

PA-FL Wireless Pulse Counter

PAFL is a wireless pulse counter for SyxthSense wireless communication system. The counter can be used to measure pulses from the following meters:

- Electricity consumption meter
- Gas flow meter
- Water consumption meter

PAFL transmits the pulse count to the FLTA base station by predefined intervals (6 ..30 min). The interval setting can be made with a trimmer placed inside the device.

PAFL uses the same device profile as TEU-FL. You can read the pulse count from the FLTA Modbus registers TE and Uin.

PAFL has two power supply possibilities: constant 24 Vac/dc and battery. For pulse frequencies higher than 1 Hz, it is recommended to use a permanent 24Vac/dc power supply.



Model Type	Model	Description
	PA-FL	Wireless Pulse Counter for Metering
Technical Data	Power Supply	24Vac/dc (22..28V) 2 x 3.6V AA Battery, 2Ah
	Frequency	868.30 Mhz Class 1
	Modulation	FSK
	Range	Line of sight: Up to 500m In buildings up to 20..100m depending on wall structures Range can be extended up to 8 times with FLREP repeaters
	Transmission Power	+8 dBm
	Reception Sensitivity	-109 dBm
	Addressing	Via FLSER Service Tool
	Maximum Pulse Frequency	20 Hz
	Minimum Pulse Duration	25ms
	Maximum Amount of Pulses	Approx. 500,000
	Pulse Generator Contact	Potential: floating, insulation to earth Resistance: open > 1MOhm, closed < 2kOhm
	Battery Life	
	Transmission Interval 6s	1 Year
	Interval 1..5min	3 Years
	Interval 15..30min	6 Years
	Ambient Humidity	0..100% rH Non-Condensing
Agency Approvals	Directives 72/23/EEC, 1999/5/EC, 2000/299/EC Standards EN60950, EN300220-2 and EN301480-3	
Protection Class	IP54, M16 Cable Gland Downwards	
Dimensions	W115 x H115 x D45mm	

PA-FL OPERATION

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PAFL uses the same device profile as TEU-FL. You can read the pulse count from the FLTA Modbus registers TE and Uin.

PAFL has two power supply possibilities: constant 24 Vac/dc and battery. For pulse frequencies higher than 1 Hz, it is recommended to use a constant 24 Vac/dc power supply.

NOTE: You can use the batteries as a backup energy source when using a 24 Vac/dc power supply.

The indicator light informs about the problems in the network and about the needed service. For example the transmitter alarms when less than 5% of the battery capacity is remaining. Indicator light behaviour during operation:

1 flash / 2 s battery and network alarm

1 flash / 4 s battery alarm

1 flash / 8 s network alarm

The commissioning tool FLSER is needed to for connecting the PAFL to the wireless network.

NOTE: The wireless network can be extended by using FLREP and FLREP-U repeaters (up to 8 repeaters).

SELECTING THE PRECOUNTING MULTIPLIER

The precounting multiplier affects to the counter value in the following way:

When the precounting multiplier is x1, every pulse increases the counter value. When the precounting multiplier is x10, every tenth pulse increases the counter value and so on.

The precounting multiplier can be selected with J2 and J3 jumpers under the cover.

J1	J2	Precounter
■	■	x1
	■	x10
■		x100
		x1000

NOTE: The device reads the precounting multiplier setting only when the power is switched on and when the counters are reset.

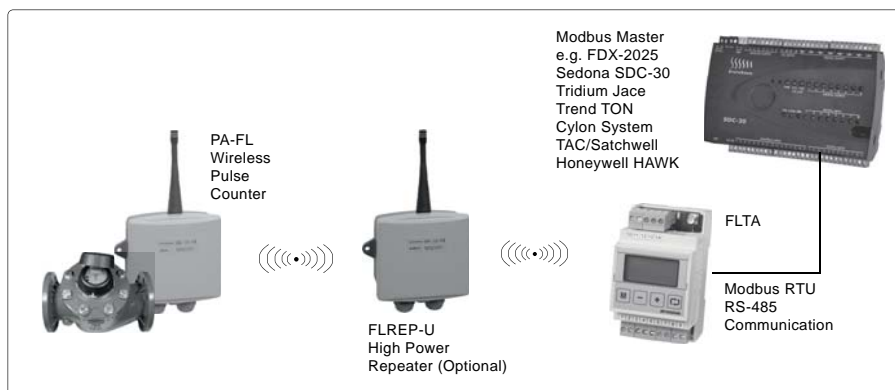
SELECTING THE PULSE COUNTING METHOD

The pulse counting method can be selected with the jumper J1.

Pulse Counting	
J3	■ falling edge
	□ rising edge

OPERATIONAL DIAGRAM

The diagram below illustrates the typical operation of the PAFL wireless pulse counter. The PAFL is connected to the pulse meter (e.g. water meter) and transmits the pulses back to FLTA base station. The FLTA base station then acts as a Modbus slave to a Modbus master e.g. SyxtSense SDC-30 controller. The modbus master polls the meter information and converts it to a value available for further analysis.



COMMISSIONING

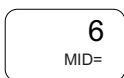
You need the FLSER commissioning tool to commission PAFL.

1. Disconnect the PAFL power supply.

NOTE: Remove the both batteries even if you are using constant 24 Vac/dc power supply.

2. Set the FLSER tool switch to the MID position.

3. Push the + and - buttons to select the FLTA base station master ID (MID) to which you are connecting PAFL.



4. Push the OK button.

5. Set the FLSER tool switch to the S-RID position.

6. Push the + and - buttons to select the sensor/repeater ID (S-RID) for PAFL.



7. Push the OK button.

"Wait" message starts to flash on the FLSER tool display. You have now approximately 30 seconds to complete the next step.

8. Connect the PAFL power supply.

"OK" flashes on the FLSER display. When the flashing stops, the PAFL is ready to start the communication with the FLTA base station.

9. FLSER tool starts to display the communication signal strengths between the FLSER and PAFL.



The bigger number indicates the strength of the received signal sent by FLSER and the smaller number the strength of received signal sent by the PAFL.

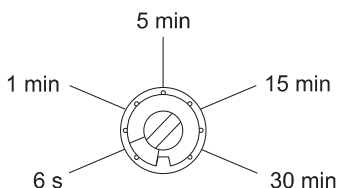
10. Leave the PAFL to the planned position and go to the FLTA base station.

11. Check that the signal strengths are adequate.

12. Set the FLSER tool switch to the OFF position.

SELECTING THE TRANSMISSION INTERVAL

You can select transmission interval with a trimmer inside the device.



The indicator light informs which interval is selected when you turn the trimmer:

1 flash = 6 seconds

2 flashes = 1 minute

3 flashes = 5 minutes

4 flashes = 15 minutes

CALCULATING THE PULSE COUNT FROM THE MODBUS REGISTER INFORMATION

The pulse counter information can be read from the FLTA Modbus registers TE (e.g. 30248) and SP (e.g. 30249). With this information the total pulse count can be calculated with the following formula:

$$\text{Total pulse count} = 1000 \times \text{SP} + \text{TE}$$

STORING THE COUNTER VALUES TO THE DEVICE MEMORY

1. Press the S1 switch until the indicator light is lit (about 1 second).

2. Release the switch.

RESETTING COUNTERS

1. Press the S1 switch until the indicator light is lit for the second time (over five seconds).

2. Release the switch.

CHANGING BATTERIES

- Change the batteries one by one to prevent power supply break.