SenNet Meter Installation Guide

1 Safety

This instruction sheet gives details of safe installation and operation of the ***SenNet Meter*** electricity meter. Safety may be impaired if the instructions are not followed. Labels on each meter give details of equipment ratings for safe operation. Take time to examine all labels before commencing installation. Safety symbols on the meter have specific meanings.

Refer To User Manual

Risk of Electric Shock

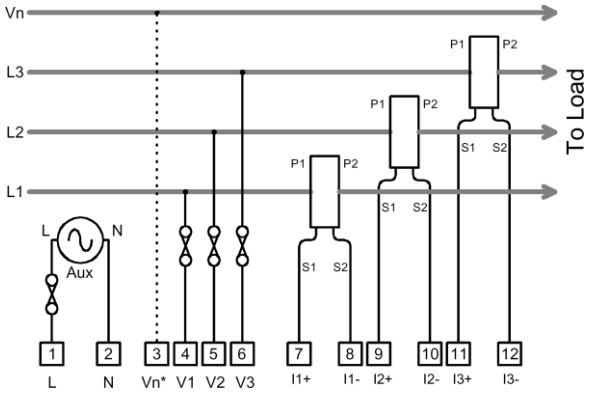
WARNING

The meter contains no user serviceable parts.
Installation and commissioning should only be carried out by qualified personnel

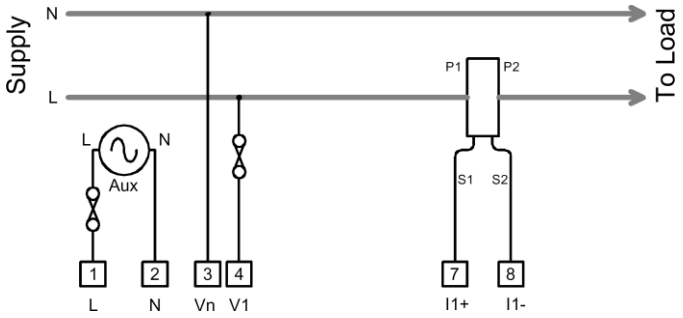
1.1 Mounting On A Rail

The ***SenNet Meter*** conforms to DIN 43880, 6-Module Wide. The unit is therefore compatible with a number of standard distribution systems with 45mm cut-outs. The meter should be mounted on a 35mm symmetrical (“Top-Hat”) DIN rail of minimum length 106mm.

2 Standard Connections



3-Phase 3 or 4-Wire (*Optional Neutral)

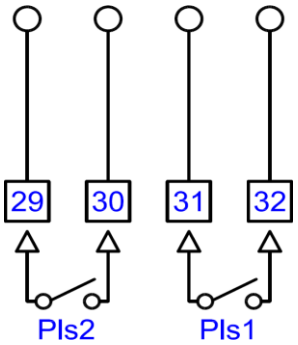


Single Phase

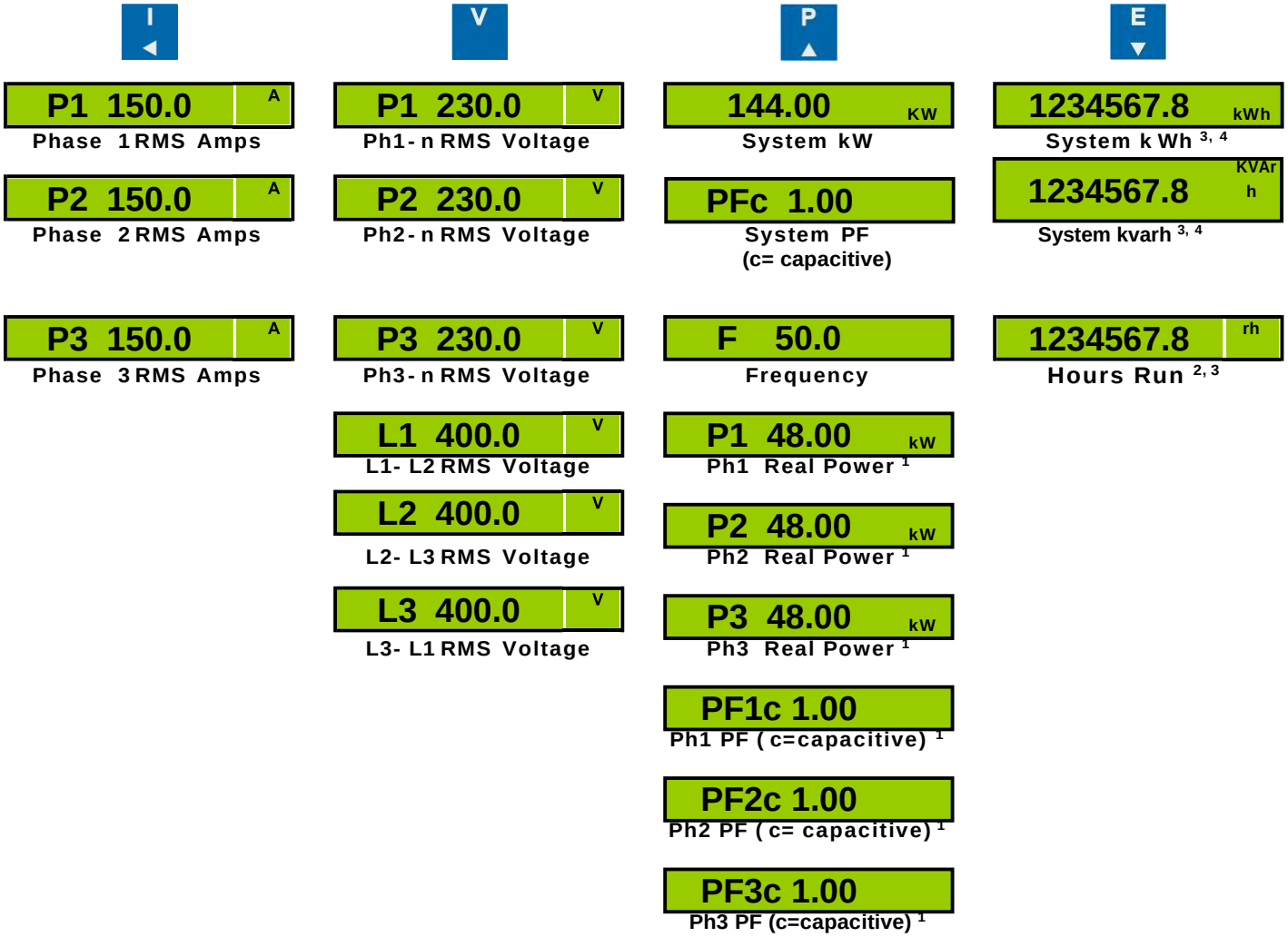
2.1 Pulse Output Connections

The pulse outputs take the form of isolated volt free normally open contact pairs. Pulse 1 is associated with active energy (kWh) and Pulse 2 with reactive energy (kvarh).
The contacts are isolated from all other circuits (2.5kV / 1 minute) and at 50V from pulse 1 to pulse 2.
Pulses can be used as input to remote counters, pulse loggers, building energy management system etc.

Light emitting diodes Л1 and Л2 remain ***ON*** during each associated output pulse.



3 Display Menus



Note 1: Display of some per phase values may not be available on all models.

Note 2: The Hours Run register accumulates the total time during which the average 3-phase load current exceeds a preset level. This is always displayed with a resolution of 0.1hour.

The percentage level of (I1+I2+I3) at which the Hours Run register accumulates is user programmable from 1% to 100% of full scale current.

Note 3: Press P and E together and hold for 2 seconds to reset the displayed value. This feature may be disabled before mounting in a panel.

Note 4: Scaling of the energy registers is set by the nominal input currents and voltages and remains constant during operation of the meter. Energy registers will each accumulate from zero to 99,999,999 then restart from zero.

4 Programming

To enter mode programming:

Press and hold I and V

To Change a Setting Value:

Press P or E until the required value is set.

To Move to The Next Setting:

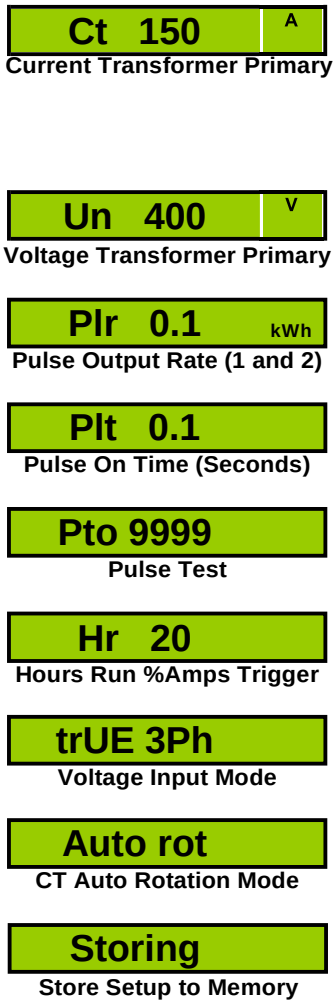
Press I until the next page in the list is displayed. Parameters are set in the following order:

Fine Adjust Ct and Un Settings
CT Primary and Nominal Voltage settings are selected from a table of preferred values. This reduces the time to program these parameters to industry standard values.

Fine Adjust Mode allows values other than those provided by the default tables to be set. To enter/exit ***Fine Adjust Mode:***

Hold P and I together for 2 Seconds while setting ***CT*** or ***Un***.

Fine Adjust Mode is indicated by a decimal point immediately after the parameter type (ie. ***"CT."*** or ***"Un."***)



4.1 Pulse Output Test Pto 9999

This feature allows the pulse output hardware and external system connections to be commissioned without a measured load. The LCD shows ***Pto*** (off) and ***Ptr*** (run) and the number of test pulses. The test pulse rate is set automatically dependant on the programmed pulse length (maximum 0.5Hz).

Press P to start/stop the test pulses on both outputs.

Press P and E together to stop the test pulses and simultaneously reset the test counter.

5 Specification

INPUTS		
System	3 Phase 3 or 4 Wire Unbalanced Load	
Voltage Un	400/230V. 3 Phase 3 or 4 Wire 110/63V, 120/240V & 208/120V optional. Others to order.	
Current Sensors		
Output @ Nominal In	0.333Vac	
Accuracy	±1% (0.1In – 1.2In)	
ND SCL8-5	In = 5A;	Max Cable = 8mm Dia. Phase Error <2.5° at 0.5In
ND SCL16-50	In = 50A;	Max Cable = 16mm Dia. Phase Error <2.5° at 0.5In
ND SCL16-100	In = 100A	Max Cable = 16mm Dia. Phase Error <2° at 0.5In
ND SCT19-150	In = 150A	Max Cable = 19mm Dia. Phase Error <2° at 0.5In
ND SCT32-400	In = 400A;	Max Cable = 32mm Dia. Phase Error <2° at 0.5In
ND SCT51-800	In = 800A;	Max Cable = 51mm Dia. Phase Error <2° at 0.5In
Enclosures	UL94V-0	
Insulation	>300Vrms, CAT III	
Environment	Indoor use only (Altitude < 2000m)	
Measurement Range	Voltage	50% to 120%
	Current	0.2% to 120%

Frequency Range		Fundamental 45 to 65Hz Harmonics Up to 30th harmonic at 50Hz Individual to the 15th
Voltage Burden		<0.1VA per phase
Overload		Voltage x4 for 1 hour Current SCL x10 for 1min SCT19 200A Continuous SCT32 800A Continuous SCT51 2000A Continuous
DISPLAY		
Type		Custom, Supertwist, LCD with LED backlight
Data Retention		10 years min. Stores kWh & Meter set-up
Format		8 x 6.66mm high digits with DPs & 3.2mm legends
Scaling		Direct reading. User programmable CT & VT CT Primary programmable from 5A to 25kA VT primary programmable from 11V to 55kV
Legends		Wh, kWh, MWh etc. depending on user settings
AUXILIARY SUPPLY		
Standard		230V 50/60 Hz ±15%
Options		110V 50/60 Hz ±15%
Load		2VA max.
Overload		x1.2 continuous
METER ACCURACY	**All errors ± 1 digit**	
kWh		Better than Class 1 per EN 62053-21 & BS 8431
Kvarh		Better than Class 2 per EN 62053-23 & BS 8431
kW & kVA		Better than Class 0.25 IEC 60688
kvar		Better than Class 0.5 IEC 60688
Amps & Volts		Class 0.1 IEC 60688 (0.01In – 1.2In or 0.1Un – 1.2Un)
PF		±0.2° (0.05In – 1.2In and 0.2Un – 1.2Un)
Neutral Current		Class 0.5 IEC 60688 (0.05In – 1.2In)
OVERALL METERING ACCURACY		
ND SCL8-5	**5 Amp**	Better than Class 2 Meter with Class 1 CTs
ND SCL16-50	**50 Amp**	Better than Class 1 Meter with Class 1 CTs
ND SCL16-100	**100 Amp**	Better than Class 1 Meter with Class 1 CTs
ND SCT19-150	**150 Amp**	Better than Class 1 Meter with Class 1 CTs
ND SCT32-400	**400 Amp**	Better than Class 1 Meter with Class 1 CTs
ND SCT51-800	**800 Amp**	Better than Class 1 Meter with Class 1 CTs
PULSE OUTPUTS		
Function		1 Pulse per unit of energy
Scaling		Settable between 1 & 1000 counts of kWh register
Pulse Period		0.1 sec. default; Settable between 0.1 and 20 sec
Rise & Fall Time		< 2.0ms
Type		N/O Volt free contact. Optically isolated BiFET
Contacts		100mA ac/dc max., 100V ac/dc max.
Isolation		2.5kV 50Hz 1 minute
MODBUS® Serial Comms		
Bus Type		RS485 2 wire + 0v. ½ Duplex, ¼ unit load
Protocol		MODBUS® RTU with 16 bit CRC
Baud Rate		4800, 9600 or 19,200 User settable
Address		1 – 247 User settable
Latency		Reply within 250ms max.
Command Rate		New command within 5ms of previous one
GENERAL		
Temperature		Operating -10°C to +65°C Storage -25°C to +70°C
Humidity		< 75% non-condensing
Environment		IP54 standard, IP65 optional
MECHANICAL		
Terminals		Rising Cage. 4mm2 (12 AWG) cable max.
Enclosure		DIN 43880, 6-Modules Wide
Material		Noryl® with fire protection to UL94-V-O. Self extinguishing
Dimensions		106 x 90 x 58mm (Cut out 106 x 45mm)
Weight		~ 250 gms
SAFETY		
Conforms to		EN 61010-1 Installation Category III & BS 8431