

Three phase multifunction din rail meter SMART VEN580D

SMART VEN580 (CT CONNECTION TYPE)
SMART VEN580D (DIRECT CONNECTION TYPE)



Product Overview

The Smartcontroller SMART VEN580 SERIES Multi-function is a three-phase DIN rail power quality meter with multi-tariff. Output is LCD displayed and the data can be transported by isolated RS485. The meter is provided with a non-volatile memory system that ensures that the readings are not lost or altered when power off.

The SMART VEN580 has both direct connection version and CT connection version. The direct connection version meter measures up to 100A load And the CT connection type requests an external current transformer with 5A secondary input.

Although we produce the SMART VEN580 meter according to IEC 62053-21 and our quality inspection is very accurate there might always be a possibility that your product shows a fault or failure for which we do apologize. Under normal conditions your product should give you years of benefit and pleasure. In case there is a problem with the energy meter you should contact your dealer immediately. All energy meters are sealed with a special seal. Once this seal is broken there is no possibility to claim for warranty. Therefore NEVER open an energy meter or break the seal of the energy meter. The warranty time is 18 months, after installation, and only valid for construction faults.

Performance criteria

Operating humidity	≤85%
Storage humidity	≤95%
Operating temperature	-20°C– +50°C
Storage temperature	-30°C– +70°C
International standard	IEC 62053-21 IEC61010

Meter specifications

Meter type	SMART VEN580 (LCD display)
Nominal voltage (Un)	230/400V AC (3~) ; 110/190V AC (3~)
Operational voltage	161/279 – 300/520V AC (3~) ; 77/133 – 143/247V AC
Insulation capabilities	
- AC voltage withstand	4KV for 1 minute
- Impulse voltage withstand	6KV – 1.2μS waveform
Basic current (Ib)	
- CT type	1.5A
- Directly connect	10A
Maximum rated current (Imax)	
- CT type	6A
- Directly connect	100A
Operational current range	0.4% Ib- Imax
Over current withstand	20Imax for 0.01s
Operational frequency range	50Hz ±10%
Internal power consumption	≤2W / 10VA per phase
Test output flash rate (PULSE LED)	
- CT type	3200imp/kWh
- Directly connect	400imp/kWh
Test pulse output rate (pins 8 & 9)	
- CT type	3200imp/kWh
- Directly connect	400imp/kWh
Consumption indicator (PULSE & SO LED)	Flashing at load running
Communication indicator	Flashing at communication running
Data communication port	RS485 and far infrared
Data save	The data can be stored more than 20 years when power off

Accuracy class

Voltage, LN & LL (Phase1, 2,3)	±0.5%
Amps (Phase 1,2,3)	±0.5%
PF (Phase 1,2,3 &Σ)	±0.5%
Active power (Phase 1,2,3&Σ)	±0.5%
Reactive power (Phase 1,2,3&Σ)	±1%
Apparent power (Phase 1,2,3&Σ)	±1%
Frequency	±0.5%
Active energy	± 1%
Reactive energy	±1%
Protection against penetration of dust and water	IP51
Insulating encased meter of protective class	II

RS485 Communication

Bus type	RS485
Protocol	MODBUS RTU with 16 bit CRC & DL/T645
Baud rate	1200(default), 2400, 4800,9600
Address range	0-247 user settable
Bus loading	32 meters per bus
Range	1200m
Parity	Even
Data bit	8
Stop bit	1

Far Infrared communication

Infrared wavelengths	900- 1000nm
Baud rate	1200bps (default), 9600bps (optional)
Communication distance	5m
Communication angle	-15°~+15°
Protocol	MODBUS RTU with 16 bit CRC & DL/T645

Tariff specifications

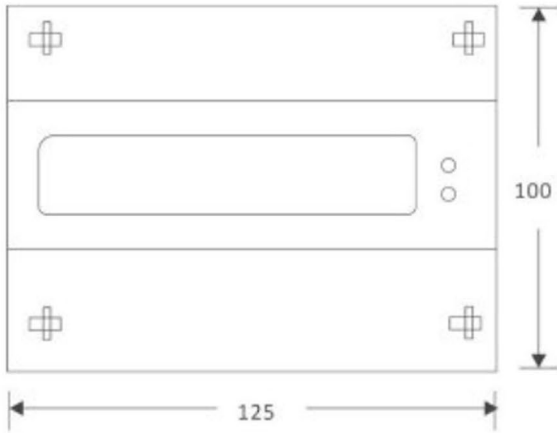
Tariff number	4
Time segments	10
Clock accuracy	$\leq 0.5S$ (every 24 hours)
Battery Voltage	3.6V DC, $\geq 1200mAh$

Basic errors

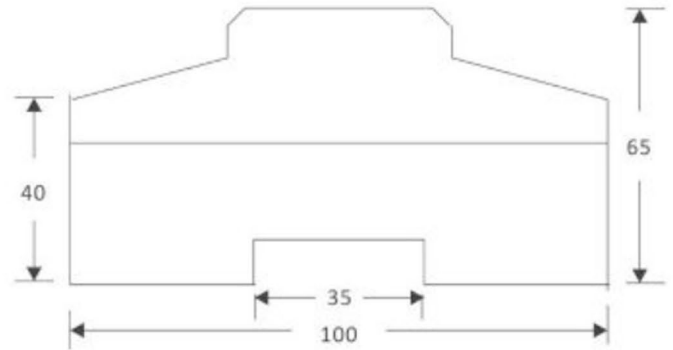
With balanced loads		
0.05lb	$\text{Cos}\phi = 1$	$\pm 1.5\%$
0.1lb	$\text{Cos}\phi = 0.5L$	$\pm 1.5\%$
	$\text{Cos}\phi = 0.8C$	$\pm 1.5\%$
0.1lb - Imax	$\text{Cos}\phi = 1$	$\pm 1.0\%$
0.2lb - Imax	$\text{Cos}\phi = 0.5L$	$\pm 1.0\%$
	$\text{Cos}\phi = 0.8C$	$\pm 1.0\%$
With single phase load		
0.1lb - Imax	$\text{Cos}\phi = 1$	$\pm 2.0\%$
0.2lb - Imax	$\text{Cos}\phi = 0.5L$	$\pm 2.0\%$

Materials and Dimension

Front panel	PC inflammable retarding
Cover	ABS inflammable retarding
Base	ABS inflammable retarding
Security hasp	ABS inflammable retarding



front view

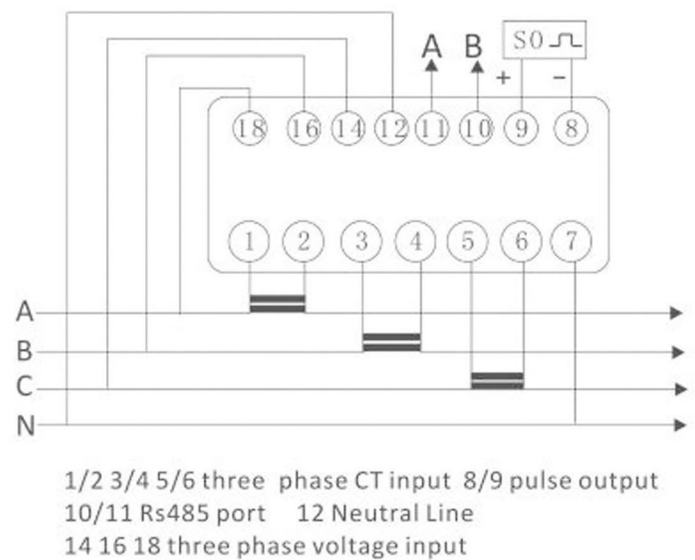
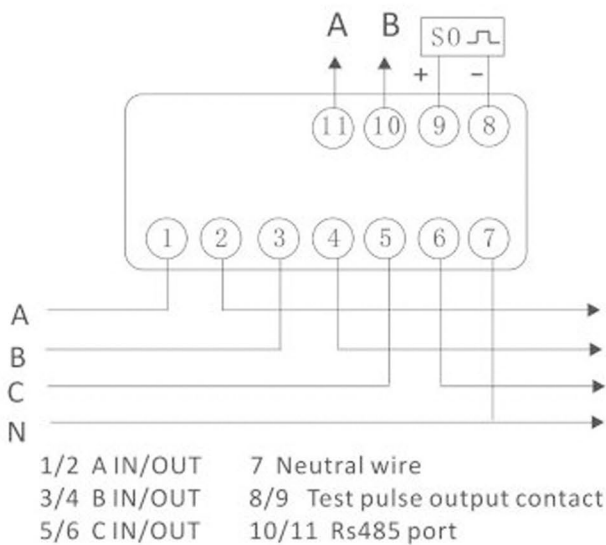


lateral view

Height	100 mm
Width	125 mm
Depth	65 mm
Weight	0.7 Kg (net)

Installation

Connection of the wires should be done in accordance with the underneath connection diagram.



Rs485 output

RS485 communication port is between the meter terminals 11 and 10. It is a synchronization wire port. Installing a software in PC, via RS485 adapter Connecting the terminal 11 and 10, PC can communicate with the meter immediately.

Communication Protocol

Smartcontroller SMART VEN580 has a RS485 port with Modbus RTU protocol. RS485 is a balanced line, half-duple transmission system allowing transmission distances of up to 1 km. The following table summarizes the RS-485 Standard:

PARAMETER	
Mode of Operation	Differential
Number of Drivers and Receivers	32 Drivers 32 Receivers
Maximum Cable Length	1200m
Maximum Data Rate	10M baud
Maximum Common Mode Voltage	12V to -7V
Minimum Driver Output Levels (Loaded)	$\pm 1.5V$
Minimum Driver Output Levels (Unloaded)	$\pm 6V$
Drive load	Minimum 60 ohms
Driver Output Short Circuit Current Limit	150mA to Gnd 250mA to 12V 250mA to -7V
Minimum Receiver Input Resistance	12kohms
Receiver Sensitivity	$\pm 200mV$

Further information relating to RS485 may be obtained from either the Smartcontroller directly or the various RS485 device manufacturers, for example Texas Instruments or Maxim Semiconductors. This list is not exhaustive.