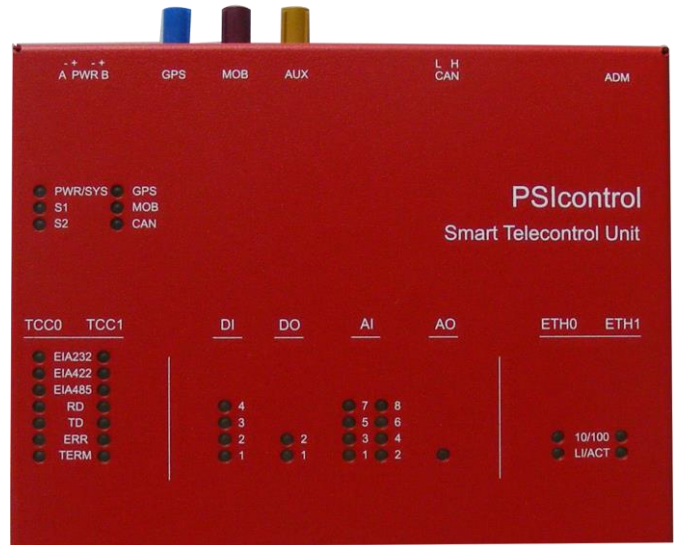


STU TCG – Front View



STU URL – Front View

The Smart Telecontrol Unit (STU) has been developed to enable intelligent power grids, so-called smart grids. The compact and modular design in a DIN rail enclosure ensures its flexible and multiple applications.

For the secure process connection, STU provides all proven functionality from the Telecontrol Gateway product family. In the low-voltage range, the STU operates as remote terminal unit for the automation of local network stations; sensors are connected via field buses and integrated PLC functionality based on IEC 61131-3. The STU is prepared to control and monitor micro grids and to transfer smart meter data

The communication interfaces of the STU enable high availability and scalability by using a wide range of transmission mediums. Intelligent applications can be loaded to the STU on demand and availability. System and data security are ensured by comprehensive security features, including central user authentication, system hardening, communication encryption via VPN tunnels and an integrated firewall.

Application Areas

- Telecontrol Gateway
Data preprocessing, protocol conversion and data transmission via IP networks
- Remote Terminal Unit (RTU)
- Micro Grid Controller
Autonomous controlling and monitoring of small decentralized power grids
- IEC-101/-104 Gateway
- IEC-104 Security Proxy

Interfaces

- Ethernet interfaces (10/100 Mbps)
- Console interface (V.24)
- CAN interface
- GPS interface

Interfaces (depending on STU variants)

- Telecontrol interfaces with galvanical isolation; selection of interface type (V.24, X.21, RS-485) via software configuration
- Administration interface (V.24)
- UART interfaces (V.24, RS-485)
- USB host interfaces

Configuration

- Command Line Interface (CLI)
- Web interface
- Automated start-up and configuration

Security

- BDEW und NERC-CIP compliant security features
- Integrated controlling and alarm features

Options

- Extended operation temperature range: -40 °C - 70 °C
- LTE mobile radio
- External DIN rail adaptor (TCG DPS)

STU-Variants

Variant	2 LAN	2 Telecontrol interface V.24/X.21/RS-485	2 UART interface V.24/RS-485	4/2 Digital input /output	8/1 Analog input / output	1 CAN	1 LTE	2 USB host	Extended operation temperature range
STU TCG	•	•	–	–	–	•	○	•	•
STU U	•	–	•	–	–	•	○	–	○
STU R	•	–	•	•	•	•	○	–	○

• default ○ option – not available

Technical data

Mechanics			
Chassis	DIN rail enclosure		
Dimensions	163 × 132 × 45 mm ³ (w/h/d)		
Cooling	Convection cooling		
Environment			
Operation	– EN 60721-3-3: 1995/A2:1997 – Class 3K7, -5 °C to 50 °C – 10% to 100% rel. humidity (not condensing)		
EMC			
Emission	EN 55032:2016 Class B		
Noise immunity	– EN 55024:2010 + A1:2015 – EN 61850-3:2002		
Product safety			
Electrical safety	– IEC 60950-1:2005 (2nd Edition) + Am1:2009 + Am2:2013 – Low voltage directive 2014/35/EU		
Conformity	CE		
Power supply			
Type	DC		
Power consumption	15 VA		
Input voltage	12 - 24 VDC ±10%		
Connector/Redundancy	4 pin screw clamp, 0.20 - 1.5 mm ² (IEC), 28 - 16 AWG (UL), pins 3 und 4 for redundant connection		
Redundancy	Second DC connector (hot standby)		
Electronics			
Main processor	Freescale power PC		
Program memory	SD cart, SDHC up to 8 GB		
Main memory	256 MB, optionally 512 MB (DDR2-RAM)		
Telecontrol interface V.24/X.21/RS-485			
Type	V.24 (RS-232)	X.21	RS-485
Signal transmission	TXD, RXD, RTS, CTS, DTR, DCD, (CLK)	T+, T-, R+, R-, S+, S-, C+, C-, I+, I-, X+, X-	2- or 4- wire
Baud rate	50 - 57600 Baud	50 - 64000 Baud, asynchronous (V11) und synchronous (X21-64 Kbps)	50 - 1000 kBaud

Telecontrol interface V.24/X.21/RS-485			
Electrical values	Conforming to V.28	Conforming to V.11 (RS422)	Conforming to V.11 (RS422)
Isolation	1 kV eff		
Connector	8 pin RJ45 socket (ISO 8877)		
Protocols	PCM-UART, PDM, PCM-NON-UART		Modbus-RTU/PCM-UART

UART interfaces		
Type	V.24 (RS-232)	RS-485
Signal transmission	TXD, RXD, RTS, CTS, DTR, DSR, DCD	2- or 4-wire
Baudrate	200 - 230400 Baud	50 - 1000 kBaud
Electrical value	Conforming to V.28	Conforming to V.11 (RS422)
Protocol	PCM-UART	Modbus-RTU/PCM-UART

LAN interfaces	
Type	10/100 Mbps, twisted pair interface (TP)
Electrical transmission	Conforming to IEEE 802.3 clause 14 and 25, Impedance: 100 Ω (symmetrical)
Connector	8 pin RJ45 socket (ISO 8877)

ADM interface	
Purpose	Configuration and service access
Electrical value	38.400 Baud, 8N1, conforming to V.28
Connector	8 pin RJ45 socket (ISO 8877)

CAN interface	
Purpose	Connection of CAN based field bus Components (analog/digital sensors)
Operating mode	2.0B extended frames with 29 Bit Identifier
Connector	2 pin screw clamp

USB host interface	
Purpose	Extensions
Function	Connection of external USB devices
Anschluss	USB 2.0 Type A

Digital input	
Type	24 VDC (+25%)
Signal voltage(0)	0 - 3 VDC
Signal voltage (1)	3.8 - 30 VDC
Input current	-2 mA
Input filter	Approx. 25 msec

Digital output	
Type	Relay, changeover
Max. switching voltage	30 V
Max. switching current	2 A
Switching capacity	60 VA
Electrical isolation	4 kV
Response time	Max. 8 msec
Fall time	Max. 4 msec

Analog inputs	
Type (configurable)	0 - 10 V, 0 - 20 mA, 4 - 20 mA
Max. input voltage	10 V
Resolution	16 Bit
Conversion time	ca. 2 msec
Measurement error 25 °C, voltage	< ± 0.15% of full scale value
Measurement error 25°C, current	< ± 0.25% of full scale value
Temperature coefficient	< ± 0.01%/°C of full scale value

Analog outputs	
Type (configurable)	0 - 10 V, 0 - 20 mA, 4 - 20 mA
Resolution	16 Bit
Load (current interface)	< 1.2 kΩ
Voltage inaccuracy 25 °C	< ± 0.05% of full scale value
Current inaccuracy 25 °C	< ± 0.1% of full scale value
Temperature coefficient	± 6 ppm/°C of full scale value

RTD input	
Sensor type	PT100, PT1000
Connector Sensor	3- or 2-wire

GPS	
Type	Integrated GPS receiver
Max. update rate	1 Hz
Number of channels	48
Position accuracy	2.5 m CEP
Protocol	NMEA
Antenna connector	SMBA (FAKRA), encoding C

Function indicators	
System	<ul style="list-style-type: none"> - System message (SYS) - Power supply (PWR) - 2 programmable LEDs (S1, S2)
LAN interfaces	Activity/TP connection status (LI/ACT), Speed (10/100 Mbps)
Telecontrol interfaces	<ul style="list-style-type: none"> - Line activity (RX, TX) - Error (ERR) - Clock pulse (CLK)
UART interfaces	<ul style="list-style-type: none"> - Line activity (RX, TX) - Error (ERR)
CAN interfaces	Active/Inactive

Function indicators	
GPS/Mobile radio/Aux	Active/Inactive

Options	
Mobile radio module	
Purpose	Data communication via mobile network
Function	Integrated radio module with modem functionality
Radio network	<ul style="list-style-type: none"> - FDD LTE: band 1, band 2, band 3, band 4, band 5, band 7, band 8, band 20, all bands with diversity receiver - WCDMA/HSDPA/HSUPA/HSPA+: band 1, band 2, band 5, band 8, all bands with diversity receiver - GSM/GPRS/EDGE: 850 MHz/900 MHz/1800 MHz/1900 MHz
Operating mode (Max. value)	<ul style="list-style-type: none"> - GPRS: UL 85.6 Kbps; DL 85.6 Kbps - EDGE: UL 236.8 Kbps; DL 236.8 Kbps - WCDMA CS: UL 64 Kbps; DL 64 Kbps - WCDMA PS: UL 384 Kbps; DL 384 Kbps - HSPA+: UL 5.76 Kbps; DL 21.6 Kbps - DC-HSPA+: UL 5.76 Kbps; DL 42 Kbps - TD-HSPA: UL 2.2 Kbps; DL 2.8 Kbps - TD-SCDMA PS: UL 384 Kbps; DL 2.8 Kbps - LTE FDD: UL 50 Kbps; DL 150 Kbps @20M BW cat4 - LTE TDD: UL 10 Mbps; DL 112 Kbps @20M BW cat4 (Uplink-downlink configuration 2, 1:3)

External adaptor	
Type	DIN rail
Primary voltage	100 - 240 VAC/50 - 60 Hz
Secondary voltage	24 VDC (controlled)
Rated power	30 W (current-limited, short-circuit proof)
Primary connector	Screw clamp
Secondary connector	Screw clamp

External extended module	
Communication	xDSL, TETRA, Powerline
Analog/digital Input/output	Connection via CANOpen/Modbus, e.g. Beckhoff or WAGO

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