INSTALLATION MANUAL
TIS ENERGY METER
Modular Single-Phase Power Meter
Model: MET-EN-1PH

TIS CONTROL EVERYTHING

PRODUCT INFORMATION

This product is a single-phase power meter designed to calculate and report energy consumption and electricity parameters on a daily, monthly, and yearly basis for energy optimization purposes.

PRODUCT SPECIFICATIONS			
	Specifications	Voltage AC (Un) Base Current (Ib) Max. Current (Imax) Mini Current (Imin) Power consumption Frequency	176-276V / 80-140V (optional) 10 A 100 A 0.5 A <2W/10VA 50/60Hz(±10%)
	Protection	Short output protection	Output will turn off in case of short connection
	Display	LCD Max. reading	LCD with blue backlit 99999.99kWh
	Dimensions	Length × Width × Height	46mm × 62mm × 90mm
	Housing	Materials Casing color IP rating	Self-extinguishing UL94V-0 Black IP 51 indoor

BARCODE (UPC-A)

6 58921 79907 9

CE RoHS COMPLIANT

INSTALLATION MANUAL

TIS Energy Meter

MODEL : MET-EN-1PH

Read Instructions

We recommend that you read this Instruction Manual before installation.

Safety instructions

Electrical equipment should only be installed and fitted by electrically skilled persons.
Failure to observe the instructions may cause damage to the device and other hazards.
These instructions are an integral part of the product and must remain with the end customer.

Programming

Advanced programming requires TIS Device Search software. Advanced software programming knowledge should be obtained in the advanced training courses.

Simple Installation

You can use either the DIN rail or fixing points to install this module.

Mounting Location

Install in a dry, well-ventilated location.
Controllers may emit some mechanical noises. Consider this when deciding on a mounting location.

Data Cable

Use screened stranded RS485 data cable with four twisted pairs. Configure devices in a “Daisy Chain.”
Do not cut or terminate live data cables.

Electrical Wires

The recommended wire size is 4…6mm2 for the Line, Neutral, and Output wires. The installer should consider the total current consumption when selecting the wires.

Warranty

There is a two-years warranty provided by law. The hologram warranty seal and product serial number are available on each device.

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

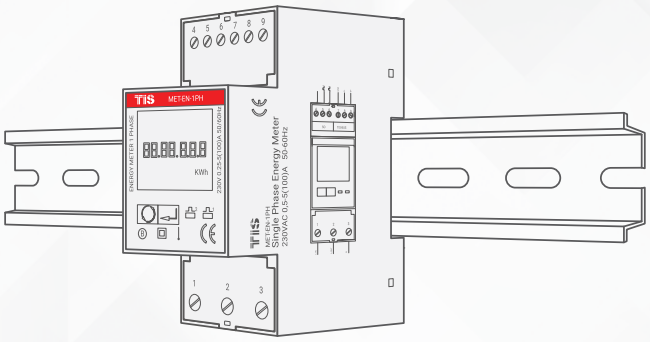
TIS CONTROL LIMITED
Wanchai, Hong Kong

INSTALLATION STEPS

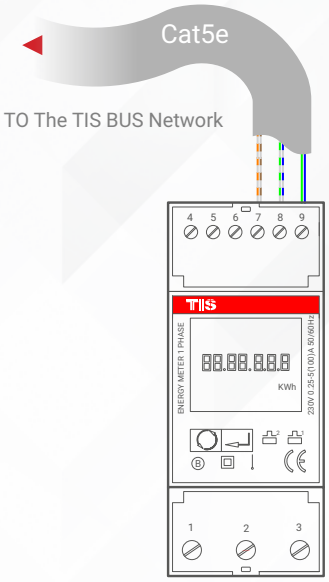
1 Turn off the main electrical source before installation.

WARNING! HIGH VOLTAGE

2 Mount the device on DIN rails inside an approved enclosure.



3 Connect the RS485 data cable to the TIS-BUS port following the product connection diagrams.

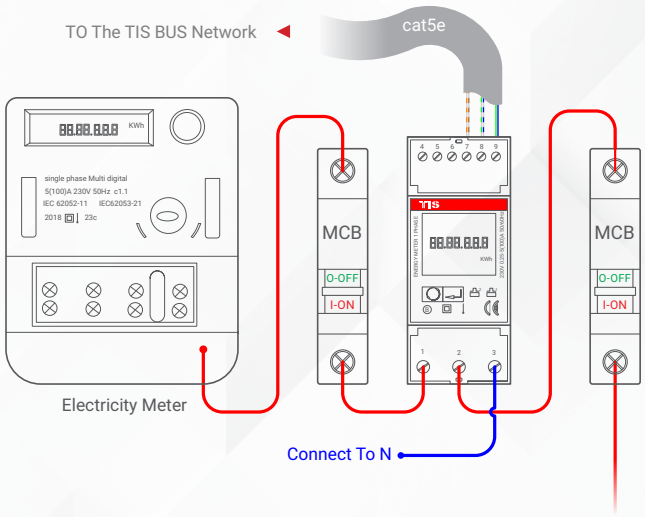


TIS CONTROL PTY LIMITED
SA , AUSTRALIA

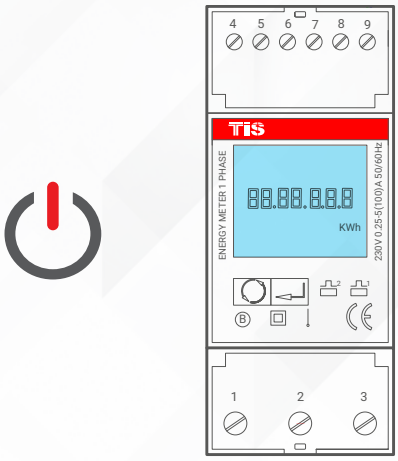
TIS CONTROL LIMITED
Wanchai, Hong Kong

INSTALLATION STEPS

4 Connect the Lin, N, and Lout to Live, Neutral, and load cables, respectively. The device input must have an appropriate MCB to protect the module.



5 Turn on the power source. The module's LCD should turn on.



TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

LCD DISPLAY

The information shown in the module's display are described in the table below:

ITEM	DESCRIPTION
1»	7 digits used to display measured values or RTC
2»	Total value
3»	Tariff information
4»	Import information, Export information
5»	Max. Demand for Power or Current
6»	Pulse output 1 and Pulse output 2
7»	Measurement units
8»	PF= power factor, Hz= frequency
9»	Bar display of Power
10»	Communication indicator
11»	Time information
12»	Low battery warning
13»	Lock symbol

OPERATION

When it is powered on, the meter initializes and performs a self-check by displaying information in the following order:

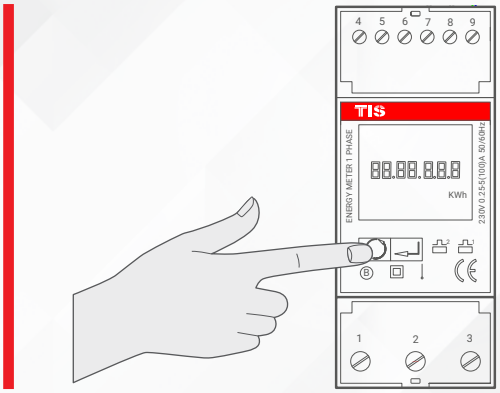
Full Screen » Software Version » Subnet ID » Device ID » Total kWh

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

DISPLAY MODE

In order to check for more information, the user needs to press the scroll button on the front panel.



The content displayed on each page would be as follows:

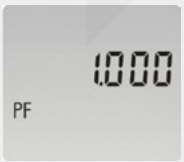
PAGE	DISPLAY	DESCRIPTION
1»	Σ 000 70.00 kWh	Total active energy Example:70.00kWh
2»	IMP 00050.00 kWh	Import(input) active energy Example: 50.00kWh
3»	EXP 00020.00 kWh	Export(output)active energy Example: 20.00kWh
4»	T1 00000.00 kWh	T1 active energy Example: 0.00kwh
5»	T2 00000.00 kWh	T2 active energy Example: 0.00kwh

PAGE	DISPLAY	DESCRIPTION
6»	T3 00000.00 kWh	T3 active energy Example: 0.00kwh
7»	T4 00000.00 kWh	T4 active energy Example: 0.00kwh
8»	Σ 000 10.00 kVArh	Total reactive energy Example: 10.00kVarh
9»	IMP 00005.00 kVArh	Import(input)reactive energy Example: 5.00kVarh
10»	EXP 00005.00 kVArh	Export(output)reactive energy Example: 5.00kVarh

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

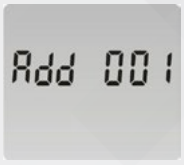
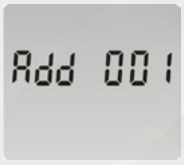
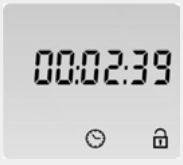
TIS CONTROL LIMITED
Wanchai, Hong Kong

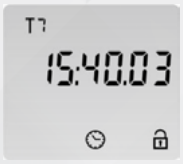
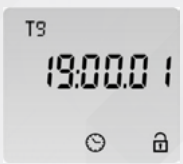
PAGE	DISPLAY	DESCRIPTION
11»		T1 reactive energy Example: 0.00kVarh
12»		T2 reactive energy Example: 0.00kVarh
13»		T3 reactive energy Example: 0.00kVarh
14»		T4 reactive energy Example: 0.00kVarh
15»		Max Power Demand Example: 6930W
16»		T1 Max. Power Demand Example:0 W
17»		T2 Max. Power Demand Example:0 W
18»		T3 Max. Power Demand Example:0 W

PAGE	DISPLAY	DESCRIPTION
19»		T4 Max. Power Demand Example:0 W
20»		Voltage Example: 229.8V
21»		Current Example: 30.156A
22»		Active Power Example: 4700W
23»		Reactive Power Example: 1030Var
24»		Apparent power Example: 4811VA
25»		Power factor Example: 1.000
26»		Frequency Example: 49.99Hz

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

PAGE	DISPLAY	DESCRIPTION
27»		Pulse Constant Example: 1000
28»		Subnet ID Address Example: 01
29»		Device ID address Example: 01
30»		Date Format: Day,Month,Year Example: 1st,Jan,2014
31»		Time Format: Hour,Minute,Second Example: 00:02:39
32»		Time segment 1 Format: Hour:Minute,Tariff Example: 00:00, Tariff 1
33»		Time segment 2 Format: Hour:Minute,Tariff Example: 02:00 Tariff 2
34»		Time segment 3 Format: Hour:Minute,Tariff Example: 04:00 Tariff 3

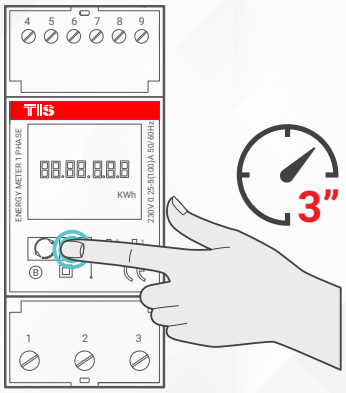
PAGE	DISPLAY	DESCRIPTION
35»		Time segment 4 Format: Hour:Minute,Tariff Example: 05:00 Tariff 4
36»		Time segment 5 Format: Hour:Minute,Tariff Example: 07:25 Tariff 1
37»		Time segment 6 Format: Hour:Minute,Tariff Example: 08:11 Tariff 2
38»		Time segment 7 Format: Hour:Minute,Tariff Example: 15:40 Tariff 3
39»		Time segment 8 Format: Hour:Minute,Tariff Example: 17:00 Tariff 4
40»		Time segment 9 Format: Hour:Minute,Tariff Example: 10:00 Tariff 1
41»		Time segment 10 Format: Hour:Minute,Tariff Example: 23:00 Tariff 2

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

SETUP MODE

To get into Set-up Mode, the user needs to press and hold the “Enter” button for 3 seconds.



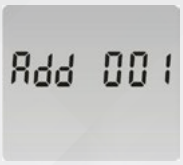
The content displayed on each page would be as follows:

PAGE	DISPLAY	DESCRIPTION
	Good	The setting is done correctly.
	Err	The information entered is wrong. The operation has failed.
1	PAS0000	**PASSWORD** To get into Setup Mode, you must confirm the password. Default password: 1000
2	Add 001	**SUBNET ID ADDRESS ID** Default ID is 01 Range: 001~254

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

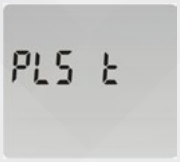
SETUP MODE

PAGE	DISPLAY	DESCRIPTION
2-1		Press the “Enter” button, and the first digit will flash. Press the “Scroll” button to change the value. After choosing the new address value, press the “Enter” button to confirm the setting.
3		**DEVICE ID ADDRESS ID** Default ID is 01 Range: 001~254
3-1		Press the “Enter” button, and the red part will flash. Press the “Scroll” button to change the pulse output option. After choosing the new pulse output option, press the “Enter” button to confirm the setting.
4		**PULSE OUTPUT** Default: kWh Option: kWh / KVarh / Imp. Kwh / Exp.kWh / Imp.kVarh / Exp. kVarh
4-1		Press the “Enter” button, and the red part will flash. Press the “Scroll” button to change the pulse constant option. After choosing the new pulse constant option, press the “Enter” button to confirm the setting.
5		**PULSE CONSTANT** Default: 1000 Option: 1000 / 100 / 10 / 1
5-1		Press the “Enter” button, and the red part will flash. Press the “Scroll” button to change the pulse duration option. After choosing the new pulse duration option, press the “Enter” button to confirm the setting.

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

SETUP MODE

PAGE	DISPLAY	DESCRIPTION
6		**PULSE DURATION** Default: 200mS Option: 200 / 100 / 60ms
6-1		Press the “Enter” button, and the red part flash. Press the “Scroll” button to change the demand integration time option. After choosing the new DIT option, press the “Enter” button to confirm the setting.
7		**DEMAND INTEGRATION TIME** Default: 15 minutes Option: 0 / 5 / 10 / 15 / 20 / 30 / 60
7-1		Press the “Enter” button, and the red part flash. Press the “Scroll” button to change the interval option. After choosing the new “Scrl” option, press the “Enter” button to confirm the setting.
8		**AUTOMATIC SCROLL TIME INTERVAL** Default: 0 S Option: 0 ~ 60S
8-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new “Scrl” option, the user need pressing the “Enter” button to confirm the setting.
9		Password setup Default: 1000

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

SETUP MODE

PAGE	DISPLAY	DESCRIPTION
9-1		Press the “Enter” button, and the red part flash. Press the “Scroll” button to change the value. After choosing the new password, press the “Enter” button to confirm the setting.
10		Date setup Press the “Enter” button to enter the date setup page.
10-1		Press the “Scroll” button to change the value. After choosing the new value, press the “Enter” button to confirm the setting. Date format: Day.Month.Year
11		Time setup Press the “Enter” button to enter the time setup page.
11-1		Press the “Scroll” button to change the value. After choosing the new value, press the “Enter” button to confirm the setting. Time format: Hour:Minute:Second

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong

TROUBLESHOOTING

The module's LCD does not turn on	**Reason:** There is no connection to the L/N input.
The LCD is showing a negative consumption total (KW/H)	**Reason 1:** The Lin and Lout connection is opposite. Please connect the Load to Lout and the Live wire to Lin. **Reason 2:** If a solar or other type of electricity generator exists, it will pass the power back.
Device search software cannot scan the module	**Reason:** There is an address conflict. Follow the setup on the LCD to change the address to a new one.
The device setting has reset to default randomly	**Reason 1:** The TIS-BUS connection has a problem, or the wire has a short. **Reason 2:** The programming address is faulty. **Reason 3:** At least one tier should be saved in the software's Energy Module. **Reason 4:** There is a time conflict in network. More than one module's broadcast time is enabled in the software.

TIS CONTROL PTY LIMITED
SA , AUSTRALIA

TIS CONTROL LIMITED
Wanchai, Hong Kong