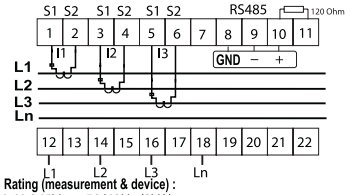
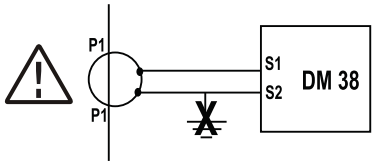
Power Meter
DM38
User Manual

Mikro SDN. BHD
No1, Jln TP7/7, Sime UEP industrial Park,
40000 Shah Alam, Selangor, Malaysia.
Tel: +603-51927155
Fax:+603-51927166
Website:www.itmikro.com
E-mail: sales@itmikro.com



Rating (measurement & device) :
L-N 265V~ 50/60Hz (3VA)
Current Input: 6A max.

Figure 1: Wiring diagram



Note:
Current transformer secondary terminal must NOT be earthed.

HAZARD CATAGORIES AND SPECIAL SYMBOL

Read all the instructions carefully and check the device before installing or service it. The following safety alert symbol may appear throughout this manual or on the device to warn of potential hazards or to call for attention.

PLEASE NOTE

The power meter should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

BEFORE YOU BEGIN

- Apply appropriate personal protective equipment and follow safe electrical work practices.
- NEVER work alone.
- Turn-off all power supplying the power meter and the equipment in which it is installed before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Before closing all covers and doors, carefully inspect the work area for tools and objects that may have been left inside the equipment.
- NEVER bypass external fusing.
- NEVER open circuit a CT; use the shorting block to short circuit the leads of the CT before removing the connection from the power meter.
- Before performing hi-pot testing on any equipment in which the power meter is installed, disconnect all input and output wires to the power meter. High voltage testing may damage electronic components contained in the power meter.
- The power meter should be installed in a suitable electrical enclosure.

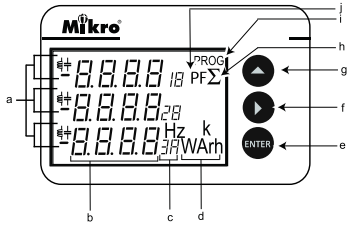
Failure to follow this instruction may result in serious injury

1. Installation Guide

1.1. Wiring

Voltage inputs and control power are for distribution systems up to 265V L-N.
Polarity marks must be followed as shown for CTs (S1 and S2).

2. Display and Button



a. Inductive/capacitive indicator
b. 4-digit display
c. Phase indicator
d. Unit indicator
e. 'ENTER' button
f. 'NEXT' button
g. 'UP' button
h. Total indicator
i. Programming mode indicator
j. Power factor indicator

3. Specification

DM38 Specifications	
Electrical Characteristic	
System	3-phase 4-wire
Current measurement	
Display	Three phase current
CT Primary	5-8000A
CT Secondary	5A
Accuracy	0.5% (from 1A to 6A secondary)
Sustained overload	6A
Voltage measurement	
Line Voltage	120~415VAC
Phase Voltage	70~265VAC
Accuracy	0.50%
Power (kW,kVAR,kVA) measurement	
Display	each phase & total
Accuracy	1.00%
Power factor measurement	
Display	each phase & total
Accuracy	1%
Frequency measurement	
Range	45~65Hz
Accuracy	0.50%
Energy measurement	
Active	IEC62053-21:Class 1
Reactive	IEC62053-23:Class 2
Communication	
Hardware Interface	Isolated RS485
Protocol	Modbus-RTU
ID	1 to 127
Baudrate	2400, 4800, 9600, 19200, 38400
Parity	None, even, odd

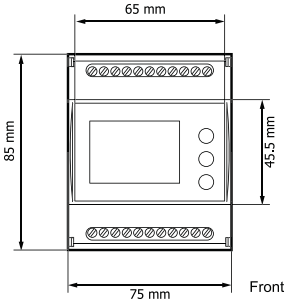
Operating Condition	
Auxiliary input	Self-supplied 100~240VAC
Operating Temperature	-10C~+55C
Storage Temperature	-20C~+70C
Data update rate	1 second
Operating time	Up to 9999 days, 23 hours, 59 minutes
Mechanical Characteristic	
Dimension	
Case	L65mm x W85mm x H65.5mm
Mounting type	DIN rail
LCD	39mmx27mm viewing area (3 lines display)
Weight	200g
Electromagnetic Compatibility (EMC)	
Part 6-2: Generic Standards IEC61000-6-2	Immunity for industrial environments
Part 6-4: Generic Standards IEC61000-6-4	Emission standard for industrial environments

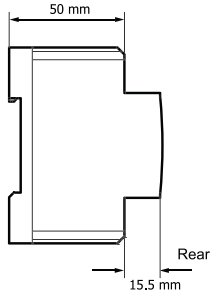
4. Modbus Register

Read Only (Function 0x03 or 0x04)		
Register	**Description**	**Min unit**
4000-4001	reserved,always returns 0	
4002-4003	Real energy	1kWh
4004-4005	reserved,always returns 0	
4006-4007	Apparent energy	1kVAh
4008-4009	reserved,always returns 0	
4010-4011	Reactive energy	1kVArh
4012	reserved,always return 0	
4013	Total real power	1kW
4014	reserved,always returns 0	
4015	Total apparent power	1kVA
4016	reserved,always returns 0	
4017	Total reactive power	1kVAR
4018	Total power factor	0.001
4019	Frequency	0.01
4020	reserved,always returns 0	
4021	Instantaneous Current L1	0.001A
4022	reserved,always returns 0	
4023	Instantaneous Current L2	0.001A
4024	reserved,always returns 0	
4025	Instantaneous Current L3	0.001A
4026-4028	reserved,always returns 0	
4029	Voltage Phase L12	0.1V
4030	reserved,always returns 0	
4031	Voltage Phase L23	0.1V
4032	reserved,always returns 0	
4033	Voltage Phase L31	0.1V
4034	reserved,always returns 0	
4035	Voltage Phase L1	0.1V
4036	reserved,always returns 0	
4037	Voltage Phase L2	0.1V
4038	reserved,always returns 0	
4039	Voltage Phase L3	0.1V
4040	reserved,always returns 0	
4041	Real Power L1	1kW
4042	reserved,always returns 0	
4043	Real Power L2	1kW
4044	reserved,always returns 0	
4045	Real Power L3	1kW
4046	reserved,always returns 0	
4047	Apparent Power L1	1kVA
4048	reserved,always returns 0	
4049	Apparent Power L2	1kVA
4050	reserved,always returns 0	
4051	Apparent Power L3	1kVA
4052	reserved,always returns 0	
4053	Reactive Power L1	1kVAR
4054	reserved,always returns 0	
4055	Reactive Power L2	1kVAR
4056	reserved,always returns 0	
4057	Reactive Power L3	1kVAR
4058-4087	reserved,always returns 0	
4088	Scale real energy	0=1 1=10 2=100 3=1000
4089	Scale apparent energy	0=1 1=10 2=100 3=1000
4090	Scale reactive energy	0=1 1=10 2=100 3=1000
4091	Scale total real power	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4092	Scale total apparent power	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4093	Scale total reactive power	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4094-4096	reserved,always returns 0	
4097	Scale Instantaneous Current L1	0=0.001 1=0.01 2=0.1 3=1
4098	Scale Instantaneous Current L2	0=0.001 1=0.01 2=0.1 3=1
4099	Scale Instantaneous Current L3	0=0.001 1=0.01 2=0.1 3=1
4100	reserved,always returns 0	
4101	Scale Real Power L1	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4102	Scale Real Power L2	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4103	Scale Real Power L3	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4104	Scale Apparent Power L1	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4105	Scale Apparent Power L2	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4106	Scale Apparent Power L3	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4107	Scale Reactive Power L1	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4108	Scale Reactive Power L2	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
4109	Scale Reactive Power L3	0=0.0001 1=0.001 2=0.01 3=0.1 4=1
1000	deviceID	1-127
1001	Parity	1=none 2=even 3=odd
1002	Baudrate	1=2400 2=4800 3=9600 4=19200 5=38400

Read Only (Function 0x03 or 0x04)		
Register	**Description**	**Min unit**
0-1	reserved	
2	DeviceType_Hi	'30'
3	DeviceType_Lo	'0'
4	Version_Hi	'0'
5	Version_Lo	1'
Read or write (Function 0x03,0x04 or 0x06)		
Register	**Description**	**Range**
100-101	reserved,always returns 0	
102	CT ratio primary	5-8000A
103-108	reserved,always returns 0	
109	System scroll	0 or 1
110	reserved,always returns 0	
111	Minutes	0-59
112	Hours	0-23
113	Days	0-9999

5. Dimension

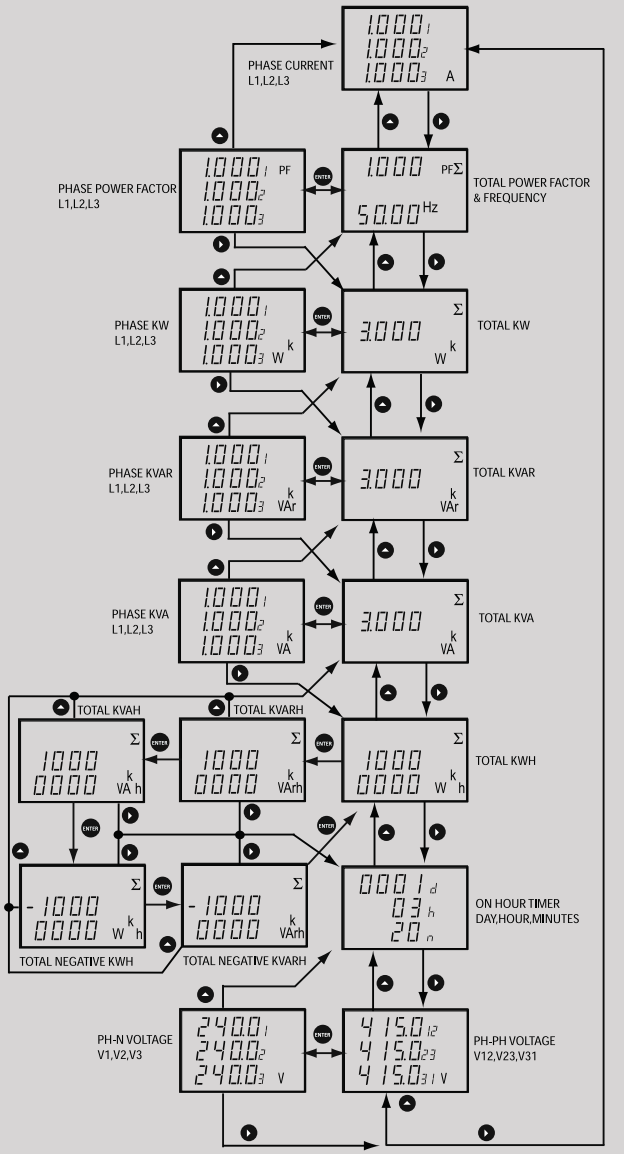




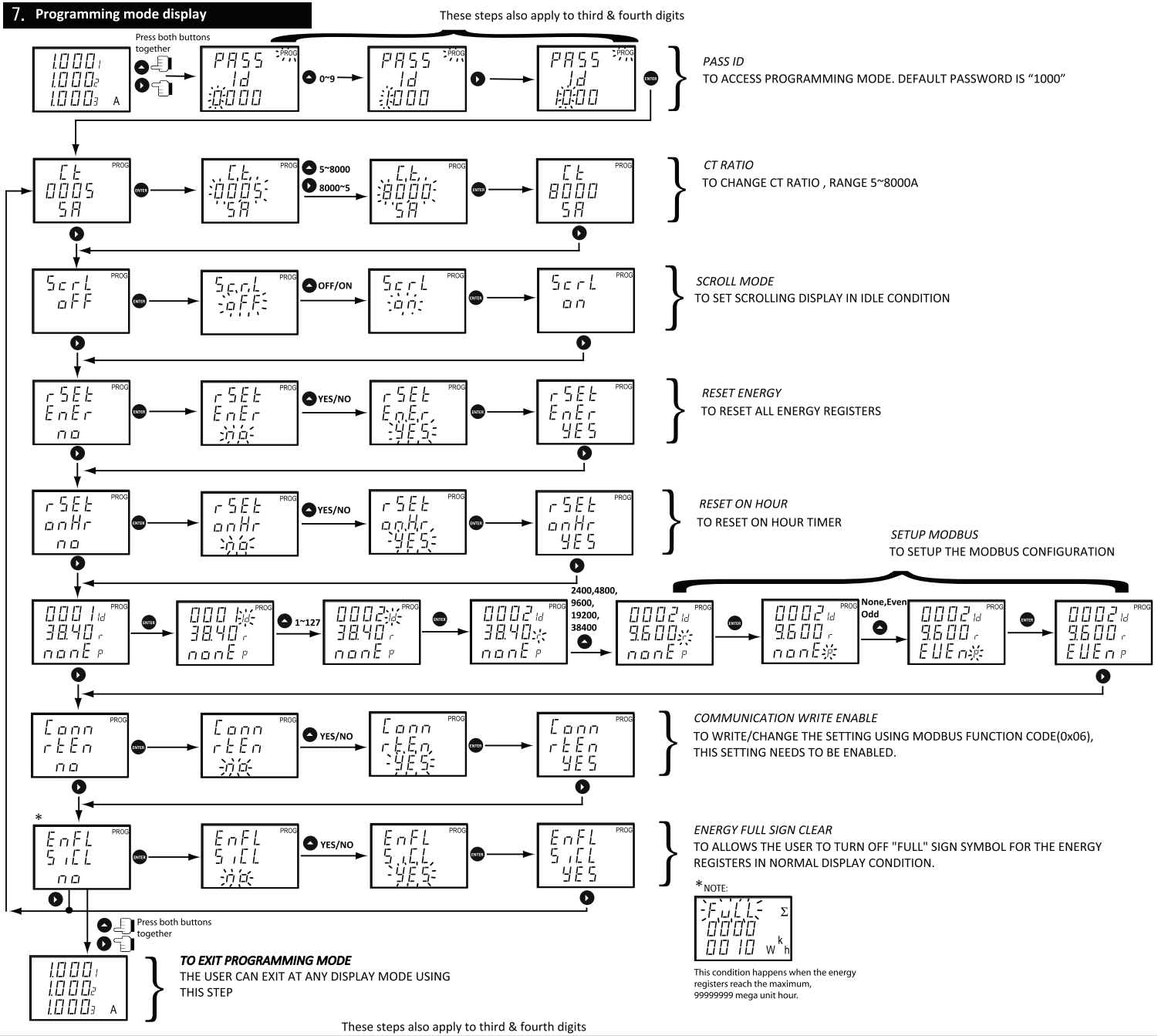
NOTE:

We reserve the right to alter or modify the information contained herein at any time in line with our product development without prior notification. We also reserve the right to discontinue production & delivery of product.

6. Normal display



7. Programming mode display



8. Change the password