

Single-phase Digital Energy meters - Direct connection 80 A

IIIST085-01 Stand 30-07-2012

active and reactive energy-meter with measurement of active and reactive instantaneous power - 2 tariff - 2 S0

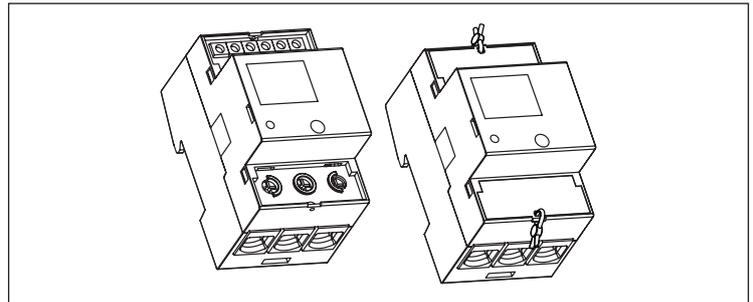
Code	Description
DRM-80-1P	single-phase digital active and reactive energy-meter with active and reactive power indication direct connection 0.25-5 (80) A - 2 tariffs - 2 S0 (MID calibrated)



WARNING
Installation must be carried out and inspected by a specialist or under his supervision. When working on the instrument, switch off the mains voltage!

- This family of devices provides a set of single phase energy meters designed to be directly connected to systems where high current is required. All the meters are equipped with an easy to read LCD on which all the active energy counters are displayed, with a red light LED which blinks in proportion to the measured active energy and with an optocoupler that allows the storage of energy on two different tariffs.

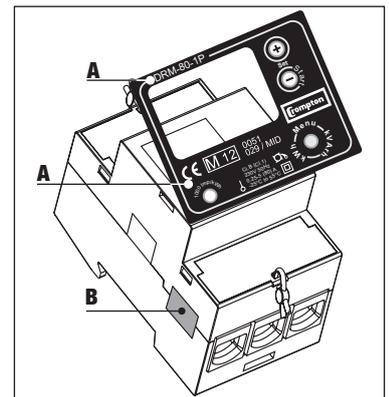
Sealable terminal covers



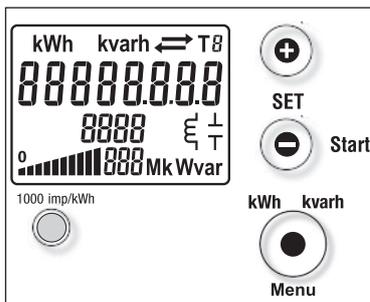
MID calibrated

DRM-80-1P

- A) Device code and certification data indications
- B) Safety-sealing between upper and lower housing part



Display



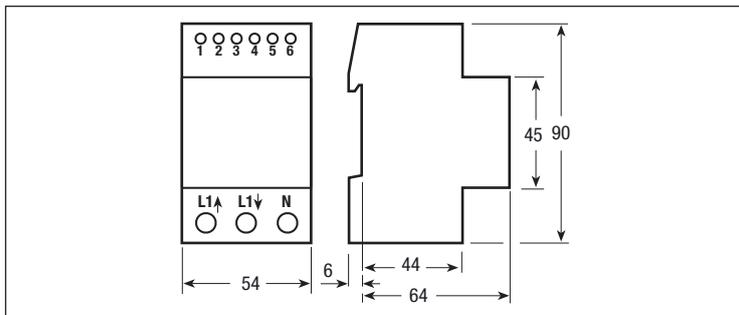
- 88888888 • Energy value
- kWh kvarh • kWh / kvarh display
- T8 • Running tariff, called tariff
- ↔ • Energy export (←) / Energy import (→)
- ⌚ • Displays inductive, reactive power
- ⌚ • Displays capacitive, reactive power
- ▬▬▬▬▬▬ • Consumption Bar display (percentage of Pmax)

- 8888 • Full scale current indication
- 1000 Imp/kWh • Precision control LED

Commands

- + • Parameters set
- SET • Menu key for reading selection
- • Start
- Menu

Dimension

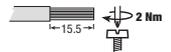


Symbols

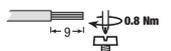
- ⊗ • Measuring elements
- ⊗ • Reversal preventing device
- • Protected by double insulation

Cable stripping length and max. terminal screw torque

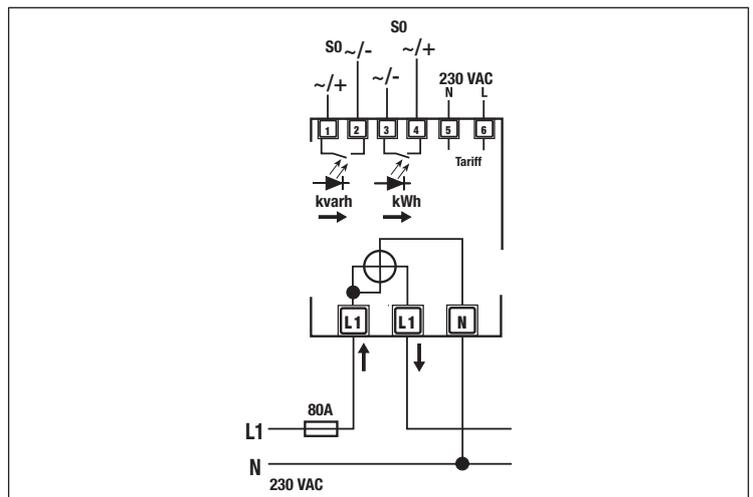
80 A direct connection main terminals
Screw driver PZ2



Tariff and communication terminals
Screw driver blade 0.8x3.5 mm



Wiring diagram



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

Terminal Description

- 1-2: Pulse output of reactive energy imported, isolated by a OptoMOS Relay.
- 3-4: Pulse output of active energy imported, isolated by a OptoMOS Relay
- 5-6: Tariff signal, isolated by a Opto Coupler.
When there is a voltage of 230 VAC connected the device store energies on the Tariff 2 registers, otherwise on the Tariff 1 registers.
- L1 ↑: Input for the phase conductor.
- L1 ↓: Output for the phase conductor.
- N: Measuring input of neutral.

Main Menu

Page 1:

In this page the value of the current Active Energy is represented (or the last one that has incremented). The energy may be Imported or Exported with Tariff T1 or T2.

Page 2:

By pushing any key the back light turns on

Page 3:

The next 8 "Menu key" presses allow the display of the 8 energy counters.

The counters are:

- Active import energy on tariff 1 - Active export energy on tariff 1
- Reactive import energy on tariff 1 - Reactive export energy on tariff 1
- Active import energy on tariff 2 - Active export energy on tariff 2
- Reactive import energy on tariff 2 - Reactive export energy on tariff 2

When displaying the energy counter corresponding to the running tariff, the bottom row shows the instantaneous power consumption.

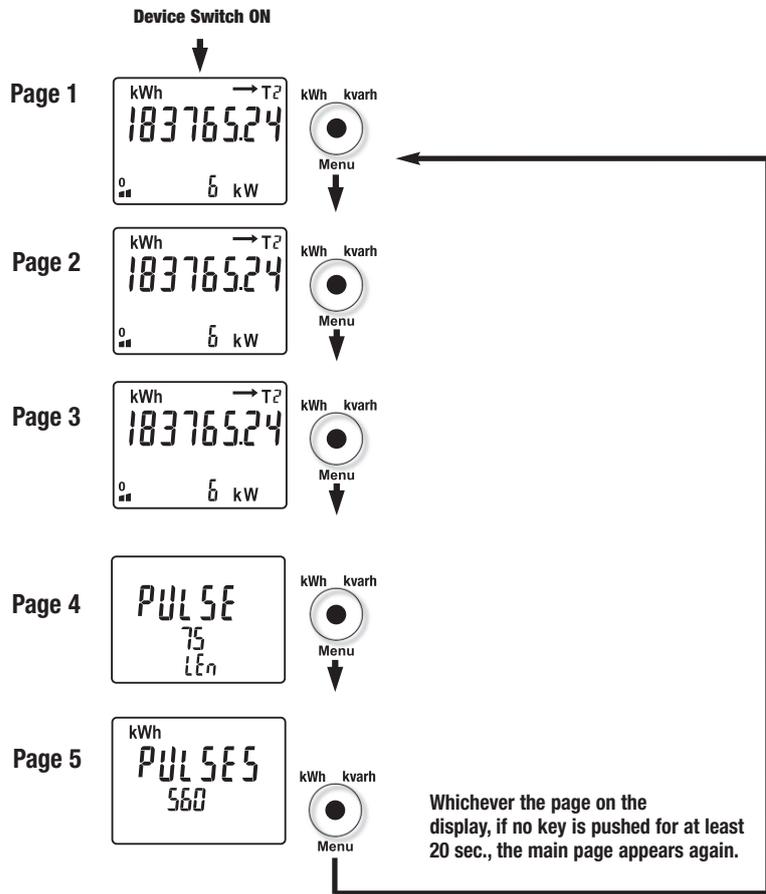
Page 4:

- **ON time page (PULSE LEn):** In this page the time in ms of the SO pulse appears. This value can be altered, see the section Pulse Output.

Page 5:

- **Pulse quantity page (PULSES):**

In this page the number of pulses per kWh, of the SO output, appears. This value can be altered, see the section Pulse Output.



Pulse Output

Pulse output quantity setting

The number of pulse per kWh (Pulse constant) that the meter can generate is a function of the ON time of the pulse. The relationship is: $\text{Pulse Constant} \leq \frac{50.000}{\text{ON time [ms]}}$

For example, a time ON pulse of 90 ms, the maximum Pulse constant that you can select is: $\text{Pulse Constant} = \frac{50.000}{90} = 555.5 = 555 \text{ pulse for kWh}$ (the number must be to tens truncated)

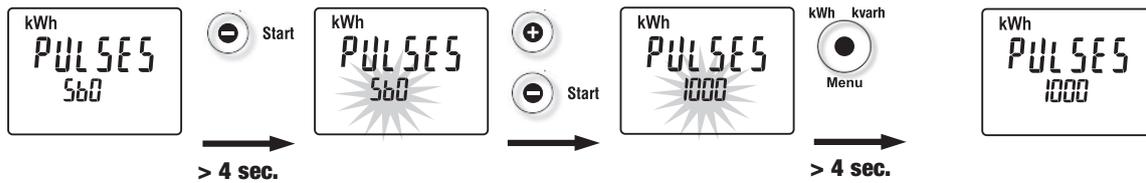
If the Pulse constant or the ON time of the pulse setted implies that the relationship is not respected, the setting is rejected.

Pulse constant setting

In the Pulse constant page, by pressing the "Start (-) key" for 4 sec, the value of the constant will blink.

Push "Start (-) key" or "(+)" to change the value. Push the "Menu key" for 4 sec. to confirm, otherwise within 5 seconds the modification will be lost.

Main Menu:

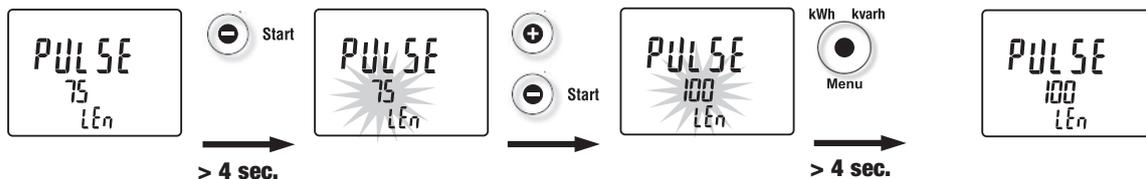


Pulse length (ms) setting

In the PULSE ON time page, by pressing the "Start (-) key" for 4 sec, the value of the pulse length will blink.

Push "Start (-) key" or "(+)" to change the value. Push the "Menu key" for 4 sec. to confirm, otherwise within 5 seconds the modification will be lost.

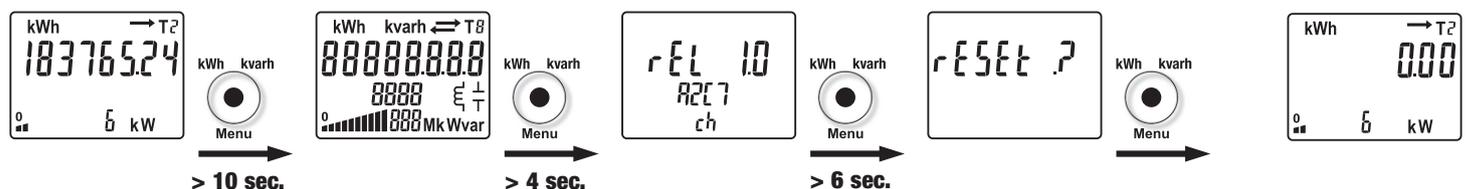
Main Menu:



Firmware Information - Diagnostic Page of the Display

In any page of the Main Menu by pressing the "Menu key" for 10 sec. the diagnostic page of the display appears. If the "Menu key" is held down for another 4 sec. the display shows information about the firmware release and the firmware checksum.

Main Menu:



Technical data

Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31

DRM-80-1P
direct connection 80 A

General characteristics

• Housing	DIN 43880	DIN	3 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70

Operating features

• Connectivity	to single-phase network	n° wires	2
• Storage of energy values and configuration	digital display (EEPROM)	-	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2

Supply

• Certified voltage range <i>Un</i>		VAC	230 ±20%
• Operating voltage range		VAC	110 ... 276
• Certified frequency <i>fn</i>		Hz	50 ±2%
• Operating frequency range		Hz	48 ... 62
• Rated power dissipation (max.) <i>Pv</i>		VA (W)	≤8 (0.6)

Overload capability

• Voltage <i>Un</i>	continuous	VAC	276
	momentary (1 s)	VAC	300
• Current <i>I_{max}</i>	continuous	A	80
	momentary (10 ms)	A	2400

Display

• Display type	LCD	n° digits	8 (2 decimal)
	digit dimensions	mm x mm	6.00 x 3
• Active energy: 1 display, 7-digit + display import or export (arrow)	tariffs 2	kWh	0.01
	overflow	kWh	999999.99
• Reactive energy: 1 display, 7-digit + display import or export (arrow)	tariffs 2	kvarh	0.01
	overflow	kvarh	999999.99
• Instantaneous active power: 1 display, 3-digit		W, kW or MW	000 ... 999
• Instantaneous reactive power: 1 display, 3-digit		var, kvar or Mvar	000 ... 999
• Instantaneous tariff measurement		-	1
	1 display, 1-digit	-	T1 or T2
• Display period refresh		s	1

Measuring accuracy

	at 23 ±1°C, referred to nominal values		
• Active energy and power	acc.to EN 50470-3	class	B
• Reactive energy and power	acc.to EN 62053-23	class	2

Measuring input

• Type of connection	phase/N	-	direct
• Operating range voltage	phase/N	VAC	110 ... 276
• Current <i>I_{ref}</i>		A	5
• Current <i>I_{min}</i>		A	0.25
• Operating range current (<i>I_{st} ... I_{max}</i>)	direct connection	A	0.020 ... 80
• Operating frequency		Hz	48 ... 62
• Certified frequency		Hz	50 ±2%
• Starting current for energy measurement (<i>I_{st}</i>)		mA	20

Pulse output S0

• Pulse output	acc.to EN 62053-31		
	for active and reactive energy T1 and T2	-	yes
• Pulse quantity		imp/kWh	1000
• Pulse duration		ms	100 ms (lower on request)
• Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON (max. 230 V AC/DC)	mA	90
• Permissible current	Impuls OFF (leakage cur. max. 230 V AC/DC)	µA	1

Optical interfaces

• Front side (<i>accuracy control</i>)	LED	imp/kWh	1000
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Safety acc. to EN 50470-1

• Indoor meter		-	yes
• Degree of pollution		-	2
• Operational voltage		VAC	300
• AC voltage test (EN 50470-3, 7.2)		kV	4
• Impulse voltage test		1.2/50 µs-kV	6
• Protection class (EN 50470)		class	II
• Housing material flame resistance	UL 94	class	V0
• Safety-sealing between upper and lower housing part		-	yes

Lateral IR interfaces

• For communication moduls connection (DRM-M / DRM-MOD / DRM-KNX / DRM-LOG)		-	yes
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Connection terminals

• Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2
• Type cage pulse output	blade for slotted screw	mm	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm ²	1.5 (50)
	stranded wire with sleeve min. (max.)	mm ²	1.5 (50)
• Terminal capacity pulse output	solid wire min. (max.)	mm ²	1 (4)
	stranded wire with sleeve min. (max.)	mm ²	1 (2.5)

Environmental conditions

• Mechanical environment		-	M1
• Electromagnetic environment		-	E2
• Operating temperature		°C	-25 ... +55
• Limit temperature of transportation and storage		°C	-25 ... +70
• Relative humidity (not condensation)		%	≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075
• Degree protection	housing when mounted in front (terminal)	-	IP51(*)/IP20

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