Crompton Instruments
MID Approved Energy Meters

TE connectivity ENERGY

MID Approved Energy Meters

The modular DIN-rail MID approved energy meters portfolio offers a wide range of instruments capable of capturing and communicating energy measurements on electrical installations where billing is required. The DIN-rail mounted electricity energy meters are designed for high level accuracy performance and are safe and fast to install. MID approved energy meters approval ensures compatibility with EU market without a need for further testing. These features make Crompton Instruments MID approved energy meters an ideal solution for residential, utility and industrial energy consumption monitoring.

The MID approved energy meters range is available for single and three phase systems and the range features include a blue backlit LCD screen, direct or CT connection capability, sealable terminal covers, and tariff identifier display. Energy consumption can be remotely monitored via SO pulse outputs or can be communicated with Modbus RS 485 RTU, M-Bus, KNX and SD card datalogger interfaces.

Features

- Blue backlit LCD
- Direct and CT connection
- Accuracy class 1 for active energy and power
- Accuracy class 2 for reactive energy and power
- The standard versions can be combined with communication modules
- Energy registers for import and export
- Instantaneous active and reactive power display
- Sealable terminal covers
- Storage of energy values and configuration digital display (EEPROM)
- Tariff identifier display

Approvals

CE M 12 0051 054 / MID ECSEM116MID

Measuring Instruments Directive 2004/22/EC

For manufacturers and end-users selling and using measuring instruments intentioned for trade.

The directive that came into force in 30th of October 2006 is designed to create a single European market for approved meters to allow the free movement and use of this equipment within the European Union without a need for any additional testing.

Since October 2006 every meter manufactured and used for electricity billing must be MID approved energy meters or UK legislation approved and as of October 2016 all meters installed for billing must be only MID approved energy meters. Moreover, it is a criminal offence to install a non-approved meter for billing.

Meters installed prior to October 2006 may remain installed, however they have to measure accurately.

The directive also includes the quality management system certification for manufacturers to ensure compliance with the directive to protect the end user who uses the data collected by meters on a daily basis.

DRM Energy Meters Overview

Product code	MID certified	Single-phase	Three-phase	Module width	CT feed (5A)	Direct connection 32A	Direct connection 40A	Direct connection 80A	Direct connection 125A	Option connection interface	Modbus built in	M-Bus built in	Two tariff T1 & T2	Pulse output (SO)	Catalogue page
DRM-32-1P	X	X		1		X				X				X	3
DRM-40-1P	X	X		1			X			X				X	3
DRM-80-1P	X	X		3				X		X			X	X	6
DRM-125-1P	X	X		3					X	X			X	X	6
DRM-125-1P-MOD	X	X		3					X	X	X		X		6
DRM-125-1P-M	X	X		3					X	X		X	X		6
DRM-5-3P	X		X	4	X					X			X	X	9
DRM-80-3P	X		X	4				X		X			X	X	9
DRM-125-3P	X		X	6					X	X			X	X	9
DRB-5-3P	X		X	4	X								X	X	22
DRB-80-3P	X		X	4				X					X	X	22
DRB-5-3P-M	X		X	4	X							X	X		25
DRB-80-3P-M	X		X	4				X				X	X		25
DRB-5-3P-MOD	X		X	4	X						X		X		25
DRB-80-3P-MOD	X		X	4				X			X		X		25
DRM-M				1											15
DRM-KNX				1											17
DRM-MOD				1											13
DRM-LOG				1											19
DRM-LOG-PS				1											19

DRM energy-meters single-phase 32A/40A

▶ Direct connection 32A **▶ Direct connection 40A**

The energy-meters use an LCD display to give a clear reading and are used to measure single-phase systems in residential, utility and industrial applications. Monitoring of the energy-consumption is via two SO pulse outputs. The products can be set up to communicate with Modbus RTU, M-Bus, KNX and SD card datalogger interfaces, and thus can be used to analyse energy-consumption in order to reduce to a minimum the running cost for industrial plants and buildings.

Active energy-meters for single-phase alternating current with a, 7 digits counter. These meters have 1 S0 output generating pulses for remote processing of the active energy measurements for 1 tariff.

Parameters

Display		Unit	ID
Active energy	Tariff	kWh	Energy imported and exported
Active power	Tariff	kW	Instantaneous value imported and exported
Current		A	
Voltage		V	
Power factor		cosϕ	
Frequency		Hz	

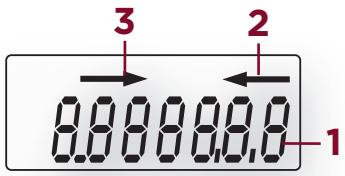
Features

- Display LCD
- For direct connection 32A and 40A
- 7 digits for energy and other values indication
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Operating range current (Ist ... Imax) for direct connection 32A and 40A = 0.020 ... 32A or 40A
- Sealable terminal covers
- The standard versions are designed to be combined with the communication module
- 1 DIN modules wide (18mm)

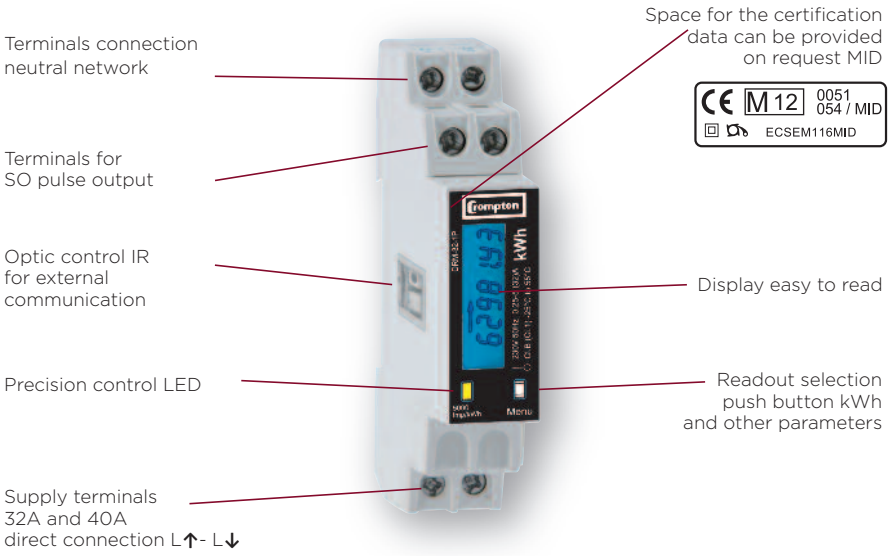
Display

Liquid crystal display

1 kWh display and other parameters
2 Power export (supplied r)
3 Power import (absorbed R)



1 standard module housing, suitable for DIN-rail mounting
Direct connection 32A and 40A



Parameters

Display	Version
Active energy register in T1 import/export	32A and 40A
Instantaneous power active import/export	32A and 40A
Current RMS	- 40A
Voltage RMS	- 40A
Power factor	- 40A
Frequency	- 40A
FW release	32A and 40A
FW checksum	32A and 40A

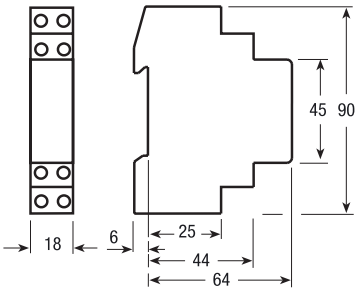
Technical Data

Display		Units	DRM - 32 - 1P direct connection 32A	DRM - 40 - 1P direct connection 40A
Supply				
Rated control supply voltage Un		V AC	230	230
Operating range voltage		V AC	184 ... 276	184 ... 276
Rated frequency fn		Hz	50 ±2%	50 ±2%
Rated power dissipation (max.) Pv		VA (W)	≤8 (0.6)	≤8 (0.6)
Overload capability				
Voltage Un	continuous momentary (1 s)	V AC V AC	276 300	276 300
Current Imax	continuous momentary (10 ms)	A A	32 960	40 1200
Display (readouts)				
Display type	LCD digit dimensions	n° digits mm x mm	7 (2 decimals) 6 x 3	7 (2 decimals) 6 x 3
Active energy: 1 display, 7-digit		kWh	0.00 ... 999999.9	0.00 ... 999999.9
Instantaneous tariff measurement	1 display, 1-digit	- -	1 T1	1 T1
Display period refresh		s	1	1
Measuring accuracy				
Active energy and power	at 23 ±1°C, referred to nominal values acc.to EN 50470-3	class 1	B (±1)	B (±1)
Measuring input				
Type of connection	phase/N	-	direct	direct
Operating range voltage	phase/N	V AC	184 ... 276	184 ... 276
Current Iref		A	5	5
Current Imin		A	0.25	0.25
Operating range current (Ist ... Imax)	direct connection	A	0.02 ... 32	0.02 ... 40
Frequency		Hz	50 ±2%	50 ±2%
Input waveform		-	alternating	alternating
Starting current for energy measurement (Ist)		mA	20	20
Pulse output S0				
Pulse output	acc.to EN 62053-31 for active energy	-	yes	yes
Pulse quantity		imp/kWh	1000	1000
Pulse duration		ms	90	90
Required voltage	min. (max.)	V AC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
Permissible current	pulse ON (max. 230V AC/DC)	mA	90	90
Permissible current	Impulse OFF (leakage cur. max. 230V AC/DC)	µA	1	1
Optical interface				
Front side (accuracy control)	LED	imp/kWh	5000	5000
Safety acc. to EN 50470-1				
Indoor meter		-	yes	yes
Degree of pollution		-	2	2
Operational voltage		V AC	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4
Impulse voltage test		1.2/50 µs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance	UL 94	class	V0	V0

Product Codes

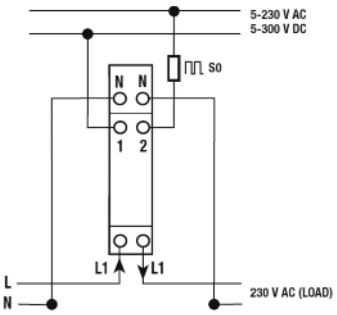
Description	Comm	DIN mod.	Part number
LCD kWh, 1 tariff, 1S0, non resettable, 32 Amp - MID	pulse	1	DRM-32-1P
LCD kWh, 1 tariff, 1S0, non resettable, 40 Amp - MID	pulse	1	DRM-40-1P
Optional communication Interfaces	M-BUS	1	DRM-M
	Modbus-RTU RS485	1	DRM-MOD
	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

Dimensions



Circuit diagrams

DRM-32-1P
DRM-40-1P



32A or 40A fuses are recommended for line protection.

DRM energy-meters single-phase 80A/125A

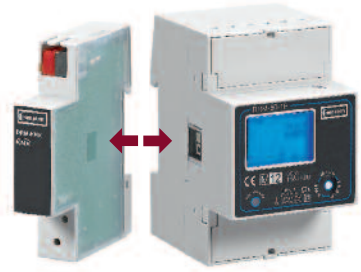
Direct connection 80A/125A

These meters are used to measure the energy consumption in single-phase systems in residential, utility and industrial applications, and use a blue backlit LCD screen to give clear readings. Monitoring of the energy-consumption is via two SO pulse outputs. The products can be set up to communicate with Modbus RTU, M-Bus, KNX and SD card Datalogger interfaces, and thus can be used to analyse energy-consumption in order to reduce to a minimum the running cost for Industrial plants and buildings.

A single phase energy meter with an 8 digit, 2 decimal, display showing the total energy reading. The meters have 2 SO outputs generating pulses for remote processing of active and reactive energy and 2 Tariffs.

Features

- Blue backlit LCD
- Direct connection 80A/125A
- 8 digit display
- Accuracy class 1 for active energy
- Accuracy class 2 for reactive energy
- The standard versions can be combined with the communication modules
- Energy register for import and export
- Sealable terminal covers
- 3 DIN modules wide (52mm)
- Storage of energy values and configuration digital display (EEPROM)
- Tariff identifier display for active and reactive energy

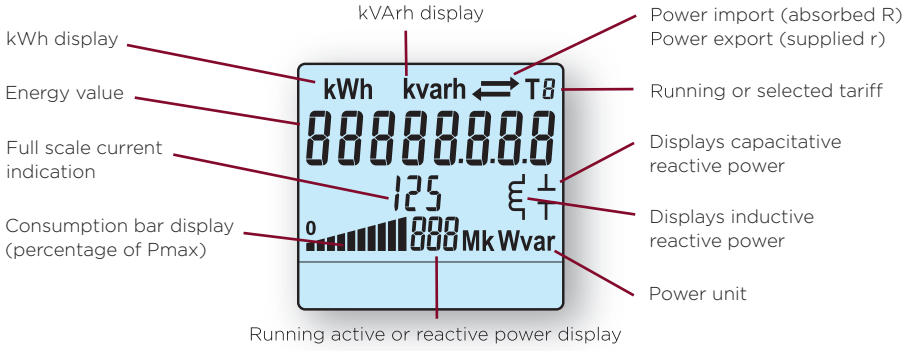


Parameters

Display	Unit		
Active energy	Tariff 1 Tariff 2	kWh kWh	Import, export Import, export
Reactive energy	Tariff 1 Tariff 2	kVArh kVArh	Import, export Import, export
Active power		(k-M) W	Import, export
Reactive power		(k-M) VAr	Import, export

Display

Liquid crystal display with illuminated blue background.



3 standard module housing, suitable for DIN-rail mounting Direct connection 80A and 125A

Technical Data

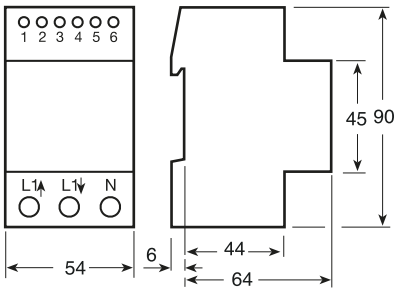
Display	Units	DRM - 80 - 1P, DRM - 125 - 1P	DRM - 125 - 1P - MOD	DRM - 125 - 1P - M
Supply				
Certified voltage range Un	V AC	230 ±20%	230 ±20%	230 ±20%
Operating voltage range	V AC	110 ... 276	110 ... 276V	110 ... 276
Certified frequency fn	Hz	50 ±2%	50 ±2%	50 ±2%
Operating frequency range	Hz	48 ... 62	48 ... 62	48 ... 62
Rated power dissipation (max.) Pv	VA (W)	<8 (0.6)	≤8 (0.6)	≤8 (0.6)
Overload capability				
Voltage Un continuous	V AC	276	276	276
momentary (1 s)	V AC	300	300	300
Current Imax continuous	A	80 or 125	125	125
momentary (10 ms)	A	2400 or 3750	3750	3750
Display (readouts)				
Display type LCD	n° digits	8 (2 decimal)	8 (2 decimal)	8 (2 decimal)
Digit dimensions	Mm	6.00 x 3	6 x 3	6 x 3
Active energy: 1 display, 7-digit tariffs 2	kWh	0.01	0.01	0.01
+ display import or export (arrow) overflow	kWh	999999.99	999999.99	999999.99
Reactive energy: 1 display, 7-digit tariffs 2	kVArh	0.01	0.01	0.01
+ display import or export (arrow) overflow	kVArh	999999.99	999999.99	999999.99
Instantaneous active power: 1 display, 3-digit	W, kW, MW	000 ... 999	000 ... 999	
Instantaneous reactive power: 1 display, 3-digit	VAr, kVAr, MVAr	000 ... 999	000 ... 999	000 ... 999
Instantaneous tariff measurement		1	1	1
Display period refresh	s	1	1	1
Measuring accuracy at 23 ±31°C, referred to nominal values				
Active energy and power acc.to EN 50470-3		B (1%) class 1	B (1%)	B (1%)
Reactive energy and power acc. to EN 62053-23		2% class 2	2%	2%
Measuring input				
Type of connection	phase/N	direct	direct	direct
Operating range voltage	V AC	110 ... 276	110 ... 276	110 ... 276
Current Iref	A	5A	5	5
Current Imin	A	0.25A	0.25	0.25
Operating range current (Ist ... Imax) direct connection	A	0.020 ... 80 or 125	0.020 ... 125	0.020 ... 125
Frequency	Hz	48 ... 62Hz	48 ... 62	48 ... 62
Pulse output S0 acc.to EN 62053-31 Pulse output for active and reactive energy T1 and T2		yes		
Pulse quantity	imp/kWh	500		
Pulse duration	ms	30 or 50		
Required voltage	V AC (DC)	5 ... 230 35% (5 ... 300)min. (max.)		
Permissible current pulse ON (max. 230V AC/DC)	mA	90		
Permissible current Impulse OFF (leakage cur. max. 230V AC/DC)		1		
Embedded communication	µA			
Modbus RTU RS-485 - 3 wires	bps	up to 38.400	-	
M-Bus RS-485 - 2 wires	bps	-	up to 9.600 bps	
Safety acc. to EN 50470-1				
Degree of pollution		2	2	2
Operational voltage	V AC	300	300	300
AC voltage test (EN 50470-3, 7.2)	kV	4	4	4
Impulse voltage test	1.2/50 µs-kV	6	6	6
Protection class (EN 50470)	class	II	II	II
Housing material flame resistance UL 94	class	V0	V0	V0
Environmental conditions				
Operating temperature	°C	-10 ... +55	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage	°C	-25 ... +70	-25 ... +70	-25 ... +70
Relative humidity (not condensation)	%	≤80	≤80	≤80
Degree protection housing when mounted in front (terminal)		IP51(*)/IP20	IP51(*)/IP20	IP51(*)/IP20

(*) For the installation in a cabinet at least with IP51 protection.

Product Codes

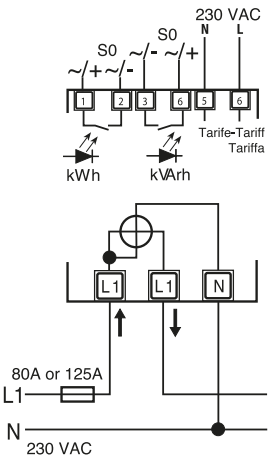
Description	Comm	DIN mod.	Part number
LCD kWh/kWArh, 2 tariffs, 2S0, 80A - MID	pulse	3	DRM-80-1P
LCD kWh/kVArh, 2 tariffs, 2S0, 125A - MID	pulse	3	DRM-125-1P
LCD kWh/kVArh, 2 tariffs, 2S0, 125 Amp - MID Modbus	Modbus RTU	3	DRM-125-1P-MOD
LCD kWh/kVArh, 2 tariffs, 2S0, 125 Amp - MID M-Bus	M-Bus	3	DRM-125-1P-M
Optional communication Interfaces	M-Bus	1	DRM-M
	EIB-KNX	1	DRM-KNX
	Modbus-RTU RS485	1	DRM-MOD
	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

Dimensions

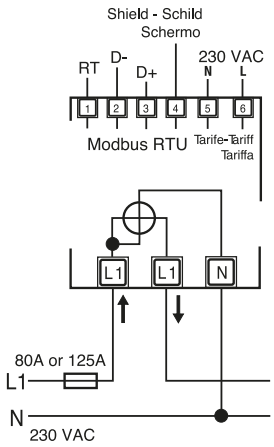


Connections

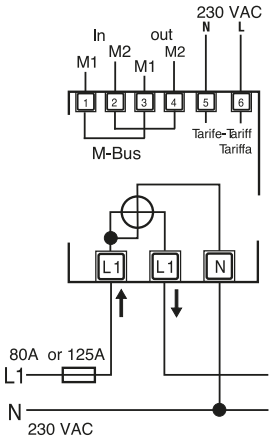
DRM-80-1P
DRM-125-1P



DRM-125-1P-MOD



DRM-125-1P-M



DRM - 80 - 1P (-*) - 80A fuse is recommended for the line protection.
DRM - 125 - 1P (-*) - 125A fuse is recommended for the line protection.

DRM energy-meters three-phase CT 5A/80A/125A

- **Direct connection 80A/125A**
- **Connection through CT .../5A up to 10.000/5A**

Digital meter to register active energy, both imported and exported, and to measure current, voltage, active and reactive power, frequency and power factor, with IR communication side port.

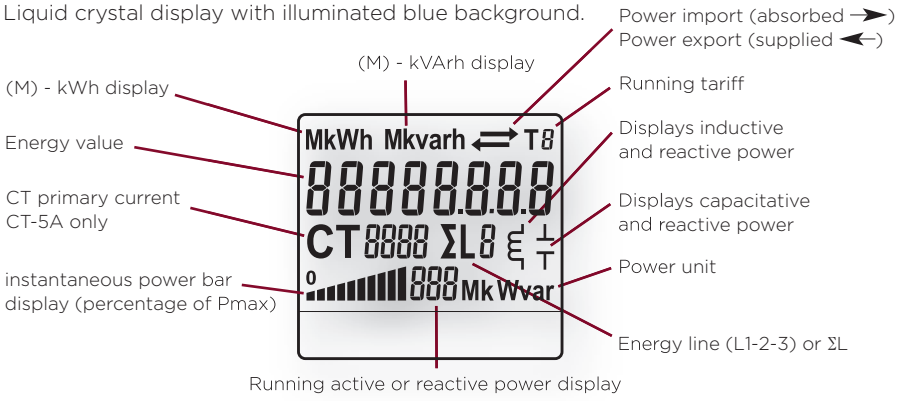
A three phase energy meter with an 8 digit, 2 decimal, display showing the total energy reading. The meters have 2 SO outputs generating pulses for remote processing of active and reactive energy and 2 Tariffs.

Parameters

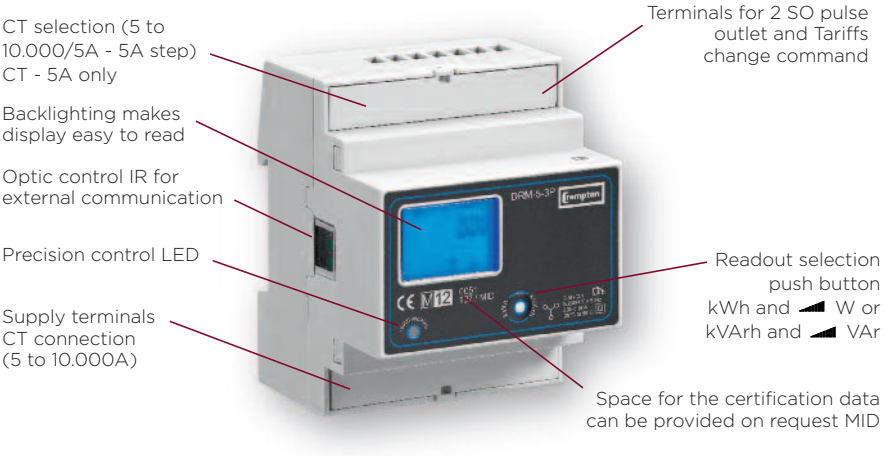
Display		Unit	ID
Active energy	Tariff 1 Tariff 2	kWh kWh	Energy imported and exported Energy imported and exported
Reactive energy	Tariff 1	kVArh	Energy imported and exported
	Tariff 2	kVArh	Energy imported and exported
Active power		(M-k)-W	Utilization and instantaneous value
Reactive power		(M-k)-VAr	Utilization and instantaneous value
Connection errors			Phase Err
Primary transformer	5 ... 9999	A	CT (current transformer) (CT 5A only)

Display

Liquid crystal display with illuminated blue background.



4 standard module housing, suitable for DIN-rail mounting
Connection through CT .../5A up to 10.000/5A



Features

- Blue backlit LCD
- For direct connection 80A/125A, or for transformer .../5A
- For transformer primary current of 5A to 10.000/5A. Input is in 5A increments
- 8 digits - 8 display for eight energy values indication
- Detection of connection errors (phase transposition)
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy and power according to EN 62053-23
- Operating range current (Ist ... Imax.) for direct connection 80A = 0.015 ... 80A/125A - 0.020...125A for connection by CT .../5A = 0.003 ... 5A
- The standard versions are designed to be combined with the communication module
- Energy register for import and export
- Instantaneous active and reactive power display
- Sealable terminal covers
- 4 DIN modules wide (72mm) 5A/80A /6 DIN 108 modules wide 125A

Technical Data

Display			DRM - 80 - 3P direct connection 80A	DRM - 5 - 3P CT connection up to 10.000/5A	DRM - 125 - 3P direct connection 125A
Supply					
Rated control supply voltage Un		V AC	230	230	230
Operating range voltage		V	184 ... 276	187 ... 276	184 ...276
Rated frequency fn		Hz	50	50	50
Rated power dissipation (max. for phase) Pv		VA (W)	≤8 (0.6)	≤8 (0.6)	≤8 (0.6)
Overload capability					
Voltage Un	continuous; phase/phase 1 second: phase/phase continuous; phase/N 1 second: phase/N	V AC V AC V AC V AC	480 800 276 300	480 800 276 300	480 800 276 300
Current Imax	continuous momentary (0.5 s) momentary (10 ms)	A A A	80 - 2400	6 120 -	125 - 3750
Display (readouts)					
Connection errors and phase out	discernible from phase-sequence indic.	-	Phase Err	Phase Err	Phase Err
Display type	LCD digit dimensions	n° digits mm x mm	8 (2 decimal) 6.00 x 3	8 (2 decimal) 6.00 x 3	8 (2 decimal) 6.00 x 3
Active energy: 1 display, 8 digit + display import or export (arrow)	tariffs 2 overflow	kWh kWh	0.01 999999.99	0.01 999999.99	0.01 999999.99
Reactive energy: 1 display, 8-digit + display import or export (arrow)	tariffs 2 overflow	kVArh kWh	0.01 999999.99	0.01 999999.99	0.01 999999.99
Instantaneous active power: 1 display, 3-digit		W, kW or MW	000 ... 999	000 ... 999	000 ... 999
Instantaneous reactive power: 1 display, 3-digit		VAr, kVAr or MVar	000 ... 999	000 ... 999	000 ... 999
Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2	T1 or T2
Transformer primary current		A	-	5 ... 10.000	
Display period refresh		s	1	1	1
Measuring accuracy					
Active energy and power	acc.to EN 50470-3	class 1	B (1%)	B (1%)	B (1%)
Reactive energy and power	acc.to EN 62053-23	class 2	2%	2%	2%
Measuring type					
Type of connection			direct	transformer .../5A	direct
Voltage Un	phase/phase	V AC	400	400	400
	phase/N	V AC	230	230	230
Operating range voltage	phase/phase	V AC	319 ... 480	319 ... 480	319 ... 480
	phase/N	V AC	184 ... 276	184 ... 276	184 ... 276
Current Iref		A	5	-	5
Current In		A	-	5	-
Current Imin		A	0.25	0.05	0.25
Operating range current (Ist ... Imax)	direct connection transformer connection (CT)	A A	0.015 ... 80 -	- 0.003 ... 6	0.02 ... 125
Transformer current	primary current of the transformer smallest input step adust. in 5A steps	A A	- -	5 ...10.000 5	-
Frequency		Hz	50 ±2%	50 ±2%	50 ±2%
Input waveform		-	sinusoidal	sinusoidal	sinusoidal
Starting current for energy measurement (Ist)		mA	15	3	20

Technical Data

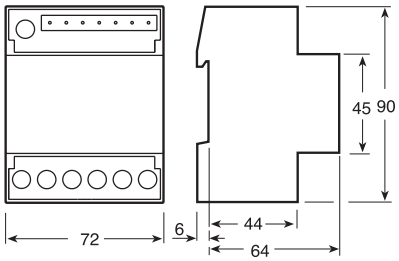
Display			DRM - 80 - 3P direct connection 80A	DRM - 5 - 3P CT connection up to 10.000/5A	DRM - 125 - 3P direct connection 125A
Pulse output SO Acc.to EN 62053-31					
Pulse output	for act. and react. energy T1 and T2	-	yes	yes	yes
Quantity pulse output	for direct connection 80A depending on the transf. factor.	Imp/kWh Imp/kWh	500 -	- 100-10-1	500 -
Pulse duration		ms	30 or 50 ±2	30 or 50 ±2	30 or 50 ±2
Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
Permissible current	pulse ON (max. 230V AC/DC)	mA	90	90	90
Permissible current	pulse OFF (leak. cur. max. 230V AC/DC)	µA	1	1	1
Optical interface Front side (accuracy control)	LED	Imp/kWh	1000	10.000	1000
Safety acc. to EN 50470-1 Indoor meter		-	yes	yes	yes
Degree of pollution		-	2	2	2
Operational voltage		V AC	300	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4	4
Impulse voltage test		1.2/50 µs-kV	6	6	6
Protection class (EN 50470)		class	II	II	II
Housing material flame resistance	UL 94	class	V0	V0	V0
Safety-sealing between upper and lower housing part (mod. 282331-282141)		-	yes	yes	yes

Product Codes

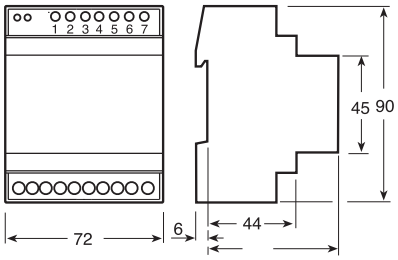
Description	Comm	DIN mod.	Part number
LCD kWh/kVArh ../5A, 2 tariffs, 2S0 - MID	pulse	4	DRM-5-3P
LCD kWh/kVArh 80A, 2 tariffs, 2S0 - MID	pulse	4	DRM-80-3P
LCD kWh/kVArh 125A, 2 tariffs, 2S0 - MID	pulse	6	DRM-125-3P
Optional communication Interfaces	M-BUS	1	DRM-M
	EIB-KNX	1	DRM-KNX
	Modbus-RTU RS485	1	DRM-MOD
	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

Dimensions

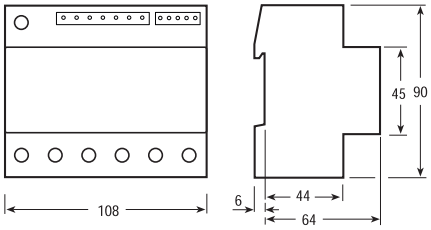
DRM-80-3P



DRM-5-3P

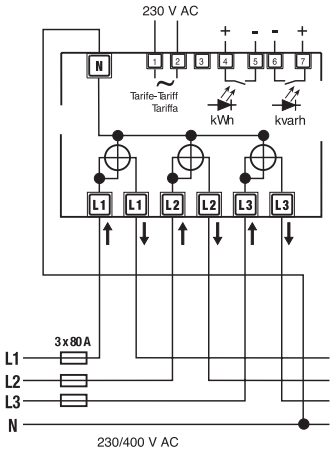


DRM-125-3P



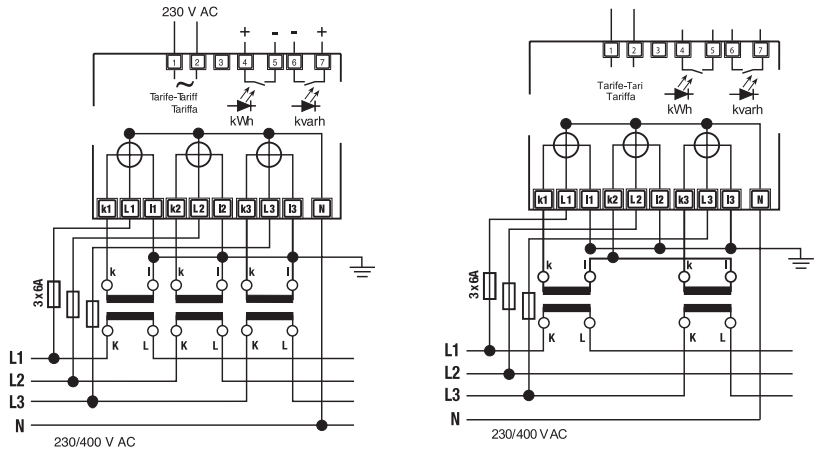
Circuit diagrams

DRM-80-3P



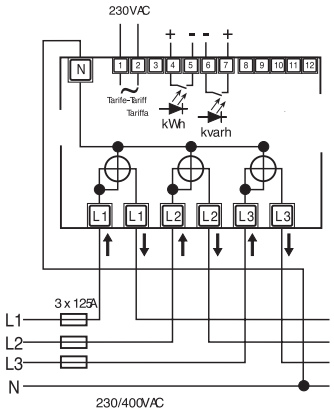
A fuse of 80A is recommended for the line protection.

DRM-5-3P



A fuse of 6A is recommended for the line protection. Current transformers must not be operated with open terminals since dangerous high voltages might occur which may result in personal injuries and property damage. In addition to this, the transformers are exposed to thermal overload.

DRM-125-3P



A fuse of 125A is recommended for the line protection.

Wire N needs to be connected to the meter.

Modbus interface RTU and Ascii

Additional communication modules for energy-meter

The product is intended to be placed side by side to an energy meter, equipped with an infra-red port on the side, to collect the measurements data from the instrument and to transmit them via an RS-485 serial line to a remote collection station using Modbus protocol.

The communication module automatically recognizes the instrument connected to its infra-red port and is in the position to transmit all the data provided by the instrument itself.

Configuration
The interface is provided with a software tool for Windows software, for configuring installation parameters (such as Modbus address and baudrate) and general settings.

Plug and play
The interface is enabled to recognize automatically the instrument connected to its infra-red port. This is an advantage in terms of flexibility, because the same interface can be connected, to single-phase or three-phase energy meters

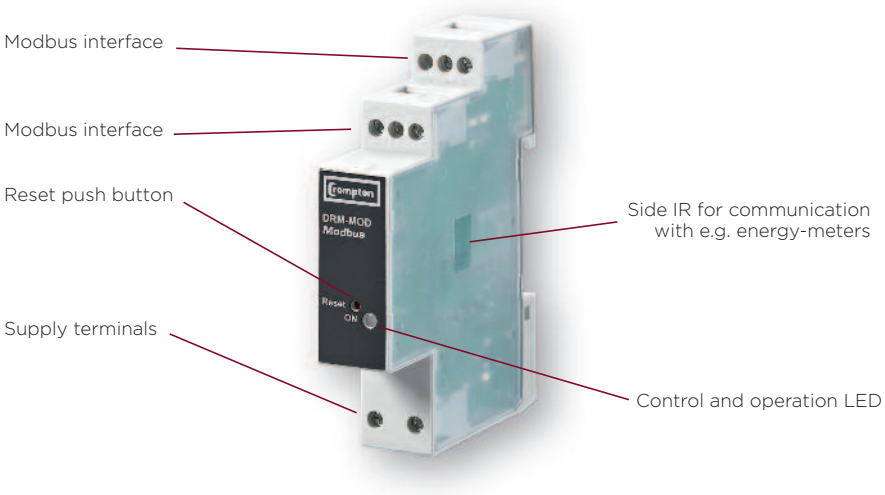
Measurements
The interface acts as a Modbus slave, so that the transmitted measurements can be collected and displayed using one of the software tools available on the market enabled to act as a Modbus master.

Baudrate
The interface is enabled to operate with a number of baudrates, up to 115200 baud. The pure speed of transmission is limited by the band capacity which is 9600 baud on the IR interface:

Features
- Interface available:
- type BIG ENDIAN: for energy, power, voltage, current, cos and frequency, etc.
- Modbus Ascii and Modbus RTU protocols
- Suitable for both single-phase and three-phase energy-meter
- 1 DIN module wide (18mm)

1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm

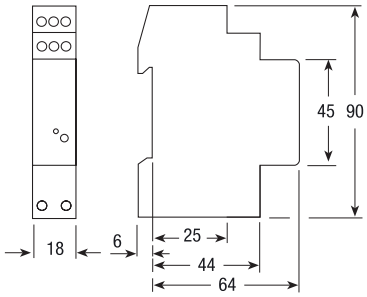
▶ Modbus RTU and Ascii interface



Technical Data

Display			DRM - MOD
Power supply			
Auxiliary voltage rating Un		V AC	230
Auxiliary power rating		VA	10
Auxiliary voltage range		V AC	0.80 ... 1.20 x Un
Frequency rating		Hz	50/60
Frequency range		Hz	45 ... 65
Operating features			
Models available: - type BIG ENDIAN: for energy, power, voltage, current, cos and frequency, etc.			
Protocol	selectable by software	-	Modbus RTU or Ascii
Suitable for both single-phase and three-phase energy-meter, Network analyser and power-meters		-	yes
Modbus interface			
HW interface	RS-485	terminals n°	3 (+/-, cable shield)
Input resistance		UL (kΩ)	1 (12)
Termination resistance		Ω	180
SW protocol	SW selectable	-	Modbus Ascii - Modbus RTU
Data transfer speed	SW selectable	baud	≤38.400 - default 19200
Parity		-	none/even - default: none
Addressing		-	1 to 247
Interface to measuring instrument			
HW interface	optical IR	n°	2 (Tx, Rx)
Environmental conditions			
Operating temperature		°C	-10 ... +55
Limit temperature of storage		°C	-25 ... +70
Relative humidity		%	≤80
Protection class acc.to IEC 60950		-	II
Degree of protection when front panel mounted (term.)		-	IP20

Dimensions



Product Codes

Description	Comm	DIN mod.	Part number
Optional communication interfaces	Modbus-RTU RS485	1	DRM-MOD

M-Bus interface

Additional communication modules for energy-meter

The M-Bus interface (1 module wide, DIN rail mount) is intended for connecting the energy meter to M-Bus. M-Bus is a standard widely used for remote reading of various types of consumption meters and sensors. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the meter itself, and gets the power supply from the bus, so that only the bus wiring (a two-wire standard telephone cable) must be connected, no additional wiring is required. The interface is suitable for both single-phase and three-phase energy-meter.

Measurements

M-bus interface is for remote reading of all of the energy, power, voltage, current, frequency, power factor registers. Status byte are available as well, containing information about the status of the energy-meter (running tariff nominal, voltage and current range overflow).

Commands

Commands can be sent via M-Bus to the interface for resetting the energy accounts. Commands are enabled only on relevant measuring instruments models.

Cable length M-Bus according to EN13757-2 Annex E

Cable type:

- Shielded telephone cable 0.5mm² (0.8mm) (typ. 4x0.8mm)
- NYM-cable (1.5mm² standard cable)

⚠ **Using telephone cables with an diameter of 0.6mm either the max. length or the number of slaves must be reduced by factor 2!**

Features

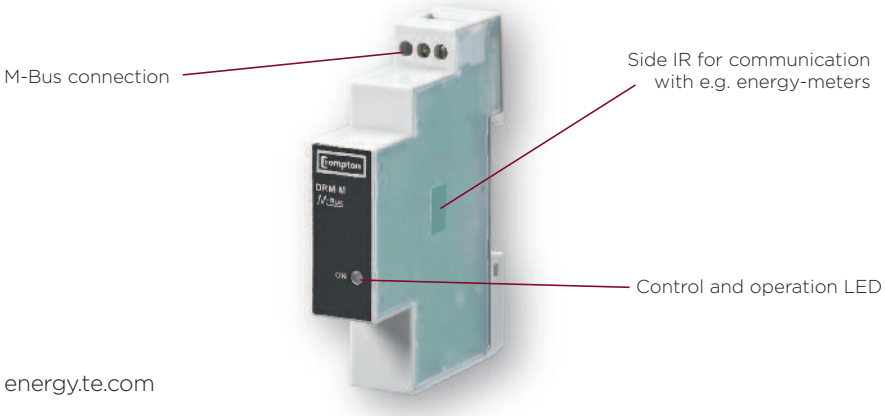
- Interface for energy, power, voltage, current, cos and frequency, etc.
- M-Bus according to EN1434
- Suitable for both single-phase and three-phase energy-meter, network analyser and power-meters
- 1 DIN module wide (18mm)

Cable Length

Type	Installation	Distance (resistive cable length)	Total length of segment wiring	Cable type (diameter)	Number of slaves (unit loads)	max. Baudrate
A	small in house installation	350m	1.000m (<30 Ohm)	0.5mm² (0.8mm)	250 64	9.600 Baud 38.400 Baud
B	large in house installation	350m	4.000m (<30 Ohm)	0.5mm² (0.8mm)	250 64	2.400 Baud 9.600 Baud
C	small wide area net	1.000m	4.000m (<90 Ohm)	0.5mm² (0.8mm)	64	2.400 Baud
D*	large wide area net	3.000m	5.000m	1.5mm² (1.4mm)	64	2.400 Baud
	Point to Point	10.000m	10.000m	1.5mm² (1.4mm)	1	300 Baud

1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm

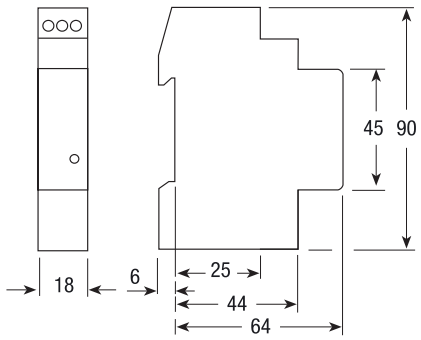
▶ M-Bus interface



Technical Data

Display			DRM - M
Power supply			
Power supply		-	through bus connection
Operating features			
Interface for energy, power, voltage, current, cos and frequency, etc.			
Suitable for both single-phase and three-phase energy-meter		-	yes
M-Bus interface			
HW interface		-	2 screw clamps
SW protocol		-	M-Bus according to EN1434
Baudrate		Baud	300-9600
Interface to measuring instrument			
HW interface	optical IR	n°	2 (Tx, Rx)
SW protocol		-	proprietary
Environmental conditions			
Operating temperature		°C	-10 ... +55
Limit temperature of storage		°C	-25 ... +70
Relative humidity		%	≤80
Vibrations	sinusoidal vibration amplitude at 50 Hz	mm	30.25
Protection class	acc.to IEC 60950	-	II
Degree of protection	When front panel mounted (term.)	-	IP20

Dimensions



Product Codes

Description	Comm	DIN mod.	Part number
Optional communication interfaces	M-BUS	1	DRM-M

KNX interface

Additional communication modules for energy-meter

The KNX interface (1 module wide, DIN rail mount) is intended for connecting the energy meter to KNX bus. KNX bus is widely used for home and building control applications. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the energy meter itself, and gets the power supply from the bus. Only the bus wiring (twisted pair) must be connected, no additional wiring is required. The interface is suitable for both single-phase and three-phase energy-meter.

Configuration
The interface is provided with an application program to be imported in ETS3, in order to allow the configuration of the communication. ETS3 is the standard software for KNX systems configuration.

Measurements
All the active and reactive energy, voltage, current, active, reactive, apparent power, power factor, frequency registers available on the measuring instrument can be transmitted over the bus. Transmission modes are available: transmission on request, automatic transmission based on adjustable energy account increment (for instance a message every 10 KWh). Status bytes are available as well, containing information about the status of the energy meter and the load (load type, running Tariff, energy import or export and so on). (Some measurements and status information are available only on selected models).

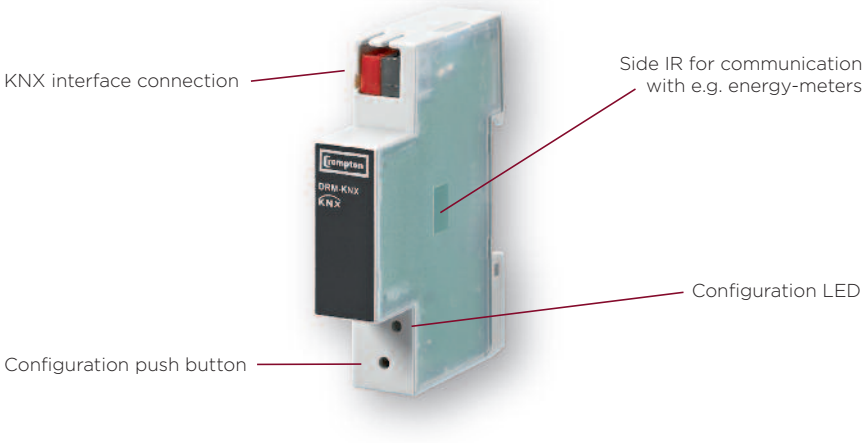
Voltage limits
Upper and lower voltage limits can be set via ETS3. A warning message will be sent over the bus by the interface, in case the voltage value goes beyond the limits.

Energy reset
Commands can be sent via bus to the interface for resetting the energy accounts (enabled only on selected measuring instruments models).

Features
- Interface for energy register and power measurements, etc.
- Communication in compliance with KNX standard for home and building control
- Configuration via ETS3
- Energy registers transmitted as float values (EIS9)
- Suitable for both single-phase and three-phase energy-meter
- 1 DIN module wide (18mm)

1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm.

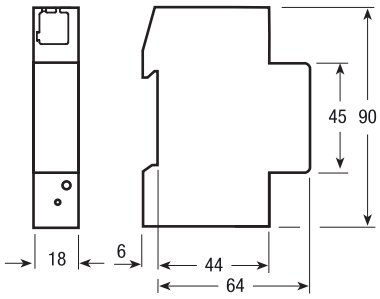
▶ KNX interface



Technical Data

Display			DRM - KNX
Power supply			
Power supply		-	through bus connection
Operating features			
Interface for energy register and power measurements			
Communication in compliance with KNX			
standard for home and building control			
Energy registers transmitted as float values (DPT 13. xxx)			
Power registers transmitted as float values (DPT 14. xxx)			
Status bytes available			
Energy account remote reset available (not active some Energy-meters models)			
Suitable for both single-phase and three-phase Energy-meter, Network analyser and Power-meters		-	yes
Configuration via ETS3			
KNX interface			
HW interface		-	black/red terminals for connection to Twisted Pair type 1 (TP-1)
Bitrate		-	9600 bps
Interface to measuring instrument			
HW interface	optical IR	n°	2 (Tx, Rx)
SW protocol		-	proprietary
Environmental conditions			
Operating temperature		°C	-10 ... +55
Temperature of storage		°C	-25 ... +70
Relative humidity		%	≤80
Protection class	acc.to EN 60664	-	II
Degree of protection housing when mounted		-	IP20

Dimensions



Product Codes

Description	Comm	DIN mod.	Part number
Optional communication interfaces	EIB-KNX	1	DRM-KNX

SD card datalogger

Additional communication modules for energy-meter

The SD card module is DIN-rail-mounting (1 DIN module, 17.5mm); it receives data from an MID approved energy meters through the infra-red interface. Its purpose is to store data (a configurable set of data) coming from the MID approved energy meters with Tapko protocol syntax into a removable SD card. The size of the SD card and the interval period between 2 records storage are also configurable. The power supply is provided by means of a IMQ safety approved DIN rail mounted transformer (1 DIN module, 17.5mm, 230V AC /12V AC - 4 VA).

In case the whole set of data is stored in each record, it is possible to store approx 1.250.000 records per gigabyte. The smaller the number of data per record, the larger the number of records that the module can store inside the SD card. The SD- card can be removed from the module at any time and inserted in a PC with suitable reader to access the saved data. The format is an CSV file.

The SD card is inserted in factory inside its receptacle on the front side of the SD card module. Inside the SD card a configuration file is written, thus allowing the selection of the parameters to be saved, of the rate of recording, etc. In case SD-module detects the presence of an SD card without any configuration file, it assumes that the dimension is 1 Gigabyte, the rate of recording is 5 minutes, the time/date is 00:00:00 01/01/2010 and the set of data is the main energies group. The module can manage SD cards of 1G, 2G, 4G and 8G sizes.

Meaning of LED

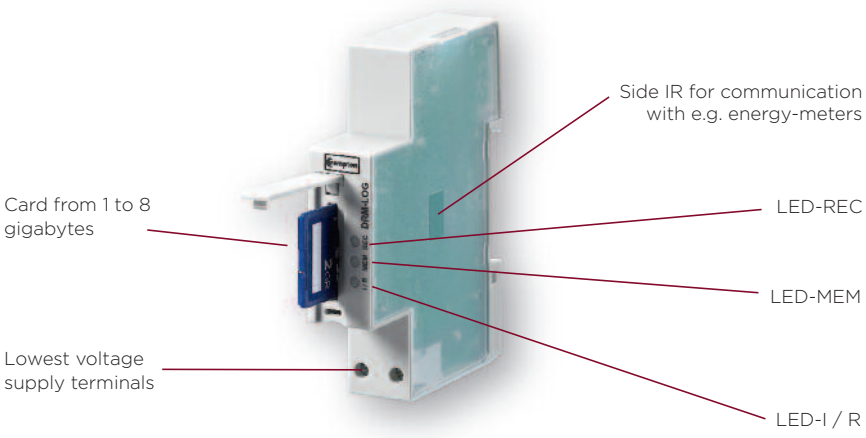
I / R-LED is the reference of IR communication with meter. REC-LED blinks for 8 seconds before a registration is performed on the memory. During registration the LED stays continuously on; in this status the memory shall not be extracted from device in order to not ruin the integrity of saved data MEM-LED is normally off and gets turned on in case less of 25% of memory is available When memory is full, LED-REC and MEM blink.

Maximum number of records

If the whole set of data is selected, it is possible to store approximately 1.250.000 records for each gigabyte, and, if the minimum rate (30 seconds) is selected, each gigabyte ensures 3 years and 9 months of storage. If the storage frequency decreases, the SD card filling time increases; for example: selecting the whole set of data and selecting 1 minute, each gigabyte ensures 7.5 years of storage.

1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm

▶ SD card Datalogger



Features

- The SD card memory from 1 to 8 gigabytes
- Suitable for both single-phase and three-phase energy-meter.
- 1 DIN module wide (18mm)

Front Panel

Three green LEDs notify the communication state, the recording state and the SD card:

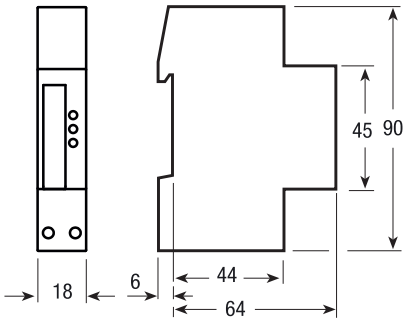
- LED blinking
- ¥LED ON
- ¥LED OFF
- ¥LED irrelevant

REC ◪ MEM ○ I/R ○	● The recording will start within 8 seconds; don't pull the SD card.
REC ◪ MEM ◪ I/R ○	The SD card is full.
REC ● MEM ○ I/R ○	The recording is started; don't pull the SD card.
REC ○ MEM ○ I/R ○	Is allowed to pull the SD card.
REC ○ MEM ● I/R ○	Less than 25% of memory is available.
REC ○ MEM ○ I/R ○	The IR communication with meter is active.
REC ○ MEM ○ I/R ●	No communication is being.

Technical Data

Display			DRM - LOG
Power supply			
Voltage rating	(DRM-LOG-PS)	V AC/DC	12 ... 24
Frequency range		Hz	45 ... 65
Operating features			
SD card memory		-	1 to 8 Gigabytes
Suitable for both single-phase and three-phase energy-meter, Network analyser and power-meters		-	yes
Interface to measuring instrument			
HW interface	optical IR	n°	2 (Tx, Rx)
Environmental conditions			
Operating temperature		°C	-10 ... +55
Limit temperature of storage		°C	-25 ... +70
Relative humidity		%	≤80
Protection class acc.to IEC 60950		-	II
Degree of protection when front panel mounted (term.)		-	IP20

Dimensions



Power supply transformer

Product Codes

Description	Comm	DIN mod.	Part number
Optional communication interfaces	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

DRB energy-meters three-phase - BASIC

- **Direct connection 80A**
- **Connection through CT .../5A up to 10.000/5A**

Digital meter to register active energy, both imported and exported, with 2 SO pulsed outputs for remote monitoring of active and reactive energies on both tariffs.

Digital energy-meters with LCD display measure active energy in three-phase systems in residential, utility and industrial application.

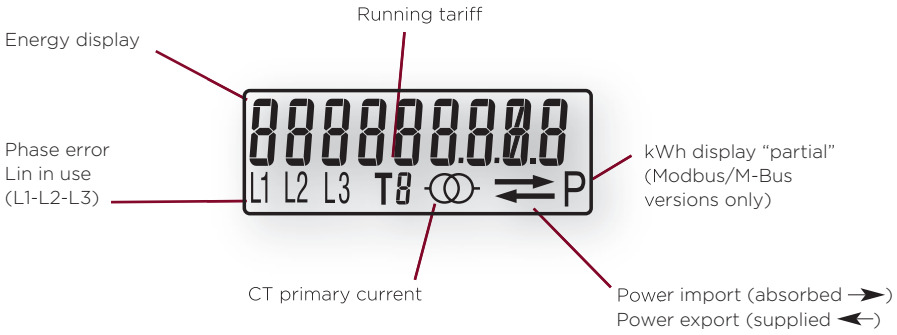
Monitors energy consumption via Modbus RTU or M-Bus communication.

Parameters

Display		Unit	ID
Active energy	Tariff 1 Tariff 2	kWh kWh	Energy imported and exported Energy imported and exported
Active energy "partial"	Tariff 1 Tariff 2	kWh kWh	Energy imported and exported (Modbus/M-Bus versions only) Energy imported and exported (Modbus/M-Bus versions only)
Phase disconnection			Phase Err
Active phases			L1 - L2 - L3
Primary transformer	5 ... 10.000/5	A	CT (current transformer)

Display

Liquid crystal display.



BASIC DRB Energy Meters Overview

Product code	MID certified	Single-phase	Three-phase	Module width	CT feed (5A)	Direct connection 32A	Direct connection 40A	Direct connection 80A	Direct connection 125A	Option connection interface	Modbus built in	M-Bus built in	Two tariff T1 & T2	Pulse output (SO)	Catalogue page
DRB-5-3P	X		X	4	X								X	X	22
DRB-80-3P	X		X	4				X					X	X	22
DRB-5-3P-M	X		X	4	X							X	X		25
DRB-80-3P-M	X		X	4				X				X	X		25
DRB-5-3P-MOD	X		X	4	X						X		X		25
DRB-80-3P-MOD	X		X	4				X			X		X		25

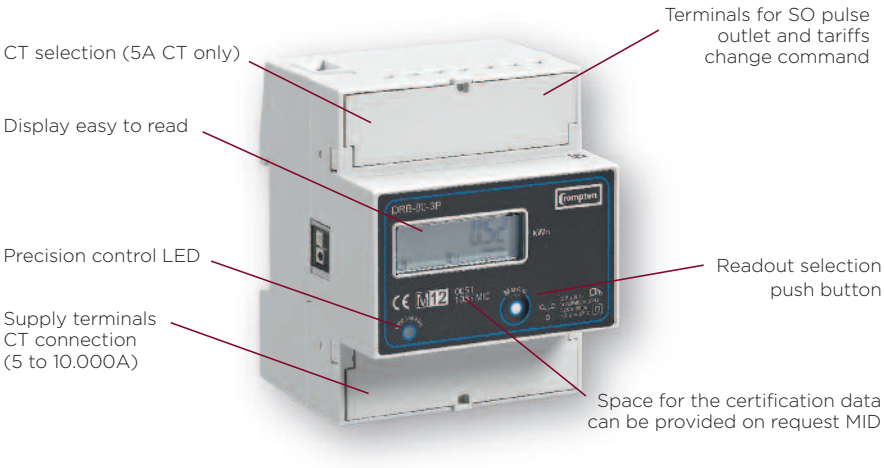
DRB energy-meters three-phase - BASIC CT 5A/80A

- **Direct connection 80A**
- **Connection through CT .../5A upto 10.000/5A**

Digital active energy-meter for imported and exported energy - 2 tariffs - 2 SO.

A three-phase active energy meter with a 9 digit, 2 decimal, display showing the total active energy reading. The meters have 2 SO outputs generating pulses for remote processing of active and reactive energy and 2 tariffs.

4 standard module housing, suitable for DIN-rail mounting
Connection through CT .../5A upto 10.000/5A or direct connection upto 80A



Features

For direct connection 80A, or for transformer .../5A

- For transformer primary current of 5A to 10.000/5A. Input is in 5A increments
- 9 digits - 4 display for energy values indication
- Detection of connection errors (phase transposition and phase missing)
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Operating range current (Ist ... Imax) for direct connection 80A = 0.015 ... 80A for connection by CT .../5A = 0.003 ... 5A
- Energy register for import and export
- Sealable terminal covers
- 4 DIN modules wide (72mm)

Technical Data

Display			DRB - 80 - 3P direct connection 80A	DRB - 5 - 3P CT connection upto 10.000/5A
Supply				
Certified voltage range Un		V AC	230	230
Operating voltage range		V AC	184 ... 276	184 ... 276
Certified frequency fn		Hz	50	50
Operating frequency range		Hz	49 ... 51	49 ... 51
Rated power dissipation (max.) Pv		VA (W)	≤8 (0.6)	≤8 (0.6)
Overload capability				
Voltage Un	continuous; phase/phase	V AC	480	480
	1 second: phase/phase	V AC	800	800
	continuous; phase/N	V AC	276	276
	1 second: phase/N	V AC	300	300
Current Imax	continuous	A	80	6
	momentary (0.5 s)	A	-	120
	momentary (10 ms)	A	2400	-
Display (readouts)				
Connection errors and phase out	discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
Display type	LCD	n° digits	9 (2 decimal)	9 (2 decimal)
	digit dimensions	mm x mm	6.00 x 3	6.00 x 3
Active energy: 1 display, 9 digit - 2 tariffs	min. measuring energy	kWh	0.01	0.01
+ display import or export (arrow)	max. measuring overflow	kWh	9999999.99	9999999.99
Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2
Transformer primary current		A	-	5 ... 10.000
Display period refresh		s	1	1

Technical Data

Display			DRB - 80 - 3P direct connection 80A	DRB - 5 - 3P CT connection up to 10.000/5A
Measuring accuracy				
Active energy	acc.to EN 50470-3	class 1	B	B
Measuring input				
Type of connection			direct	transformer .../5A
Operating range voltage	phase/phase	V AC	319 ... 480	319 ... 480
	phase/N	V AC	184 ... 276	184 ... 276
Current Iref		A	5	-
Current In		A	-	5
Current Imin		A	0.25	0.05
Operating range current (Ist ... Imax)	direct connection	A	0.015 ... 80	-
	transformer connection (CT)	A	-	0.003 ... 6
Transformer current	primary current of the transformer	A	-	5 ...10.000
	smallest input step adjus. in 5A steps	A	-	5
Frequency		Hz	49-51	48-62
Pulse output SO	acc.to EN 62053-31			
Pulse output	for active energy T1 and T2	-	yes	yes
Quantity pulse output	for direct connection 80A	Imp/kWh	500	-
	depending on the transf. factor.	Imp/kWh	-	100-10-1
Pulse duration ms 30 or 50 32		ms	30 ±2	30 ±2
Required voltage	min. (max.)	V AC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
Safety acc. to EN 50470-1				
Degree of pollution		-	2	2
Operational voltage		V AC	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4
Impulse voltage test		1.2/50 µs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance	UL 94	class	V0	V0
Environmental conditions				
Operating temperature (on request -25 ... +55 °C)		°C	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70
Relative humidity (not condensation)		%	≤80	≤80
Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20

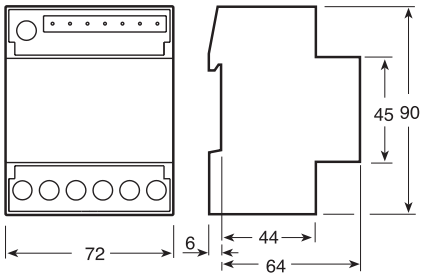
(*) For the installation in a cabinet at least with IP51 protection.

Product Codes

Description	Comm	DIN mod	Part number
LCD kWh ../5A, 2 tariffs, 2S0	pulse	4	DRB-5-3P
LCD kWh 80A, 2 tariffs, 2S0	pulse	4	DRB-80-3P

Dimensions

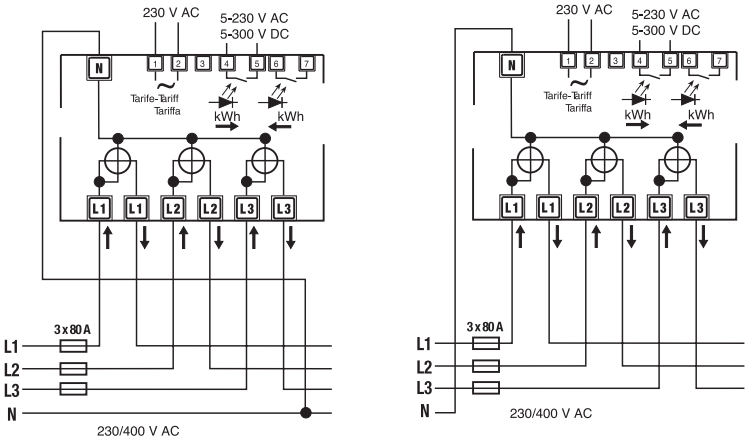
DRB-80-3P



An 80A fuse is recommended for the line protection.

Circuit diagrams

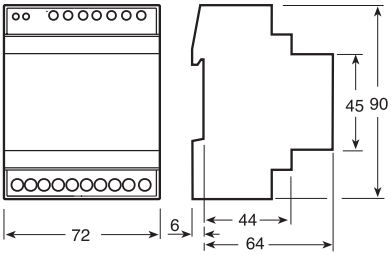
DRB-80-3P



Wire N needs to be connected to the meter

Dimensions

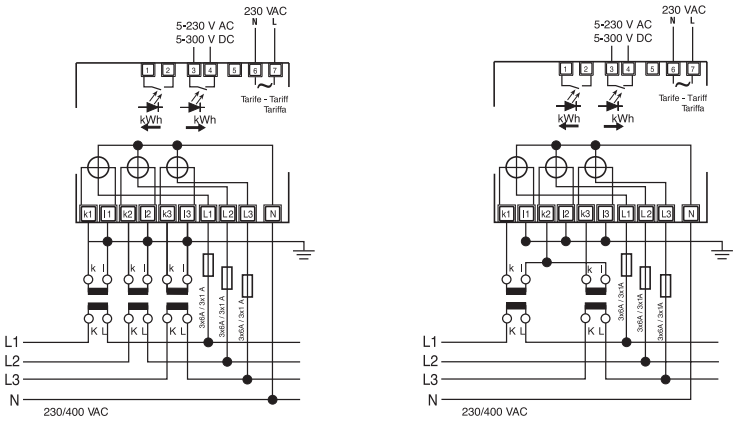
DRB-5-3P



A 6A fuse is recommended for the line protection. Current transformers must not be operated with open terminals as dangerous high voltages might occur and may result in personal injuries and property damage. Transformers are exposed to thermal overload.

Circuit diagrams

DRB-5-3P



Wire N needs to be connected to the meter

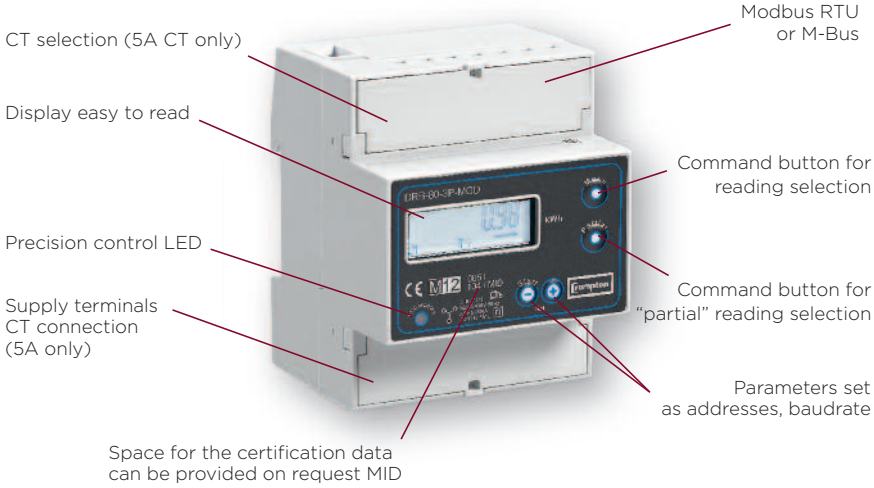
DRB energy-meter three-phase – BASIC CT 5A/80A with built-in communication

- **Direct connection 80A**
- **Connection through CT .../5A upto 10.000/5A**
- **Built-in Modbus RTU or M-Bus**

Digital meter to register active energy, both imported and exported, with built-in communication of either Modbus or M-Bus allowing remote access to active, reactive power and energies on both tariffs.

A three-phase active energy meter with a 9 digit, 2 decimal-display showing the total active energy reading. The meters have 2 SO outputs and 2 tariffs that are managed through intergral communications on the meter via Modbus RTU or M-bus interface.

4 standard module housing, suitable for DIN-rail mounting
Connection through CT .../5A up to 10.000/5A or direct connection up to 80A with built in connections (Modbus/M-Bus)



Features

- For direct connection 80A, or for transformer .../5A
- For transformer primary current of 5A to 10.000/5A. Input is in 5A increments
- 9 digits for four energy totalized values
- Detection of connection errors (phase transposition and phase missing)
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Operating range current (Ist ... Imax) for direct connection 80A = 0.015 ... 80A for connection by CT .../5A = 0.003 ... 5A
- Energy register “Partial kWh” resettable* for Modbus /M-Bus versions only
- Sealable terminal covers
- 4 DIN modules wide (72mm)

Technical Data

Display			DRB-80-3P-M DRB-80-3P-MOD direct connection to 80A built-in communication Modbus/M-Bus	DRB-5-3P-M DRB-5-3P-MOD CT connection upto 10.000/5A built-in communication Modbus/M-Bus
Supply				
Certified voltage range Un		V AC	230 ±20%	230 ±20%
Operating voltage range		V AC	184 ... 276	57 ... 100/276 ... 480
Certified frequency fn		Hz	50 ±2%	50 ±2%
Operating frequency range		Hz	49 ... 51	48 ... 62
Rated power dissipation (max.) Pv		VA (W)	≤8 (0.6)	≤8 (0.6)
Overload capability				
Voltage Un	continuous; phase/phase	V AC	480	480
	1 second: phase/phase	V AC	800	800
	continuous; phase/N	V AC	276	276
	1 second: phase/N	V AC	300	300
Current Imax	continuous	A	80	6
	momentary (0.5 s)	A	-	120
	momentary (10 ms)	A	2400	-

Technical Data

Display			DRB-80-3P-M DRB-80-3P-MOD direct connection to 80A built-in communication Modbus/M-Bus	DRB-5-3P-M DRB-5-3P-MOD CT connection upto 10.000/5A built-in communication Modbus/M-Bus
Display (readouts)				
Connection errors and phase out	discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
Display type	LCD	n° digits	9 (2 decimals)	9 (2 decimals)
	digit dimensions	mm x mm	6.00 x 3	6.00 x 3
Active energy: 1 display, 9 digit - 2 tariffs	min. measuring energy	kWh	0.01	0.01
+ display import or export (arrow)	max. measuring overflow	kWh	9999999.99	9999999.99
Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2
Transformer primary current		A	-	5 ... 10.000
Display period refresh		s	1	1
Measuring accuracy				
Active energy and power	acc.to EN 50470-3	class 1	B	B
Measuring input				
Type of connection			direct	transformer .../5A
Voltage Un	phase/phase	V AC	400	400
	phase/N	V AC	230	230
Operating range voltage	phase/phase	V AC	319 ... 480	319 ... 480
	phase/N	V AC	184 ... 276	57 ... 276
Current Iref		A	5	-
Current In		A	-	5
Current Imin		A	0.25	0.05
Operating range current (Ist ... Imax)	direct connection	A	0.015 ... 80	-
	transformer connection (CT)	A	-	0.003 ... 6
Transformer current	primary current of the transformer	A	-	5 ...10.000
	smallest input step adjus. in 5A steps	A	-	5
Frequency		Hz	49 ... 51	48 ... 62
Safety acc. to EN 50470-1				
Degree of pollution		-	2	2
Operational voltage		V AC	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4
Impulse voltage test		1.2/50 µs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance	UL 94	class	V0	V0
Environmental conditions				
Operating temperature (on request -25 ... +55 °C)		°C	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70
Relative humidity (not condensation)		%	≤80	≤80
Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20

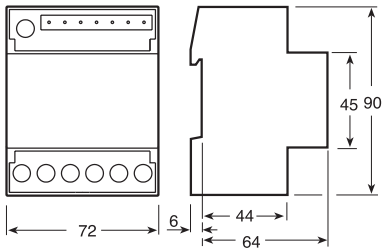
(*) For the installation in a cabinet at least with IP51 protection.

Product Codes

Description	Comm	DIN mod	Part number
LCD kWh .../5A, 2 tariffs, NO zero setting - MID M-Bus	M-Bus	4	DRB-5-3P-M
LCD kWh 80A, 2 tariffs, NO zero setting - MID M-Bus	M-Bus	4	DRB-80-3P-M
LCD kWh .../5A, 2 tariffs, NO zero setting - MID Modbus	Modbus RTU	4	DRB-5-3P-MOD
LCD kWh 80A, 2 tariffs, NO zero setting - MID Modbus	Modbus RTU	4	DRB-80-3P-MOD

Dimensions

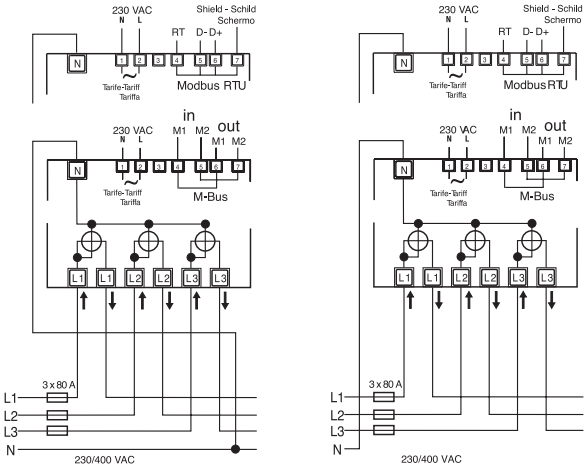
DRB-80-3P-MOD
DRB-80-3P-M



An 80A fuse is recommended for the line protection.

Circuit diagrams

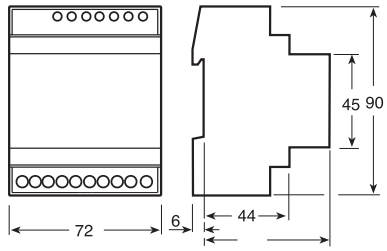
DRB-80-3P-MOD
DRB-80-3P-M



Wire N needs to be connected to the meter

Dimensions

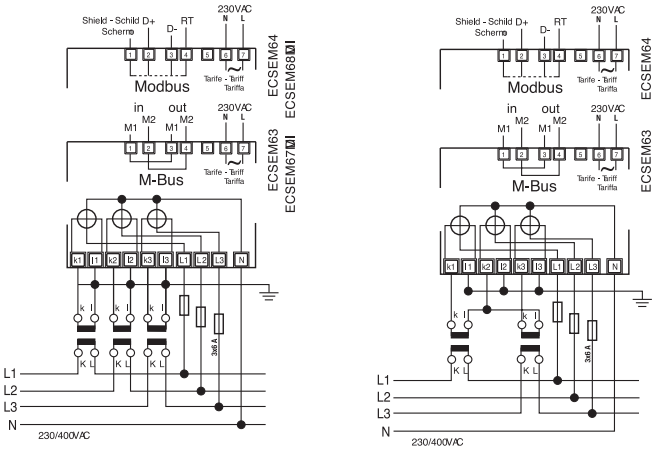
DRB-5-3P-MOD
DRB-5-3P-M



A 6A fuse is recommended for the line protection. Current transformers must not be operated with open terminals as dangerous high voltages might occur and may result in personal injuries and property damage. Transformers are exposed to thermal overload.

Circuit diagrams

DRB-5-3P-MOD
DRB-5-3P-M



Wire N needs to be connected to the meter

About TE Connectivity

TE Connectivity is a global, $14 billion company that designs and manufactures over 500,000 products that connect and protect the flow of power and data inside the products that touch every aspect of our lives. Our nearly 100,000 employees partner with customers in virtually every industry – from consumer electronics, energy and healthcare, to automotive, aerospace and communication networks – enabling smarter, faster, better technologies to connect products to possibilities.

TE Energy – innovative and economical solutions for the electrical power industry: cable accessories, connectors & fittings, insulators & insulation, surge arresters, switching equipment, street lighting, power measurement and control.

Tyco Electronics UK Ltd
TE Energy
Freebournes Road
Witham, Essex CM8 3AH

Phone: +44 (0)870 870 7500
Fax: +44 (0)870 240 5287
Email: crompton.info@te.com

crompton-instruments.com
energy.te.com

Registered office:
Faraday Road, Dorcan
Swindon, SN3 5HH
Reg. no. 550 926