



PLC-MAP-x

3-phase access point to PLC networks of AMR meter systems

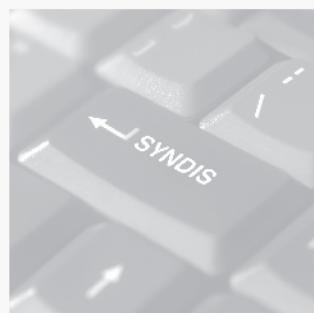
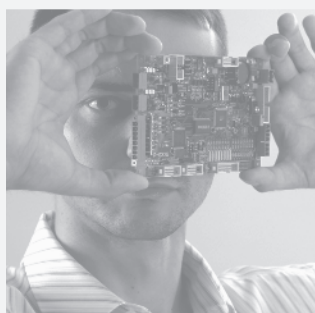
The PLC-MAP-x modem is designed for data transmission over 230VAC power supply lines in industrial applications. It performs the function of a 3-phase access point to PLC networks of AMR meter systems. The PLC technology (Power Line Communication) uses low voltage power lines as a transmission medium.

The structure of the modem is oriented towards remote reading of electric energy meters in AMR systems. The software implemented in the device enables supporting extensive networks of energy meter reading.

The PLC-MAP-x device performs the function of managing a network of PLC-201 reading devices. It constitute a gate between superior systems operating in the LAN technology on the communication interfaces side and a network of PLC-201 devices.

From the superior system side the device is equipped, according to version, with: RS-485 interface (type: PLC-MAP-1) or Ethernet interface (type: PLC-MAP-2). The PLC technology is realized by means of a modem which operates in the half-duplex mode with FSK modulation. Modulation signals introduced to a power network together with their levels are compliant with the CENELEC EN50065 standard as well as the FCC standard part 15 of specification what enables the device to be applied in Poland and European Union.

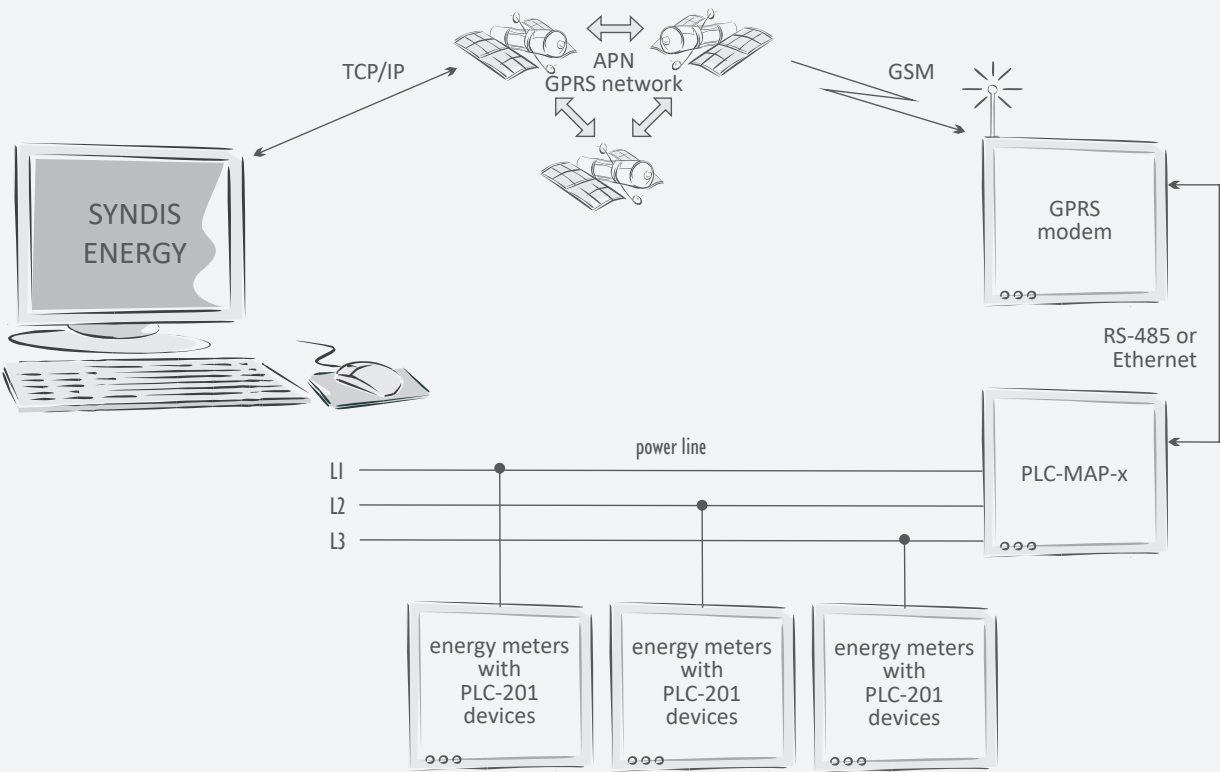
The range of devices operating in a PLC network depends on several factors such as type and level of disturbances in the communication band of a supplying network, electrical state of a low voltage network, etc. In an average environment the range is ca. 500m.



Communication

Communication between the SYNDIS ENERGY superior system and the PLC-MAP-x access point is performed using the PLCP protocol by means of a communication channel in Ethernet network. When the PLC-MAP-x device receives a correct frame of the PLCP protocol, data gains additional information which enables addressing and increasing efficiency and reliability in heavily disturbed transmission channel, which a power line is. A PLCP frame supplemented in this way is further transmitted to an associated PLC-201 device, installed next to a meter. Return information from the PLC-201 device is transmitted to the SYNDIS ENERGY system in the analogous way in the same protocol (PLCP).

The below figure presents a diagram of communication and data transmission.



Environmental conditions

- **localization:** covered, class C according to PN-EN 60870-2-2
- **atmosphere composition:** without corrosive vapors and gases
- **operation temperature:** -20°C to 55°C
- **relative humidity:** 5% to 95% without condensation
- **electric strength:** power supply 2.5kV/RMS 1 min, transmissions 1kV/RMS 1 min
- **surge strength:** power supply 5kV, 1.2/50ms, transmissions 2kV, 1.2/50ms
- **electromagnetic compatibility:** compliant with PN-EN 60870-2-1 p. 5 for 4th level of endangerments

Technical data

PARAMETER	VALUE	PARAMETER	VALUE
voltage power supply	110÷230V AC/DC	transmission speed for RS-485	9600bd
current consumption Tx/Rx	20/17mA	RS-485 galvanic separation	1kV
built-in fuse	1A	Ethernet 10/100Mb interface	TP RJ45
modem transmission speed	4800bd	tightness grade	IP53
service interface transmission speed	115000bd	housing dimensions	220 x 140 x 40 mm
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