Damper unit

PRO-S

Description

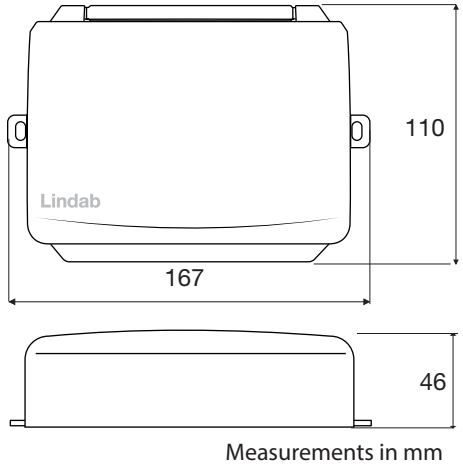
The PRO-S is used as a damper unit in Lindab Fire System Pro. It works together with a master unit (PRO-M) where most of the setup of the PRO-S is made.
The damper unit has two analogue inputs, two digital inputs, one analogue output and two digital outputs. The in- and outputs are used for e.g damper control, smoke detector, temperature sensors and VAV. It communicates via Modbus. One terminal is used as +19 V DC supply voltage for a smoke detector.

There is an app available (Lindab ProLink™) for Android and iOS that can be used to identify the units and for setting a Modbus address for the unit. The app can also be used to upgrade the firmware. Get the app from App store (iPhone and iPad) or Google play (Android).

Ordering example

	PRO-S
Product	

Dimensions



Measurements in mm

Technical data

Supply voltage	18...30 V AC (50...60 Hz), 22...26 V DC
Power consumption	4 VA, 4 W
Protection class	IP44
Ambient temperature	-25...+50°C
Storage temperature	-25...+70°C
Ambient humidity	5...95 %RH (non-condensing)
Wireless communication	Bluetooth Low Energy
Communication frequency	2.4 GHz
Number of cable glands	8 large, 5 small
Recommended cable size, cable glands	**Note!** circular cable only - Small cable gland: 3...6 mm - Large cable gland: 6...10 mm
Recommended cable tie width	Up to 2.8 mm

Smoke detector specifics

Number of smoke detectors per Pro-S unit	1
Supply voltage	+ 19 V DC, provided from terminal DO1
Detector status range	0...100 mA

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Inputs and outputs

Analogue inputs (AI)	2
Digital inputs (DI)	2
Analogue outputs (AO)	1
Digital outputs (DO)	2
+19 V DC (DO1 on label)	1

Analogue inputs

Analogue inputs	0... 10 V or PT1000
Accuracy for input	± 1 % (0...10 V) ± 1K (PT1000)
Measuring range, PT1000	-40...+150 °C

Digital inputs

Digital input (DI)	Potential-free contacts on / off (on = closed)
Output current	0.5 mA (max 2.5 V)

Analogue outputs

Analogue outputs	0... 10 V
Load impedance, 0...10 V	Min. 10 kΩ
Accuracy	± 1 %

Digital outputs

Configuration	Mosfet sinking type outputs, 24 V AC or DC, 2 A continuous
Output current	Max. 2A (in total) **Caution!** This is a non-protected output. A current overload will destroy the unit

Communication port data

Communication ports	1
Port type	RS485, isolated
Supported protocols	Modbus
Port isolation	Isolated
Communication speed, default	9600 Baud
Parity	Even, None
Stop bits	1
Cable length	Max 300 m

LED lights

There are two LED lights in the unit with the following light colours and patterns:

LED number	Colour	Pattern	Description
1	Blue	Steady	Bluetooth connection active
	Yellow	Steady	Service alarm
		Blinking	Unit identified
	Red	Steady	Alarm
		Blinking	Factory reset
	Green	Steady	Everything ok
	Magenta	Steady	Unit offline
	White	Steady	Unit has address 1 and is ready to be addressed in the system
		Blinking	The button has been pressed on the unit and it's waiting to be addressed
2	Yellow	Fast blinking	Communi-cation in progress

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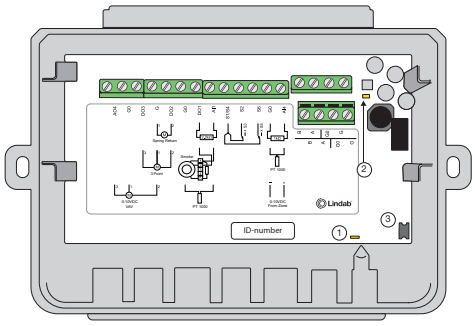

Figure 2. Inside the Pro-S. 1= LED light for identification, 2= LED light for communication, 3= Push button

Factory reset

It's possible to reset the device to factory settings via the button, see *Figure 2*.

To reset the unit:

- 1. Push and hold the button for 10 seconds. LED 1 (Figure 2) will turn red.
- 2. Release the button
- 3. Push and release the button 3 times in 10 seconds
- 4. LED 1 blinks 3 times to confirm the factory reset

Addition of external power supplies in application

In a fire control system with one master unit and a number of damper units with e.g. dampers there will be a voltage drop (Δ**U**) along the wire which makes it necessary to add external power supplies between the damper units. The voltage drop depends on the resistance, thickness and length of the wire and the power consumption in the damper units with connected dampers/detectors/sensors. The voltage drop (Δ**U**) can be maximum 10% before an external power supply must be added. To decide how many external power supplies are needed, calculation for the voltage drop (Δ**U**) must be made. An example is shown below.

Calculation example:
The following formulas are used:
Δ**U**= R * I
I=P / U
R=CU * L / q
where
– **R** is the resistance in the wire (O)
– **I** is the total current (A)
– **U** is the power supply (V AC)
– **P** is the power consumption (VA)
– **CU**, Copper wire resistivity
– **L**, Length of wire
– **q**, Wire cross section area

Calculation example :
– U=24 V AC
– $P_{damper\ unit}$ =2 VA
– P_{damper}: 7 VA
– CU=0.017 Wmm^2/m at 20 °C
– L =138 m (*2 since the cable goes back and forth)
– q =0.75 mm^2

Note! Please note that the resistivity in copper is temperature dependant. In this example we have calculated with the value at 20 °C.

1. Start by calculating the current used in the damper unit and the damper by using the formula:I=P/U: $\mathbf{I}_{damper\ unit}$ =2 / 24 = 0.0833 A, $\mathbf{I}_{damper}$=7 / 24 =0.2917 A
The total current is $\mathbf{I}_{damper\ unit}$ + $\mathbf{I}_{damper}$= 0.375 A

Note! In this example there is only one damper unit with one damper. If there are more units, the current for all units must be calculated and added to the total current.

2. Calculate the resistance in the wire: **R = CU** *(2 *L) / **q**
R = 0.017 *(2 * 138) / 0.75 = 6.256
3. Calculate the voltage drop in **V** (Δ**U** = **R * I**). ΔU = 6.256 * 0.375 = 2.346
4. Calculate the voltage drop in % (ΔU/U * 100). ΔU (%) = 2.346 / 24 * 100 =9.8 %

Conclusion: No external power source is needed after one unit in this example, since the voltage drop Δ**U**=9.8 % is less than 10 %.

CE

Hereby, Lindab declares that the radio equipment type PRO-S is in compliance with Directive 2014/53/EU.
This radio equipment device is approved for use in all countries within the European union.
This product carries the CE-mark. More information is available at www. lindab.com.

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