

## 6 Diagnostic & Troubleshooting

### 6.1 Diagnostic

There are two different type of diagnostic information:

1. local, by FAULT LED flashing
2. remote, by diagnostic information available from FBP

When the FAULT LED flashes at least one of the following conditions is verified

#	Meaning	Description
1.	No device communication	No device physically connected OR message CRC error
2.	Wrong device connected	The connected device Slave ID is NOT the right one
3.	Device not initialised	The connected device has not been correctly initialised at the end of manufacturing (where applicable - see device dependent sections)
4.	Internal configuration map error	Software configuration tables bug
5.	Wrong parameter number	The requested parameter number doesn't exist (only for writing operation)
6.	Wrong parameter value	The parameter value is not allowed (only for writing operation)
7.	Command not executed	The command is correctly received by the EP010 but it's not possible to send it to the device (e.g. the device is not connected).
8.	Watchdog fault	Start-up diagnostics
9.	Modbus UART fault	Start-up diagnostics
10.	RS 485 driver fault	Start-up diagnostics

**Table 5. Diagnostic codes**

### 6.2 Troubleshooting

Depending on the status and behaviour of the LEDs it's possible to get locally some information:

#	Symptom	Diagnosis
1.	Some or all LEDs still ON after start-up sequence	SW/HW bug
2.	- TX LED flashes (very fast) and - FAULT LED flashes at 2 Hz and - FBP LED flashes at 2 Hz	No response from the device
3.	FAULT LED flashes at 2 Hz	- Previously detected fault and - no communication with the FBP

**Table 6. Troubleshooting**

NOTE: the PWR LED is always ON if EP010 is powered.



Please note that NO communication between FBP and EP010 is active if there is a failure on the relevant serial channel (UART).

## EP010: INSTALLATION, USE AND DISINSTALLATION PROCEDURES

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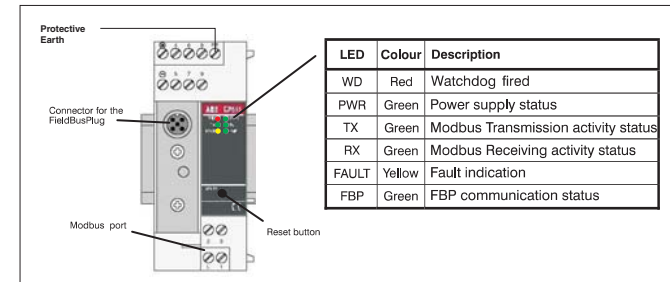
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## Installation Instructions

This document describes the installation, use and disinstallation procedures of EP010 program further named as program.

For more information see document. n.1SDH000510R0001.

### 1 Description



**Figure 1. Terminals, indicators and operating elements on the front plate**

#### TERMINAL NAME MODBUS CABLE

L (left)	A
1 (right)	B

**Table 1. Modbus port terminals**



Total length of the Modbus cable from EP010 to connected device has to be less or equal to 1 m.

Power supply (24V DC) for EP010 comes from the FBP.  
 Connected Modbus device, however, must be independently powered.  
 Protective Earth (PE) must be connected to earth.  
 Suitable ABB field bus plug types

DeviceNet	yes
PROFIBUS DP	yes

Connected device communication parameters have to be:

<b>Slave Address</b>	<b>247 (0xF7)</b>
<b>Baudrate</b>	<b>19200</b>
<b>Parity</b>	<b>Even</b>
<b>Stop bits</b>	<b>1</b>
<b>Addressing Type (where applicable)</b>	<b>Standard</b>

Table 2. Device communication parameters



Installation and maintenance have to be performed according to the technical rules, codes and relevant standards e.g. EN 60204 part 1 by skilled electricians only.

## 2 Replacement of a defective EP010

A defective EP010 can be replaced without any problems. After disconnecting Modbus cables and the FieldBusPlug, the EP010 can be dismantled and replaced.



Remember that the address associated to the device via the EP010 is stored into the FBP. Therefore, after installation, the new EP010 takes on the same address as the replaced one.

## 3 Mechanical Data

Mounting on DIN rail	according to DIN EN 50022-35
	The DIN rail is positioned aligned between the top edge and the lower edge of the unit.
Width x Height x Depth	36 x 90 x 62 mm
Conductor cross section	max. 2.5 mm <sup>2</sup>
Weight	0.102 kg
Dimensions for mounting	refer to the following figure

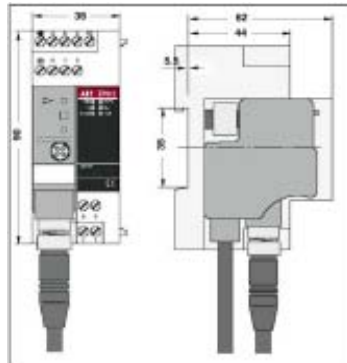


Figure 2. Dimensions for mounting

## 4 Start-up

At power up or after a reset, beginning with all the LEDs switched OFF, a diagnostic process starts and the following sequence is performed:

Step	LED	Colour	ON
1	WD	Red	Power-on
2	RX	Green	RAM and Code Tests passed
3	FBP	Green	External clock ready
4	FAULT	Yellow	Diagnostic completed
5	TX	Green	Ready

Table 3. Start-up LEDs sequence

Then all LEDs stay ON for about 500 ms. After this time:

1. all the LEDs are switched OFF
2. the WD LED flashes a number of times depending on the device that can be connected on the Modbus Port
3. the EP010 enters in Run state.

The total start-up time is less than 3 [s].

## 5 Run State

The table reports the normal behaviour of LEDs in this state.

LED	Colour	ON	OFF	GENERIC FLASHING
PWR	Green	FBP connected	FBP disconnected (1)	
WD	Red	Watchdog expired		
TX	Green		FBP doesn't communicate with EP010	FBP communicates AND Modbus query to PU sending
RX	Green		FBP doesn't communicate with EP010 OR no response from PU (if TX flashes)	FBP communicates AND Modbus response from PU receiving
FAULT	Yellow			See section 6
FBP	Green		FBP doesn't communicate with EP010	FBP communicates with EP010

Table 4. Normal LEDs behaviour

(1) If the FBP is disconnected, the EP010 is powered off. After a failure has been detected and signalled, the FAULT LED continues flashing until:

1. the FBP is communicating with the EP010 (and then the EP010 is communicating with the device using the Modbus port) and the fault is removed OR
2. the EP010 is power off (i.e. the FBP is disconnected) or reset.