

Easergy T300 range

HU250

Control and communication unit

Installation
Guide



IMPORTANT NOTE

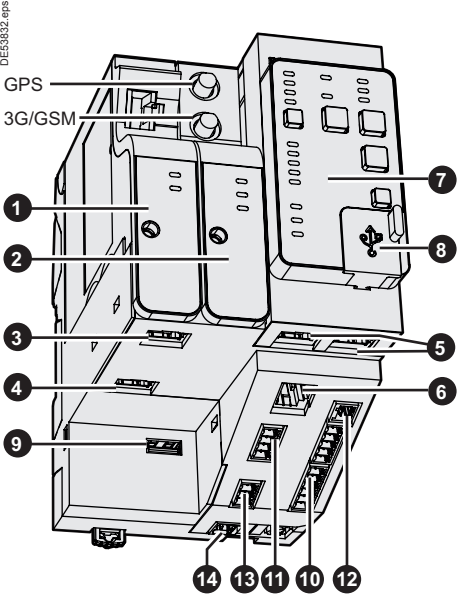
Only qualified personnel should carry out the installation, operation, servicing and maintenance of electrical equipment. Schneider Electric accepts no liability regarding any consequences of the use of this documentation.

By qualified person is meant a technician who is competent regarding the construction, installation and operation of electrical equipment and is trained in safety procedures, and is therefore capable of detecting and preventing the risks involved.



Description

The HU250 module of the Easergy T300 range is the communication gateway dedicated to remote control applications for T300 units.



WARNING

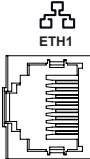
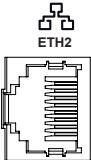
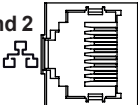
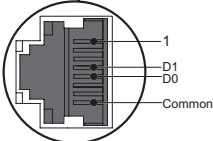
RISK OF MATERIAL DAMAGE

- Do not expose the device to conditions exceeding the electrical values specified in this document.
- The device should be installed horizontally in an electrical cabinet, in accordance with the local regulations in force.
- The product must be connected to the ground (DIN rail) to 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 appropriates (not excessively) before connecting them to the connectors.

Failure to comply with these instructions can cause material damage.

The HU250 includes the following components:

Port	Characteristics	Description																																																
<div><div><div><div>1</div><div>2</div></div><div>Communication ports</div></div><div><div><div>1</div><div>2G/3G</div></div><div><div>2</div><div>RS232 RS485</div></div></div></div> <div><div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div></div>	<div><div>RS232</div><table><tr><td>1</td><td>TXD</td></tr><tr><td>2</td><td>RXD</td></tr><tr><td>3</td><td>CTS</td></tr><tr><td>4</td><td>DTR</td></tr><tr><td>5</td><td>DSR</td></tr><tr><td>6</td><td>RTS</td></tr><tr><td>7</td><td>DCD</td></tr><tr><td>8</td><td>GND</td></tr></table><div>RS485 (2-wire)</div><table><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>GND</td></tr></table><div>RS422 (4-wire)</div><table><tr><td>1</td><td>RXD0 (A')</td></tr><tr><td>2</td><td>RXD1 (B')</td></tr><tr><td>3</td><td></td></tr><tr><td>4</td><td>TXD1 (B)</td></tr><tr><td>5</td><td>TXD0 (A)</td></tr><tr><td>6</td><td></td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td>GND (C/C')</td></tr></table></div>	1	TXD	2	RXD	3	CTS	4	DTR	5	DSR	6	RTS	7	DCD	8	GND	1		2		3		4	D1 (B)	5	D0 (A)	6		7		8	GND	1	RXD0 (A')	2	RXD1 (B')	3		4	TXD1 (B)	5	TXD0 (A)	6		7		8	GND (C/C')	<div>Customizable modem boxes including the following modems:</div> <div><div>■ RS232/485: for the remote link to the control center.</div><div>Speed: up to 38400 baud</div><div>Isolation: 2kVAC</div><div>■ 2G/3G: for the remote link to the control center.</div><div>■ 2G/3G + GPS: for the remote link with the control center with GPS time synchronization.</div></div> <div><div>Note:</div>The 2G/3G or 2G/3G + GPS modem can only be installed on port 1.</div>
1	TXD																																																	
2	RXD																																																	
3	CTS																																																	
4	DTR																																																	
5	DSR																																																	
6	RTS																																																	
7	DCD																																																	
8	GND																																																	
1																																																		
2																																																		
3																																																		
4	D1 (B)																																																	
5	D0 (A)																																																	
6																																																		
7																																																		
8	GND																																																	
1	RXD0 (A')																																																	
2	RXD1 (B')																																																	
3																																																		
4	TXD1 (B)																																																	
5	TXD0 (A)																																																	
6																																																		
7																																																		
8	GND (C/C')																																																	

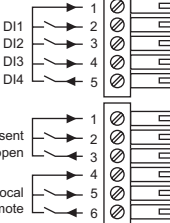
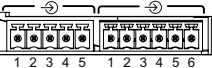
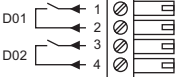

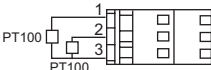

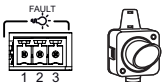
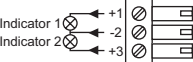
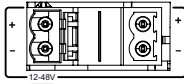
Port	Characteristics	Description																		
<div>3</div> <div>Local communication Ethernet port</div> <div></div>	10/100 Base-T RJ45 connector	Ethernet port used for the link to an external device in the MV substation or for connection to a PC. Isolation: 2kVAC																		
<div>4</div> <div>Remote communication Ethernet port</div> <div></div>	10/100 Base-T RJ45 connector	Ethernet port used for the remote link to the control center, via a modem or router. Isolation: 4kVAC																		
<div>5</div> <div>Double Ethernet ports LAN 1 and 2</div> <div></div>	10/100 Base-T RJ45 connectors	Double ports dedicated to internal communication between T300 modules. Isolation: 2kVAC 10 Ethernet jumpers (Ref: EMS59528) provide as accessories allow the internal Ethernet connection between the modules HU250, SC150 and LV150.																		
<div>6</div> <div>RS485 port</div> <div></div>	<div>RJ45 connector capable of including the following connections:</div> <table><tr><th colspan="2">RS485 (2-wire)</th></tr><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></table>	RS485 (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 38400 baud Isolation: 2kVAC
RS485 (2-wire)																				
1																				
2																				
3																				
4	D1 (B)																			
5	D0 (A)																			
6																				
7																				
8																				
<div>7</div> <div>WiFi port</div>	Dual-band concurrent WiFi (2.4GHz/5GHz)	Secure WiFi port for local connection of a PC, tablet or smartphone to: ■ The T300's embedded Web server; ■ The Easergy Builder advanced configuration tool																		
<div>8</div> <div>Expert USB port</div>	Mini USB connector	Mini USB port dedicated to equipment maintenance (reserved for qualified personnel). Requires the installation of a specific driver.																		
<div>9</div> <div>Host USB port</div>	B type USB connector	Multi-purpose USB peripheral																		









WARNING

RISK OF DAMAGE TO THE DEVICE

- Use appropriate tightening torques for tightening connector screws (tightening torque values provided in this document).
- The HU250 module must be powered by a power supply of the SELV/PELV type (e.g. the PS50 is of the SELV/ PELV type).
- The supply voltage of the HU250 module must not exceed 60VDC.

Failure to comply with the instruction may lead to risks of material damage.

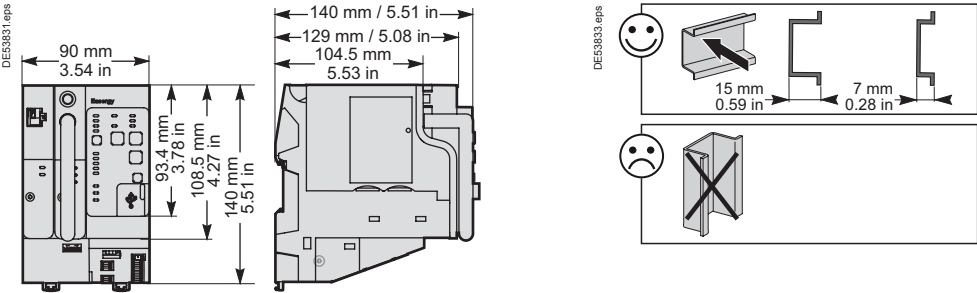
Port	Characteristics	Description																								
<div>10</div> <div>Digital inputs</div> <div></div>	<div>Plug-in screw connectors:</div> <div><table><tr><th>Digital inputs 1</th></tr><tr><td>1</td><td>Common (+24VDC)</td></tr><tr><td>2</td><td>Digital input 1</td></tr><tr><td>3</td><td>Digital input 2</td></tr><tr><td>4</td><td>Digital input 3</td></tr><tr><td>5</td><td>Digital input 4</td></tr></table> <table><tr><th>Digital inputs 2</th></tr><tr><td>1</td><td>Common (+24VDC)</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 (+24VDC)</td></tr><tr><td>5</td><td>Local</td></tr><tr><td>6</td><td>Remote</td></tr></table></div>	Digital inputs 1	1	Common (+24VDC)	2	Digital input 1	3	Digital input 2	4	Digital input 3	5	Digital input 4	Digital inputs 2	1	Common (+24VDC)	2	Voltage presence	3	Door open	4	Common (+24VDC)	5	Local	6	Remote	<div>8 digital inputs:</div> <div>■ 4 unallocated digital inputs (for free use)</div> <div>■ 4 dedicated digital inputs for:</div> <div><input type="checkbox"/> voltage presence (e.g. via the PS50 module)</div> <div><input type="checkbox"/> connection of a door open switch</div> <div></div>
Digital inputs 1																										
1	Common (+24VDC)																									
2	Digital input 1																									
3	Digital input 2																									
4	Digital input 3																									
5	Digital input 4																									
Digital inputs 2																										
1	Common (+24VDC)																									
2	Voltage presence																									
3	Door open																									
4	Common (+24VDC)																									
5	Local																									
6	Remote																									
<div>11</div> <div>Digital outputs</div> <div></div>	<div>Plug-in screw connector:</div> <div><table><tr><th>Digital outputs</th></tr><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></table></div>	Digital outputs	1	DO1	2	DO1	3	DO2	4	DO2	<div>2 dry-contact digital outputs for free use.</div> <div>Breaking capacity: 2000VA</div> <div>Max. voltage: 60VDC</div> <div>Max. current: 2A</div> <div>Isolation: 2kVAC</div> <div></div>															
Digital outputs																										
1	DO1																									
2	DO1																									
3	DO2																									
4	DO2																									
<div>12</div> <div>Analog inputs</div> <div></div>	<div>Plug-in leaf-spring connector:</div> <div><table><tr><th>PT100</th></tr><tr><td>1</td><td>In1</td></tr><tr><td>2</td><td>In2</td></tr><tr><td>3</td><td>Réf</td></tr></table></div>	PT100	1	In1	2	In2	3	Réf	<div>2 analog inputs for connection of PT100 temperature sensors</div> <div>Measurement: -55°C to 250°C (-67°F to 482°F)</div> <div>Resolution: 1°C (1°F)</div> <div></div>																	
PT100																										
1	In1																									
2	In2																									
3	Réf																									
<div>13</div> <div>Indicator outputs</div> <div></div> <div></div>	<div>Plug-in screw connector:</div> <div><table><tr><th>Indicator lamps</th></tr><tr><td>1</td><td>Indicator 1</td></tr><tr><td>2</td><td>Common +5V</td></tr><tr><td>3</td><td>Indicator 2</td></tr></table></div>	Indicator lamps	1	Indicator 1	2	Common +5V	3	Indicator 2	<div>2 polarized indicator outputs for external indication outside the MV substation. These indicators can be assigned by configuration to fault detection indication (directional indication).</div> <div>Refer to the User Manual or the Expert Guide.</div> <div>Voltage delivered: 5V</div> <div>Max. current: 100 mA</div> <div>Note: These outputs are polarized. Comply with the direction of connection, + and -</div>																	
Indicator lamps																										
1	Indicator 1																									
2	Common +5V																									
3	Indicator 2																									
<div>14</div> <div>Power supply</div> <div></div>	<div>Plug-in screw connectors:</div> <div><table><tr><th>Power supply</th></tr><tr><td>+</td><td>+ Vdc (+12V to +48V)</td></tr><tr><td>-</td><td>0V</td></tr></table></div>	Power supply	+	+ Vdc (+12V to +48V)	-	0V	<div>2 power supply connectors connected internally, facilitating serial connections and allowing looping of power supplies between the T300 modules. (see Power Supply section).</div>																			
Power supply																										
+	+ Vdc (+12V to +48V)																									
-	0V																									

				
10		7 mm 0.276 in	1.5 mm ² 15 AWG	0.22-0.25 N.m 1.9-2.2 lb-in
11				
13				
12		8 mm 0.315 in	0.14-0.5 mm ² 26-20 AWG	-
14	 12-48V	7 mm 0.276 in	1.5 mm ² 15 AWG	0.5-0.6 N.m 4.4-5.3 lb-in

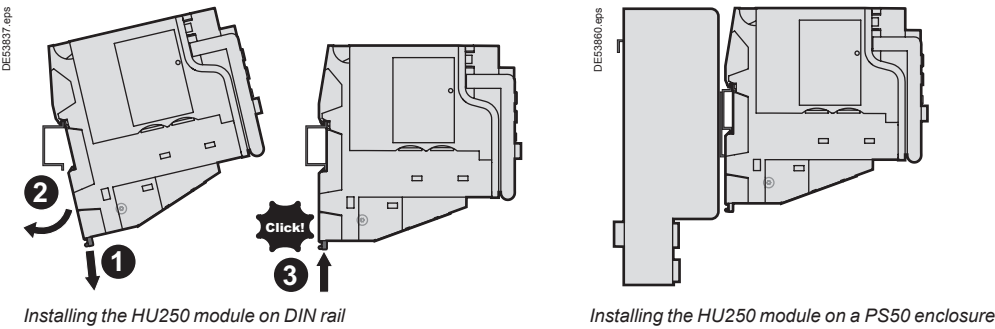
Installation

Installing the enclosure

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.



External dimensions of the HU250 enclosure

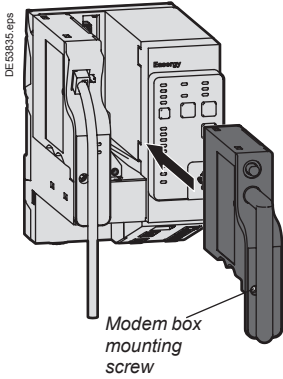


Installing the HU250 module on DIN rail

Installing the HU250 module on a PS50 enclosure

Installation of a modem box

Each modem box can be installed or interchanged easily and quickly in the HU250. The modem box is installed in factory, but if necessary it is possible to dismount it and replace it with another type of modem. To install a modem box:



- Install the modem box in the required slot on the HU250 (port 1 or port 2 slot).
- Press the front panel to insert the rear panel connector in the HU250 (be careful not to over-force during insertion).
- Tighten the screw on the front panel using a flat or Phillips-head screwdriver to fasten the modem box to the HU250.

To withdraw a modem box from its slot, perform the operation in reverse.
Note: When changing a modem box it is also necessary to have the configuration changed by an expert using the Easergy Builder configuration tool. To do so, refer to the Expert Guide.

Operation

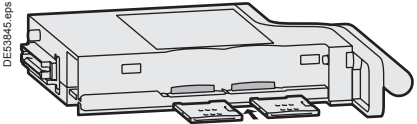
Once the HU250 has been powered up, some indicator lamps on the front panel may be lit to indicate certain operating states. The buttons allow the user to perform actions. These indications and actions are summarized in the table below:

Part	Description of indications and actions
1 <div><div>1.1 ON</div><div>1.2</div><div>1.3</div><div>1.4</div></div>	HU 250 states 1.1 HU 250 operating 1.2 Equipment fault 1.3 WIFI access operating (activated by Local mode) 1.4 T300 modules communication fault
2 <div><div>2.1</div><div>2.2</div><div>2.3</div></div>	Local/Remote 2.1 Local position: All remote controls are locked 2.2 Remote position: All local controls on switches via the SC150 module are locked (via the front panel and WIFI). 2.3 Push button that can be used to change Local/Remote state Note: Switching to local mode activates WIFI access
3 et 8 <div><div>3.1 ON</div><div>3.2 OFF</div><div>3.3</div><div>3.4</div><div>8.1 OK</div></div>	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). 8.1 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 <div><div>4.1 AC Supply</div><div>4.2 48V/24V</div><div>4.3</div><div>4.4 FAULT</div><div>4.5</div></div>	Power supply 4.1 Mains power supply operating 4.2 48V/24V motor pack power supply operating 4.3 Transmission equipment power supply operating 4.4 Over consumption on Transmission equipment power supply 4.5 Battery fault Note: 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 Expert Easergy Builder tool.
5 <div><div>5.1</div><div>5.2</div><div>5.3</div></div>	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 configuration tool. Refer to the User Manual or the Expert Guide.
6 <div><div>6.1</div><div>6.2</div><div>6.3</div></div>	3G/GPS modem box indicator lamps 6.1 Indicator of activity on the GSM/3G network. This indicator flashes at the pace of data interchange (TX/RX). 6.2 Modem fault indicator lamp: lights for a SIM card fault or for any low level of GSM/3G reception. 6.3 GPS signal reception status indicator.
7 <div><div>7.1 TX</div><div>7.2 RX</div></div>	RS232-RS485 modem box indicator 7.1 TX: RS232/RS485 data transmission indicator lamp 7.2 RX: RS232/RS485 data reception indicator lamp.
9 <div><div>9.1</div></div>	Reset 9.1 Reset button reinitializing all fault indications on all the SC150 modules and automatic control locking.
10 <div><div>10.1</div></div>	Indicator test 10.1 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.

GSM/3G modem

The 2G/3G modem allows a SIM card card to be inserted in one of the two available SIM card slots, without there being any difference at the operating level.



The GPS and GSM antenna connectors and the SIM cards are accessible on the front of the modem.

Mounting the GPS antenna:

- Attach the GPS antenna to the wall of the substation (preferably outside).
 - Connect the antenna cable to the modem connector marked «GPS».
 - Insert the SIM card(s) (preferably with HU250 switched off).
- Note:** The GSM/3G antenna requires no outside mounting. It is a short antenna connected to the modem itself. This antenna is installed in factory.

Power supply

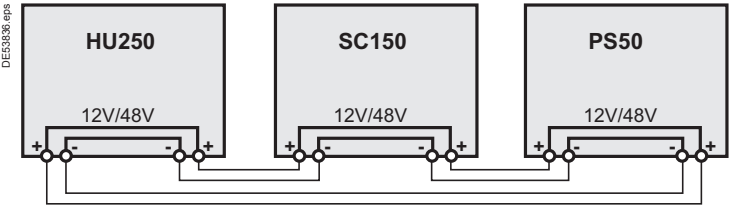
DANGER

RISK OF BURNING, ELECTRIC SHOCK, EXPLOSION OR ELECTRIC ARC

- Wear your personal protective equipment (PPE) and comply with the safety procedures. Refer to the local installation standards in force.
- 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.
- Use a power off check to make sure that the device is properly switched off.

Failure to comply with these instructions may cause severe bodily injuries or death.

The HU250 includes two connectors to connect the power supply. These two connectors are connected together internally in the HU250. The fact of having two power supply connections can facilitate connection between the modules. No strapping is necessary. Moreover, this architecture allows loopback, thus offering the security of continuity of the power supply. For any maintenance work, if one of the modules is removed from the loop, the other modules keep their power supply during the replacement. Connect the HU250 as shown in the following diagram in order to have the benefit related to power supply loopback.



Parameters setup

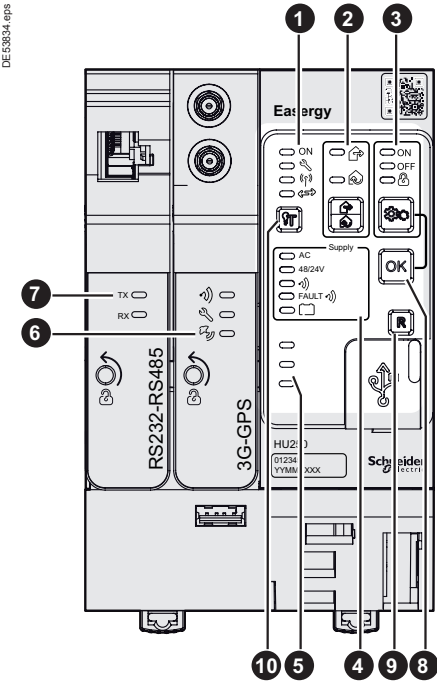
Installation of the HU250 module requires no parameters setup. This is performed during the commissioning/ configuration stages. Refer to the User Manual and the Expert Guide for any further information.

Identification

The serial number of the HU250 is formed as follows: Year - Week - Work order
e.g. 15340265 (265th product manufactured, week 34 of the year 2015)

Grounding

The DIN rail on which the HU250 is installed must be grounded and of the metallic type. However, if the HU250 is installed on a PS50 power supply module, grounding shall be performed on the power supply input of the PS50 and not on the DIN rail. Refer to the Installation Guide of the PS50 power supply.



Meaning of indications for each color or indicator lamp state.

Indicator state	Flashing		Steady red	Steady green	Steady orange	Extinguished
	Red	Green				
1 <div><div>1.1 ON</div><div>1.2</div><div>1.3</div><div>1.4</div></div>	Boot	-	Fault	OK	Com fault	-
<div><div>1.2</div><div>1.3</div><div>1.4</div></div>	-	-	Fault	-	-	OK
<div><div>1.3</div><div>1.4</div></div>	-	-	Fault	OK	OK	-
<div><div>1.4</div></div>	-	-	Fault	-	-	OK
2 <div><div>2.1</div><div>2.2</div></div>	-	-	-	Remote	-	Local
<div><div>2.2</div></div>	-	-	Local	-	-	Remote
3 <div><div>3.1 ON</div><div>3.2 OFF</div><div>3.3</div></div>	-	-	-	ON	-	OFF
<div><div>3.2</div><div>3.3</div></div>	-	-	OFF	-	Locked	Non-locked
<div><div>3.3</div></div>	-	-	-	-	-	Non-locked
4 <div><div>4.1 AC Supply</div><div>4.2 48V/24V</div><div>4.3</div><div>4.4 FAULT</div><div>4.5</div></div>	-	-	AC OFF	AC ON	-	-
<div><div>4.2</div><div>4.3</div><div>4.4</div><div>4.5</div></div>	-	-	Fault	OK	-	-
<div><div>4.3</div><div>4.4</div><div>4.5</div></div>	-	-	Fault	OK	-	-
<div><div>4.4</div><div>4.5</div></div>	-	-	Fault	-	-	OK
<div><div>4.5</div></div>	-	-	Fault	OK	-	-
5 (1) <div><div>5.1</div><div>5.2</div><div>5.3</div></div>	-	-	-	-	ON	OFF
<div><div>5.2</div><div>5.3</div></div>	-	-	-	-	ON	OFF
<div><div>5.3</div></div>	-	-	-	-	ON	OFF
6 <div><div>6.1</div><div>6.2</div><div>6.3</div></div>	-	Activity	-	-	-	Inactivity
<div><div>6.2</div><div>6.3</div></div>	-	-	Fault	-	-	OK
<div><div>6.3</div></div>	-	Active and sync	-	No sync	-	Deactivated
7 <div><div>7.1 TX</div><div>7.2 RX</div></div>	-	Emission	-	-	-	Inactivity
<div><div>7.2</div></div>	-	Reception	-	-	-	Inactivity

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

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

IMPORTANT NOTE

Easergy HU250, FCC ID : 2AHHK-EASERGYHU250
Easergy GSM/3G modem box contains FCC ID : QIPPHS8-P
Caution: the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with FCC RF radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.