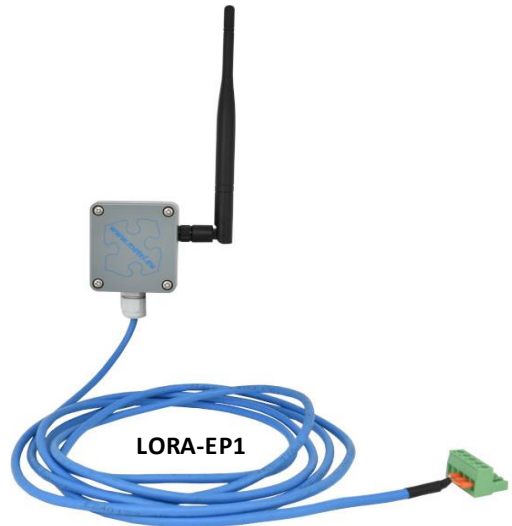


The LORA-EP1 modules are used in conjunction with PLCs IPLOG-GAMA intended for long distance monitoring and applications covering a long range of kilometers.

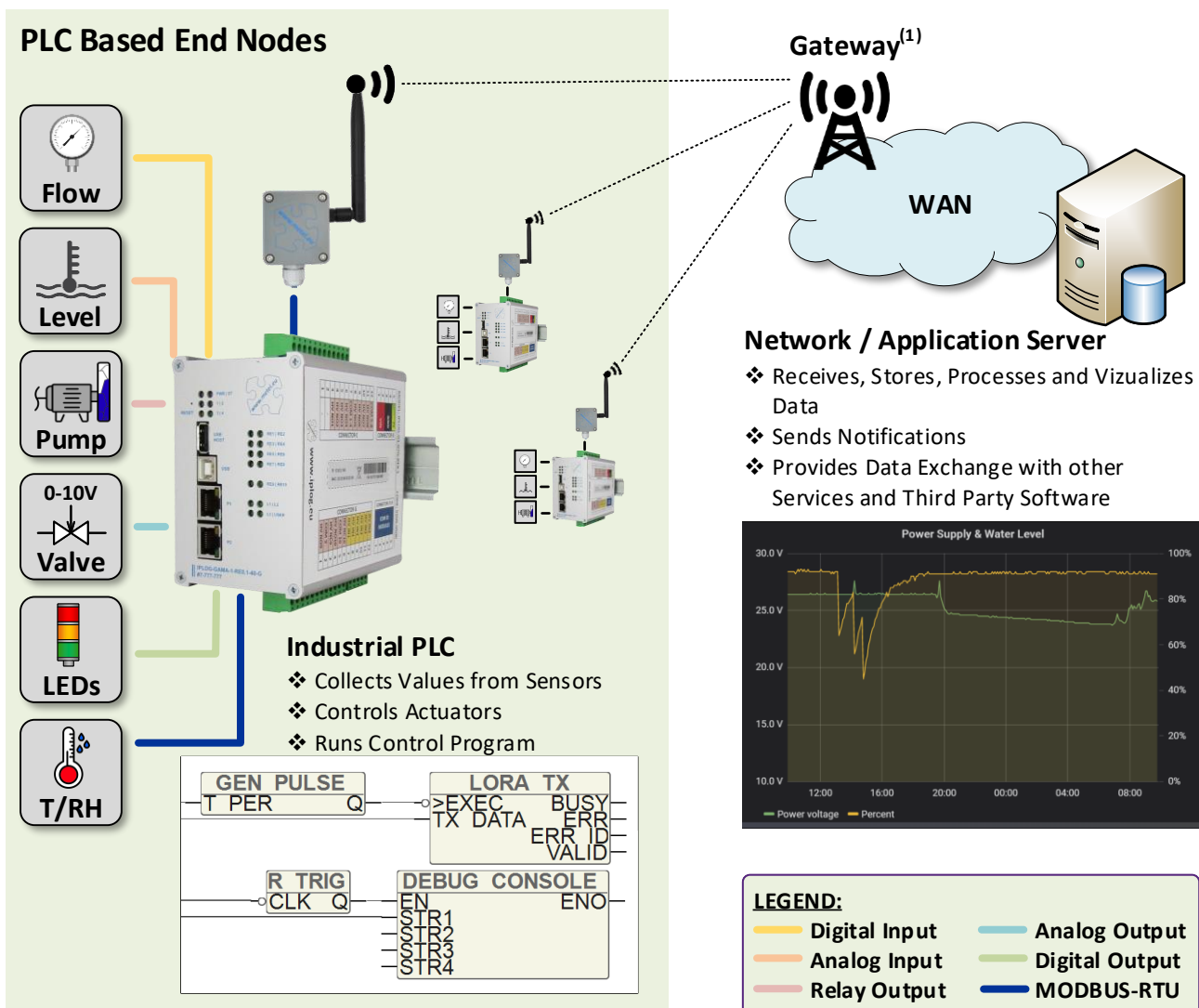
- ❖ Outdoor Design with IP55 Protection
- ❖ Two-Way Communication
- ❖ Intended for Connection with PLC IPLOG-Gx-18G...
- ❖ Supports in IEC61131-3 IDE
- ❖ Operating Range  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- ❖ Operating Range of Components  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

The LoRaWAN 1% duty-cycle limitation does not allow real time communication and especially remote point control. Our end nodes LORA-EP1 in conjunction with modular PLCs IPLOG-GAMA Largely eliminates this deficiency. The PLC runs the control program independently of the central server and only the necessary data for visualization, logging in, and operator feedback is transmitted via the LoRa network. Typical examples of usage are applications in smart cities, monitoring systems for remote areas without GSM signal coverage, data collection from weather stations, control of pumping water from wells, etc.



PRODUCT NAME	CODE	SUPPLY
LORA-EP1	5-211-280	Over IF-18G

## Typical Topology of The PLC Based LoRaWAN System



<sup>(1)</sup> LoRa standard can communicate with hundreds of end nodes.

## Technical Parameters

	Parameter	Value	Unit	Note	
LoRa Specification	Range in Urban Areas	2 – 5	km		
	Range in Rural Areas	5 – 15	km		
	Tx Power	Max. 25 mW (14dBm)			
	Frequency Band	863 – 870	MHz		
	Sensitivity	-146	dBm	Depends on SF	
	Mode	A, C			
	Channels	10			
	Data Rate	250 b/s – 50 kb/s			
	Power Supply	Voltage	5	VDC	From IF-18G
		Consumption	10 / 60	mA	Idle / Transmit
Environment	Operational Range	-40...+70	°C	Temp. of Environment	
	Storage Range	-40...+70	°C	Temp. of Environment	
Mechanical	Degree of Coverage	IP55			
	Weight	0.16	kg		
	Connection to the PLC	3m Cable with Terminal		Included	
Installation	Wall Mount	Screw Included			
Certification	Standard CE				
The producer retains the right to change any technical parameters without previous written or published notification.					

## LoRaWAN FAQ

### What is the difference between LoRa and LoRaWAN ?

The difference between LoRa and LoRaWAN is that LoRa is the chirp spread spectrum radio modulation technology that is used in LPWA (Low Power Wide Area) and LoRaWAN is a media access control (MAC) protocol for wide area networks.

### Can a gateway be used independent from any provider ?

Yes, the LoRaWAN specification allows the system integrators to use their own gateways independent from any provider.

### How many LoRa end nodes can be connected to one gateway?

From hundreds to thousands, depending on the gateway type and the amount of data sent from the end points.

### What frequency does LoRa use?

LoRa uses a license-free sub-gigahertz radio frequency bands like 169 MHz, 433 MHz, 868 MHz (Europe) and 915 MHz (North America). Our End nodes support communication in a 868 MHz frequency band.

### Is LoRa secure?

LoRa uses AES (Advanced Encryption Standard) security keys so the operator does not have access the end users application data.

### What do A,B,C LoRaWAN communication modes mean ?

The LoRaWAN specification defines three device types. Class A is mandatory for all LoRaWAN devices, whereas Class B and Class C are extensions to the specification of Class A devices.

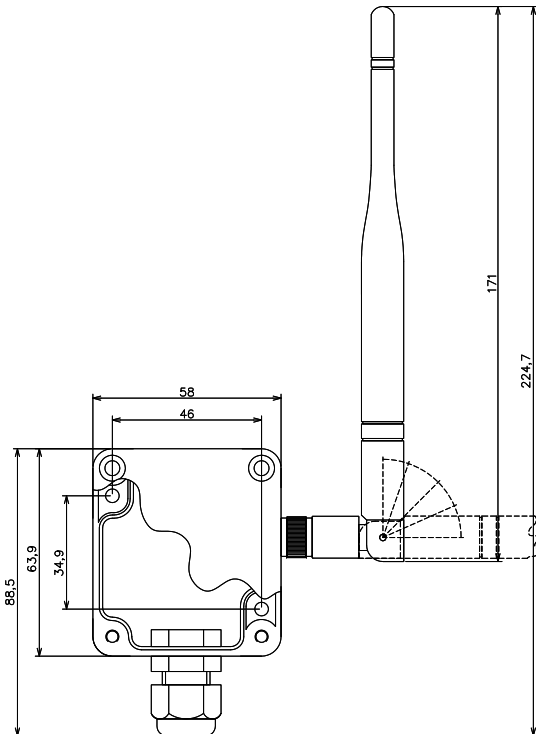
Class A end nodes uplink messages from end-node to the server and can be sent at any time (randomly).

The end-node then opens the two received windows at specified times (1s and 2s) after an uplink transmission. The server can respond in any window, but not in both.

Class B end nodes extend Class A downlink windows using time-synchronized beacons transmitted by the gateway, which periodically opens the next received windows.

Class C end nodes extend Class A by keeping the received windows open unless they are transmitting. This mode allows for low-latency communication.

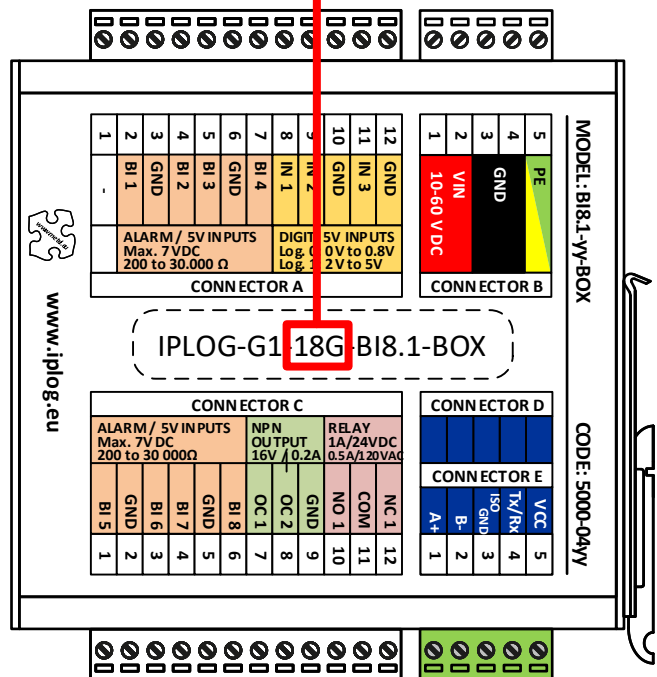
## Dimensions and Connecting to a PLC



PLC IPLOG with communication module  
IF-18G compatible with a LoRa End Node.

Compatible versions: IPLOG-Gx-18G....

G1, G2, G2E, G3, G4



## OFF-GRID DEMO System of The PLC Based LoRaWAN System

The block diagram below describes the connection of our OFF-GRID DEMO system which in a practical way demonstrates the possibilities of using LoRaWAN technology in conjunction with photovoltaic power supply. The DEMO system is open to all those interested in this modern technology. Any requests for an excursions should be sent to [info@metel.eu](mailto:info@metel.eu).

### LEGEND:

- Supply
- Modbus
- Pulse Output
- Analogue Input
- Relay Output

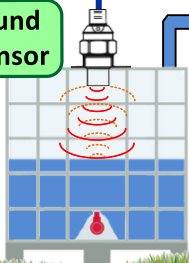
### Wide Range of Supply Voltage

The IPLOGs can be powered in ranges from 10 to 60VDC or from 20 VDC in applications with analog inputs and outputs. IPLOGs are well optimized for OFF-GRID applications.

### MODBUS RTU Interface

This protocol enables the connection of sensors and IO modules from a wide range of manufacturers.

### Ultrasound Level Sensor



### Flowmeter with Pulse Output



### Hydrostatic Level Sensor

### Easy Connection

The EP modules include a 3m length cable for powering and communicating with the PLC IPLOG-GAMA.

### Immersive 24V Pump

50m

