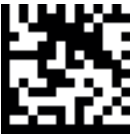


PowerLogic T300 Substation Controller

HU250

Control and Communication Without Wireless Unit

Installation Guide



NOTE

Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

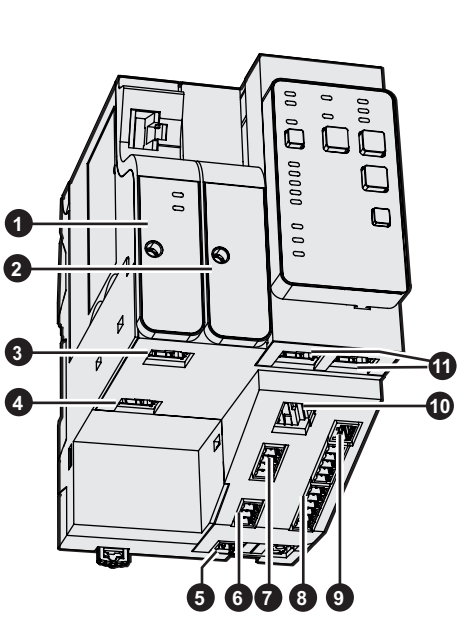
A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Notes:
This Installation Guide is related to EMS59009 module.
The configuration shown in the picture above is equipped with the optional EMS59151 modem on slot 1.



Description

This HU250 module of the PowerLogic™ T300 range is a communication gateway without wireless functionalities, dedicated to remote control applications for T300 units. This module has no WiFi chipset hardware and the complete wireless option is disabled.



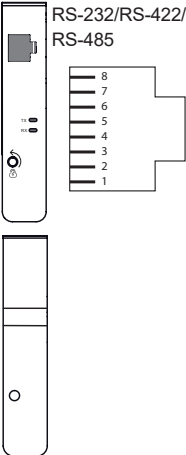
NOTICE

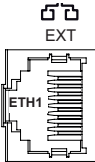
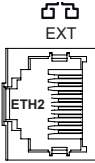
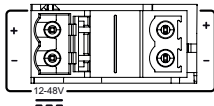
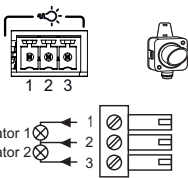
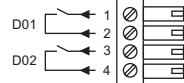
HAZARD OF INCORRECT CURRENT MEASUREMENTS

- Do not expose the device to conditions exceeding the electrical values specified in this document.
- Install the device vertically in an electrical cabinet, in accordance with the local regulations in force.
- Connect the product to the ground (DIN rail) to help ensure compliance with electromagnetic compatibility (EMC) limits.
- Standby protection should be provided in accordance with national and international cabling regulations.
- An appropriate electrical disconnecting device must be installed in the building in question.
- Use only the type of connector supplied as an accessory for the HU250 module (product reference: EMS59010).
- Check that the connections correspond to the recommended cables before powering up the equipment.
- Use appropriate tools to perform cabling on the connectors (suitable screwdriver, crimped end-pieces, etc.).
- Strip the wires appropriately (not excessively) before connecting them to the connectors (see the recommendations in *Cabling* section in this document).

Failure to follow these instructions can result in equipment damage.

The HU250 includes the following components:

Port	Characteristics																																				
12 Communication port  RS-232/RS-422/ RS-485	HU250 slots 1 an 2 can be fitted with the following modem option: ■ EMS59151: RS-232/RS-422/RS-485 modem (speed up to 115,200 bps - isolation 2 kVac - RJ45 connector) with the following pin-out: <table><tr><th>PIN No.</th><th>RS-232</th><th>RS-422 (4-wire)</th><th>RS-485 (2-wire)</th></tr><tr><td>1</td><td>TXD</td><td>RXD0 (A')</td><td></td></tr><tr><td>2</td><td>RXD</td><td>RXD1 (B')</td><td></td></tr><tr><td>3</td><td>CTS</td><td></td><td></td></tr><tr><td>4</td><td>DTR</td><td>TXD1 (B)</td><td>D1 (B)</td></tr><tr><td>5</td><td>DSR</td><td>TXD0 (A)</td><td>D0 (A)</td></tr><tr><td>6</td><td>RTS</td><td></td><td></td></tr><tr><td>7</td><td>DCD</td><td></td><td></td></tr><tr><td>8</td><td>GND</td><td>GND (C/C')</td><td>GND</td></tr></table> ■ EMS59150: empty modem box	PIN No.	RS-232	RS-422 (4-wire)	RS-485 (2-wire)	1	TXD	RXD0 (A')		2	RXD	RXD1 (B')		3	CTS			4	DTR	TXD1 (B)	D1 (B)	5	DSR	TXD0 (A)	D0 (A)	6	RTS			7	DCD			8	GND	GND (C/C')	GND
PIN No.	RS-232	RS-422 (4-wire)	RS-485 (2-wire)																																		
1	TXD	RXD0 (A')																																			
2	RXD	RXD1 (B')																																			
3	CTS																																				
4	DTR	TXD1 (B)	D1 (B)																																		
5	DSR	TXD0 (A)	D0 (A)																																		
6	RTS																																				
7	DCD																																				
8	GND	GND (C/C')	GND																																		

Port	Characteristics	Description										
3 Local communication Ethernet port 	10/100 Base-T RJ45 connector	Ethernet port used for the link to an external device in the MV substation or for connection to a PC. Isolation: 2 kVac										
4 Remote communication Ethernet port 	10/100 Base-T RJ45 connector	Ethernet port used for the remote link to the control center, via a modem or router. Isolation: 4 kVac										
5 Power supply 	Plug-in screw connectors: <table border="1"><thead><tr><th colspan="2">Power supply</th></tr></thead><tbody><tr><td>+</td><td>+Vdc (+12 V to +48 V)</td></tr><tr><td>-</td><td>0 V</td></tr></tbody></table>	Power supply		+	+Vdc (+12 V to +48 V)	-	0 V	2 power supply connectors connected internally, facilitating serial connections and allowing looping of power supplies between the T300 modules (see <i>Power supply</i> section).				
Power supply												
+	+Vdc (+12 V to +48 V)											
-	0 V											
6 Indicator outputs 	Plug-in screw connector: <table border="1"><thead><tr><th colspan="2">Indicator lamps</th></tr></thead><tbody><tr><td>1</td><td>Indicator 1</td></tr><tr><td>2</td><td>Common 5 V</td></tr><tr><td>3</td><td>Indicator 2</td></tr></tbody></table>	Indicator lamps		1	Indicator 1	2	Common 5 V	3	Indicator 2	2 polarized indicator outputs for external indication outside the MV substation. These indicators can be assigned by configuration to fault current detection indication (directional indication). Refer to the <i>PowerLogic T300 Quick Start Guide</i> . Voltage delivered: 5 V Max. current: 100 mA Note: These outputs are polarized. Comply with the direction of connection.		
Indicator lamps												
1	Indicator 1											
2	Common 5 V											
3	Indicator 2											
7 Digital outputs 	Plug-in screw connector: <table border="1"><thead><tr><th colspan="2">Digital outputs</th></tr></thead><tbody><tr><td>1</td><td>DO1</td></tr><tr><td>2</td><td>DO1</td></tr><tr><td>3</td><td>DO2</td></tr><tr><td>4</td><td>DO2</td></tr></tbody></table>	Digital outputs		1	DO1	2	DO1	3	DO2	4	DO2	2 dry-contact digital outputs for free use. Breaking capacity: 2,000 VA Max. voltage: 60 Vdc Max. current: 2 A Isolation: 2 kVac 
Digital outputs												
1	DO1											
2	DO1											
3	DO2											
4	DO2											

NOTICE

HAZARD OF MISUSING LAN PORT 1 AND 2

The T300 LAN network was designed for internal communications between the T300 modules. It is also possible to connect to this LAN via a PC to establish an Ethernet connection to the equipment. Other use does not guarantee correct functionality of the system.

Failure to follow these instructions can result in equipment malfunction.

NOTICE

HAZARD OF TERMINAL DAMAGE OR INCORRECT POWER SUPPLY

- Use appropriate tightening torques for tightening connector screws (tightening torque values provided in this document).
- The digital inputs accept only dry contacts. Consequently, these inputs must not receive voltage.
- The HU250 module must be powered by a power supply of the SELV/PELV type (e.g. the PS50 module).
- The supply voltage of the HU250 module must not exceed 57.6 Vdc.

Failure to follow these instructions can result in equipment damage.

Port	Characteristics	Description																										
8 Digital inputs	Plug-in screw connectors: <table><thead><tr><th colspan="2">Digital inputs 1</th></tr></thead><tbody><tr><td>1</td><td>Common (0 V)</td></tr><tr><td>2</td><td>Digital input 1</td></tr><tr><td>3</td><td>Digital input 2</td></tr><tr><td>4</td><td>Digital input 3</td></tr><tr><td>5</td><td>Digital input 4</td></tr></tbody></table> <table><thead><tr><th colspan="2">Digital inputs 2</th></tr></thead><tbody><tr><td>1</td><td>Common (0 V)</td></tr><tr><td>2</td><td>Voltage presence</td></tr><tr><td>3</td><td>Door open</td></tr><tr><td>4</td><td>Common (0 V)</td></tr><tr><td>5</td><td>Local</td></tr><tr><td>6</td><td>Remote</td></tr></tbody></table>	Digital inputs 1		1	Common (0 V)	2	Digital input 1	3	Digital input 2	4	Digital input 3	5	Digital input 4	Digital inputs 2		1	Common (0 V)	2	Voltage presence	3	Door open	4	Common (0 V)	5	Local	6	Remote	8 digital inputs: ■ 4 unallocated digital inputs (for free use) ■ 4 dedicated digital inputs for: ☐ voltage presence (e.g. via the PS50 module) ☐ connection of a door open switch ☐ connection of an external Local/Remote switch Note: The <i>Door open</i> and <i>Local/Remote</i> dedicated digital inputs correspond to a default T300 application. They can be used differently for another application by configuration.
Digital inputs 1																												
1	Common (0 V)																											
2	Digital input 1																											
3	Digital input 2																											
4	Digital input 3																											
5	Digital input 4																											
Digital inputs 2																												
1	Common (0 V)																											
2	Voltage presence																											
3	Door open																											
4	Common (0 V)																											
5	Local																											
6	Remote																											
9 Analog inputs	Plug-in leaf-spring connector: <table><thead><tr><th colspan="2">PT100</th></tr></thead><tbody><tr><td>1</td><td>In1</td></tr><tr><td>2</td><td>In2</td></tr><tr><td>3</td><td>Réf</td></tr></tbody></table>	PT100		1	In1	2	In2	3	Réf	2 analog inputs for connection of one 3 wire PT100 temperature sensor. Measurement: -55 °C to 250 °C (-67 °F to 482 °F) Resolution: 1 °C (1 °F)																		
PT100																												
1	In1																											
2	In2																											
3	Réf																											
10 RS-485 port	RJ45 connector capable of including the following connections: <table><thead><tr><th colspan="2">RS-485 (2-wire)</th></tr></thead><tbody><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr><tr><td>3</td><td></td></tr><tr><td>4</td><td>D1 (B)</td></tr><tr><td>5</td><td>D0 (A)</td></tr><tr><td>6</td><td></td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td></td></tr></tbody></table>	RS-485 (2-wire)		1		2		3		4	D1 (B)	5	D0 (A)	6		7		8		Port dedicated to internal Modbus communication with the Easergy PS50 power supply module or any other device communicating in Modbus protocol. Speed: up to 38,400 baud Isolation: 2 kVAc								
RS-485 (2-wire)																												
1																												
2																												
3																												
4	D1 (B)																											
5	D0 (A)																											
6																												
7																												
8																												
11 Double Ethernet ports LAN 1 and 2	10/100 Base-T RJ45 connectors	Double ports dedicated to internal communication between T300 modules or for connection to a PC. Isolation: 2 kVAc 10 Ethernet jumpers (Ref: EMS59528) provided as accessories allow the internal Ethernet connection between the HU250, SC150, SC160 and LV150 modules. See <i>LAN port NOTICE</i>.																										

Cabling			
Recommendation for length of cable less than 2 meters.			
5	8 mm 0.315 in	0.14-0.5 mm² 26-20 AWG	-
9	7 mm 0.276 in	1-2.5 mm² 17 AWG	0.5-0.6 N.m 4.4-5.3 lb-in
6			
7			
8			

! DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Wear your personal protective equipment (PPE) and comply with the safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Only qualified person should install this equipment. Such work should be performed only after reading this entire set of instructions.
- Switch off the electric power supply of the HU250 and of all the devices to which the HU250 is connected before any handling or replacement operation.
- Always use a properly rated voltage sensing device to confirm that all power is off.

Failure to follow these instructions will result in death or serious injury.

The HU250 module is fastened to a DIN rail. No tool is needed for mounting. Simply clip it in order to fasten it as shown below.



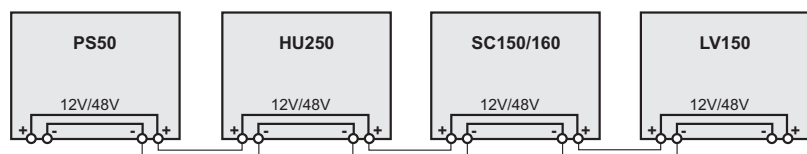
Once the HU250 has been powered up, some indicator lamps on the front panel may be lit to indicate certain operating states.

The buttons allow the user to perform actions. These indications and actions are summarized in the table below:

Part	Description of indications and actions
1 1.1 1.2 1.3	HU250 states 1.1 HU250 operating 1.2 Equipment status 1.3 Communication status with modules (SCxxx, LV150, PS50, for instance)
2 2.1 2.2 2.3	Local/Remote 2.1 Remote position: all local controls on switches via the SCxxx module are locked (via the front panel) 2.2 Local position: all remote controls are locked 2.3 Push button that can be used to change Local/Remote state
3 and 7 3.1 3.2 3.3 3.4 7	Automatic control states and checks 3.1 Automatic control enabled 3.2 Automatic control disabled 3.3 Automatic control locked 3.4 Automatic control change-of-state button (ON/OFF) 7 Change-of-state enabling button. The two buttons, change of state and enabling, must be pressed simultaneously for the change of state to take place. This change is performed simultaneously on all the T300 modules using automatic control functions. Note: Change of state of the automatic control system by means of the buttons is possible only in Local mode.
4 4.1 4.2 4.3 4.4 4.5	Power supply 4.1 Mains power supply operating 4.2 48 V/24 V motor pack power supply operating 4.3 Transmission equipment power supply operating 4.4 Over consumption on transmission equipment power supply 4.5 Battery status Notes: These states correspond to information retransmitted by the PS50 module via Modbus communication between modules. When another type of power supply module is used, these indicators can be customized by configuration via the Easergy Builder advanced configuration tool.
5 5.1 5.2 5.3	Customizable indicator lamps 5.1, 5.2, 5.3 3 unassigned indicator lamps configurable for indication of customized states Note: Customization of these indicators is performed via the Easergy Builder advanced configuration tool. Refer to the <i>PowerLogic T300 Quick Start Guide</i> .
6 6.1 6.2	RS232-RS485 modem box indicator 6.1 TX: RS-232/RS-485 data transmission indicator lamp 6.2 RX: RS-232/RS-485 data reception indicator lamp
8 8.1	Reset 8.1 Reset button reinitializing all fault current indications on all the SCxxx modules and automatic control locking
9 9.1	Indicator test 9.1 Indicator test button for forced setting of lighting of all indicator lamps on the front panel of the T300 modules and the external indicator lamp. Makes it possible to detect any anomaly concerning the indicator lamps.

Note: Refer to the table opposite for the meaning of the flashing states and the various possible colors for indicator lamps. Some indicators can be customized by configuration.

The HU250 includes two connectors to connect the power supply. These two connectors are connected together internally in the HU250. Having two power supply connections can facilitate connection between the modules. No strapping is necessary. Connect the HU250 as shown in the following diagram.



Installation of the HU250 module requires no parameters setup. This is performed during the commissioning/configuration stages.
Refer to the *PowerLogic T300 User Manual* and *Quick Start Guide* for any further information.

The serial number of the HU250 is formed as follows: **PPYYWWDLLLNNNNN**.

Characters	Description
PP	Characters [A-Z,0-9]. Unique code of the manufacturing plant code. ME= India. SM = Latvia.
YYWW	Numbers [01-12, 01-52]. Datecode (year and week).
D	Number [1-7]. Day of the week, 1 representing Monday, 7 representing Sunday.
LLL	Characters [A-Z,0-9]. Unique code of the manufacturing line.
NNNNN	Numbers [00001-99999]. Unique number of the manufactured product.

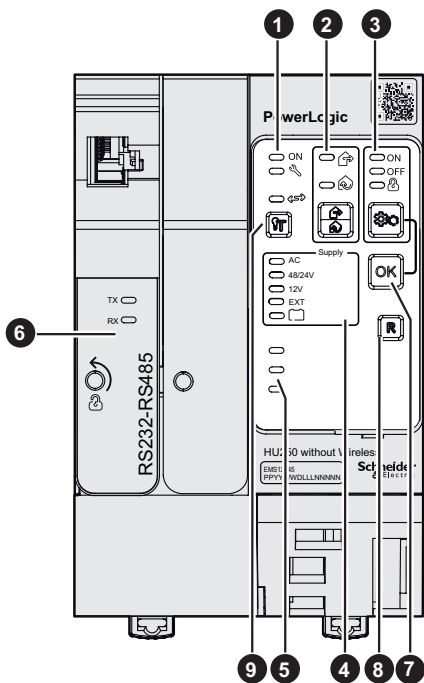
The HU250 module must be connected to the ground via the mounting DIN rail. The DIN rail helps ensure electrical continuity (preferably use a DIN rail in 304L stainless steel to withstand the climatic conditions).

<i>NOTICE</i>	
HAZARD OF INCORRECT CURRENT MEASUREMENTS	
■ The DIN rail on which the HU250 is installed must be grounded and of metallic type and must comply with electrical continuity in all climatic conditions. ■ If the HU250 is installed on a PS50 power supply module, the grounding of the module is done via the PS50 DIN rail, which must be grounded via a dedicated terminal near the PS50 power input connector. Refer to the <i>PS50 Power Supply Installation Guide</i>.	
Failure to follow these instructions can result in equipment damage.	

Indicator state	Flashing		Steady			Unlit
	Red	Green	Red	Green	Orange	
1 1.1 1.2 1.3		Boot	-	Fault	OK	-
		-	-	Major Fault	-	OK
		-	-	Fault	-	OK
2 2.1 2.2		-	-	Remote	-	Local
		-	-	Local	-	Remote
3 3.1 3.2 3.3		-	-	ON	-	OFF
		-	-	OFF	-	ON
		-	-	-	Locked	Non-locked
4 4.1 4.2 4.3 4.4 4.5		-	-	AC OFF	AC ON	-
		-	-	Fault	OK	-
		-	-	Fault	OK	-
		-	-	Fault	OK	-
		-	-	Fault	OK	-
5 (1) 5.1 5.2 5.3		-	-	-	ON	OFF
		-	-	-	ON	OFF
		-	-	-	ON	OFF
6 6.1 6.2		-	Transmitting	-	-	Inactive
		-	Receiving	-	-	Inactive

(1) Indicators customizable by configuration. Only default values shown.

Note: The indications in bold letters correspond to normal operation (first power up without existence of a potential issue indication).



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