

Instruction and Operation Manual

DL P50

Display and Data Logger



Dear Customer,

Thank you for choosing our product.

Please read the operating instructions in full and carefully observe them before starting up the device. The manufacturer cannot be held liable for any damage which occurs as a result of non-observance or non-compliance with this manual.

Should the device be tampered with in any manner other than a procedure which is described and specified in the manual, the warranty is void and the manufacturer is exempt from liability.

The device is destined exclusively for the described application.

Atlas Copco offers no guarantee for the suitability for any other purpose. Atlas Copco is also not liable for consequential damage resulting from the delivery, capability or use of this device.

Revision: 2026-1



Last modifications: January, 2026

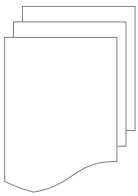
Table of Contents

1 Safety Instructions.....	6
2 Registered Trademarks.....	7
3 Application.....	8
4 Features.....	9
5 Technical Data.....	10
5.1 General Data.....	10
5.2 Electrical Data.....	10
5.3 Input Signals.....	10
5.4 Output Signals.....	10
6 Installation	11
6.1 Installation Requirements.....	11
6.2 Install the DL P50.....	11
7 Overview of Setting and Operation of DL P50.....	13
8 Electronic Connection.....	14
8.1 Terminals Introduction.....	14
8.1.1 Digital Inputs.....	15
8.1.2 Analog Inputs	16
8.1.3 Alarm Output	16
8.1.4 Data Interface	19
8.2 Connect DL P50 to External Devices	19
8.2.1 Connect DL P50 to Power Supply	19
8.2.2 Power Supply for Connected Sensors.....	21
8.2.3 Connect Devices to Terminal A and B via Modbus.....	22
8.2.3.1 Modbus/RTU Cable Length.....	22
8.2.3.2 Modbus/RTU Wiring and Cable Type.....	23
8.2.3.3 Daisy-Chain using RS-485 Splitter.....	24
8.2.4 Connect Atlas Copco Devices to Terminals E and F via Analog/Pulse.....	25
8.2.5 Connect 3rd Party Analog/Pulse devices to Terminals E and F	26
9 Configuration using S4C-Display Software.....	28
9.1 Establish Communication between DL P50 and S4C-Display.....	28
9.2 Add Devices to DL P50.....	29
9.2.1 Add an Atlas Copco Modbus Slave to DL P50.....	29
9.2.2 Add an Atlas Copco Analog/Pulse Device to DL P50.....	34
9.2.3 Connect a 3rd Party Device to DL P50.....	35
9.3 Download Configurations to DL P50.....	38
9.4 Save/Load Configuration as Files.....	39
9.4.1 Save Configuration to a File.....	39
9.4.2 Load configuration from a file.....	39
10 Settings using Touchscreen	40

10.1 Value Screen.....	40
10.2 Main Menu.....	41
10.3 Icons in the Status Bar	42
10.4 Graphic Screen.....	42
10.4.1 Add a Data Curve.....	42
10.4.2 View Curves.....	44
10.5 Sensor Setting.....	45
10.5.1 Change Sensor Settings.....	45
10.5.2 Dew Point Sensor	45
10.5.3 Flow Sensor	47
10.5.4 Vacuum Flow Sensor (Virtual Sensor).....	49
10.5.5 Oil Vapor Sensor	50
10.5.6 Analog Input Channel	50
10.6 Alarm Management.....	52
10.6.1 Alarm Setting.....	52
10.6.2 Monitor and Dismiss Alarms via DL P50.....	54
10.7 Logger	55
10.8 Files.....	56
10.9 Service Info	56
10.10 System Setting	57
10.11 Communication.....	58
11 Export Logger Files and Screen-shots.....	59
11.1 Export Logger Files and Screen-shots using S4A	59
11.2 Export Logger Files and Screen-shots using USB Disk.....	62
12 Build Network using Modbus Interface.....	64
12.1 Integration with a Factory Automation System.....	64
12.1.1 RS-485 through the Modbus-to-RTU Gateway.....	64
12.1.2 Field-bus Ethernet through the Modbus/TCP.....	65
12.2 Standalone Solution.....	66
12.2.1 Physical Networking Modes.....	66
12.2.1.1 RS-485.....	66
12.2.1.2 Ethernet.....	66
12.2.1.3 More Complex Networking Solutions.....	67
12.2.2 Hardware Connection.....	68
12.2.3 Fieldbus Interface Configuration.....	69
12.2.3.1 Field bus RS-485 settings.....	70
12.2.3.2 Field Bus Ethernet Settings.....	70
12.3 Print Modbus Slave Register Table.....	71
12.4 Troubleshooting.....	73
13 Monitor Data Remotely	75
13.1 Enable Remote Access.....	75
13.2 Monitor Data through an Internet Browser.....	75

13.3 Monitor Data through S4A Software.....	76
14 Extended Use of Virtual Channels.....	77
14.1 Virtual Channels.....	77
14.1.1 Monitor Vacuum Flow and Consumption.....	77
14.1.2 Monitor Flow or Consumption for Several Branch Lines.....	81
14.2 Monitor Compressor Run Time.....	83
15 Firmware Update.....	85
15.1 Update using S4C-Display.....	85
15.1.1 Preparation.....	85
15.1.2 Update Steps.....	85
15.2 Update using a USB Stick.....	88
15.2.1 Preparation.....	88
15.2.2 Update Steps.....	88
16 Maintenance.....	89
17 Disposal of Waste.....	89
18 Appendix A – Modbus Interface	90
19 Appendix B – Power Consumption of Sensors	91

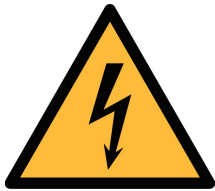
1 Safety Instructions



Please check if this instruction manual matches the product type.

Please observe all notes and instructions indicated in this manual. It contains essential information which must be observed before and during installation, operation and maintenance. Therefore this instruction manual must be read carefully by the technician as well as by the responsible user / qualified personnel.

This instruction manual must be available at the operation site of the display and data logger at any time. In case of any obscurities or questions, regarding this manual or the product, please contact the manufacturer.



WARNING!

Voltage used for supply!

Any contact with energized parts of the product may lead to an electrical shock which can lead to serious injuries or even death!

- Consider all regulations for electrical installations.
- The system must be disconnected from any power supply during maintenance work.
- Any electrical work on the system is only allowed by authorized qualified personal.



WARNING!

Permitted operating parameters!

Observe the permitted operating parameters. Any operation exceeding this parameters can lead to malfunctions and may lead to damage on the instrument or the system.

- Do not exceed the permitted operating parameters.
- Make sure the product is operated in its permitted limitations.
- Do not exceed or undercut the permitted storage and operating temperature and pressure.

General safety instructions

- It is not allowed to use the product in explosive areas.
- Please observe the national regulations before/during installation and operation.

Remark

- It is not allowed to disassemble the product.



ATTENTION!

Measurement values can be affected by malfunction!

The product must be installed properly and frequently maintained, otherwise it may lead to wrong measurement values, which can lead to wrong results.

Storage and transportation

- Make sure that the transportation temperature of the display and data logger is between -20 ... +60°C.
- For transportation it is recommended to use the packaging which comes with the display.
- Please make sure that the storage temperature of the display is between -20 ... +70°C.
- Avoid direct UV and solar radiation during storage.
- For the storage the humidity must be <90%, no condensation.

2 Registered Trademarks

Trademark	Trademark owner
MODBUS®	Modbus Organization, Hopkinton, USA
Android™, Google Play	Google LLC

3 Application

The DL P50 Display and Data Logger is mainly used to display and record all relevant parameters in compressed air systems, such as flow rate, dew point, pressure, temperature, power, compressor condition, and so on.

The DL P50 offers the following main features:

Power supply	60 W
Power supply for sensors	50 W
Dimension	306*225*139 (mm)
Weight	2.12 kg
Number of cable glands	8
Installation method	Wall mounting
USB port	Type-C on side panel

The DL P50 supports configuring a maximum of 100 measurement channels. The following table lists the maximum number of channels and connected devices by input types.

Input type	SDI	Analog and pulse	Virtual channel	Modbus/RTU
Max. number of channels	12	4	4	58
Max. number of connected devices	2	2	2	16

Note: The other 16 channels are reserved for further use.

The DL P50 is mainly used in compressed air systems in the industrial environment. It is not developed to be used in explosive areas. For the use in explosive areas, please contact the manufacturer.

4 Features

- Provides 5" high-resolution color touch screen.
- Supports connections to all Atlas Copco sensors and 3rd-party sensors.
- Supports 16 Modbus, 2 SDI, 2 analog, and 2 pulse sensors.
- Supports up to 100 measuring channels.
- Wall mountable.
- USB port to enable data transfer to memory stick or PC.
- RS-485 (Modbus/RTU) and Ethernet (Modbus / TCP) interfaces to enable connections to the factory automation system.
- 50 W sensor power supply (24 VDC).
- Can store up to 100 million measurement values.
- Integrates Web server for remote monitoring.
- Supports monitoring of the compressor run time.

5 Technical Data

5.1 General Data

	
Data logger	Internal, 100 million values
Operating temperature	0 ... +50°C
Housing material	PC
Protection class	IP65
Dimensions	See the dimensional drawing in section 6.2 Install the DL P50.
Display	5" high-resolution graphic display, 800 x 480 pixels touch screen
Cable entry diameter	4.5 ... 8 mm
Cable	Supply: AWG12 ... AWG24, 0.2 ... 2.5 mm ² Signals: AWG16 ... AWG28, 0.14 ... 1.5 mm ²
Weight	2.12 kg

5.2 Electrical Data

Power supply	85 ... 305 VAC, 60 W
Sensor supply	24 VDC, 50 W

5.3 Input Signals

Digital input	2 X SDI sensors 16 x RS-485 Modbus/RTU Sensors
Analog input	2 x 0 ... 20 mA / 4 ... 20 mA / 0 ... 10 V 2 x pulse
Pulse input	100 Hz maximum; 28 V, 10 mA

5.4 Output Signals

Analog / Pulse output	4 ... 20 mA signal and pulse signal can be looped through the display by using the connection board
Alarm output	Integrated 2 relays, 230 VAC, 3 A, NC
Interface	Ethernet (Modbus/TCP) RS-485 (Modbus/RTU) USB-C port

6 Installation

Make sure that all components listed below are included in your package.

Qty	Description
1	DL P50 with wall casing
1	USB-C cable, USBA to USB-C, 1.5 m
1	Instruction manual

6.1 Installation Requirements

- The DL P50 is for indoor use only! At an outdoor installation, the device must be protected from solar radiation and rain.
- Do not install the DL P50 permanently in a wet environment.

6.2 Install the DL P50

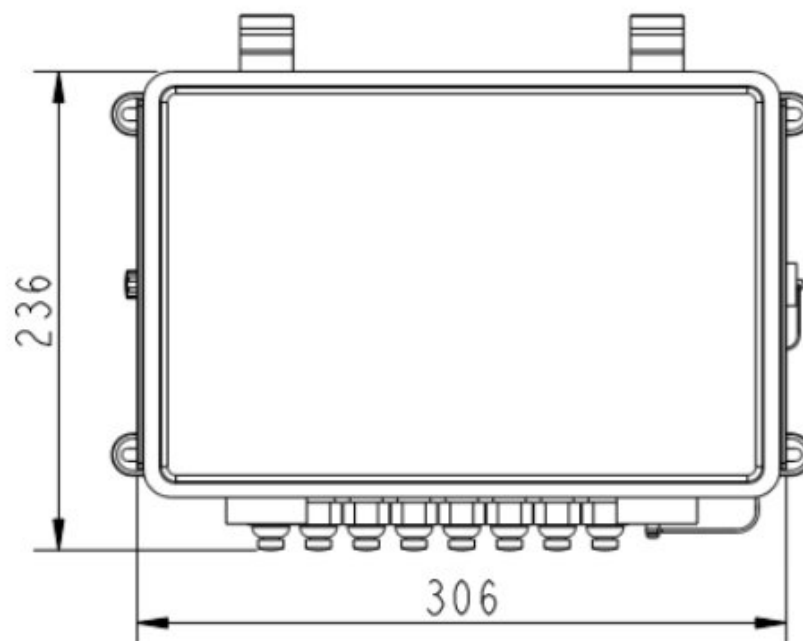
The DL P50 can be mounted on a wall. The wall casing of the DL P50 must be fixed on the wall using suitable dowels and screws.



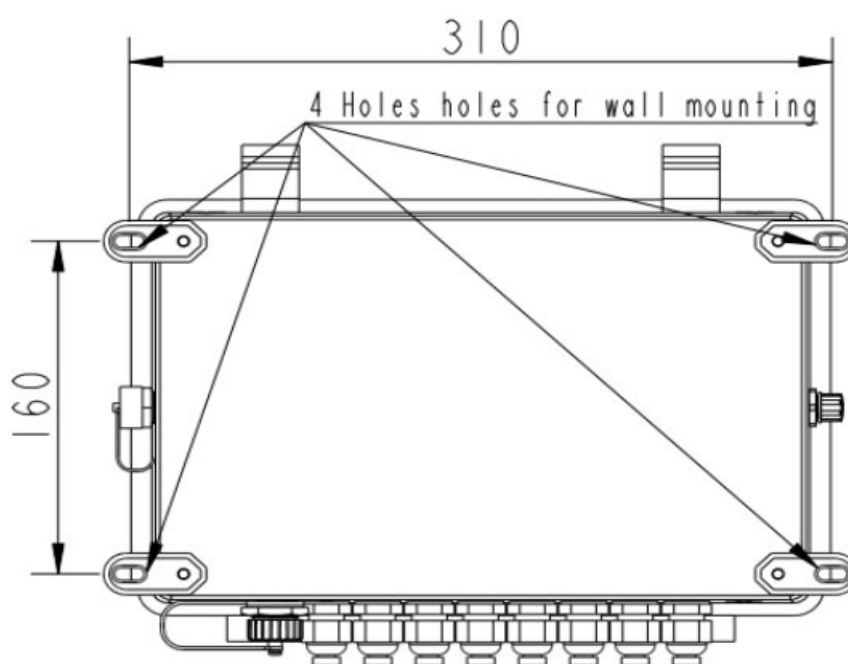
ATTENTION!

Wrong measurement is possible if the DL P50 is not installed correctly.

Dimensional drawing:

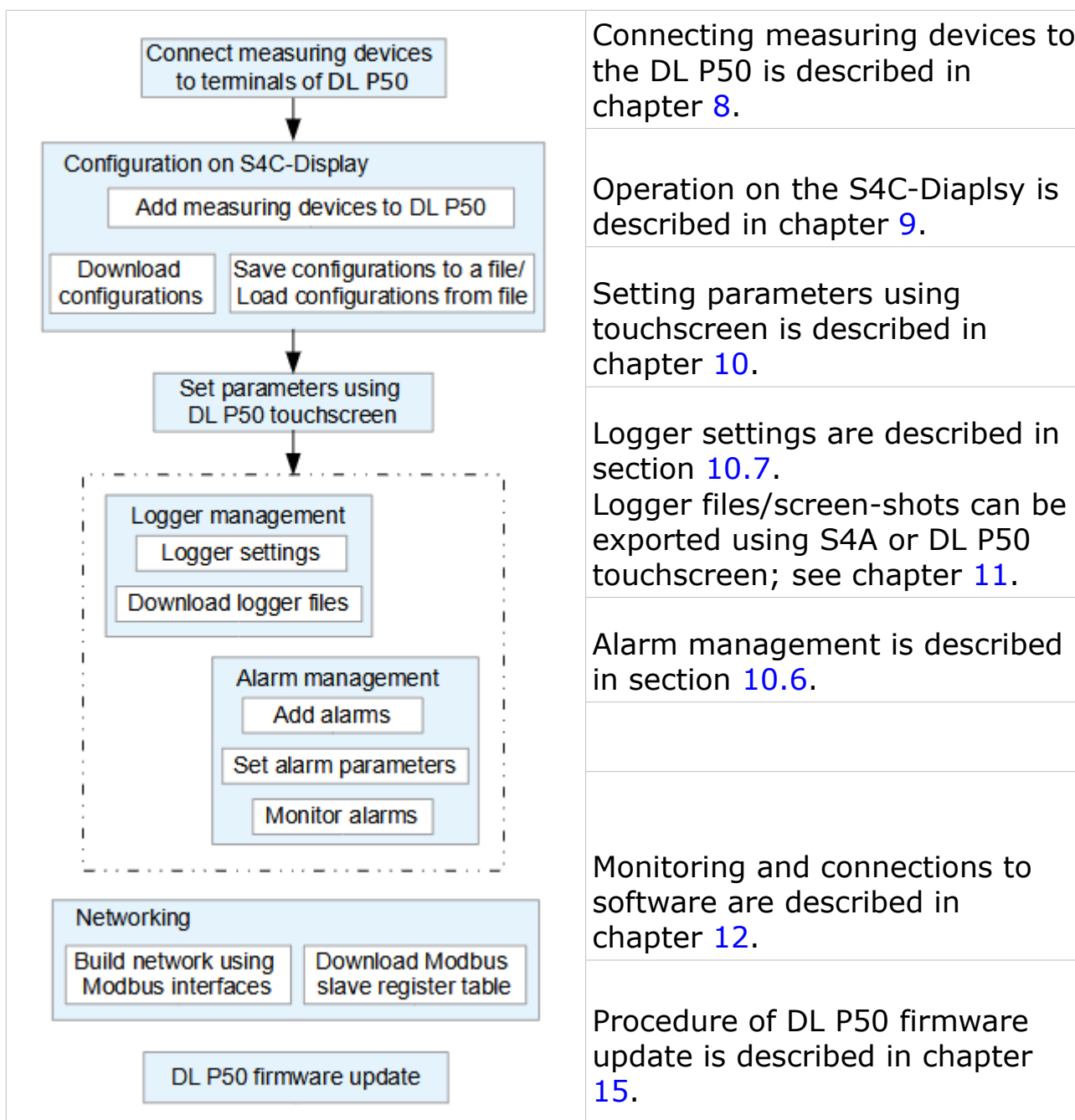


Wall mounting instruction:



7 Overview of Setting and Operation of DL P50

The DL P50 cannot automatically identify connected sensors. You need to use the S4C-Display software to configure sensors. After the sensors are configured using the S4C-Display software, you can change settings of connected sensors using the touchscreen of the DL P50. The figure below describes the general procedure.

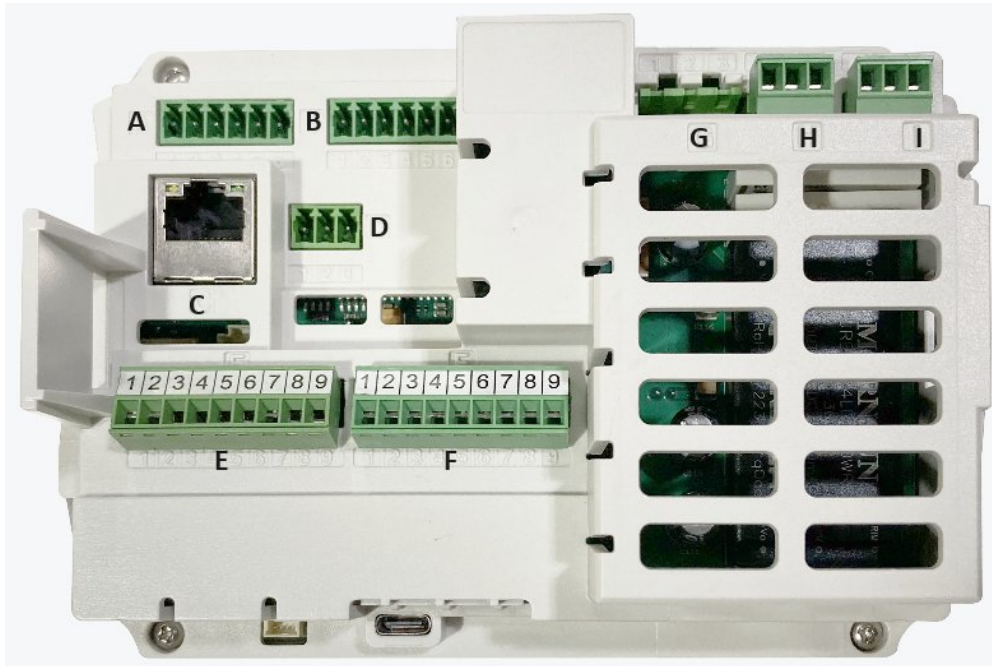


8 Electronic Connection

8.1 Terminals Introduction

The terminals A, B, C, D, E, F, G, H, and I on the back of the DL P50 are used as inputs and/or outputs for various signals, power supply, or alarm contacts.

This section describes the function and pin assignments of each terminal.



A : Input for digital sensors (1 X SDI + 1 X Modbus/RTU)

B : Input for digital sensors (1 X SDI + 1 X Modbus/RTU)

C : Ethernet

D : RS-485, to connect DL P50 to a Modbus master (Modbus/RTU)

E : Input for analog sensors (1 x analog + 1 x pulse)

F : Input for analog sensors (1 x analog + 1 x pulse)

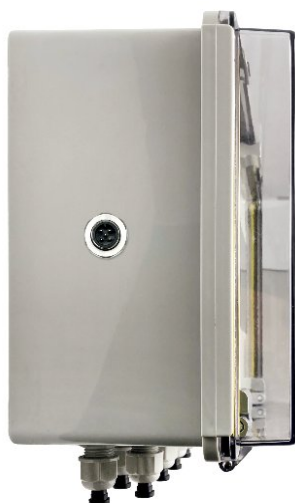
G : Power supply

H : Relay output

I : Relay output

Note: Sensors connected to the DL P50 are powered by two power output terminals on the power distribution board. See section 8.2.1 for details.

A USB port and an M12 connector are available on each side panel separately.



The M12 connector is for internal use.



The USB port is used to connect to a USB stick or USB cable to update FW or transfer data.

8.1.1 Digital Inputs

The terminals A and B are used to connect SDI and Modbus/RTU sensors to the DL P50. In total you can connect:

- Two SDI sensors
- Sixteen Modbus/RTU sensors

Details for connection can be found in section 8.2.3 Connect Devices to Terminal A and B via Modbus.

Pin assignments of the terminal A/B are described in the table below:

Terminal	Pin	Signal	Description
A/B	1	SDI	Digital communication signal from a sensor
	2	-V _b	Negative sensor supply
	3	+V _b	Positive sensor supply (24 VDC)
	4	D+	Modbus/RTU sensor input (Data+ Signal)
	5	D-	Modbus/RTU sensor input (Data- Signal)
	6	GND	GND for Modbus/RTU sensor communication

8.1.2 Analog Inputs

The terminals E and F provide two analog / pulse inputs. In total you can connect:

- 2 x analog sensors (0 ... 20 mA / 4 ... 20 mA / 0 ... 10 V)
- 2 x pulse sensors

Pin assignments of terminals E and F are described in the table below.

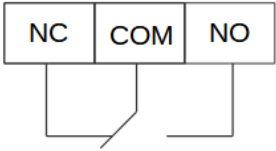
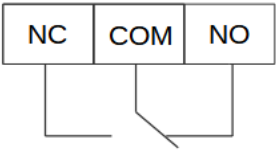
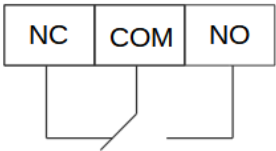
Terminal	Pin	Signal	Description
E/F	1	N/A	Not used
	2	+E	Positive voltage input (0... 10 V)
	3	-E	Negative voltage input (0... 10 V)
		-I	Negative analog signal (0... 20 mA / 4... 20 mA)
	4	N/A	Not used
	5	+I	Positive analog signal (0... 20 mA / 4... 20 mA)
	6	P+	Positive pulse input
	7	P-	Negative pulse input
	8	-V _b	Negative sensor supply
	9	+V _b	Positive sensor supply (24 VDC)

8.1.3 Alarm Output

The terminals H and I provide two alarm relay outputs (230 VAC, 3 A).

Terminal	Pin	Signal	Description
H/I	1	NC	Normally closed (closed when no power is supplied to the DL P50.)
	2	COM	Common ground
	3	NO	Normally open (open when no power is supplied to the DL P50.)

See the table below for the relay states.

State	Signal NC to COM	Signal NO to COM	Symbol
The DL P50 is powered off.	Closed	Open	
The DL P50 is powered on.	Open	Closed	
The alarm is activated. (set alarm threshold reached)	Closed	Open	

Notes:

- When the DL P50 is powered on, relays will be activated. That means:
 - NC-COM will open when the DL P50 is powered on.
 - NO-COM will close when the DL P50 is powered on.
- When an alarm is activated (only when the DL P50 is powered on), relays will be activated. That means:
 - NC-COM will close when the alarm threshold is reached.
 - NO-COM will open when the alarm threshold is reached.

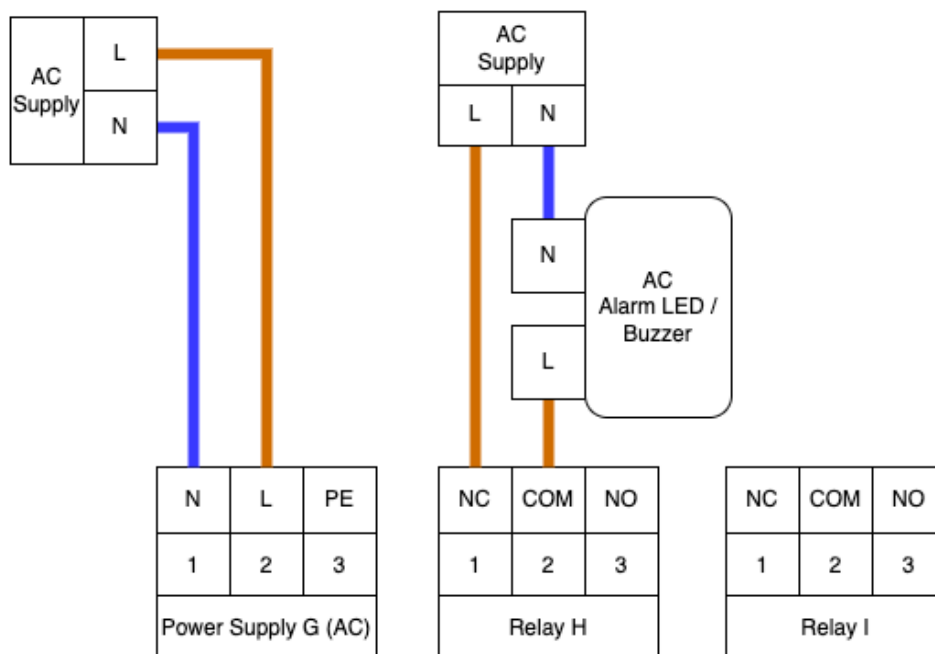
Examples:

- If an external device should be powered in case of alarm, connect the device to the NC-COM signal.
- If an external device should be deactivated in case of alarm, connect it to the NO-COM signal.

Connection examples:

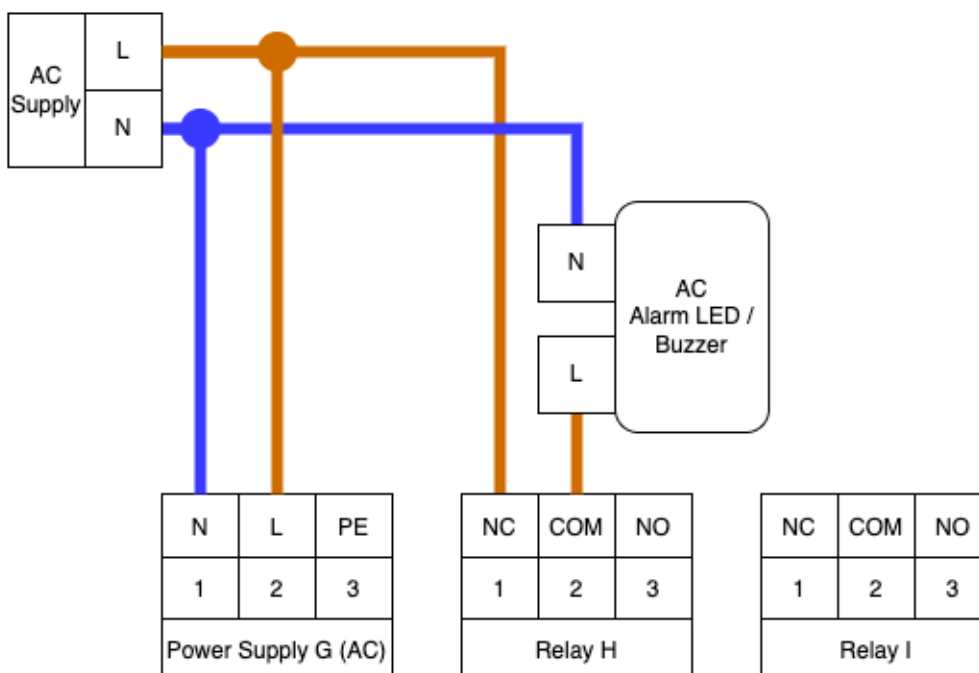
1. Alarm LED/Buzzer with using a separated AC power supply.

LED/buzzer is activated if the alarm is activated or the power is off.



2. Alarm LED/Buzzer with using the same AC power supply as the DL P50.

LED/buzzer is activated if the alarm is activated or the DL P50 is off.



8.1.4 Data Interface

The terminals C and D are data interfaces.

- The connector C is an Ethernet connector used for transmitting data via the local network (Modbus/TCP, Web Server).
- The connector D is an RS-485 output used to connect the DL P50 as a slave to a Modbus/RTU master.

Pin assignments of the terminal D are described in the table below.

Terminal	Pin	Signal	Description
D	1	D+	Modbus output (Data+)
	2	D-	Modbus output (Data-)
	3	GND	GND for Modbus

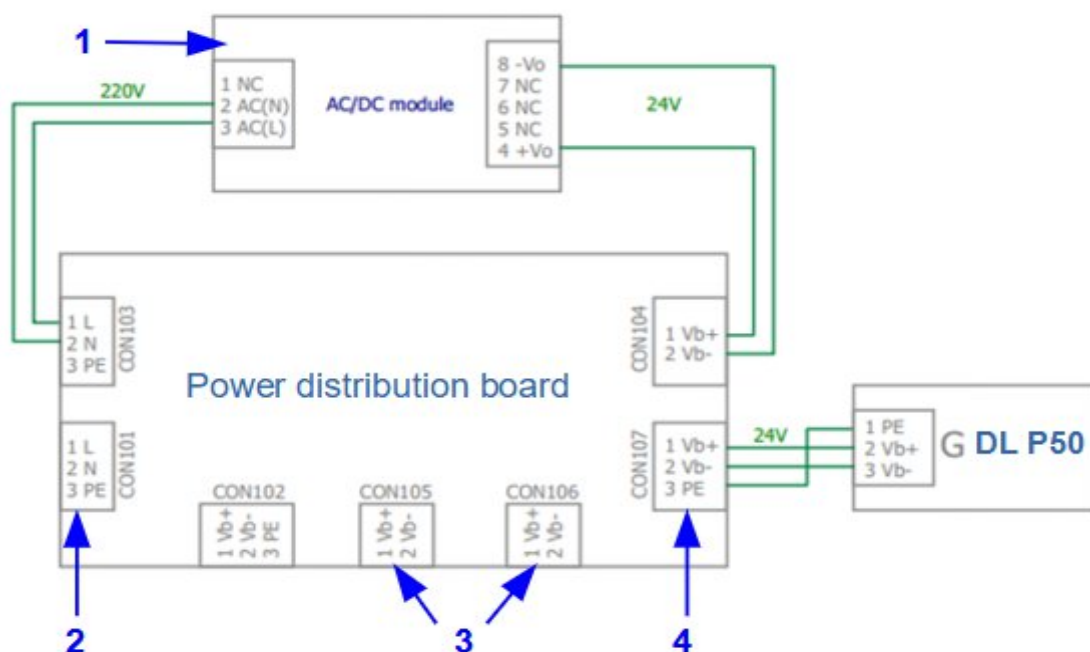
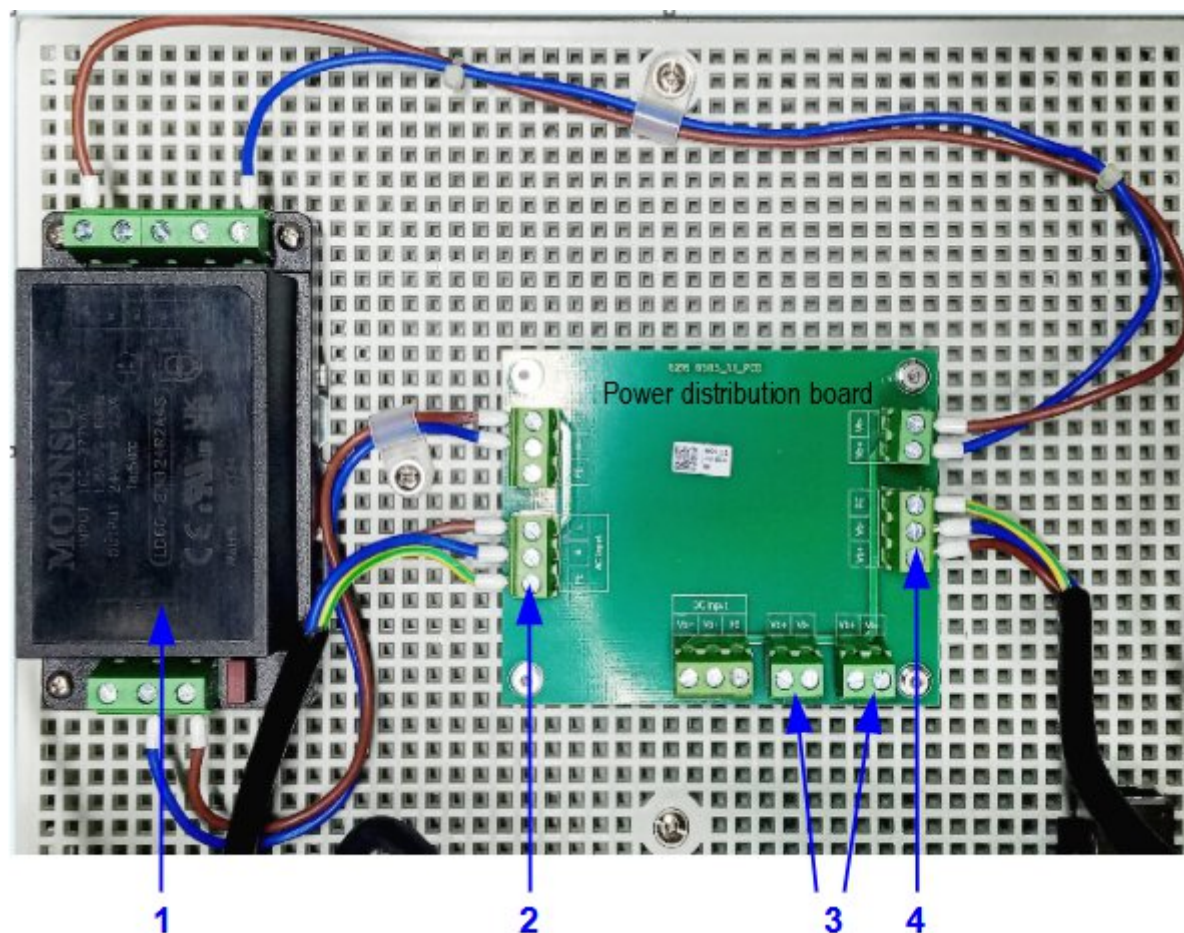
The terminal C is a standard Ethernet port (RJ-45).

For networking, see chapter 12 Build Network using Modbus Interface.

8.2 Connect DL P50 to External Devices

8.2.1 Connect DL P50 to Power Supply

The DL P50 can be powered by AC power. It comes with a power distribution board. The terminal G has been connected to the power distribution board before delivery. You need to connect an external power supply to the power distribution board. Its product picture and wiring diagram are as follows.



1	AC to DC converter	Powers the display and connected sensors
2	AC input	Connect it to the external AC power.
3	DC output for sensors	Provides DC power supply for sensors that connect with the DL P50. For details, see section 8.2.2 Power Supply for Connected Sensors.
4	DC output for DL P50	Provides DC for DL P50. This terminal has connected to the terminal G at factory.

Pin assignment of ports on the power distribution board

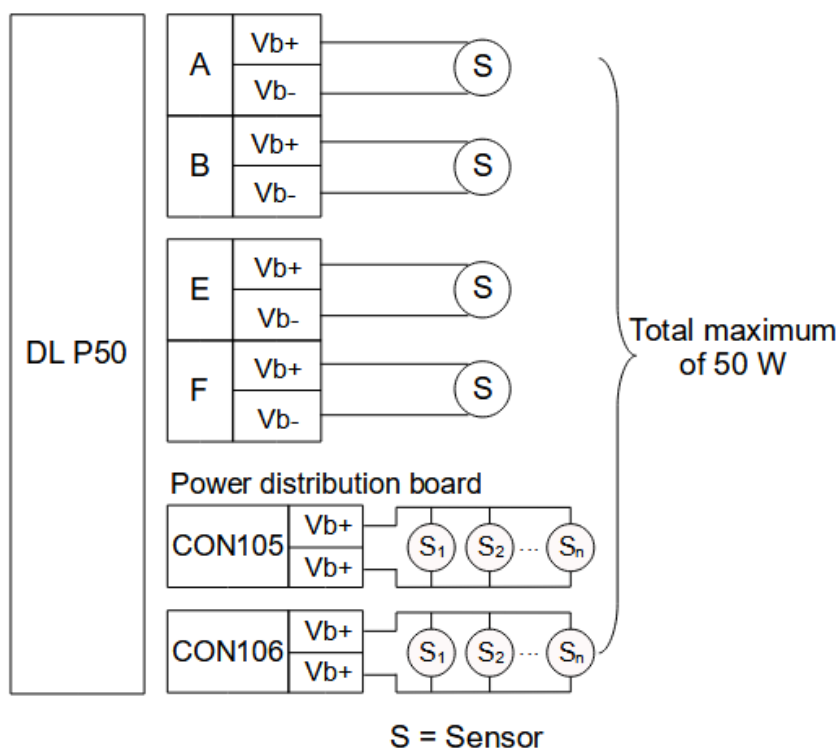
Terminal	Pin	Signal	Description
AC input (CON101)	1	L	Life connector (AC)
	2	N	Neutral connector (AC)
	3	PE	Protection earth
DC output for sensors (CON105, CON106)	1	+Vb	Positive power supply (DC)
	2	-Vb	Negative power supply (DC)

8.2.2 Power Supply for Connected Sensors

The DL P50 can power connected sensors, and provides a maximum power output of 50 W.

A total power output of 10 watts can be drawn for connected sensors from terminals A, B, and E, F (optional).

If the power consumption of the connected sensors exceeds 10 watts, you can use terminals CON105 and CON106 on the power distribution board to power the sensors.



8.2.3 Connect Devices to Terminal A and B via Modbus

In this case, the DL P50 acts as a Modbus master.

DL P50			DP T20, DP T60, DP T100, DP T20 P, DP T60 P, DP T100 P	FL S185 T, FL S224 T, FLI Dxx A, FL S200 P, FL S260 P	Color
Terminal	Pin	Signal	Pin	Pin	
A / B	2	-V _b	A.2	B.2	white
	3	+V _b	A.3	B.3	blue
	4	D+	A.4	B.4	black
	5	D-	A.5	B.5	grey
	6	GND	N/A	B.1	brown

The termination resistor is software controlled and can be enabled or disabled using the communication menu.

A Modbus connection requires a termination resistor at both ends of the lines in most of the cases. Please follow the standard Modbus (RS-485) connections as described below or as described in the Modbus standard.

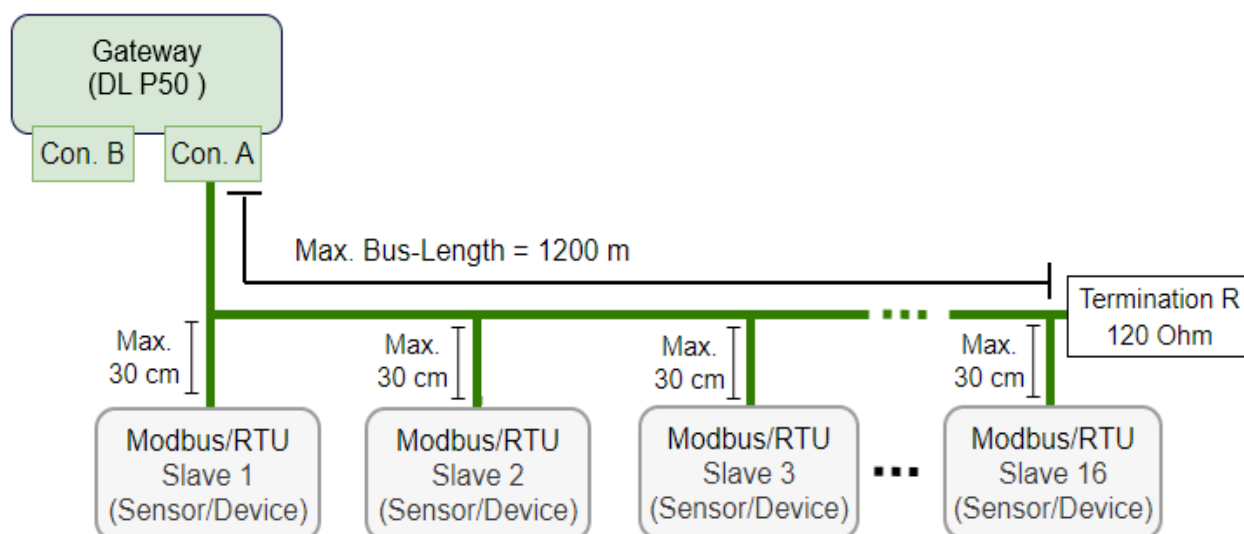
In total 16 Modbus slaves can be connected to the DL P50. If more than 4 devices are connected in total, please connect all Modbus slaves to either Terminal A or B using a daisy chain. Do not split them up between A and B.

8.2.3.1 Modbus/RTU Cable Length

A Modbus/RTU bus line has limitations which shall not be exceeded, otherwise the communication might not be stable.

- The maximum total bus length must not exceed 1200 m.
- The stub length to each node must not exceed 30 cm.

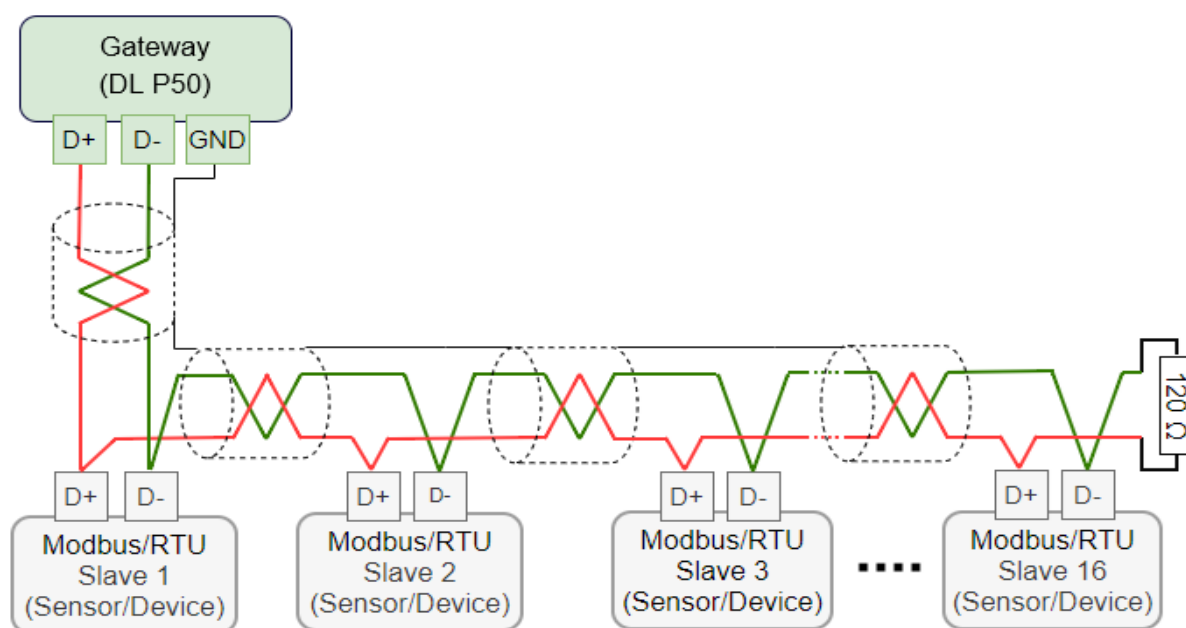
See the picture below for details.



8.2.3.2 Modbus/RTU Wiring and Cable Type

To ensure a stable communication a twisted-pair bus cable must be chosen to set up the Modbus/RTU communication.

- Bus-cable specifications must follow the EIA485 Standard, must be twisted pair and shielded, for example $2 \times 2 \times 0.22 \text{ mm}^2$, Li-2YCY.
- The shield must be connected at one end to the master GND connection.
- At the end of the bus, a 120 Ohm resistor should be placed a termination resistor.

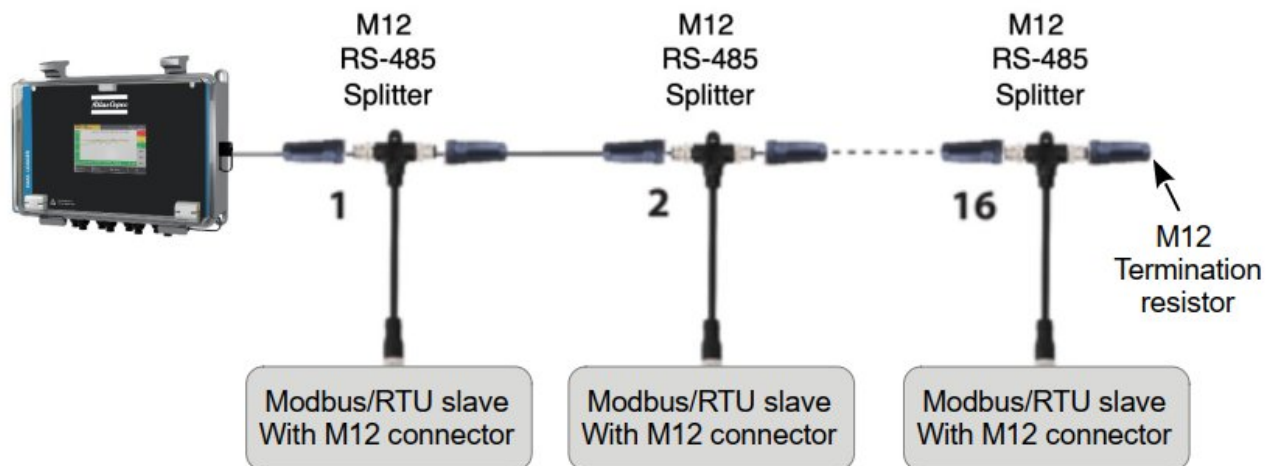


8.2.3.3 Daisy-Chain using RS-485 Splitter

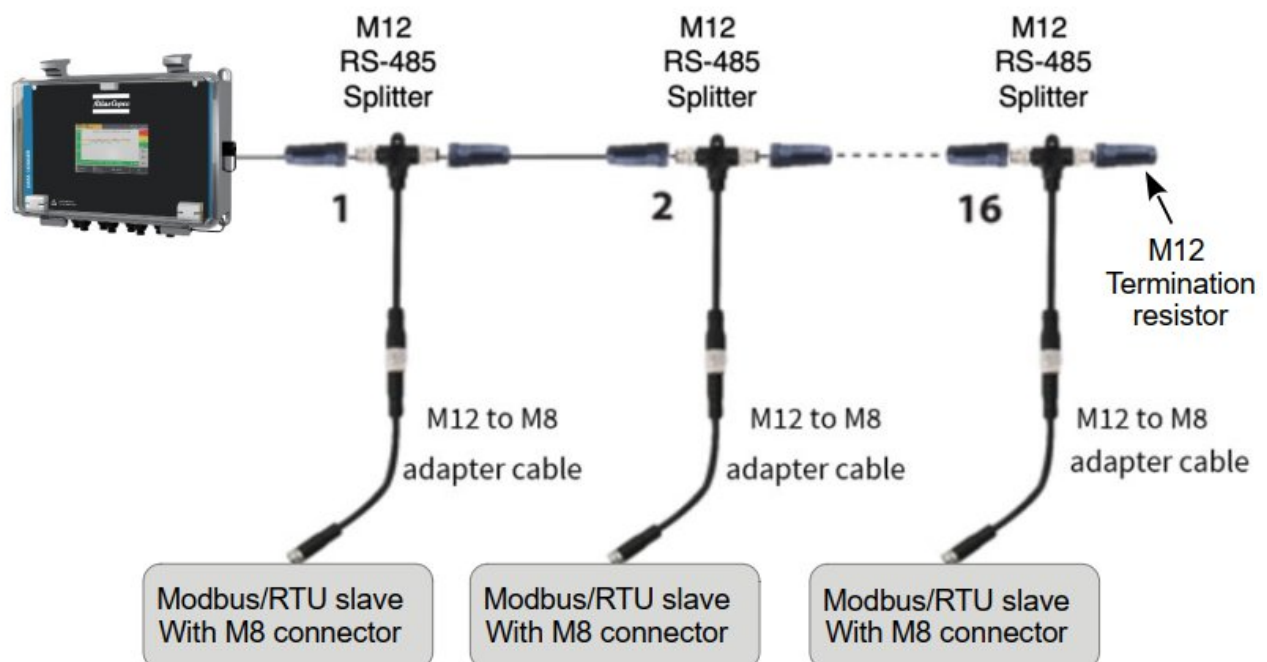
Atlas Copco devices with M12 connectors can be easily connected in a Modbus/RTU daisy-chain using an M12 RS-485 splitter.

Furthermore this allows to easily place the M12 termination resistor at the last splitter in the bus-chain.

See example below for reference.

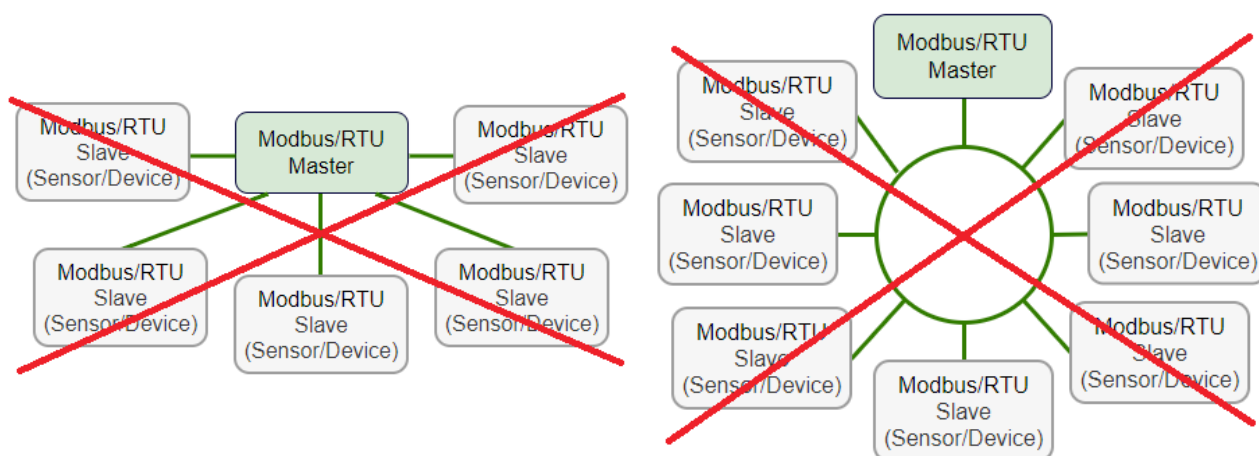


To connect the Atlas Copco devices with M8 connectors to the daisy-chain, the RS-485 splitter, the M8 to M12 converter cable, and the termination resistor are needed. See the example below for reference.



Notes:

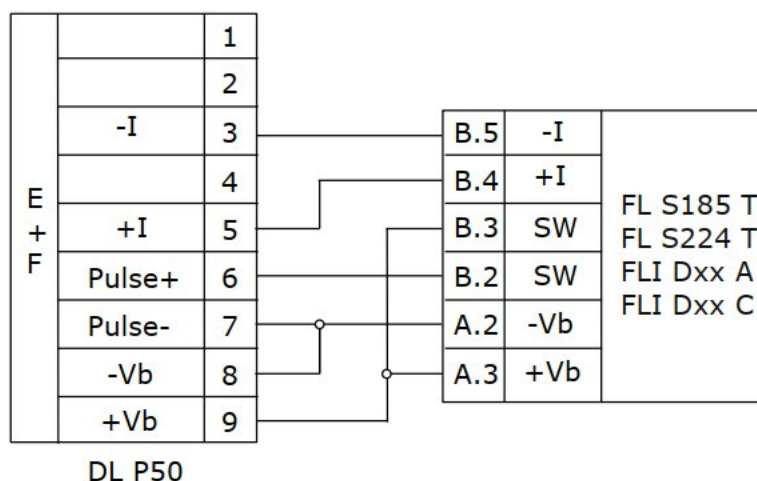
- The DL P50 can provide a maximum of 50 W power for the connected sensors. If more power is needed, a separate power supply is required.
- At the end of the bus line, the termination resistor of 120 Ohm must be placed to avoid interference.
- Avoid a connection of slaves to the master in ring or star topology.

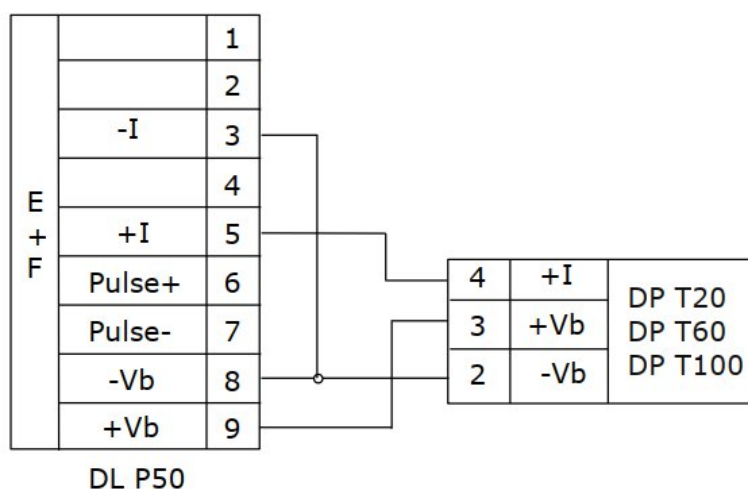


Avoid a star topology

Avoid a ring topology

8.2.4 Connect Atlas Copco Devices to Terminals E and F via Analog/Pulse



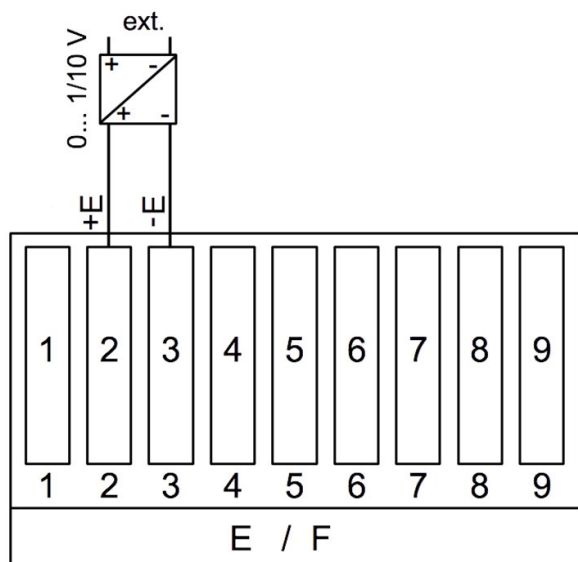


8.2.5 Connect 3rd Party Analog/Pulse devices to Terminals E and F

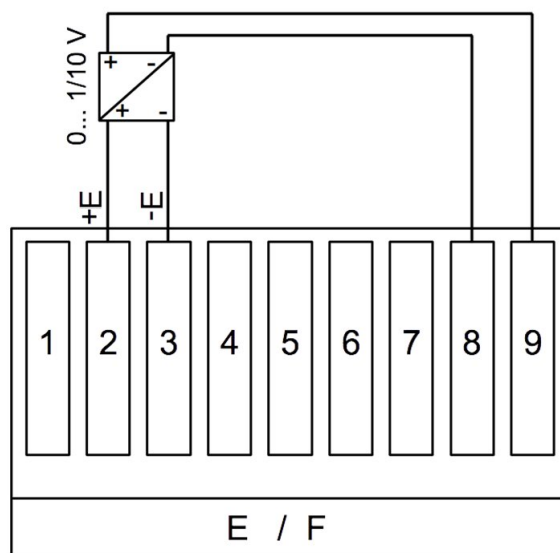
This offers inputs at Terminal E and F, which can be used to receive:

- 4 ... 20 mA, 0 ... 10 V analog signal and pulse signal from third-party flow sensors.
- Relay signals from compressors.

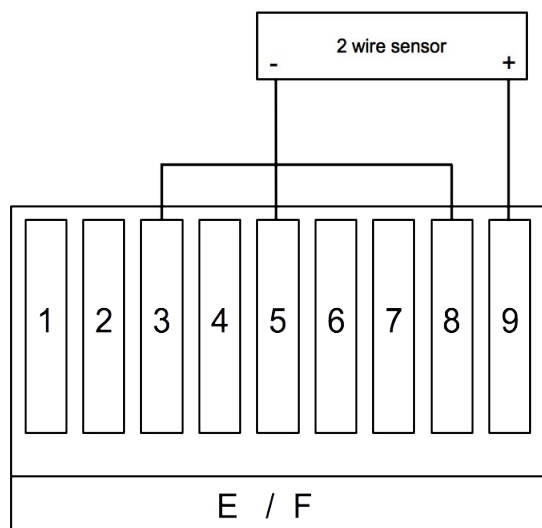
A. Process voltage input
0 ... 1 V or 0 ... 10 V



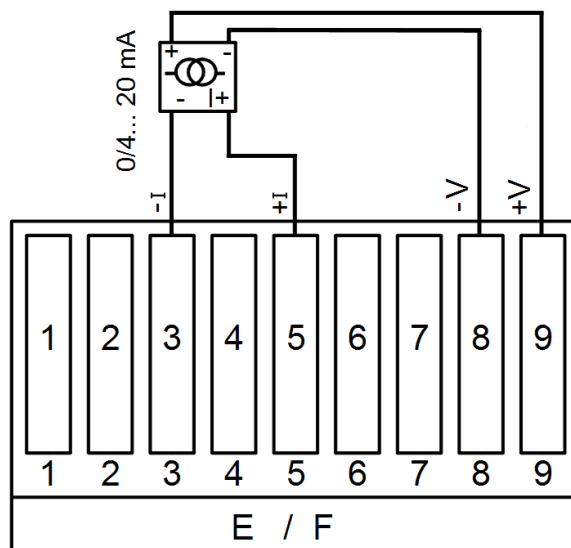
B. Process voltage input. The sensor is supplied by DL P50



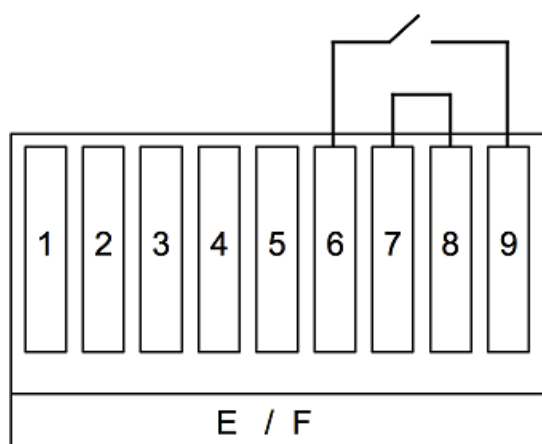
C. Loop current input
0 ... 20 mA / 4 ... 20 mA.



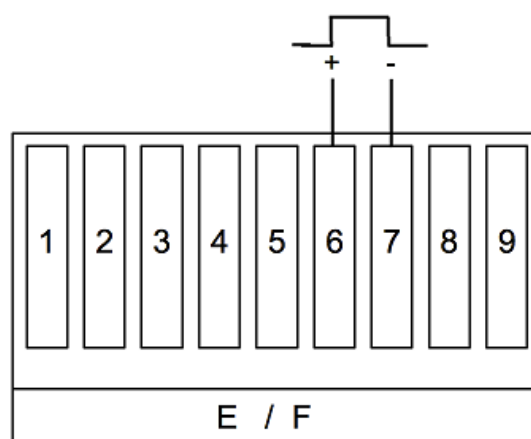
D. Process current input 0 ... 20 mA / 4 ... 20 mA. Sensor is supplied by DL P50.



E. Connection of an isolated pulse input from a flow meter or connection of a relay signal from a compressor for monitoring the run time of the compressor.



F. Connection of an active pulse signal from a flow meter or connection of a 24 VDC relay signal from a compressor for monitoring the run time of the compressor.



9 Configuration using S4C-Display Software

In case you need to add devices afterwards or you have ordered the DL P50 separately, you must configure accordingly.

To do these, the following software and hardware are required:

- S4C-Display Software
- PC with Windows 7 or later
- USB cable to connect the DL P50 to your PC (included within the DL P50)

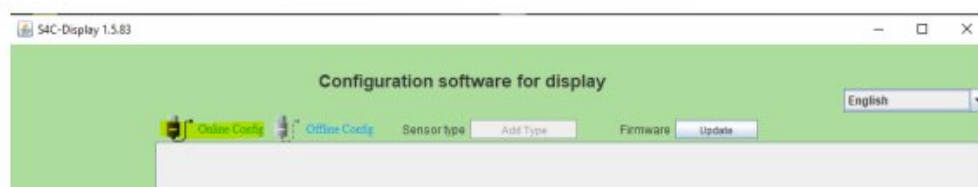
This section introduces how to add various devices to the DL P50, including the following specific topics:

- Establish communication between DL P50 and S4C-Display.
- Add an Modbus/RTU slave device, an Analog/Pulse device, and a 3rd party Modbus device to the DL P50.
- Download configurations to the DL P50.
- Save configurations in DL P50 to a file; load configurations from a file to the DL P50.

9.1 Establish Communication between DL P50 and S4C-Display

Before adding devices to the DL P50, communication between the DL P50 and S4C-Display must be established.

1. Download and install the S4C-Display software on your PC.
2. Connect the DL P50 to your PC, using the supplied USB cable.
3. Start the S4C-Display software.
4. Click **Online Config** to configure the connected DL P50.



5. Click **Auto Detect** to detect the connected DL P50.
The detected DL P50 will show up in the list.



6. Select the detected DL P50 and click **Start Config** to start the configuration.

9.2 Add Devices to DL P50

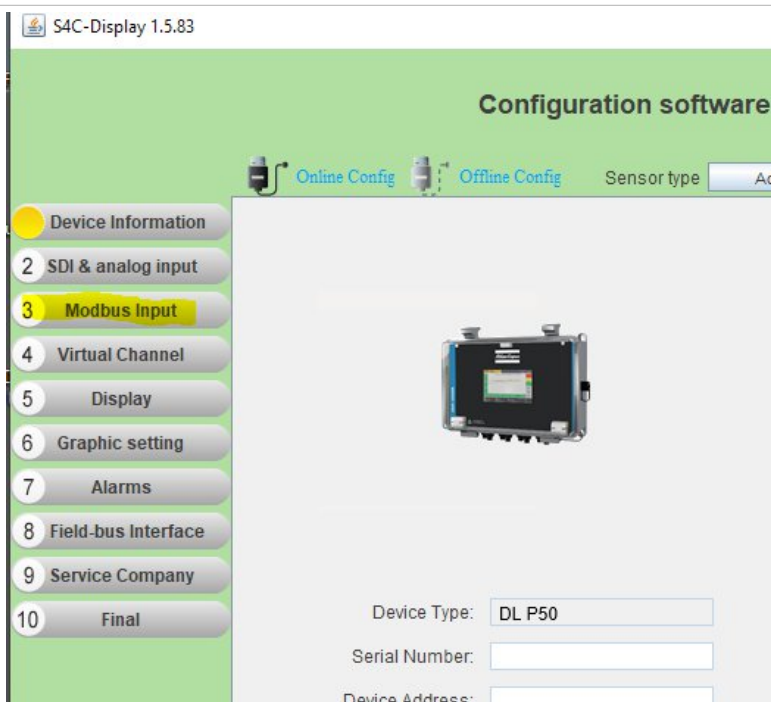
After devices/sensors are connected to the DL P50 physically, the DL P50 cannot detect these devices automatically. You have to add these devices to DL P50 using the S4C-Display software.

9.2.1 Add an Atlas Copco Modbus Slave to DL P50

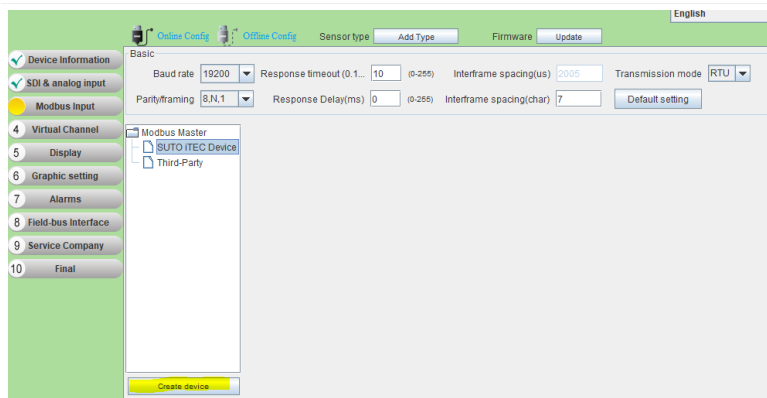
Take the FL S185 T as an example to add it to the DL P50 as a Modbus slave.

Prerequisite: Connect the FL S185 T to the terminal A or B on the DL P50 as described in section 8.2.3 Connect Devices to Terminal A and B via Modbus.

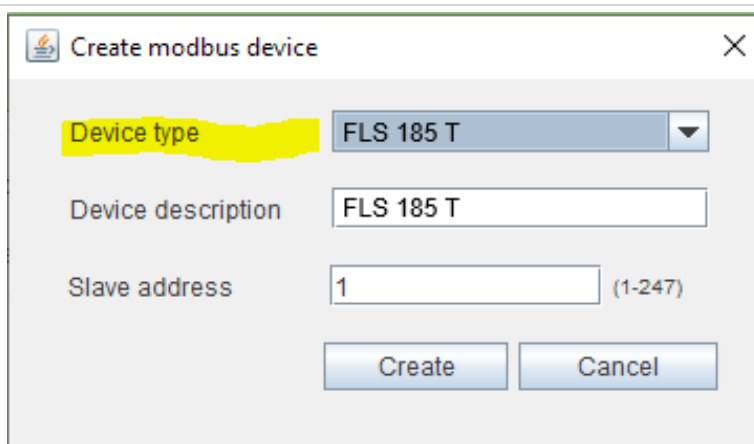
On the S4C-Display interface, follow the steps below to add the FL S185 T to the DL P50 as a Modbus slave.



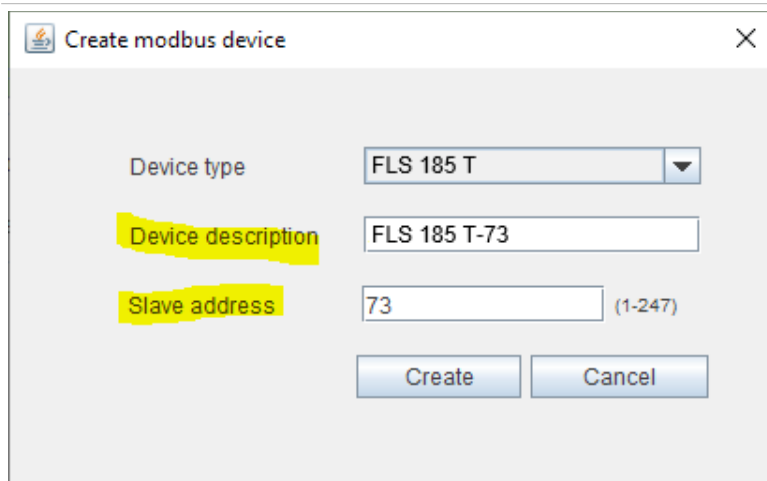
On the left side menu, click **3 Modbus Input** to add a Modbus slave device.



Once open, click **Create Device** in the bottom.



A new pop up is shown. From the **Device Type** drop-down menu, select the device type to be added. In this example, the FL S185 T is selected.



Enter the **Device Description** and the **Slave address** of the device.

For Atlas Copco devices, the slave address is typically the last two digits of the serial number. Please check the label on the device, where the slave address is indicated.

9 Configuration using S4C-Display Software

Create modbus device

Device type: FLS 185 T

Device description: FLS 185 T-73

Slave address: 73 (1-247)

Buttons: Create, Cancel

After information is entered click **Create**.

Modbus Master

Device Type: S401 Slave Address: 73 (1-247) Error Value: Only for input value type is float.

Description: S401-73

Enable	Index	Description	Unit	Resolution
☒	1	Flow	m³/h	0.1
☒	2	Consumption	m³	1
☐	3	Temperature	°C	0.1
☐	4	Rev. consumption	m³	1
☐	5	Flow direction		1

The new created device is now added to the list of connected slaves.

To add another device, repeat the steps above.

Online

Menu:

- Device Information
- SDI & analog input
- Modbus Input
- Virtual Channel
- Display**
- 6 Graphic setting
- 7 Alarms
- 8 Field-bus Interface

Device List:

Device
My Device(M)
My Device(M)
My Device(M)
My Device(M)

Select **Display** from the left side menu to add the configured devices to be shown on the DL P50.

Display Configuration

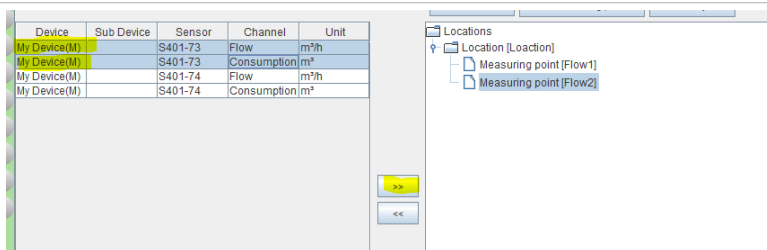
Buttons: Add location, Add measuring point, Modify

Device	Sub Device	Sensor	Channel	Unit
My Device(M)		S401-73	Flow	m³/h
My Device(M)		S401-73	Consumption	m³
My Device(M)		S401-74	Flow	m³/h
My Device(M)		S401-74	Consumption	m³

Locations:

- Location (Location)
 - Measuring point (Flow1)
 - Measuring point (Flow2)

In order to display the devices on the DL P50 screen, you need to have a Location and Measuring point created. If not already existing, create new ones as indicated left.

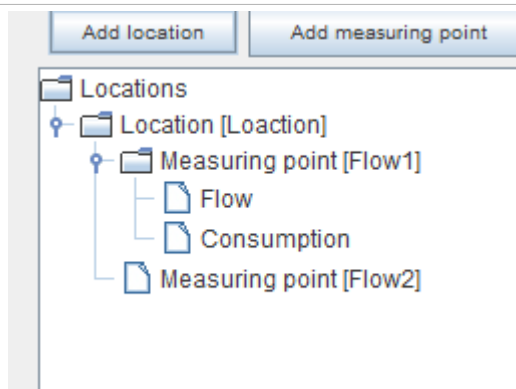
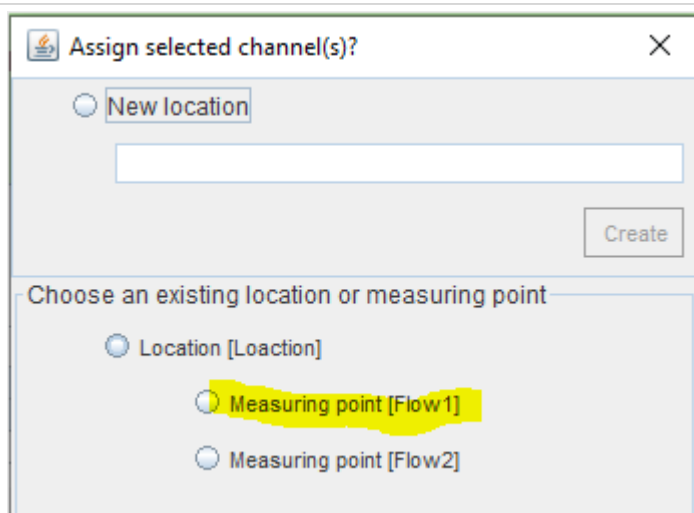


After Measuring points are created you can add the devices.

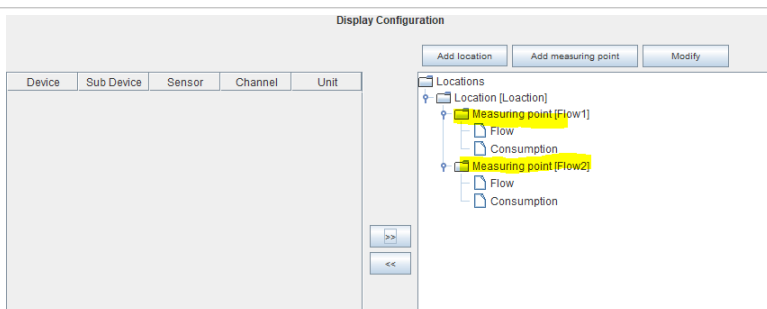
Therefore select the channel on the left side by marking it.

Then click the arrow >> in the middle to add the channels to the view.

Select the measuring point.



The selected channels are now added to the Measuring point.

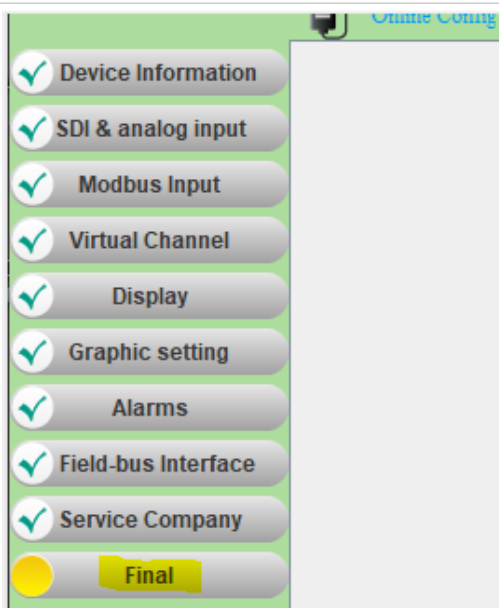


Repeat these steps for all channels which should be displayed.

9 Configuration using S4C-Display Software

The option to configure the field bus is available in the **Field-bus interface** menu. Please do so if needed.

Note: this can also be configured at a later step via the touchscreen on the DL P50 .



Finally, to download the configuration, select the **Final** menu from the left.

Here you can choose **Download Configuration into Device** this will download the configuration into the connected DL P50.

9.2.2 Add an Atlas Copco Analog/Pulse Device to DL P50

Take the FL S185 T as an example to add it to the DL P50.

Prerequisite: Connect the FL S185 T to the terminal E or F on the DL P50 as described in section 8.2.4 Connect Atlas Copco Devices to Terminals E and F via Analog/Pulse.

On the S4C-Display interface, follow the steps below to add the FL S185 T to the DL P50 as a analog device.

1. On the left menu, click **Analog input**. Then select the tab **Terminal E** or **Terminal F**.
2. Select the tab **Channel 1**. Select **4 ... 20 mA** from the drop-down box after **Measure Type**, and add texts in the **Description** field.

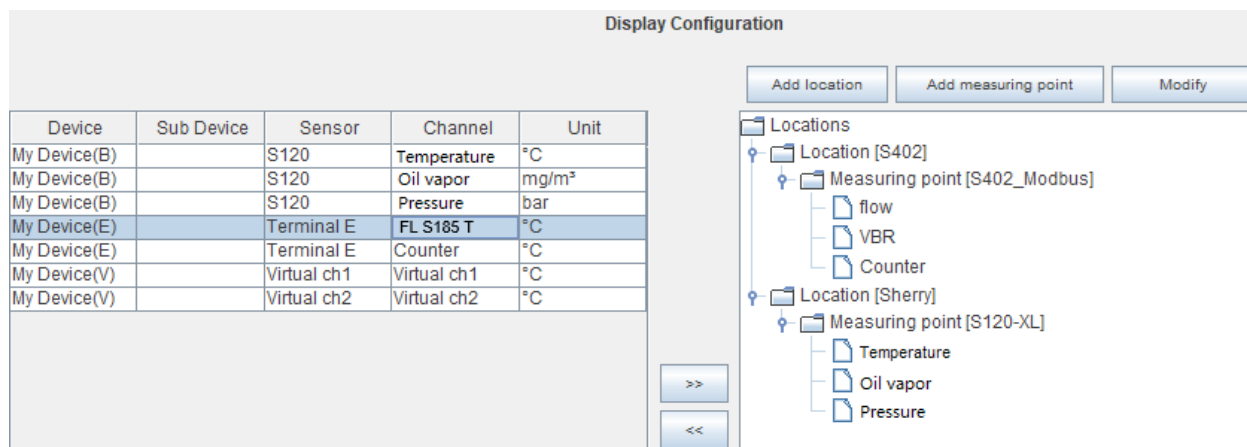
The screenshot shows the 'Terminal E Configuration' window. At the top, there are tabs for 'Terminal A', 'Terminal B', 'Terminal E', and 'Terminal F'. Below these, the 'Sensor Description' field is set to 'Terminal E'. Underneath, there are tabs for 'Channel 1' and 'Channel 2'. The 'Channel 1' tab is selected, and the 'Basic' section is visible. In this section, the 'Measure Type' is set to '4 - 20 mA' and the 'Description' field contains 'FL S185 T'.

3. Click **Display** from the left side menu to add the FL S185 T to be shown on the DL P50 screen.

Device	Sub Device	Sensor	Channel	Unit
My Device(B)		S120	Temperature	°C
My Device(B)		S120	Oil vapor	mg/m³
My Device(B)		S120	Pressure	bar
My Device(E)		Terminal E	FL S185 T	°C
My Device(E)		Terminal E	Counter	°C
My Device(V)		Virtual ch1	Virtual ch1	°C
My Device(V)		Virtual ch2	Virtual ch2	°C

4. Add the channel to the location and measuring point:
Select the channel on the left side by marking it.
Then click the arrow >> in the middle to add the channels to the view.

9 Configuration using S4C-Display Software



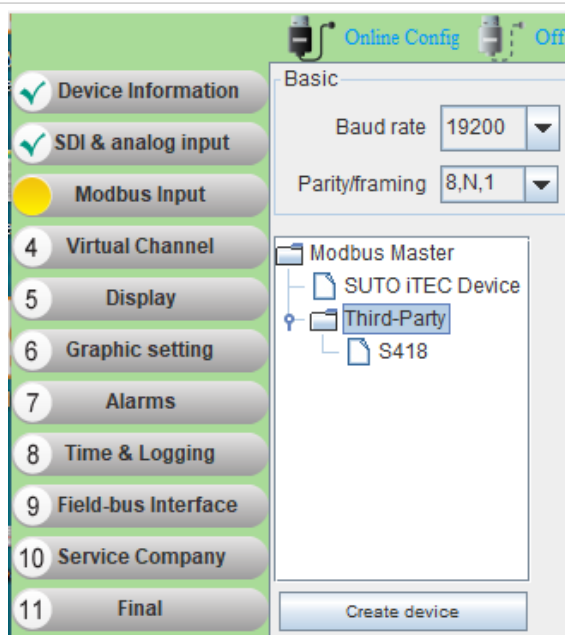
- Click **Time & Logging** from the left side menu, and tick the items to be displayed.

Atlas	S120-XL	Temperature	°C	☒
		Oil vapor	mg/m³	☒
		Pressure	bar	☒
	Terminal E	FLS 185T	°C	☒

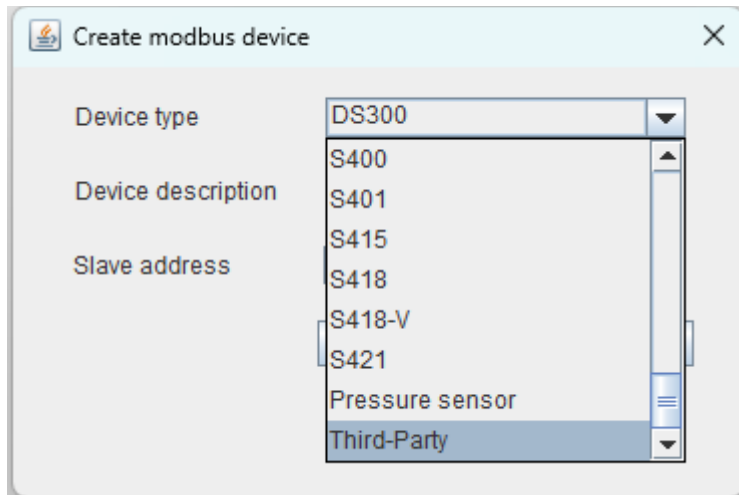
- Select **Final** from the left, then click **Download Configuration into Device** to download the configuration into the DL P50.

9.2.3 Connect a 3rd Party Device to DL P50

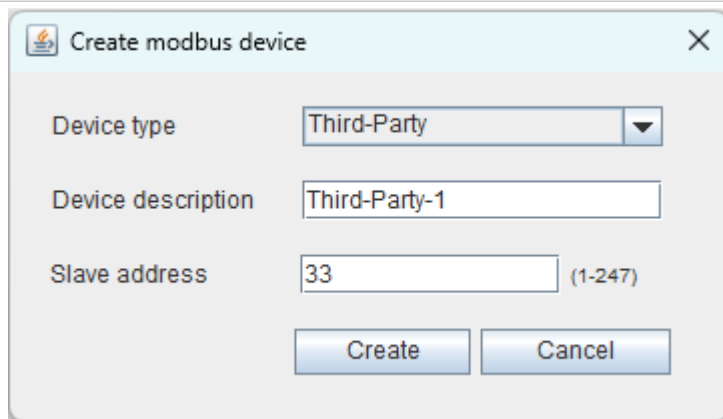
Prerequisite: Connect the 3rd device with the terminal A or B on the DL P50 as described in section 8.2.3 Connect Devices to Terminal A and B via Modbus. Follow steps below to add a 3rd device as a Modbus slave.



- On S4C-Display main page, click **3 Modbus Input > Third-Party > Create device** to add a 3rd Modbus slave device.

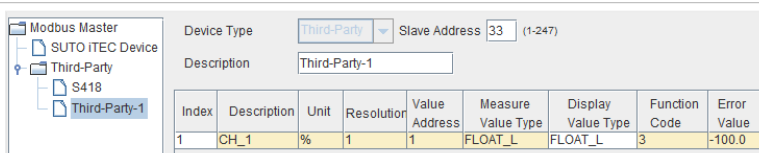


2. A new pop up is shown. From the **Device Type** drop-down menu, select **Third-Party**.

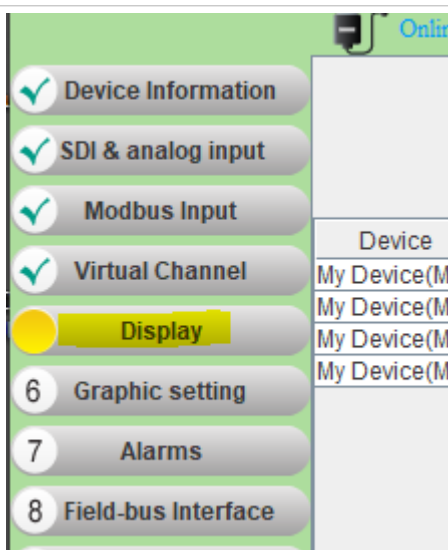


3. Enter the **Device Description** and the **Slave address** of the device. Typically the slave address is found on the device label or instruction manual.

After information is entered click **Create**.

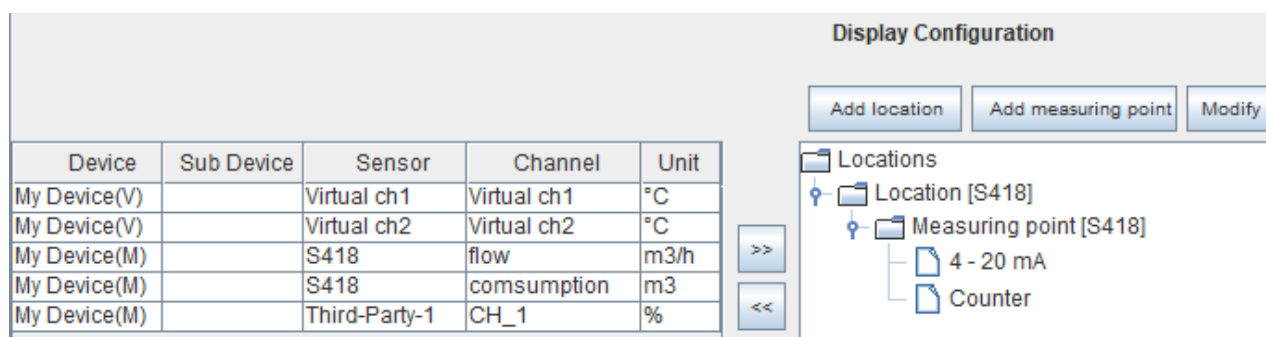


4. The new created device is now added to the list of connected slaves.

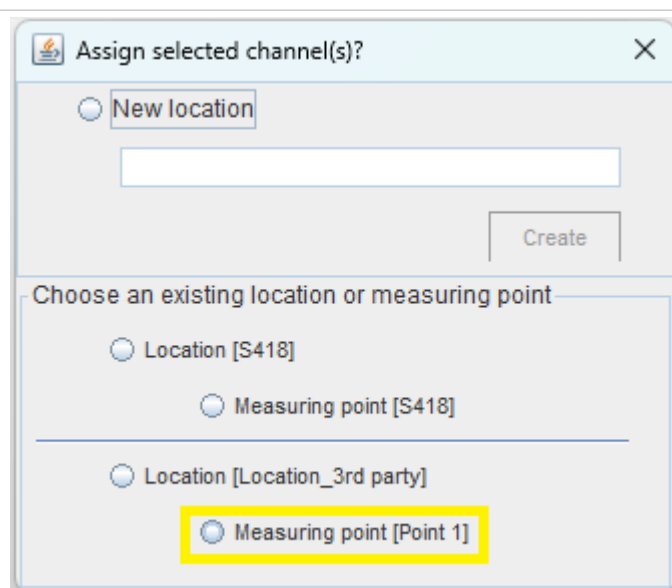
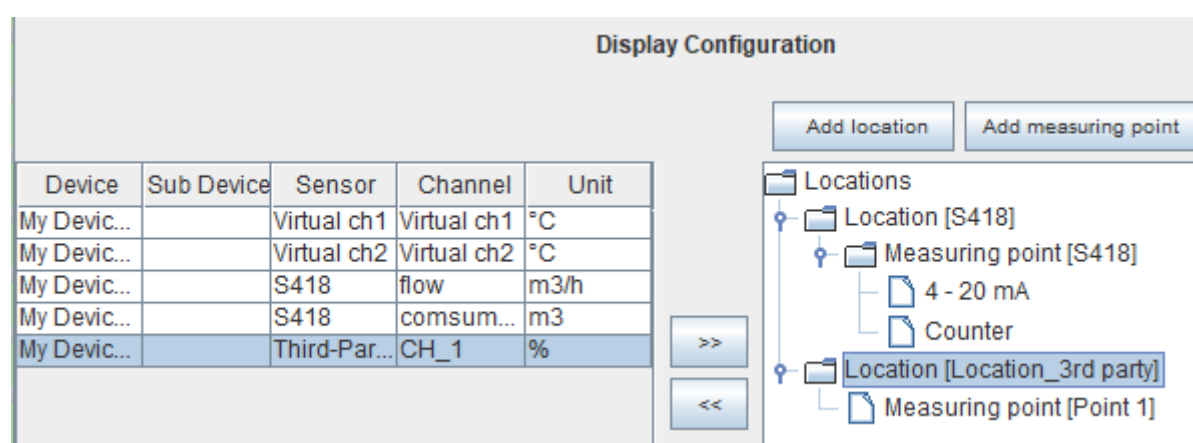


5. Select **Display** from the left side menu to add the configured device to be shown on the DL P50 screen.

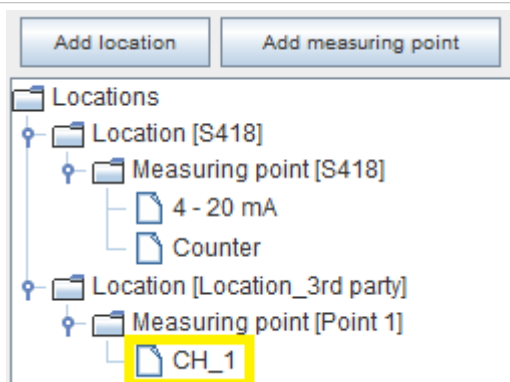
6. In order to display the devices on the DL P50 screen, the device must be added to a location and measuring point. If the location and measuring point has not existed, create new ones as indicated.



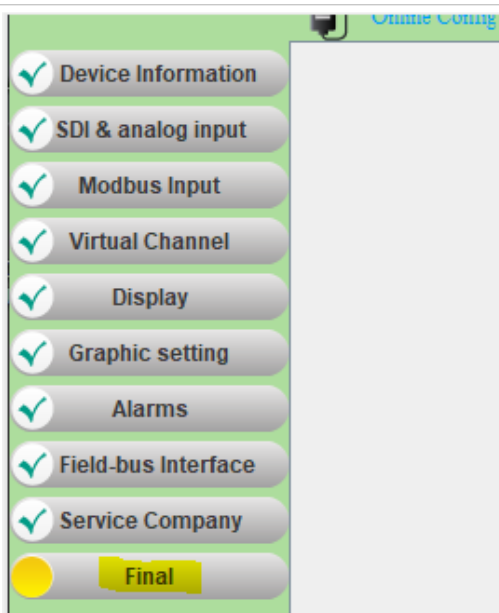
7. After Measuring points are created you can add the devices. Therefore select the channel on the left side by marking it. Then click the arrow >> in the middle to add the channels to the view.



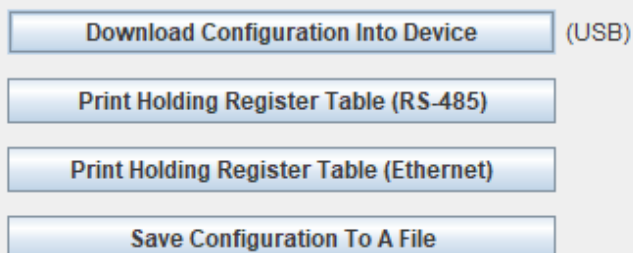
8. Select the Measuring point.



9. The selected channels are now added to the Measuring point. Repeat these steps for all channels which should be displayed.



10. Finally, to download the configuration into the device, select the **Final** menu from the left.



11. Select **Download Configuration into Device** this will download the configuration into the connected DL P50. **Note:** This setp can also be done after all devices are added.

9.3 Download Configurations to DL P50

If you have not loaded the configuration of each configured device to the DL P50, you can load all configurations together.

1. Click **Final** in the left menu.
2. Click **Download Configurations into Device** to download all configurations to the DL P50.

9.4 Save/Load Configuration as Files

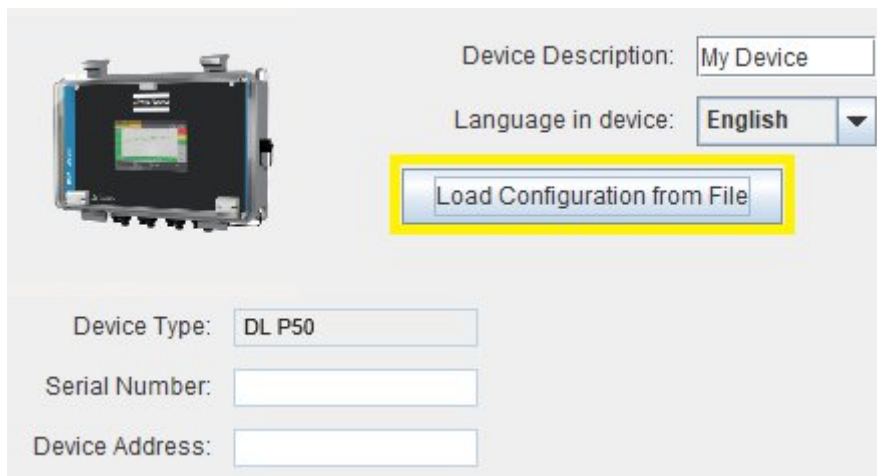
9.4.1 Save Configuration to a File

After all configurations are done, you can save setting to a file for later use. You can recover it if needed or share it with support / service.

On the S4C-Dispaly, click **Final** from the left. Then click **Save Configuration To A File** to save configurations to your PC as a file.

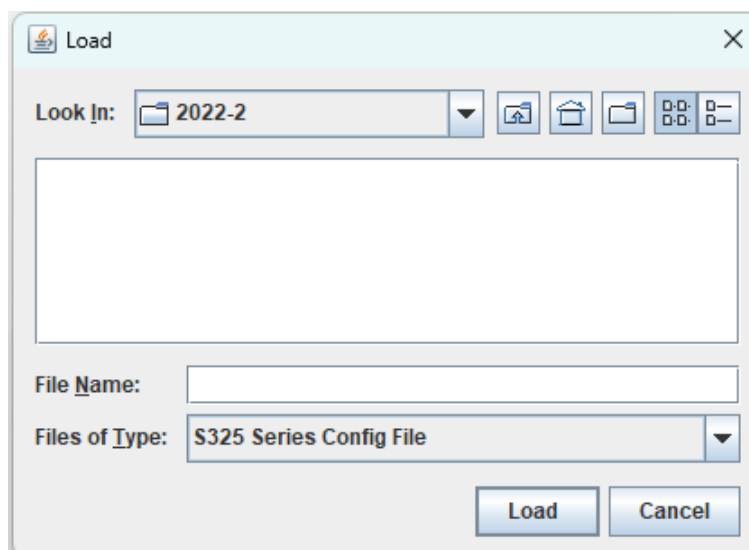
9.4.2 Load configuration from a file

1. On the S4C-Dispaly, click **Device Information** from the left.



The screenshot shows the 'Device Information' section of the S4C-Display software. On the left is an image of the DL P50 device. On the right, there are input fields for 'Device Description' (containing 'My Device') and 'Language in device' (set to 'English'). Below these is a button labeled 'Load Configuration from File', which is highlighted with a yellow rectangular box. At the bottom, there are input fields for 'Device Type' (containing 'DL P50'), 'Serial Number', and 'Device Address'.

2. Click **Load Configuration from File**.



The screenshot shows a 'Load' dialog box. At the top, there's a 'Look In:' dropdown menu showing '2022-2'. Below it is a large empty text area. At the bottom, there's a 'File Name:' input field and a 'Files of Type:' dropdown menu set to 'S325 Series Config File'. At the very bottom, there are two buttons: 'Load' and 'Cancel'. The 'Load' button is highlighted with a blue rectangular box.

3. Select the configuration file from your PC, and click **Load**. The configurations in the file will overwrite the original settings in the DL P50.

10 Settings using Touchscreen

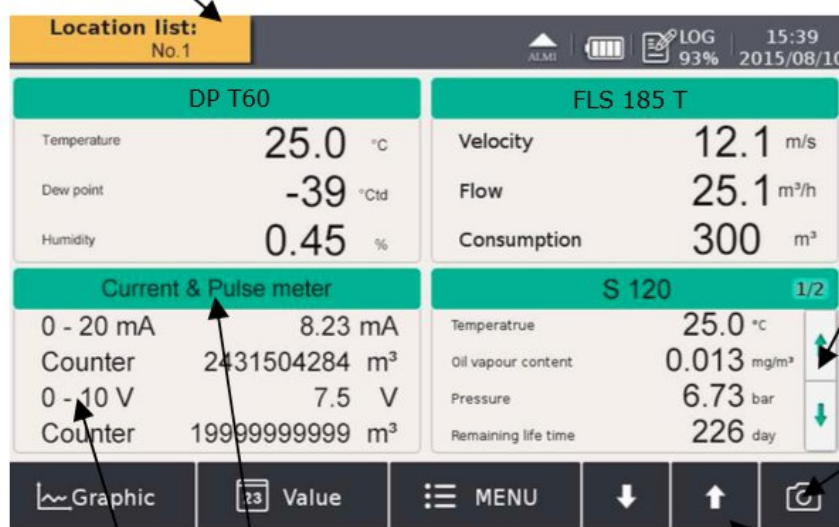


When the DL P50 starts up, the launch screen appears for a few seconds. During this period of time, the sensor connections are established and a few other initialization tasks are performed.

10.1 Value Screen

After start-up, the DL P50 displays measurement values of sensors. The display of measurement values may exceed one page. To view the data on the next page, touch the arrow button on the screen.

Display group selection



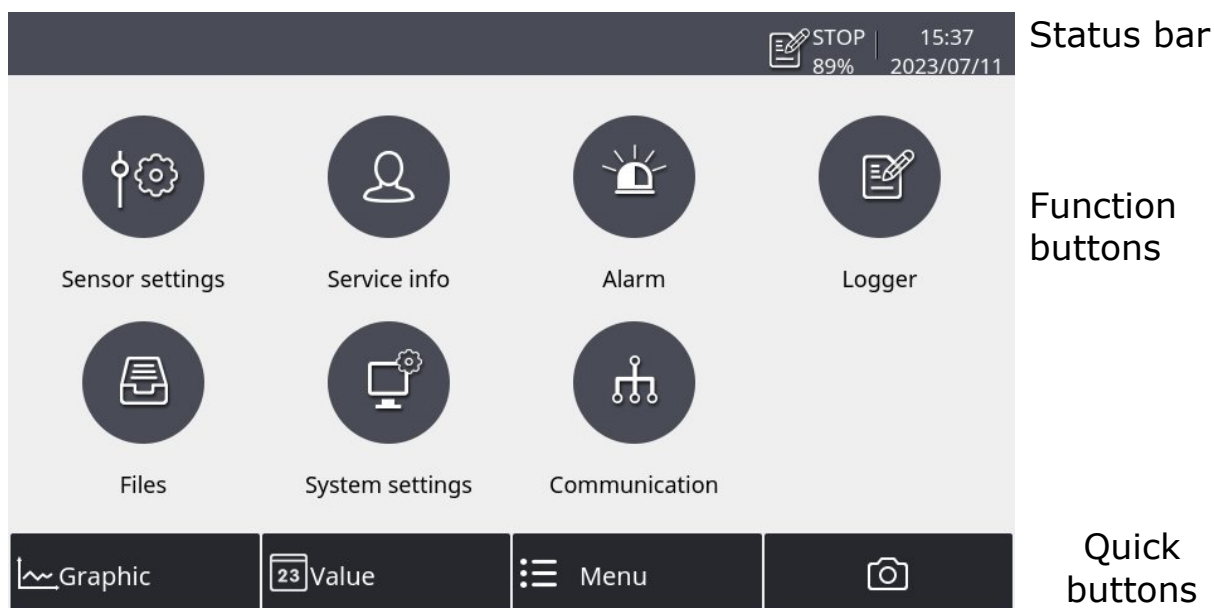
If there are more than 4 channels user can scroll through these buttons

Screen shot. Stores screen in PNG file

Sensor name and channel name

Up to 4 sensors can be shown on one page. Use page button to scroll up and down.

10.2 Main Menu



The main menu consists of the following sub-menus:

Sensor settings	Settings related to the connected sensors.
Alarm	Alarm settings and status.
Logger	DL P50 data logger settings.
Files	All recorded files and screen-shots. The memory status can be checked here.
Service info	Contact information for service.
System setting	Other system-level settings.
Communication	Communication settings related to Modbus master, field bus RS-485 or Ethernet, and IIoT.

10.3 Icons in the Status Bar

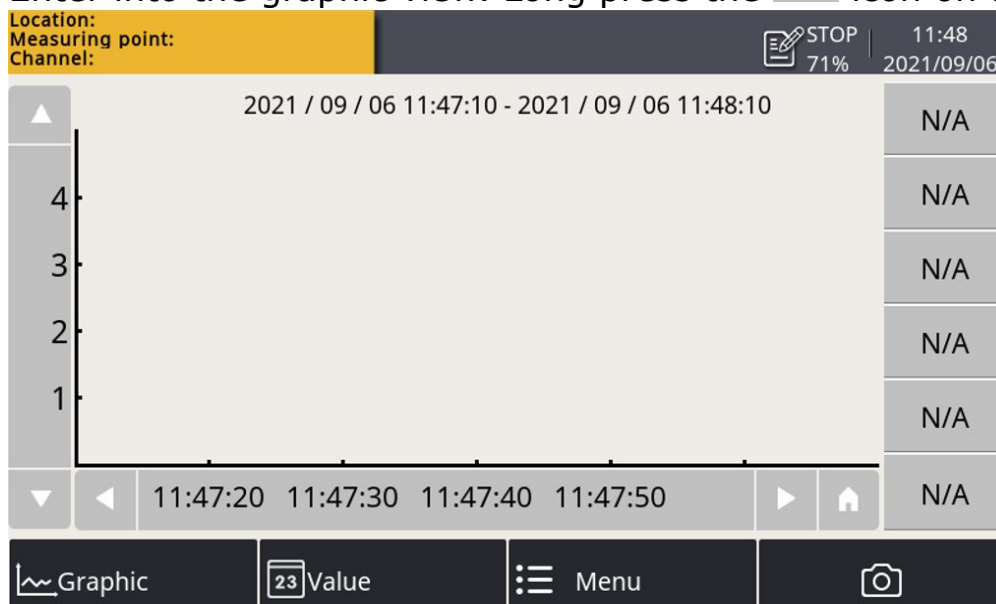
	USB stick connected		System error
	Sensor connection has changed, not matching with configuration		Sensor unit is not matching with configuration
	Logger version of the DL P50		RTC backup battery status
	Sensor calibration is expired		Alarm triggered

10.4 Graphic Screen

10.4.1 Add a Data Curve

Follow the steps below to add a data curve:

1. Enter into the graphic view. Long press the **N/A** icon on the page.



2. The channel setting window is present as below. On this page:
 - Click the  icon to select the location, sensor and channel.
 - Input a brief name in the **Abbr** item.
 - Select the color for the curve.

10 Settings using Touchscreen

STOP 71% 11:49 2021/09/06

← Channel setting

Select Channel

Location DL P50

Sensor FL S200 P

Channel Pressure(bar)

Abbr. Pressure

Y-axis

☒ Auto scale

☐ Disable

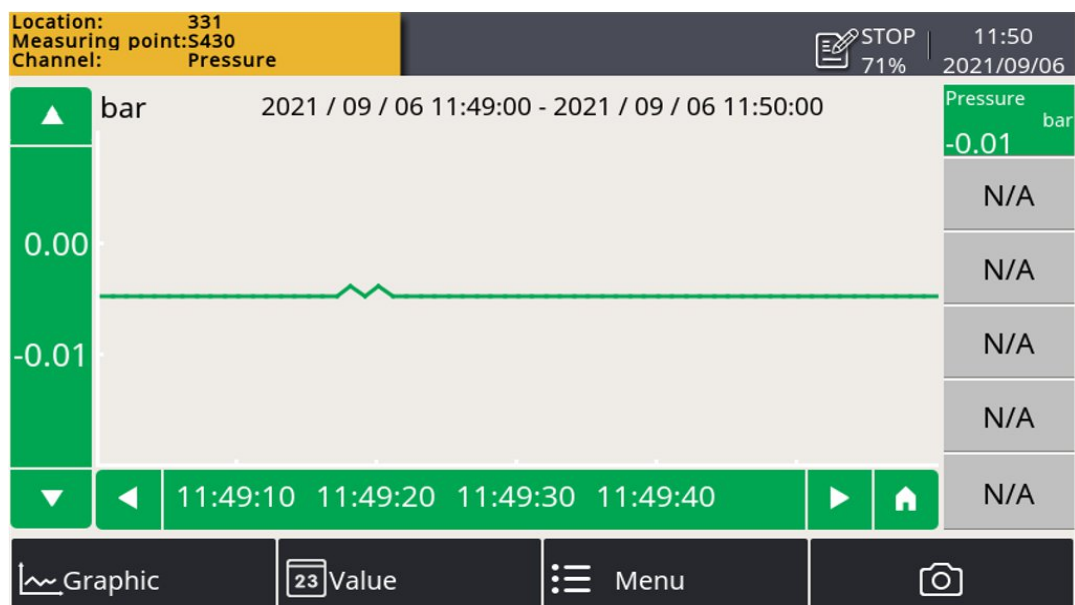
Min 0 bar

Max 7 bar

Select color

Color selection grid with 12 options.

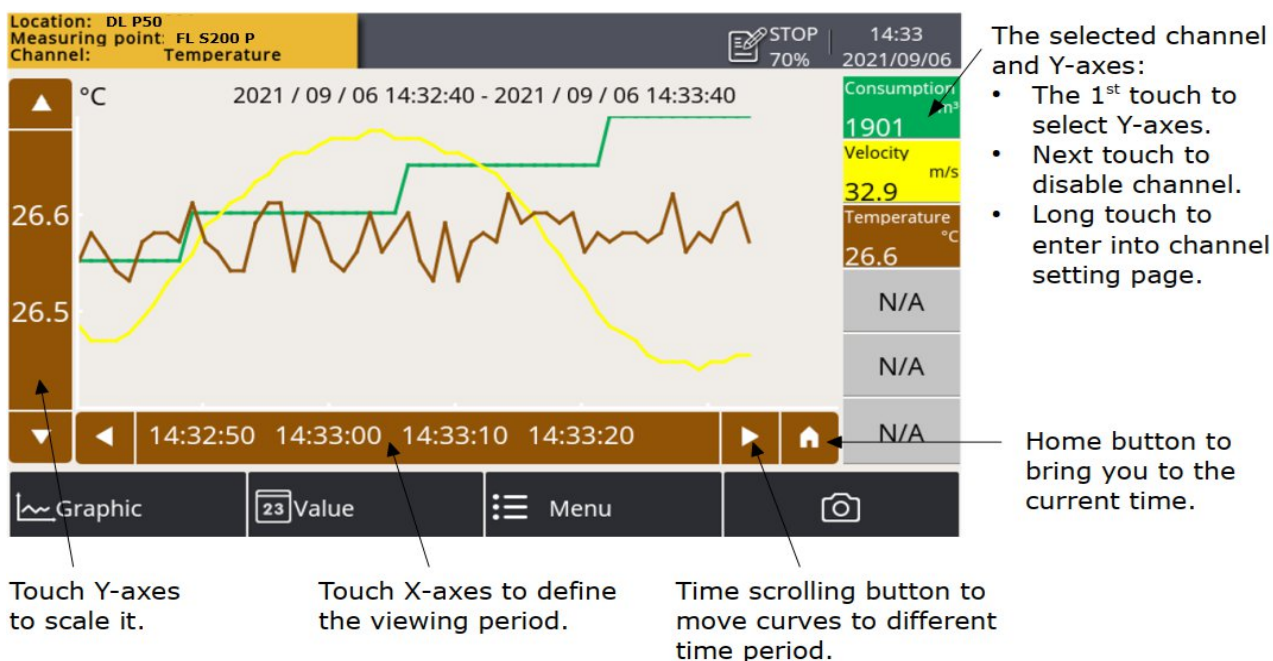
3. Click the  icon, and the curve is created as below.



Notes:

- Only the data curve in the last 24 hours can be seen.
- By default, the data showing the curve are not saved when the DL P50 is powered off. Thus the curve cannot be seen when the device is powered on again.
- To save the data, you must enable the logger.
Use either of the following two ways to enable the logger:
 - Click **Menu > Logger > Key start**.
 - Click the  icon in the status bar, then click **Key start**.

10.4.2 View Curves



10.5 Sensor Setting

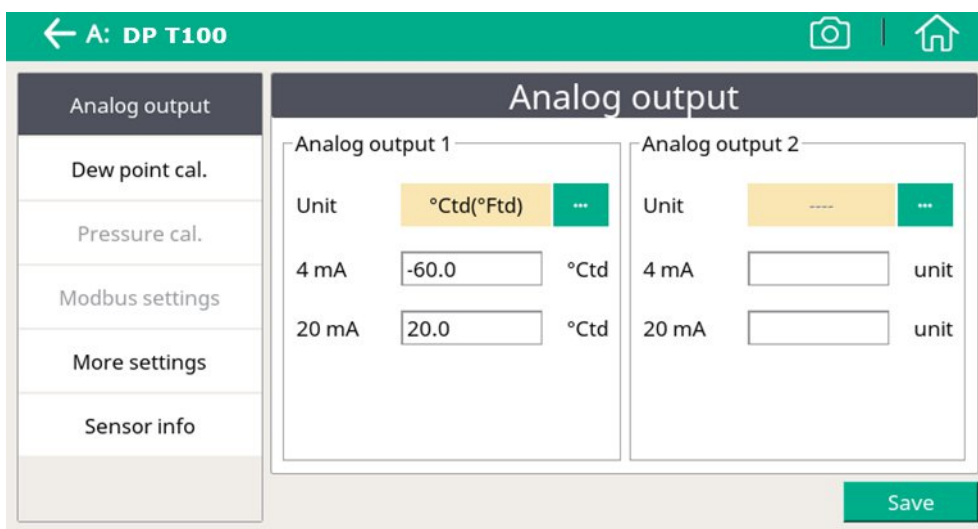
Enables you to configure physical sensors that are connected to the DL P50 and virtual sensors, which are configured via S4C-Display. This section describes sensor settings by sensor types.

10.5.1 Change Sensor Settings

Detailed steps are as follows:

1. In the main screen, select **Sensor setting**.
The screen shows a list of sensors.
2. Choose a sensor as needed.
3. View and configure the sensor settings through the left navigation menu.
4. Click **Save** to submit the changes to the sensor.

10.5.2 Dew Point Sensor



Analog output Select the physical moisture unit and set scaling for the analog output:

Whenever you change the moisture unit, it is recommended to adjust the scaling of the analog output. The DL P50 will recommend a standard scaling.

The scaling is used to express the moisture through a 4 ... 20 mA signal, which then can be transferred to a PLC or SCADA system.

Set the moisture unit to ppm (V), g/m³, mg/m³.

Atmospheric dew point requires to enter a reference pressure.

Dew point cali.	Dew point sensor can be adjusted at one point with a reference value. We recommend you perform calibration only below -40°C dew point by using a reliable reference.
Pressure calibration	Some dew point sensors have integrated pressure sensors which can be calibrated in this menu.
Modbus setting	Some sensors have Modbus interface. Communication parameters can be set here.
More settings	• Filters can be activated to dampen the output signal. • Auto calibration setting allows the activation of an auto calibration function. • Absolute pressure is required for g/m³, mg/m³, ppm[V] and atmospheric dew point calculation. The pressure must be entered as absolute pressure (not gauge pressure!). For the unit atmospheric dew point and ppm[V], the line pressure (absolute) must be entered. For the unit g/m³, mg/m³, if the calculation should be done under line pressure conditions, reference pressure of 1013 hPa must be entered.
Sensor info	Shows the sensor information for service inquiries.

10.5.3 Flow Sensor

Analog output Select the physical flow unit and set scaling of analog output:
Whenever the flow unit is changed, it is recommended you adjust the scaling of the analog output.
The DL P50 will recommend a standard scaling. The scaling is used to express the flow through a 4 ... 20 mA signal, which then can be transferred to a PLC or SCADA system.
Some sensors support active and passive analog outputs.

Flow setting

- Inner diameter:** To set for flow calculation
- Gas type:** To select the gas type. (Some gases require the real gas calibration. Please contact the manufacturer.)
- Ref. pressure:** To set for calculating the standard flow.
- Ref. temperature:** To set for calculating the standard flow.
- Constant:** Shows the gas constant of selected gas, or enter the gas constant for mixed gas or not-listed gas.
- Flow unit:** To select a desired flow unit.
- Consumption unit:** To select a desired consumption unit.
- Pressure unit:** Only applicable to flow sensors that integrate the pressure sensor such as FL S200 P/FL S260 P.
To select a desired pressure unit.

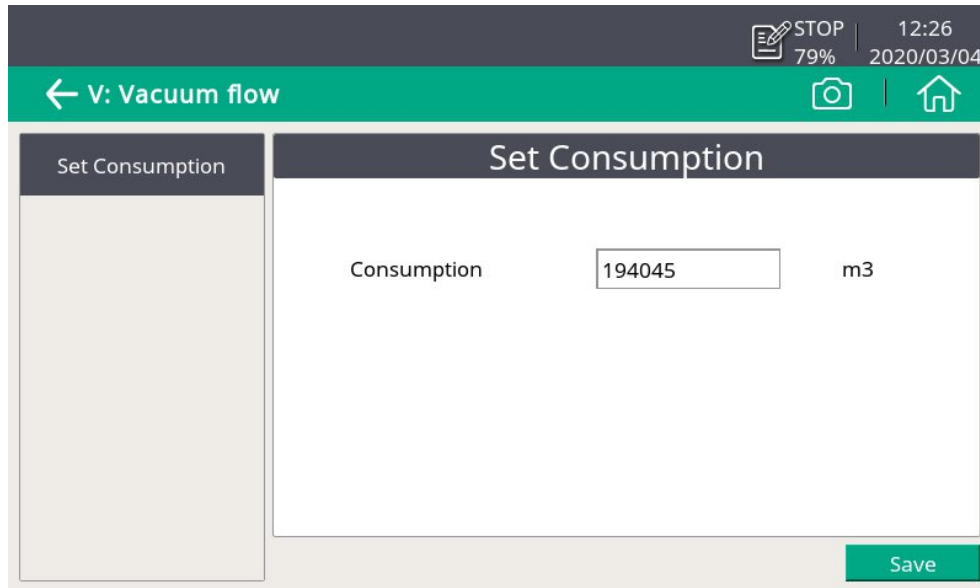
Flow type	Only applicable to FL S200 P and FL S260 P. To select the flow type from Flow, Dry air flow, FAD, and Actual flow.
Installation	Only applicable to an insertion type sensor. To select the installation method from center installation and 100 mm insertion installation.
More settings	Std. consumption: To set the internal consumption counter. Rev. consumption: Some sensors support bi-directional flow measurement. This is the counter for the reverse direction. Altitude: To set the altitude level. The default value is 0. User slope: To enable a correction of the flow by a factor. Temperature coefficient: by default temperature.
Copy settings	Enabled only for S551-P6.
Modbus settings	Enabled only for sensors with Modbus interface. Communication parameters can be set here.
Sensor info	Shows the sensor information for service inquiries.

Remark:

Reference pressure and reference temperature are used to calculate the standard flow at standard conditions, for example, 1000 hPa, 20°C. They are not related to the actual process pressure and temperature.

10.5.4 Vacuum Flow Sensor (Virtual Sensor)

If a virtual channel (for example, vacuum flow channel) is configured in the DL P50, the corresponding virtual sensor is displayed in the sensor list. For configuration steps of a virtual channel, see section 14.1 Virtual Channels.



The screenshot shows a touchscreen interface for configuring a virtual sensor. At the top, there is a status bar with a 'STOP' icon, '79%', '12:26', and '2020/03/04'. Below this is a green header bar with a back arrow, 'V: Vacuum flow', a camera icon, and a home icon. The main area is titled 'Set Consumption' and contains a text input field labeled 'Consumption' with the value '194045' and the unit 'm3'. A 'Save' button is located at the bottom right.

Consumption To configure the initial consumption value for the virtual flow.

10.5.5 Oil Vapor Sensor

The screenshot shows the 'Basic setting' screen for the Oil Vapor Sensor. The sidebar menu on the left includes 'Basic setting', 'Analog output', 'Modbus setting', 'Alarm setting', 'Status', and 'Sensor info'. The main content area is titled 'Basic setting' and contains the following fields:

- Altitude:** A text input field with the value '30' and the unit 'm'.
- User slope:** A text input field with the value '1.1' and a range indicator '(Range: 0.5...1.5)'.
- Compressor oils:** A dropdown menu showing 'Custom Oil' with a three-dot menu icon.
- Response factor:** A text input field with the value '1.02000' and a range indicator '(Range: 0.1...15)'.
- Output unit:** A dropdown menu showing 'mg/m³' with a three-dot menu icon.

A green 'Save' button is located at the bottom right of the screen.

Basic setting	Altitude: To enter the altitude level, and the default value is 0. User slope: To enter a correction factor for the oil content. Compressor oil: To select an oil type. Output unit: Select the unit of the oil content.
----------------------	--

Analog output	To set scaling of analog output (4 ... 20 mA).
----------------------	--

Modbus setting	To set address, baud-rate and parity for Modbus communication.
-----------------------	--

Alarm setting	To enable or disable the alarm function and set the alarm threshold.
----------------------	--

Status	Shows the PID sensor lifetime, valid calibration time, remaining filter capacity (the filter is consumable component used for the auto zero calibration), gas temperature, and pressure. There is an indication at each line whether the value is normal or not.
---------------	--

10.5.6 Analog Input Channel

The DL P50 provides two analog input channels for various analog signals (4 ... 20 mA, 0 ... 10 V, etc.). Please note that these channels must be initialized using the S4C-Display software. Only after that, you can configure the channel details on the DL P50.

The screenshot shows a touchscreen interface for 'E: Terminal E'. On the left is a sidebar with 'Basic setting', 'Ch1 setting' (selected), and 'Ch2 setting'. The main area is titled 'Ch1 setting' and contains the following fields:

- Process signal: 0 - 20 mA (with a dropdown arrow)
- Description: 0 - 20 mA (text input)
- Predefined unit: (with a dropdown arrow)
- Customized unit: mA (text input)
- Resolution: 0.001 (with a dropdown arrow)
- Lower limit: 4 (text input)
- Upper limit: 16 (text input)

At the bottom right are two buttons: 'Save' and 'One point calibration'.

Basic setting	Sensor description: To enter a sensor name.
CH 1 setting	Process signal: To select 0 - 20mA or Pulse. Description: To enter a sensor name. Predefined unit: to select a physical unit. Customized unit: Enter a name for the measurement unit as you want. Resolution: To select a resolution (how many digits behind the decimal point). Lower limit: To enter the lower limit for the measurement range. Upper limit: To enter the upper limit for the sensor measurement range. One point calibration: The instrument provides a one-point system calibration, which can eliminate accuracy failures of instrument and sensor. If an accurate reference is available (e.g. calibration lab), the system can be calibrated at one point to this reference. The calibration is stored inside the DL P50. This calibration offset is applied to every sensor connected to the terminal that is used for calibration.
Ch 2 setting (counter only)	Measure type: Only counter is selectable. Description: To enter a channel name. Predefined unit: To select a physical unit. Customized unit: To enter a name for the measurement unit as you want. Count/pulse: To specify how many consumption units one pulse is equal to.

10.6 Alarm Management

The DL P50 comes with two alarm relay outputs and optical alarm indications (flashing value). The **Alarm settings** can be used to define alarms and thresholds.

10.6.1 Alarm Setting

The DL P50 provides two internal relays H and I.

Follow steps below to set parameters for an alarm:

1. On DL P50 touchscreen, click **Menu** > **Alarm** > **Alarm settings** to enter the alarm setting page.

Channel	Unit	Threshold	Hysteresis	Direction	Relay
001 FL S185 T Flow	m³/h	1500	10	Up	Relay I

Add Delete

2. Click **Add** to add an alarm.
3. Set alarm parameters.

Either on the DL P50 screen or on the S4C-Display software, you can set alarm parameters.

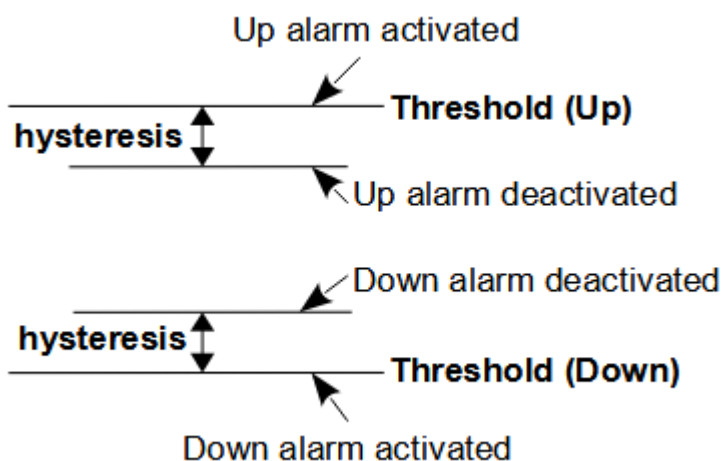
The alarm parameters are explained as below.

Channel	Select the channel to be set.
Unit	Set the unit of the channel.
Direction	Up: indicates the alarm is triggered when upper limit is reached. Down: indicates the alarm is triggered when lower limit is reached.
Threshold	The threshold and hysteresis are used to activate or deactivate the alarm.
Hysteresis	

- When the channel value is higher than the threshold, the **Up** alarm is activated.
- When the channel value is lower than the (Up

threshold - hysteresis), the **Up** alarm is deactivated.

- When the channel value is lower than the threshold, the **Down** alarm is activated. When the channel value is higher than the (Down threshold + hysteresis), the **Down** alarm is deactivated.



Relay	Select Relay I, Relay H.
--------------	--------------------------

10.6.2 Monitor and Dismiss Alarms via DL P50

The following ways are available to monitor alarms.

- The DL P50 comes with optical alarm indication, that is, when an alarm is activated, the relevant value on the DL P50 screen is flashing.
- The DL P50 comes with two alarm relay outputs. When an alarm is activated, the external alarm unit will emit sound or light, telling you there is an alarm.
- View activated alarms on DL P50 screen.

Click **Activated alarms** on the alarm page, the activated alarms will be listed.

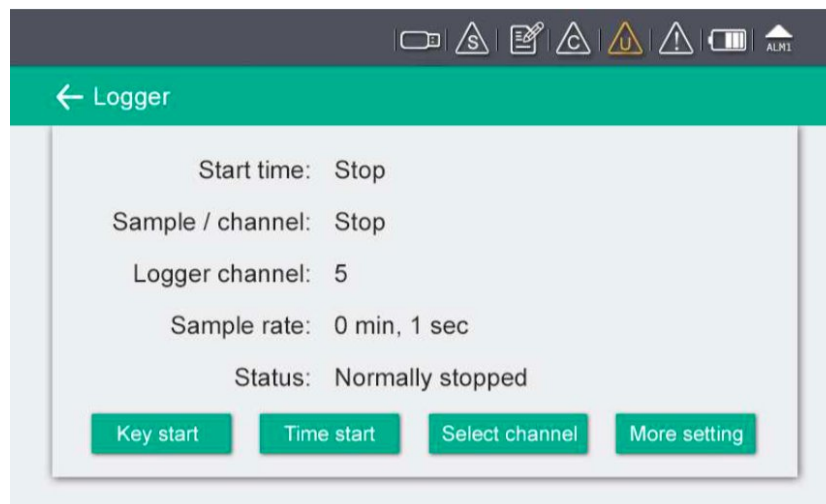
ALMI STOP 83% 14:45 2023/04/04						
← Activated alarm(s) 📷 🏠						
Channel	Unit	Threshold	Time & Date	Direction	Dismiss	
qq FL S200 P Pressure	bar	2	14:45 2023/04/04	↓	☐	
qq FL S200 P Temperature	°C	42	14:44 2023/04/04	↑	☐	

- When an alarm is deactivated, it is not shown in the activated alarms list.
- When selecting **Dismiss** an alarm (as below), this alarm will not trigger the alarm relay.

Channel	Unit	Threshold	Time & Date	Direction	Dismiss
qq FL S200 P Pressure	bar	2	14:45 2023/04/04	↓	☒

10.7 Logger

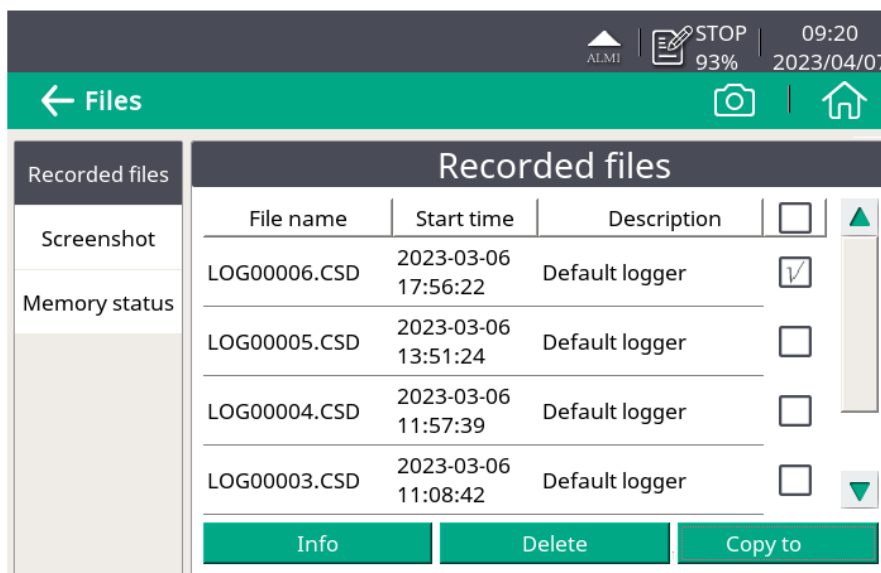
View the logger status and control the logger.



Start time	Logger start time.
Sample / Channel	Recorded sample number per logging channel.
Logger channel	Total recording channel number.
Sample rate	Shows the sampling rate. To change the sampling rate, click More settings.
Status	Logger status.
Key start button	To start logging immediately.
Time start button	To configure a scheduled start for logging.
Select channel button	To select the channel to log for.
More setting button	To configure the logging interval, logging mode, and memory mode. • Average: Turning Average on means to log the average value during an interval; turn the average off means the logged value is an instantaneous one. • Memory mode: Choose a mode as needed. ◦ Full stop: Logging stops if the memory is full. ◦ Wrap around: If the memory is full, new logging data overwrites the oldest data.

10.8 Files

View and process recorded files and screenshots; view DL P50 memory status.



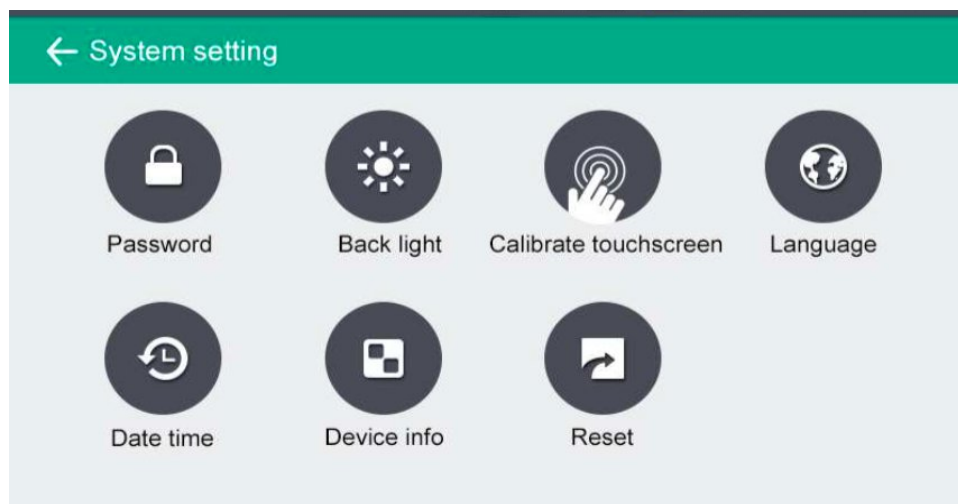
For how to export logger files or screen-shots, see chapter 11 Export Logger Files and Screen-shots.

10.9 Service Info

Contact information of service company can be set via S4C-Display software.

10.10 System Setting

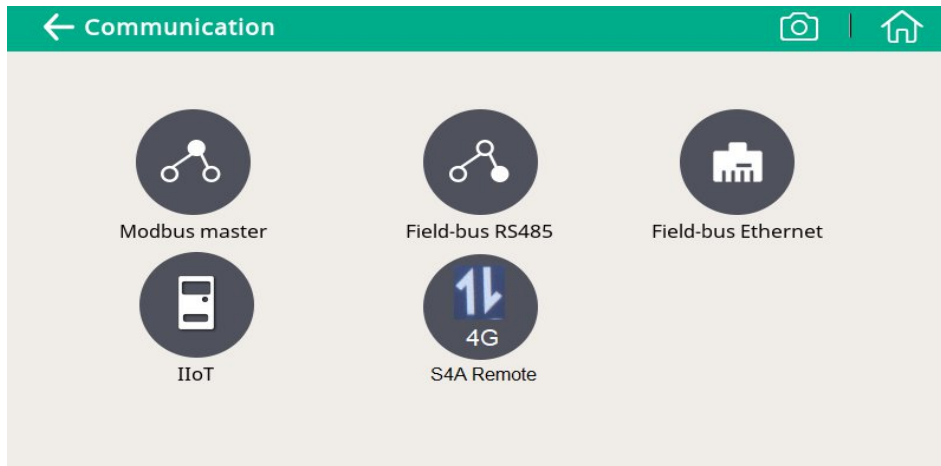
This sub-menu enables you to change various system settings. Click an icon as needed and following the onscreen instructions to proceed.



Password	To set password to protect critical operations.
Back light	To adjust brightness and timeout settings for power saving.
Calibrate touch screen	Calibrate touch accuracy.
Language	To select the user interface language.
Date time	To set date and time.
Device info	Shows information for service cases.
Reset	To reboot the display.

10.11 Communication

Configure how the DL P50 communicates with other devices and applications. Select a communication mode as needed and follow the onscreen instruction to proceed.



The following table lists the communication modes that DL P50 supports.

Modbus master	To enter the Modbus communication parameters for DL P50 (as the Modbus master) to communicate with Modbus slaves.
Field-bus RS485	DL P50 works as the slave. Enter the port (1-247) that DL P50 uses to communicate with the master.
Field-bus Ethernet	To enter an IP address for the DL P50 or select DHCP for the DL P50 to be assigned with a dynamic IP address.
S4A Remote	To configure DL P50 to connect to S4A remote server, view measurement values, and read out logging files via the S4A software.

11 Export Logger Files and Screen-shots

You can export logger files and screen-shots from the DL P50 to your local PC for further analysis. Two ways are available to export:

- Export using the S4A Software
- Export using a USB disk

Note: Requirements to the USB disk are as follows:

- With the OTG function
- In the FAT 32 format
- The capacity $\leq$ 256 GB

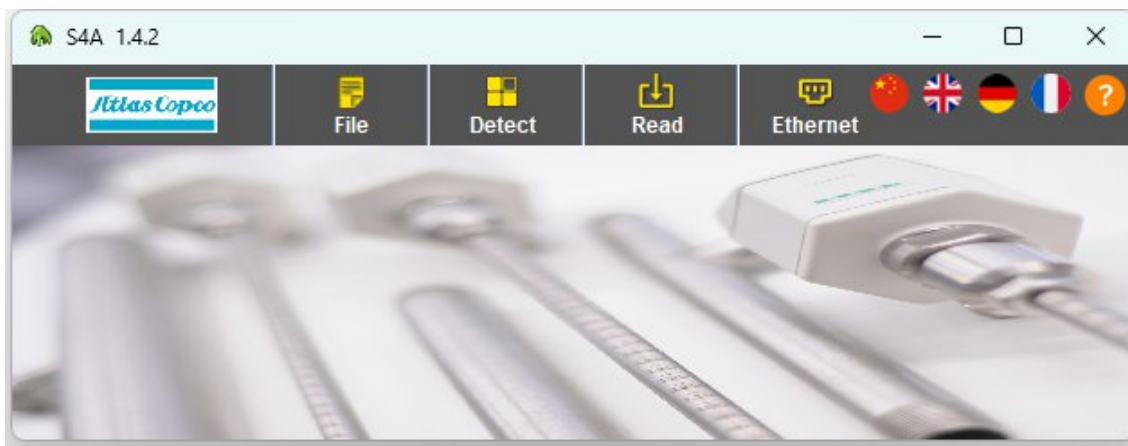
11.1 Export Logger Files and Screen-shots using S4A

Preparation:

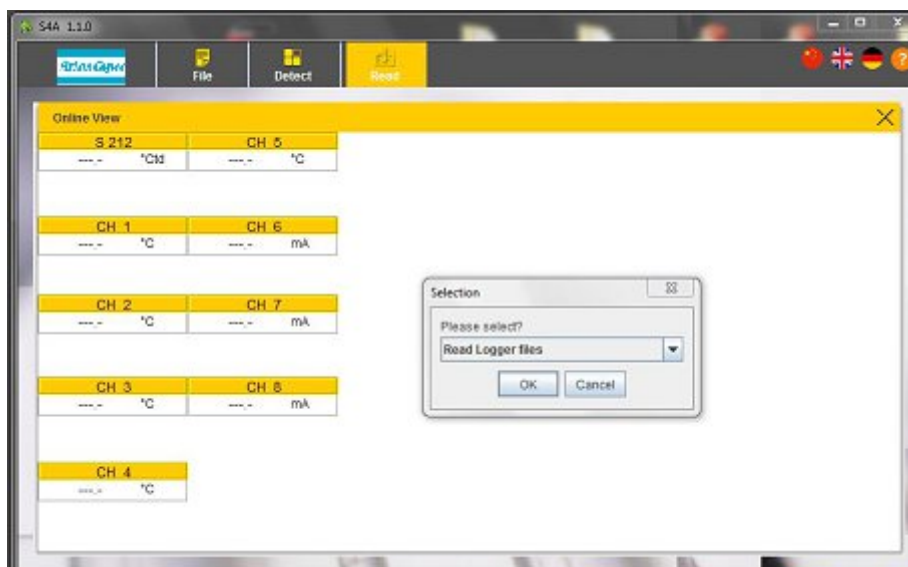
1. Download the S4A Software and install it to your PC.
2. Connect the DL P50 with your PC using the supplied USB cable.

Start the S4A Software and follow the instructions below:

1. In the top bar, click **Ethernet** to switch it to **USB**.
2. Click **Detect**, and the Online view appears on the screen.



3. Click **Read** in the top bar. The Selection window appears. Select the logger files or the screen-shots that you want to download, then click **OK**.



4. The following window appears showing the log files that are saved on the DL P50 data logger. Select a single or multiple files and click **Read Selected File(s)**.

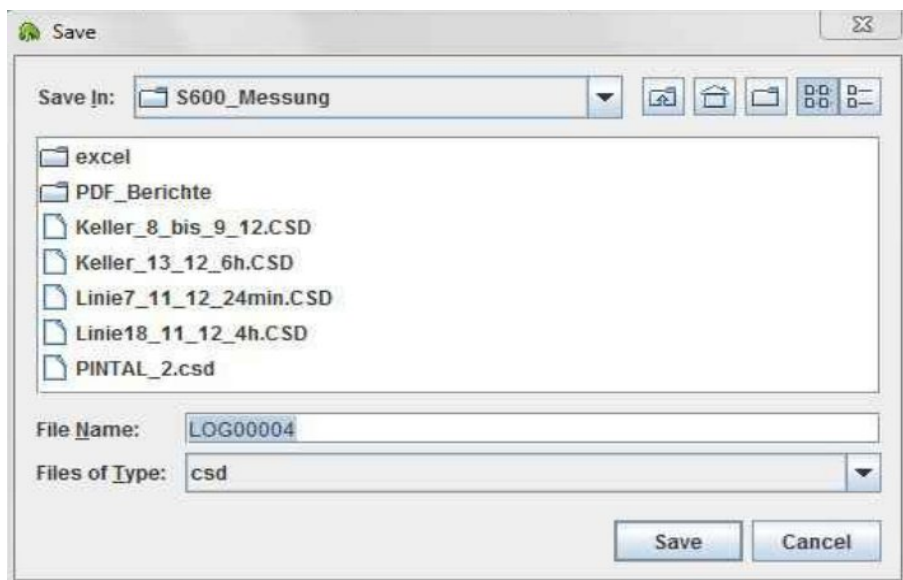
Device SD Card Protocol Header List

Start Time	End Time	No Of Channels	Values Per Channel	File Name	Description
22.01.2018 16:56:13	22.01.2018 16:59:58	8	226		Record File
22.01.2018 16:48:26	22.01.2018 16:53:46	9	321		Record File
22.01.2018 16:37:47	22.01.2018 16:43:40	9	354		Record File
12.10.2017 14:59:59	12.10.2017 15:01:03	16	65		Record File

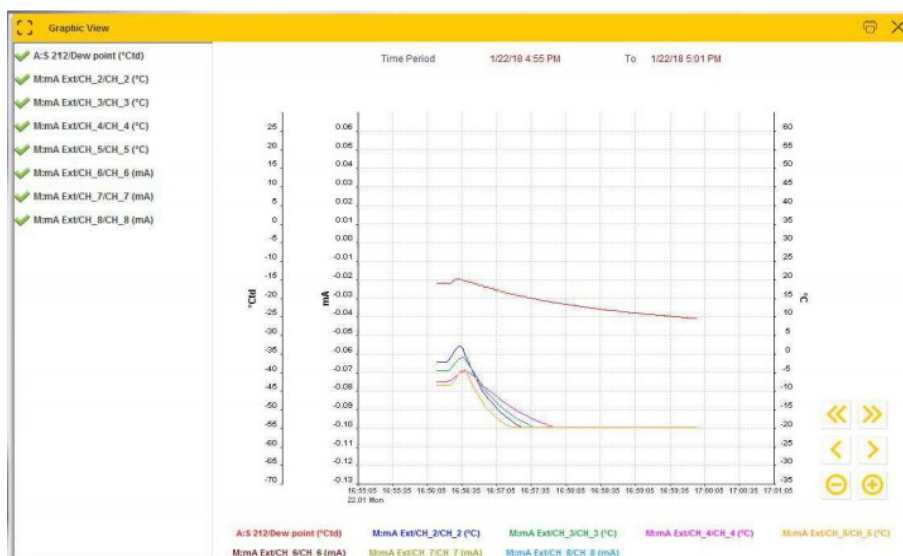
Buttons: Delete Selected File(s), Read Selected File(s), S Time To Read File, Close

5. A pop up will ask where to save the data. Remember the path. Then click **Save**.

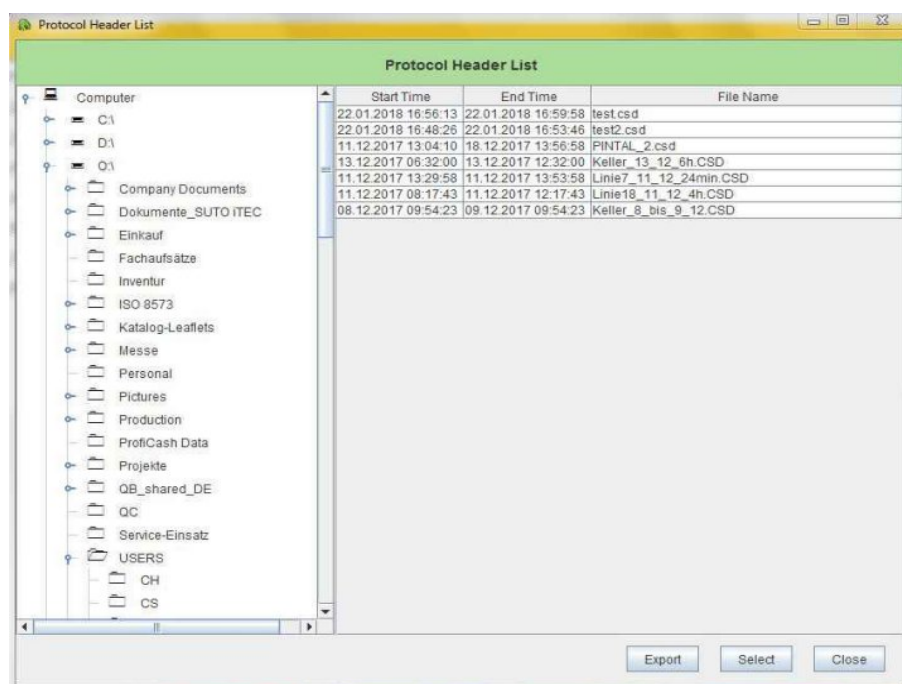
11 Export Logger Files and Screen-shots



6. After saving, a new window appears showing the downloaded data in a graphic view. Views can be zoomed, modified, and exported.



7. To view graphics of a different file or to export a file into the Excel or CSV format, click **File** in the top bar. The following window appears.



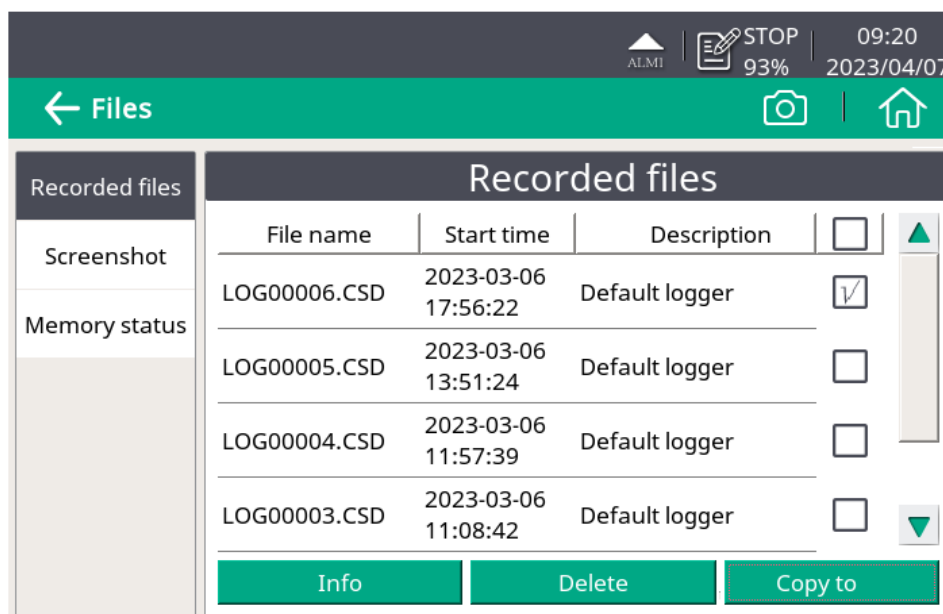
- To view the graphics of a file, select the file and click **Select**. The graphic view of the file appears.
- To export a file into the Excel or CSV format, select the file, and click **Export**.

Remark:

The measurement value of -9999 in a logger file denotes an invalid measurement value or a measurement failure (e.g. if the sensor was not connected or the connection was interrupted). The measurement value of -8888 denotes an out-of-range measurement value.

11.2 Export Logger Files and Screen-shots using USB Disk

1. Insert the USB stick to the connector on the front panel of the DL P50.
2. On the DL P50 touchscreen, click **Menu > Files**. All recorded files are listed.



3. Select files to be downloaded, and click **Copy to**. The selected files are exported to the USB disk.
4. On the **Files** page, click **Screen-shot** on the left to export screen-shots to the USB disk.

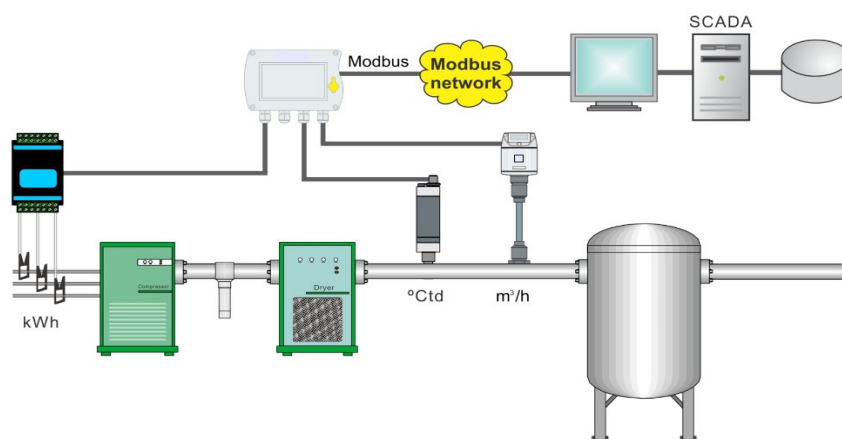
12 Build Network using Modbus Interface

Using the Modbus output terminals (C and D) on the DL P50, you can connect all the measuring instruments in your system into a communication network, thus you can use DL P50 to monitor the measurements of all the measuring instruments.

12.1 Integration with a Factory Automation System

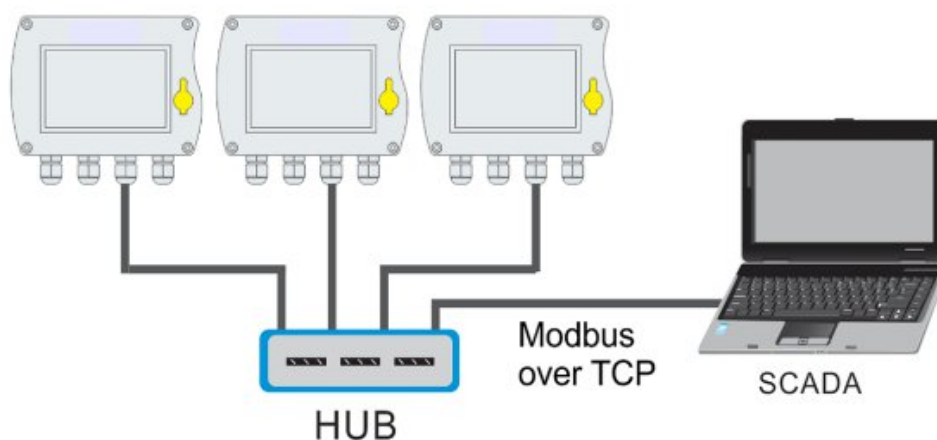
You can use the communication solutions to connect DL P50 to a factory automation system. In these solutions, DL P50 enables the factory automation system to retrieve measurement data from sensors, which is sufficient for most of the field applications.

12.1.1 RS-485 through the Modbus-to-RTU Gateway



Modbus is a popular industry bus that can be used to connect several DL P50 to a Modbus master. A PLC, a SCADA system, or a DL P50 Master can work as the Modbus master.

12.1.2 Field-bus Ethernet through the Modbus/TCP



The DL P50 comes with an Ethernet interface. By selecting the Field-bus Ethernet protocol from the DL P50 menu, the communication with a Modbus master can be established. This is a popular way to connect to a Modbus Master through Ethernet. Process visualization systems are using so-called OPC servers to establish the link to Modbus.

12.2 Standalone Solution

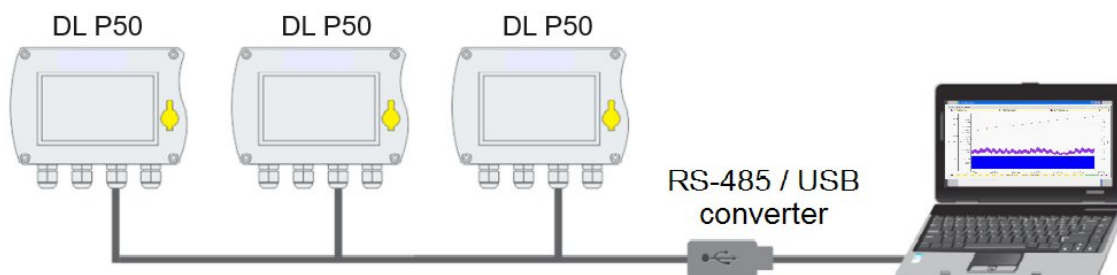
The standalone total solution for industrial communication includes data recording and analysis. If measurement values still need to be fed into a SCADA system or a Factory Automation System, you also have the option to use the analogue signals (4...20 mA or pulse).

12.2.1 Physical Networking Modes

This standalone solution supports multiple networking modes.

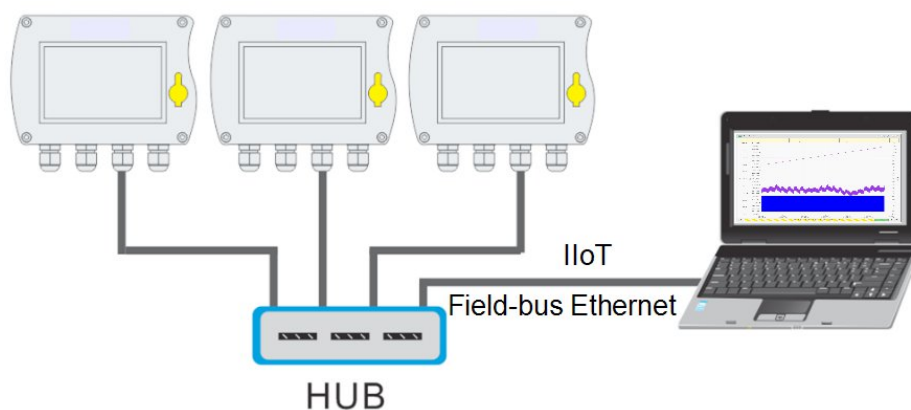
12.2.1.1 RS-485

RS-485 is commonly used in industrial applications. It can reach up to 1000 m distance with a shielded 2-wire cable. If further distance is required, a repeater can be installed to reach another 1000 m. Up to 30 DL P50 instruments can be connected to the RS-485 network. Please ensure that the Modbus/RTU communication protocol is selected on every DL P50, and that each DL P50 has a unique slave address between 1 and 247.

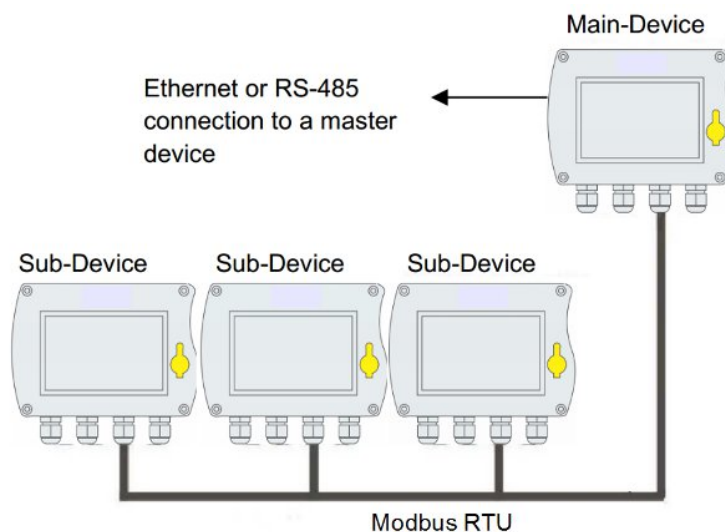


12.2.1.2 Ethernet

The DL P50 can be connected to an Ethernet switch or router or sometimes called a hub. Please consider following hardware and software requirements.



12.2.1.3 More Complex Networking Solutions



The above picture shows that DL P50 (Sub-Device) - or any other device that has a Modbus/RTU interface can be connected to a Modbus-Master (Main-Device) through Modbus/RTU.

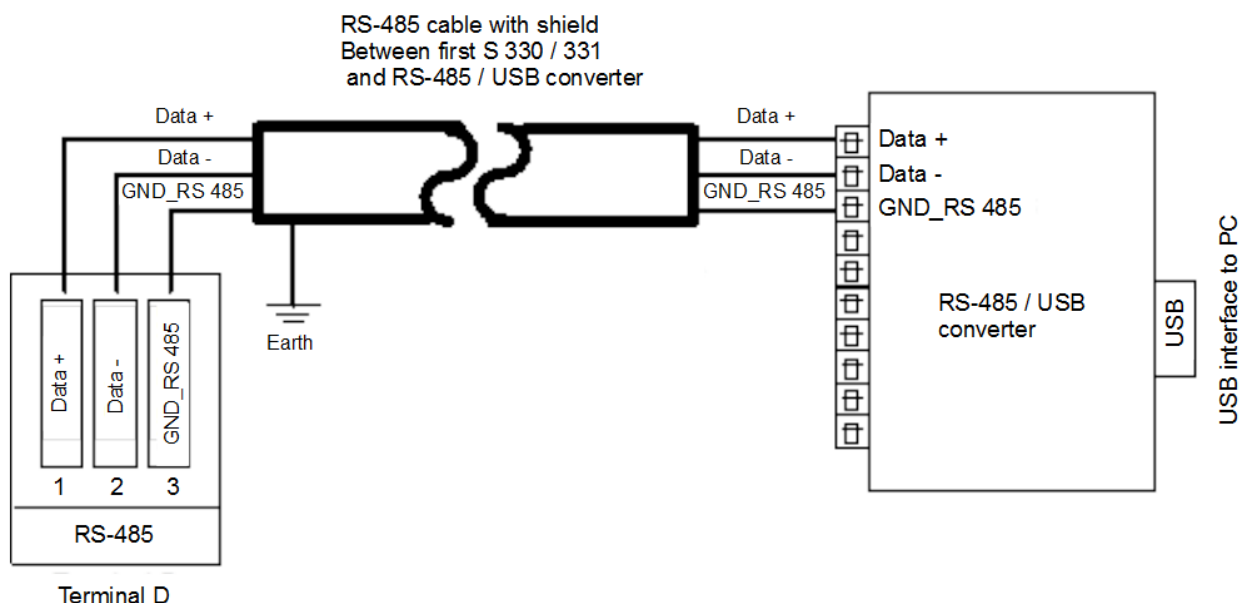
The Main-Device itself then can be connected to a higher level Master Device either through RS-485 or Ethernet.

The Master-Device on top monitors only the main device, which provides all measurement channels from the sub-devices.

12.2.2 Hardware Connection

This section introduces the hardware connections for DL P50.

RS-485 Hardware



Through a RS-485 / USB converter the system is connected to a USB port of the office PC. RS485 network requires a termination resistor network. At both far ends of the devices, termination resistor must be turned on communication menu, all others DL P50 remain off, Termination resistor is software control in DL P50. Please set it up correctly. There are totally 3 poles on the terminal D for RS-485 network wiring. The pin function description is shown below.

Pin No.	Pin name	Function
1	Data +	Data + signal
2	Data -	Data - signal
3	GND RS-485	Ground of RS-485

RS-485 cable

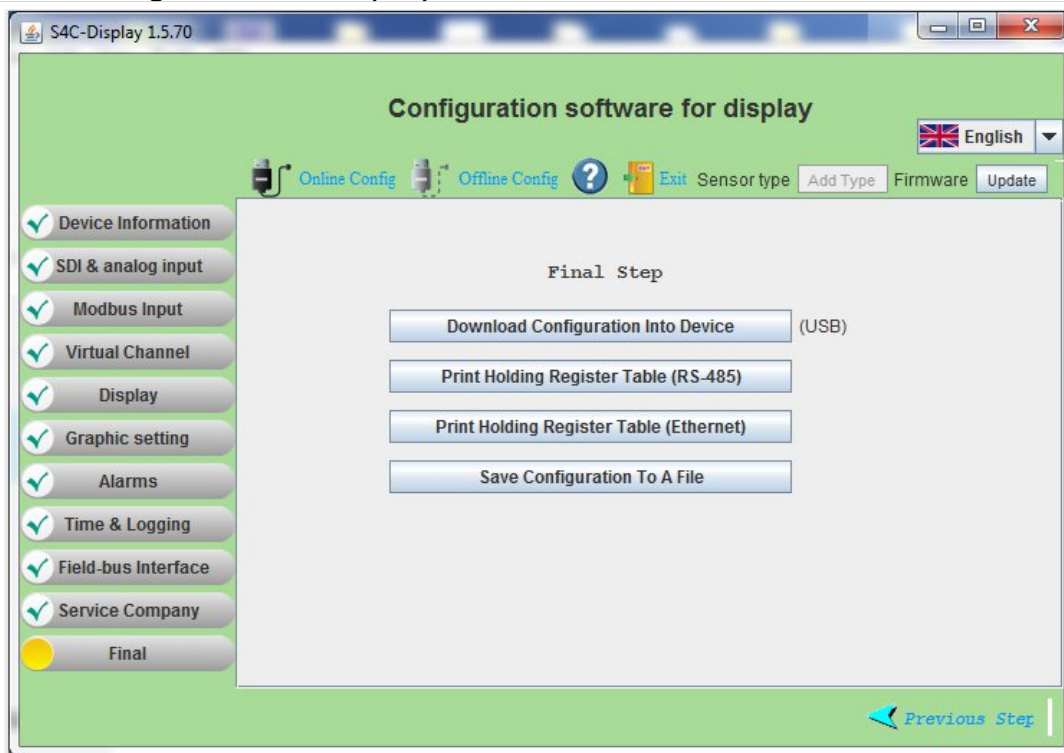
According to the recommendations of EIA 485 standard, only cables should be used. A maximum of 30 devices may be connected to one segment. The bus cable must be laid at a distance of at least 20 cm from other cables. It should be laid in a separate, conductive, and earthed cable trunk. It must be ensured that no potential differences occur between the individual devices on the bus.

RS-485 cable specifications

- Impedance: 135 – 165 Ohm @ 3 to 20 MHz
- Cable capacity: < 30 pF/m
- Cable diameter: > 0.64 mm
- Cross section: > 0.34 mm², conforms to AWG 22
- Loop resistance: < 110 Ohm per km
- Screening: Cu shielding braid or shielding braid and shielding foil
- Outer diameter for power and sensor cable: 4.5 ... 8 mm

12.2.3 Fieldbus Interface Configuration

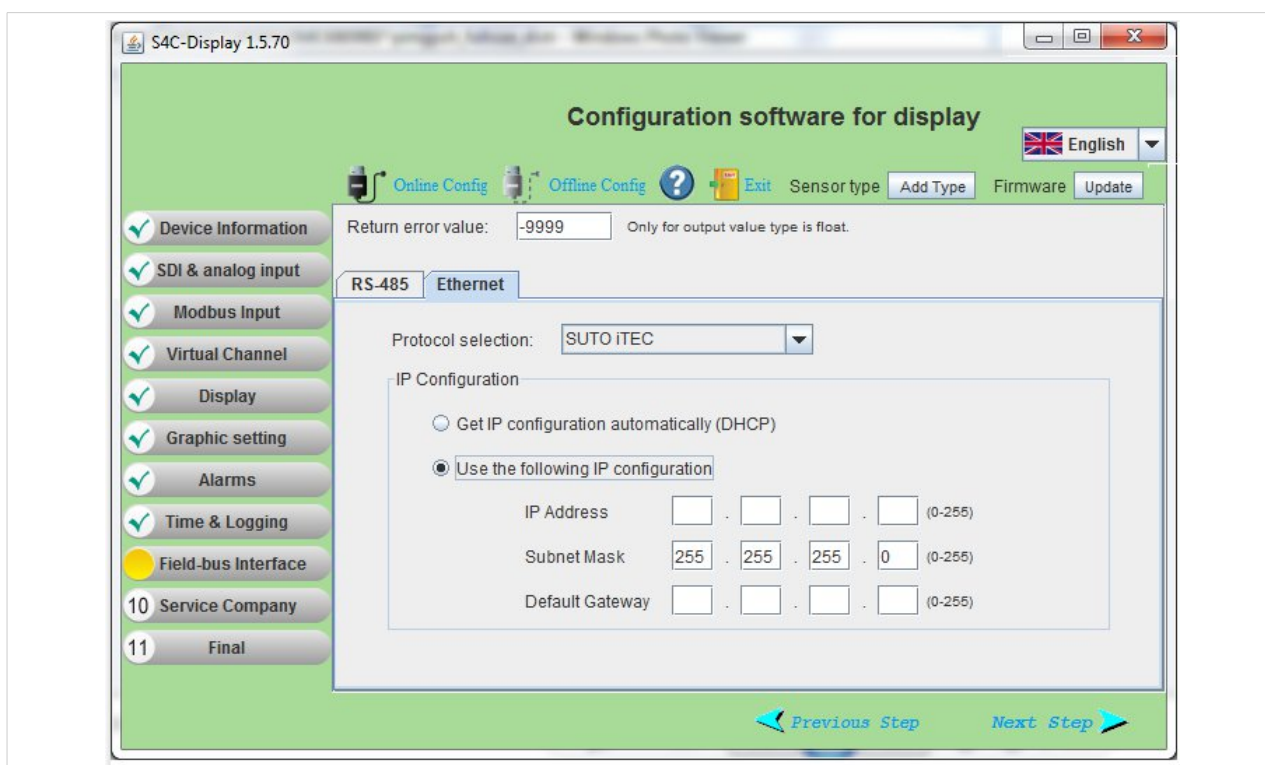
This section introduces how to configure the Fieldbus RS-485 and Ethernet interfaces using the S4C-Display software.



12.2.3.1 Field bus RS-485 settings

Setting	Description
Return error value	Enter the value that DL P50 will return to the master as a measurement value in case of any error condition.
Protocol selection	Select Modbus if the device is connected to a Modbus network.
Address	Each device on the RS-485 network must have a unique device address. Enter a number that is not assigned to any device in the RS-485 network as the device address of the DL P50.

12.2.3.2 Field Bus Ethernet Settings



Setting	Description
Return error value	Enter the value that the slave device will return as a measurement value in case of any error condition.
Protocol selection	Select Modbus if the device is connected to a Modbus network.
Get IP config automatically	Select this option to assign the DL P50 an IP address through the network router. This is

	convenient but not a recommended choice in industrial networks. We recommend to choose a static IP address.
Use the following IP...	Enter the static IP address.

12.3 Print Modbus Slave Register Table

The Modbus Register Tabel can be different depending on the configuration of the DL P50, therefore there is no static Modbus Holding Register Table. When the DL P50 is connected to a Modbus master or BMS, the Modbus master needs to be programmed based on this table.

The S4C-Display software can download the holding register table of the actual configuration with a few clicks.

What you need:

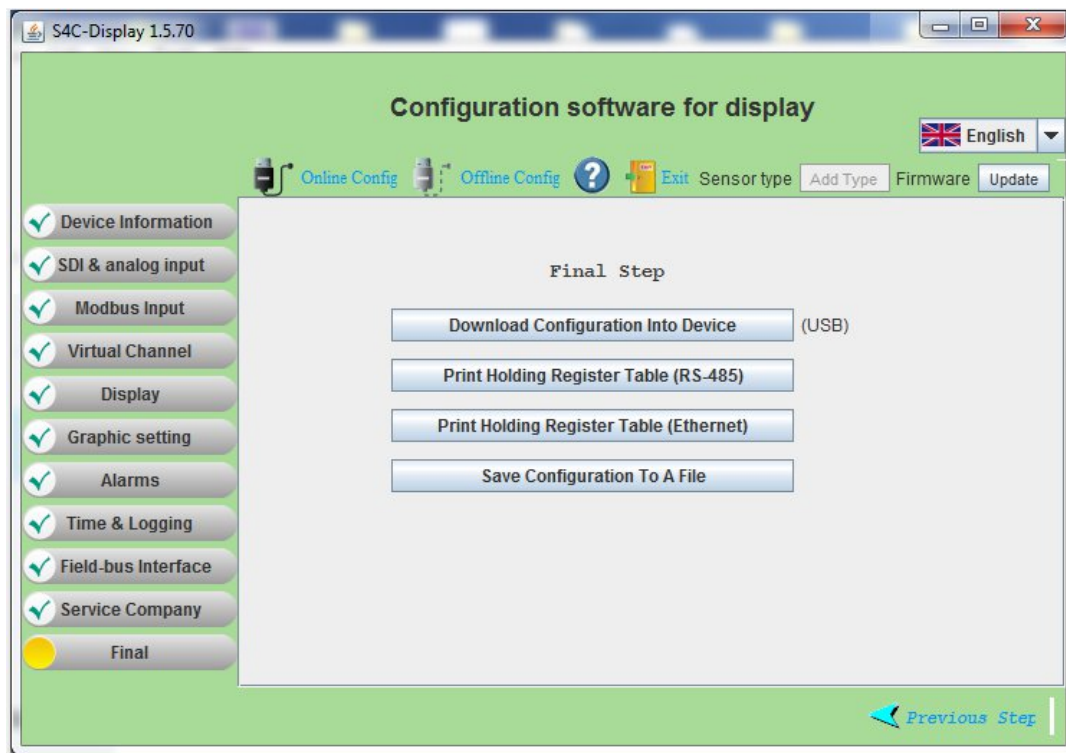
1. Download the S4C-Display software and install it to your PC.
2. Connect the DL P50 with your PC using the supplied USB cable.

Start the S4C-Display and follow the instructions below:

Click **Online Config > Auto Detect > Select Display > Start Config > Final.**

Here you can find the buttons to print the Modbus Holding Register Table for RS485 (Modbus/RTU) and for Ethernet (Modbus/TCP).

Click **Print Holding Register Table.** This will create the PDF to access the Modbus register from external Modbus software.

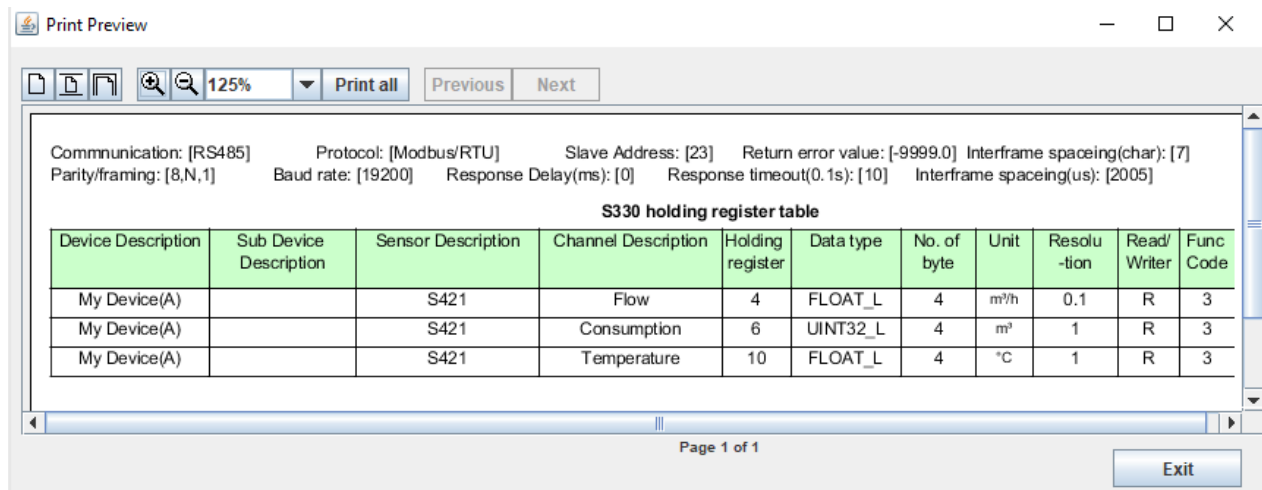


This is the example Modbus Holding Register to read from DL P50.

Flow = Register 4

Consumption = Register 6

Temperature = Register 10



12.4 Troubleshooting

Ethernet

Problem: Cannot find any device or cannot establish communication.

Action:

- Check the device connection. There are two lights at DL P50 Ethernet connector. When DL P50 is properly connected, the yellow light is on indicating the power supply works normally, while the green light blinks indicating connectivity is present.
- Check the network cable. Make sure it's a workable RJ-45 Ethernet cable and connected properly.

Note that the 'Link' light on the switching hub should be on.

- Make sure PC and DL P50 are on the same subnet.
- Make sure there is a device or PC that has same IP address as the DL P50.
- Make sure firewall settings on PC do not block the DL P50 communication which uses port 502.
- Make sure the firewall is closed on the PC.
- Make sure that the PC has installed only one Ethernet card.

Problem: Communication is not stable.

Action:

1. Make sure the speed of switching hub that DL P50 connects to is 100Mbps.
2. Make sure physical connection (network cable) is well connected.
3. Check and configure the communication option again in the **Configuration > Communication** menu.
4. Try to communicate again.
5. If it still does not work, try to reset DL P50 by powering it off and on again. Restart the software. Then retry the communication.

RS-485

Problem: Cannot find any device or cannot establish communication

Actions:

- Make sure the RS485-USB converter is correctly cabled to the network.
- Make sure each DL P50 is set with a unique address.

Problem: Communication is not stable or lost during online reading.

Actions:

- Ensure that only the last device on the RS 485 network has the termination resistor switched on.
- Ensure the bus cable must be laid at a distance of at least 20 cm from other cables.
- Ensure the bus cable is no longer than 1000 m; otherwise consider to install a repeater.
- Ensure the length of each T (stub) connection is no more than 1 m.

13 Monitor Data Remotely

You can remotely monitor measurement data from the DL P50 using an Internet browser or the S4A software on the same network.

13.1 Enable Remote Access

1. Connect the DL P50 to your network.
2. Assign the DL P50 with an IP address by using the **Communicate > Field-bus Ethernet** menu on the DL P50 screen or **Field-bus Interface > Ethernet** on the S4C-Display software.

Remarks:

- You can assign a static IP address to DL P50 or delegate the DHCP server to assign an IP address to DL P50 dynamically. If the long term access is needed, we recommend you assign DL P50 a static IP address.
- To enable access from Internet, please ask your IT administrator for help on router configuration.

13.2 Monitor Data through an Internet Browser

1. On a networked device (*for example*, smart phone, PC, and so on), start a Web browser.
2. View the DL P50 IP address by accessing the **Communicate > Field-bus Ethernet > Status** menu on the DL P50.
3. Launch an Internet browser, and enter the IP address of the DL P50 in the address bar.

In the monitoring window that appears as shown below, you can view the information of the DL P50 and measurement data. The measurement data in alarm is displayed in red.

Device Type: S 331 Device SN: 8888 9999 IP Address: 192.168.0.68 Logger: STOP			
Factory#1			
Compressor#1	Pressure	-0.00	bar
	Velocity	0.0	Nft/min
Compressor#2	Flow	0.0	Ncfm
	Consumption	538549	Ncf
	Temperature	27.0	°C
Factory#2			
Compressor#3	Velocity	0.0	m/s
	Flow	0.0	NI/min
	Consumption	324	Nm³
	Rev. consumption	0	Nm³
	Temperature	27.2	°C
	Casing temp.	25.0	°C

Remark: The web server only works if all devices are on the same network.

13.3 Monitor Data through S4A Software

1. Launch the S4A and open its online help.
2. Click **Detect** on the S4A to detect the DL P50.

The online view of the detected DL P50 appears. In this example, the DL P50 is configured with an FL S200 P and an FLI D50 A sensors, but only the FL S200 P is connected to the DL P50.

		 File	 Detect	 Read	 Ethernet
Online View					
		FL S200 P			
		-0	bar		
		0	m/s		
		0	m³/h		
		1111	m³		
		26	°C		
FL D50 A		0	m/s		
---	m³/h	0	m³/h		
---	m³	0	m³		

14 Extended Use of Virtual Channels

14.1 Virtual Channels

A virtual channel is a channel that is created by adding, subtracting, multiplying, or dividing two or more physical channels. By using the virtual channel, you can:

- Monitor the vacuum flow and consumption when a flow meter does not contain a pressure sensor.
- Monitor total flow or consumption for several branch lines.
- Perform any calculation on a physical channel, for example unit conversion calculations.

The virtual channels must be configured via the S4C-Display, and values of a virtual channel can be viewed on the screen of the DL P50.

14.1.1 Monitor Vacuum Flow and Consumption

Take the FL S185 T and an absolute pressure sensor as an example. Follow steps below to create and view a virtual channel for a vacuum flow.

1. Create a pressure channel using the **SDI & analog input** or **Modbus Input** menu according to your actual condition.

Device	Sub Device	Sensor	Channel	Unit
My Device(E)		Terminal E	Pr. 1.6 bar a...	bar

2. Create a flow channel and a consumption channel for FL S185 T using the **SDI & analog input** menu.

[3]	My Device(E)		Terminal E	Pr. 1.6 bar abs.	bar	0.01
[4]	My Device(M)		FL S185 T	Flow	m³/h	0.1
[5]	My Device(M)		FL S185 T	Consumption	m³	1

3. Create the virtual channel for flow:
 - a. Select the FL S185 T flow channel. In the example, it is Index [4].
Now in the **Formula** field, **[4]** appears.

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(A)		FLI D50 A	Flow	m³/h	0.1	
[2]	My Device(A)		FLI D50 A	Consumption	m³	1	
[3]	My Device(E)		Terminal E	Pr. 1.6 bar abs.	bar	0.01	
[4]	My Device(M)		FL S185 T	Flow	m³/h	0.1	
[5]	My Device(M)		FL S185 T	Consumption	m³	1	

Compare channel
Virtual consumption

7
8
9
+
(

4
5
6
-

1
2
3
*

0
.
-/+
/
)

Description: Virtual ch1
Unit: m³/h
Resolution: 0.1

Formula: [4]
Clear

Add
Remove

- b. Click * and **1000** on the onscreen numeric keypad. Now the Formula is as follows:

Virtual Channel

Description: Virtual ch1
Unit: m³/h
Resolution: 0.1

Formula: [4]*1000
Clear

Add
Remove

- c. Click / on the onscreen numeric keypad, and then select the absolute pressure channel. In this example, it is Index[3].

14 Extended Use of Virtual Channels

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(A)		FLI D50 A	Flow	m³/h	0.1	
[2]	My Device(A)		FLI D50 A	Consumption	m³	1	
[3]	My Device(E)		Terminal E	Pr. 1.6 bar abs.	bar	0.01	
[4]	My Device(M)		FL S185 T	Flow	m³/h	0.1	
[5]	My Device(M)		FL S185 T	Consumption	m³	1	

Compare channel

Virtual consumption

Virtual Channel

7

8

9

+

4

5

6

-

1

2

3

*

0

.

-/+

/

(

)

Description: Unit: Resolution:

Formula:

Clear

Add

Remove

- d. Change the **Unit** "bar" to "**m³/h**", and **Resolution** "0.01" to "**0.1**" to match the flow attributes. You can also change the **Description**.

Virtual Channel

Description: Unit: Resolution:

Formula:

Clear

Add

Remove

- e. Click **Add** to create the virtual channel for vacuum.

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(A)		FLI D50 A	Flow	m³/h	0.1	
[2]	My Device(A)		FLI D50 A	Consumption	m³	1	
[3]	My Device(E)		Terminal E	Pr. 1.6 bar abs.	bar	0.01	
[4]	My Device(M)		FL S185 T	Flow	m³/h	0.1	
[5]	My Device(M)		FL S185 T	Consumption	m³	1	
[6]	My Device(V)		Vacuum flow	Vacuum flow	m3/h	0.1	[4]*1000.0/[3]

4. Create virtual consumption channel:
Select the virtual flow channel that you want to calculate the consumption, and then click **Virtual consumption**.

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(A)		FLI D50 A	Flow	m³/h	0.1	
[2]	My Device(A)		FLI D50 A	Consumption	m³	1	
[3]	My Device(E)		Terminal E	Pr. 1.6 bar abs.	bar	0.01	
[4]	My Device(M)		FL S185 T	Flow	m³/h	0.1	
[5]	My Device(M)		FL S185 T	Consumption	m³	1	
[6]	My Device(V)		Vacuum flow	Vacuum flow	m³/h	0.1	[4]*1000.0/[3]

Compare channel

Virtual consumption

7

8

9

+

(

4

5

6

-

)

1

2

3

*

)

0

.

-/+

/

)

Description:

Vacuum flow

Unit:

m³/h

Resolution:

0.1

▼

Formula:

[6]

Clear

Add

Remove

Edit

A virtual consumption channel is automatically created in the list. In this example, it is Index [7].

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(A)		FLI D50 A	Flow	m³/h	0.1	
[2]	My Device(A)		FLI D50 A	Consumption	m³	1	
[3]	My Device(E)		Terminal E	Pr. 1.6 bar abs.	bar	0.01	
[4]	My Device(M)		FL S185 T	Flow	m³/h	0.1	
[5]	My Device(M)		FL S185 T	Consumption	m³	1	
[6]	My Device(V)		Vacuum flow	Vacuum flow	m³/h	0.1	[4]*1000.0/[3]
[7]	My Device(V)		Vacuum flow	Consumption	m³	1	totalizer([6])

Note: You do not need to configure the formula for the consumption channel because the calculation formula between the flow and consumption is written in the DL P50.

- Click **Display** on the S4C-Dispaly to add the virtual channels to a measuring point.
- Click **Final** > **Download Configuration into Device** to save the virtual channels to the DL P50.
- Set the initial consumption: click **Sensor settings** menu on the DL P50 touch screen. For more information, see section [10.5.4 Vacuum Flow Sensor \(Virtual Sensor\)](#).
- View the vacuun flow and consumption created in the virtual channel: on the DL P50 screen, click **Value** in the lower menu bar,

then select the **Location** where the virtual channels are. An example is shown below.

14.1.2 Monitor Flow or Consumption for Several Branch Lines

Another application of the virtual channel is to measure a total flow or consumption for several branch lines.

This section takes flow channel and consumption channel of the FLI DN20 C and FL S185 T as an example. The 4 channels have been created as below:

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(E)		Terminal E	0 - 20 mA	mA	0.001	
[2]	My Device(E)		Terminal E	Counter	I	1	
[3]	My Device(M)		FLI DN20 C	flow	m³/h	0.1	
[4]	My Device(M)		FLI DN20 C	consumption	m³	1	
[5]	My Device(M)		Third-Party-1	CH 1	%	1	
[6]	My Device(M)		FL S185 T	Flow	m³/h	0.1	
[7]	My Device(M)		FLS 185 T	Consumption	m³	1	
[8]	My Device(M)		Pressure 16 bar(g)	Pressure	bar	0.01	

Follow steps below to create and view the total flow and total consumption channels:

1. Create the entire flow channel:

- Select the FLI DN20 C flow channel. In the example, it is Index [3].
Now in the **Formula** field, [3] appears.
- Click **+** on the onscreen numeric keypad. Then select the FL S185 T flow channel. In the example, it is Index [6]. You can change the text in the Description field, and this will be the name of this virtual channel.

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(E)		Terminal E	0 - 20 mA	mA	0.001	
[2]	My Device(E)		Terminal E	Counter	l	1	
[3]	My Device(M)		FLI DN20 C	flow	m ³ /h	0.1	
[4]	My Device(M)		FLI DN20 C	consumption	m ³	1	
[5]	My Device(M)		Third-Party-1	CH_1	%	1	
[6]	My Device(M)		FL S185 T	Flow	m ³ /h	0.1	
[7]	My Device(M)		FL S185 T	Consumption	m ³	1	
[8]	My Device(M)		Pressure 16 bar(g)	Pressure	bar	0.01	

Compare channel

Virtual consumption

Virtual Channel

7

8

9

+

(

4

5

6

-

)

1

2

3

*

)

0

.

-/+

/

)

Description: Unit: Resolution:

Formula:

- c. Click to create the virtual channel for the total flow.
2. Select the consumption channels of the FLI DN20 C and FL S185 T. Then use the same way in the step 1 to create the total consumption channel.
- Two virtual channels are created as below: Index [9] and Index [10].

Index	Device Description	Sub Device Description	Sensor Description	Channel Description	Unit	Resolution	Formula
[1]	My Device(E)		Terminal E	0 - 20 mA	mA	0.001	
[2]	My Device(E)		Terminal E	Counter	l	1	
[3]	My Device(M)		FLI DN20 C	flow	m ³ /h	0.1	
[4]	My Device(M)		FLI DN20 C	consumption	m ³	1	
[5]	My Device(M)		Third-Party-1	CH_1	%	1	
[6]	My Device(M)		FL S185 T	Flow	m ³ /h	0.1	
[7]	My Device(M)		FL S185 T	Consumption	m ³	1	
[8]	My Device(M)		Pressure 16 bar(g)	Pressure	bar	0.01	
[9]	My Device(V)		Total flow	Total flow	m ³ /h	0.1	[3]+[6]
[10]	My Device(V)		Total consumption	Total consumption	m ³	1	[4]+[7]

3. Click **Display** on the S4C-Dispaly to add the virtual channels to a measuring point.
4. Click **Final** > **Download Configuration into Device** to save the virtual channels to the DL P50.

5. View the vacuum flow and consumption created in the virtual channel: on the DL P50 screen, click **Value** in the lower menu bar, then select the **Location** where the virtual channels are.

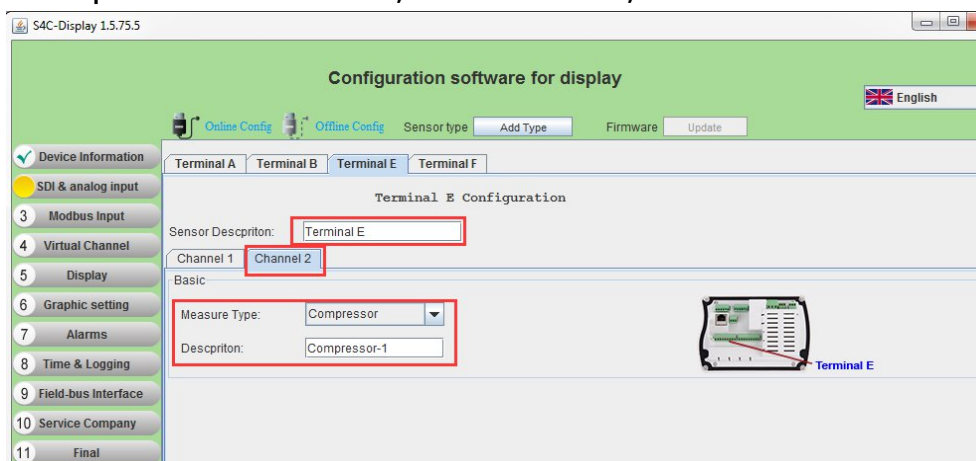
14.2 Monitor Compressor Run Time

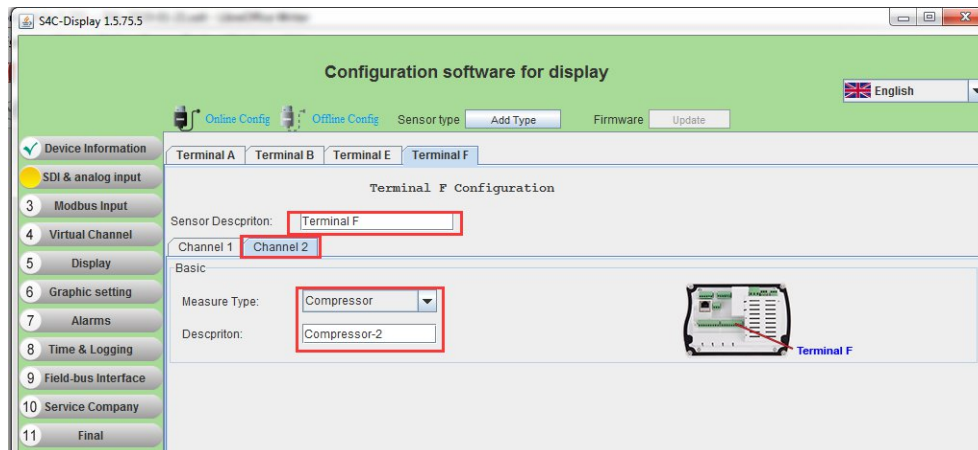
The DL P50 enables you to monitor the total run time of a compressor by configuration.

To enable the monitoring by configuration

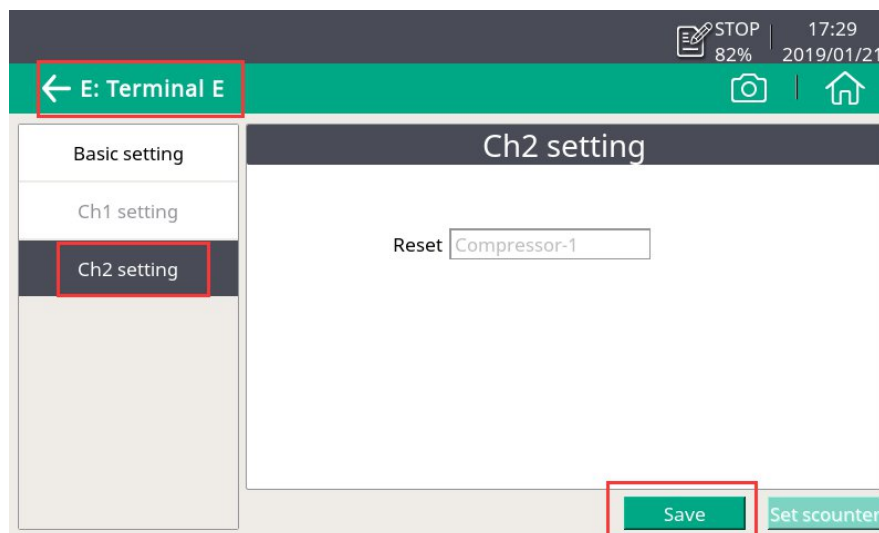
1. Connect a relay signal from a compressor to Terminal E or F on the DL P50. For more information, see case E or F in Section [8.2.5](#).
2. Connect the DL P50 with a computer installed with S4C-Display.
3. Launch the **S4C-Display**.
4. In the **SDI&Analog Input** menu, configure the Channel 2 of Terminal E or F as shown in the following figures. Detailed settings are as follows:
 - Measurement type: Select **Compressor**.
 - Description: Enter a display name for the channel.

Note: The configuration is to enable the channel to receive the relay signal from a compressor. By accumulating the time spans during which the relay contact is closed, the DL P50 can show you the compressor load time, unload time, and the total run time.



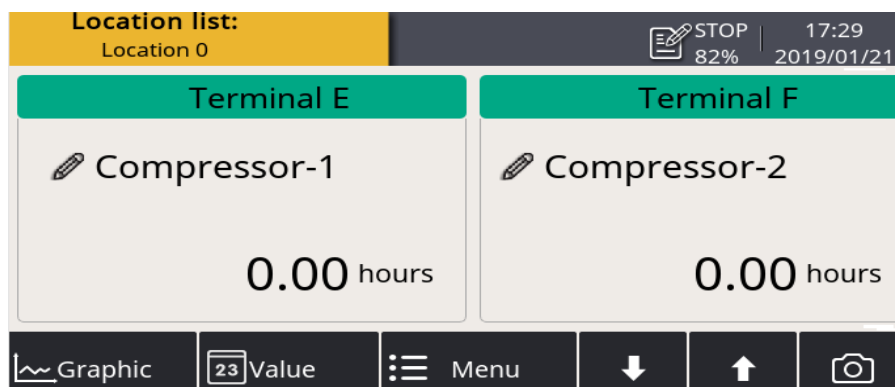


To reset the compressor run time, reset the Channel 2 on Terminal E or F. See the following figure for details.



Note: If you reset Channel 2 on a Terminal, measurement data on both Channels will be reset.

As shown in the following example, the running hours of the two corresponding compressors are cleared to zero.



15 Firmware Update

This section describes how to update the DL P50 firmware and data logger. You can update the firmware using the S4C-Display software or the USB stick supplied with the DL P50.

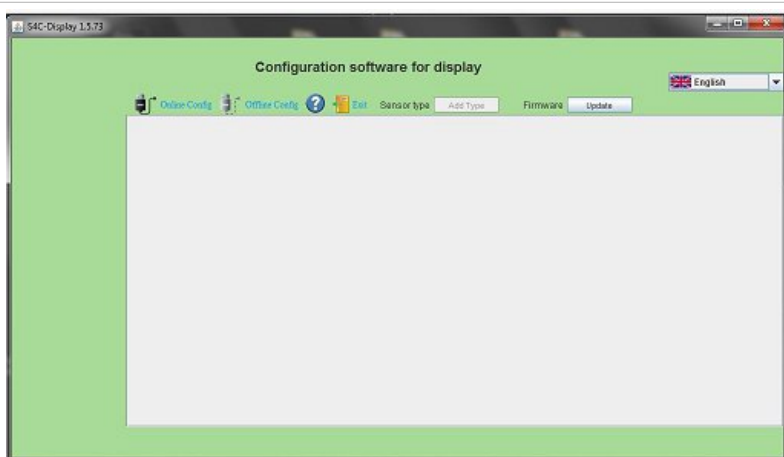
15.1 Update using S4C-Display

15.1.1 Preparation

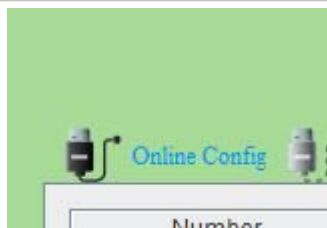
- A PC with S4C-Display software installed.
- Internet connection.
- A USB cable (USB A–micro) which is supplied with the DL P50.
- Firmware file.
- The DL P50 connected to power and booted until you see the value screen.
- Connect the USB cable to your PC and the DL P50 (open the yellow front cover) and wait until the drivers are automatically installed. To install the drivers automatically you need an Internet connection and Windows automated driver download must be enabled.

15.1.2 Update Steps

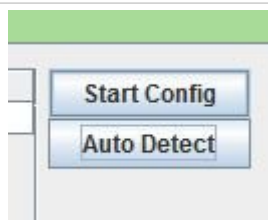
Follow the instructions below to update the DL P50 firmware.



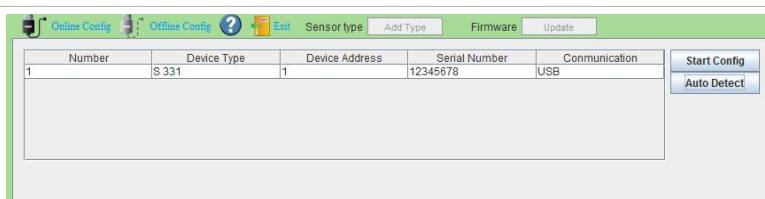
1. Start the Software.



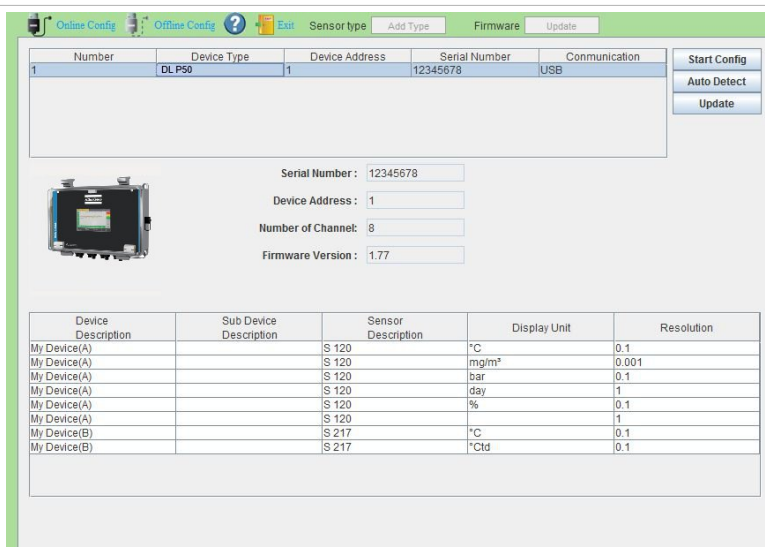
2. Click **Online Config**.



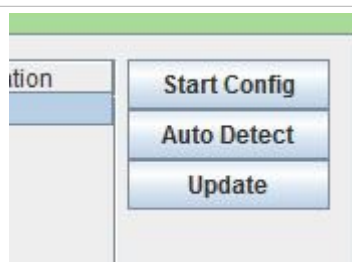
3. Click **Auto Detect**.



4. The device will appear in the list.

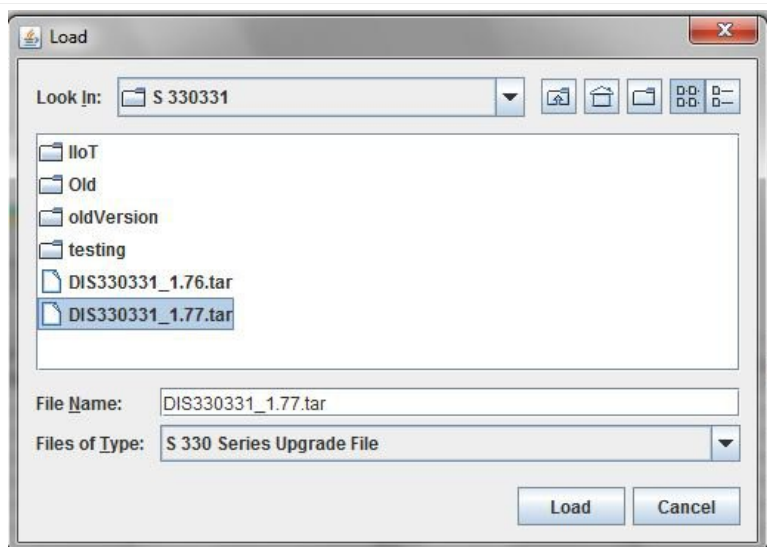


5. Select the device by clicking on the line. (it turns blue.)



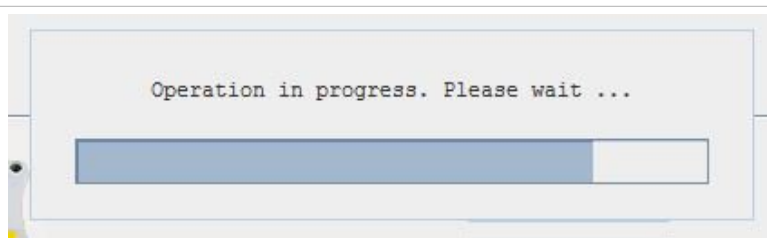
6. Click **Update**.

15 Firmware Update



7. Select the Firmware file (.tar file) from your PC folder.

And click **Load**.



8. Wait until the update is finished.

Note: Do not turn on the power or disconnect the USB.

Serial Number :	12345678
Device Address :	1
Number of Channel:	8
Firmware Version :	1.77

9. Wait until the device has booted again to the values screen.
You can now see the latest firmware.

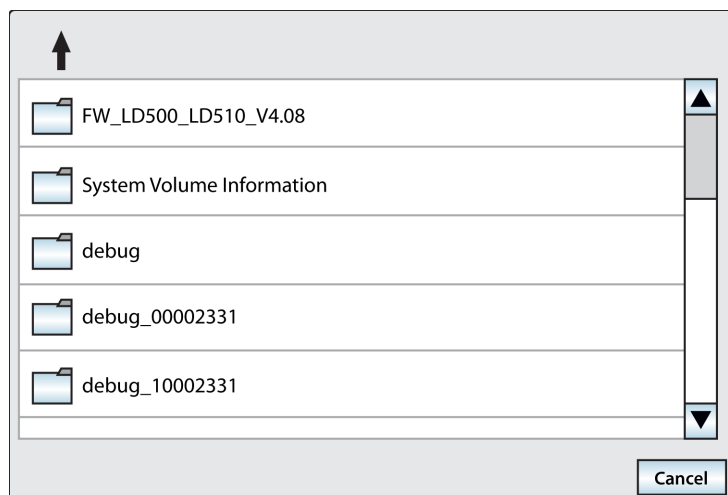
15.2 Update using a USB Stick

15.2.1 Preparation

- A PC with USB type-A port.
- A type-C USB stick.
- Insert the USB stick to the PC.
- Download the firmware to the USB disk.

15.2.2 Update Steps

1. Insert the USB stick into the DL P50.
2. After the  icon appears on the DL P50 display, click **Menu** > **System settings** > **System update**, and the window below appears.



3. Select the right firmware, and click **Yes**. The firmware update starts.
4. After the update is done, the DL P50 restart automatically.

16 Maintenance

To clean the device it is recommended to use moist cloth only.



ATTENTION!

Do not use isopropyl alcohol to clean the display!

17 Disposal of Waste



Electronic devices are recyclable material and do not belong in the household waste.

The device, the accessories and its packings must be disposed according to your local statutory requirements. The dispose can also be carried by the manufacturer of the product, for this please contact the manufacturer.

18 Appendix A – Modbus Interface

The default settings of the Modbus interface are as follows:

Mode : TCP
DHCP : Yes
MAC : Set ex-factory
IP address : Dynamic or Static
Subnet : Dynamic or Static
Gateway : Dynamic or Static
Timeout : ≥ 200 ms

Mode : RTU
Baud rate : 19200
Device address : 1
Framing / parity / stop bit : 8, N, 1
Response time : 1 second
Response delay : 0 ms
Inter-frame spacing : 7 char

Response message that the device returns to the master:

- Function code: 03

The information of the byte order is shown in the table below:

Byte Order	Sequence				Data Type
	1st	2nd	3rd	4th	
1-0-3-2	Byte 1 (MMMMMMMM*)	Byte 0 (MMMMMMMM *)	Byte 3 (SEEEEEEE)	Byte 2 (EMMMMMMM *)	FLOAT
1-0-3-2	Byte 1	Byte 0 LSB	Byte 3 MSB	Byte 2	UINT32 INT32
1-0	Byte 1 MSB	Byte 0 LSB	---	---	UINT16 INT16
1-0	Byte 1 XXX *	Byte 0 DATA	---	---	UINT8 INT8

* S: Sign, E: Exponent, M: Mantissa, XXX: no value

Explanations of MSB and LSB

MSB MSB refers to Most Significant Byte first, which follows the Big-Endian byte order.

For example, if the main system follows the MSB first order:
When the 4-byte floating number, in the order of Byte1-Byte0-Byte3-Byte2, is received from the slave (sensor), the master must change the byte order to Byte3-Byte2-Byte1-Byte0 for the correct display of the value.

LSB LSB refers to Least Significant Byte first, which follows the Little-Endian byte order.

For example, if the main system follows the LSB first order:
When the 4-byte floating number, in the order of Byte1-Byte0-Byte3-Byte2, is received from the slave (sensor), the master must change the byte order to Byte0-Byte1-Byte2-Byte3 for the correct display of the value.

19 Appendix B – Power Consumption of Sensors

The DL P50 can provide a maximum 50 W power supply separately to connected sensors. The following table shows the power consumption of the sensors supported by DL P50.

If the total power consumption of connected sensors is greater than 50 W, please use an external power source.

Device/Sensor	Power consumption [W]
FL S185 T FL S224 T FLI Dxx A	5.8
FL S200 P, FL S260 P	2.2
DP T20, DP T60, DP T100 DP T20 P, DP T60 P, DP T100 P	1.2



atlascopco.com

All rights reserved ©

Modifications and errors reserved

DL P50_IM_EN_V2026-1
