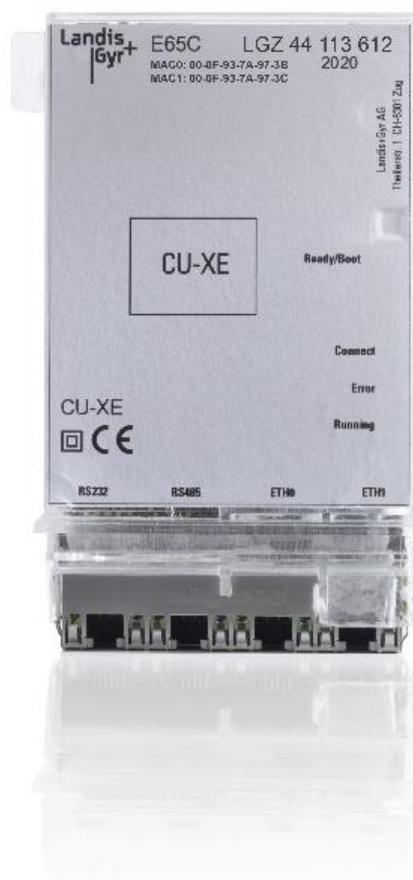


CU-XE Release 2

E65C

Technical data



E65C-XE communication units provide Ethernet communication between E650, S650 or E850 meters and the metering and SCADA systems.

Date: 14.03.2020

File name: D000062527 E65C CU-XE Technical Data en b.docx

Revision history

Version	Date	Comments
a	10.07.2018	First edition
b	14.03.2020	Adaptations for Release 2: <ul style="list-style-type: none">– Passthrough can be configured in combination with other devices– Simultaneous use of protocols (Modbus server, SCADA IEC 60870-5-104 server, Modbus client, DLMS/COSEM client)– Ethernet ports fully configurable– Maximum transmission speed of serial ports 115.2 kbps– Time synchronisation based on base meter time or NTP– OpenVPN– Manufacturer access can be allowed with DIP switch setting– Temperature sensor– Several minor layout changes

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E65C CU-XE Release 2 – Technical data

Design

Product type options			
Type	10/100BASE-TX	RS485/RS422	RS232
CU-XE	●	●	●

Virtual bus (configurable)

Interfaces base meter, Ethernet, RS485/RS422, RS232

Supported service protocols

DLMS/IEC 62056-21 passthrough (base meter: data readout)

Passthrough and bridging protocol independent, verification recommended

Passthrough can also be configured in combination with other devices, e.g. E65C CU-L52 fitted into an ADPx

Simultaneous use of protocols

1. Modbus server
2. SCADA IEC 60870-5-104 server (directly to SCADA system)
3. Modbus client over both TCP/IP and serial connection (for additional Modbus devices)
4. DLMS/COSEM client for base meter and additional devices

Installation

Directly in meter (E650 ZxD300/400xT, E850 ZxQ or S650 SxD400xT)

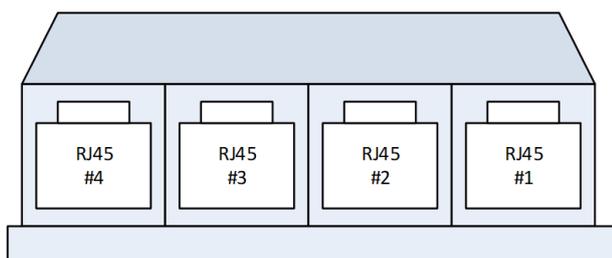
External operation with E65C CU adapter ADPx

Processor and hardware description

Application processor	ARM Cortex-A5
Clock speed	600 MHz
Core performance	828 DMIPS
DRAM capacity	256 Mbyte
FLASH capacity	8 Gbyte
Encryption co-processor	AES, 3DES

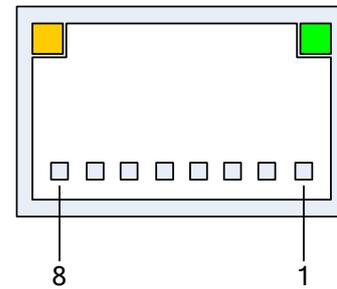
Connections

Terminal layout



- #1: Ethernet port 1 #3: RS485/RS422
 #2: Ethernet port 0 #4: RS232

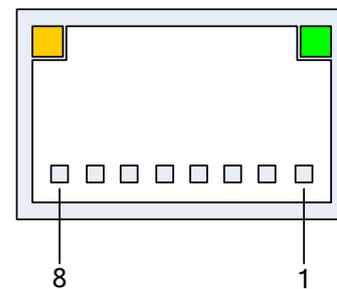
Ethernet interfaces



RJ45 socket

1	TxD+
2	TxD-
3	RxD+
4	not used
5	not used
6	RxD-
7	not used
8	not used
orange	speed
green	link

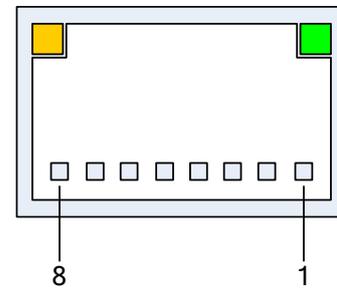
RS485/RS422 interface



RJ45 socket

1	not used
2	GND
3	Tx+
4	Tx-
5	Rx-
6	Rx+
7	GND
8	not used
orange	speed
green	link

RS232 interface



RJ45 socket

1	DSR
2	DCD
3	DTR
4	GND
5	RxD
6	TxD
7	CTS
8	RTS
orange	speed
green	link

Connection to meter or CU adapter

10-pin connector at rear of CU

Ethernet connections

All Ethernet ports	10/100-BASE-TX
Standard	IEEE 802.3
Duplex	half or full
Auto MDI/MDIX	
Reinforced insulation	SELV voltage
Max. cable length	up to 100m
Ethernet ports fully configurable	

Network bridging

Number of devices in bridging mode tested up to 20

Serial connections

RS485/RS422 port RJ45

Application asymmetric, serial, asynchronous, half-duplex (RS485) or full-duplex (RS422), bi-directional for multi-drop bus

DLMS/IEC application configuration

Maximum number of slaves 31

Master/slave configurable

Max. cable length and speed environment/cable dependent

Typical use cases

- Up to 550 m at 115.2 kbps with 31 slaves
- Up to 1000 m at 115.2 kbps with 15 slaves

Built-in terminations

120 Ohm line termination selectable with DIP switch and 680 Ohm bias network

Reinforced insulation SELV voltage

RS232 port RJ45

Application asymmetric, serial, asynchronous, full-duplex, bi-directional

Standard EIA RS232-F / ITU-T V.24

Pin-out EIA-561

Maximum transmission speed 115.2 kbps

Maximum cable length 3 m

Reinforced insulation SELV voltage

Information storage security

Encrypted storage of configuration files, user data and the applications in FLASH memory.

Firmware security

Cryptographic verification of all firmware executed by the processor from secure boot start-up.

Device management

OpenAPI (RESTful) for system integration

Web UI for device configuration

Access control

Role-based access using passwords for configuration management or firmware updates using HTTPS (TLS).

Management-related functions

Time synchronisation options

Time synchronisation based on base meter time or NTP

Firmware updates

Secure HTTPS-based firmware update and configuration management.

Firmware signed with digital signature.

Event logging

Syslog RFC 5424 logging of device boot, network link activity, application activity, security changes, network activity, login attempts and firmware updates. Logs are stored in non-volatile memory.

Networking-related functions

TCP/IP stack

IPv4 stack

OpenVPN

Network bridge

Indicators

LED display (top to bottom)

Boot/Ready, Connect, Error, Running
Ethernet states green: no link, link, activity
orange: 10 Mbps, 100 Mbps

Configuration switches

DIP switch

Position 1 ON = rx termination enabled, 120 Ω

Position 2 ON = tx termination enabled, 120 Ω

Position 3 ON = rx bias enabled

Position 4 ON = rx bias enabled

Position 5 ON = Manufacturer access

Position 6 ON = used as RS485 (half-duplex)

OFF = used as RS422 (full-duplex)

Position 7 ON = used as RS485 (half-duplex)

OFF = used as RS422 (full-duplex)

Position 8 ON = used as RS485 (half-duplex)

OFF = used as RS422 (full-duplex)

Power consumption

Maximum active/apparent power

4.0 W

Environmental influences

In general same as for base meter

Exception operating temperature -40 to +55°C

Pollution Degree 2

Temperature sensor

Provides actual temperature in communication unit for monitoring of internal temperature

Range +25 to +85°C

Resolution 0.01°C

Accuracy ±1°C

Update time approx. every second

Insulation strength to meter

Insulation strength 4 kV at 50 Hz for 1 min.

Insulation spacing at least 6.3 mm

Conformance

Insulation test according EN 61010-1:2010

Protective class II, double insulation

AC voltage isolation 4 kV_{rms} 50 Hz/1min.

6 kV peak 1.2/50 us

EMC emissions tests according to IEC 61000-6-3

Radio noise voltage to lines IEC-CISPR 11: 150 kHz to 30 MHz limit Class B

Radio noise to air IEC-CISPR 11: 30 MHz to 1000 MHz limit Class B

EMC immunity tests according to IEC 61000-6-2

ESD 8 kV contact discharge, 15 kV air discharge

RF EM field, amplitude modulation IEC 61000-4-3: 10 V/m; 80 MHz to 2.5 GHz; 80 % AM; 1 kHz

HF on lines, AM IEC 61000-4-6: 10 V RS485/RS422 150 kHz to 80 MHz; 80 % AAM, 1 kHz

HF on lines, AM EN 55024: 3 V RS232; 150 kHz to 80 MHz; 80 % AAM, 1 kHz

Weight and dimensions**Weight**

approx. 100 g

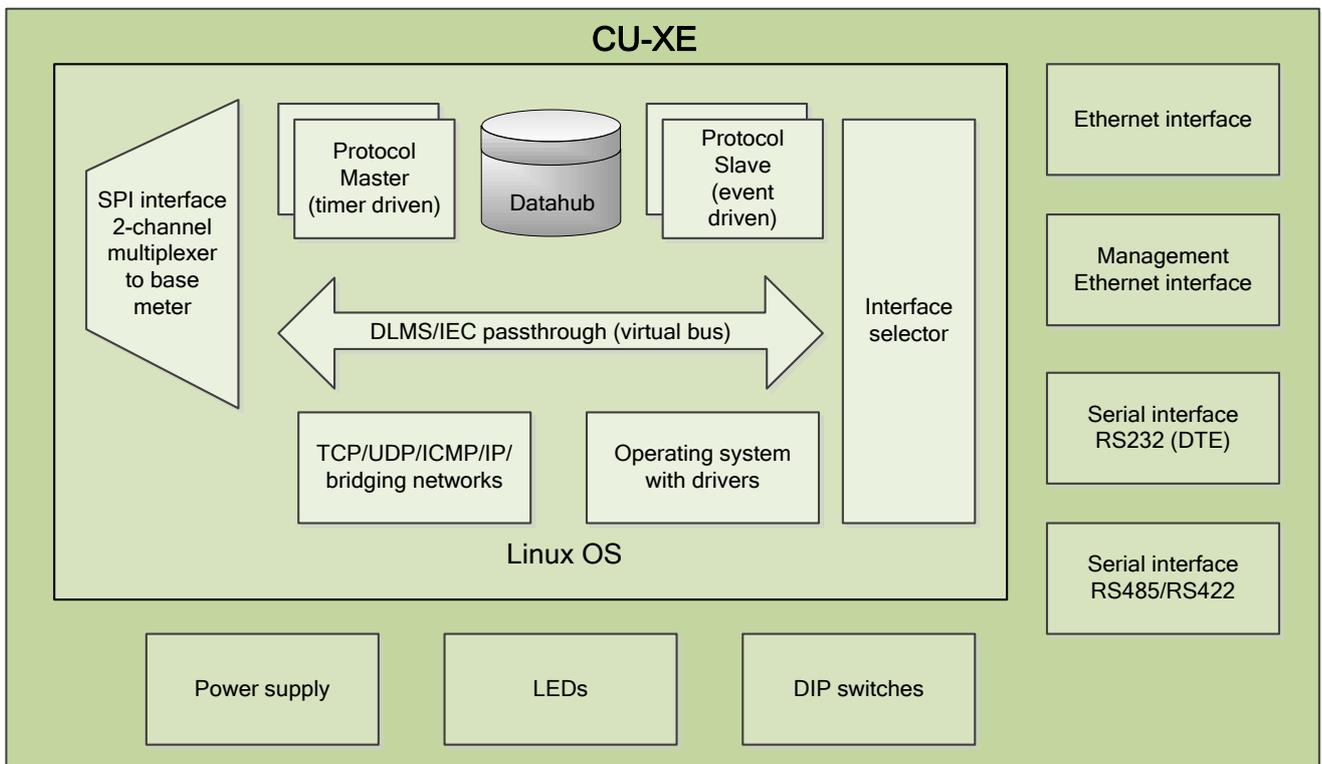
Width / height / depth

65 / 107 / 38 mm

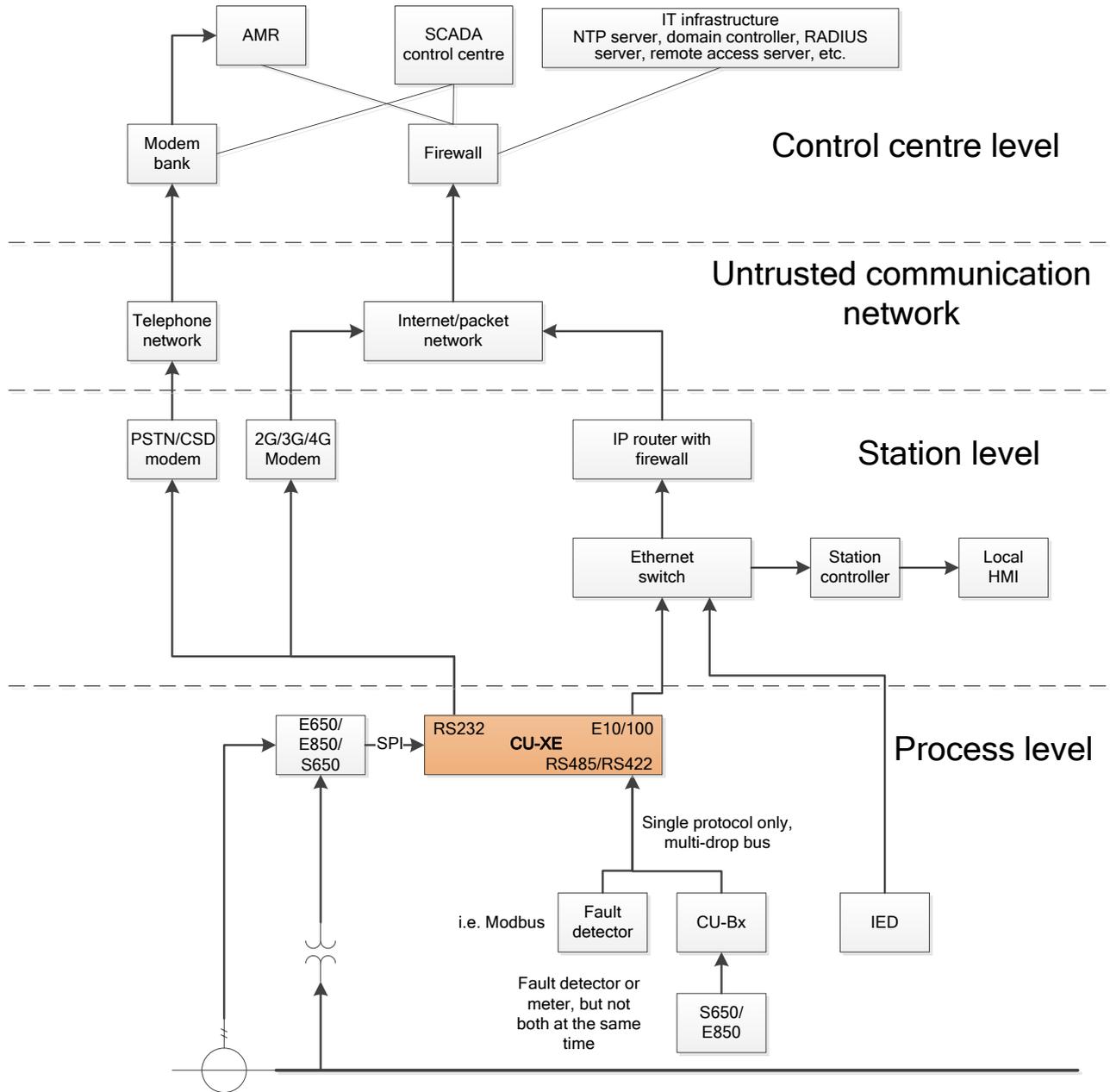
Note: Longer than standard CU

Material**Case**

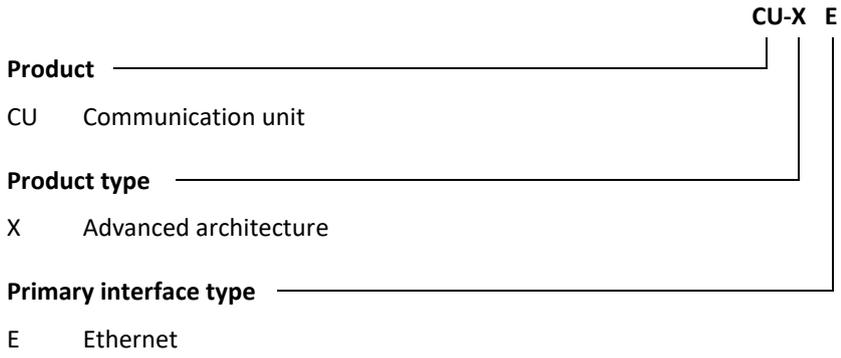
polycarbonate

Functional block diagram

Typical application diagram



Type designation



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