

Dynamic P1 Balancer eDPB



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Installation manual
 Technical guidance

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1. INTRODUCTION

1.1 Scope

This manual is applicable to eDPB v1.0, a device which interfaces to the P1 port of a smart meter and transforms the data and makes it available on its Modbus slave interface to be read out via a Modbus RTU. This document describes the specifications, installation and operation of the product. Please read this document carefully before installation and operating. The most recent version of this manual and specific config settings can be found on www.enovates.com/downloads/.

1.2 Target group

The installation and the operation of this device and any maintenance must be carried out by a qualified person in accordance with specific local standards and safety regulations.

1.3 Intended usage

The eDPB is only to be used in combination with a smart meter with P1 output and shall operate within the specified values only. Further, this eDPB is compatible with following Enovates charging stations/platforms:

- SWB 4XX and variants
- PRO 4XX and variants
- Ewall (single and three phase)

In case of doubt of compatibility, contact Enovates first.

1.4 Used symbols

Following symbols are used in this document and/or are marked on the product:

	Alternating current
	Three-phase alternating current
	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION
	Caution, possibility of electric shock
	Caution

1.5 Safety precautions:

Always adhere to the following checklist:

1. Only qualified personnel or licensed electricians should install the Enovates eDPB.
2. Follow all applicable local and national electrical and safety codes.
3. Install the eDPB device in an electrical enclosure (panel or junction box) or in a limited access electrical room.
4. Before applying power, check that all the wires are securely installed by tugging on each wire.
5. Do not install the eDPB where it may be exposed to temperatures below -25°C or above 75°C, excessive moisture, dust, salt spray, or other contamination. The device requires an environment no worse than pollution degree 2 (normally only non-conductive pollution; occasionally, a temporary conductivity caused by condensation must be expected).
6. Do not drill mounting holes in the device. Click the module on a DIN Rail instead.
7. If the eDPB is installed incorrectly, the safety protections may be impaired.

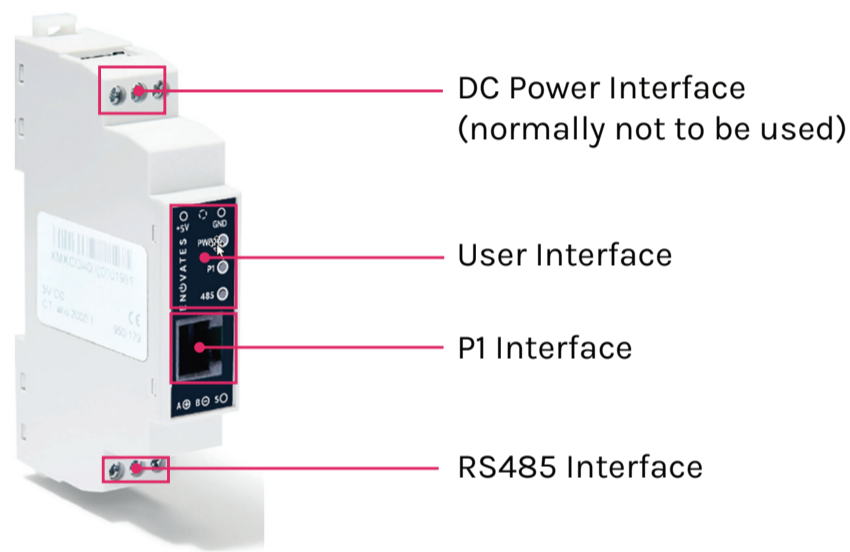
2. TECHNICAL DESCRIPTION

2.1 General description

The Enovates eDPB device is a device which interfaces to the P1 port of a smart meter and transforms the data and makes it available on its Modbus slave interface.

It has following interfaces:

- +5V DC Power Interface (normally not to be used, as power comes from smart meter through P1 port)
- User Interface
- P1 Interface
- RS485 Communication Interface (Modbus slave)



The eDPB is connected via an RJ12 connection to the P1 port of a smart meter. The device is powered by the +5V of the P1 port of the connected smart meter. If not available the eDPB can optionally be powered by an external adapter connected to the DC power interface.



3. TECHNICAL SPECIFICATIONS

3.1 Form factor

Housing	DIN 43880 / 1 unit
Dimensions	90 x 18 x 65mm

3.2 Environmental conditions

Protection class	II
Operating temperature	-25 °C - +75 °C
Storage temperature	-40 °C - +85 °C
Relative humidity	< 75 % year's average at 21 °C < 95 % less than 30 days/year, at 25 °C
Pollution Degree	2
Altitude	< 2000m
Application area	Residential, Indoors in suitable meter cabinet

3.3 DC Power Interface (optional)

Only use the DC power interface if the eDPB is not powered via the P1 port of the smart meter (See also cable specification 3.4)



Use SELV power supply only!
Risk of serious injuries or death and/or at least product damage!

Connector	Screw terminal connector for 0V and +5V DC
Voltage range:	5V DC, -10%, +10%
Max current consumption:	50 mA
Max cable length:	3 meter
Cable location:	indoor + outdoor
Reverse polarity protection:	yes

3.4 P1 Interface

Protocol	P1 protocol conform DSMR4.2/DSMR5 (NL) and eMUCS (BE)
Max cable length:	3 meter
Cable location:	indoor
Connector	RJ12 - 6 pin
Pin definition	

Pin #	Signal name	Description	Remark
1	+5V	+5V power supply	Power input for eDPB device
2	Data Request	Data Request	Output for eDPB device
3	Data GND	Data ground	
4	n.c.	Not connected	
5	Data	Data line	Input. Current source PU.
6	Power GND	Power ground	

3.5 P1 Cable Specifications

For installations, the RJ12 6P6C cable delivered in the same box as the eDPB should be used. Please note this is a crossed cable.

3.6 Modbus Interface

Connector	Screw terminal connector for A, B and Shield
Bus termination	120 Ohm, switchable on (= default)/off
Protocol	Modbus RTU over RS485
Max cable length:	100 meter
Cable location:	indoor + outdoor
Baud rate	9600

3.7 Modbus Cable Specifications

Preferably armored twisted pair with drain wire. Section 0,20 ... 0,50 mm².
Example of cable type: Belden 3107A

3.8 User Interface

3.8.1. Power indicator LED

The PWR LED is a yellow LED that will light up from the moment the eDPB device gets power.

If after installation, the LED doesn't light up you should check the connection with the smart meter or the mains power if you use a power adapter.

3.8.2. P1 port indicator

The P1 port indicator LED is a green LED that will light up if a correct P1 message is received from the smart meter. For this it is necessary that the eDPB device is connected to the smart meter.

3.8.3. Modbus indicator LED (485)

The Modbus indicator LED is a red LED that gives an indication that the eDPB device has received a read request from a Modbus RTU master.

3.9 Screw terminals

- Max. wire section: 2.5mm² / 14 AWG
- Wire stripping: 7 mm
- Tightening torque: 0.5 Nm

4. INSTALLATION INSTRUCTIONS

4.1 Guidelines for safety and installation



This installation guide must be consulted in all cases when manipulating parts which are marked with the Caution symbol.
The installation and the operation of this device and any maintenance must be carried out by a qualified person in accordance with specific local standards and safety regulations.

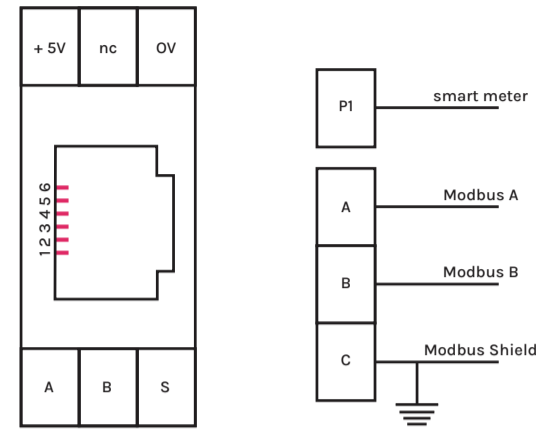
Failing to obey the "Guidelines for safety and installation", the guarantee no longer applies.

4.2 Mounting

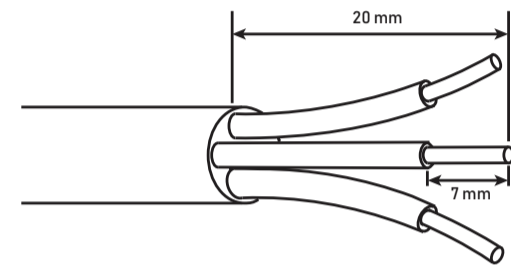
Mount the device in a DIN rail cabinet.

4.3 Electrical wiring

Note: +5VDC not to be used as power for device comes normally via P1 port



4.4 Wire stripping



4.5 Notes



The Modbus Shield must only be connected at the eDPB side and not at the Modbus master side. The Modbus Shield connection is also connected to the protected earth of the building.

5. OPERATING INSTRUCTIONS

After installation and applying DC power the device starts automatically and puts its request line high to get a P1 message from the smart meter. The P1 message is converted and stored in the defined Modbus registers.
A connected Modbus master (= charging station) can request these values by reading the corresponding Modbus registers.

The eDPB device gives visual feedback by its 3 Status Indicators:

5.1 PWR - POWER Status LED - Yellow LED

Not lit: eDPB device is not powered
Lit: eDPB device is powered

5.2 P1 - P1 Status LED - Green LED

Not lit: no valid P1 data received from the smart meter within the last minute
Lit: P1 data received with correct CRC

5.3 485 - Modbus Status LED - Red LED

Not lit: no data received within the last 6 minutes.
Blinking: data received, but no valid* Modbus request received within the last minute
Continuously lit: valid* Modbus request received within the last minute
Valid* = CRC verified frame for own address

6. CLEANING

Clean the unit with a slightly damp cloth and mild detergent.

7. LIFTING AND CARRYING

Use care when lifting and carrying the product.

8. MAINTENANCE AND SERVICE

There are no serviceable parts inside.