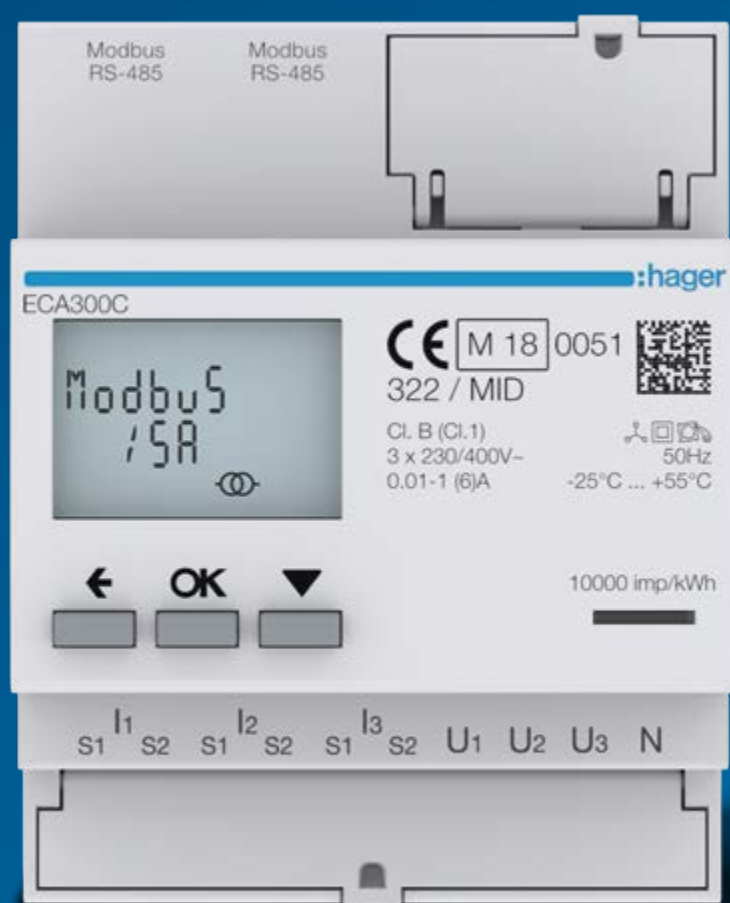


Metering solutions

Track,
communicate,
optimise



:hager

Editorial

Your relationship with energy is going to change

Welcome to the smart, connected, and efficient tertiary building.

With metering solutions designed by Hager, you can access precious information. Your relationship with energy will change. You can track your building's energy consumption and gain better control. Detect an anomaly on the network. Control equipment remotely. Predict consumption and be in a better position to negotiate your electricity contract.

In a restrictive energy context, marked by the arrival of new environmental standards specifically [IEC 60364-8-1](#) and energy costs that have risen by **40% in fifteen years**, these measurement tools, designed to facilitate savings and optimisation, will leave you well positioned.

Truly interactive control panels, adapted to changes in the regulatory framework and to new consumption habits, Hager metering solutions will reinvent how you use your electrical installations.

Modbus
RS-485

Modbus
RS-485

ECA300C

hager



CE M 18 0051

322 / MID

Cl. B (Cl. 1)
3 x 230/400V-
0.01-1 (BA)

50Hz
-25°C ... +85°C

1000 Imp/kWh



I_1 I_2 I_3 U_1 U_2 U_3 N
S1 S2 S1 S2 S1 S2

Summary

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Simple and advanced metering

Understanding the difference

A number of important parameters must be taken into consideration when looking at meters. These are crucial factors to understand when choosing the right level of performance for your system and the desired level of control.

Simple metering

Simple metering consists of recording energy consumption, expressed in kWh. Also referred to as apparent energy, this is the consumption that is indicated on energy bills from electricity suppliers. The voltage (V), current (I) and also the active power (W), which are the components of apparent energy, can also be associated with this consumption.

Advanced metering

Advanced metering consists of recording and displaying parameters relating to the quality of the energy (the network efficiency) in addition to the simple metering data. It includes parameters such as reactive power, apparent power or Cos Phi. Energy meters are used for this application. For a more detailed analysis of the derivatives of an electrical supply network, advanced metering provides you with additional parameters, such as the voltage harmonics and current harmonics in all phases and in neutral. To measure the harmonics, a measurement unit is required.



Complete metering solutions to take measurements across all levels of your electrical installation.

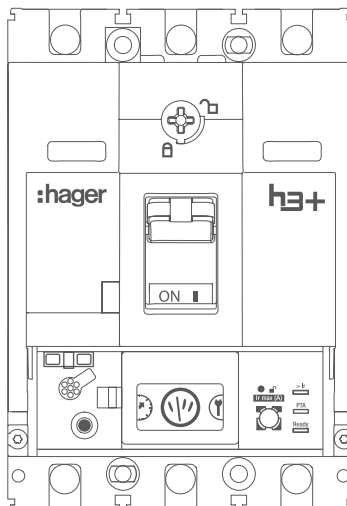
Direct metering

Metering solution dedicated to measuring modular sub-feeds, single phase or three phase, up to 125 A.



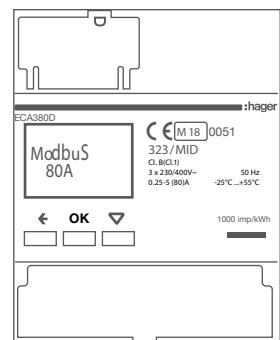
Metering integrated in a moulded case

Integrated, compact measurement solution, designed to ensure perfect integration in your systems, including your submetering incomer and feeder protection devices.



Indirect metering

Metering solutions enabling remote measurement on bus bars via current transformers. A solution adapted to procedures on installations requiring continuity of service and reduced maintenance times.



Simple or advanced meters: functions and utilisation

Reactive power (Q)

Reactive power (Q), expressed in var, is the power generated by the reactive consumers of a circuit. These are either capacitors (from the capacitive consumers range) or coils (from the inductive consumers range).

Reactive power can impair the performance of an electrical network. This results in calorific energy, synonymous with energy losses. It's worth remembering that, beyond a certain threshold, reactive power is measured and taxed by electrical energy suppliers, because it affects the overall performance of their network. This is why it is crucial to identify and control the reactive power in your electrical network.

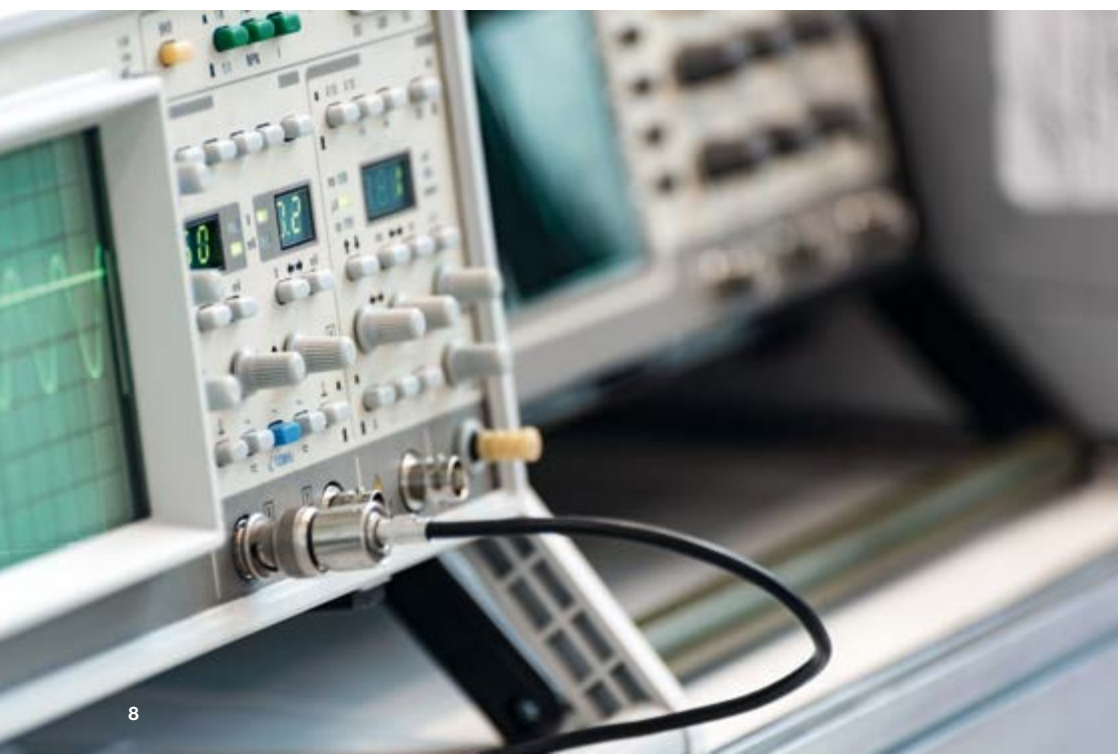
Don't forget that the greater the reactive power, the more apparent power you will draw from your electricity supplier, compared to the same demand for active power.

Energy (E) and power (P)

Power P, expressed in kilowatts (kW) is the product of the voltage in a circuit multiplied by the current circulating through it at a given time. It differs from energy, expressed in kWh, which in turn represents a quantity of energy accumulated over a period of one hour. It is this energy that is invoiced by the electricity supplier, while the power corresponds to the maximum permitted by the electricity supply contract.

Active power (P)

Active power (P), expressed in watts, is the power available at a time T to supply a network consumer.



Cos Φ

Cos Phi is the coefficient of performance based on the angular phase shift between an alternating circuit's voltage and current. Ideally, it should be around 1, because this indicates that the phase shift angle between voltage and current is low. The power lost in the network is low in this case. This lost power, called reactive power, is generated by inductive or capacitive non-resistive loads in an electrical network. One way of absorbing these derivatives of Cos Φ is to install capacitor banks sized according to the capacitors present in the electrical network.

Harmonics

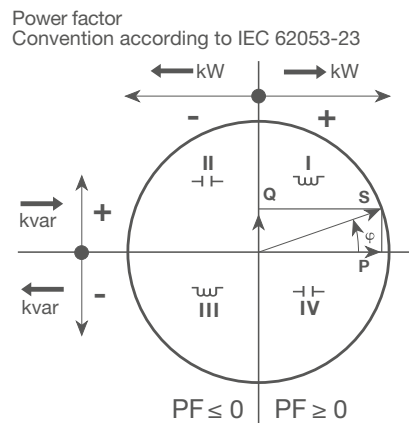
In France, the current circulates at a fixed oscillation frequency of 50 Hz in every electrical network with an alternating current. In order to maintain the most regular sinusoidal signal possible, this oscillation must remain constant. Yet the network supplies some consumers that are operating with direct current. So, the signal must be transformed via an AC/DC supply. These transformation processes are not without consequence in terms of keep the frequency stable. The resulting frequency distortions are called harmonics. They can occur on the voltage signal, the current, in every phase, between phases or between a phase and neutral. Physically, harmonics translate into disturbances on the line, such as interference, an increase in noise and a reduction in the overall performance, as well as heating. In the end, this can also result in disturbances in operation and the tripping of electrical protection devices in an installation. To limit the harmonics, it is important to identify their origin so that the right remedial devices can be installed, such as active or passive filters.

Energy import/export

In an electrical installation, it is generally accepted that the voltage and current are positive, since the loads present in a circuit consume power while they are working. However, some inductive loads can, in certain situations, see their current and voltage become negative. When the voltage and current are positive, we refer to imported energy. Conversely, if they are negative, we talk about exported energy.

It is possible to have a positive quantity and a negative quantity: in this case, measurement is on all four quadrants.

This reaction is possible if one of the two sinusoidal curves of the voltage or current is out of phase with the other.



Apparent power (S)

Apparent power (S), expressed in VA, is the total power that can be supplied by a network or a consumer. In France, it is this power that is taken as the reference for all electricity contracts, because it consists of the active power (i.e. the used power) and the reactive power (i.e. the generated power).

Creating your metering plan

A key stage in finding the right solution

Introduction

The energy metering plan is an operational and control tool for your building. It is based on measurement systems that provide indicators. Thanks to this, you can track the energy consumption of your building: log, events, discrepancies, etc. It also allows you to create a log of the building's consumption and events.

These indicators are of the utmost importance, because they must enable you to answer these fundamental questions:

- is the building consumption justified?
- is the energy being used correctly?
- are there potential gains to be made from the energy installations in the building?

In conclusion

Creating a good metering plan means analysing the equipment currently used in the building and having a clear vision of what you wish to achieve as an energy target. It also means positioning appropriate measurement devices in the right locations to provide the information required for this vision and energy targets. Finally, it means regularly monitoring the installations and checking the information collected, in order to carry out corrective action if necessary.

How to create a good metering plan

To understand the actual needs of a building, you must not only identify usage but also record indicators that will enable you to optimise your measurements and monitoring.

01

Begin by creating an energy report for the installations, on a theoretical basis (based on available energy bills as well as any meters already installed).

02

Identify the usage of the installation and its consumers by creating a summary of the installation's energy processes.

03

Identify the factors influencing the variation in consumption, which will then be included in the performance monitoring indicators for the installations. At the same time, define the level of detail of the data desired and required for good data analysis.

04

Once the monitoring criteria have been identified, you can select the meters to be installed or, in the case of an existing installation, reused, in order to supply the performance monitoring tables with data. The number and type of meters, as well as their positioning in the installation, will depend on the level of detail required for the information.



Smart metering is it crucial for my installation?

Do I need to choose smart electricity meters or can I do without them?

The answer is pretty simple. If there are meters in an installation, they are there to provide information on the systems of the installation at the right time and to the right people. In the case of simple metering, used only for monthly tracking of changes to energy consumption, manual data recording could be an option for reporting information in performance monitoring tools for small installations with few meters.

If the data recording frequency is greater or if there are more meters or they are used to monitor the quality of the energy, it will be more practical and quicker to use smart meters, with a corresponding energy manager.

It is important to note that it makes no sense for some of the meters in the same installation to be installed in smart versions while others are installed in standalone versions, since the smart meters can be operated remotely while the others require manual data recording.



Choosing your communication technology

Before considering the additional cost represented by a smart meter, you must identify the actual requirement in terms of the quantity of information to be collected, the required level of reliability of the communication and, finally, the environment in which the meter will be installed.

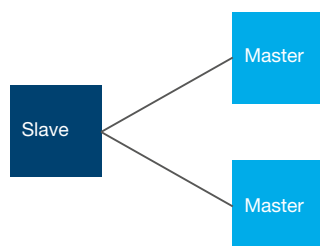
The last question to consider is whether the data requirement will differ between measurement points or whether it will stay the same. If there is a possibility that the requirement may change, it would be advisable to choose a smart meter, in order to enable a change of hardware in the future.

	Simple metering (kWh)	Quality of simple energy	Quality of complete energy	Reliability of communication	Installation distance
Pulse	x			Average	A few metres
KNX		x		Good	350 m from the supply point
M-bus		x	x	Good	1000 metres
Wired connection Modbus RS485 RTU		x	x	Good	1200 metres of cable between the transmitter and the receiver, in Modbus cable

The details of the communication networks

Pulse meters

Parallel wiring, point to point



Advantages

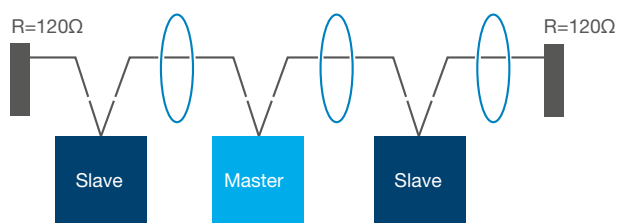
- Easy to install,
- No programming required.

Disadvantages

- 1 single piece of information can pass along a Pulse line. For 2 pieces of information, 2 Pulse lines would be required,
- Not possible to check if the data is being transferred properly.

Modbus RTU RS485 meters

Wiring in series/parallel (no branches!)



Advantages

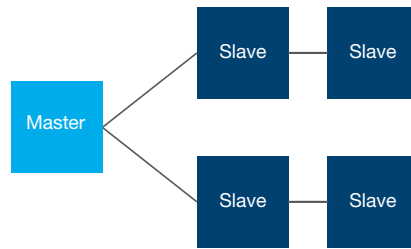
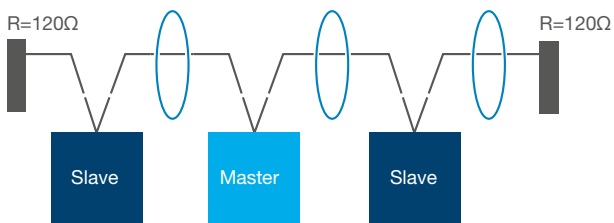
- Confirmation of receipt of the information sent,
- Native function for checking errors in data frames,
- Maximum distance of 1200 metres,
- Maximum flow of 38,400 bauds, depending on the number of participants and the quantity of data in transit.

Disadvantages

- Requires programming,
- Limited to 31 participants over 1200 metres,
- Sensitive to the quality of the wiring.

M-bus meters

Wiring in parallel, star-type, cluster



Advantages

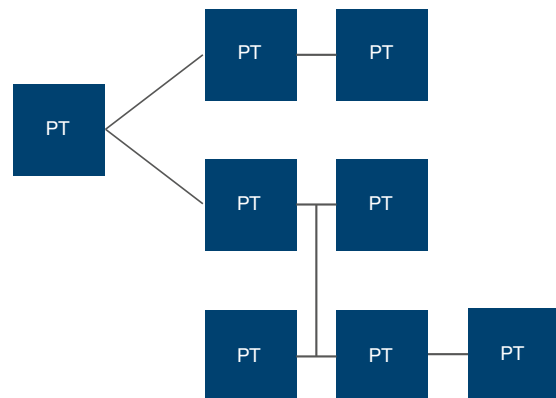
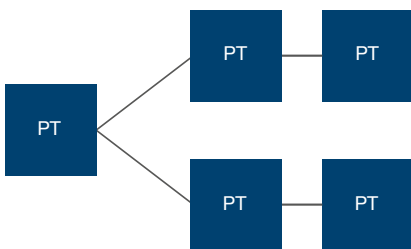
- Confirmation of receipt of the information sent,
- Maximum transmission speed of 9600 bauds,
- Up to 64 participants over 1000 metres of line,
- Available on wired, Ethernet and radio basis.

Disadvantages

- Requires a specific programming tool.

KNX meters

Wiring in line, star-type, cluster



Advantages

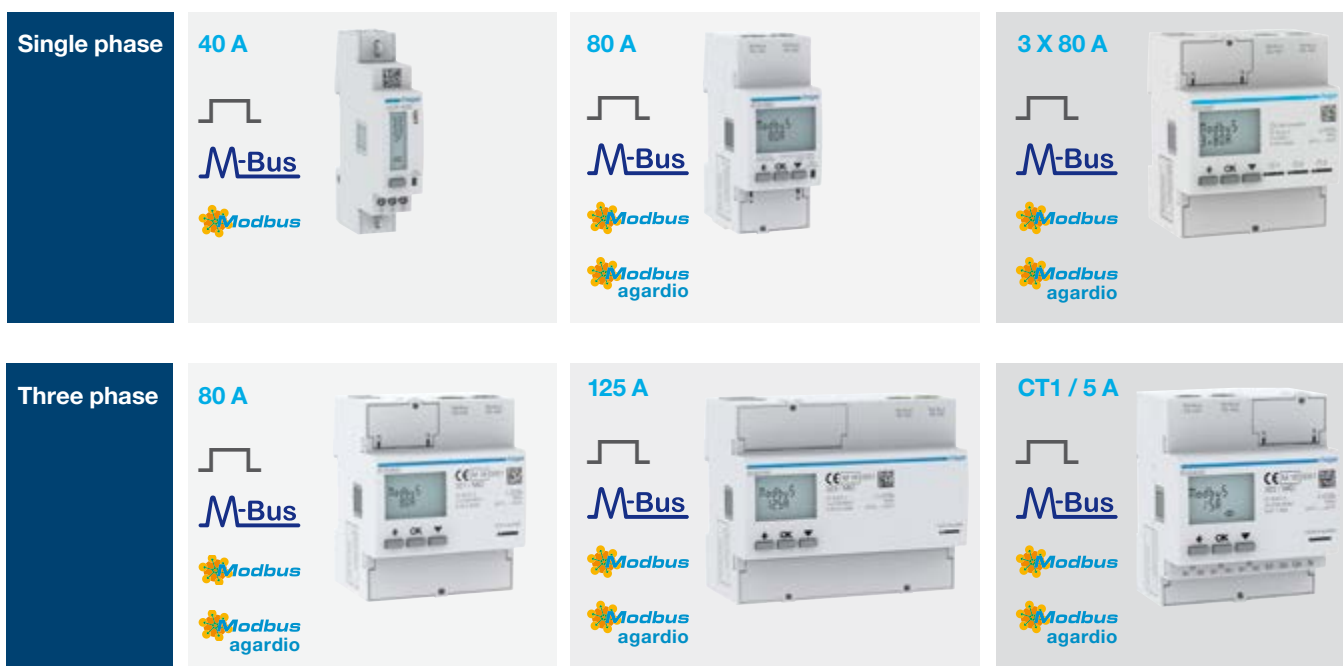
- Continuity of the KNX standard,
- Variety of products communicating in KNX,
- Ease of programming,
- Up to 64 participants over a maximum 1000 metres of line.

Disadvantage

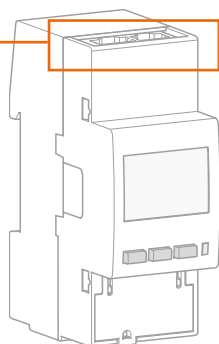
- Requires a specific programming tool

Our new range: straightforward, modern solutions

A complete solution, which allows you to save space in your installation and to be connected, regardless of the measurement rating.

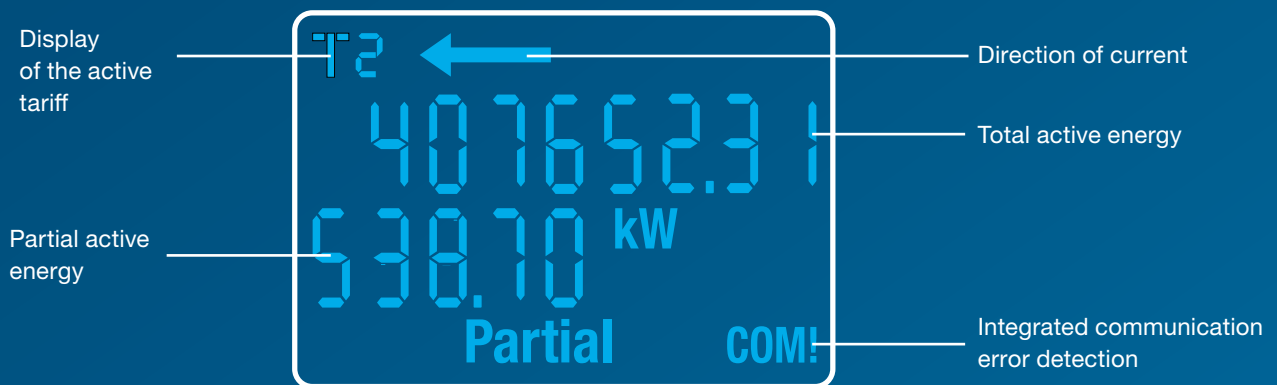


Modbus on RJ45 for agardio versions



Easy to wire with Hager products

Simple and intuitive menus



The same level of functionality for all meters

All Hager meters enable the recovery of the following data:

- Voltage,
- Current,
- Frequency,
- Power factor,
- Active energy and power.

If required by the ratings, it is possible to also measure more advanced parameters, such as the reactive and apparent power and energy measurements, as well as measuring the energy discharged in the network (exported energy).

All this information is saved by an internal memory in the meter.

New meters, benefits for everyone



Panel builders

Quick and reliable assembly

- Quick connection,
- Compact products,
- Optimisation of the number of meters.

Installers

Quick and easy configuration

- Easy adjustment,
- Same interface on all meters,
- Simple offer with all embedded functions.



Facility managers

Manage consumption, ensure network quality, compliance with standards and developments

- Optimisation of congestion and the number of meters in the panel,
- Simple and legible offer,
- Range compatible with the agardio.manager ecosystem,
- MID-certified products allowing for compliance with ISO 50001.



Integrators

Time saved during installation

- Range of smart meters,
- Optimisation of addresses,
- Ease of integration.

Overview of the range



Reference	ECx140D	ECx180D	ECx180T
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Selection criteria

Connection	Single-phase 40 A direct	Single-phase 80 A direct	Single-phase 80 A direct (3 track)
Supply voltage	230 V AC	230 V AC	230 V AC
Maximum current I _{max}	40 A	80 A	3 x 80 A
Accuracy class, active//reactive energy	Cl.1/-	Cl.1/Cl.B//Cl.2	Cl.1/Cl.B//Cl.2
Max. permissible transformer rating	-	-	-
MID certification, required for use in re-invoicing	MID except ECN140D	MID	-

Connectivity

No communication	ECN140D	-	-
Pulsed communication	ECP140D	ECP180D	ECP180T
M-bus series communication	ECM140D	ECM180D	ECM180T
RS485 series communication	ECR140D	ECR180D	ECR180T
agardio Modbus communication	-	ECA180D	ECA180T

Functions and values recorded by the product

Current	• except on ECN140D	•	•
Voltage	• except on ECN140D	•	•
Power factor	• except on ECN140D	•	•
Frequency	• except on ECN140D	•	•
Active power	• except on ECN140D	•	•
Reactive power	-	•	-
Apparent power	-	•	•
Active energy	•	•	•
Reactive energy	-	•	•
Partial resetting of consumption measurements	-	•	•
Energy import/export	• except on ECN140D	•	•
Tariff control	-	•	•
Number of tariffs managed by: physical input/communication	ECN = 1/0 ECP = 1/0 ECM = 1/2 ECR = 1/8	ECP = 2/0 ECM = 2/2 ECR = 2/8 ECA = 1/8	ECP = 2/0 ECM = 2/2 ECR = 2/4 ECA = 2/4
I/O function	• except on ECN140D	depending on version	•
Configurable I/O function	-	depending on version	•
Tariff control by physical input	-	• except ECA180D	•
Tariff control by communication system	depending on version	depending on version	depending on version
Saved by internal memory	•	•	•

Single phase direct 40 A range



The main functions

- Single phase 40 A energy meter in direct reading,
- MID-certified as standards,
- Advanced metering, (sub-feeds and direct feeds).

Basic functions

- Active energy,
- Active power,
- Voltage,
- Current,
- Power factor.

Specifications

40 A meter intended for sub-metering for tertiary and residential applications. Available with a large communications panel (Pulse/Modbus/M-bus), it enables the metering structure to be adapted to any new or existing installation. Available with a large communication panel (Pulse / Modbus / M-Bus), it enables the metering structure to be adapted to any new or existing installation while providing essential information for the analysis of the energy consumption and quality of the sub-feeds. Data is saved in the internal memory, enabling continuity of information to be guaranteed, even after a network failure.

- 01 Sealable enclosures supplied as standard providing safety,
- 02 Pre-addressed product for improved integration in agardio.manager,
- 03 Modbus and M-Bus smart versions,
- 04 Available in MID or non-MID version.

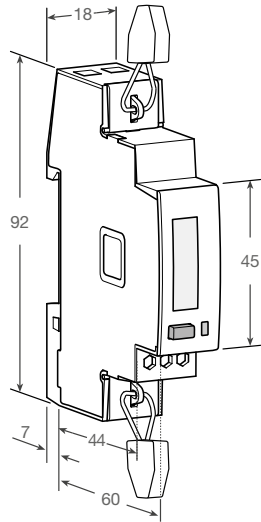
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
230 V AC	Direct	40 A	-	1 ■	1 pcs	ECN140D
230 V AC	Direct	40 A (MID)	Pulse	1 ■	1 pcs	ECP140D
230 V AC	Direct	40 A (MID)	M-bus	1 ■	1 pcs	ECM140D
230 V AC	Direct	40 A (MID)	Modbus	1 ■	1 pcs	ECR140D

Function selection guide

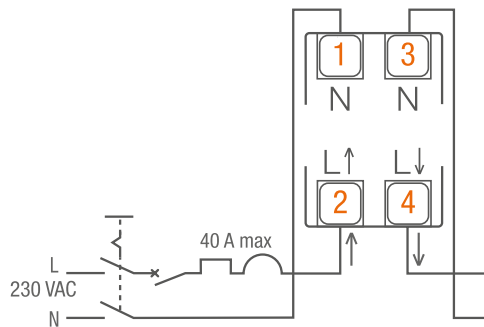
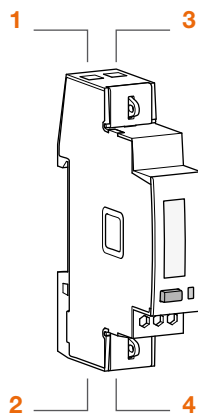
Reference	ECN140D	ECP140D	ECM140D	ECR140D
Current	-	•	•	•
Voltage	-	•	•	•
Power factor	-	•	•	•
Frequency	-	•	•	•
Active power	-	•	•	•
Reactive power	-	-	via com	via com
Apparent power	-	-	via com	via com
Active energy	•	•	•	•
Reactive energy	-	-	via com	via com
Partial resetting of consumption measurements	-	-	-	-
Energy import/export	-	•	•	•
Tariff control	-	-	•	•
Number of tariffs managed by: physical input/com	1/0	1/0	0/2	1/8
I/O function	-	•	-	-
Configurable I/O function	-	-	-	-
Programming of the max. demand threshold	-	-	-	-
Management of harmonics	-	-	-	-
Alarm function	-	-	-	-
Minimum / Maximum demand	-	-	-	-
Tariff control by physical input	-	-	-	-
Tariff control by communication system	-	-	•	•
Saved by internal memory	•	•	•	•

Single phase direct 40 A range

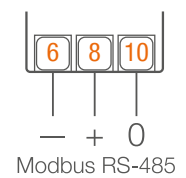
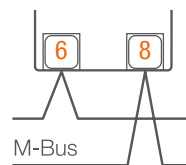
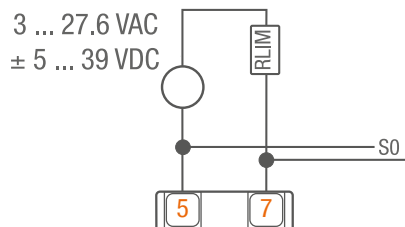
Dimensions



Power wiring



Communication wiring



Technical specifications

Ref.	Single-phase direct 40 A			
	ECN140D	ECP140D	ECM140D	ECR140D
Nominal voltage	1 x 230 V			
Voltage range	184 V - 276 V		92 V - 276 V	
Frequency	45...65Hz			
General information				
MID-certified product	-	MID, Class B		
Consumption of voltage circuits in VA/W	≤2/≤1			
Consumption of current circuits in VA/W	≤1			
Basic current I _b	5 A			
Reference current I _{ref}	5 A			
Transition current I _{tr}	0.5 A			
Maximum current I _{max}	40 A			
Minimum current I _{min}	0.25 A			
Starting current	0.02 A			
Cable cross-section for the measurement circuit	- rigid - flexible	1.5 - 20 mm ² 1 - 20 mm ²		
Power terminals tightening torque	1 Nm			
Energy accuracy class	active Class 1/reactive -			
Measurement accuracy in %	active/reactive 1%			
Type of display	LCD (without backlighting)			
Product material	Plastic			
Electrical protection device	Protected by a 40 A single-phase fuse (x1)			
Input characteristics				
Number of inputs	-			
Voltage	-			
OFF = T1	-			
ON = T2	-			
Cable cross-section	-			
Tightening torque	-			
Pulse output specifications				
Number of outputs	-	1	-	-
Max. pulse current 39 V DC	-	90 mA	-	-
V AC/V DC voltage	-	3-27.6/±5-39	-	-
Frequency of pulse output	-	1000 p/kWh	-	-
Pulse duration	-	100 ms	-	-
Cable cross-section:	- rigid - flexible	1.5 - 2.5mm ² 1 - 2.5mm ²	-	-
Tightening torque	-	0.5 Nm	-	-
Communication output specifications				
Protocol	-	-	M-bus	Modbus RTU
Type of connector	-	-	Screw terminals	
Cable cross-section	-	-	0.8 - 2.5mm ²	
Tightening torque	-	-	0.5 Nm	
Pulse indicator (front panel LED)				
Pulse frequency	5000 p/kWh			
EMC compatibility				
Surge voltage test	6 kV			
Overvoltage test	4 kV			
Environmental data				
Operating T°	-25...+55 °C			
Storage T°	-25...+70 °C			
Humidity	≤ 95% to 20 °C			
Resistance to fire/heat	V0			
Resistance to water/dust, installed/not installed	IP40/IP20	IP51 /IP20		
Mechanical environment	M1			
Electromechanical environment	E2			
Dimensions L x H x D	18 x 92 x 60			
Number of DIN modules	1 ■			
Standards	EN 50470-3, CEI 62053-21/23, CEI 61557-12, DIN 43880, EN 60715			
	-	EN 50470-1		-
	-	IEC 62053-31	-	-

Single phase direct 80 A range



The main functions

- Single phase 80 A energy meter in direct reading,
- MID-certified as standard,
- Advanced metering, (sub-feeds and direct feeds).

Basic functions

- Active/reactive energy
- Active/reactive/apparent power
- Voltage,
- Current,
- Power factor
- Partial resetting of consumption
- Tariff management.

Specifications

80 A meter intended for sub-metering for tertiary applications.

Available with a large communication panel (pulse/Modbus/M-Bus), it enables the metering structure to be adapted to any new or existing installation while providing essential information for the analysis of the energy consumption and quality of the sub-feeds.

Data is saved in the internal memory, enabling continuity of information to be guaranteed, even after a network failure.

- 01 Sealable enclosures supplied as standard providing safety,
- 02 Pre-addressed product for improved integration in agardio.manager,
- 03 Modbus and M-Bus smart versions,
- 04 MID-certified.

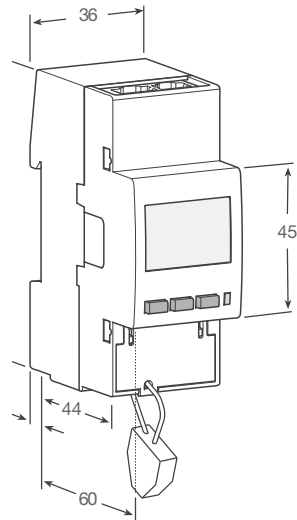
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
230 V AC	Direct	80 A	Pulse	2 ■	1 pcs	ECP180D
230 V AC	Direct	80 A	M-bus	2 ■	1 pcs	ECM180D
230 V AC	Direct	80 A	Modbus	2 ■	1 pcs	ECR180D
230 V AC	Direct	80 A	agardio Modbus	2 ■	1 pcs	ECA180D

Function selection guide

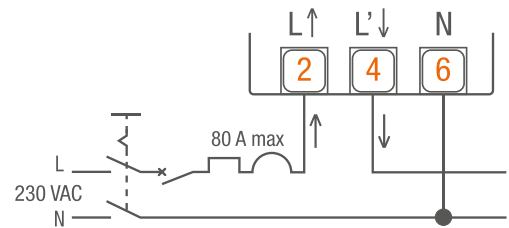
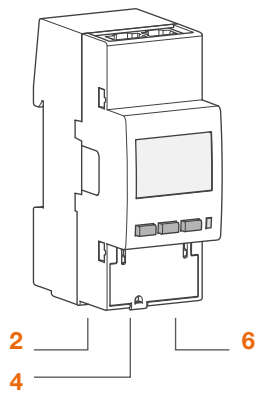
Reference	ECP180D	ECM180D	ECR180D	ECA180D
Current	•	•	•	•
Voltage	•	•	•	•
Power factor	•	•	•	•
Frequency	•	•	•	•
Active power	•	•	•	•
Reactive power	•	•	•	•
Apparent power	•	•	•	•
Active energy	•	•	•	•
Reactive energy	•	•	•	•
Partial resetting of consumption measurements	•	•	•	•
Energy import/export	•	•	•	•
Tariff control	•	•	•	•
Number of tariffs managed by: physical input / com	2/0	2/2	2/8	1/8
I/O function	•	-	-	-
Configurable I/O function	•	-	-	-
Programming of the max. demand threshold	-	-	-	-
Management of harmonics	-	-	-	-
Alarm function	-	-	-	-
Minimum / Maximum demand	-	-	-	-
Tariff control by physical input	•	•	•	-
Tariff control by communication system	-	•	•	•
Saved by internal memory	•	•	•	•

Single phase direct 80 A range

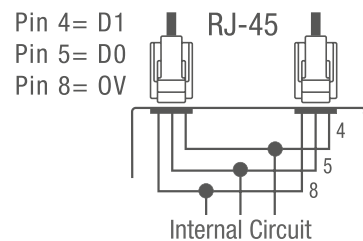
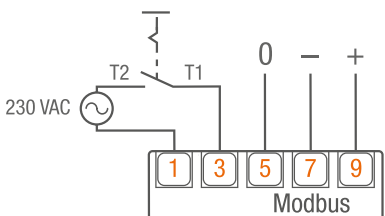
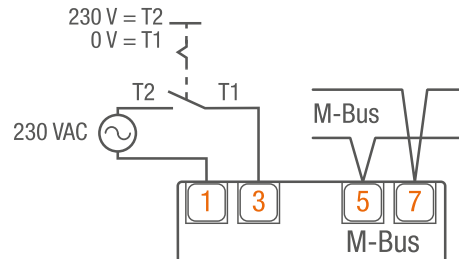
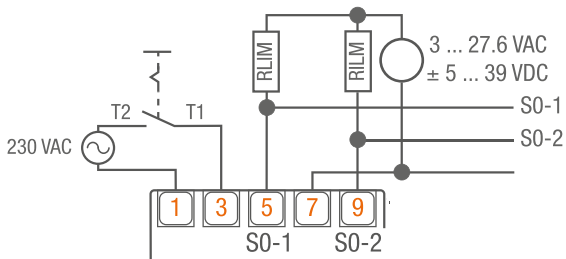
Dimensions



Power wiring



Communication wiring



Technical specifications

Ref.	Single-phase direct 80 A			
	ECP180D	ECM180D	ECR180D	ECA180D
Nominal voltage	1 x 230 V			
Voltage range	92 V - 276 V			
Frequency	45...65 Hz			
General information				
MID-certified product	MID, Class B			
Consumption of voltage circuits in VA/W	≤2/≤1			
Consumption of current circuits in VA/W	≤1			
Basic current I _b	5 A			
Reference current I _{ref}	5 A			
Transition current I _{tr}	0.5 A			
Maximum current I _{max}	80 A			
Minimum current I _{min}	0.25 A			
Starting current	0.015 A			
Cable cross-section for the measurement circuit	- rigid - flexible	2.5 - 33 mm ² 2.5 - 33 mm ²		
Power terminals tightening torque	2 Nm			
Energy accuracy class	active Class 1/reactive Class 2			
Measurement accuracy in %	active 1%/reactive 2%			
Type of display	LCD (backlighting)			
Product material	Plastic			
Electrical protection device	Protected by a 80 A single-phase fuse (x1)			
Input characteristics				
Number of inputs	1			-
Voltage	230 V AC			-
OFF = T1	0 V			-
ON = T2	230 V AC			-
Cable cross-section	1 - 4 mm ² (flexible and rigid)			-
Tightening torque	1 Nm			-
Pulse output specifications				
Number of outputs	2	-	-	-
Max. pulse current 39 V DC	90 mA	-	-	-
V AC/V DC voltage	3-27.6/±5-39	-	-	-
Frequency of pulse output	1-1000 p/kWh	-	-	-
Pulse duration	30-100 ms	-	-	-
Cable cross-section:	- rigid - flexible	0.8 - 2.5 mm ² 0.8 - 2.5 mm ²	-	-
Tightening torque	0.5 Nm			-
Communication output specifications				
Protocol	-	M-bus	Modbus RTU	
Type of connector	-	Screw terminals	RJ45	
Cable cross-section	-	0.8 - 2.5 mm ²	-	
Tightening torque	-	0.5 Nm	-	
Pulse indicator (front panel LED)				
Pulse frequency	1000 p/kWh			
EMC compatibility				
Surge voltage test	6 kV			
Overvoltage test	4 kV			
Environmental data				
Operating T°	-25...+55 °C			
Storage T°	-25...+70 °C			
Humidity	≤ 95% to 20 °C			
Resistance to fire/heat	V0			
Resistance to water/dust, installed/not installed	IP51/IP20			
Mechanical environment	M1			
Electromechanical environment	E2			
Dimensions L x H x D	36 x 92 x 60			
Number of DIN modules	2 ■			
Standards	EN 50470-1/3, CEI 62053-21/23, CEI 61557-12, DIN 43880, EN 60715			
	EI 62053-31	-	-	-

Single phase direct 3 x 80 A range



The main functions

- 1 energy meter for 3 single phase feeds of 80 A in direct reading,
- Advanced metering, (sub-feeds and direct feeds).

Basic functions

- Active/reactive energy,
- Active/reactive/apparent power,
- Voltage,
- Current,
- Power factor,
- Partial resetting of consumption,
- Tariff management.

Specifications

80 A meter intended for sub-metering for tertiary applications.

It is equipped with three 80 A inputs, each enabling the space within the panel to be optimised and information to be sent from three 80 A sub-feeds via 1 single Modbus or M-bus address.

Available with a large communication panel (pulse/Modbus/M-bus), it enables the metering structure to be adapted to any new or existing installation while providing essential information for the analysis of the energy consumption and quality of the sub-feeds.

Data is saved in the internal memory, enabling continuity of information to be guaranteed, even after a network failure.

- 01 Sealable enclosures supplied as standard providing safety,
- 02 Pre-addressed product for improved integration in agardio.manager,
- 03 One single Modbus/M-Bus address for 3 metering points,
- 04 120 Ohm resistor integrated in the Modbus version.

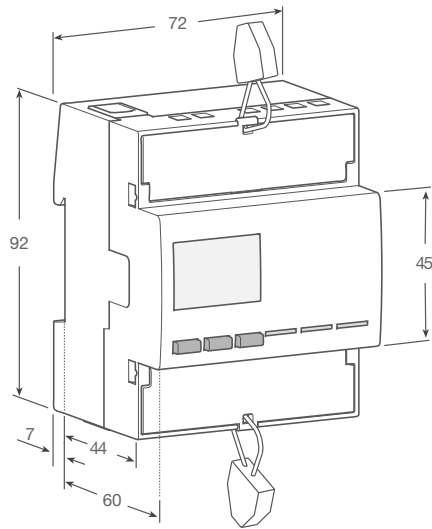
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
230 V AC	Direct	80 A (x3 measurement points)	Pulse	4 ■	1 pcs	ECP180T
230 V AC	Direct		M-bus	4 ■	1 pcs	ECM180T
230 V AC	Direct		Modbus	4 ■	1 pcs	ECR180T
230 V AC	Direct		agardio Modbus	4 ■	1 pcs	ECA180T

Function selection guide

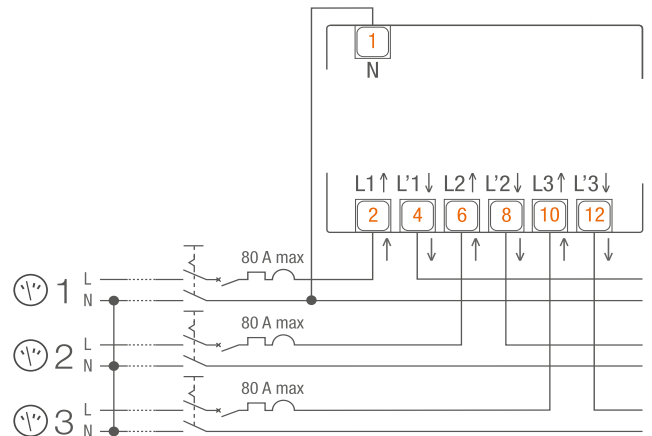
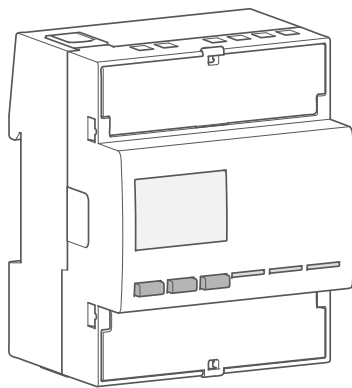
Reference	ECP180T	ECM180T	ECR180T	ECA180T
Current	•	•	•	•
Voltage	•	•	•	•
Power factor	•	•	•	•
Frequency	•	•	•	•
Active power	•	•	•	•
Reactive power	•	•	•	•
Apparent power	•	•	•	•
Active energy	•	•	•	•
Reactive energy	-	-	-	-
Partial resetting of consumption measurements	•	•	•	•
Energy import/export	•	•	-	-
Tariff control	•	•	•	•
Number of tariffs managed by: physical input / com	2/0	2/2	2/4	2/4
I/O function	•	-	-	-
Configurable I/O function	-	-	-	-
Programming of the max. demand threshold	-	-	-	-
Management of harmonics	-	-	-	-
Alarm function	-	-	-	-
Minimum / Maximum demand	-	-	-	-
Tariff control by physical input	•	•	•	•
Tariff control by communication system	-	•	•	•
Saved by internal memory	•	•	•	•

Single phase direct 3 x 80 A range

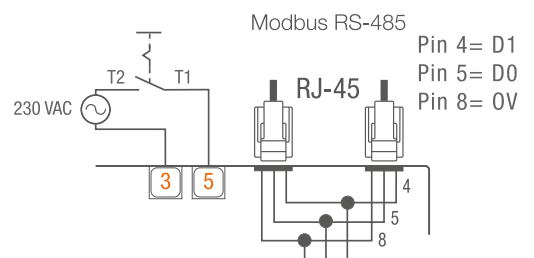
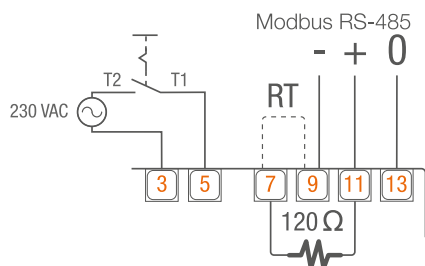
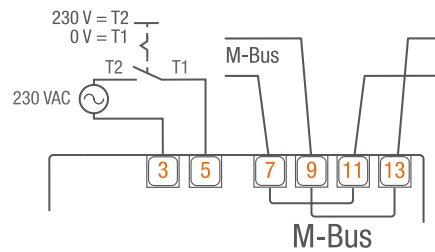
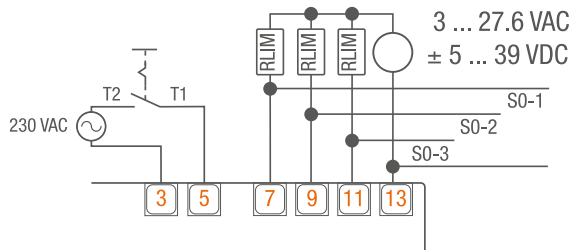
Dimensions



Power wiring



Communication wiring



Technical specifications

Ref.	Single-phase direct 3 x 80 A			
	ECP180T	ECM180T	ECR180T	ECA180T
Nominal voltage	1 x 230 V			
Voltage range	184 V - 276 V			
Frequency	45...65 Hz			
General information				
MID-certified product	-			
Consumption of voltage circuits in VA/W	≤2/≤1			
Consumption of current circuits in VA/W	≤1			
Basic current I _b	5 A			
Reference current I _{ref}	5 A			
Transition current I _{tr}	0.5 A			
Maximum current I _{max}	80 A			
Minimum current I _{min}	0.25 A			
Starting current	0.015 A			
Cable cross-section for the measurement circuit	- rigid - flexible	2.5 - 33 mm ² 2.5 - 33 mm ²		
Power terminals tightening torque	2 Nm			
Energy accuracy class	active Class 1/reactive Class 2			
Measurement accuracy in %	active 1%/reactive 2%			
Type of display	LCD (backlighting)			
Product material	Plastic			
Electrical protection device	Protected by a 80 A single-phase fuse (3 x counters)			
Input characteristics				
Number of inputs	1			
Voltage	230 V AC			
OFF = T1	0 V			
ON = T2	230 V AC			
Cable cross-section	0.8 - 2.5 mm ² (flexible and rigid)			
Tightening torque	0.5 Nm			
Pulse output specifications				
Number of outputs	3	-	-	-
Max. pulse current 39 V DC	90 mA	-	-	-
V AC/V DC voltage	3-27.6/±5-39	-	-	-
Frequency of pulse output	1-1000 p/kWh	-	-	-
Pulse duration	30-100 ms	-	-	-
Cable cross-section:	- rigid - flexible	0.8 - 2.5 mm ² 0.8 - 2.5 mm ²	-	-
Tightening torque	0.5 Nm			
Communication output specifications				
Protocol	-	M-bus	Modbus RTU	
Type of connector	-	Screw terminals	RJ45	
Cable cross-section	-	0.8 - 2.5 mm ²	-	
Tightening torque	-	0.5 Nm	-	
Pulse indicator (front panel LED)				
Pulse frequency	1000 p/kWh			
EMC compatibility				
Surge voltage test	6 kV			
Overvoltage test	4 kV			
Environmental data				
Operating T°	-25...+55 °C			
Storage T°	-25...+70 °C			
Humidity	≤ 95% to 20 °C			
Resistance to fire/heat	V0			
Resistance to water/dust, installed/not installed	IP51/IP20			
Mechanical environment	M1			
Electromechanical environment	E2			
Dimensions L x H x D	72 x 92 x 60			
Number of DIN modules	4 ■			
Standards	EN 50470-1/3, CEI 62053-21/23, CEI 61557-12, DIN 43880, EN 60715			
	EI 62053-31	-	-	-

Three phase direct 80 A range



The main functions

- Three phase 80 A energy meter in direct reading,
- MID-certified as standard,
- Advanced metering (direct feeds).

Basic functions

- Active/reactive energy,
- Active/reactive/apparent power,
- Voltage,
- Current,
- Power factor,
- Partial resetting of consumption,
- Tariff management.

Specifications

80 A meter intended for sub-metering for tertiary applications.

Available with a large communication panel (pulse/Modbus/M-bus), it enables the metering structure to be adapted to any new or existing installation while providing essential information for the analysis of the energy consumption and quality of the sub-feeds.

Data is saved in the internal memory, enabling continuity of information to be guaranteed, even after a network failure.

- 01 Sealable enclosures supplied as standard providing safety,
- 02 Pre-addressed product for improved integration in agardio.manager,
- 03 Modbus and M-Bus smart versions,
- 04 120 Ohm resistor integrated in the Modbus version.

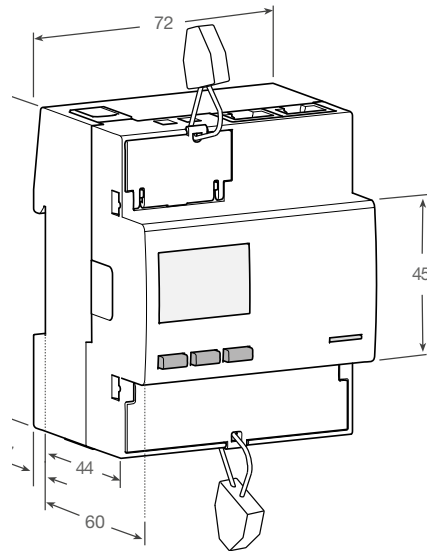
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
400 V AC	Direct	80 A	Pulse	4 ■	1 pcs	ECP380D
400 V AC	Direct	80 A	M-bus	4 ■	1 pcs	ECM380D
400 V AC	Direct	80 A	Modbus	4 ■	1 pcs	ECR380D
400 V AC	Direct	80 A	agardio Modbus	4 ■	1 pcs	ECA380D

Function selection guide

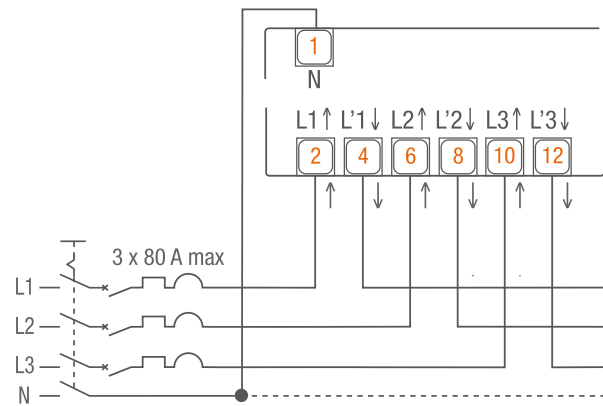
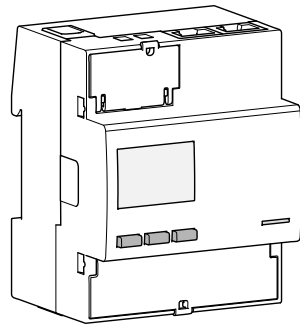
Reference	ECP380D	ECM380D	ECR380D	ECA380D
Current	•	•	•	•
Voltage	•	•	•	•
Power factor	•	•	•	•
Frequency	•	•	•	•
Active power	•	•	•	•
Reactive power	•	•	•	•
Apparent power	•	•	•	•
Active energy	•	•	•	•
Reactive energy	•	•	•	•
Partial resetting of consumption measurements	•	•	•	•
Energy import/export	•	•	•	•
Tariff control	•	•	•	•
Number of tariffs managed by: physical input/com	2/0	2/2	2/8	2/8
I/O function	•	-	-	-
Configurable I/O function	•	-	-	-
Programming of the max. demand threshold	-	-	-	-
Management of harmonics	-	-	-	-
Alarm function	-	-	-	-
Minimum / Maximum demand	-	-	-	-
Tariff control by physical input	•	•	•	•
Tariff control by communication system	-	•	•	•
Saved by internal memory	•	•	•	•

Three phase direct 80 A range

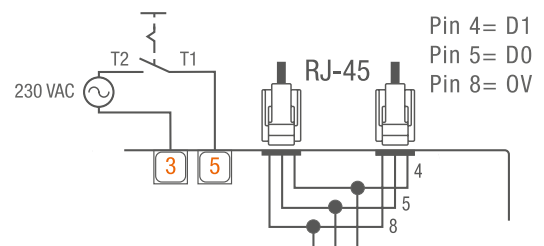
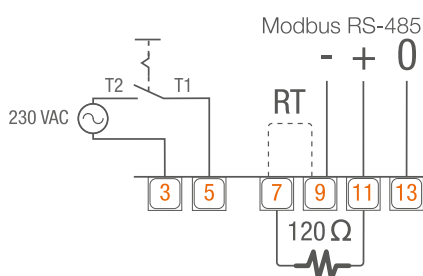
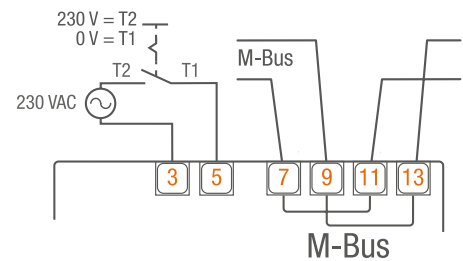
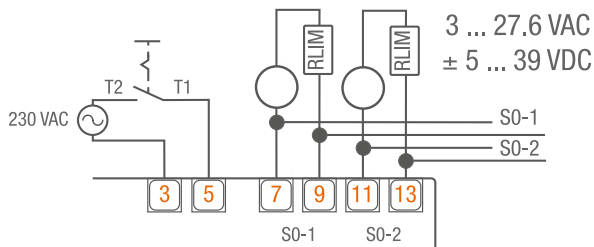
Dimensions



Power wiring



Communication wiring



Technical specifications

Ref.	Three-phase direct 80 A			
	ECP380D	ECM380D	ECR380D	ECA380D
Nominal voltage	1 x 400 V			
Voltage range	160 V - 480 V			
Frequency	45...65 Hz			
General information				
MID-certified product	MID, Class B			
Consumption of voltage circuits in VA/W	≤2/≤0.6			
Consumption of current circuits in VA/W	≤0.7			
Basic current I _b	5 A			
Reference current I _{ref}	5 A			
Transition current I _{tr}	0.5 A			
Maximum current I _{max}	80 A			
Minimum current I _{min}	0.25 A			
Starting current	0.015 A			
Cable cross-section for the measurement circuit	- rigid - flexible	2.5 - 33 mm ² 2.5 - 33 mm ²		
Power terminals tightening torque	2 Nm			
Energy accuracy class	active Class 1/reactive Class 2			
Measurement accuracy in %	active 1%/reactive 2%			
Type of display	LCD (backlighting)			
Product material	Plastic			
Electrical protection device	Protected by a 80 A three-phase fuse (x 1)			
Input characteristics				
Number of inputs	1			
Voltage	230 V AC			
OFF = T1	0 V			
ON = T2	230 V AC			
Cable cross-section:	0.8 - 2.5 mm ² (rigid and flexible)			
Tightening torque	0.5 Nm			
Pulse output specifications				
Number of outputs	2	-	-	-
Max. pulse current 39 V DC	90 mA	-	-	-
V AC/V DC voltage	3-27.6/±5-39	-	-	-
Frequency of pulse output	1-200 p/kWh	-	-	-
Pulse duration	30-100 ms	-	-	-
Cable cross-section:	- rigid - flexible	0.8 - 2.5 mm ² 0.8 - 2.5 mm ²	-	-
Tightening torque	0.5 Nm			
Communication output specifications				
Protocol	-	M-bus	Modbus RTU	
Type of connector	-	Screw terminals	RJ45	
Cable cross-section	-	0.8 - 2.5 mm ²	-	
Tightening torque	-	0.5 Nm	-	
Pulse indicator (front panel LED)				
Pulse frequency	1000 p/kWh			
EMC compatibility				
Surge voltage test	6 kV			
Overvoltage test	4 kV			
Environmental data				
Operating T°	-25...+55 °C			
Storage T°	-25...+70 °C			
Humidity	≤ 95% to 20 °C			
Resistance to fire/heat	V0			
Resistance to water/dust, installed/not installed	IP51/IP20			
Mechanical environment	M1			
Electromechanical environment	E2			
Dimensions L x H x D	72 x 92 x 60			
Number of DIN modules	4 ■			
Standards	EN 50470-1/3, CEI 62053-21/23, CEI 61557-12, DIN 43880, EN 60715			
	IEC 62053-31	-	-	-

Three phase direct 125 A range



The main functions

- Three phase 125 A energy meter in direct reading,
- MID-certified as standard, Advanced metering (direct feeds).

Basic functions

- Active/reactive energy,
- Active/reactive/apparent power,
- Voltage,
- Current,
- Power factor,
- Partial resetting of consumption,
- Tariff management.

Specifications

125 A meter intended for sub-metering for tertiary applications.

Available with a large communication panel (pulse/Modbus/M-bus), it enables the metering structure to be adapted to any new or existing installation while providing essential information for the analysis of the energy consumption and quality of the sub-feeds.

Data is saved in the internal memory, enabling continuity of information to be guaranteed, even after a network failure.

- 01 Sealable enclosures supplied as standard providing safety,
- 02 Pre-addressed product for improved integration in agardio.manager,
- 03 Modbus and M-Bus smart versions,
- 04 120 Ohm resistor integrated in the Modbus version.

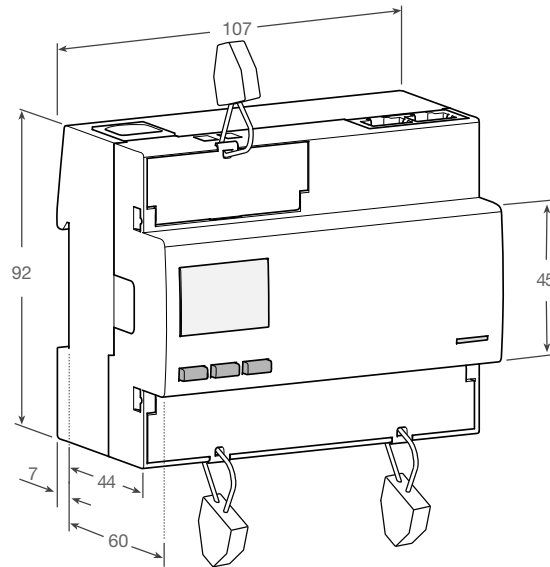
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
400 V AC	Direct	125 A	Pulse	6 ■	1 pcs	ECP310D
400 V AC	Direct	125 A	M-bus	6 ■	1 pcs	ECM310D
400 V AC	Direct	125 A	Modbus	6 ■	1 pcs	ECR310D
400 V AC	Direct	125 A	agardio Modbus	6 ■	1 pcs	ECA310D

Function selection guide

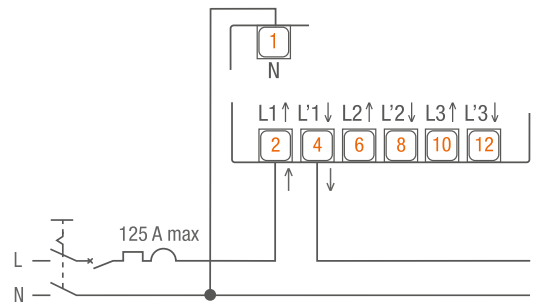
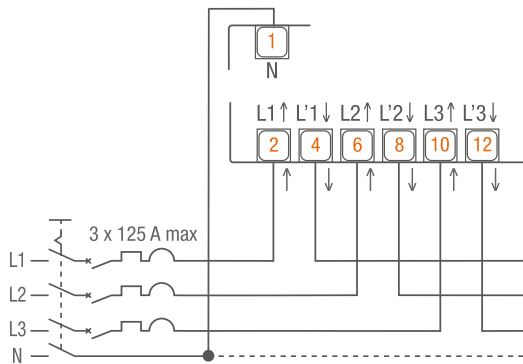
Reference	ECP310D	ECM310D	ECR310D	ECA310D
Current	•	•	•	•
Voltage	•	•	•	•
Power factor	•	•	•	•
Frequency	•	•	•	•
Active power	•	•	•	•
Reactive power	•	•	•	•
Apparent power	•	•	•	•
Active energy	•	•	•	•
Reactive energy	•	•	•	•
Partial resetting of consumption measurements	•	•	•	•
Energy import/export	•	•	•	•
Tariff control	•	•	•	•
Number of tariffs managed by: physical input/com	2/0	2/2	2/8	2/8
I/O function	•	-	-	-
Configurable I/O function	•	-	-	-
Programming of the max. demand threshold	-	-	-	-
Management of harmonics	-	-	-	-
Alarm function	-	-	-	-
Minimum / Maximum demand	-	-	-	-
Tariff control by physical input	•	•	•	•
Tariff control by communication system	-	•	•	•
Saved by internal memory	•	•	•	•

Three phase direct 125 A range

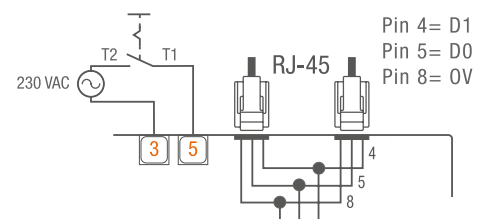
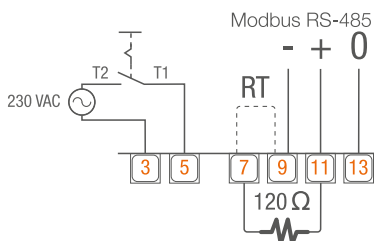
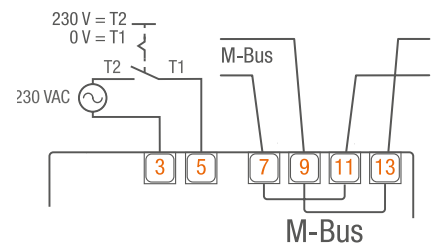
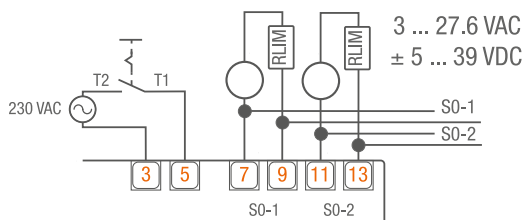
Dimensions



Power wiring



Communication wiring



Technical specifications

Ref.	Three-phase direct 125 A			
	ECP310D	ECM310D	ECR310D	ECA310D
Nominal voltage	1 x 400 V			
Voltage range	160 V - 480 V			
Frequency	45...65 Hz			
General information				
MID-certified product	MID, Class B			
Consumption of voltage circuits in VA/W	≤2/≤0.6			
Consumption of current circuits in VA/W	≤0.7			
Basic current I _b	5 A			
Reference current I _{ref}	5 A			
Transition current I _{tr}	0.5 A			
Maximum current I _{max}	125 A			
Minimum current I _{min}	0.25 A			
Starting current	0.02 A			
Cable cross-section for the measurement circuit	- rigid - flexible	2.5 - 50 mm ² 2.5 - 50 mm ²		
Power terminals tightening torque	5 Nm			
Energy accuracy class	active Class 1/reactive Class 2			
Measurement accuracy in %	active 1%/reactive 2%			
Type of display	LCD (backlighting)			
Product material	Plastic			
Electrical protection device	Protected by a 125 A three-phase fuse (x 1)			
Input characteristics				
Number of inputs	1			
Voltage	230 V AC			
OFF = T1	0 V			
ON = T2	230 V AC			
Cable cross-section:	0.8 - 2.5 mm ² (rigid and flexible)			
Tightening torque	1 Nm			
Pulse output specifications				
Number of outputs	2	-	-	-
Max. pulse current 39 V DC	90 mA	-	-	-
V AC/V DC voltage	3-27.6/±5-39	-	-	-
Frequency of pulse output	1-200 p/kWh	-	-	-
Pulse duration	30-100 ms	-	-	-
Cable cross-section:	- rigid - flexible	0.8 - 2.5 mm ² 0.8 - 2.5 mm ²	-	-
Tightening torque	0.5 Nm			
Communication output specifications				
Protocol	-	M-bus	Modbus RTU	
Type of connector	-	Screw terminals	RJ45	
Cable cross-section	-	0.8 - 2.5 mm ²	-	
Tightening torque	-	0.5 Nm	-	
Pulse indicator (front panel LED)				
Pulse frequency	1000 p/kWh			
EMC compatibility				
Surge voltage test	6 kV			
Overvoltage test	4 kV			
Environmental data				
Operating T°	-25...+55 °C			
Storage T°	-25...+70 °C			
Humidity	≤ 95% to 20 °C			
Resistance to fire/heat	V0			
Resistance to water/dust, installed/not installed	IP51/IP20			
Mechanical environment	M1			
Electromechanical environment	E2			
Dimensions L x H x D	90 x 92 x 60			
Number of DIN modules	6 ■			
Standards	EN 50470-1/3, CEI 62053-21/23, CEI 61557-12, DIN 43880, EN 60715			
	EI 62053-31	-	-	-

Three phase indirect range



The main functions

- Three phase indirect energy meter in direct reading,
- MID-certified as standard,
- Advanced metering, (indirect feeds via 1/5A CTs).

Basic functions

- Active/reactive energy,
- Active/reactive/apparent power,
- Voltage,
- Current,
- Power factor,
- Partial resetting of consumption,
- Tariff management.

Specifications

Indirect meter intended for sub-metering for tertiary applications via current transformers of 1 or 5 A.

Available with a large communication panel (pulse/Modbus/M-bus), it enables the metering structure to be adapted to any new or existing installation while providing essential information for the analysis of the energy consumption and quality of the sub-feeds.

Data is saved in the internal memory, enabling continuity of information to be guaranteed, even after a network failure.

- 01 Sealable enclosures supplied as standard providing safety,
- 02 Pre-addressed product for improved integration in agardio.manager,
- 03 Modbus and M-Bus smart versions,
- 04 120 Ohm resistor integrated in the Modbus version.

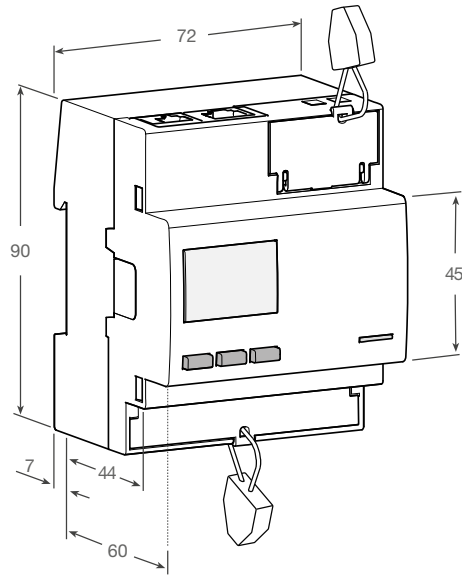
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
400 V AC	Indirect	1/5 A via CT	Pulse	4 ■	1 pcs	ECP300C
400 V AC	Indirect	1/5 A via CT	M-bus	4 ■	1 pcs	ECM300C
400 V AC	Indirect	1/5 A via CT	Modbus	4 ■	1 pcs	ECR300C
400 V AC	Indirect	1/5 A via CT	agardio Modbus	4 ■	1 pcs	ECA300C

Function selection guide

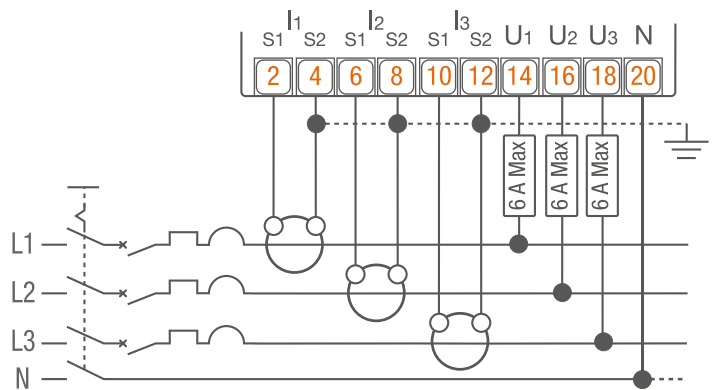
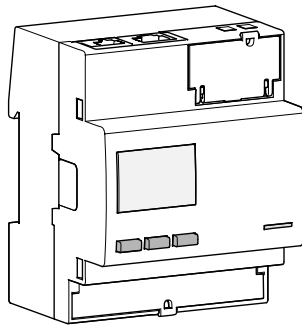
Reference	ECP300C	ECM300C	ECR300C	ECA300C
Current	•	•	•	•
Voltage	•	•	•	•
Power factor	•	•	•	•
Frequency	•	•	•	•
Active power	•	•	•	•
Reactive power	•	•	•	•
Apparent power	•	•	•	•
Active energy	•	•	•	•
Reactive energy	•	•	•	•
Partial resetting of consumption measurements	•	•	•	•
Energy import/export	•	•	•	•
Tariff control	•	•	•	•
Number of tariffs managed by: physical input/com	2/0	2/2	2/8	2/8
I/O function	•	-	-	-
Configurable I/O function	•	-	-	-
Programming of the max. demand threshold	-	-	-	-
Management of harmonics	-	-	-	-
Alarm function	-	-	-	-
Minimum / Maximum demand	-	-	-	-
Tariff control by physical input	•	•	•	•
Tariff control by communication system	-	•	•	•
Saved by internal memory	•	•	•	•

Three phase indirect range

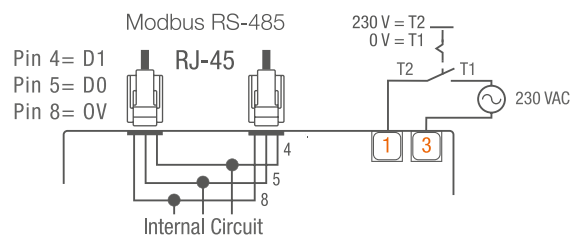
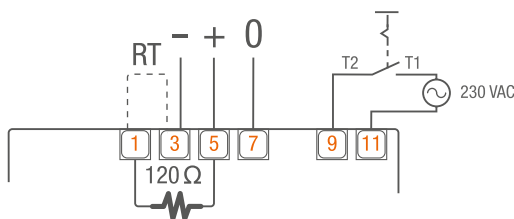
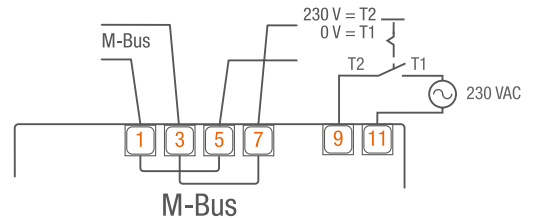
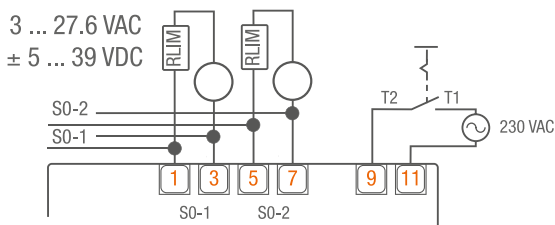
Dimensions



Power wiring



Communication wiring



Technical specifications

	Three-phase indirect 1/5 A			
	Ref.	ECP300C	ECM300C	ECR300C
Nominal voltage	1 x 400 V			
Voltage range	160 V - 480 V			
Frequency	45...65 Hz			
General information				
MID-certified product	MID			
Consumption of voltage circuits in VA/W	≤2/≤0.6			
Consumption of current circuits in VA/W	≤0.7			
Basic current I _b	1(6) A			
Reference current I _{ref}	1 A			
Transition current I _{tr}	0.05 A			
Maximum current I _{max}	6 A			
Minimum current I _{min}	0.01 A			
Starting current	0.001 A			
Cable cross-section for the measurement circuit	- rigid - flexible	0.5 - 4 mm ² 0.5 - 4 mm ²		
Power terminals tightening torque	0.5 Nm			
Energy accuracy class	active Class 1/reactive Class 2			
Measurement accuracy in %	active 1%/reactive 2%			
Type of display	LCD (backlighting)			
Product material	Plastic			
Electrical protection device	Protected by a 6 A single-phase fuse (x 3)			
Measurement input characteristics				
Transformation ratio	Adjustable from 1 to 6000 (in 5 A, or 1200 in 1 A)			
Input characteristics				
Number of inputs	1			
Voltage	230 V AC			
OFF = T1	0 V			
ON = T2	230 V AC			
Cable cross-section:	1.5 - 4 mm ² (rigid and flexible)			
Tightening torque	1 Nm			
Pulse output specifications				
Number of outputs	2	-	-	-
Max. pulse current 39 V DC	90 mA	-	-	-
V AC/V DC voltage	3-27.6/±5-39	-	-	-
Frequency of pulse output	1-1000 p/kWh	-	-	-
Pulse duration	30-100 ms	-	-	-
Cable cross-section:	- rigid - flexible	0.8 - 2.5 mm ² 0.8 - 2.5 mm ²	-	-
Tightening torque	0.5 Nm	-	-	-
Communication output specifications				
Protocol	-	M-bus	Modbus RTU	
Type of connector	-	Screw terminals	RJ45	
Cable cross-section	-	0.8 - 2.5 mm ²	-	
Tightening torque	-	0.5 Nm	-	
Pulse indicator (front panel LED)				
Pulse frequency	1000 p/kWh (without taking into account the transformation ratio)			
EMC compatibility				
Surge voltage test	6 kV			
Overvoltage test	4 kV			
Environmental data				
Operating T°	-25...+55 °C			
Storage T°	-25...+70 °C			
Humidity	≤ 95% to 20 °C			
Resistance to fire/heat	V0			
Resistance to water/dust, installed/not installed	IP51/IP20			
Mechanical environment	M1			
Electromechanical environment	E2			
Dimensions L x H x D	72 x 92 x 60			
Number of DIN modules	4 ■			
Standards	EN 50470-1/3, CEI 62053-21/23, CEI 61557-12, DIN 43880, EN 60715			
	EI 62053-31	-	-	-

Measurement unit range



The main functions

A measurement unit enables analysis of the networks.

It records basic parameters, such as current, voltage, Cos Phi, power and energy, as well as harmonic disturbances and the reaction to different parameters.

Installed at the head of the installation and in sensitive networks, the measurement unit provides essential information to check the operating derivatives of a building.

01 Separate communication and memory expansion module can be added subsequently (on SM102E and SM103E),

02 Configuration of the minimum and maximum thresholds,

03 Tariff level controlled via communication.

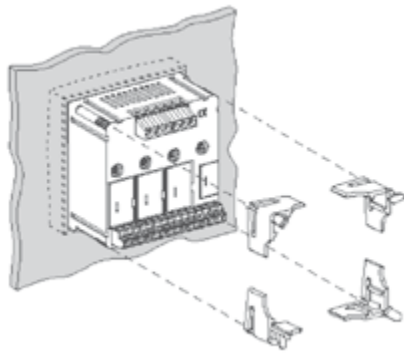
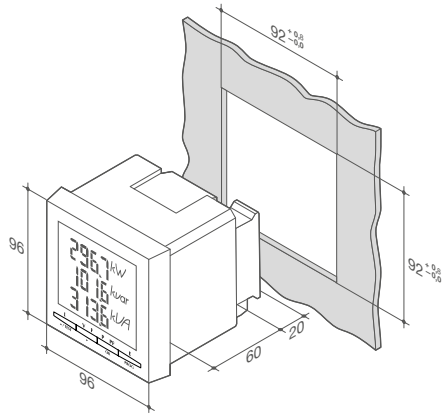
Voltage	Type of measurement	Rating	Communication	No. of 17.5 mm modules	Package	Reference
400 V AC	Indirect	1/5 A	Modbus	4 ■	1 pcs	SM101C
400 V AC	Indirect	1/5 A	Pulse (ref. SM200) Modbus RTU (ref. SM210)	Built-in	1 pcs	SM102E
400 V AC	Indirect	1/5 A	Pulse (ref. SM201) Modbus RTU (ref. SM210 or SM213) Ethernet (ref. SM213 or SM214)	Built-in	1 pcs	SM103E

Function selection guide

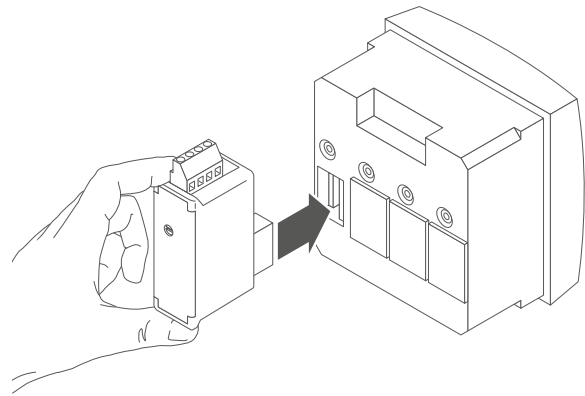
Reference	SM101C	SM102E	SM103E
Current	•	•	•
Voltage	•	•	•
Power factor	•	•	•
Frequency	•	•	•
Active power	•	•	•
Reactive power	•	•	•
Apparent power	•	•	•
Active energy	•	•	•
Reactive energy	•	•	•
Internal clock	•	•	•
Advanced internal clock function	•	•	•
Partial resetting of consumption measurements	-	-	-
Import/export of energy	•	•	•
Tariff control	•	•	•
I/O function	•	•	•
Configurable I/O function	•	•	•
Programming of the maximum demand threshold	•	•	•
Management of harmonics	-	•	•
Alarm function	•	•	•
Recording of measured values per day/week/month	-	-	-
Minimum/maximum demand	•	•	•
Tariff control by physical input	•	•	•
Tariff control by communication system	•	•	•
Tariff control by the clock	•	•	•
Saved by internal memory			

Measurement unit range

SM102E built-in measurement unit

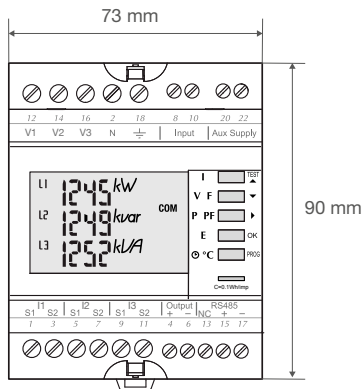


Unit locking system on the faceplate



Insertion of communication modules

SM101C measurement unit on DIN rail



Technical specifications

Ref.	Three-phase		
	SM101C	SM102E	SM103E
Nominal voltage	400 V		
Voltage range	50 V - 500 V between phase		
	28 V - 289 V between phase and neutral		
Frequency	45...65 Hz		
MID-certified product	-		
Consumption of voltage circuits in VA	≤5		
Consumption of current circuits in VA/W	≤0.6		
Transformation ratio of the CT	1 A/5 A, secondary		
Permissible CT measurement	5 A to 9999 A, primary		
Cross-section of rigid cables for the measurement circuit	2.5 mm ²		
Power terminals tightening torque	0.6 Nm	0.4 Nm	
Frequency	45–65 Hz		
Accuracy class of active power and reactive power	Cl.0.5S/Cl.2		
Measurement accuracy in %	active 0.5%/reactive 2%		
Type of display (type of screen)	LCD		
Product material	Plastic		
Operating temperature	-10...+55 °C	-10...+55 °C	
Storage temperature	-20...+70 °C	-20...+85 °C	
Resistance to water and dust, front face/casing	IP51/IP20	IP52/IP30	
Number of outputs	1	-	-
Max. pulse current at 39 V DC	27 mA	-	-
Voltage	20–30 V DC	-	-
Pulse duration	100–900 ms	-	-
Permissible cross-section of cables, rigid/flexible	2.5 mm ²	-	-
Recommended tightening torque for communication terminals	0.6 Nm	-	-
Number of inputs	1	-	-
Voltage	230 V AC	-	-
OFF == T1	0 V	-	-
ON == T2	230 V	-	-
Minimum pulse duration	-	-	-
Permissible cross-section of cables, rigid/flexible	2.5 mm ²	-	-
Recommended tightening torque	0.6 Nm	-	-
Protocol	Modbus RTU	Modbus RTU (ref. SM210)	Modbus RTU (ref. SM210 or SM213)
		-	Ethernet (ref. SM213 or SM214)
		Pulse (ref. SM200)	Pulse (ref. SM201)
Type of connector	Screw terminals		
Permissible cross-section of cables, rigid/flexible	2.5 mm ²		
Recommended tightening torque	0.6 Nm	0.5 Nm	
Dimensions L x H x D	73 x 90 x 67	96 x 96 x 60	
Number of DIN modules	4	-	-
Standards	IEC 62053-22/23	IEC 62053-22/23	IEC 61000-4-2/4-3/4-4/4-5
	IEC 61326-1 IEC 60068-2-1/2-2/2-30 IEC 60068-2-52/2-6 IEC 61010-1 IEC 62053-31	IEC 61000-4-2/4-3/4-4/4-5 IEC 61000-4-6/4-8/4-11 IEC 60068-2-1/2-2/2-30/2-52 IEC 60068-2-6 IEC 60947-1 IEC 61010-1	IEC 61000-4-6/4-8/6-4/4-11 IEC 60068-2-1/2-2/2-30/2-52 IEC 60068-2-6 IEC 60947-1 IEC 61010-1

Accessories

Both the agardio energy meters range and the h3+ range of smart moulded cases benefit from a mechanical RJ45 connection, which saves time during installation and prevents wiring mistakes for Modbus communication.

To ensure perfect compatibility and continuity of service throughout the entire information collection chain, Hager has developed a series of specific accessories tested with meters, smart cases and the agardio.manager energy manager



HTG465H



HTG471H/HTG472H/HTG474H



SMC120R



HTG480H/HTG481H/
HTG482H/HTG484H



HTG485H



HTG467H



HTG911H



HTG445H



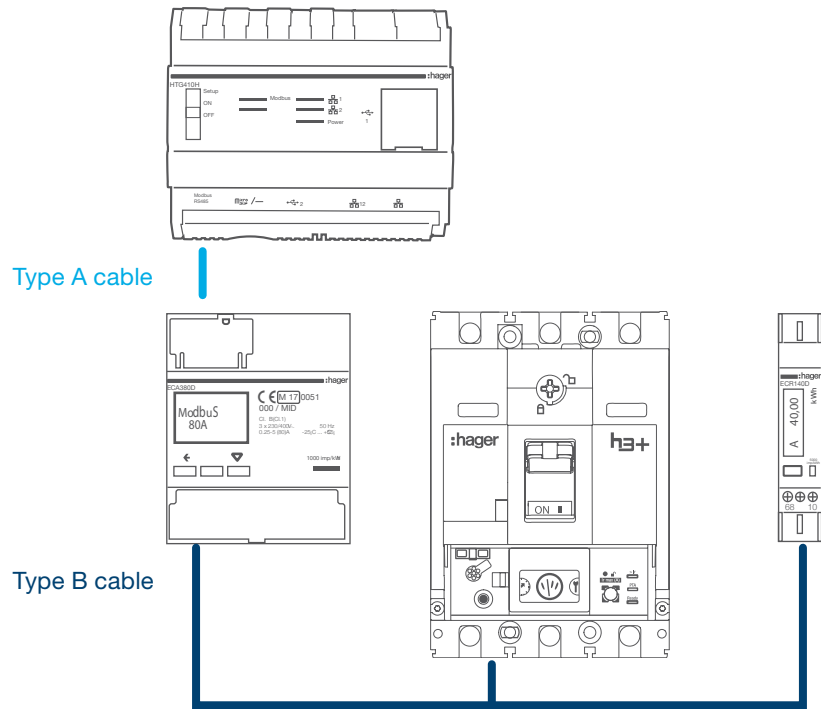
HTG450H



HTG457H



HTG460H



A cables

Reference	Designation	Connector 1	Connector 2	Use
HTG465H	Modbus cable, 1xRJ45 + earth / 3 m	RJ45	Cable	Modbus feed connection
HTG471H	Modbus cable, 2xRJ45 + earth / 1 m		RJ45	
HTG472H	Modbus cable, 2xRJ45 + earth / 2 m			
HTG474H	Modbus cable, 2xRJ45 + earth / 3 m			

B cables

Reference	Designation	Connector 1	Connector 2	Use
HTG480H	Modbus cable, 2xRJ45 / 0.2 m	RJ45	RJ45	connection between products
HTG481H	Modbus cable, 2xRJ45 / 1 m		RJ45	
HTG482H	Modbus cable, 2xRJ45 / 2 m			
HTG484H	Modbus cable, 2xRJ45 / 5 m			
HTG485H	Modbus cable, 25 m	Cable	Cable	

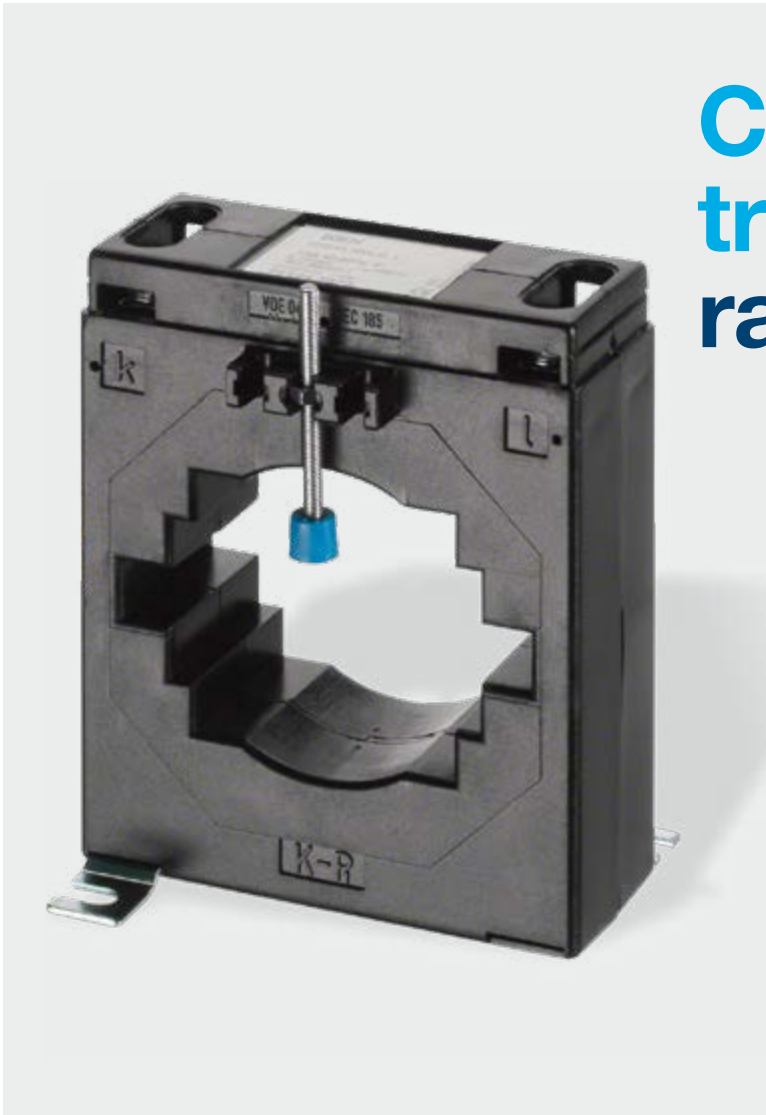
Resistors

Reference	Designation	Connector	Use
SMC120R	120 Ohm terminating resistor	pin	Modbus line termination
HTG467H	120 Ohm terminating resistor	RJ45	Modbus line termination

Supply and connection accessories

Reference	Designation	Use
HTG911H	230 V AC / 24 V DC / 2.5 A power supply	range h3+ / agardio.manager (HTG411H)
HTG455H	PT100 temperature sensor	agardio.manager (HTG411H)
HTG450H	Industrial n4 Go μ SD card	
HTG457H	USB to Ethernet converter	
HTG460H	WiFi dongle	

Current transformer range



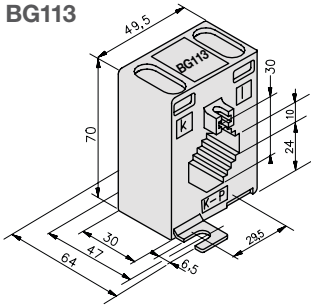
- 01 Current transformers equipped with twin current socket terminals,
- 02 Range dedicated to measuring the current on busbars and supply cables.

References

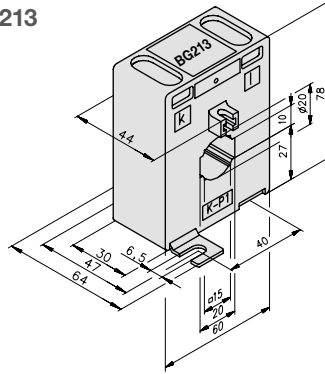
Prim./sec. rating	Precision	Power	Max. cable diameter	Max. size of supply bar	Type	Numerical reference	Commercial reference
50/5 A	1% Cl.1	1.5 VA	dia. 20 mm	20 x 10 mm 15 x 15 mm	BG213	706385	SRA00505
75/5 A	1% Cl.1	1.5 VA	dia. 28 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm	BG113	713929	SRA00755
100/5 A	1% Cl.1	2.5 VA	dia. 20 mm	20 x 10 mm 15 x 15 mm	BG213	725003	SRA010051
125/5 A	1% Cl.1	2.5 VA	dia. 28 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm	BG113	713932	SRA01255
150/5 A	1% Cl.1	2.5 VA	dia. 28 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm	BG113	719933	SRA01505
200/5 A	1% Cl.1	2.5 VA	dia. 28 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm	BG113	713934	SRA02005
250/5 A	1% Cl.1	2.5 VA	dia. 28 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm	BG113	713935	SRA02505
300/5 A	1% Cl.1	5 VA	dia. 28 mm	40 x 12 mm	BG413	706386	SRI03005
400/5 A	1% Cl.1	5 VA	dia. 28 mm	40 x 12 mm	BG413	725000	SRI04005
600/5 A	1% Cl.1	5 VA	dia. 28 mm	40 x 12 mm	BG413	706387	SRI06005
800/5 A	1% Cl.1	5 VA	dia. 45 mm	60 x 10 mm 50 x 30 mm	BG613	713938	SRD08005
1000/5 A	1% Cl.1	5 VA	dia. 45 mm	60 x 10 mm 50 x 30 mm	BG613	713939	SRD10005
1000/5 A	1% Cl.1	15 VA	dia. 60 mm	80 x 10 mm 60 x 30 mm	BG814	725008	SRE100051
1250/5 A	1% Cl.1	15 VA	dia. 60 mm	80 x 10 mm 60 x 30 mm	BG814	713941	SRE12505
1250/5 A	1% Cl.1	15 VA	dia. 85 mm	100 x 30 mm 80 x 50 mm	BG1034	713944	SRF12505
1500/5 A	1% Cl.1	5 VA	dia. 45 mm	60 x 10 mm 50 x 30 mm	BG613	706388	SRD15005
1600/5 A	1% Cl.1	15 VA	dia. 60 mm	80 x 10 mm 60 x 30 mm	BG814	713942	SRE16005
1600/5 A	1% Cl.1	30 VA	dia. 85 mm	100 x 30 mm 80 x 50 mm	BG1034	713945	SRF16005
2000/5 A	1% Cl.1	15 VA	dia. 60 mm	80 x 10 mm 60 x 30 mm	BG814	713943	SRE20005
2000/5 A	1% Cl.1	30 VA	dia. 85 mm	100 x 30 mm 80x50 mm	BG1034	713946	SRF20005
2500/5 A	1% Cl.1	30 VA	dia. 85 mm	100 x 30 mm 80 x 50 mm	BG1034	713947	SRF25005
3000/5 A	1% Cl.1	15 VA	dia. 98 mm	120 x 50 mm	BG1254	713948	SRG30005
3000/5 A	1% Cl.1	15 VA	dia. 70 mm	120 x 70 mm	BG1274	713950	SRH30005

Dimensions

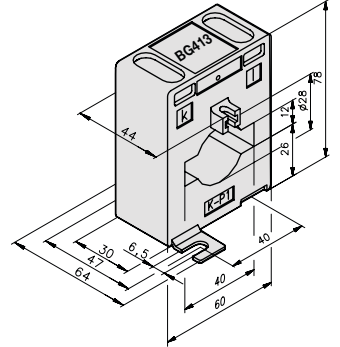
BG113



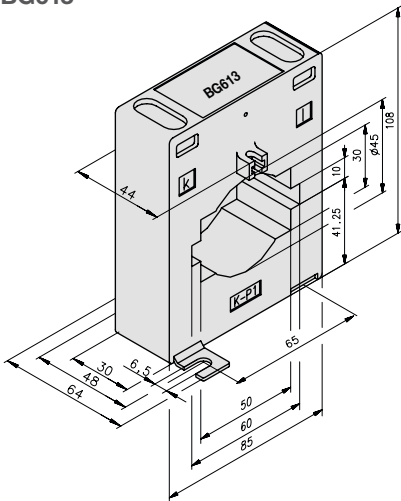
BG213



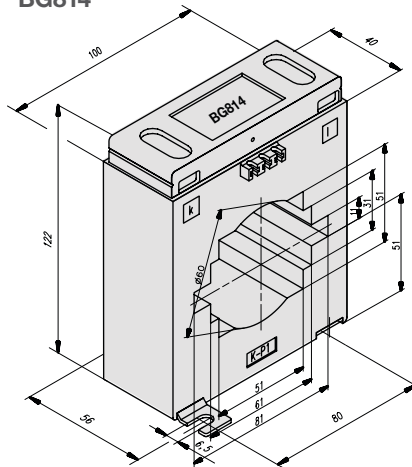
BG413



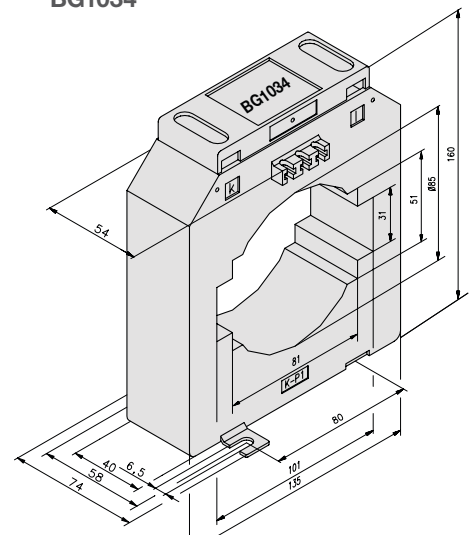
BG613



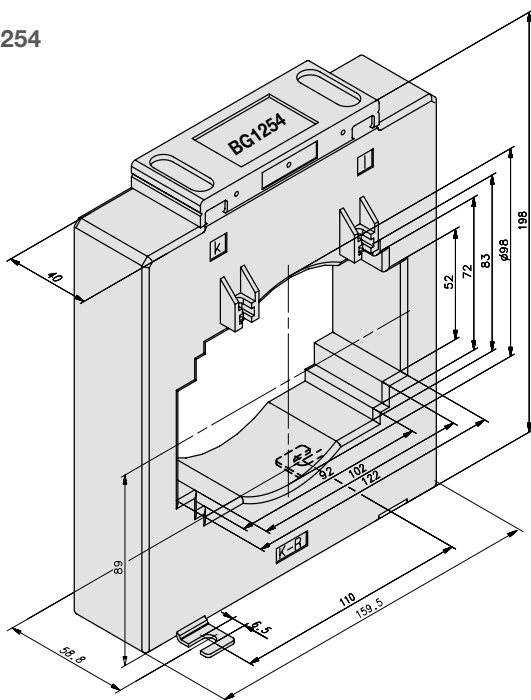
BG814



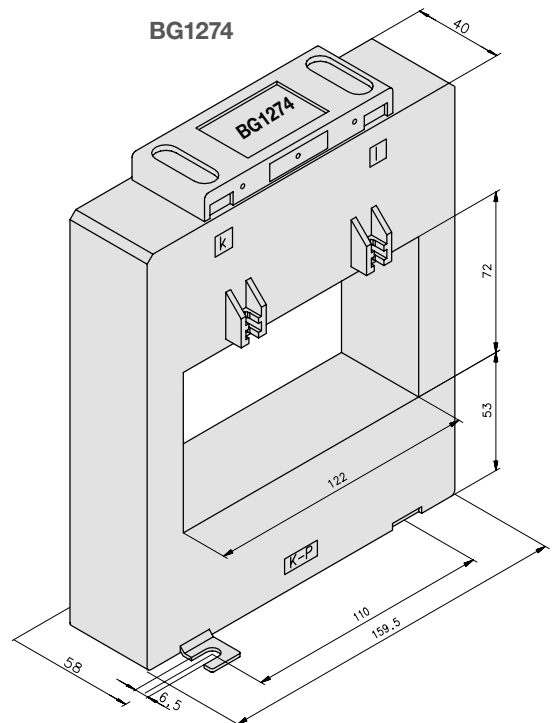
BG1034



BG1254



BG1274



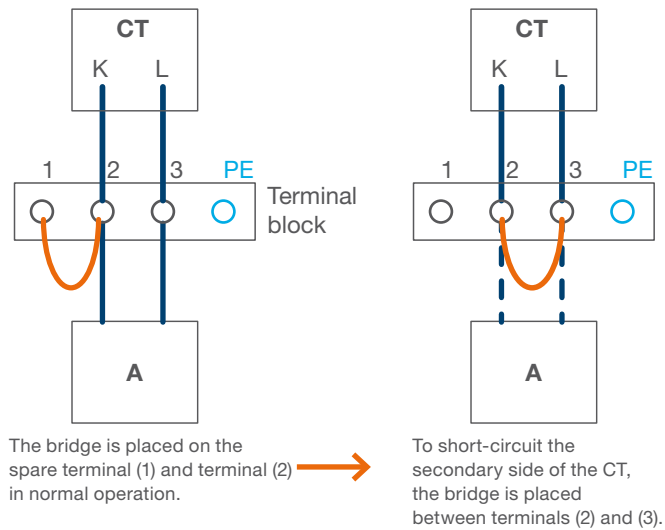
Wiring

01 Significance of the shunt terminals for connection of current transformers

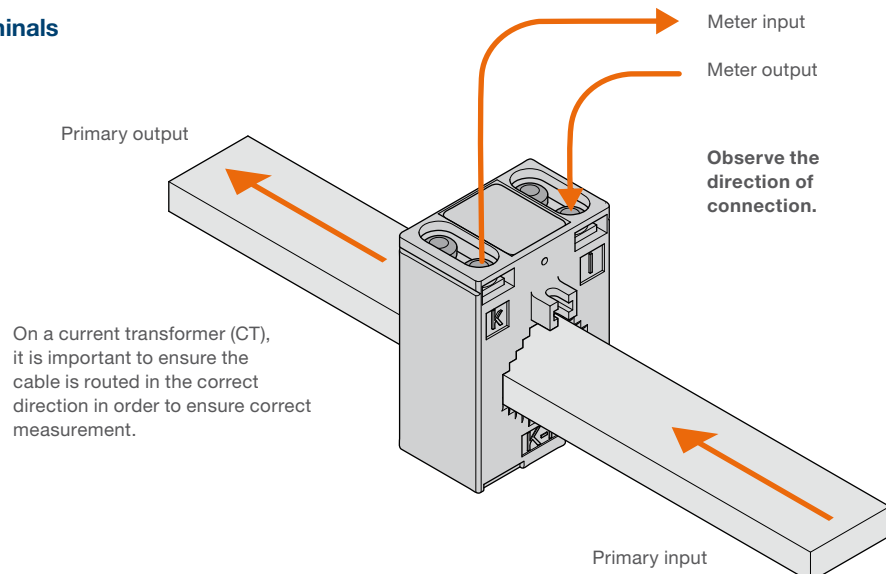
Why shunt the current transformers?

When the secondary side of the current transformer is left open and, at the same moment, the primary side is supplied with power, the load impedance will approach infinity. In mechanical terms, this translates as rapid overheating and destruction of the current transformer due to extremely elevated voltage at the transformer terminals.

A damaged current transformer can become a source of electrocution and will no longer send information. It is therefore crucial to shunt its secondary side when no metering system is connected to it.



02 Direction of current flow and connection between terminals



Provide metering information



Energy meter



Multifunction measuring device for the rail top



Multifunction measuring device for installing doors



Circuit breaker open



24 V Supply voltage

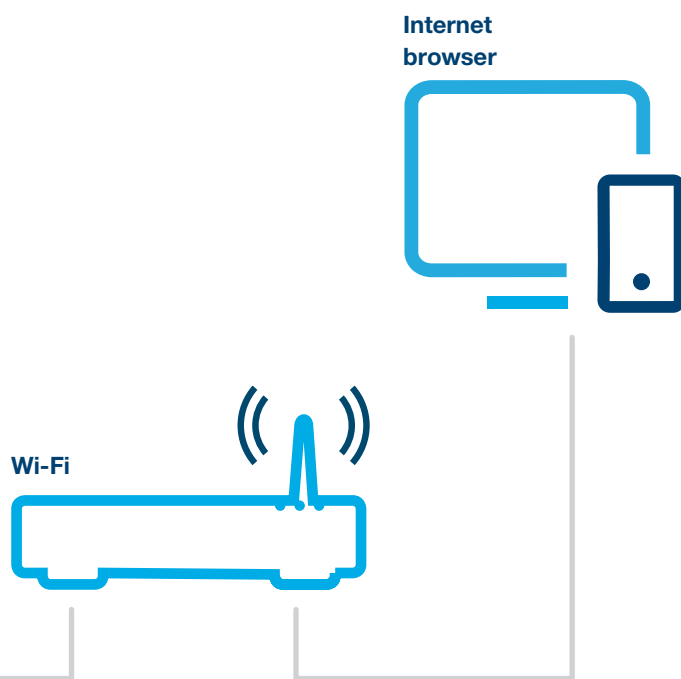


Energy monitoring server (Modbus Master)



agardio.manager, Hager tool for monitoring your consumption

- Enables metering data to be centralised,
- simple, easy to read access to the building consumption and the network quality information,
- provides alerts of overruns and installation faults,
- displays consumption trends and the energy costs of the building.



Designation	Compatible field bus	Maximum number of addresses	Reference
Multi-energy server agardio.manager	Modbus RTU	31 Modbus RS485 addresses	HTG411H
	agardio Modbus		

h3+ energy go further

Measure, track, communicate: the h3+ energy version can be integrated in the agardio.manager ecosystem, the solution designed by Hager to monitor energy consumption.

h3+

Associated with the agardio.manager ecosystem, the h3+ energy range is at the forefront of a new generation of circuit breakers that combine safety and energy efficiency.



It guarantees Class 1 energy measuring accuracy.

The h3+ energy moulded case is an adaptable, scalable solution that protects, measures, tracks, displays and communicates.



You can use your smartphone, tablet or PC to easily access information on the use and maintenance of the building. Consumption and installation configuration data, alarms and faults can be identified at any time. The h3+ energy moulded case is a scalable solution that protects, measures, tracks, displays and communicates.

For bakeries, hotels and residential care homes: you are immediately warned if there is a power outage, enabling you to maintain the cold chain and preserve the quality and comfort of living areas.

One range and two versions, the choice is yours

From the traditional version to the smart, connected model: discover the multi-faceted range of h3+ circuit breakers.

Featuring a compact case, available from 25 to 630 A with 3 or 4 poles, the h3+ provides superior protection and breaking capacity up to 110 kA.

Equipped with a magnetothermal or electronic trip unit, the moulded case circuit breaker range offers another benefit: flexible protection settings for all power distribution installations.



NEW

h3+/P160
208 variants



NEW

h3+/P250
254 variants



NEW

h3+/P630
78 variants

The new generation of h3+ moulded case circuit breakers is available in two versions: the traditional range for protecting your electrical installations and the energy model for improving the energy efficiency of your buildings.

One partner, for everything you need.

01

Energy Distribution



03

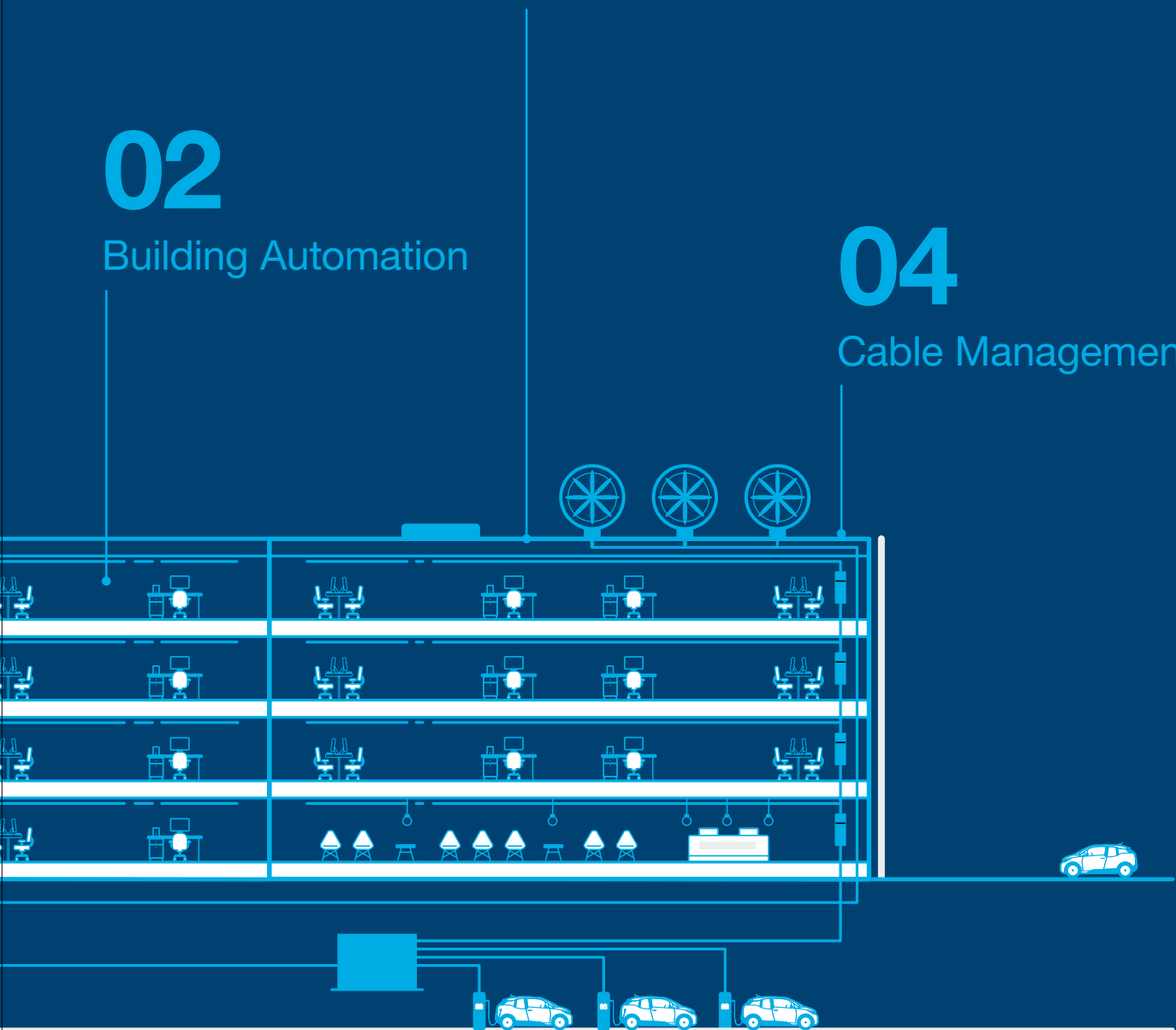
Energy Management

02

Building Automation

04

Cable Management



By your side from the start to the finish line

As a proven supplier of products and solutions, we ensure your projects run uninterrupted and seamlessly. Our team is technically well versed to plan and execute all types of energy distribution installations from the main to the final distribution board. We also provide tailored solutions according to each customer's requirements. For more details, please contact info.me@hager.com





Our journey in the Middle East

Hager Group is a leading provider of solutions and services for electrical installations in residential, commercial and industrial buildings. Our range of solutions and services extends from energy distribution to cable management and from security systems to building automation.

Since 1997, Hager Middle East comes with a strong commercial team with expertise in product management, sales & marketing, customer service and finance. Our main office is based in Dubai, United Arab Emirates, with two offices in Kingdom of Saudi Arabia and Qatar, alongside representative in Oman.

Throughout the year, our qualified team of engineers conducts various other trainings on request. They make sure that these customer-oriented programs are instrumental in reinforcing the trust and quality of Hager brand.

With such commitment and dedication, we aim to whittle the best solutions for all your electrical installation systems anytime, anywhere.



Hager Electro GmbH Co. KG

Zum Gunterstal
66440 Blieskastel
Germany

Hager Electro S.A.S.

132, Boulevard d'Europe
67215 Obernai cedex
France

Tel: +33 (0)3 88 49 50 50

Hager Middle East FZE

Office 222-227, Building A4
Dubai Digital Park, Dubai Silicon Oasis
PO Box N° 61056, Dubai
United Arab Emirates

Tel: (+971) 4 510 5300

Fax: (+971) 2 4251598

Email: info.me@hager.com

Hager Electro B.V.

Building N° 1, Office No. 24
Al-Bayt Bldg, King Abdul Aziz Street
PO Box N° 4280, Riyadh
Kingdom of Saudi Arabia
Tel: (+966) 11 292 4541
Fax: (+966) 11 292 3744

Hager Electro B.V.

Building N° 840, Office N° 7
Concord Business Center
Al Rawabi Street, C Ring Road
PO Box N° 31830, Doha
Qatar

Tel: (+974) 4032 6447

Fax: (+974) 4441 8707

hager-me.com

