





## 5 Technical characteristics

	L-TRH	L-T	L-PW	L-DI/DO	L-AI	L-Modbus
<b>Communication characteristics</b>						
Link	Wireless	Wireless	Wireless	Wireless	Wireless	Wireless
Protocol	LoRaWAN	LoRaWAN	LoRaWAN	LoRaWAN	LoRaWAN	LoRaWAN
Bandwidth	EU: 863-870 MHz	EU: 863-870 MHz	EU: 863-870 MHz	EU: 863-870 MHz	EU: 863-870 MHz	EU: 863-870 MHz
Use	Europe	Europe	Europe	Europe	Europe	Europe
Class	Class A	Class A	Class A	Class C	Class A	Class C
Power Level	+14 dBm	+14 dBm	+14 dBm	+14 dBm	+14 dBm	+14 dBm
Spreading Factor	SF7 to SF12	SF7 to SF12	SF7 to SF12	SF7 to SF12	SF7 to SF12	SF7 to SF12
Activation Method	ABP / OTAA	ABP / OTAA	ABP / OTAA	ABP / OTAA	ABP / OTAA	ABP / OTAA
Antenna	Internal	Internal	Internal	External	Internal	Internal
<b>Electrical characteristics</b>						
Power Supply	3.6V / 2500mAh Lithium battery	3.6V / 3600mAh Lithium battery	3.6V / 3600mAh Lithium battery	9-24 VDC - External power supply	3.6V / 3600mAh Lithium battery	9-24 VDC - External power supply
Battery Life *	≈ 7 years	≈ 7 years	≈ 10 years (1 Hz Pulse Frequency)	-	≈ 10 years	-
<b>EMC characteristics</b>						
Immunity to electrostatic discharges - EN 61400-4-2	4 kV contact, 8 kV air Criterion B	4 kV contact, 8 kV air Criterion B	8 kV contact, 15 kV air Criterion B	8 kV contact, 15 kV air Criterion B	4 kV contact, 8 kV air Criterion B	4 kV contact, 8 kV air Criterion B
Immunity to radiated radio-frequency fields - EN 61400-4-3	80 MHz to 2700 MHz, 3V/m Criterion B	80 MHz to 2700 MHz, 3V/m Criterion A	80 MHz to 2700 MHz, 3V/m Criterion A	80 MHz to 2700 MHz, 3V/m Criterion A	80 MHz to 2700 MHz, 3V/m Criterion A	80 MHz to 2700 MHz, 3V/m Criterion A
Immunity to electrical fast transients/bursts - EN 61400-4-4	N/A	1 kV Criterion B	1 kV Criterion B	1 kV Criterion B	1 kV Criterion B	1 kV Criterion B
Immunity to impulse waves - EN 61400-4-5	N/A	N/A	N/A	1 kV line/line, 2 kV line/earth Criterion B	N/A	1 kV line/line, 2 kV line/earth Criterion B
Immunity to conducted disturbances - EN 61400-4-6	N/A	150 KHz to 80 MHz, 3 Veff Criterion A	150 KHz to 80 MHz, 3 Veff Criterion A	150 KHz to 80 MHz, 3 Veff Criterion A	150 KHz to 80 MHz, 3 Veff Criterion A	150 KHz to 80 MHz, 3 Veff Criterion A
Immunity to voltage dips, short interruptions and voltage variations - EN 61400-4-11	N/A	N/A	N/A	Voltage dip: 30% for 1 cycle 60% for 5 cycles Short interruption: 0% for 250 cycles Criterion C	N/A	Voltage dip: 30% for 1 cycle 60% for 5 cycles Short interruption: 0% for 250 cycles Criterion C
Conducted emissions - CISPR 11	N/A	N/A	N/A	Class A	N/A	Class B
<b>Input characteristics</b>						
Input/Output Type**	-	2 Temperature Inputs	3 Pulse Inputs > 0 - 30 VDC > 3.5 μA > 1 - 100 Hz	• 10 Digital Inputs > 0 - 30 VDC > 3.5 μA > 1 - 100 Hz  • 4 Digital Outputs > 24 VDC > 100 mA	• 2 Analog Inputs: > 1 x 4-20 mA > 1 x 0-10 V • 1 Digital Input	RS485 2-3 wires Modbus Master
<b>Measurement performance</b>						
Range	+0°C ... +55°C 0% ... 100% RH	-25°C ... +90°C	-	-	-	-
Resolution	0.1°C / 0.5%	0.1°C	-	-	-	-
Accuracy	± 0.2°C (+12°C ... +25°C), otherwise ± 0.5°C ± 2% RH (+12°C ... +25°C)	± 0.2°C (+40°C ... +90°C) ± 1°C (+10°C ... +40°C / +90°C ... +110°C)	-	-	-	-
<b>Mechanical characteristics</b>						
Casing materials	ABS UL 94 V0	ABS UL94-V0HB	ABS UL94-V0HB	ABS UL94-V0HB	ABS UL94-V0HB	ABS UL94-V0HB
Weight	95 g	200 g	150 g	250 g	200 g	150 g
<b>Environmental characteristics</b>						
Protection Index	IP 30	Case: IP51 / Probes: IP67	IP 58	IP 55	IP 55	IP 51
Operating temperature	+0°C ... +55°C	-20°C ... +50°C	-20°C ... +50°C	-20°C ... +50°C	-20°C ... +50°C	-20°C ... +50°C
Use	Indoor	Indoor/Outdoor	Indoor/Outdoor	Indoor	Indoor	Indoor/Outdoor
<b>Certifications</b>						
Europe	EN 300-220-1 EN 301 489	EN 300-220-1 EN 301 489	EN 300-220-1 EN 301 489	EN 300-220-1 EN 301 489	EN 300-220-1 EN 301 489	EN 300-220-1 EN 301 489
RoHS	Yes	Yes	Yes	Yes	Yes	Yes

(\*) Battery life guaranteed with default configuration only. (\*\*) Refer to the default configuration of sensors in chapter 3.

## 6 Warnings

-  Using an appropriate radio tester, check that there is sufficient LoRa radio coverage where the sensor is to be installed. It is not recommended to install the LoRa sensor in a metal cabinet.
-  To obtain the maximum radio range and avoid possible water ingress, the sensor must be installed with the cable gland facing downwards.
-  LoRa sensors must not be installed in an electrical cabinet.
-  Every change made to the default configuration must comply with the legal duty cycle (for example, the most restrictive in the EU is 0.1%, which corresponds to approximately 1 frame per hour with SF12).



## LORAWAN SENSORS



Full user manual:  
www.socomec.com/operating-instructions  
www.socomec.com



**L-TRH**  
Ref. 4829 0901



**L-T**  
Ref. 4829 0902



**L-PW**  
Ref. 4829 0903



**L-Modbus**  
Ref. 4829 0906

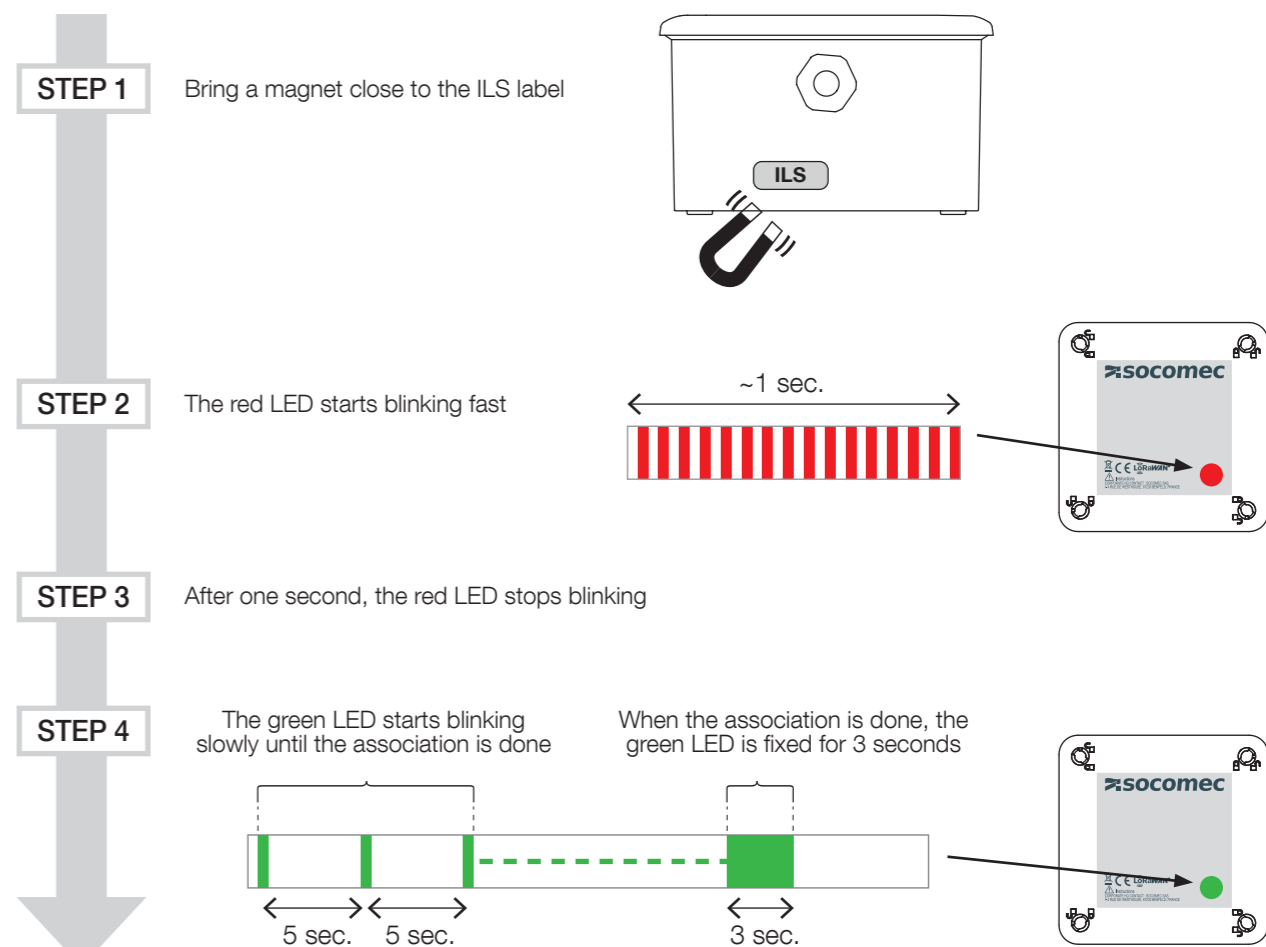


**L-DI/DO**  
Ref. 4829 0904



**L-AI**  
Ref. 4829 0905

## 1 Activating the LoRa sensors



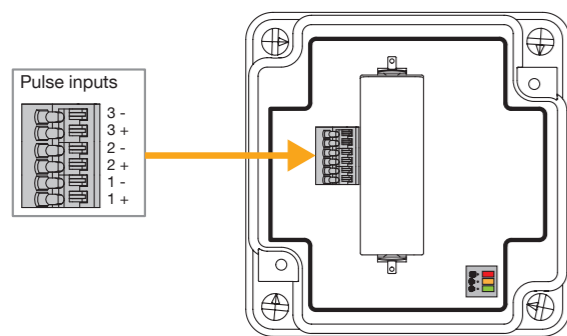
## 2 LoRa Key Recovery

- Go to [www.socomec.com/activate-lora-product/](http://www.socomec.com/activate-lora-product/) or flash the following QR code
- Fill in the form
- Retrieve your LoRa Keys



## 3 Connections

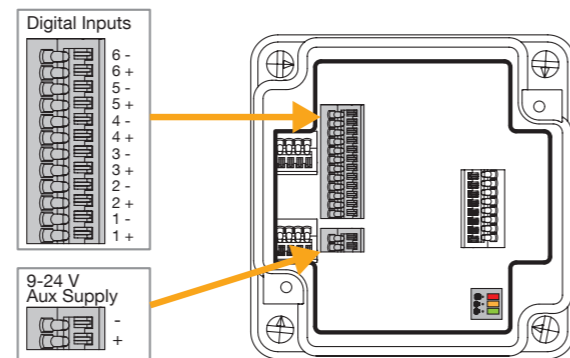
### L-PW



#### Default configuration

Digital Input 1 (Pulse Metering) - 1 Uplink / Hour  
Battery Level - 1 Uplink / 7d

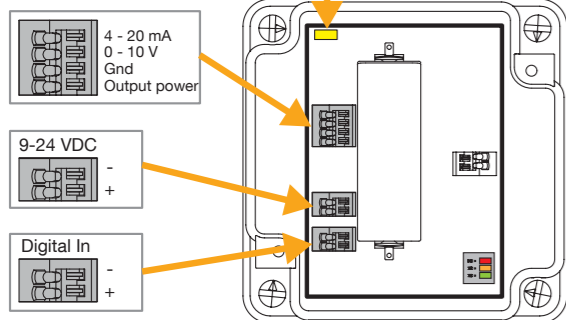
### L-DI/DO



#### Default configuration

Digital Input 1 (Pulse Metering) - 1 Uplink / Hour  
Digital Input 2 (Pulse Metering) - 1 Uplink / Hour  
Digital Input 3 (Pulse Metering) - 1 Uplink / Hour  
Digital Input 4 (Status/Event) - 1 Uplink / 10 min  
Digital Input 5 (Status/Event) - 1 Uplink / 10 min  
Digital Input 6 (Status/Event) - 1 Uplink / 10 min  
Battery Level - 1 Uplink / 7d

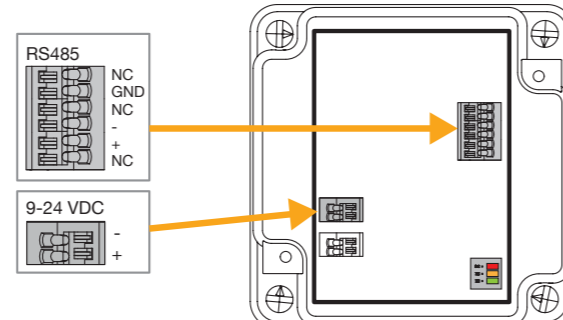
### L-AI



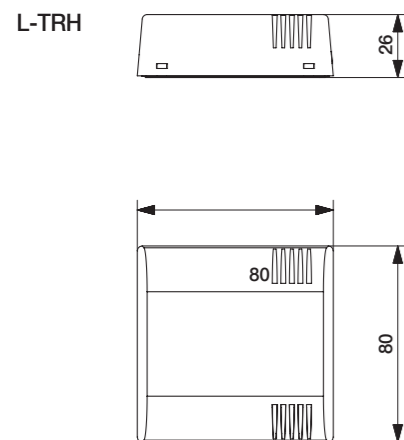
#### Default configuration

4-20 mA Input - 1 Uplink / 24h  
0-10 V Input - 1 Uplink / 24h  
Battery Level - 1 Uplink / 7d

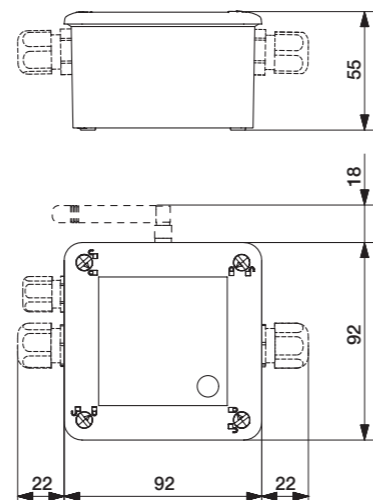
### L-Modbus



## Dimensions (mm)

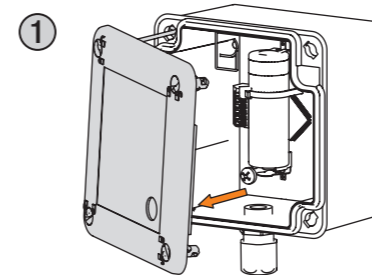


### L-T / L-PW / L-DI/DO L-AI / L-Modbus

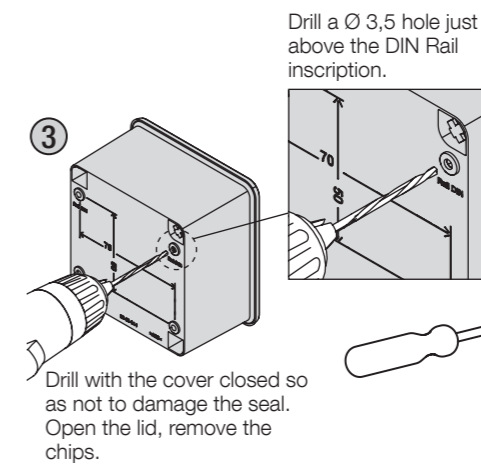
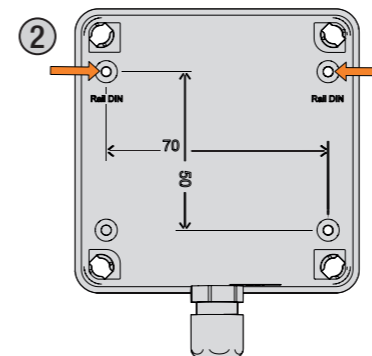


## 4 Installation

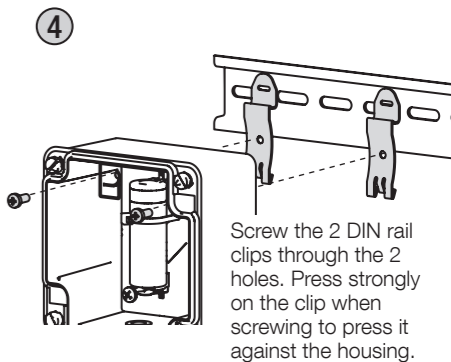
### L-T / L-PW / L-DI/DO / L-AI / L-Modbus



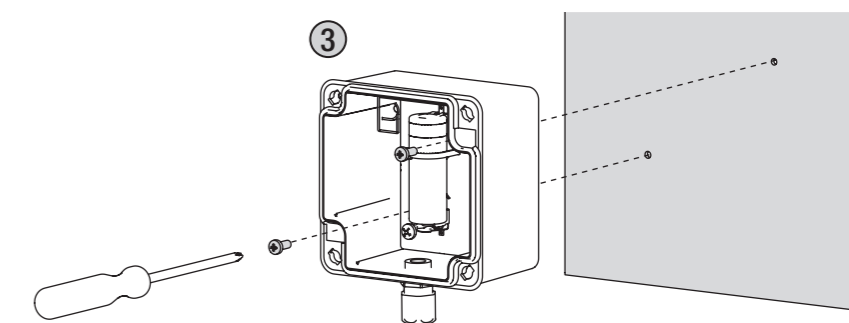
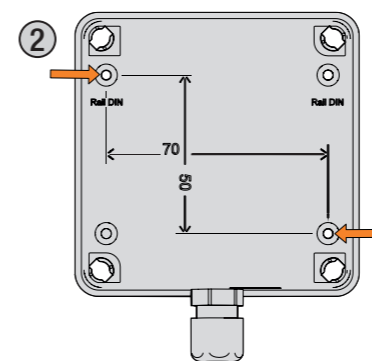
#### DIN rail mounting



After installing the DIN rail kit, the protection index of the LoRa sensors changes to IP50.



#### Back plate mounting



### L-TRH

