

Direct three-phase meter

MKD

Electronic three-phase energy meter with direct connection for DIN rail mounting



Description

Electronic three-phase meter (active and reactive energy), with a direct connect, for DIN rails and 4 quadrants (measures the active (kW·h) and reactive (kvar·h) energy consumed and generated)

Other features:

- Optional Modbus/RTU communications (type RS-485)
- The current direction can be adjusted
- 2 Impulse outputs with optoinsulated transistor and 2 digital inputs, depending on the type
- Partial meters

Application

- Billing meter: measures energy in the different billing categories (up to 3, depending on the type), adjustable with 2 digital inputs
- Control station of various types of consumption, such as gas, water and electricity

Features

Power supply circuit	110...500 V _{ac} . Between L1-L2 (with the measurement itself)
Maximum consumption	5 V·A
Frequency	45..0.65 Hz
Metering circuit	
Nominal voltage	300 Vac (phase-neutral) 500 Vac (phase-phase)
Maximum consumption: Voltage V _{p-p} < 300 V	2 W - 3 V·A
Voltage V _{p-p} > 300 V	2 W - 20 V·A
Minimum current	160 mA
Nominal current	40 A
Maximum current	120 A
Frequency	45..0.65 Hz
Maximum meter value	9,999,999 kW·h (Minimum resolution of the display 10 w·h)
Class/Accuracy	
Class/Accuracy in Active Energy	Class 1 - IEC 61036
Class/Accuracy in Reactive Energy	Class 2 - IEC 61268
Output transistor	Optoinsulated (collector open) NPN
Maximum switching voltage	24 Vdc
Maximum switching current	50 mA
Maximum Impulse frequency	5 impulse / s
Duration of the Impulse	100 ms ON / 100 ms OFF
Communications	
Type	RS-485
Communication parameters	1200 - 19200 bps, 7/8 bits, parity no / even / odd, stop 1/2
Ambient conditions	
Operating temperature	-20 ... +60 °C
Humidity (non-condensing)	5 ... 95%
Altitude	2000 m
Build features	
Type of box	VO self-extinguishing plastic
Degree of protection	Fitted unit (frontal): IP 51 Non-fitted unit (sides and rear cover): IP 31
Dimensions	6 DIN Modules
Weight	410 g
Safety	
Category III EN 61010-1 . Electric shock protection class II	
Standards	
EN 62052-11, EN 62053-21, EN 62053-23, EN 61010-1	

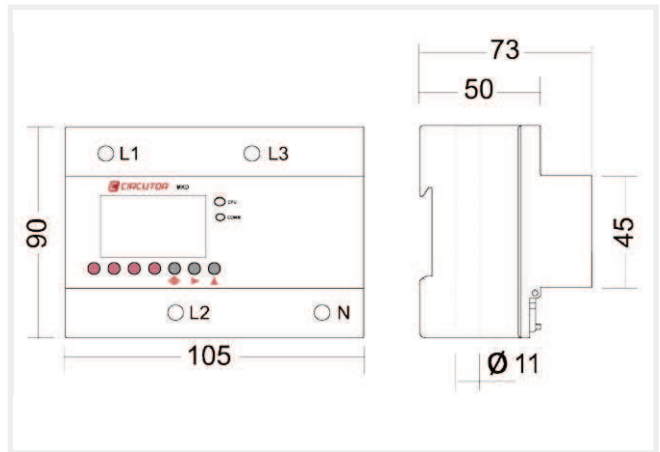
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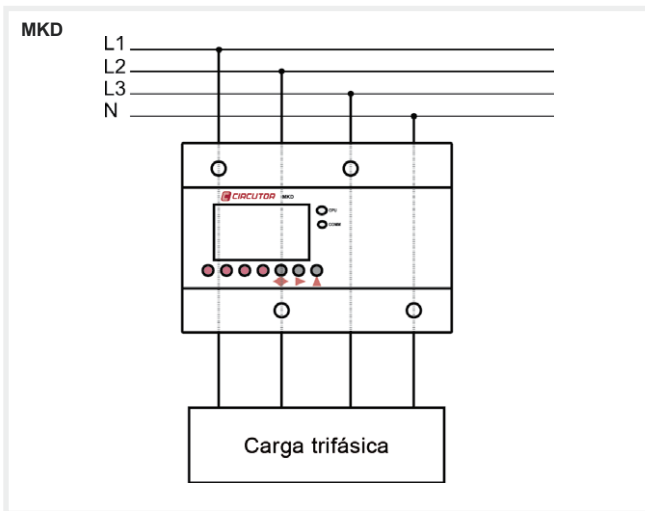
Dimensions



References

Parameters measured	Input range	Partial meters	Quadrants	Communications with the MODBUS (RTU) protocol	Rates	Digital output	Inputs	DIN Modules	Type	Code
kW-h, kvarL-h, kvarC-h	160 mA ... 120 A	Yes	4	-	1	2	0	6	MKD-ITF-C2	M33000
kW-h, kvarL-h, kvarC-h	160 mA ... 120 A	Yes	4	Yes	3	2	2	6	MKD-ITF-RS485-I2-C2	M33011

Connections

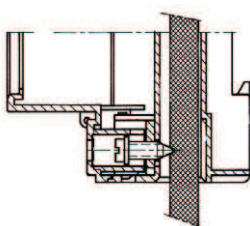


List of unit terminals

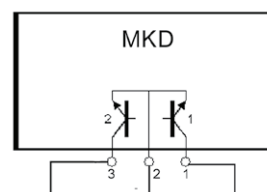
Number of number	Concept
1	Impulse output 1
2	Common
3	Impulse output 2
4	B (RS-485)
5	S (RS-485)
6	A (RS-485)
7	Input 1 Digital (stats / impulses)
8	Common
9	Input 2 Digital (stats / impulses)

Diagram

Details of the voltage tap



Transistor output diagrams



ARON Direct three-phase meter

MKB - 363 M

ARON - 400

Electronic three-phase energy meter with direct ARON connection for DIN rail mounting



Description

Electronic three-phase energy meter with direct ARON connection energy for DIN rails

Other features include:

- Mechanical 7 digit display: 6 whole numbers + 1 decimal
- Assembly on a 4 module DIN rail
- 2 digital outputs

Application

- Energy control in three-phase installations with no neutral where the efficient use of space is important, for example: installations with motors
- In applications with severe temperature conditions. The working life of the unit's mechanical display is not affected by high temperatures.

Features

Voltage circuit	400 Va.c. phase-phase \pm 20 % (between L1-L3)
Consumption	4 V·A
Frequency	45...65 Hz
Current circuit (only phases L1 and L3)	
Minimum current	500 mAa.c.
Maximum current	63 Aa.c.
Nominal current (I_n)	90 Aa.c.
Maximum meter value	999,999.9 kW·h
Accuracy	Class 2 - IEC 1036 and EN-61036
Maximum current	0,8%
Base current (IN)	0,8%
5% IN	1,4 %
Output transistor (optoisolated - open collector)	
Maximum switching voltage	35 Vd.c.
Maximum switching current	30 mA
Output time	4 imp / s
Energy output	100 impulses / kW·h (no programmable)
Impulse duration	100 ms
Ambient conditions	
Operating temperature	-10 ... +45 °C
Humidity (non-condensing)	25...75%
Altitude	2000 m
Build features	
Minimum display resolution	100 W·h
Type of box	Modular DIN rail. Self-extinguishing plastic
Degree of protection	IP 20
Dimensions	70 x 85 x 70 mm (4 modules)
Weight	300 g
Safety	
Designed for category II, in accordance with EN 61010	
Standards	
IEC-1036, EN-61036, EN 61010	

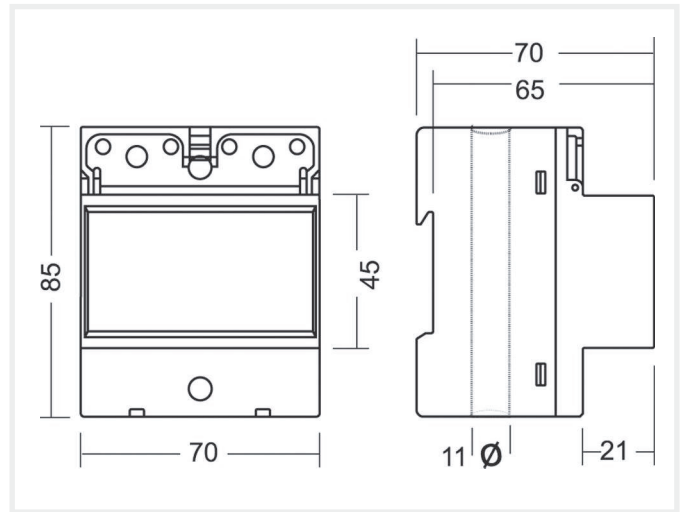
ARON Direct three-phase meter

MKB - 363 M
ARON - 400

Electronic three-phase energy meter with direct ARON connection for DIN rail mounting



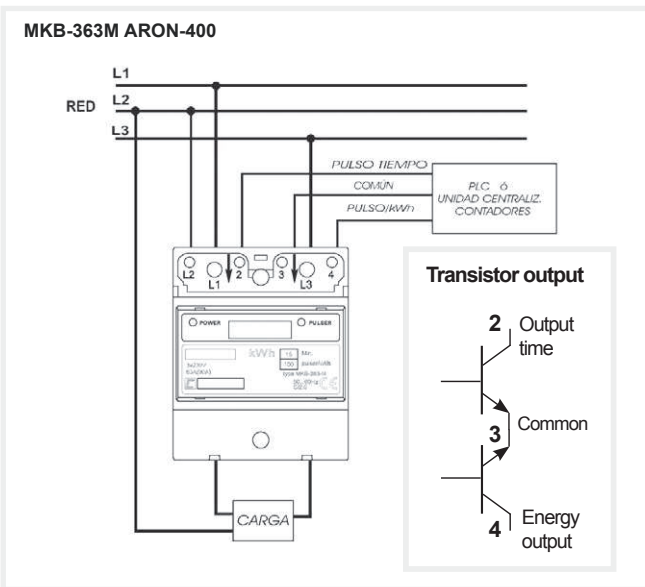
Dimensions



References

Parameters measured	Input range	Quadrants	Rates	Digital output	DIN Modules	Type	Code
kW-h	500 mA...900 A	2	1	2	4	MKB-363M ARON-400	M30310

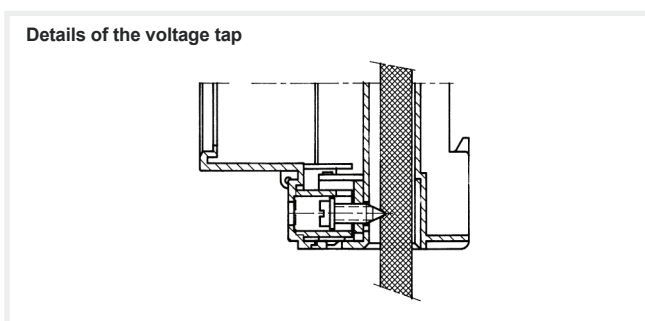
Connections



List of unit terminals

Number of number	Definition	Concept
L1	Voltage input Current input	Phase 1
L3	Voltage input Current input	Phase 3
L2	Voltage input	Phase 2 (Reference phase)
2	+	Impulse output time (optoisolated)
3	Common	-
4	+	Impulse energy output (optoisolated)

Diagram



Coding table

M	3	X	X	X	X	0	0	X
Code						Internal Code	↑	
Power supply voltage p-p	Standard (400 Vac)						0	
	230 Vac						2	