

MDM 3100

Multifunction Power Meter



ARTEL

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Product Profile

MDM3100 is a powerful multifunction power meter that measures more than 60 parameters such as U, I, P, Q, $\cos\Phi$, F, kWh, kvarh, etc. The standard MDM3100 has RS-485 communication protocol, 2 energy pulse outputs(active and reactive each) functions. With optional module, MDM3100 can perform more functions: harmonic analysis, 8 digital signal inputs, 4 programmable relay outputs, 4 programmable analog outputs (0-5V or 4-20mA), data storage, Profibus communication, Ethernet networking capabilities. MDM3100 fulfills all the important requirement of IEC 60668;IEC61557-12; IEC61000-4-30 and CE standards as LVD EN61010;EMC EN62052-11 and EN62053-21.

EMC and other safety standard

IEC61326-1
IEC61000-4-2
IEC61000-4-2/3/4/5/12
IEC61010-1



Functions Description

	Item	Description		
 <p>Main unit</p>	Real time measurement	Phase Voltage	Phase Voltage, average phase Voltage	
		Line Voltage	Line Voltage, average line Voltage	
		Current	Phase Current, average phase Current, zero sequence Current	
		Active Power	Phase active Power, 3 phase active total Power	
		Reactive Power	Phase reactive Power, 3 phase reactive total Power	
		Apparent Power	Phase apparent Power, 3 phase apparent total Power	
		Power 4 quadrant	Power 4 quadrant	
		Frequency	System frequency	
		Power Factor	Phase Power factor, 3 phase total Power factor	
		Demand statistic	Demand	3 phase active/reactive demand Power, demand apparent Power
		Energy Reading	Active energy	Imported, exported and net active energy, 1 channel active energy pulse output
			Reactive energy	Imported, exported and net reactive energy, 1 channel reactive energy pulse output
			Multi tariff billing	Multi tariff setup
		Time display	Real time display	Year/month/day/hour/minute/second
Data communication	RS-485 communication	1 Modbus-RTU protocol		
 <p>Optional Module</p>	Remote signal input module	8 channels	Status detection, SOE event record	
	Relay output module	4 channels programmable overlimit/underlimit alarm	Programmable over/under limit value for real time measurement, Voltage/Current unbalanced ratio, demand value, harmonics,remote signal. The overlimit/underlimit command can be read thru com. Port.	
	Analog output module	4 channels programmable	4-20mA or 0-5V	
	Data storage module		Store real time measured value in cycle, Voltage/Current unbalanced ratio, demand value, harmonics, remote signal. Storage capacity: 2GB	
	Harmonic analysis module	Total harmonic distortion for Voltage/Current	3 phase, single phase, neutral line	
		Even/odd harmonic distortion	Harmonic distortion (2nd to 63rd)	
		Fundermental Voltage / Current	Magnitude, phase angle	
		Fundermental active/reactive power	Magnitude, phase angle	
		Harmonics, individual		
	Profibus communication module	1channel	Profibus-DP protocol	
	Ethernet networking communication module		10M/100M adaptable	
		TCP/IP protocol		

Measurement Accuracy

Parameters	Display	Direction	Accuracy
Voltage	0 ~ 9999.9kV		Class0.2
Current	0 ~ 9999.9kA		Class0.2
Power factor	-1 ~ +1	Directional	Class 1
Frequency	45 ~ 65Hz		0.01Hz
Active Power	-99999 ~ 99999MW	Directional	Class0.5
Reactive Power	-99999 ~ 99999Mvar	Directional	Class0.5
Apparent Power	-99999 ~ 99999MVA		Class0.5
Active Demand	-99999 ~ 99999MW		Class 1
Reactive Demand	-99999 ~ 99999MVar		Class 1
Active Energy	0~9999999.99MWh	Directional	Class 1
Reactive Energy	0~9999999.99Mvarh	Directional	Class 2
Phase Angle	0.0 ~ 359.9	Directional	Class 2
Current total harmonic %	0 ~ 100%		Class 2
Voltage total harmonic %	0 ~ 100%		Class 2

Technical Specification

Current Input

Input Current: 0 ~ 5A (Current value can be set up)
Measurement scope: 0.5% ~ 120%In
Overload capacity: 2 X rated continuously, 100A/1s non continuously
Power consumption: ≤0.2VA per phase

Voltage Input

Input Voltage: 0 ~ 400VAC (L-N) , 0 ~ 690VAC (L-L)
(Voltage value can be set up)
System frequency: 45 ~ 65Hz
Measurement scope: 3% ~ 120%Un
Overload Capacity: 2 X rated continuously, 2500V/1s non continuous
Power consumption: ≤0.5VA per phase

Switch Status (optional)

Input Channels	8 channels
Input Type	Dry contact
Isolated Voltage	2500VAC

Relay Output (optional)

Output Channels	4 channels programmable
Output Type	Mechanic contact, constant on output
Contact Capacity	5A/250VAC

Analog Output (optional)

No. of outputs	4 channels programmable
Output signal	4 ~ 20mA or 0 ~ 5V
Response time	≤400ms

Pulse Output (standard)

No. of outputs	2 channels (active/reactive energy each)
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Technical Specification

Serial com. Port (standard)

No. of outputs	1 RS-485 port
Communication protocol	Modbus-RTU protocol
Baud rate	2400/4800/9600/19200/38400bps

Profibus com. Module (optional)

No. of Channels	1
Communication protocol	Profibus-DP protocol

Ethernet networking Module (optional)

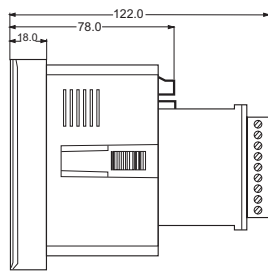
No. of channels: 1 channel	10M/100M adaptive
Communication Protocol	TCP/IP protocol

Other parameters

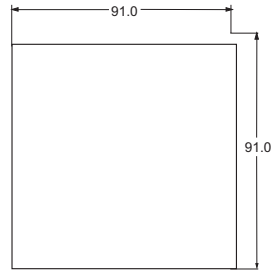
Auxiliary Power	85 ~ 265VAC/DC (standard) 24 ~ 36VAC/DC (optional) 36 ~ 80VAC/DC (optional)
Display module	LCD Display 76mmx66mm luminosity can be adjusted
Storage Capacity	2GB
Temp. drifting factor	< 100PPM/°C
Withstand Voltage (Input against output)	2500V/1 min
Total power consumption	< 8VA
Operation temperature	-20°C ~ 60°C
Storage temperature	-40°C ~ 85°C
Operation humidity	5 ~ 95% RH
Pollution Class	Class 2
Material of Housing	Flammability acc. to UL94V0
Dimensional Size: Main unit+ module	96mmx96mmx122mm
Main unit	96mmx96mmx78mm
Installation Size:	91mmx91mm

Dimensional size diagram ▾

Unit: mm

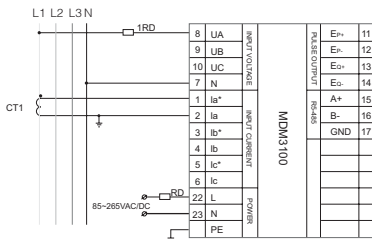


Side Elevation Diagram

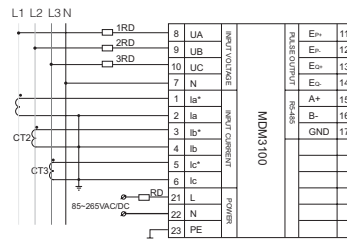


Installation Diagram

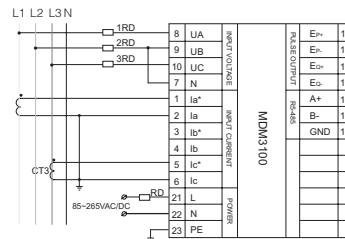
Wiring Diagram ▾



Single phase wiring diagram



3-ph 4-wire wiring diagram



3-ph 3-wire wiring diagram

Order code ▾

MDM3100



English code is filled left. Up to 4 optional modules can be selected, null means no optional unit is selected

Module code ▾

English code for ordering module with standard unit	Module Name	Order code for ordering module alone
8 remote input signals module	A	3100-101
4 relay output module	B	3100-102
4 analog output module (4 ~ 20mA)	C	3100-103
4 analog output module (0 ~ 5V)	D	3100-104
Data storage module	E	3100-105
Harmonic analysis module	F	3100-106
Data storage and harmonics analysis module	G	3100-107
Profibus communication module	H	3100-108
Ethernet communication module	I	3100-109

Remark:

1. A maximum of 4 modules can be applied in 1 meter, but the same type of module can't be selected at the same time; C and D can't be selected at the same time; G can't be selected with E or F.
2. The Auxiliary Power Supply of standard MDM3100 is 85 ~ 265VAC/DC, if you require 24 ~ 36VAC/DC or 36 ~ 80VAC/DC Auxiliary Power Supply, please specify it.

Example:

MDM 3100 AFH, which means 8 remote signals input module, harmonics analysis module, Profibus com. module.

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