Main Catalogue

Electricity meters, DIN-rail mounted

ODINsingle
DELTAsingle
ODIN
DELTAplus

Catalogue 2CMC480022C0002, ed.1 December 2008

DIN-rail mounted electricity meters

Modular DIN Rail Products offer a wide range of functions to be integrated in electrical installations with significant benefits for the user. DIN rail mounted electricity meters are designed for high level performance and are safe and fast to install.

The DIN rail mounted electricity meters are available in four product lines: ODINsingle and DELTAsingle for single phase metering and ODIN and DELTAplus for three phase metering.

The meters are available in several configurations to suite many applications.

ABB Automation Products

The Automation Products division provides products, with related services, that are used as components in machinery, switchboards, distribution panels and automation systems.

The Automation Products offering covers a wide range of products and services including power electronics systems, motors and generators, drives, instrumentation, control products, DIN-rail components, enclosures, wiring accessories, low-voltage switchgear and circuit breakers. All these products help customers to save energy, improve productivity and increase safety.

The Automation Products division is a global business.
Key products include low-voltage products and systems, drives, power electronics, motors, machines, instrumentation and product service.

Low voltage products

Due to ABB's broad program of product standardization, components of today are the 'building blocks' of system solutions, incorporating functionalities that will allow seamless integration in real-time automation and information systems.

At the product level, all the low voltage products can operate together perfectly.

To create a systems solution every product included has to be equipped with the tools necessary to install, operate and maintain it efficiently throughout the product life cycle.

The range of low voltage products is supported by technical documentation. This together with compact design makes it easier than ever to incorporate our products in your system.

Our customers can find all product related documentation such as brochures, catalogues, selection program, certificates, drawings and other information directly at **www.abb.com/lowvoltage**.

Electricity meters, DIN-rail mounted

Contents

“To measure is to know” DIN-rail me

With the increasing energy cost, measuring of the electricity consumption is getting more and more important.
If you can identify where you have your use you are one step closer to reducing your energy cost.
ABB have a complete range of DIN-mounted electricity meters for different applications, together with a wide range of communication options. The meters are quick and easy to install due to their DIN-rail mounting.

There are four different product lines: **ODINsingle, DELTAsingle, ODIN** and **DELTAplus.**
Together they offer several types of configurations for different applications due to their intelligent programming possibilities.

- In-house certified laboratory (SS-EN/ISO/IEC 17025)
- Approved according to international & national standards
- Compact design
- Easy to install
- Infra-red (IR) communication interface
- Easy to combine with Serial Communication Adapters (SCA)

ODINsingle, 1-phase meter
- Single phase measuring
- Active energy, accuracy class B (Cl. 1)
- Direct metering up to 65A
- LCD display, Pulse output and IR port for SCA

DELTAsingle, 1-phase meter
- Single phase measuring
- Active energy, accuracy class B (Cl. 1)
- Direct metering up to 80A
- LCD display, Pulse output and IR port for SCA
- Internal clock for 1, 2 and 4 tariffs and monthly values
- Memory back-up (EEprom)

ODIN, basic 3-phase meter
- 3 phase metering
- Active energy, accuracy A (Cl. 2)
- Direct metering up to 65A
- Transformer metering 5A
- LCD display, Pulse output and IR port for SCA
- Memory back-up (EEprom)

DeltaPlus, advanced 3-phase meter
- 3 phase metering
- Measuring of Active or Combined (Active and reactive) energy, accuracy class A & B (Cl. 2 & 1)
- Direct metering up to 80A
- Transformer metering for 1, 2 or 5A
- Voltage range 100-500V
- LCD display, Pulse and IR port for SCA
- Instrumentation
- Automatic installation control
- Memory back-up (EEprom)
- Internal clock for monthly values, maximum demand, load profile, tariff and control

Glossary

AMR	Automatic Meter Reading system
BMS	Building Management System
DST	Daylight Savings Time
EEprom	Electrically Erasable programmable read-only memory
EIB	European Installation Bus
EMC	Electromagnetic compatibility
EMS	Energy Management System
GPRS	General Packet Radio Service
GSM	Global system for Mobile communication
I/O	Inputs and Outputs
IR-port	Infra-Red communication interface
KNX	Open standard for Home and Building Control
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LON	Local Operating Network
M-Bus	Meter bus
MID	Measuring Instrument Directive (Common testing rules for all EU and EES countries)
OTA	Over The Air
PSTN	Public Switched Telephone Network
RTC	Real Time Clock
SCA	Serial Communication Adapter
SMS	Short Message Service
SP	Sveriges Tekniska Forskningsinstitut (Technical Research Institute of Sweden)
TCP	Transmission Control Protocol
UDP	User Datagram Protocol

ounted electricity meters from ABB

Flexible communication solution

The **ODINsingle, DELTAsingle, ODIN** and **DELTAplus** electricity meters offer flexible solutions for communication with a standard pulse/LED output or an infrared (IR) port.
The IR port can be connected to any of the Serial Communication Adapters (SCA) available.
Due to open protocols and the possibility to add a SCA later the installation is flexible and adaptable to any future communication needs.

IR port for Serial Communication Adapter (SCA)

The **ODINsingle, DELTAsingle**, **ODIN** and **DELTAplus** electricity meters have an IR port for remote reading of metered data.
The adapter converts the optical signals to a electrical signal.

Certification

All ABB meters are certified according to IEC 62052-11 and IEC 62053-21. This is the best quality guarantee there is.

Our procedures for design and production are 3rd party approved by BVC according to ISO 9001:2000.
This ensures high quality design and production.

That is why you can always trust the accuracy of an ABB DIN rail mounted electricity meter.

Accreditation

Our laboratory is accredited by SWEDAC according to SS-EN/ISO/IEC 17025 for initial verification of Electricity meters.

MID – Measuring Instrument Directive

The European parliament decided in 2004 to establish a new directive for measuring instrument.
The MID directive took affect at the 30th of October 2006 and each member country has to take this directive into the national legislation latest April 2006.

The MID directive means:

- Common testing rules based on IEC standards for all EU and EEA countries.
- No need for local testing/approval. Test performed in one EU country must be accepted in all EU and EEA countries.
- No special national requirements of any kind are allowed.

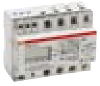
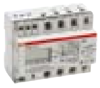
On the product as well as on the packing you find a label certifying that the ABB electricity meter is tested and approved according to MID directive.

CE M06 0402

Test standard

A new standard EN 50470-1, -3 replaces IEC 62052-11 and IEC 62053-21 (IEC 62053-22) in EU and EEA countries.

Selection Guide

		Network Type	Max. current Direct Connection	Voltage (V) (50/60Hz)	Active energy	Reactive energy
ODINsingle	**Single phase** 	Single phase	65	230	Yes	—
		Single phase	65	230	Yes	—
DELTAsingle	**Single phase** 	Single phase	80	230	Yes	—
		Single phase	80	230	Yes	—
		Single phase	80	230	Yes	—
		Single phase	80	230	Yes	—
		Single phase	80	230	Yes	—
		Single phase	80	230	Yes	—
DELTAplus	**3 phase** 	3 phase	80	100 - 500	Yes	—
		3 phase	80	100 - 500	Yes	—
		3 phase	80	100 - 500	Yes	—
		3 phase	80	100 - 500	Yes	—
		3 phase	80	100 - 500	Yes	—
ODIN	**3 phase + N** 	3 phase + N	65	230/400	Yes	—
DELTAplus	**3 phase + N** 	3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	Yes
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	Yes
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	—
		3 phase + N	80	57-288 / 100-500	Yes	—
			Max. current Transformer Connection			
DELTAplus	**Single phase** 	Single phase	6 (1,2,5)	57 - 288	Yes	—
		Single phase	6 (1,2,5)	57 - 288	Yes	Yes
	3 phase 	3 phase	6 (1,2,5)	100 - 500	Yes	—
		3 phase	6 (1,2,5)	100 - 500	Yes	Yes
		3 phase	6 (1,2,5)	100 - 500	Yes	—
		3 phase	6 (1,2,5)	100 - 500	Yes	Yes
		3 phase	6 (1,2,5)	100 - 500	Yes	Yes
ODIN	**3 phase + N** 	3 phase + N	10 (5)	230/400	Yes	—
DELTAplus	**3 phase + N** 	3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	Yes
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	Yes
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	—
		3 phase + N	6 (1,2,5)	57-288 / 100-500	Yes	Yes

Built in comm.	Internal Clock	Instrumen Values	Accuracy Class	Tariffs	Pulse output	Type code	Ref page No.
IR	—	—	B (Cl. 1)	1	—	OD1065	10
IR	—	—	B (Cl. 1)	1	Yes	OD1365	10
IR	—	—	B (Cl. 1)	1	Yes	FBB11200	14
IR	Yes *	—	B (Cl. 1)	2	Yes	FBB11205	14
IR	Yes *	—	B (Cl. 1)	4	Yes	FBB11206	14
IR	—	—	B (Cl. 1)	1	—	FBU11200	14
IR	Yes *	—	B (Cl. 1)	2	—	FBU11205	14
IR	Yes *	—	B (Cl. 1)	4	—	FBU11206	14
IR	—	Yes	A (Cl. 2)	1	Yes	DBB22000	22
LON+IR	—	Yes	A (Cl. 2)	2	—	DBL22003	22
LON+IR	—	Yes	A (Cl. 2)	4	—	DBL22004	22
Mbus+IR	—	Yes	A (Cl. 2)	2	—	DBM22001	22
Mbus+IR	—	Yes	A (Cl. 2)	4	—	DBM22002	22
IR	—	—	A (Cl. 2)	1	Yes	OD4165	18
IR	—	Yes	A (Cl. 2)	1	Yes	DBB23000	22
IR	Yes	Yes	A (Cl. 2)	1	Yes	DBB23007	22
IR	—	Yes	B (Cl. 1)	1	Yes	DDB13000	22
LON+IR	—	Yes	A (Cl. 2)	2	—	DBL23001	22
LON+IR	—	Yes	A (Cl. 2)	1	Yes	DBL23070	22
LON+IR	—	Yes	A (Cl. 2)	1	—	DDL23000	22
Mbus+IR	—	Yes	A (Cl. 2)	1	—	DBM23000	22
Mbus+IR	—	Yes	A (Cl. 2)	2	—	DBM23003	22
Mbus+IR	—	Yes	A (Cl. 2)	4	—	DBM23004	22
Mbus+IR	Yes	Yes	A (Cl. 2)	1	—	DBM23007	22
Mbus+IR	—	Yes	A (Cl. 2)	1	Yes	DBM23070	22
IR	—	Yes	B (Cl. 1)	1	Yes	DAB11000	23
IR	—	Yes	B (Cl. 1)	1	Yes	DCB11000	23
IR	—	Yes	B (Cl. 1)	1	Yes	DAB12000	23
IR	—	Yes	B (Cl. 1)	1	Yes	DCB12000	23
LON+IR	—	Yes	B (Cl. 1)	1	Yes	DAL12070	23
LON+IR	—	Yes	B (Cl. 1)	1	—	DCL12000	23
Mbus+IR	—	Yes	B (Cl. 1)	1	Yes	DCM12070	23
IR	—	—	A (Cl. 2)	1	Yes	OD4110	18
IR	—	Yes	B (Cl. 1)	1	Yes	DAB13000	23
IR	—	Yes	B (Cl. 1)	2	Yes	DAB13001	23
IR	—	Yes	B (Cl. 1)	4	Yes	DAB13002	23
IR	Yes	Yes	B (Cl. 1)	1	Yes	DAB13007	23
IR	—	Yes	B (Cl. 1)	1	Yes	DCB13000	23
LON+IR	—	Yes	B (Cl. 1)	2	—	DAL13003	23
LON+IR	—	Yes	B (Cl. 1)	4	—	DAL13004	23
LON+IR	—	Yes	B (Cl. 1)	1	—	DCL13000	23
Mbus+IR	Yes	Yes	B (Cl. 1)	1	—	DAM13007	23
Mbus+IR	—	Yes	B (Cl. 1)	1	Yes	DAM13070	23
Mbus+IR	—	Yes	B (Cl. 1)	1	—	DCM13000	23

*) Internal Clock for tariff control and monthly energy values

ODINsingle

1-phase meter

ODINsingle is a compact, single phase electricity meter for direct connection up to 65 A. The small size and the DIN rail mounting makes it suitable for installation in distribution boards and small standard enclosures.
Key product features are clear markings on the front that are easy to understand, robust connection terminal and a backlit display that is very easy to read.

ODINsingle, 1-phase meter

- Single phase metering
- Active energy, accuracy class B (Cl. 1)
- Direct metering up to 65A
- LCD display, Pulse output and IR port
- IEC and MID approval

ODINsingle

ODINsingle

General description

General features

ODINsingle has a display type LCD (Liquid Crystal Display). The display shows the measured values clearly with 6 digits, 6 mm high. Due to the compact design of the meter, only 2 modules, space will be saved at installation.

ODINsingle has a temperature range from -25 C to +55 C (storage +70 C).

Communication

ODINsingle has three ways to communicate:

- Backlit LCD display
- IR interface for serial communication (together with a Serial Communication Adapter).
- Pulse output as standard on OD1365.

Type approval

The **ODINsingle** types are tested and approved according to different standards.

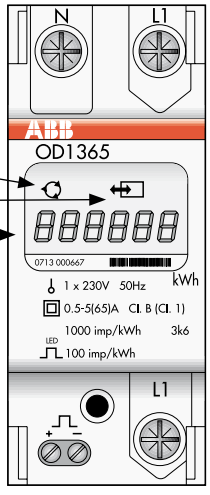
These standards cover technical aspects of the meter such as climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

Strong features

- 65A Direct connection
- Low starting current, 20 mA
- IEC approval, MID approval
- IR interface
- OD1365 one counter is resettable

Display info

- Load indicator
- Communication active
- Backlit LCD



ODINsingle

Ordering details, Wiring diagrams

OD1065 direct connected, single phase meter 65 A

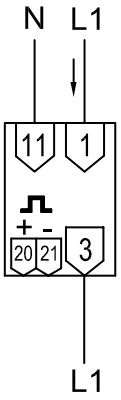
Voltage (V)	Pulse output frequency	Type	Order code	Weight kg
230	-	OD1065	2CMA131040R1000	0.135

OD1365 direct connected, single phase meter 65 A, two counters, resettable, pulse output

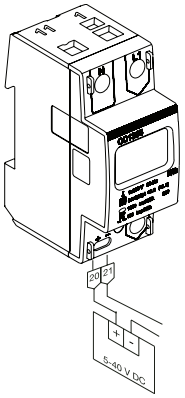
Voltage (V)	Pulse output frequency	Type	Order code	Weight kg
230	100 imp/kWh	OD1365	2CMA131041R1000	0.140

Wiring diagrams

Direct connection



Pulse output



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ODINsingle

Technical data

Direct connection up to 65A single phase meter

	OD1065 / OD1365
Voltage (V)	
Nominal voltage AC	1 x 220 - 240
Voltage range	-20% to +15% of nominal voltage
Current (A) (see page 33 for detailed current information)	
I_{min}	0.25
I_{tr}	0.5
I_{ref} (I_b)	5
I_{max}	65
I_{st}	20 mA
General data	
Frequency (Hz)	50/60
Frequency range	+/-5%
Accuracy Class	B (Cl. 1)
Power consumption current circuits at 230 VAC and I_{ref}	0.004 VA, 0.004 W
Power consumption voltage curcuits	1.0 VA, 1.0 W
Standards	
MID approval according to	EN 50470-1, EN 50470-3
International approval according to	IEC 62052-11, IEC 62053-213
Temperature range (°C)	
Operating	-25 to +55
Storage	-25 to +70
Enclosure material	
Upper	Polycarbonate
Lower	Glassfibre reinforced polycarbonate
Environment classes	
Mechanical environment	M1
Electromagnetical environment	E2
Resistance to heat and fire	IEC 60695-2-1
Humidity	75% yearly average, 95% on 30 days/year
Connection area main terminals	
Current terminals flexible 1 x mm²	1 - 16
Protection against penetration of dust and water	According to IEC 60529: IP 20 on terminal block without protective enclosure*)
Pulse output (OD1365)	
Connection area, main terminals	
• Flexible 1 x mm²	0 - 2.5
• Solid 1 x mm²	0 - 2.5
External pulse voltage (V) DC	5 - 40 (Transistor output)
Max. current (mA)	100
Pulse length (ms)	100 (± 2.5)
Pulse frequency (imp/kWh)	100
Standard	IEC 62053-31 (S0)
LED	
Pulse frequency (imp/kWh)	1000
Pulse length (ms)	40
Display	Backlit LCD with 6 digits, height 6 mm
Dimensions	
Width (mm)	35.8
Height (mm)	85
Depth (mm)	63.4
DIN modules	2

*) To comply with the protection requirements the meter must be mounted in a class IP 51 enclosure or better, acc. to IEC 60529.

DELTAsingle
1-phase meter

DELTAsingle is an advanced single phase electricity meter for active energy. It is designed for installation on a DIN rail in distribution boards and small enclosures.

Key product features are internal clock for tariff handling and direct metering up to 80 A.

DELTAsingle, 1-phase meter

- Single phase metering
- Active energy, accuracy class B (Cl. 1)
- Direct metering up to 80A
- LCD display, Pulse output and IR port
- Internal clock for 1, 2 and 4 tariffs and monthly values
- Memory back-up (EEprom)
- IEC and MID approval

DELTAsingle

DELTAsingle
General description

General features

The **DELTAsingle** is an active energy, single phase meter for direct metering up to 80A. The LCD (Liquid Crystal Display) has 6 digits, 6 mm high to ensure clear reading.

DELTAsingle has a compact design, only 4 modules (72 mm) that saves space in the installation.

In the case of a power failure, the meter is equipped with a "Super Cap" power backup capacitor that will run the clock for one week at +20˚ C.
A LED on the front flashes proportionally to the energy consumed.

DELTAsingle has a temperature range from –40 to +55° C (storage +70° C)

Communication

DELTAsingle has 3 ways to communicate depending on type.

- LCD display
- Pulse output
- IR interface for serial communication (together with the serial communication adapter)

Programming

It is possible to choose information shown on the display and change the settings in the meter using two push buttons. The push button used for changing settings can be sealed.

Tariffs

The **DELTAsingle** range includes 1, 2 and 4 tariff meter options.

Type approval

All the **DELTAsingle** meter types are tested and approved according to different standards.
These standards covers all technical aspects of the meter such as climate conditions, electromagnetic compatibility (EMC),
electrical requirements, mechanical requirements as well as accuracy.

Unique

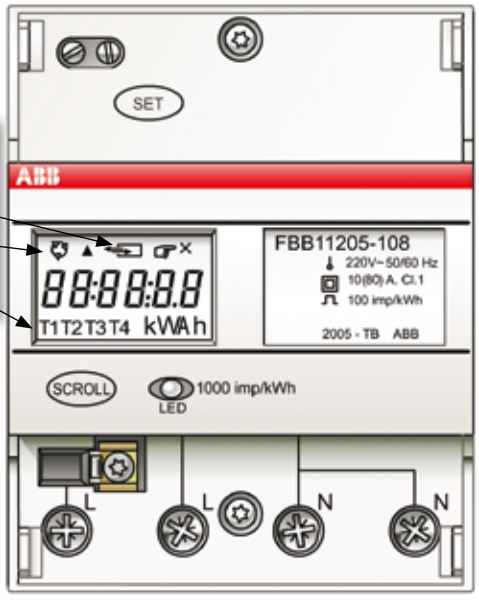
- IR Port
- Internal clock
- Weight, only 150gr
- Display Info

Strong features

- 80A direct current
- Low starting current
  - Direct = 25mA
- IEC approval, MID approval
- Memory back up (EEprom)
- Clock back up (Super Cap)
- Accuracy class B (Cl.1)
- Tariffs (1, 2, 4)

Display info

- Communication indicator
- Load indicator
- Tariff indicator



DELTAsingle

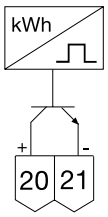
Ordering details, Wiring diagrams

Ordering details

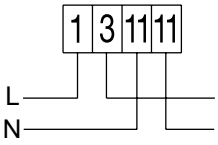
No. of Tariffs	Pulse output	Type	Order code	Weight kg
1	No	FBU11200	2CMA 180 891 R1000	0.150
1	Yes	FBB11200	2CMA 180 892 R1000	0.150
2	No	FBU11205	2CMA 180 893 R1000	0.150
2	Yes	FBB11205	2CMA 180 894 R1000	0.150
4	No	FBU11206	2CMA 180 895 R1000	0.150
4	Yes	FBB11206	2CMA 180 896 R1000	0.150

Wiring diagrams

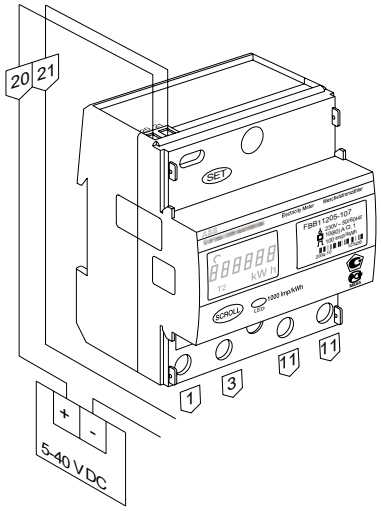
Pulse output



Main terminals



Pulse output



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Direct connection up to 80A single phase meter

Voltage (V)	
Nominal voltage AC	1x220 - 240
Voltage range	-20% to +15% of nominal voltage
Current (A) (See page 33 for detailed current information)	
I_{min}	0.5
I_{tr}	1.0
I_{ref} (I_b)	10
I_{max}	80
I_{st}	25 mA
General data	
Frequency (Hz)	50/60
Frequency range	±5%
Accuracy class	B (Cl. 1)
Power comsumption current circuits at 230 VAC and I_{ref}	0.02 VA, 0.02 W
Power consumption voltage circuits	1.3 VA, 1.3 W
Standards	IEC 62052-11, IEC 62053-21 (IEC 61036) EN 50470-1, EN 50470-3
Memory back-up	EEprom
Clock back-up	Super Cap. 168 hours back-up at +20° C, min 48 hours over operating temperature range
Clock accuracy	IEC 62052-21, IEC 62054-21
Temperature range (°C)	
• Operating	-40 to +55
• Storing	-40 to +70
Environment	According to IEC 60695-2-1:
Resistance to heat and fire	• Terminal 960° C • Cover 650° C
Enclosure material	
Upper	Polycarbonate
Lower	Glassfibre reinforced polycarbonate
Humidity	75% yearly average, 95% on 30 days/year
Connection area, main terminals	
• Flexible 1 x mm²	4 - 25
• Solid 1 x mm²	4 - 25
Protection against penetration of dust and water	According to IEC 60529: • IP20 on terminal block without protective enclosure *)
Pulse output	
Connection area, main terminals	
• Flexible 1 x mm²	0 - 2.5
• Solid 1 x mm²	0 - 2.5
External pulse voltage (V) DC	5 - 40 (transistor output)
Max. current (mA)	100
Pulse lenght (ms)	100
Pulse frequency (imp/kWh)	100
Standard	IEC 62053-1 (SO)
LED	
Pulse frequency (imp/kWh)	1000
Pulse length (ms)	40
Display	LCD with 6 digits, height 6 mm
Dimensions	
Width (mm)	72
Height (mm)	95
Depth (mm)	63.6
DIN modules	4

*) To comply with the protection requirements the meter must be mounted in a class IP 51 enclosure or better, acc. to IEC 60529

ODIN Meter

Basic 3-phase meter

ODIN Meter is a basic three phase electricity meter in a compact format. It is designed to measure active energy and for mounting on a DIN rail. It is suitable for use in distribution boards and standard cabinets.

Key product features are clear markings on the front that are easy to understand, robust connection terminal and a display that is easy to read.

ODIN Meter, basic 3-phase meter

- 3 phase metering
- Active energy, accuracy class A (Cl. 2)
- Direct metering up to 65A
- Transformer metering 5A
- LCD display, Pulse output and IR port
- Memory back-up (EEprom)
- IEC and MID approval

ODIN Meter

ODIN Meter

General description

General features

ODIN meter is an active energy, 3-phase meter for direct connection up to 65A or transformer connected up to 10A secondary.
The LCD display (Liquid Crystal Display) has 7 digits, 6 mm high.
ODIN meter has a compact design, only 6 modules, which saves space in the installation.
ODIN meter has as temperature range from -25 ˚C to +55 ˚C (storage +70 ˚C).

Communication

ODIN meter has 3 ways to communicate

- Front LCD display.
- Pulse output.
- IR interface for serial communication (together with the Serial Communication Adapter).

Programming

Selection of the transformer ratio is easily achieved by using the push button on the front. The programming / push button can be sealed.

Type approval

All the **ODIN** meter types are tested and approved according to different standards.
These standards covers all technical aspects of the meter such as climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

Unique

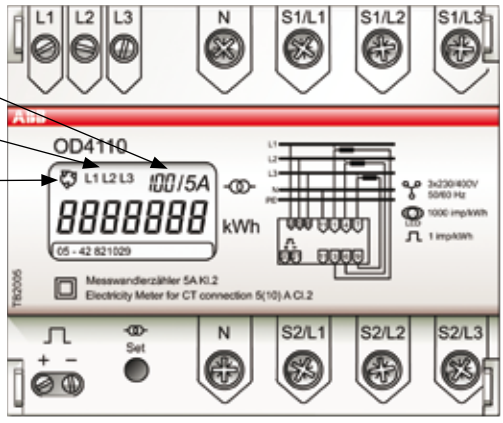
- IR Port
- Display Info

Strong features

- 65A Direct Current
- Low starting current
  Direct = 25mA,
  Transformer = 15mA
- IEC approval, MID approval
- Busbar mounting
- Transformer ratio setting
- Wiring instruction on the front

Display info

- Transformer ratio
- Phase indication
- Load indicator



ODIN Meter

Ordering details, Wiring diagrams

OD4165 direct connected, 3 phase meter 65 A

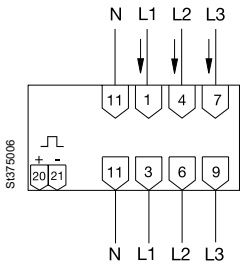
Voltage (V)	Pulse output frequency	Type	Order code	Weight kg
230/400	100 imp/kWh	OD4165	2CMA 131 024 R1000	0.393

OD4110 transformer connected by external CT, 3 phase meter

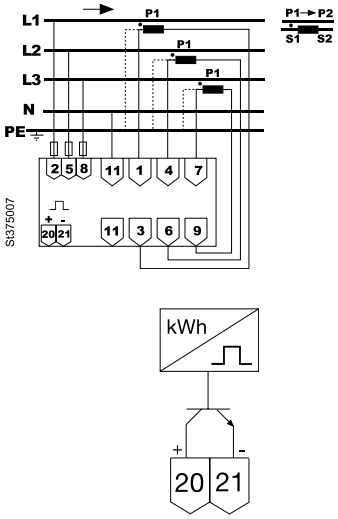
Voltage (V)	Pulse output frequency	Type	Order code	Weight kg
230/400	1 imp/kWh	OD4110	2CMA 131 025 R1000	0.417

Wiring diagrams

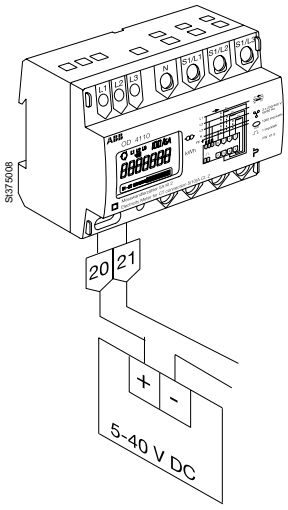
Direct connection



Connection via current transformer



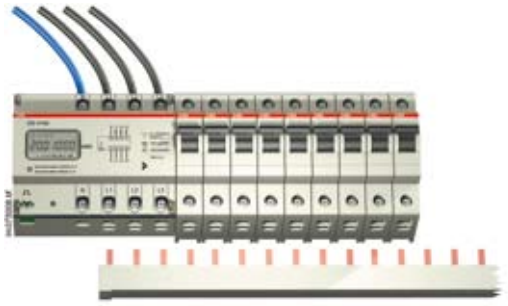
Pulse output



Examples of connections

Using cables

Using cabling and busbar



To ensure correctly functionality the ODIN Meter should be connected to neutral by either the upper of lower terminal.

• Accessories ..... page 32 • Technical data .....page 19 • Dimensions ..... page 34

ODIN Meter
Technical data

	OD4165 Direct connection, 3 phase meter up to and incl. 65A	OD4110 Connection via external current transformers, 3 phase meter
Voltage (V)		
Voltage AC	3 x 230/400	3 x 230/400
Voltage range	-20% to +15%	-20% to +15%
Current (A) (See page 33 for detailed current information)		
I_{min}	0.25	0.10
I_{tr}	0.50	0.25
I_{ref} (I_b)	5	—
I_n	—	5
I_{max}	65	10
I_{st}	25 mA	15 mA
General data		
Frequency (HZ)	50/60	50/60
Frequency range	±5%	±5%
Accuracy class	A (Cl. 2)	A (Cl. 2)
Power consumption current circuits at 230 VAC and I_{ref}	0.004 VA, 0.004 W per phase	0.004 VA, 0.004 W per phase
Power consumption voltage circuits	0.9 VA, 0.9 W total	0.9 VA, 0.9 W total
Standards	IEC 62052-11, IEC 62053-21, EN 50470-1, EN50470-3	
Temerature range (˚C)		
• Operating	-25 to +55	-25 to +55
• Storing	-25 to +70	-25 to +70
Selectable transformer ratios	—	5/5, 75/5, 100/5, 150/5, 200/5 250/5, 300/5, 400/5, 500/5, 600/5, 700/5, 800/5, 900/5 A/A
Enclosure material		
Upper	Polycarbonate	Polycarbonate
Lower	Glassfibre reinforced polycarbonate	Glassfibre reinforced polycarbonate
Environment resistance to heat and fire	IEC 60695-2-1	IEC 60695-2-1
Humidity	75% yearly average, 95% on 30 days/year	75% yearly average, 95% on 30 days/year
Protection against penetration of dust and water	IP20	IP20
Connection area main terminals		
• Current terminals		
Flexible 1 x mm²	1 - 16	1 - 16
• Voltage terminals		
Flexible 1 x mm²	—	0.5 - 6
Pulse output		
Connection area, main terminals		
• Flexible 1 x mm²	0 - 2.5	0 - 2.5
• solid 1 x mm²	0 - 2.5	0 - 2.5
External pulse voltage VDC	5 - 40 (Transistor output)	5 - 40 (Transistor output)
Max. current (mA)	100	100
Pulse lenght (ms)	100 (± 2,5)	100 (± 2,5)
Pulse frequency (imp/kWh)	100	1
Standard	IEC 62053-31 (S0)	IEC 62053-31 (S0)
LED		
Pulse frequency (imp/kWh)	100	1000
Pulse length (ms)	40	40
Display of energy	LCD with 7 digits, height 6 mm	LCD with 7 digits, height 6 mm
Dimensions		
Width (mm)	105	105
Height (mm)	85	85
Depth (mm)	63.4	63.4
DIN modules	6	6

DELTAplus

Advanced 3-phase meter

The DELTAplus Meter is an advanced three phase electricity meter for installation on a DIN rail in distribution boards and small enclosures. The meter is capable of measuring active or combined (active and reactive) energy.

Key product features are wide voltage range, automatic installation control, internal clock for tariff handling and logging, and energy analyzer functionality.

DELTAplus, advanced 3-phase meter

- 3 phase metering
- Measuring of Active or Combined (Active and reactive) energy, accuracy class B & A (Cl.1 & 2)
- Direct metering up to 80A
- Transformer metering for 1, 2 or 5A
- Voltage range 100-500V
- LCD display, Pulse output and IR for SCA
- Instrument values
- Automatic installation control
- Memory back-up (EEprom)
- Internal Clock for 1,2 and 4 tariffs
- Monthly values, maximum demand, load profile (option)
- IEC and MID approval

DELTAplus

DELTAplus

General description

General features

The **DELTAplus** is easy to read with its LCD (Liquid Crystal Display) with 7 mm high digits and several symbols.
The meter has a polarity independent, solid state (semi-conductor) relay that generates pulses proportionally to the measured energy.

A LED also flashes propotionally to the energy measured. The **DELTAplus** can be equipped with inputs or outputs for control, alarm handling and pulse counting.
The meter is equipped with unique instrumentation functions enabling it to read the essential electrical units.

Communication

DELTAplus with integrated M-Bus or LONWorks communication, are easy to read remotely in a cost-effective way without conversions by traditional pulsed output.
The **DELTAplus** is also equipped with an IR output that can be connected to the ABB Serial Communication Adapter(SCA).

Programming

Selection of the information in the LCD-display and programming of the **DELTAplus** is performed by two programming buttons. These buttons can be sealed.

Type approval

All **DELTAplus** meter types are tested and approved according to different standards.
These standards cover all technical aspects of the meter such as climate conditions, electromagnetic compability (EMC), electrical requirements, mechanical requirements as well as accuracy.

Tariffs

The **DELTAPlus** range includes 1, 2 and 4 tariff meters.

Installation check

All meters are equipped with an automatic installation check that monitors correct connection of the meter.

Instrumentation

The instrumentation functions in **DELTAplus** which enable it to read essential electrical units.
This means that the user can read out the following from the **DELTAplus**:

- Power (W)
- Current (A)
- Voltage (V)
- Frequency (Hz)
- Power factor

Functionalities of DELTAplus with Log functions

Optional log functions include:

- Load profile
- Maximun demand
- Power quality
- Event log

For more information see page 29

Unique

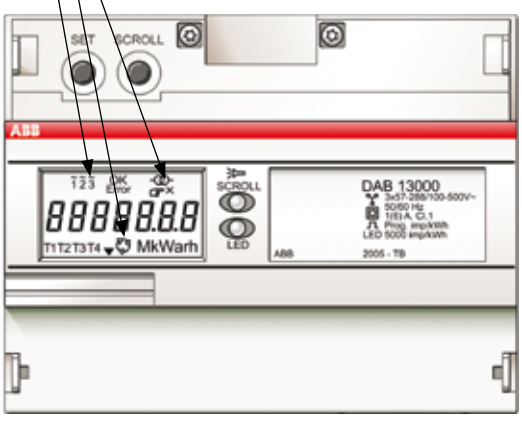
- IR Port
- Voltage range (100-500V)
- Automatic Installation Control
- I/O function
- Display Info

Strong features

- 80A Direct Current
- Low starting current
  - Direct = 20mA, Transformer = 2mA
- IEC approval, MID approval
- Memory back up (EEprom)
- Clock back up (Super Cap)
- Active & Reactive energy
- Instrumentation
- Internal clock
- Tariffs (1, 2 and 4)
- Wide transformer ratio range

Display info

- Phase indication
- Load indicator
- Transformer ratio active



DELTAplus

Direct connected meters

Ordering details

Pulse

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/	Active	A (Cl. 2)			DBB23000	2CMA 180 800 R1000	0.338
100-500	Active	A (Cl. 2)	2		DBB23001	2CMA 180 811 R1000	0.338
	Active	A (Cl. 2)	4		DBB23002	2CMA 180 813 R1000	0.338
	Active	B (Cl.1)			DBB13000	2CMA 180 801 R1000	0.338
	Active	B (Cl.1)	2		DBB13001	2CMA 180 812 R1000	0.338
	Active & Reactive	B (Cl.1)			DDB13000	2CMA 180 810 R1000	0.338
3x100-500	Active	A (Cl. 2)			DBB22000	2CMA 180 802 R1000	0.338
	Active	A (Cl. 2)	2		DBB22001	2CMA 180 814 R1000	0.338
	Active	A (Cl. 2)	4		DBB22002	2CMA 180 815 R1000	0.338
1x57-288	Active	A (Cl. 2)			DBB21000	2CMA 180 804 R1000	0.338
	Active	A (Cl. 2)	2		DBB21001	2CMA 180 816 R1000	0.338
	Active	A (Cl. 2)	4		DBB21002	2CMA 180 817 R1000	0.338
	Active	B (Cl.1)	2		DBB11001	2CMA 180 818 R1000	0.338

Pulse/Log function

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/ 100-500	Active	A (Cl. 2)			DBB23007	2CMA 139 261 R1000	0.338

M-Bus communication

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288	Active	A (Cl. 2)			DBM23000	2CMA 180 840 R1000	0.338
100-500	Active	A (Cl. 2)	2		DBM23001	2CMA 180 920 R1000	0.338
	Active	A (Cl. 2)	4		DBM23002	2CMA 180 921 R1000	0.338
	Active	A (Cl. 2)		1 pulse output	DBM23070	2CMA 180 841 R1000	0.338
	Active	A (Cl. 2)		2 inputs	DBM23020	2CMA 180 922 R1000	0.338
3x100-500	Active	A (Cl. 2)			DBM22000	2CMA 180 842 R1000	0.338
	Active	A (Cl. 2)	2		DBM22001	2CMA 180 923 R1000	0.338
	Active	A (Cl. 2)	4		DBM22002	2CMA 180 924 R1000	0.338
1x57-288	Active	A (Cl. 2)			DBM21000	2CMA 180 843 R1000	0.338

M-Bus communication/Log function

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/ 100-500	Active	A (Cl. 2)			DBM23007	2CMA 139 370 R1000	0.338

LonWorks communication

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/	Active	A (Cl. 2)			DBL23000	2CMA 180 820 R1000	0.338
100-500	Active	A (Cl. 2)	2		DBL23003	2CMA 180 829 R1000	0.338
	Active	A (Cl. 2)	4		DBL23004	2CMA 180 830 R1000	0.338
	Active	A (Cl. 2)		1 pulse output	DBL23070	2CMA 180 821 R1000	0.338
	Active & Reactive	A (Cl. 2)			DDL23000	2CMA 139 357 R1000	0.338
3x100-500	Active	A (Cl. 2)			DBL22000	2CMA 180 822 R1000	0.338
	Active	A (Cl. 2)	2		DBL22003	2CMA 180 831 R1000	0.338
	Active	A (Cl. 2)	4		DBL22004	2CMA 180 832 R1000	0.338
1x57-288	Active	A (Cl. 2)			DBL21000	2CMA 180 833 R1000	0.338

• Accessories ..... page 32 • Technical data ..... page 24 & 25 • Dimensions ..... page 35

DELTAplus

Transformer connected meters

Ordering details

Pulse

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/ 100-500	Active	B (Cl.1)			DAB13000	2CMA 180 806 R1000	0.304
	Active& Reactive	B (Cl.1)			DCB13000	2CMA 180 808 R1000	0.304
	Active	B (Cl.1)	2		DAB13001	2CMA 180 870 R1000	0.304
	Active & Reactiv	B (Cl.1)	2		DCB13001	2CMA 180 872 R1000	0.304
	Active	B (Cl.1)	4		DAB13002	2CMA 180 871 R1000	0.304
	Active & Reactive	B (Cl.1)	4		DCB13002	2CMA 180 873 R1000	0.304
3x100-500	Active	B (Cl.1)			DAB12000	2CMA 180 807 R1000	0.304
	Active & Reactive	B (Cl.1)			DCB12000	2CMA 180 809 R1000	0.304
1x57-288	Active	B (Cl.1)			DAB11000	2CMA 180 819 R1000	0.304
	Active & Reactive	B (Cl.1)			DCB11000	2CMA 137 601 R1000	0.304

Pulse/Log function

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/ 100-500	Active	B (Cl.1)			DAB13007	2CMA 139 305 R1000	0.304

M-Bus communication

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288	Active	B (Cl.1)			DAM13000	2CMA 180 844 R1000	0.304
100-500	Active & Reactive	B (Cl.1)			DCM13000	2CMA 180 852 R1000	0.304
	Active	B (Cl.1)	2		DAM13001	2CMA 180 855 R1000	0.304
	Active	B (Cl.1)	4		DAM13002	2CMA 180 856 R1000	0.304
	Active	B (Cl.1)		1 pulse output	DAM13070	2CMA 180 845 R1000	0.304
	Active & Reactive	B (Cl.1)		2 pulse output	DCM13070	2CMA 180 848 R1000	0.304
3x100-500	Active	B (Cl.1)			DAM12000	2CMA 180 846 R1000	0.304
	Active & Reactive	B (Cl.1)		2 pulse output	DCM12070	2CMA 180 849 R1000	0.304

M-Bus communication/Log function

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/ 100-500	Active	B (Cl.1)			DAM13007	2CMA 139 371 R1000	0.304

LonWorks communication

Voltage (V)	Energy Measure	Accuracy Class	Tariffs	I/O	Type	Order code	Weight kg
3x57-288/ 100-500	Active	B (Cl.1)			DAL13000	2CMA 180 823 R1000	0.304
	Active & Reactive	B (Cl.1)			DCL13000	2CMA 180 828 R1000	0.304
	Active	B (Cl.1)	2		DAL13003	2CMA 180 834 R1000	0.304
	Active	B (Cl.1)	4		DAL13004	2CMA 180 835 R1000	0.304
	Active	B (Cl.1)		1 pulse output	DAL13070	2CMA 180 824 R1000	0.304
3x100-500	Active	B (Cl.1)			DAL12000	2CMA 180 825 R1000	0.304
	Active & Reactive	B (Cl.1)			DCL12000	2CMA 180 836 R1000	0.304
	Active	B (Cl.1)		1 pulse output	DAL12070	2CMA 180 826 R1000	0.304

• Accessories ..... page 32 • Technical data ..... page 24 & 25 • Dimensions ..... page 35

DELTAplus

Technical data

	Direct connected meters	Transformer connected meters
Voltage (V)		
Voltage	3 x 57-288 /100-500 (4-wire) 3 x 100-500 (3-wire) 1 x 57-288 (single phase)	3 x 57-288 /100-500 (4-wire) 3 x 100-500 (3-wire) 1 x 57-288 (single phase)
Voltage range	-20% to +15% of nominal voltage	-20% to +15% of nominal voltage
Current (A) (See page 33 for detailed current information)		
I_{min}	0.25	0.01
I_{tr}	0.50	0.05
I_{ref} (I_b)	5	—
I_n	—	1.0
I_{max}	80	6
I_{st}	20 mA	2 mA
General data		
Frequency (Hz)	50/60	50/60
Frequency range	±5%	±5%
Accuracy class	A or B (Cl. 2 or Cl. 1)	B (Cl. 1)
Power consumption current circuits at 230 VAC and I_{ref}	0.007 VA, 0.007 W per phase	0.001 VA, 0.001 W per phase
Power consumption voltage circuits	0.5 VA, 0.5 W total	0.5 VA, 0.5 W total
Standards		
active energy meters of class 1 and 2	• IEC 62052-11, IEC 62053-21	• IEC 62052-11, IEC 62053-21
reactive energy meters of class 2	• IEC 62053-23	• IEC 62053-23
active energy meters class A, B	• EN 50470-1, EN 50470-3	• EN 50470-1, EN 50470-3
Memory back-up	EEprom	EEprom
Clock back-up	Super Cap. One week back-up at +20°C, min. 72 hours over operating time	Super Cap. One week back-up at +20°C min. 72 hours over operating time
Clock accuracy	IEC 62052-11, IEC 62054-21	IEC 62052-11, IEC 62054-21
Temerature range (°C)		
• Operating	-40 to +55	-40 to +55
• Storing	-40 to +70	-40 to +70
Voltage transformer ratio	—	1 - 9 999
Current transformer ratio	—	1 - 9 999
Max. transformer ratio	—	CT x VT max 999 999
Environment resistance to heat and fire	According to IEC 60695-2-1: • Terminal 960°C • Cover 650°C	According to IEC 60695-2-1: • Terminal 960°C • Cover 650°C
Enclosure material		
Upper	Polycarbonate	Polycarbonate
Lower	Glassfibre reinforced polycarbonate	Glassfibre reinforced polycarbonate
Humidity	75% yearly average, 95% on 30 days/year	75% yearly average, 95% on 30 days/year
Protection against penetration of dust and water	According to IEC 60529: • IP20 on terminal block without protective enclosure	According to IEC 60529: • IP20 in terminal block without protective enclosure
Connection area, main terminals		
• Current terminals		
Flexible 1 x mm²	1.0 - 25	0.5 - 10
• Voltage terminals		
Flexible 1 x mm²	—	0.5 - 10

DELTAplus

Technical data

	Direct connected meters	Transformer connected meters
Pulse output		
Connection area (mm^2)	0 - 2.5 (For combined meters 0 - 0.5)	0 - 2.5 (For combined meters 0 - 0.5)
External pulse voltage (V) AC/DC	0 - 247 (solid state relay polarity independent)	0 - 247 (solid state relay polarity independent)
Max. current (mA)	0 - 100	0 - 100
Pulse length (ms)	100	100
Pulse frequency	Programmable (Default 100)	Programmable (Default 10)
Standards	IEC 62053-31 (S0)	IEC 62053-31 (S0)
LED		
LED frequency	1000	5000 (secondary registering)
Pulse width (ms)	40	40
Display of energy	LCD with 7 digits, height 7 mm	LCD with 7 digits, height 7 mm
Electromagnetic compability (EMC)		
Impulse voltage test	6 kV 1.2 / 50µs (IEC 600-60)	6 kV 1.2 / 50µs (IEC 600-60)
Fast transient burst test (kV)	4 (IEC 61000-4-4)	4 (IEC 61000-4-4)
Radio frequency immunity	80 MHz 1 GHz at 10 V/m (IEC 61000-4-3)	80 MHz 1 GHz at 10 V/m (IEC 61000-4-3)
Electrostatic discharge (ESD) (kV)	15 (IEC 61000-4-2)	15 (IEC 61000-4-2)
Tariff inputs (optional)		
Max. voltage (V) AC	276	276
Max. wire size (mm^2)	2.5	2.5
Input voltage range (V) AC	0 - 20 (”voltage off”) 57 - 276 (”voltage on”)	0 - 20 (”voltage off”) 57 - 276 (”voltage on”)
Terminal wire area (mm^2)		
LON and M-Bus	0 - 2.5	0 - 2.5
EIB	0.5	0.5
Dimensions		
Width (mm)	122.5	122.5
Height (mm)	97	97
Depth (mm)	64.8	64.8
DIN modules	7	7

DELTAplus
Wiring diagram, Pulse frequency

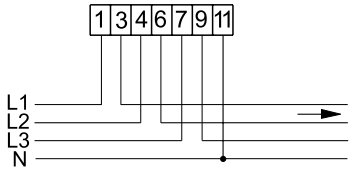


Fig.1 **DBB23XXX**

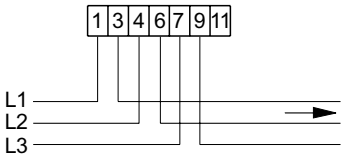


Fig.2 **DBB22XXX**

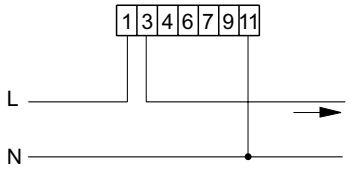


Fig.3 **DBB21XXX**

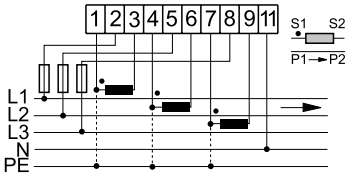


Fig.4 **DAB13XXX**

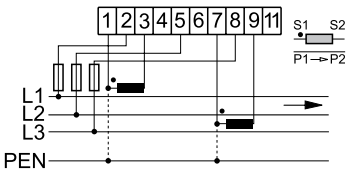


Fig.5 **DAB12XXX**

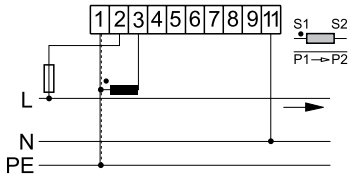


Fig.6 **DAB11XXX**

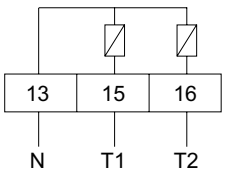


Fig.7

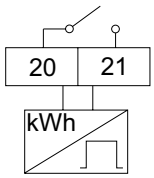


Fig.8

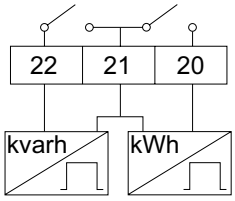


Fig.9

Direct connected meters

Three phase system
With neutral conductor (see DBB23XXX, Fig.1)
Without neutral conductor (see DBB22XXX, Fig.2)

One phase system
Phase and neutral (see DBB21XXX, Fig.3)

Transformer connected

Three phase system
With neutral conductor (see DAB13XXX, Fig.4)
Without neutral conductor (see DAB12XXX, Fig.5)

One phase system
With neutral conductor (see DAB11XXX, Fig.6)

Pulse output

External power supply up to 247 V AC or DC
Active energy meters (see Fig.8)
Combined meters (see Fig.9)

Tariff input

Tariff control by external power supply up to 230 V AC (see Fig.7)

Active Tariff	Input (T1)	Input (T2)
Tariff 1	0*	0
Tariff 2	1**	0
Tariff 3	0	1
Tariff 4	1	1

*0 means < 20 V, **1 means> 57 V - 276

Pulse frequency

at different loads

Direct connected meters (imp/kWh)	Transformer-connected meters (imp/kWh primary registering)	Max power
—	0.01	3500 MW
—	0.1	350 MW
—	1	35 MW
10	10	3.5 MW
100	100	350 kW
500	500	70 kW
640	640	54 kW
1000	1000	35 kW
5000	—	7 kW

Cable length for connection

This table is valid for copper cable

Transformer Secondary side	Leader area mm²	Double leader (meters) 0.5	1	2.5	5	10	
5A	1.5	0.3	0.6	1.5	2.9	5.8	VA
5A	2.5	0.2	0.4	0.9	1.8	3.6	VA
5A	4	0	0	0.6	1.1	2.3	VA
5A	6	0	0	0.1	0.3	0.6	VA
1A	1	0.02	0.04	0.09	0.18	0.35	VA
1A	1.5	0.01	0.03	0.06	0.12	0.23	VA
1A	2.5	0.01	0.02	0.04	0.07	0.14	VA

Note:
Cable length is depending on max. transformer VA.
Max. cable area is depending of max entry of the transformer.

DELTAplus type designation key

Pos	1	2	3	4	5	6-8
Basic						
Standard	**D**					
Measuring						
Active - CTVT connected		**A**				
Active - direct connected		**B**				
Active & reactive CTVT connected		**C**				
Active & reactive direct connected		**D**				
Communication						
Pulse, output & IR-port			**B**			
M-Bus interface built-in & IR-port			**M**			
LonWorks interface built-in & IR-port			**L**			
Accuracy						
Class B (Cl. 1)				**1**		
Class A (Cl. 2)				**2**		
Voltage						
1 x 57-288 V					**1**	
3 x 100-500 V					**2**	
3 x 57-288 / 100-500 V					**3**	
Option functionallity						
No option						**000**
2 tariffs (controlled by 230 V)						**001**
4 tariffs (controlled by 230 V)	1*					**002**
2 tariffs (controlled by communication)	2*					**003**
4 tariffs (controlled by communication)	2*					**004**
2 tariffs (controlled by communication or internal clock)	1*					**005**
4 tariffs (controlled by communication or internal clock)	1*					**006**
Internal clock without tariffs	1*					**007**
1 input (40 V)	3*					**010**
2 inputs (40 V)	1*					**020**
1 output (230 V)	3*					**030**
2 outputs (230 V)	1*					**040**
1 in / 1 out (230 V)	1*					**050**
1 in / 1 out (40 V)	1*					**060**
Pulse output (230 V)	2*					**070**

1*) Not available for meters with built-in LonWorks communication

2*) Only available for meters with communication

3*) Only available for meters with LonWorks communication

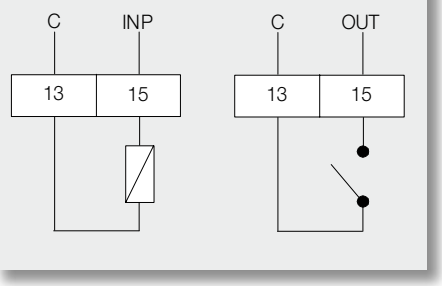
Example:
Standard DELTAplus transformer connected for active energy metering, accuracy class B (Cl. 1).
For 4 wire system 400 V and no option.

D	A	B	1	3	000
1	2	3	4	5	6

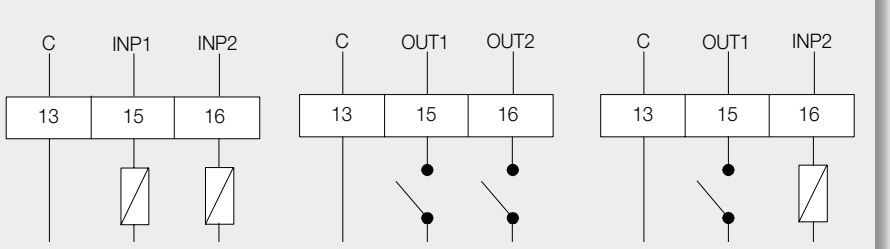
Inputs or Outputs

The meter is available with various input and output as options. The input can be used as an alarm or as a pulse counter, e.g., for a water meter. The output can be used as ON and OFF function, for example to switch off the current by remote control.
The inputs/outputs are of opto-switch type and are galvanic isolated from other electronics parts in the meter. There are two input/output voltage variants; high and low, (see technical data). Both variants are for AC/DC voltage and are of polarity independent.

LonWorks meters



M-Bus and standard meters



Technical data input/output

Input	
Voltage range	0-40 V AC/DC 0-2 V no pulse count 4.5-40 V pulse count
Input resistance	8-13 kohm
Min. pulse length and pause	30 ms
Output	
Voltage range	0-400 V DC, 0-282 V AC
Output resistance	12-36 ohm
Max. current	120 mA

LonWorks Protocol

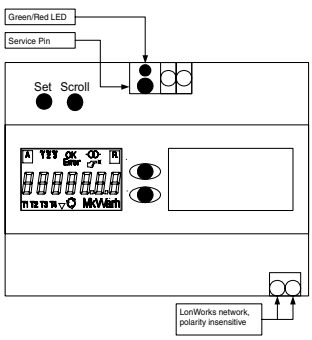
The software is compatible with Lon Mark 3.2 and uses the LonMark-profile Utility Data Logger 1.0. A description of network variables can be found noted in the DELTAplus User's Manual.

Technical information (LonWorks)

Operating and display elements:
Service pin and LED.
Bus inerface: FTT-10A.
Communication rate: 78 kbps.

A software clock is implemented in the LonWorks interface to enable readings from meter to be time-recorded.
The accuracy is ± 2 seconds per 24 hours.

Installation (LonWorks)



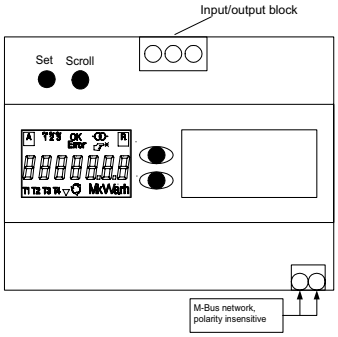
M-Bus Protocol

The protocol is based on international standard IEC 870.
The bus system is adapted for remote reading of energy meters and works on the principle of master slave.

Baud rate

300, 600, 1200, 2400 (default), 4800, 9600

Installation (M-Bus)



For more information see "DELTAplus Meter User's Manual" at **www.abb.com/lowvoltage.**
«Modular DIN Rail Products»«Electricity meters for DIN Rail»

Internal clock and time dependant functions

DELTAplus meter with internal clock keeps track of the date and time and is equipped with various time dependant functions such as load profile, maximum demand, monthly values, event log, outputs controlled by time and in tariffs.
The tariffs are normally controlled via the internal clock (no external time switch required).

The monthly values, load profile, maximum demand and the event log functions are only readable via bus.
Changing the default settings of these functions are only possible by serial communication.
If the time and date are not set no values will be registered.

If all the memory available for a time dependant function is used, the oldest recorded data for that function will be overwritten. Changing interval length or number of values to be stored for a function will reset all values stored.

Internal clock

The internal clock has a built in calendar and keeps automatically track of leap year and daylight savings time (DST).
DST function is optional.

Backup of the clock during a power failure is provided by a supcapacitor. The time is controlled from a quartz crystal based real time clock. Time and date is set via the buttons or via communications.

The internal clock is approved according to IEC 62052-21 and IEC 62054-21 which contains particular requirements for time switches. The stated accuracy is less than 5 ppm at room temperature when controlled from the quartz crystal based real time clock.

Monthly values

The monthly value feature will store all energy registers and input counter values altogether with a date/time stamp upon a change of month. All total energy values are stored and in meters equipped with the tariff feature all the tariff registers will also be stored. The number of stored monthly values can be set from 0 to 31 and is by default set to 18.

Load profile

In the load profile function each day is divided into intervals of a certain length where the energy consumption in each interval is stored. The possible interval lengths are 15, 30 or 60 minutes. The default value is 60 minutes.

The quantities that can be stored are active and reactive energy with the number of pulses registered on input 1 and 2. Storage of reactive energy is possible on combined meters only and storing of pulses requires meters with corresponding input.

The load profile function always use standard time irrespective if the DST (daylight savings time) function is active or not.

Maximum demand

In the maximum demand function the time is divided into intervals of a certain length and the mean power in each interval is measured and the maximum mean value is stored together with a date/time stamp. The possible interval lengths are 15, 30 or 60 minutes and is programmable. Default value 15.

For each set of maximum demand values the end date/time of the period is stored.

The quantities that can be stored are active and reactive power and number of pulses registered on input 1 and 2 (pulses/interval). In tariff meters the maximum demand is stored for each tariff.

The maximum number of maximum demand values to be stored are programmable from 0 up to 31. Default value 6.

Event log

The event log function can log the following events:

- Overvoltage on each phase (+6%)
- Undervoltage level 1 on each phase (-10%)
- Undervoltage level 2 on each phase (-15%)
- Phase voltage outage (-15%)
- Negative power
- Total power outage

For the over- and undervoltage events a percentage level in respect to a nominal voltage is given which is programmable.

For each registered event the start date/time and the duration (in seconds) is stored.

The number of events to be stored are programmable from 0 up to 512. Default value 50.

Serial Communication Adapter

General description

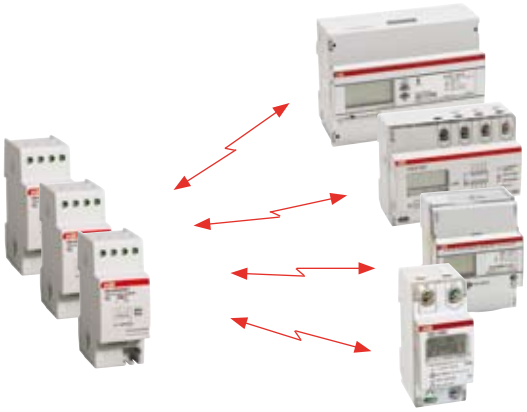
The Serial Communication Adapter (SCA) enables serial data communication between the electricity meter and an Automatic Meter Reading system (AMR).

The adapter for ABB DIN-rail mounted electricity meters

The electricity meter has an optical interface for remote reading of its measured data and identity, using the M-Bus protocol.

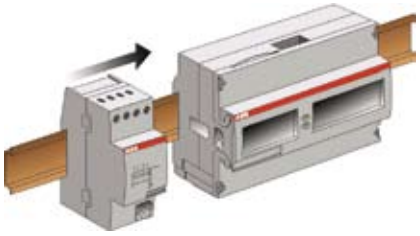
A SCA converts the optical signals to different chosen media (Power line, Twisted pair, etc.) and protocols (LonWorks, M-Bus, TCP/IP, etc.)

- DIN-rail mounting
- Compact size, only 2 DIN-modules
- Easy installation



Installation

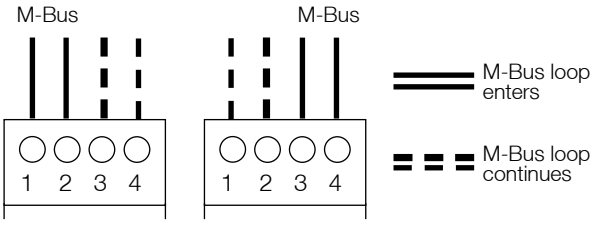
The SCA is designed for DIN-rail mounting. The optical interface on the left side of ABB meter must face the optical interface on the right side of the SCA. It is important that the electricity meter and the adapter are installed close to each other.



SCA Two-wire M-Bus

The M-Bus adapter can be ordered for two-wire M-Bus usage. To connect the M-Bus loop, terminals 1-2 or 3-4 can be used. The loop continues on the other two free terminals. The M-Bus two-wire connection is polarity insensitive. The two-wire connection is mainly used when several M-Bus slaves are to be connected into a M-Bus loop.

The Adapter is powered directly by the M-Bus and does not require an additional power source. The M-Bus adapter consumes 3 mA i.e. two standard M-Bus loads.



Connecting 2-wire M-Bus

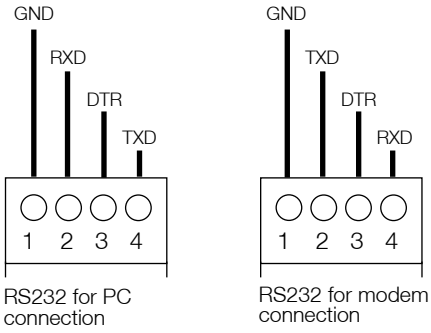
SCA RS232

The RS232 M-Bus connection is used when connecting a M-Bus slave directly to a Master (e.g. PC/modem) without an M-Bus interface.

The table below shows how to connect a M-Bus master computer (PC). To connect to a M-Bus repeater (MODEM) switch RXD <> TXD in table 1.

Terminal no	Function	9-pole connector	25-pole connector
1	GND --	5	7
2	TXD <-	3	2
3	DTR >-	4	20
4	RXD ->	2	3

Connecting M-Bus Master (PC) with R232 port to the ABB adapter.



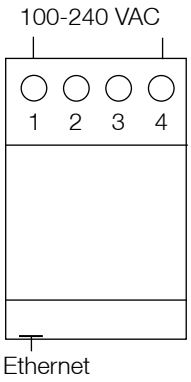
Serial Communication Adapter

General description

SCA Ethernet M-Bus

The Ethernet adapter is used for communication over Ethernet networks. It has two main functions. One is supporting remote reading using M-Bus over UDP or TCP. It is used by AMR systems. The other function is a built in web server.

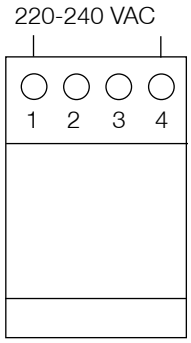
The Ethernet adapter is powered by 100 – 240 VAC (-20/+15%) between terminal 1 and 4. To connect to an Ethernet network a RJ-45 connector is used.



SCA PLC LonWorks

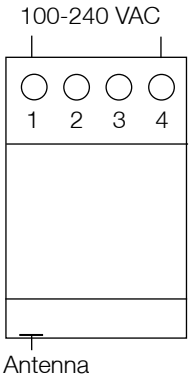
The power line adapter uses LonWorks technology for communication on the CENELEC A-band or via public C-band over the mains. It complies with the LonMark profile “Utility Data Logger”.

The adapter is powered with 220-240 VAC (-20/+15%) between terminal 1 and 4.
These terminals are also used by the communication signals.



SCA GSM/GPRS M-Bus

The GSM/GPRS communication adapter is a quad band GSM/GPRS device, which enables AMR with GSM or GPRS over GSM 850/900 and GSM 1800/1900 networks. Furthermore the ABB GSM/GPRS communication adapter support remote configuration using Short Message Service (SMS), which provides flexible configuration of the adapter.
The adapter is powered with 100-240 VAC (-15/+10%).



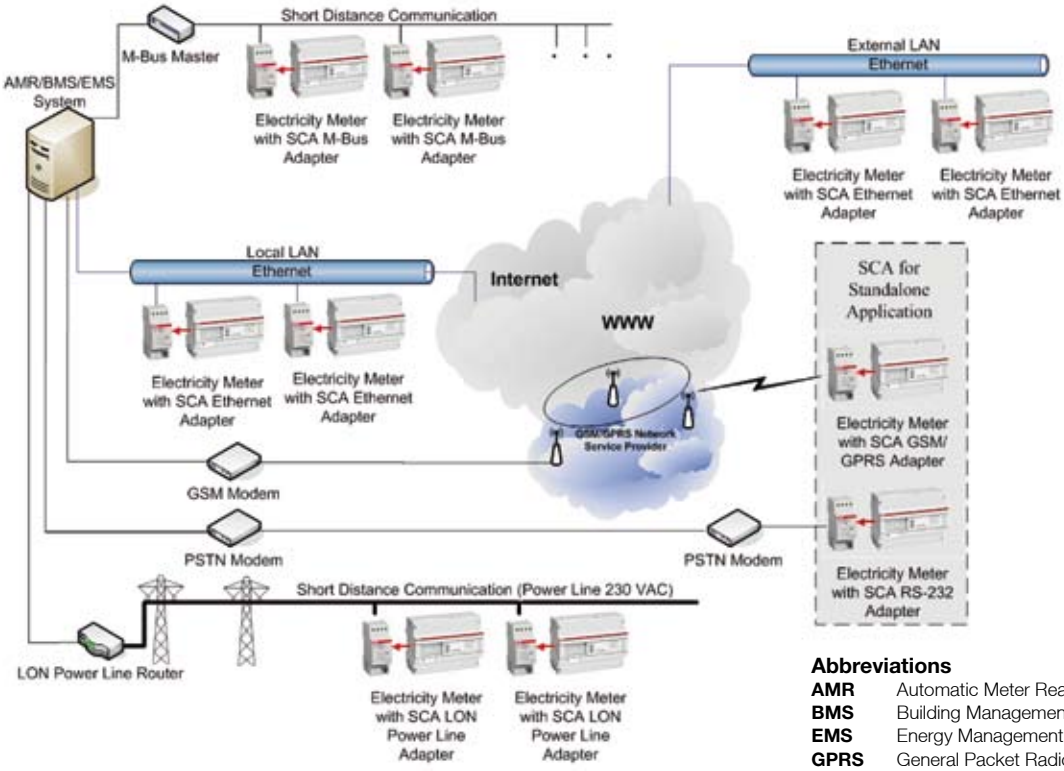
M-Bus extender

The M-Bus extender makes it possible to expand your SCA with up to 32 extra M-Bus units. The M-Bus extender features standard M-Bus over IR communication and is equipped with the unique IR-Pass Through function, making the product series stackable. The M-Bus extender is only for use with M-Bus networks using M-Bus addressing.

EIB/KNX interface module

The EIB/KNX interface module is used to connect the meter to an EIB/KNX installation

Media overview



Abbreviations

AMR	Automatic Meter Reading
BMS	Building Management System
EMS	Energy Management System
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communication
LAN	Local Area Network
PSTN	Public Switched Telephone Network
SCA	Serial Communication Adapter

Accessories

Ordering details

Serial communication adapter

DIN-rail

Long Cover

Short Cover

Front mounting kit

Enclosure

Serial Communication Adapter

Modul	Protocol / Media	Type	Order code	Weight kg
M-Bus	M-Bus / M- Bus Twisted pair	CTM04000	2CMA 137 090 R1000	0.073
RS232	M-Bus / RS232	CRM04000	2CMA 137 091 R1000	0.072
Ethernet	M-Bus over TCP or UDP / Ethernet	CEM05000	2CMA 137 099 R1000	0.090
GSM/GPRS	M-Bus over GSM/GPRS	CGM05000	2CMA 137 104 R1000	0.105
LON PLC A-band	LONWorks / Power Line	CAL06000	2CMA 137 100 R1000	0.188
LON PLC C-band	LONWorks / Power Line	CCL06000	2CMA 137 103 R1000	0.188
EIB/KNX	EIB/KNX	ZS/S 1.1	2CDG 110 083 R0011	0.067
M-Bus extender	M-Bus/M-Bus Master	CMM05000	2CMA 137 120 R1000	0.070

DIN-rail

Type of electricity meter	Application	Type	Order code	Weight kg
DELTAplus	Wall mounting	DIN-rail	2CMA 132 540 R1000	0.025
DELTAsingle	Wall mounting	DIN-rail	2CMA 139 501 R1000	0.025

Cover

Type of electricity meter	Application	Type	Order code	weight kg
DELTAplus	Wall mounting	Long cover	2CMA 132 633 R1000	0.070
ODIN	Sealing	Short cover	2CMA 131 026 R1000	0.025

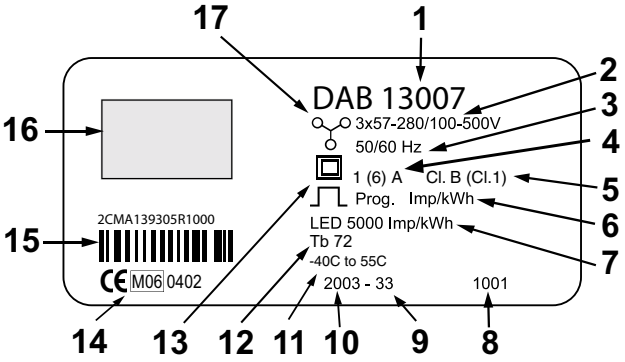
Front mounting kit

Type of electricity meter	Application	Type	Order code	Weight kg
DELTAplus ODIN	Panel mounting	Front mounting kit	2CMA 132 635 R1000	0.200

Enclosure

Type of electricity meter	Application	Type	Order code	Weight kg
ODIN	Wall mounting	Enclosure (6 modules)	2CMA 131 022 R1000	0.500

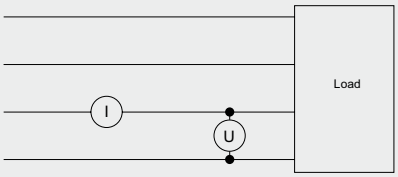
Example of Type label



No	Symbol	No	Symbol
1	Type code	11	Temperature working range
2	Voltage range	12	Clock backup time
3	Frequency	13	Protective class
4	Base current (max current)	14	Approval symbols, MID
5	Accuracy class		• Declaration of prod. safety
6	Pulse output frequency		• Year of verification
7	LED frequency		• Notified body
8	Serial number	15	Bar code
9	Week of manufacture	16	Customized area
10	Year of manufacture	17	Network type

Symbols for electricity meters and Methods of Measuring Power

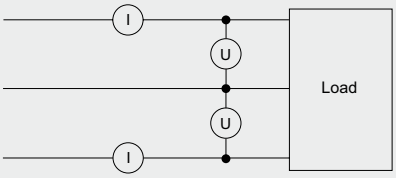
Meters with 1 drive system
which have one current and one voltage coil (used for single phase 2-wire circuits)



The single-watt meter method (single phase)

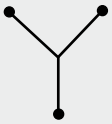
In three phase systems the single-watt meter method only gives correct results with a symetrical load on the phases. Since in practice perfectly balanced systems are very rare, this method should not be used for accurate measurements.

Meters with 2 drive systems
each with a voltage and current coil connected as per the two watt-meter method (used for the three phase 3-wire circuits)

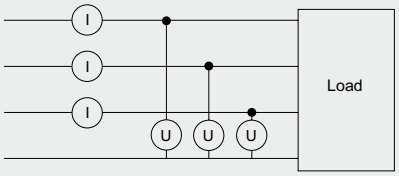


The two-watt meter method

The two-watt meter method is used in three phase systems without a neutral conductor, irrespective of the load symetrical or asymetrical.



Meters with 3 drive systems
each with a voltage and current coil connected as per the three watt-meter method (used for the three phase 4-wire circuits)



The three-watt meter method

The three-watt meter method is usually used in three phase systems having a neutral conductor. This method can deal with asymetrical and symetrical loads.

Detailed current information

I_{min} – minimum current, the lowest value of the current at which this European Standard specifies accuracy requirements. At and above I_{min} up to I_{tr} relaxed accuracy requirements apply.

I_{tr} – transitional current, the value of the current at, and above which, up to I_{max} full accuracy requirements apply.

I_{ref} – reference current

I_b – base current

I_n – rated current

I_{max} – maximum current

I_{st} – starting current

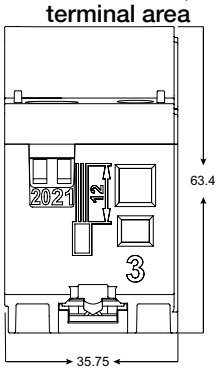
Detailed information about the currents used in technical data sections of the catalogue.

Dimensions

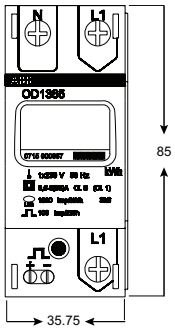
ODINsingle, DELTAsingle, ODIN

ODINsingle

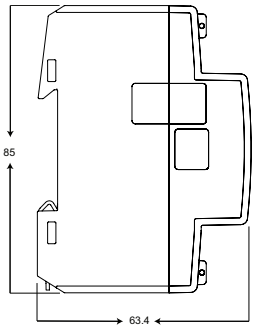
Bottom view, terminal area



Front view



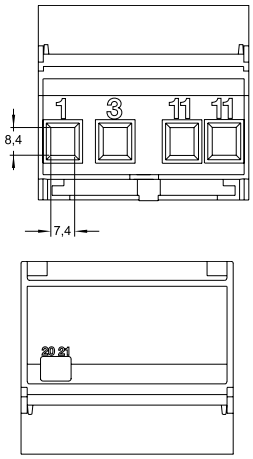
Side view



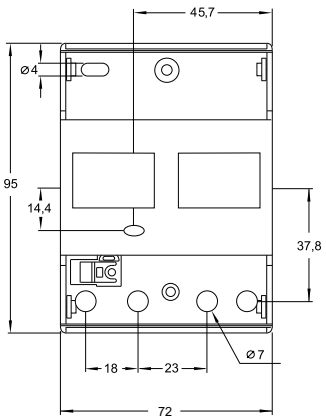
Dimensions in mm

DELTAsingle

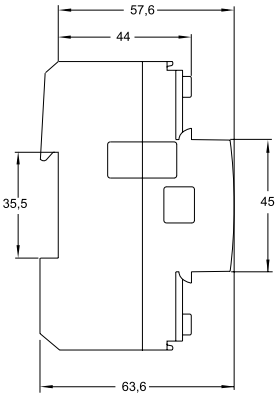
Bottom view, terminal area



Front view



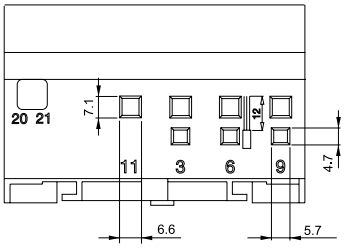
Side view



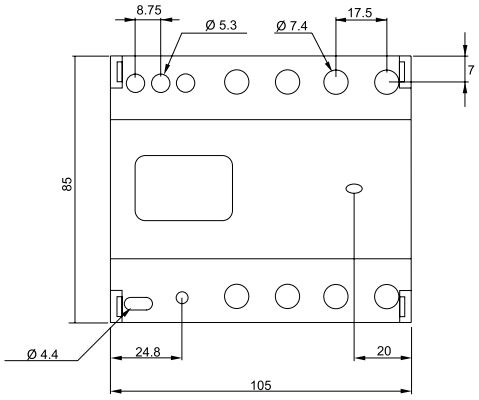
Dimensions in mm

ODIN

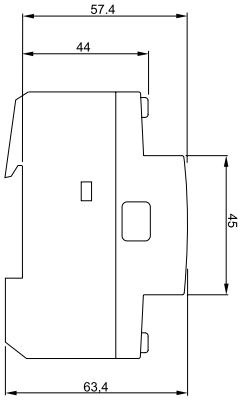
Bottom view, terminal area



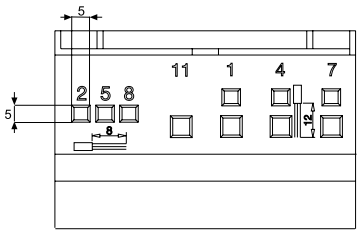
Front view



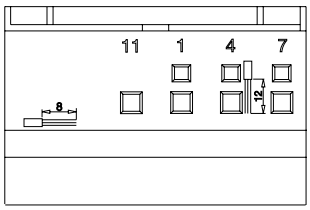
Side view



Terminal area, transformer connected meter



Terminal area, direct connected meter



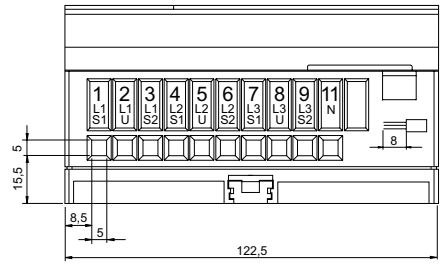
Dimensions in mm

Dimensions

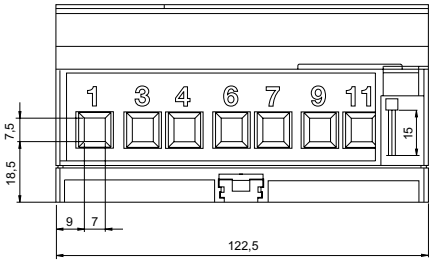
DELTAplus, Serial communication adapter

DELTAplus

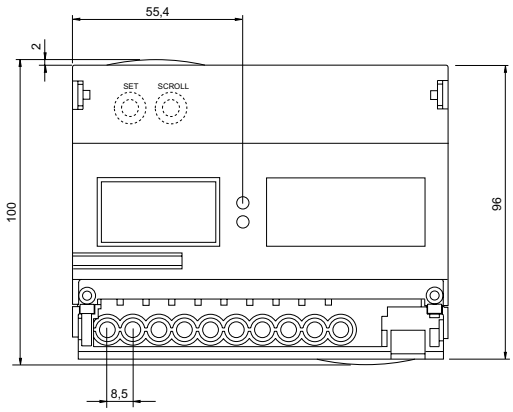
Bottom view,
Terminal area, transformer connected meter



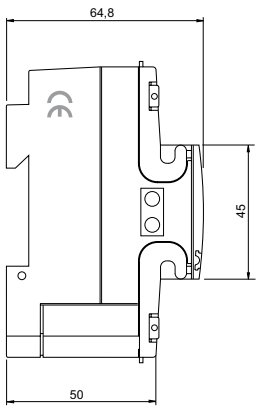
Bottom view,
Terminal area, direct connected meter



Front view, all meters



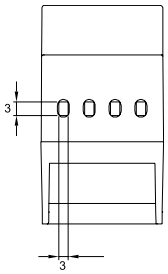
Side view, all meters



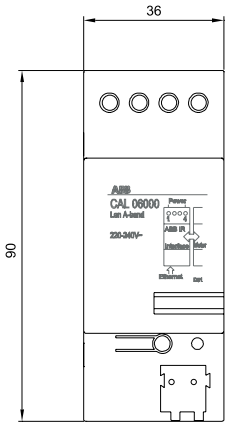
Dimensions in mm

Serial communication adapter

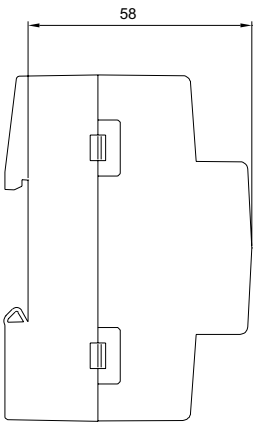
Top view,
terminal area



Front view



Side view



Dimensions in mm

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