indicates STOP.

4.6.2 Starting a water pump

1. Turn the pump control switch to the automatic position (AUTO).

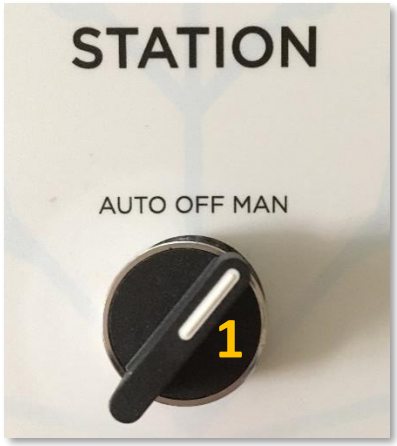
2. Go to page 2 of the station, then press the WATER PUMP START button to force the water pump to start.

⚠ The two bottom electrodes must be in contact with the water.

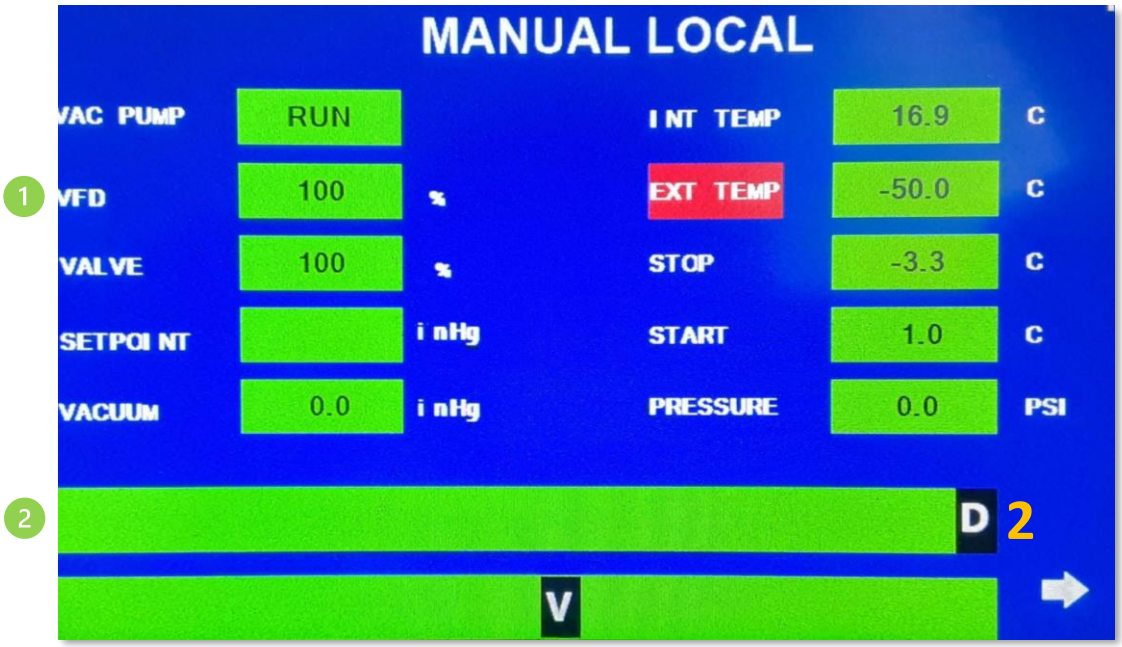


4.6.3 Forcing the speed of a vacuum pump with a drive

1. Turn the station selector switch to the manual position (MAN).



2. Move the cursor of the speed of the D Drive from left to right on the interface of the station on page 1.



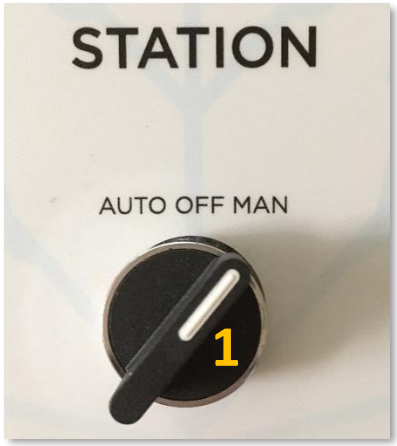
1 You can view the percentage of the instantaneous speed of the vacuum pump in the VFD box.

2 Moving the cursor to the right increases the speed.

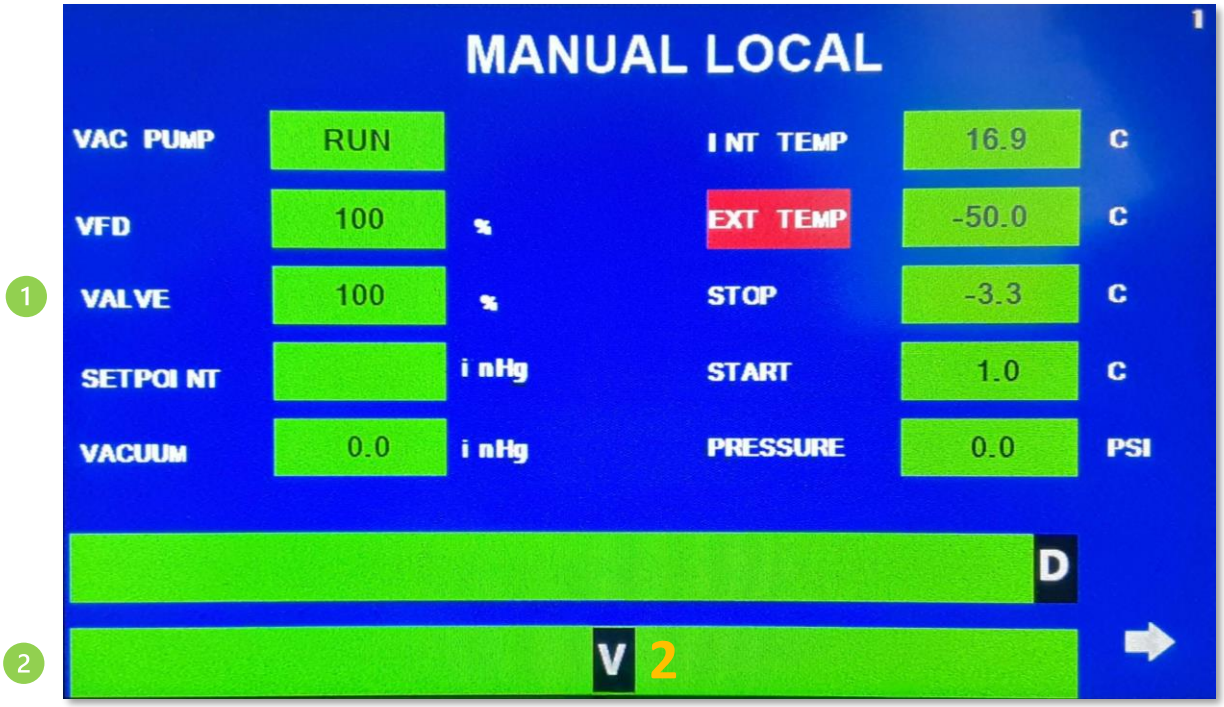
Left Cursor: minimum speed. Right Cursor: maximum speed.

4.6.4 Forcing the Modulation Valve Open

1. Turn the station selector switch to the manual position (MAN).



2. Go to page 1 of the station, then move the valve opening slider from left to right.



1 You can view the percentage of opening of the modulation valve in the VALVE box.

2 Moving the cursor to the right opens the valve.

Cursor on the left: valve closed. Cursor on the right: valve fully open.

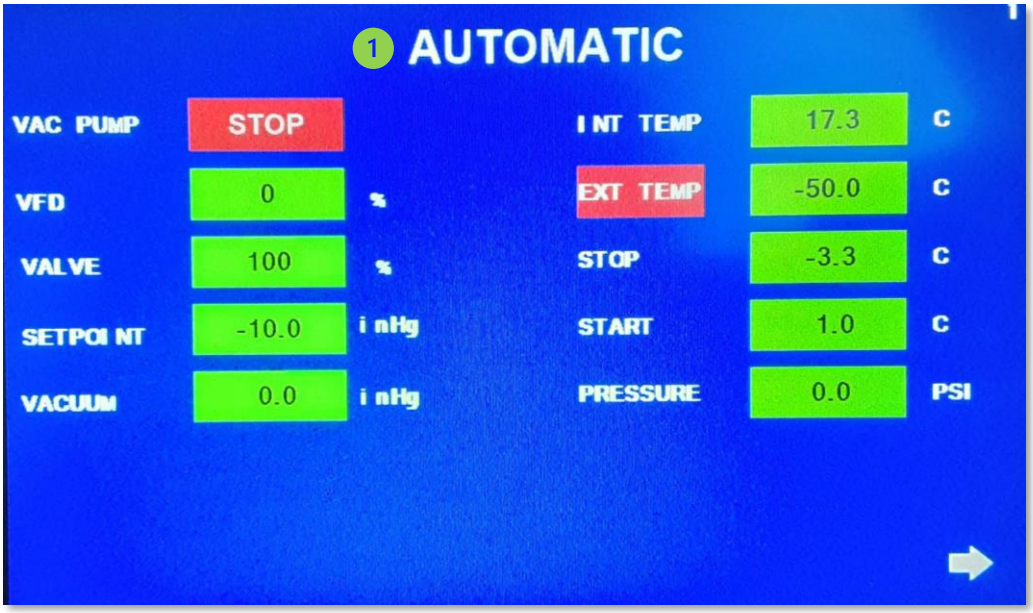
4.7 Controlling equipment remotely

With the DATACER™ interface, you can remotely control your equipment the same way you do in your pumping station.

For these functions to be active, you must set the DATACER™ station's selector switch to AUTO and click the REMOTE MANUAL CTRL button on the DATACER™ interface (see below).

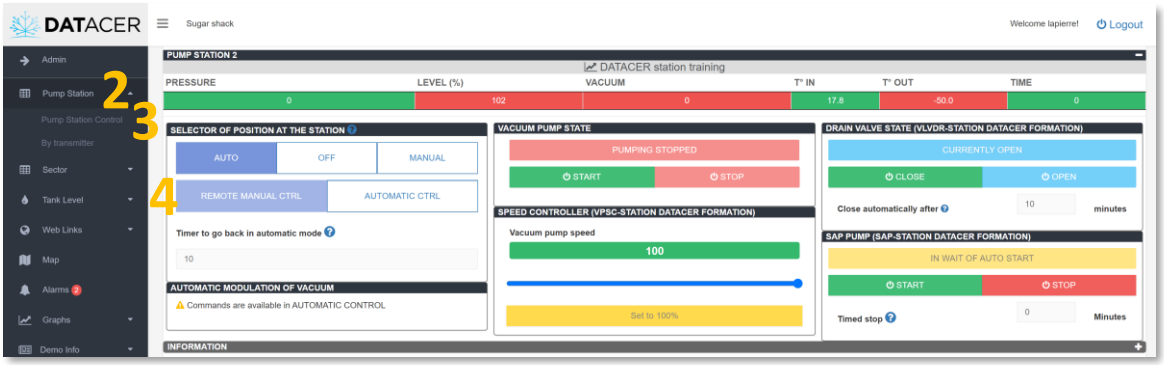
★ Furthermore, for the fields to be active on the DATACER™ interface, remember to activate the functions in Admin (see example in section 3.2.13.1 page 116).

1. Switch of the station to AUTO.



1 AUTOMATIC confirms that you are in automatic mode (AUTO) on the DATACER™ station.

2. On the DATACER™ interface, click on Pump Station.
3. Click on Pump Station Control.
4. Click on CTRL REMOTE MANUAL.

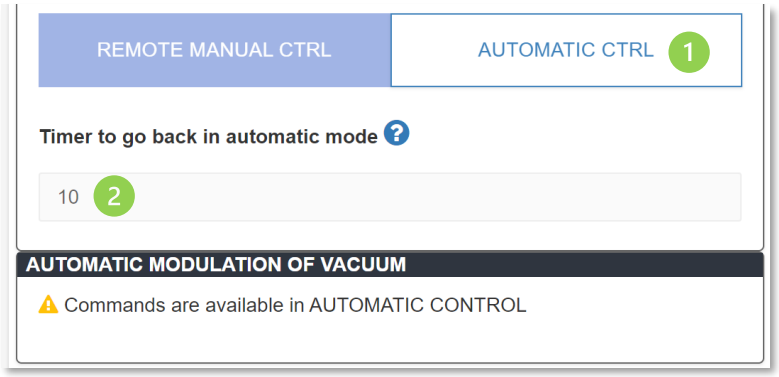


To continue using the automati SMS after your remote controls, proceed as follows:

1 Return to automatic mode on the DATACER™ interface by clicking on the AUTOMATIC CTRL button,

OR

2 Enter a time in the timer to automatically switch back to AUTOMATIC CTRL. If you enter 0 minutes, you will remain in REMOTE MANUAL CTRL mode until you click on the AUTOMATIC CTRL button.

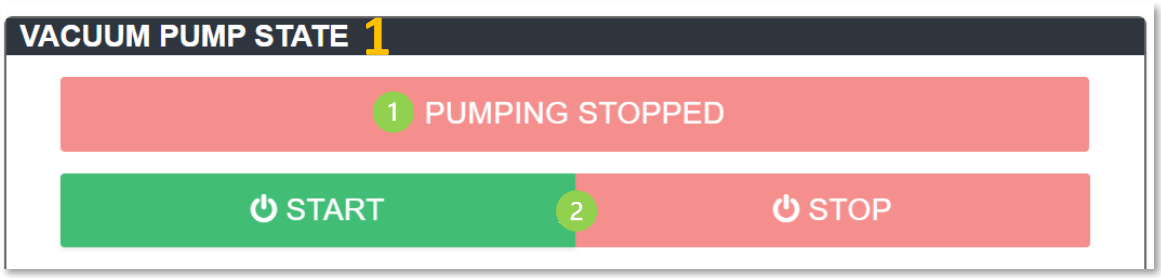


4.7.1 Starting/stopping a vacuum pump

Prerequisites (see section 4.7 page 207):

- Station Switch at AUTO.
- On the DATACER™ interface, click on Pumping Station, then Pumping Station Control, then REMOTE MANUAL CTRL.

1. Scroll down the page to VACUUM PUMP STATUS, this space will allow you to start or stop the station's vacuum pump.



1 Shows you the operating status of your vacuum pump.

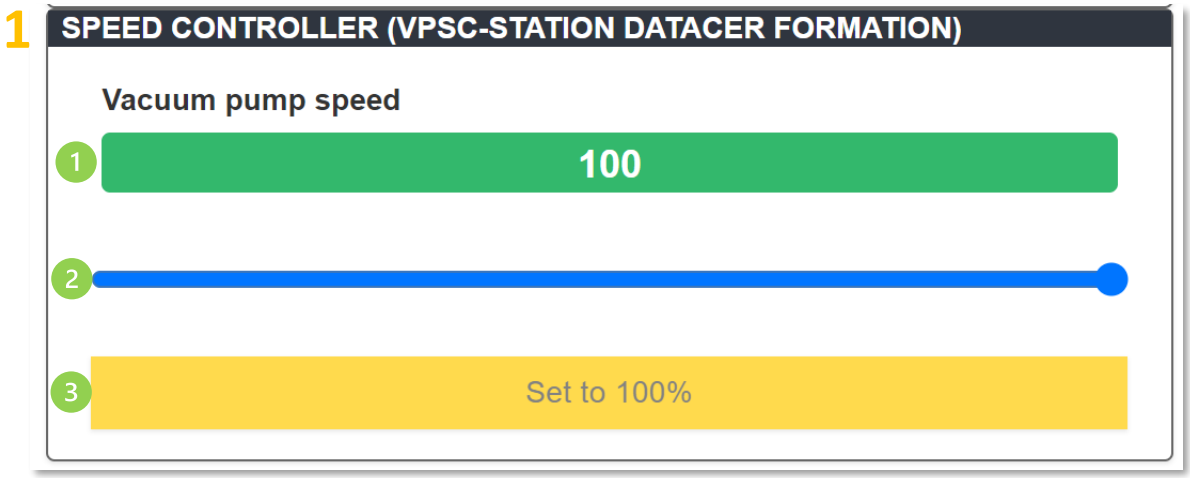
2 These buttons allow you to START or STOP the vacuum pump.

4.7.2 Forcing the speed of a vacuum pump with a drive

Prerequisites (see section 4.7 page 207):

- Turn the station Switch to the automatic position (AUTO).
- On the DATACER™ interface, click on Pumping Station, then Pumping Station Control, then REMOTE MANUAL CTRL.

1. Scroll down the page to SPEED CONTROLLER, this space will allow you to adjust the speed of the vacuum pump.



1 Indicates the current speed percentage of the vacuum pump.

2 Cursor that allows you to set the desired speed percentage.

Moving the slider to the right increases the speed.

Cursor on the left at 0% : minimum speed. Cursor on the right at 100% : maximum speed.

3 Used to confirm the setting and send the command to the DATACER™ station.

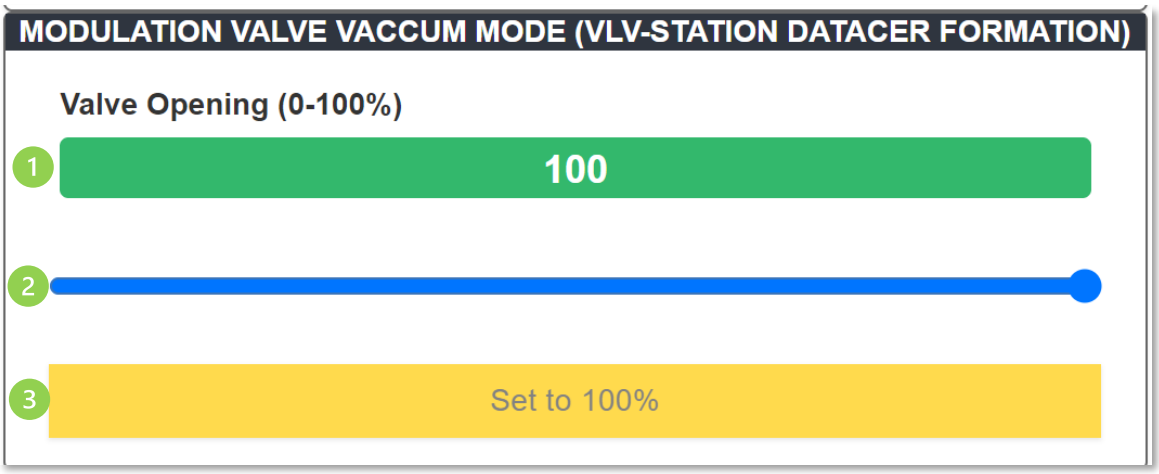
4.7.3 Forcing the Modulation Valve Open

Prerequisite (see section 4.7 page 207):

- Set the station Switch to automatic (AUTO).
- On the DATACER™ interface, click on Pumping Station, then Pumping Station Control, then REMOTE MANUAL CTRL.

1. Scroll down the page to MODULATION VALVE VACCUM MODE, this space will allow you to adjust the opening of the Modulation Valve.

1



1 Indicates the percentage of opening of the Modulation Valve.

2 Slider that allows you to set the desired opening percentage.

Moving the slider to the right increases the percentage of valve opening. Left slider at 0%: minimum opening. Cursor to the right at 100%: maximum opening.

3 Used to confirm the setting and send the command to the DATACER™ station.

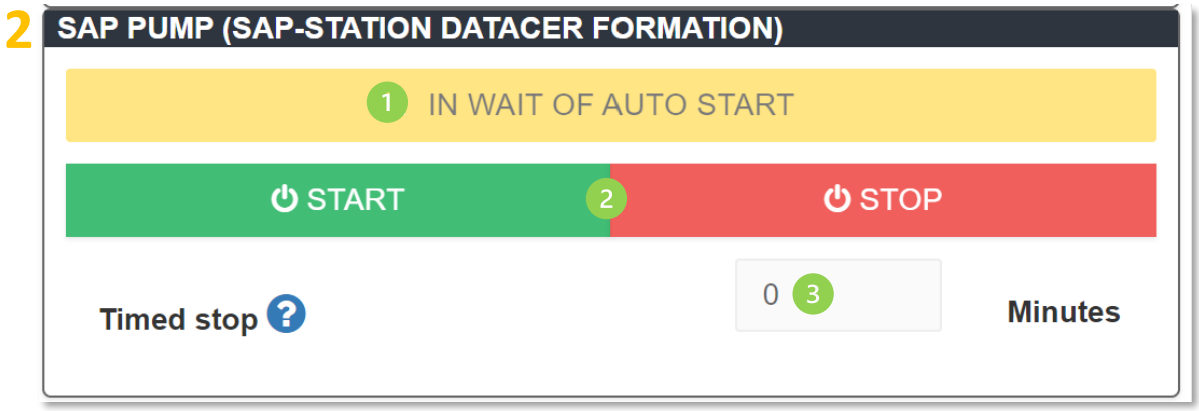
4.7.4 Starting/stopping a water pump

Prerequisites (see section 4.7 page 207):

- Switch of the station at AUTO.
- On the DATACER™ interface, click on Pumping Station, then Pumping Station Control, then REMOTE MANUAL CTRL.

1. Turn the pump control switch to the AUTO position.

2. Scroll down the page to SAP PUMP, this space will allow you to start or stop the water pump.



1 Shows you the operating status of your water pump.

2 These buttons allow you to START or STOP the water pump.

3 The forced shutdown time is the time for which the water pump will not start **under any condition** after clicking the Stop button. You must enter this time before clicking the Stop button.

⚠ Neither the Electrodes nor the JOG button on the pump control box will start the water pump. If a time of 0 minutes is sent, the pump will remain off until the next start command in the REMOTE MANUAL CTRL mode.

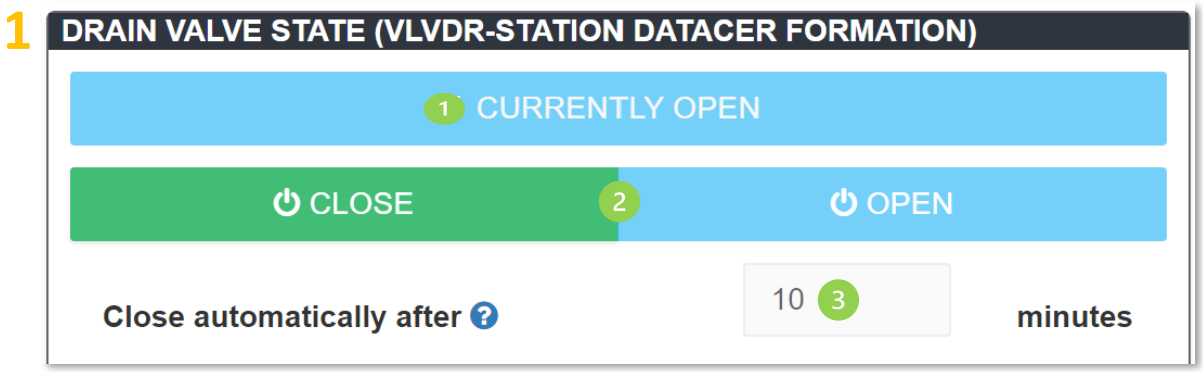
To deactivate the water pump's forced shutdown, click on the "Start" button.

4.7.5 Open/Close Drain Valve

Prerequisites (see section 4.7 page 207):

- Switch of the station to AUTO.
- On the DATACER™ interface, click on Pumping Station, then Pumping Station Control, then REMOTE MANUAL CTRL.

1. Scroll down the page to DRAIN VALVE STATUS, this area allows you to open or close the Drain Valve.



1 Shows you the operating status of your Drainage Valve.

2 These buttons allow you to OPEN or CLOSE the Drain Valve.

3 The auto-close time is the time for which the Drainage Valve will not close **UNDER ANY CONDITION** after the Open button is clicked. This time must be entered before clicking the Open button.

Neither temperature nor pressure will close the valve. If a time of 0 minutes is sent, the valve will remain open until the next closing command in REMOTE MANUAL CTRL.

To deactivate forced opening of the drain valve, click on the "Close" button.

4.8 Automate the control of your equipment

The DATACER™ system allows you to automatically control some of your equipment according to the value of some of the measured indicators. Some functions require to act on the interfaces.

In order for the vacuum level modulation features to be active on the DATACER™ interface, remember to activate the functions in Admin (see section 3.2.13.1 page 116).

4.8.1 Temperature-dependent start/stop of a vacuum pump

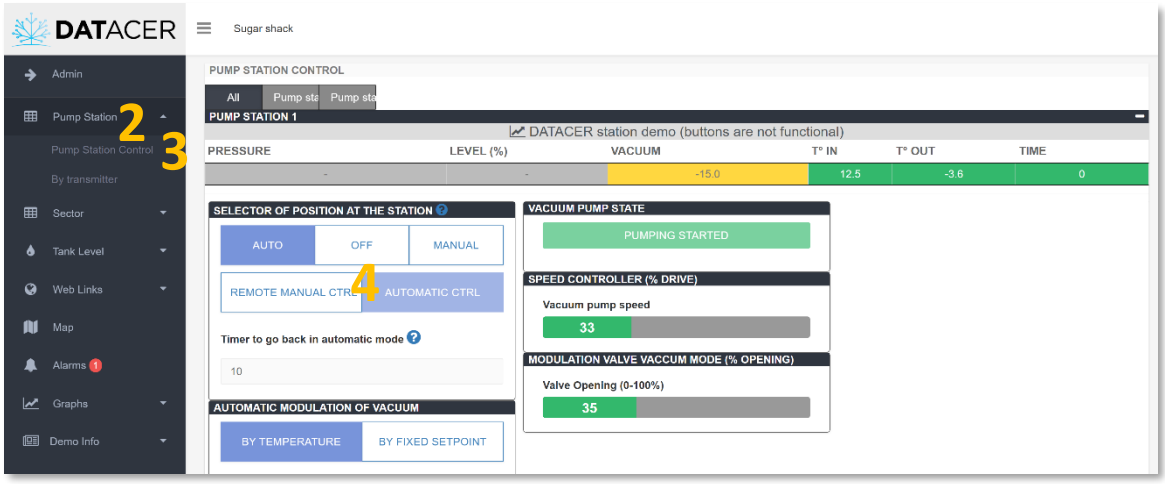
Principle:

The vacuum pump starts if the outdoor temperature measured by the DATACER™ station is equal to or higher than the start threshold. The vacuum pump stops if the outdoor temperature measured by the DATACER™ station is below the stop threshold.

Prerequisite: Set your temperature thresholds in the DATACER™ station (see section 3.3.1 page 149).

1. Switch of the station to AUTO.

2. On the DATACER™ interface, click on Pump Station.
3. Click on Pump Station Control.
4. Click on AUTOMATIC CTRL.



4.8.2 Stop/restart the vacuum pump via the Float in the Humidity Trap (safety for the vacuum pump)

Principle:

The vacuum pump stops when the Humidity trap is full. The pump starts again when the trap is empty.

Prerequisite: Install your Humidity Trap following the procedure described in section 2.8.12 page 95.

No manipulation is required for use in the interfaces. This function is active at all times.

1 A red T indicator appears if the trap is full.

4.8.3 Modulation of the vacuum level at the Extractor according to the temperature

Principle:

The modulation valve and the speed of the vacuum pump, if it has a Drive, adjust according to the outside temperature to maintain the desired level of vacuum at the Extractor.

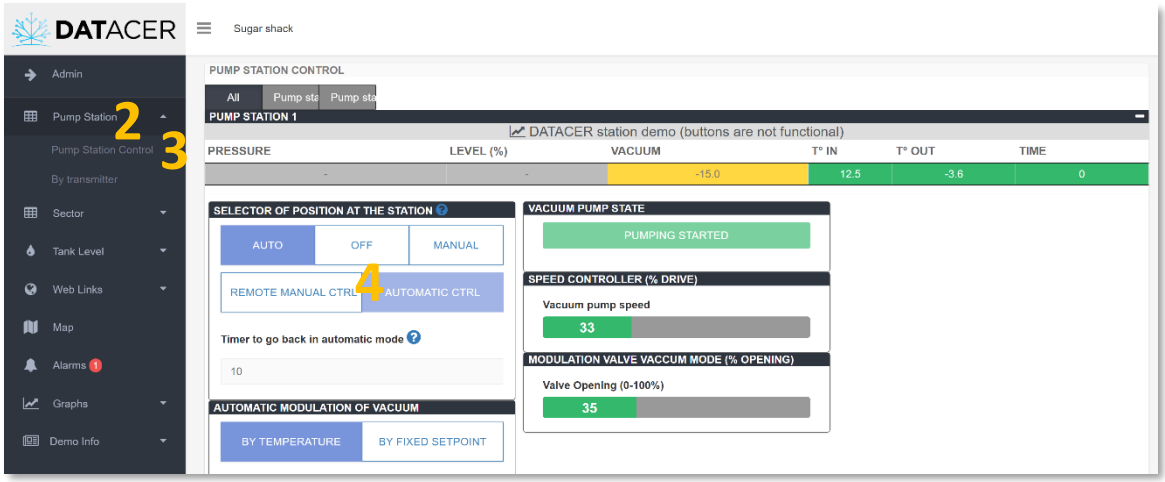
The desired vacuum level values for the temperatures are entered in the table on the DATACER™ station interface. The valve closes and the pump speed decreases, if the pump has a Drive, to lower the vacuum level in the network. The valve opens and the pump speed increases, if the pump has a Drive, to increase the vacuum level in the network.

Prerequisite:

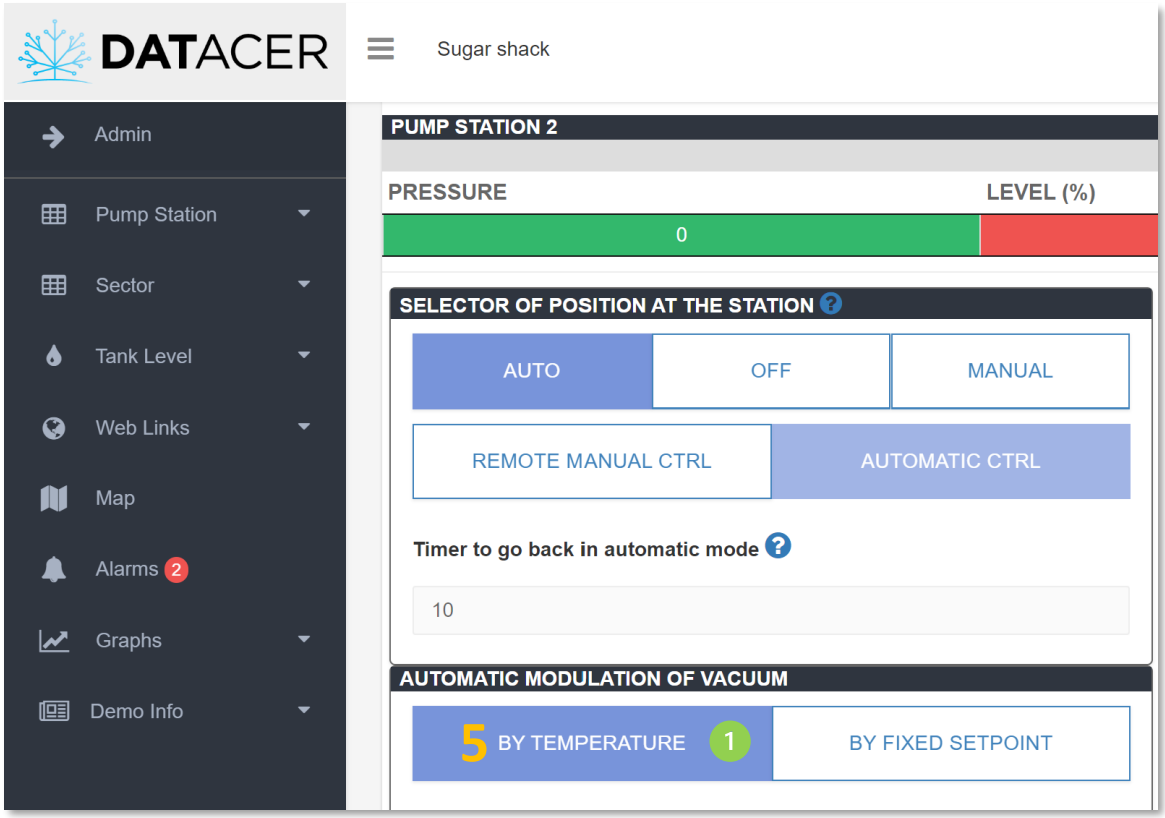
- Install your Modulation Valve following the procedure (see la section 2.8.3 page 81).
- Set up your desired vacuum level table for different temperatures in the DATACER™ station (see section 3.3.2 page 150).

1. Switch of the station to AUTO.

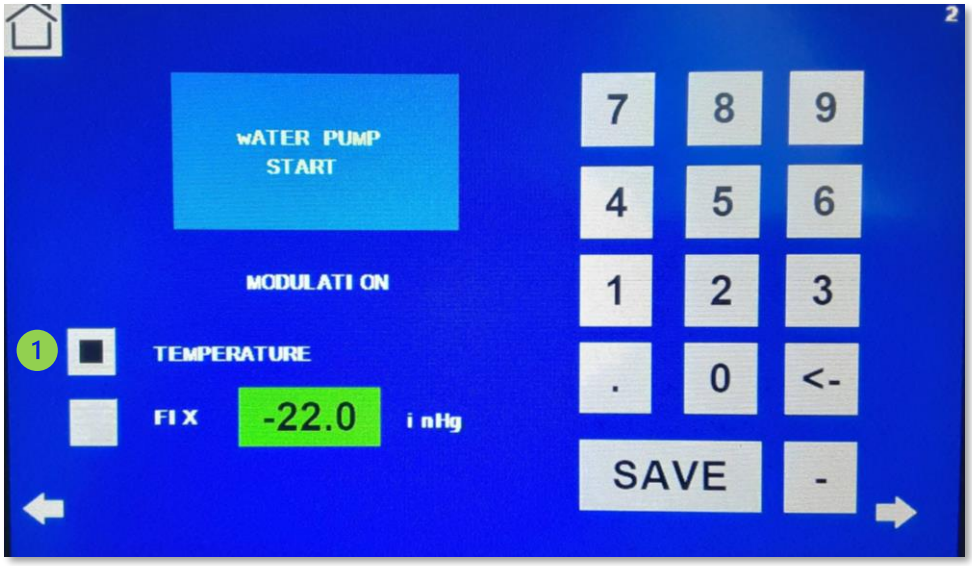
2. On the DATACER™ interface, click on Pump Station.
3. Click on Pump Station Control.
4. Click on AUTOMATIC CTRL.



5. Scroll down the page to AUTOMATIC VACUUM MODULATION and click on the By Temperature button.



1 For information, the modulation type chosen on the DATACER™ base interface will be automatically updated on the DATACER™ station interface at the next communication and vice versa.



4.8.4 Modulation of the vacuum level at the Extractor according to a set vacuum value

Principle:

The modulation valve and the speed of the vacuum pump, if the pump has a Drive, are adjusted according to the vacuum value at the Extractor determined by the user.

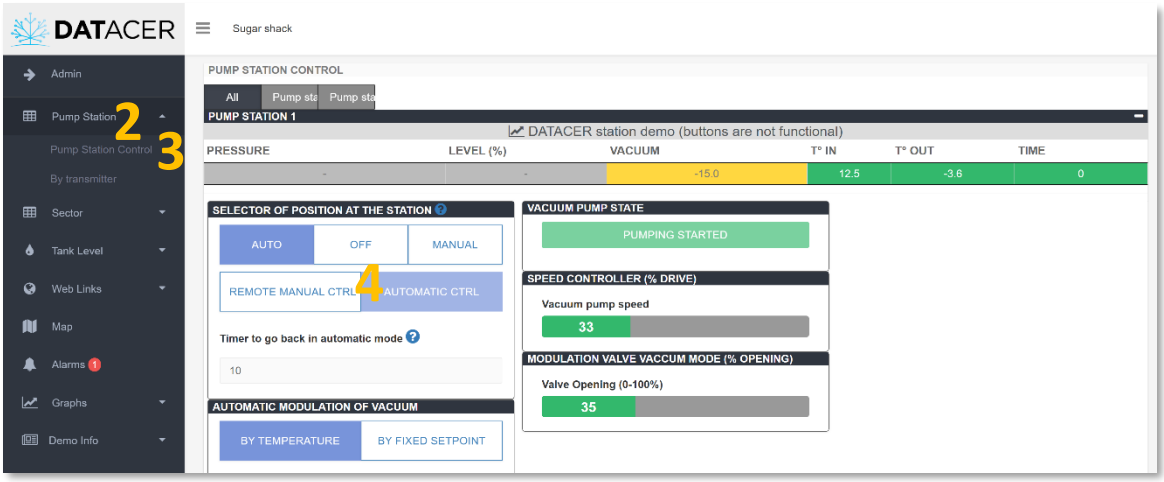
The valve closes and the pump speed decreases, if the pump has a Drive, to lower the vacuum level in the system. The valve opens and the pump speed increases, if the pump is equipped with a Drive, to increase the vacuum level in the system.

Prerequisite: Install your Modulation Valve following the procedure (see la section 2.8.3 page 81).

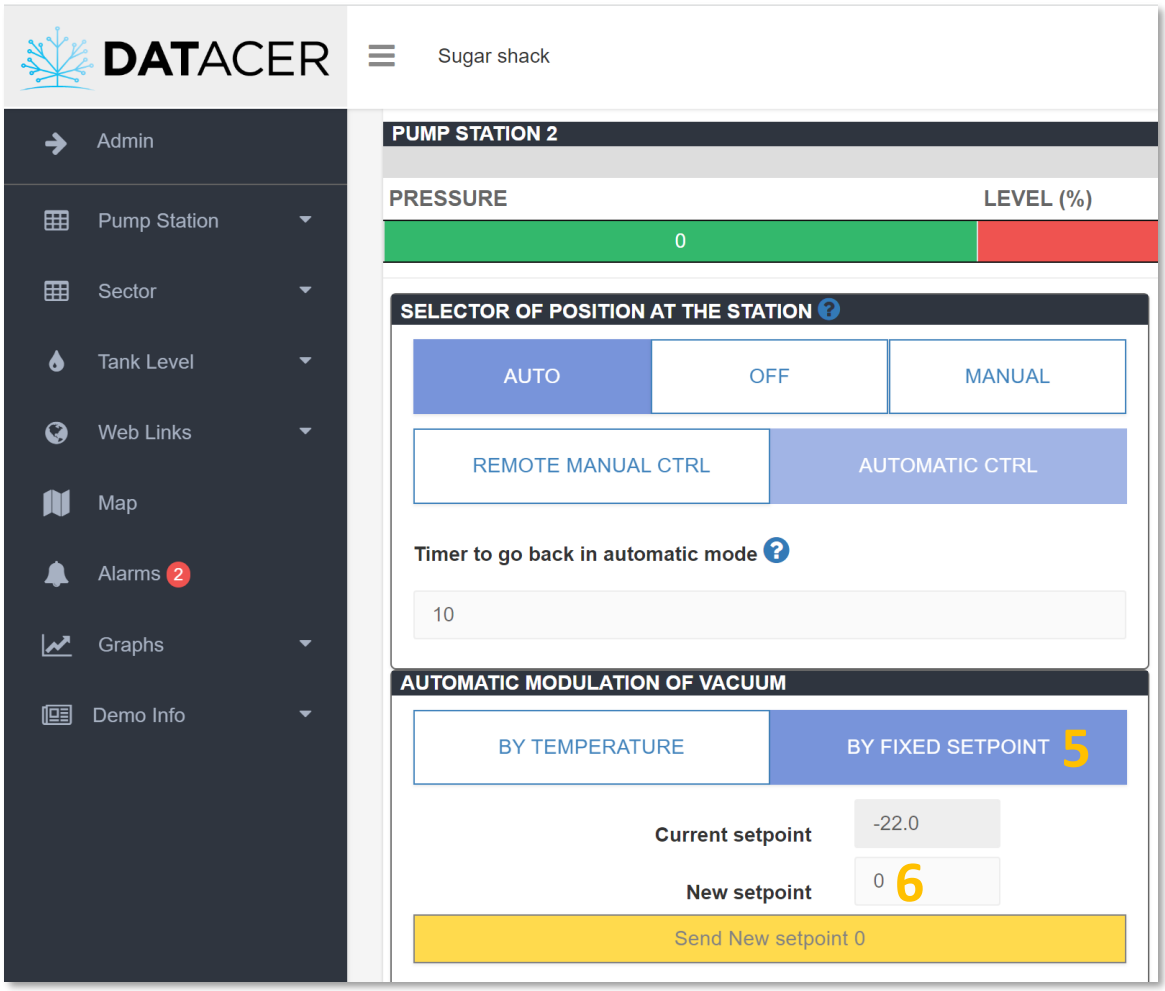
1. Switch of the station set to AUTO.

2. On the DATACER™ interface, click on Pump Station.

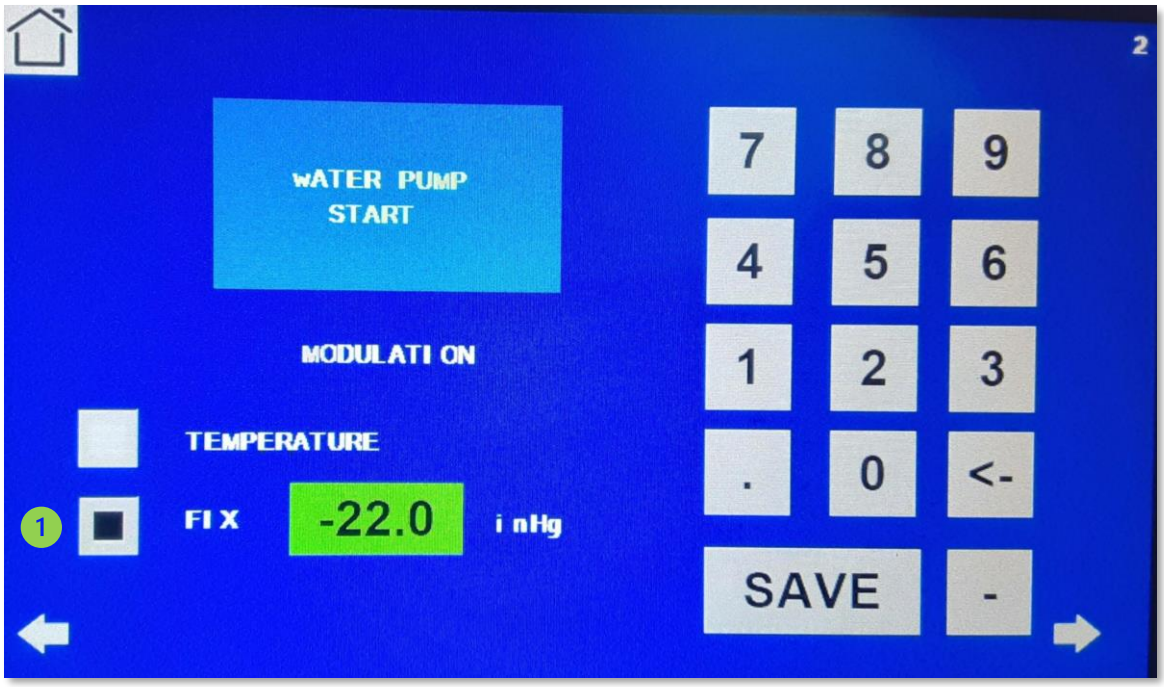
3. Click on Pump Station Control.
4. Click on AUTOMATIC CTRL.



5. Scroll down the page and click on the by fixed setpoint button in the AUTOMATIC MODULATION OF VACUUM section.
6. Enter the desired vacuum value in the New Setpoint field.
7. Validate by clicking on the button Sending the new instruction.



1 For information, the type of modulation and the value of the vacuum setpoint chosen in the DATACER™ base interface will be automatically updated in the DATACER™ station interface at the next communication and vice versa.


2
WATER PUMP
START
MODULATION
TEMPERATURE
FIX
-22.0
inHg
1
7
8
9
4
5
6
1
2
3
.
0
<-
SAVE
-

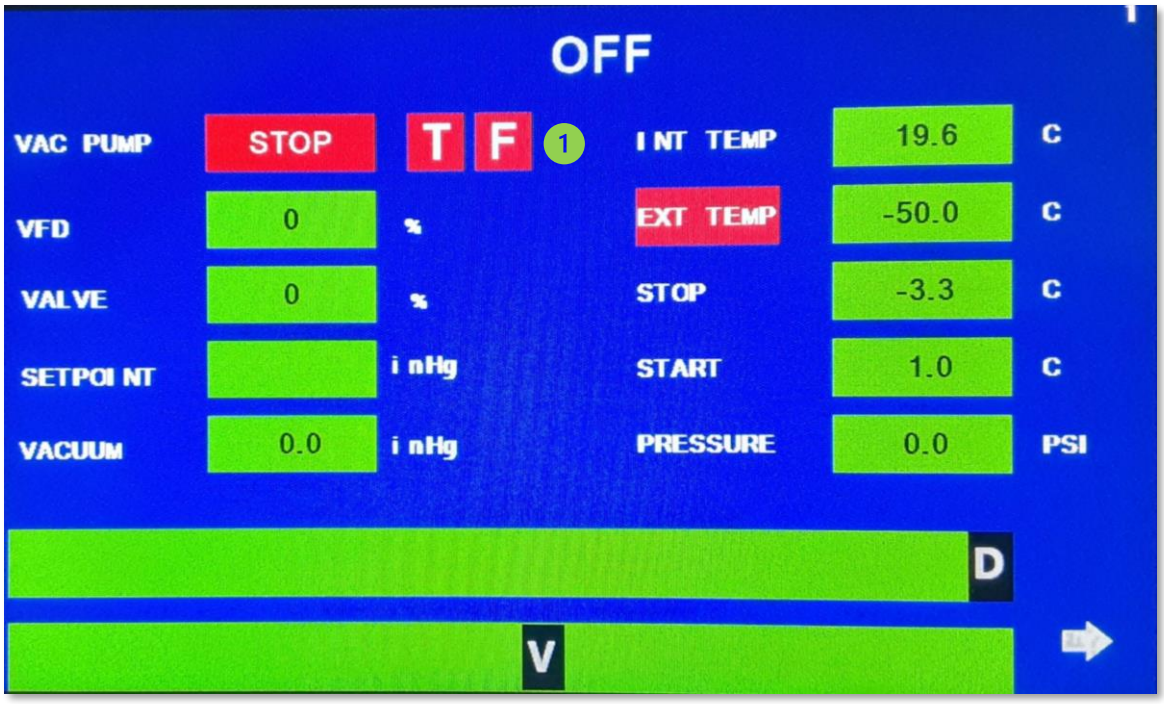
4.8.5 Close the modulation valve if the water level in the Extractor exceeds a certain level (safety for the vacuum pump)

Principle:

If the Level Float positioned on the inner and upper part of the Extractor is activated, then the Modulation Valve closes. When the level drops, the Modulation Valve opens again.

Prerequisite: Install your Modulating Valve and Emergency Stop Float according to the procedure (see section 2.8.3 page 81 and section 2.8.4 page 83).

No manipulation is required for use in the interfaces. This function is active at all times.



1 A red F light appears when the Float is triggered.

4.8.6 Start/stop a water pump according to a pond level by Electrodes

Principle:

Three Electrodes are positioned in the Tank. The top one, the middle one and the reference electrode at the bottom. The pump stops if the liquid level falls below the middle electrode. The pump starts if the liquid touches the top electrode.

Prerequisite: Install your electrodes and water pump control following the procedure (see section 2.8.5 page 85).

1. Set the pump control switch to automatic (AUTO).

No manipulation is required for use in the interfaces. This function is active at all times.

4.8.7 Open/close a Drain Valve depending on the outside temperature and/or the pressure of a pipe

Principle:

The valve opens if the outdoor temperature is below the threshold. The valve closes if the outdoor temperature is above or equal to the threshold.

The valve can also open if the pressure in the tube where it is installed is greater than or equal to the threshold. If the valve opens according to the pressure, then it can stay open for a certain time.

You can decide to automate the opening of the Drain Valve according to temperature and/or pressure.

In the case where the opening/closing of the valve can be controlled according to temperature and pressure at the same time, if the valve opens according to one of the 2 parameters, then it remains open until the closing condition of the same parameter is reached.

Example:

If the valve opens according to the pressure in the tube for 30 min and the closing temperature is reached during this time, then the valve remains open. When the time has expired, the valve closes if conditions permit.

Prerequisite:

- Install your Drainage Valve following the procedure (see section 2.8.6 page 89).
- Set the opening and closing conditions of the Drain Valve on the DATACER™ station (see sections 3.3.3, 3.3.4 pages 151 and 152).

No manipulation is required for use on the interfaces. This function is active at all times.

4.8.8 Stop the water pump if the drain valve is open

Principle:

Pump stops if Drain Valve is open.

Prerequisite:

- Install your Drain Valve following the procedure (see section 2.8.6 page 89).
- Check the condition PUMP OFF IF OPEN on the DATACER™ station (see section 3.3.5 page 153).

No manipulation is required for use in the interfaces. This function is active at all times.

4.8.9 Opening/closing the air intake valve depending on the outside temperature (safety for the vacuum pump)

Principle:

The valve allows air into the pump without affecting the vacuum level in the Extractor. This ensures that the pump cools down after a certain vacuum level and prevents the pump from deteriorating.

Prerequisite:

- Install your Air Intake Valve following the procedure (see section 2.8.7 page 89).
- Check the temperature lines that correspond to the vacuum level setpoints of the vacuum pump (see method in section 3.3.6 page 154).

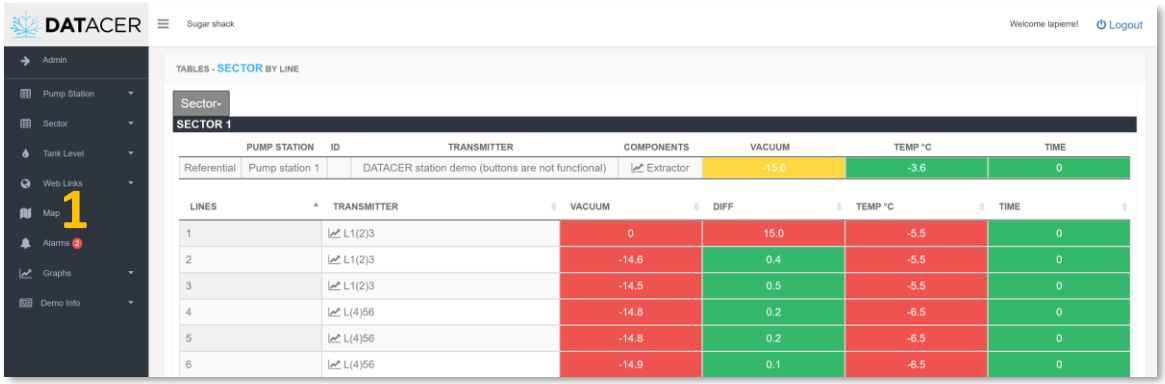
No manipulation is required for use in the interfaces. This function is active at all times.

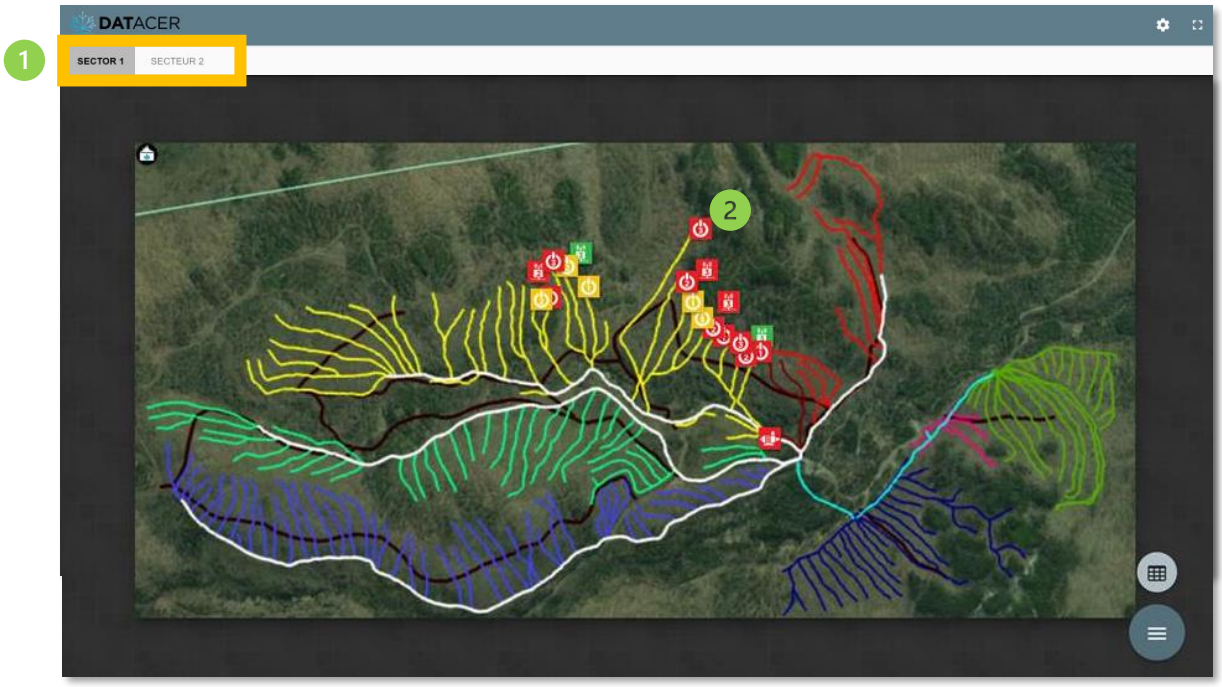
4.9 Maps

The maps in your system allow you to visualize in a different way your data displayed in the other tabs.

Prerequisite: Create your sector maps (see section 3.2.16 page 138).

1. On the DATACER™ interface, click on Maps to view your sector maps.



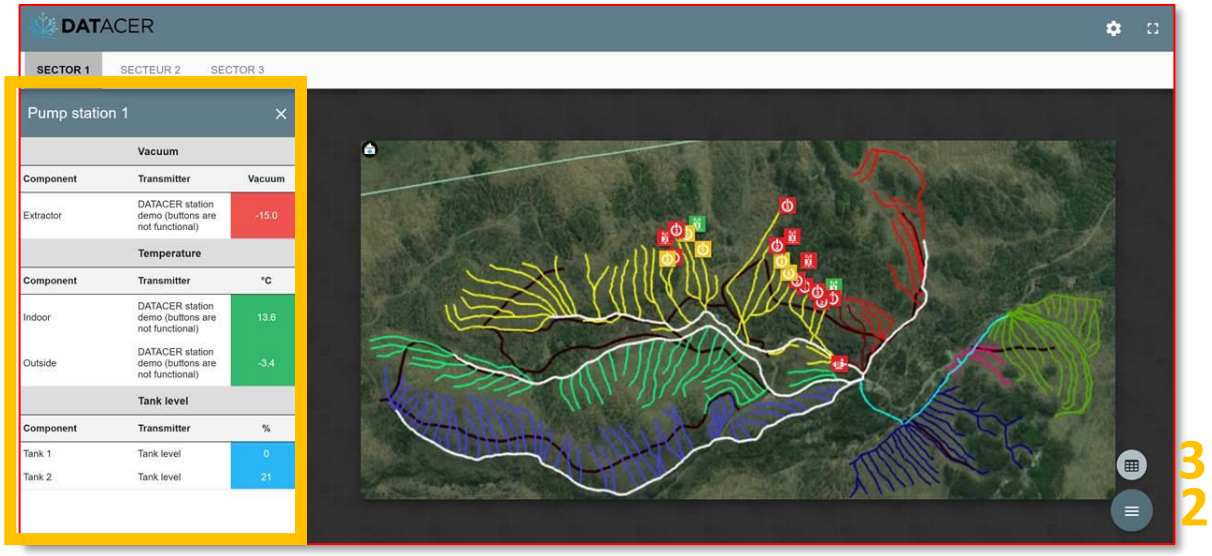


1 You can change the sector by clicking on the top tabs.

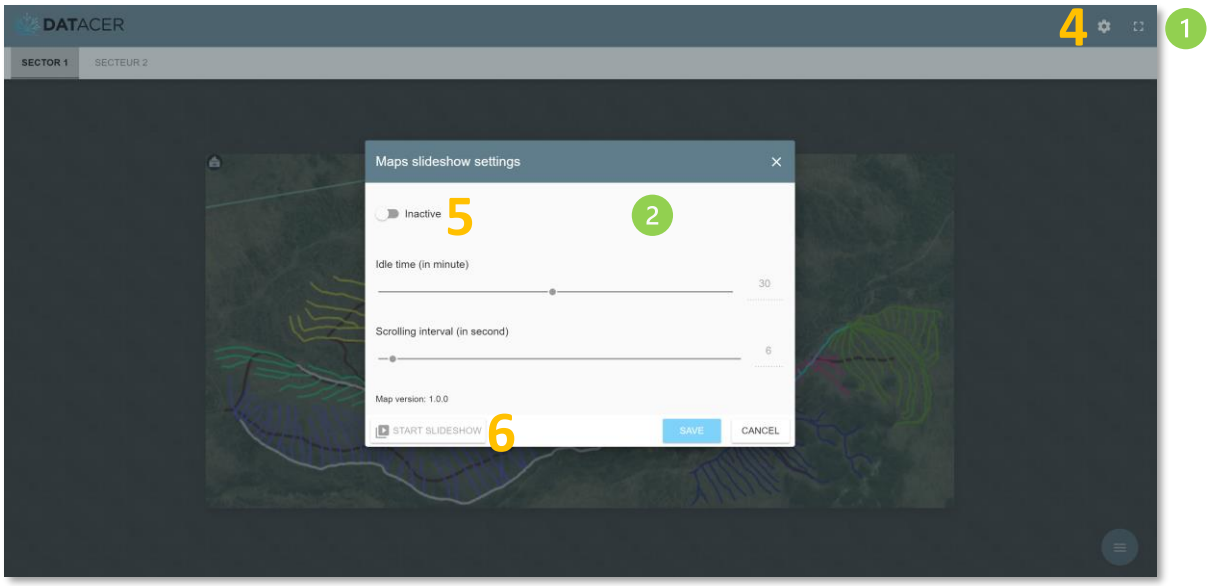
2 The color of the icons changes according to the thresholds you have set (see section 3.2.6 page 107).

2. To view the data for the pumping station(s) in the area click on .

3. Then on .



4. To view the area map slideshow click on .
5. Enable slideshow startup.
6. Start the slideshow.



1 Allows you to switch to full screen mode.

2 For the different settings see section section 3.2.16.2 page 141.

The slideshow will run until you move the mouse or click on the screen. To restart the slideshow, repeat the same procedure as above.

4.10 Alarms and notifications

Principle:

An alarm is generated on the DATACER™ interface if it is activated and when the measured value of an indicator is above or below the defined threshold. An SMS or email notification is sent directly to you to inform you that an alarm has been triggered.

If an alarm is deactivated, you cannot receive alarms on your DATACER™ interface or email or SMS notifications for this alarm. For an active alarm, it is possible to receive a SMS and/or email notification in addition to the alarm on the interface.

SMS or email notifications are sent every 5 minutes.

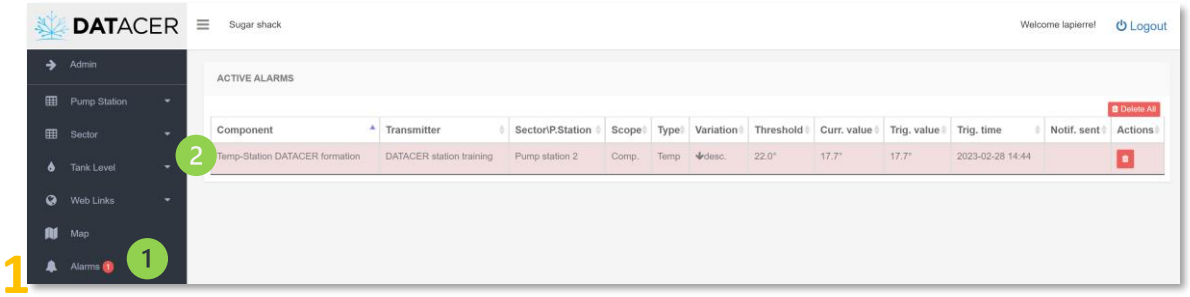
Prerequisites:

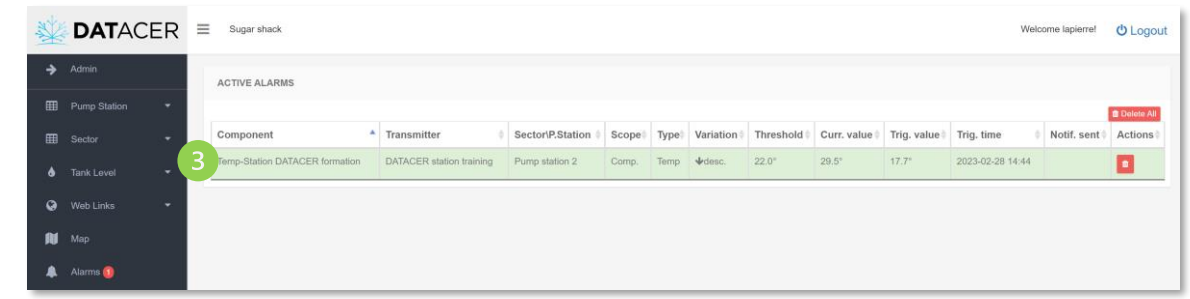
- To add or delete a contact (see sections 3.2.14.1, 3.2.14.2 pages 128 et 130)
- To add or remove an alarm (see section 3.2.14.3 page 132).
- To activate or deactivate an alarm (see section 3.2.14.6 page 136).
- To receive SMS and/or email notifications (see step 9 in section 3.2.14.3 page 132).

4.10.1 Viewing active alarms on the DATACER™ interface

1. On the DATACER™ interface, click on Alarm.

View 1: Manual reset alarm.





The sending of notifications is no longer active by default as long as the alarm appears in this table. You have to remove it from this table by clicking on the red button that it can be reset if the measured value is above or below the threshold.

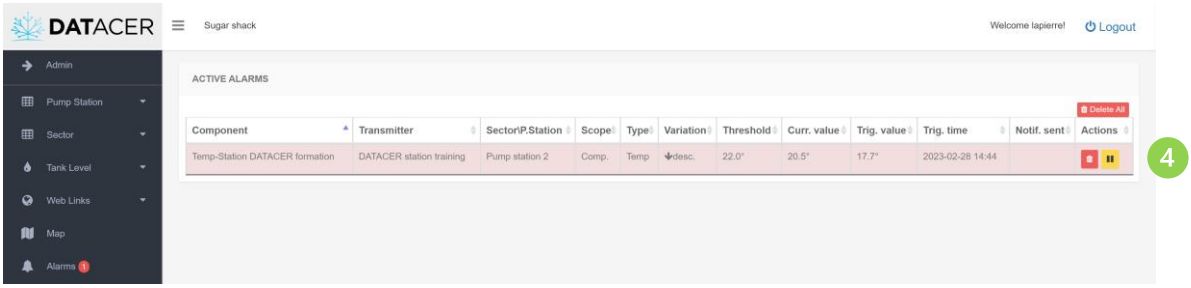
1 The alarm tab appears if there is at least one alarm activated in the Admin and it has been triggered. The number circled in red tells you if any alarms have been triggered and are present in the list of active alarms.

2 An alarm is displayed in red when it has been triggered and is currently faulty. The value of the measured parameter is then higher or lower than the set threshold.

3 An alarm is displayed in green when it has been triggered in the past and is not currently in default. The value of the measured parameter is then not in default with respect to the set threshold.

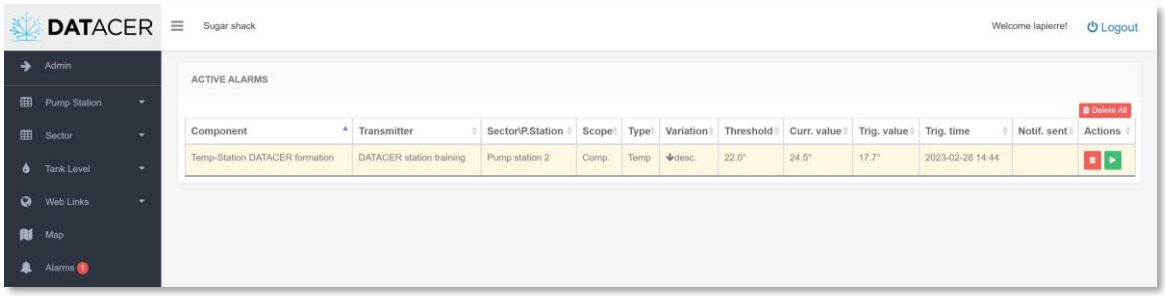
View 2: Automatic reset alarms

To reset an alarm automatically without having to delete it from the table, you must set an automatic reset time in Admin (see step 8 of section 3.2.14.3 page 132)



When the automatic reset time has elapsed, the alarm is automatically removed from this table if the current value is no longer in default.

4 To deactivate the automatic reset of the alarm (e.g. to stop receiving SMS or email notifications), click on the yellow button which will then turn green .



5 To reactivate the automatic reset of the alarm, click on the green button which will then turn yellow .

4.10.2 Viewing notifications received by SMS or email

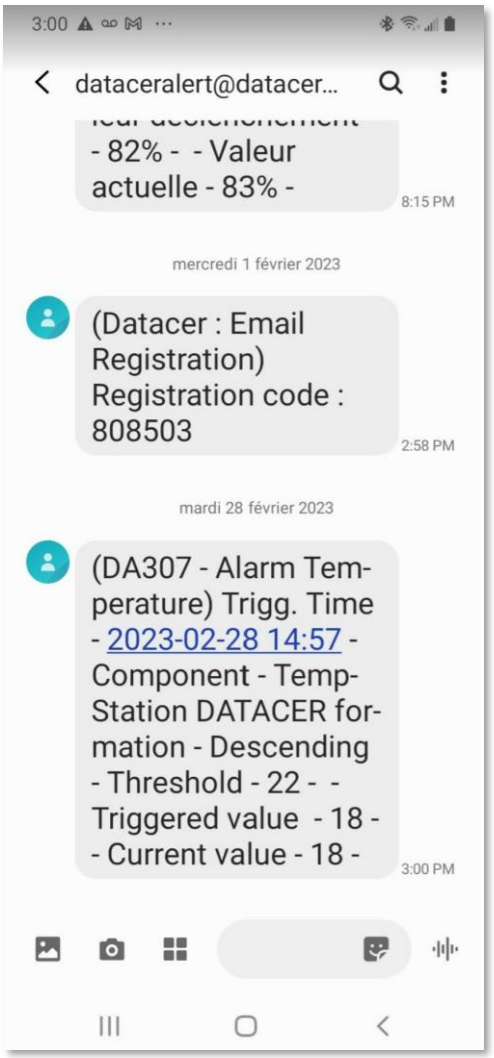


Figure 109 : Example of notification sent by SMS if an alarm is triggered

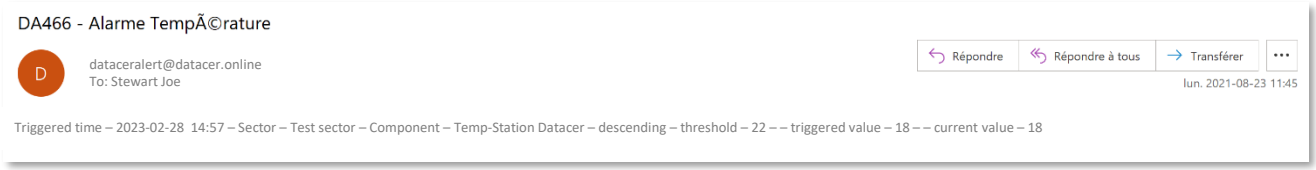


Figure 110: Example of notification sent by email if an alarm is triggered

To receive notifications by SMS or email you must have added a contact, activated the notifications and activated the alarm (See prerequisites in section 3.2.14 page 128).

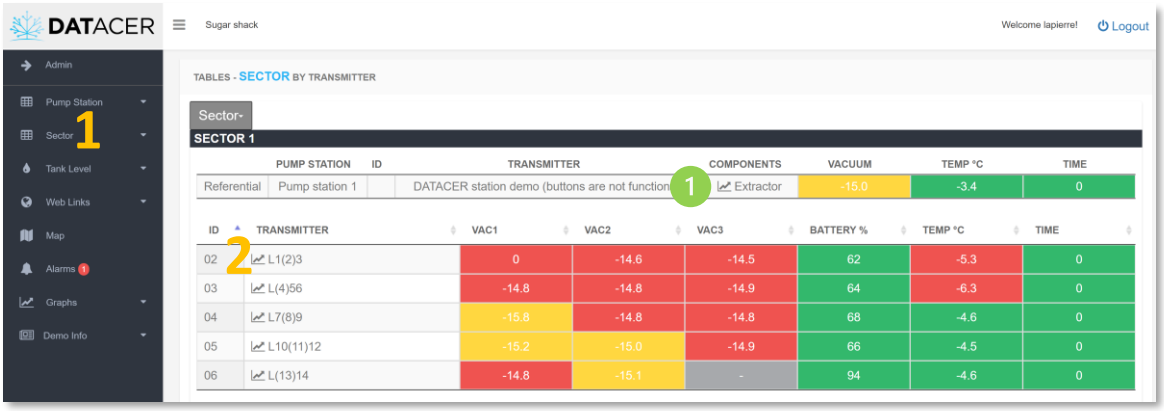
4.11 Graphs

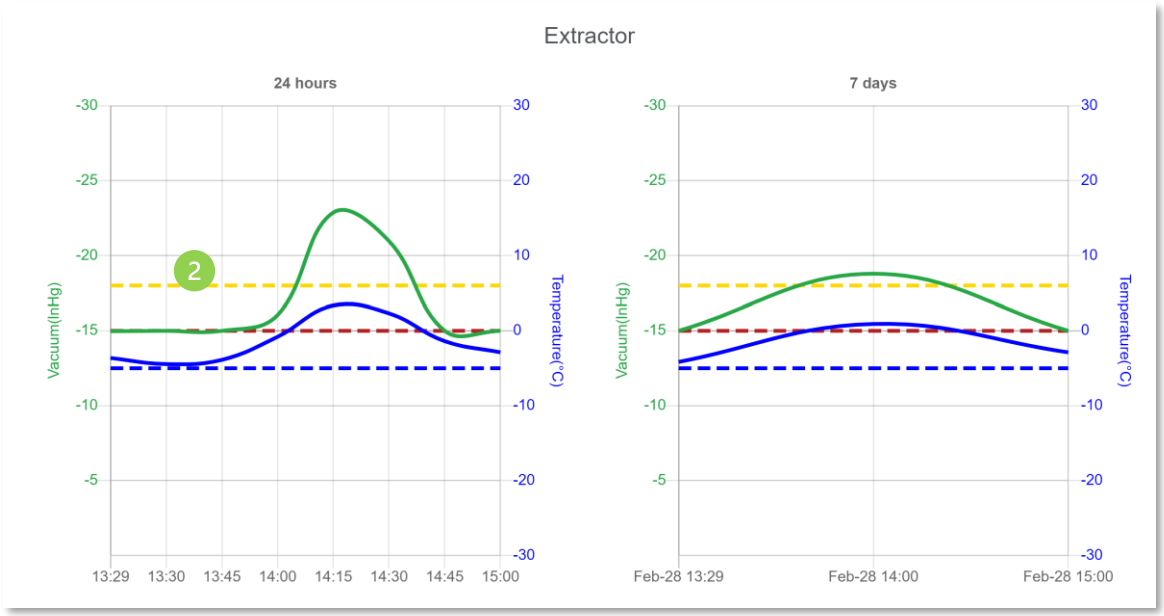
The graphs allow you to visualize the evolution of the measured data over time. Your interpretation of the graphs will allow you to make better decisions during and after seasons.

4.11.1 Vacuum level and temperature 24 / 7

1. On the DATACER™ interface, click on Sector, View by Line or Transmitter.

2. Click on the grey button to generate the graph.





1 Generate graph for vacuum level at the Extractor.

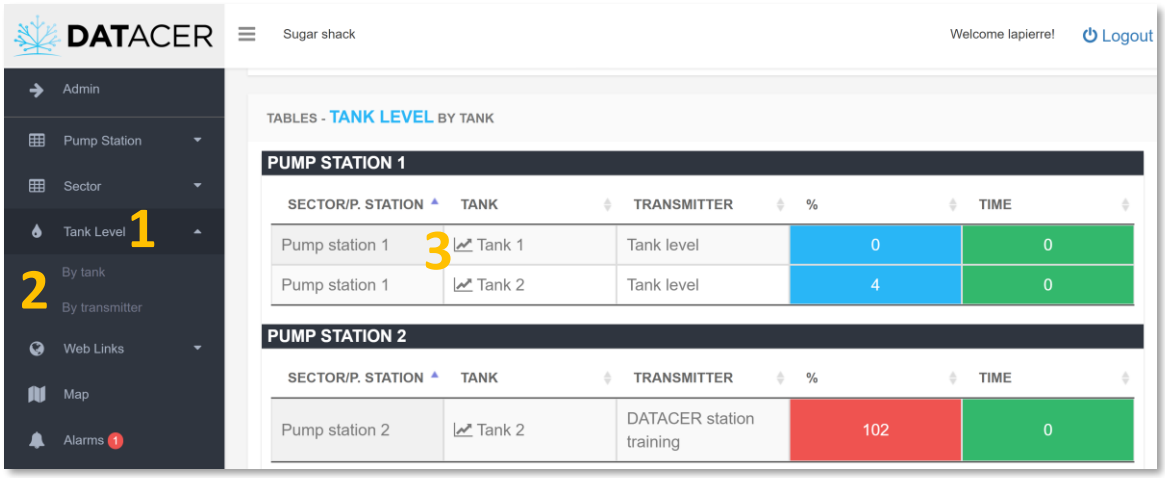
2 On the graphs, the dotted horizontal lines are shown for information purposes. They represent, in yellow and red, the vacuum thresholds. The blue dotted line represents the

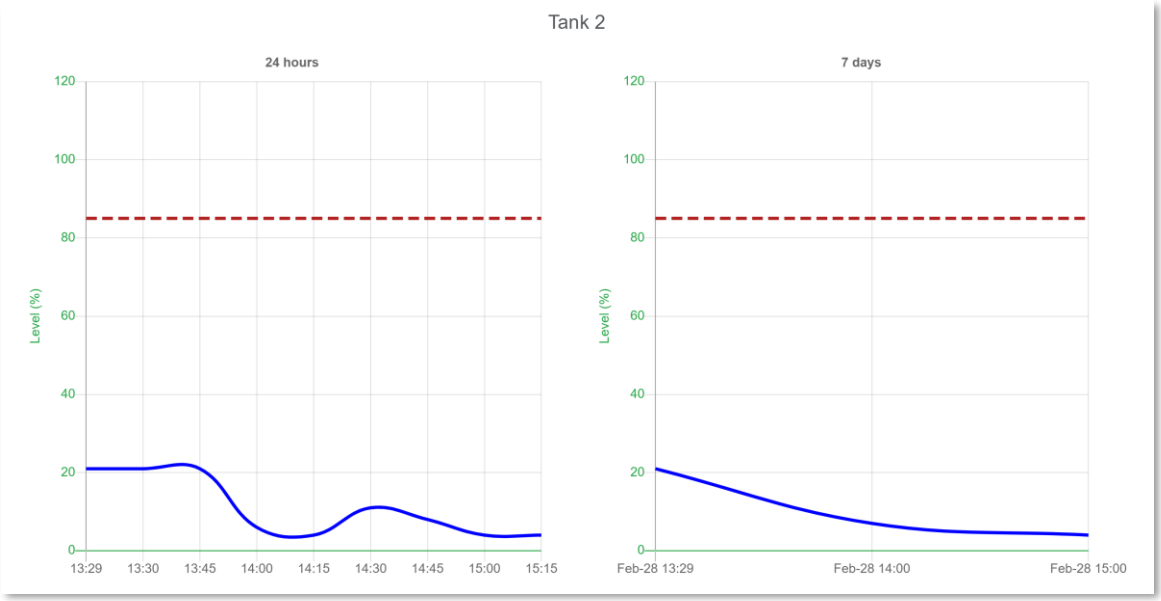
temperature threshold. These threshold values can be modified in the Admin menu (see section 3.2.6 page 107).

It is also possible to generate these types of graphs for Extractor vacuum levels via the Pumping Station tab if the DATACER™ station is used to measure the vacuum level at the Extractor.

4.11.2 Tank level 24 / 7

1. On the DATACER™ interface, click on Tank Level.
2. Click on view By Tank or By Transmitter.
3. Click on the grey button to generate the graph.



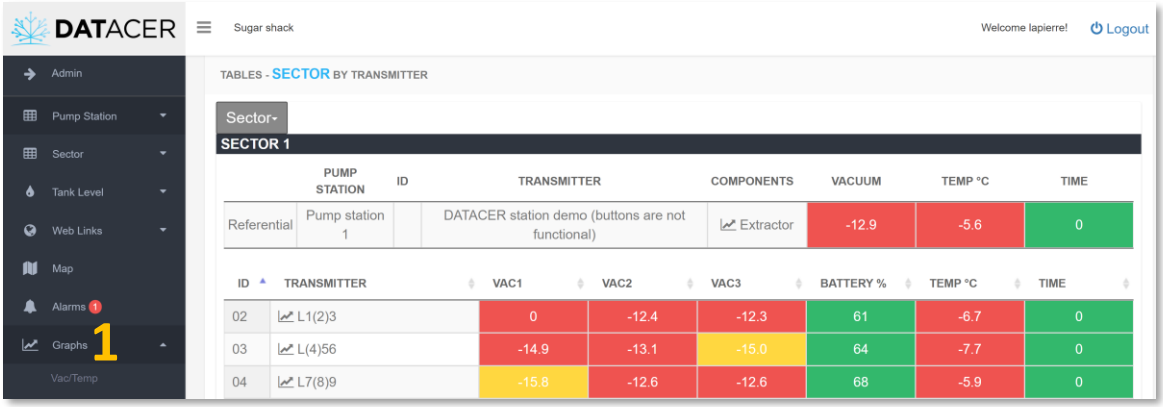


It is also possible to generate these types of graphs via the Pumping Station tab if the DATACER™ station is used to measure the Tank level.

4.11.3 Historical graph of vacuum level and temperature per day for a season

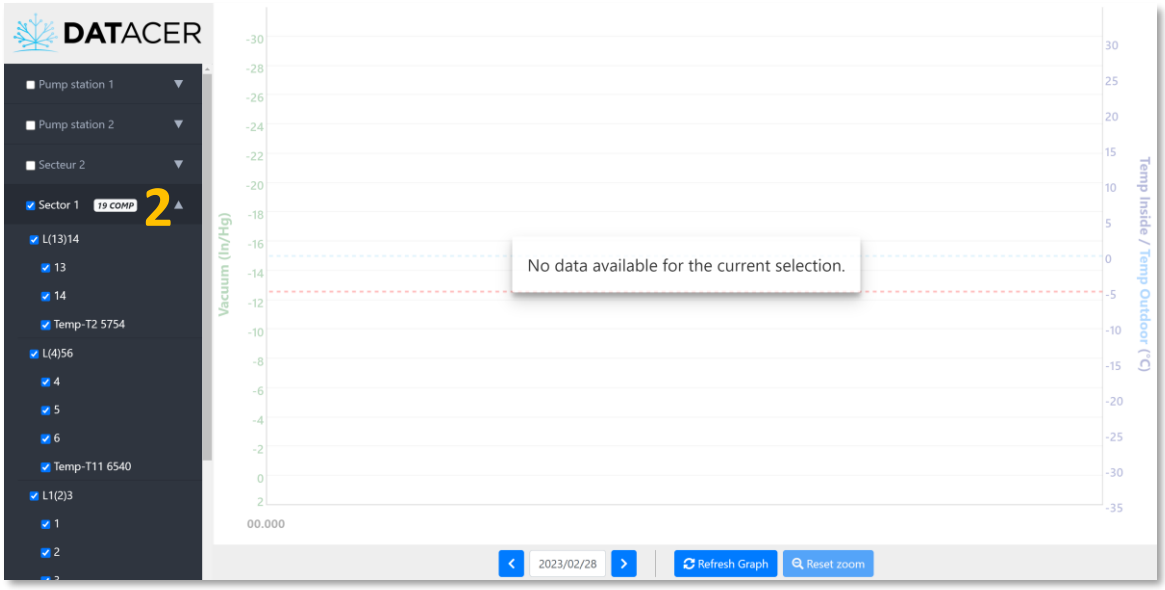
With this type of graph you have an update of the vacuum and temperature values every 10 minutes for 24 hours on every day of the season. You can also record your previous seasons.

1. On the DATACER™ interface, click on Graphs, then Vac/temp.

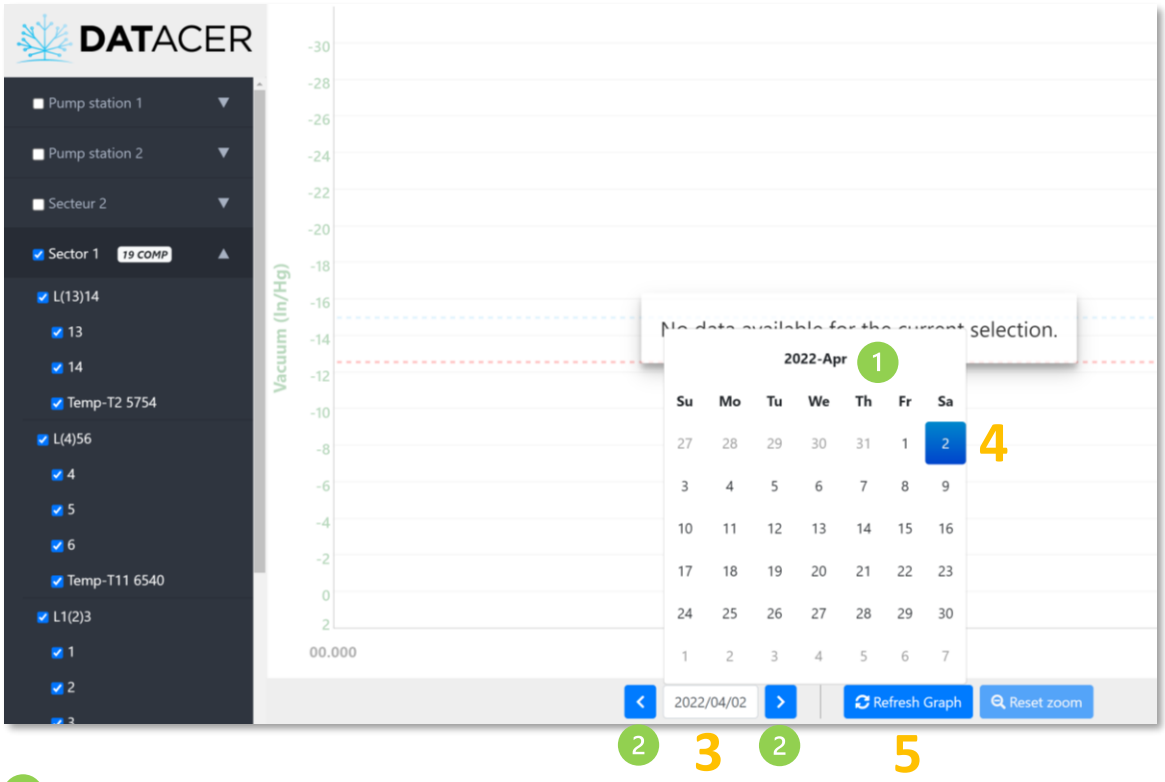


2. Select your sectors and pump stations.

You can then choose to display the desired vacuum levels and temperatures by sector or by pump station.


DATACER
Pump station 1
Pump station 2
Secteur 2
Sector 1
19 COMP
2
L(13)14
13
14
Temp-T2 5754
L(4)56
4
5
6
Temp-T11 6540
L1(2)3
1
2
Vacuum (In/Hg)
Temp Inside / Temp Outdoor (°C)
No data available for the current selection.
00.000
2023/02/28
Refresh Graph
Reset zoom

3. Click on the date space to display the calendar.
4. Choose a date (year, month, day) in the calendar.
5. Then click on Refresh Graphics.



1 Allows you to change the month and year.

2 Allows you to change the date, one day at a time. The left arrow moves back one day. The right arrow moves forward one day.

6. Possibility to have information on each curve by positioning the mouse on the colored points on the curves. These points appear when the mouse cursor passes over the curves. With this method, it is possible to know the name of the line or the Extractor, the name of the Transmitter and other information.

If you change your selection on the left or the date at the bottom, please click on Refresh Graph again to update the screen.

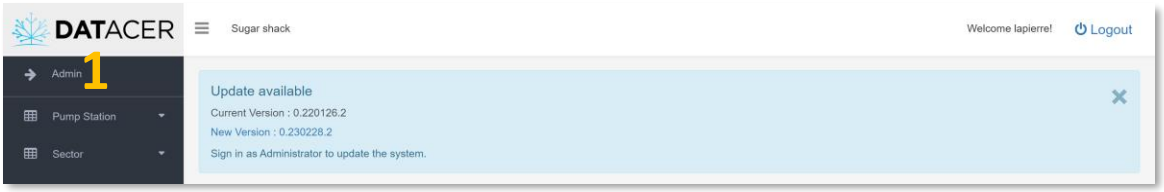
4.12 Updating the DATACER™ database software

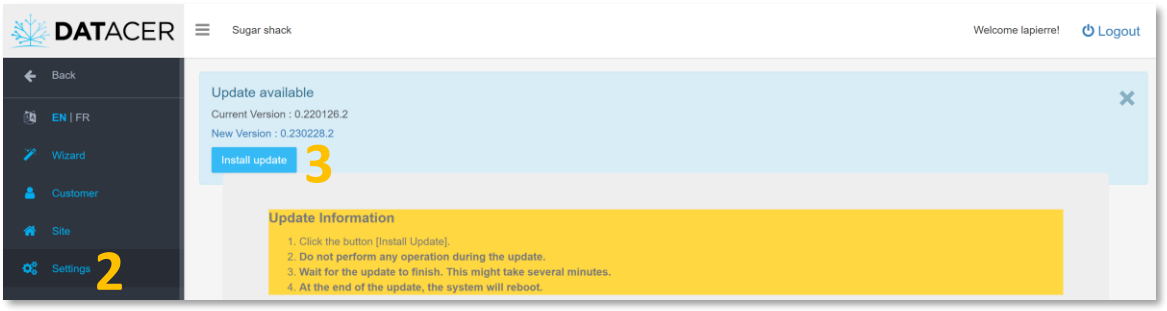
Prerequisite:

- The DATACER™ database must be connected to the Internet to receive updates (see sections 2.2, 4.1.1, 3.2.19 pages 51, 161 et 144.
- The update tool is activated (see section 3.2.8 page 109).

If an update is available a message will appear at the top of your screen.

1. Click on Admin.
2. Click on Settings.
3. Click on Install the update and follow the on-screen instructions.




DATACER
Sugar shack
Welcome lapierre!
Logout
Back
EN | FR
Wizard
Customer
Site
Settings
2
Update available
Current Version : 0.220126.2
New Version : 0.230228.2
Install update
3
Update Information
1. Click the button [Install Update].
2. Do not perform any operation during the update.
3. Wait for the update to finish. This might take several minutes.
4. At the end of the update, the system will reboot.

5. Problems and solutions

The most frequently encountered problems, their probable causes, as well as the associated solutions. Do not hesitate to contact your LAPIERRE representative or distributor if you need assistance.

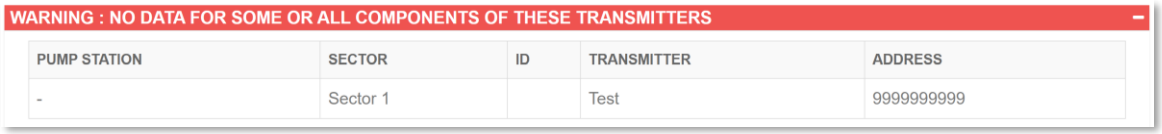
5.1 Warning: No data for some or all of the components of these Transmitters 239
5.2 Data refresh time fluctuates randomly for Transmitters..... 239
5.3 Data refresh time fluctuates randomly for a group of Transmitters 240
5.4 Data refresh time increases for all Transmitters connected to a DATACER™ base..... 241
5.5 Tank level readings with an Ultrasonic Sensor are not consistent 241
5.6 Vacuum level reading = 0 inHg at line end and the exterior temperature read by the vacuum transmitter = -50˚C 242
5.7 Inconsistent tank level readings with pressure sensor 242
5.8 In automatic mode, vacuum pump starts/stops too often 243
5.9 I can't lower my vacuum differential in a line..... 243
5.10 Impossible to modulate my vacuum level only by varying the speed of my vacuum pump 243
5.11 Modulating valve position does not change..... 244
5.12 Return pump does not start when water touches flow electrode 244
5.13 Water pump does not start following a remote manual start request 245
5.14 Unable to connect remotely to the DATACER™ interface via datacer.online 246

5.1 Warning: No data for some or all of the components of these Transmitters

Description of Problem:

Error message that appears at the top of the View by Line or View by Transmitter page in the Area tab. This message means that the Transmitter has never communicated with the DATACER™ base.

1 You can view the list of associated transmitters by clicking on the +



Causes:

- Adding a new Transmitter to the system.
- A Transmitter returns from repair.
- The added or repaired Transmitter is not yet communicating with the rest of the Mesh Network.

Solutions:

- Please ensure that all prerequisites and points of section 4.1.6 page 169 have been executed. In particular, check the address of the transmitter.
- Start an Address Initialization. See section 3.2.12 page 114.
- Check that the Transmitter is synchronized with the base and that the data communication is successful (See section 4.2 page 170).

5.2 Data refresh time fluctuates randomly for Transmitters.

Description of Problem:

The data refresh delay for a Transmitter fluctuates randomly in the Time boxes on the DATACER™ interface. In other words, the delay may vary between normal values (e.g., 0-2 min) and abnormal values (e.g., >10 min). This transmitter may also drain its batteries faster than other transmitters.

Causes:

- Weak signal strength with the rest of the Mesh Network
- The number of hops needed to get to the base is too high regardless of the path the communication can take.

Solutions:

- See section 2.1.2 page 46 and section 2.4 page 57 to optimize the signal strength of a Transmitter with the rest of the Mesh Network.
- See section 2.1.4 page 48 to optimize the number of Hops in a Mesh Network.
- If the timing was good the previous season, then make sure that all Transmitters were installed in the same location.

5.3 Data refresh time fluctuates randomly for a group of Transmitters

Description of Problem:

The data refresh delay for a group of Transmitters fluctuates randomly in the Time boxes on the DATACER™ interface. In other words, the delay can vary between normal values (e.g., 0-2 min) and abnormal values (e.g., > 10 min). These Transmitters may also drain their batteries faster than others.

Causes:

- Weak signal strength with the rest of the Mesh Network
- The Transmitter group does not have enough Paths to get to the base.
- The number of hops needed to get to the base is too high regardless of the path the communication may take.

Solutions:

- See section 2.1.2 page 46 and section 2.4 page 57 to optimize the signal strength of a Transmitter with the rest of the Mesh Network.
- See section 2.1.4 page 48 to optimize the number of Paths and Hops in a Mesh Network.
- If the timing was good the previous season, then make sure that all Transmitters were installed in the same location.

5.4 Data refresh time increases for all Transmitters connected to a DATACER™ base

Description of Problem:

The data refresh time for all the Transmitters connected to a DATACER™ base increases in the Time boxes on the DATACER™ interface. Autrement dit, une minute s'ajoute au délai de chaque Transmetteur à chaque rafraichissement de l'interface, soit à toutes les minutes.

Causes:

- The radio transmitter of the DATACER™ Base is switched off.
- Antenna connections connected to the base or antenna are unscrewed.

Solutions:

- Please make sure that the base station's radio transmitter adapter is plugged in and that the switch is in the ON position. See section 2.2 page 51 for the installation of the base and section 4.1.1 page 161 to switch on the radio transmitter from the base.
- Please ensure that the antenna connections are screwed on. See section 2.10 page 96 for the installation of cables and antennas.

5.5 Tank level readings with an Ultrasonic Sensor are not consistent

Description of Problem:

The Tank level percentage is not consistent with the volume of liquid actually contained in the Tank. For example, the percentage read is 90% when in reality the level is 50%.

Causes:

- Sensor wires are not properly connected to the transmitter board.
- The setting of the Ultrasonic Tank Level Sensor is not correct.
- The space between the Sensor and the ceiling is less than 2 ft (60.96 cm).
- The departure of the water pump causes vibrations transmitted by the Tank to the Sensor.
- The Ultrasonic Sensor is positioned too close to the liquid inlet in the Tank.

Solutions:

- Please make sure that your Sensor is properly connected. See section 2.5 page 63.
- Please make sure that your Sensor is properly configured. See section 3.2.13.6 page 123.
- Check that the distance between the Sensor and the ceiling is greater than 2 ft (60.96 cm). See section 2.5 page 63.
- Check that the sensor is away from the liquid inflow. See section 2.5 page 63.
- If the vibrations caused by the discharge pump are too high, be sure not to install the Sensor holder on the Tank.

5.6 Vacuum level reading = 0 inHg at line end and the exterior temperature read by the vacuum transmitter = -50˚C

Description of Problem:

The vacuum level reading is equal to 0 inHg and the outdoor temperature read by the vacuum transmitter is equal to -50˚C.

Cause:

- Maple sap has entered one of the Transmitter's Vacuum Sensors. Therefore, there is a good chance that the Vacuum Sensor will be broken. Moisture filters protect the Vacuum Sensors from residual moisture in the tubes but cannot stop large amounts of sap due to improper installation.

Solution:

- After repair, please ensure that the slope of the 5/16 pipe is downward from the transmitter to the end of line connection. See section 2.4 page 57.

5.7 Inconsistent tank level readings with pressure sensor

Problem description:

The tank level percentage is not consistent with the volume of liquid currently contained in the tank. For example, the percentage reading is 0.1%, whereas in reality the level is 50%.

Causes:

- If the sensor is connected to a DATACER™ station, it may be incorrectly configured in the DATACER™ station.
- Wrong sensor model selected in DATACER™ interface.

Solutions:

- If the sensor is connected to a DATACER™ station, check that the sensor selected is "Other sensor" on the last page of the DATACER™ station interface. Refer to section 3.3.7 on page 156.
- Check that the pressure sensor model selected when setting up the transmitter is the correct one in the DATACER™ interface. Refer to section 3.2.13 on page 116. After clicking on the blue button, click on the yellow pencil to check the selected sensor model.

5.8 In automatic mode, vacuum pump starts/stops too often

Description:

Vacuum pump starts/stops too often in automatic mode.

Cause:

- Temperature sensor is not correctly installed.
- The 2°C difference between pump start and stop temperature is not adhered to.
- The DATACER™ station has been installed too close to the drive or vacuum pump.
- Incorrect connection between DATACER™ station and drive (or relay box if no drive).

Solutions:

- Check that temperature sensor is correctly installed. See section 2.8.9 on page 91.
- Check that the difference in degrees Celsius between pump start and stop temperature is adhered to. See section 3.3.1 on page 149.
- Check that the DATACER™ station is correctly installed. See section 2.8 on page 75.
- Check connections of drive and vacuum pump start relay to DATACER™ station. See section 2.8.1 on page 77 and section 2.8.2 on page 77.

5.9 I can't lower my vacuum differential in a line

Description of Problem:

After correcting my leaks, I can't get my vacuum level differential down in a line.

Causes:

- There are still leaks between the vacuum sensor and the extractor.
- Vacuum level readings can be influenced by several factors.

Solutions:

- Check for leaks to the vacuum sensor.
- Be aware of the factors that can influence the values read by the vacuum sensor at section 4.5.1 page 191.

5.10 Impossible to modulate my vacuum level only by varying the speed of my vacuum pump

Description of Problem:

The vacuum level at the Extractor does not follow the set points programmed in the DATACER™ station according to the exterior temperature. In other words, even at its minimum speed, the pump generates a vacuum level that is always higher than the vacuum set point programmed in

the station. For example, at 1˚C the vacuum set point to be reached is -15 inHg, the pump speed is at minimum and the vacuum level read at the Extractor does not go above -20 inHg

Cause:

- Even at minimum speed the vacuum pump is able to generate vacuum.

Solution:

- Put a modulation valve between the humidity trap and the extractor. For the description of a Modulating Valve see section 1.4.3 page 28 for installation see section 2.8.3 page 81, for available settings section 3.3.2 page 150 and to implement vacuum modulation section 4.8.3 page 216.

5.11 Modulating valve position does not change

Problem description:

The modulating valve is immobile. It cannot be used to vary the vacuum level as a function of temperature.

Causes:

- The modulation type remains in fixed setpoint.
- If modulation is a function of temperature, then the vacuum values in the table are probably not appropriate.
- If there is an emergency stop float for a horizontal extractor, the white cylinder may be mounted upside down.

Solutions:

- Make sure to select the correct modulation type from the DATACER™ interface or the DATACER™ station interface section 4.8.3 page 216 for temperature-dependent modulation and section 4.8.4page 218 for fixed setpoint modulation.
- Check the vacuum values entered in the modulation table in the DATACER™ station interface. See section 3.3.2 on page 150.
- Swap the white float cylinder so that the correct side can make contact. See section 2.8.4 page 83.

5.12 Return pump does not start when water touches flow electrode

Problem description:

Return pump does not start when water touches the flow electrode.

Causes:

- Installation or connection error of the DATACER™ water pump control or its electrodes.
- Wrong sensitivity setting on Lovato relay.
- Water pump control selector not correctly positioned.
- A forced shutdown of the water pump has been requested remotely from the DATACER™ interface.

Solutions:

- Make sure that the DATACER™ water pump control and its electrodes are properly installed and connected. See section 2.8.5 on page 85.
- Make sure that the sensitivity setting of the Lovato relay is correct. See section 2.8.5 on page 85.
- Make sure the water pump control selector is in the "AUTO" position. See section 4.8.6 on page 222.
- Click on "Start" to disable forced shutdown on the DATACER™ interface. See section 4.7.4 on page 211.

5.13 Water pump does not start following a remote manual start request

Problem Description:

The water pump does not start following a remote manual start request. In other words, the water pump status remains "Waiting for auto start" and never changes to "Pumping in progress".

Causes:

- Poor radio communication with the DATACER™ station that manages water pump control. DATACER™ station refresh times too long.
- No water in the tank. It can be checked remotely if you measure the tank level with your DATACER system.
- Water pump not or no longer supplied with power (overload protection engaged, DATACER™ pump control selector switch in OFF position).
- Wrong Lovato relay sensitivity setting.

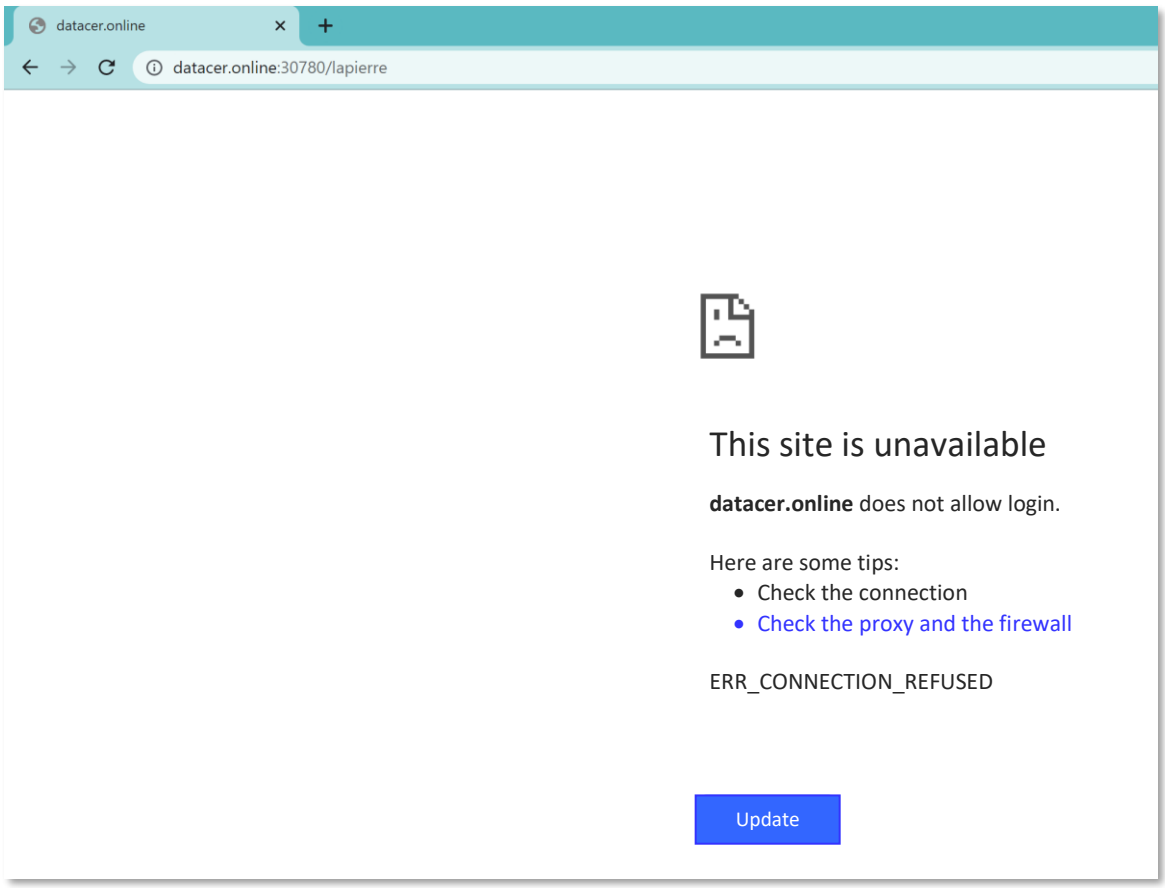
Solutions:

- Optimize the position of your radio transmitters and antennas to improve the responsiveness of the DATACER™ station, see section 2.1 on page 45.
- Check pump power supply and that water pump control selector is set to "AUTO", see section 4.7.4 on page 211.
- Make sure that the sensitivity setting of the Lovato relay is correct. See section 2.8.5 on page 85.

5.14 Unable to connect remotely to the DATACER™ interface via datacer.online

Description of problem:

The following error message appears on your computer, tablet or cell phone screen.



Causes:

- The site address is incorrect.
- The DATACER™ base is not connected to the Internet.
- The computer or the router of the DATACER™ base is turned off.

Solutions:

- Check remote connection address, see section 4.4.4 on page 186.
- Check that your internet service is working (residential internet, hotspot...). You can for example connect to the WI-FI and try to do an internet search. If you have Internet, then the search should result in a valid Internet page. If you are using a cell phone, then please disable data usage to make sure that your internet search uses the data from your internet service and not from your phone subscription.
- Check that you have enabled the network connection on the interface. (See section 3.2.19 page 144)
- Check that the DATACER™ base is connected. See section 2.2 page 51.

- Turn off the DATACER™ base, wait 10 seconds and then turn it back on. See section 4.3.1 page 175 for stopping and section 4.1.1 page 161 for starting up the DATACER™ base. Please respect the order indicated.
- If it still doesn't work, please turn off the power, unplug the power adapters, and unplug the Ethernet cables from all your equipment, i.e., the Internet service and the DATACER™ base. Wait at least 30 seconds. Reconnect and turn on your equipment in the following order: 1) Internet service and 2) DATACER™ base. To connect and start the DATACER™ base, please refer to the sections indicated in the previous paragraph.

6. Appendices

Additional information.

6.1 Equipment specification 249
6.2 Reminders of the steps for seasonal opening and closing of the DATACER™ system. 250
6.3 Grounding an antenna 252
6.4 Summary of settings and use of control and automation functions 254
6.5 Meaning of the lights on the DATACER™ station..... 255
6.6 Industry Canada Regulatory Compliance Notice 256
6.7 Federal Communications Commission (FCC) Statement 256

6.1 Equipment specifications

		Margin of error	Cable length (ft)	Operation temperature (°C)	Storage temperature (°C)	Sealing - waterproofing
Transmitters	Base	N/A	N/A	0 to +40	-30 to +40	IP43
	Station	N/A	N/A	-30 to +40	-30 to +40	IP43
	Tank level transmitters (L,LL,LLL), pressure transmitters (P,PP,PPP) and combined transmitters (LV, LLV, PV, PPV, PLL, PLV)	N/A	N/A	-20 to +40	-30 to +70	IP43
	Vacuum transmitters (V,VV,VVV)	N/A	N/A	-20 to +40	-30 to +40	IP65
	Battery powered repeater	N/A	N/A	-20 to +40	-30 to +40	IP65
	Power cable repeater	N/A	N/A	-20 to +40	-30 to +40	IP65
Sensors	Vacuum sensor	+/- 1% (+/-0.3 inHg)	N/A	-25 to +40	-30 to +40	N/A
	Temperature sensor paired with vacuum sensor	+/- 2°C	N/A	-25 to +40	-30 to +40	N/A
	Sonar	+/- 1.5%	50	-25 to +40	-40 to +65	IP40
	Pressure sensor (0-150 or 300 psi)	+/- 1.5%	25	-25 to +40	-25 to +65	IP40
	Level pressure sensor (0-34 feet)	+/- 1.5%	25	-25 to +40	-25 to +65	IP40
	Level pressure sensor (0-10 feet)	+/- 1.5%	50 or 100	-25 to +40	-25 to +65	IP40
	Level pressure sensor (0 -100 inches)	+/- 1.5%	15	-25 to +40	-25 to +65	IP40
	DATACER External temperature probe station	+/- 0.4°C	30	-25 to +40	-30 to +40	IP40
	DATACER Internal temperature probe station	+/- 0.1°C	3	-25 to +40	-30 to +40	IP40
DATACER station peripherals	Vacuum pump start relay	N/A	30	-25 to +40	-30 to +40	IP43
	Drive vacuum pump connection station	+/- 1%	15	-25 to +40	-30 to +40	IP43
	Modulation valve	+/-2%	16	-25 to +40	-30 to +40	IP40
	Emergency stop float / Horizontal extractor	N/A	20	-25 to +40	-30 to +40	IP40
	Emergency stop float / Vertical extractor	N/A	20	-25 to +40	-30 to +40	IP41
	Water pump control	N/A	15	-25 to +40	-30 to +40	IP40
	Drain valve	N/A	30	-25 to +40	-30 to +40	IP40
	Air intake valve	N/A	30	-25 to +40	-30 to +40	IP40

6.2 Reminders of the steps for seasonal opening and closing of the DATACER™ system

SEASONAL OPENING
Start of season operation

DATACER
sugarbush automation

Proceed in the following order:

1. Plug in and turn on the system display.
2. Connect the router, the transmitter and the computer of the DATACER BASE to the battery (UPS).
3. **Switch on battery (UPS) first**, green LED on.
4. **Then turn on the DATACER router second**.
5. **Switch on the radio transmitter of the DATACER BASE UNIT third**.
6. **Then switch on the DATACER BASE NUC fourth**, the program will then run automatically.
7. Enter the program in **ADMIN** mode.
8. In **SETTINGS**, set the synchronization to **INSTALLATION** mode.
9. Make sure that the batteries in the vacuum transmitters are new, over 95%.
10. Turn on, one by one, your transmitters near the DATACER base.
11. Make sure that the transmitters communicate with the DATACER BASE and that the refresh times are fast (0, 1, 2, 3 minutes) on the interface.
12. Bring the transmitters on to the sugarbush, in quantities of 6 to 10 transmitters at a time, from the closest to the DATACER BASE to the furthest.
13. Once steps 1-12 are completed, validate that the communication between the DATACER BASE UNIT and the transmitters is stable, with fast refresh times.
14. Set the synchronization to OPERATION. The system will then automatically switch to this mode at midnight.

My DATACER unit number: _____ Channel: _____

User admin: _____
Admin password: _____

Online user: _____
Online password: _____

Internet access: **datacer.online: _____80/lapierre**

SEASONAL CLOSING

End of season storage

DATACER
sugarbush automation

Proceed in the following order

to take full advantage of your DATACER for many years.

1. As soon as the season is over: disconnect the vacuum hoses and remove the transmitters, turn the switch off, **return the transmitters, remove the batteries and recycle them according to your local regulations.**
2. Store transmitters in a cool, dry place, leave covers ajar.
3. Turn off the DATACER BASE (main controller):
   Select SHUT-DOWN from the computer menu, i.e. the blue icon in the upper left corner.
4. Turn off the DATACER BASE Transmitter, monitor, router, and unplug anything connected to the UPS.
5. **Leave the UPS connected to extend the life of the battery.**
6. **Disconnect the antenna cable from the DATACER BASE UNIT to prevent lightning damage outside the sugaring season.**
7. For connected transmitters and DATACER stations, **turn the switches OFF** and disconnect the power supply and antenna cables for the same reason as for the base.

Recommendations, diagnosis of possible failures

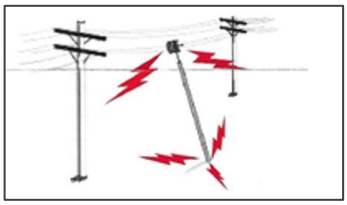
1. PASSWORDS. For security purposes, choose a personalized password to enter the ADMIN mode and to access the system via DATACER.ONLINE.
2. SYSTEM START-UP. We suggest turning on the transmitters during the first spring leaks. Battery life is approximately 100 days.
3. LOSS OF SYNCHRONIZATION FOR ALL TRANSMITTERS. The times all increase at the same time. Turn OFF the DATACER BASE transmitter and back ON after 10 seconds, the times should return to normal values. If not, proceed with a restart of the NUC DATACER BASE system.
4. CAUTION. Never turn on a transmitter without its antenna.

6.3 Grounding an antenna

OUTDOOR INSTALLATION WARNING
IMPORTANT SAFETY MEASURES

WARNING, DANGER OF DEATH!
Please follow these guidelines and the specific instructions that accompany the equipment you are installing. | **IMPORTANT** | Inspect the site before beginning installation to anticipate potential hazards.

ANY CONTACT WITH HIGH VOLTAGE LINES CAN BE FATAL



Make sure there are no power lines in the area of the installation. Antennas, masts, towers, ropes and guy wires can come in contact with high voltage lines.

Personnel can be injured or killed if they touch power lines or hold a piece of equipment that comes in contact with power lines. Ensure that there is NO RISK of direct or indirect contact between equipment or people and high voltage power lines.

Assume that all overhead cables are high voltage cables.

The horizontal distance between a tower, mast or antenna and the nearest high voltage line should be at least twice the total length of the mast/antenna combination.

TO AVOID AN ACCIDENTAL FALL, FOLLOW SAFETY PROCEDURES WHEN WORKING AT HEIGHTS ABOVE THE GROUND

- Choose a location that will allow for easy and safe installation of the equipment.
- Never work alone. A friend or co-worker can save your life in case of an accident.
- Use approved non-conductive ladders and other safety equipment. Make sure equipment is in good condition.
- If a tower or antenna starts to fall, don't try to hold it. Step back and let the equipment fall.
- If a cable or pole comes in contact with a high voltage line, DO NOT TOUCH IT OR TRY TO REMOVE IT. Call your local power company immediately.
- Do not attempt to erect antennas or towers on windy days.

MAKE SURE THAT ALL TOWERS AND MASTS ARE WELL GROUNDED AND THAT THE ELECTRICAL CABLES CONNECTED TO THE ANTENNAS ARE EQUIPPED WITH A LIGHTNING ARRESTER

This precautionary measure helps prevent fire damage and personal injury that may result from lightning, static buildup, or short circuits in equipment connected to the antenna.

- The base of the antenna tower or mast must be connected directly to the building ground or to one or more approved ground rods using OAWG ground wire and corrosion-resistant connectors.

- Consult the National Electrical Code for more information on grounding.

• Surge protectors are available for coaxial antenna feeder cables.

IF A PERSON COMES INTO CONTACT WITH A POWER SOURCE AND IS UNABLE TO MOVE

• DO NOT TOUCH THE PERSON, AS THIS MAY RESULT IN ELECTROCUTION.

• Use a dry, non-conductive sign, stick or rope to push or pull the person away from the electrical source.

• When the person is no longer in contact with the electrical source, perform artificial respiration (CPR) if you are certified as a first responder and ensure that first responders have been contacted.

WARNING LABEL

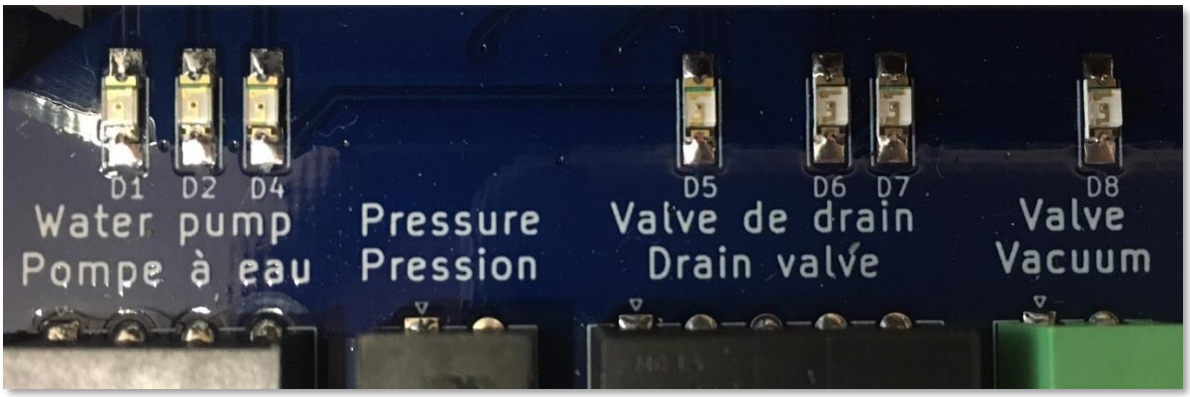
This warning label should be affixed to the antenna in a manner that is clearly visible to installers and maintenance personnel. If there is no space on the antenna, it is recommended that the label be affixed to a mounting bracket or mounting location (such as a mast) near the antenna.

The label shown may differ from the one affixed to your equipment.

6.4 Summary of settings and use of control and automation functions

	Function / Feature	Page	Settings			Use							
						DATACER station selector switch position			DATACER interface options				
			None	DATACER station interface	DATACER Interface	AUTO	OFF	MAN	Manual Control remote	Automatic Control	Modulation based on temperature	Modulation based on set value
Controlling equipment locally	Starting/stopping vacuum pump(s)	202	X				X	X				
	Starting a water pump	204	X									
	Forcing the speed of a vacuum pump with a drive	205	X					X				
	Forcing the Modulation Valve Open	206	X					X				
Controlling equipment remotely	Starting/stopping vacuum pump(s)	209			X	X			X			
	Forcing the speed of a vacuum pump with a drive	210			X	X			X			
	Forcing the Modulation Valve Open	211			X	X			X			
	Starting/stopping a water pump	211			X	X			X			
	Open/Close Drain Valve	213			X	X			X			
Automate the control of your equipment	Temperature-dependent start/stop of vacuum pump(s)	214		X		X				X		
	Stop/restart the vacuum pump via the Float in the Humidity Trap	215	X									
	Modulation of the vacuum level at the Extractor according to the temperature	216		X		X				X	X	
	Modulation of the vacuum level at the Extractor according to a set vacuum value	218				X				X		X
	Close the modulation valve if the water level in the Extractor exceeds a certain level	222	X									
	Start/stop a water pump according to tank level by Electrodes	222	X									
	Open/close a Drain Valve depending on the outside temperature and/or the pressure of a pipe	223		X								
	Stop the transfer pump if the drain valve is open	224		X								
	Opening/closing the air intake valve depending on exterior temperature	224		X								

6.5 Meaning of the lights on the DATACER™ station



D1 | Water Pump: If lit for 3 seconds, the station will ask you to start the water pump.

D2 | Water Pump: If it remains on, the station prevents the pump from starting.

D4 | Water Pump: If lit, the pump is running.

D5 | Drain Valve: If lit, then the valve is opening.

D6 | Drain Valve: If lit, then the valve is fully open.

D7 | Drain Valve: If lit, then the valve is fully closed.

D8 | Vacuum Valve (Air Intake Valve): If lit, then the valve is opening or is fully open.

D6 | Vacuum control : If lit, the vacuum pump is on.

D9| Humidity trap: If lit, the switch is closed and the trap is empty. This is the normal position.

D11| Input (Emergency Stop Float): If lit, then the switch is closed and indicates that the Extractor may overflow.

6.6 Industry Canada Regulatory Compliance Notice

This Class A digital apparatus complies with Canadian ICES-003.

6.7 Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy. It may also cause harmful interference to radio communications if not installed and used in accordance with the instruction manual.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

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We sincerely appreciate your trust.

Thank you!

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99, rue de l'Escale, Saint-Ludger (Québec) Canada G0M 1W0

819 548.5454 | 1 833 548.5454 | info@elapierre.com | www.elapierre.com