

## **PowrTec Three-phase Networked Energy Meter**



### **Key Features:**

- Electronic Meter to IEC 61036 standards with Accuracy Better than 1%
- Integrated GSM connectivity for Automatic Meter Reading (AMR).
- SMS and GPRS data encapsulation
- Three-phase active energy direct-reading and transformer-connected meter
- 200-240VAC 50Hz 5(80) Amperes (Direct-reading); 1(6) Amperes (Transformer-connected)
- Single-tariff (Multi Tariff is optional)
- Optional Infrared (IR) port for configuration and meter reading
- Serial port for configuration and meter reading
- S0 Pulse output
- Data collection software and database with interface to utilities CRM software
- Meets DIN 43 857
- Integrated 2A power supply for GSM modem

## **PowrTec Three-phase Energy Meter**

**Product Brochure**

**Installation and Operations**

**Specifications**



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## Overview

### Product Perspective:

The PowrTec offers unparalleled features and accuracy at a value price. It has an integrated GSM modem and 2A power supply for the GSM modem. The meter offers many value features as a standard offering, these include; Class 1 power reading, Automatic Meter Reading using multi band GSM network, DIN 43 857 specification, IEC 61036 specifications and the IEC 61107 Optical Communications specifications. It is capable of fitting into all enclosures currently available.

### Three-Phase Meters

The PowrTec product family includes both direct connected and transformer connected meters for three-phase four-wire applications. The basic meter is available as either 5 (80) Ampere Direct Reading Active Energy Meter or 1 (6) Ampere Current Transformer connected meters.

The meter has extended communications capability thanks to an Infra red port and serial GSM interface. A GSM modem is installed inside the meter and will communicate over the GSM network to a central station.

### Mechanical Parameters:

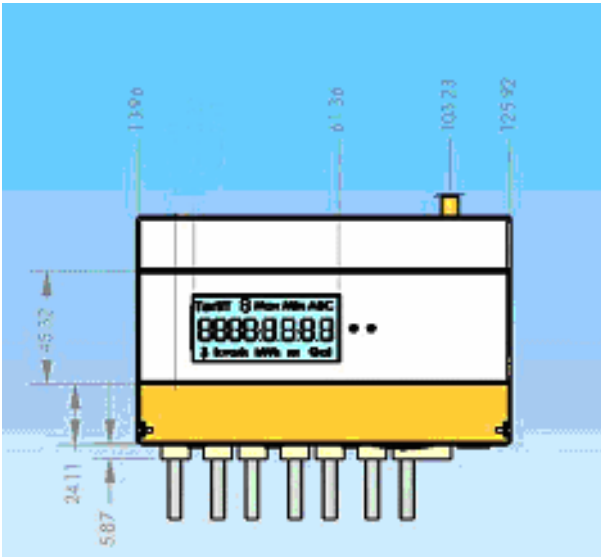


Figure 1 Front View

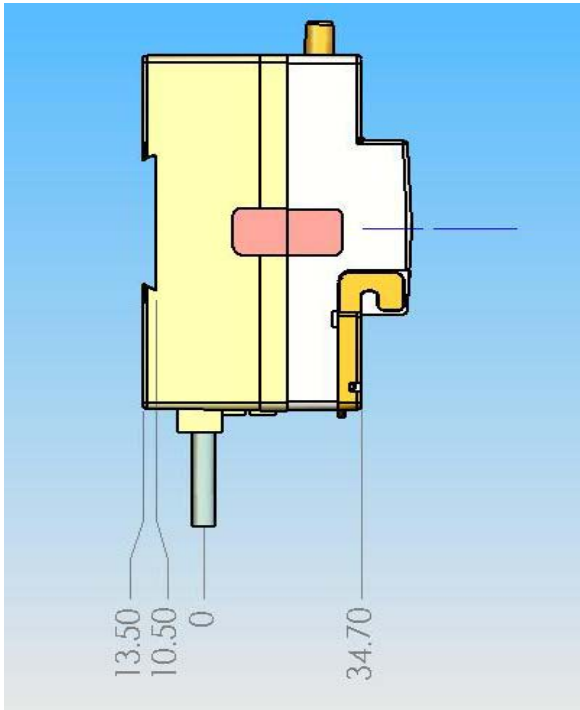


Figure 2 Left Side View

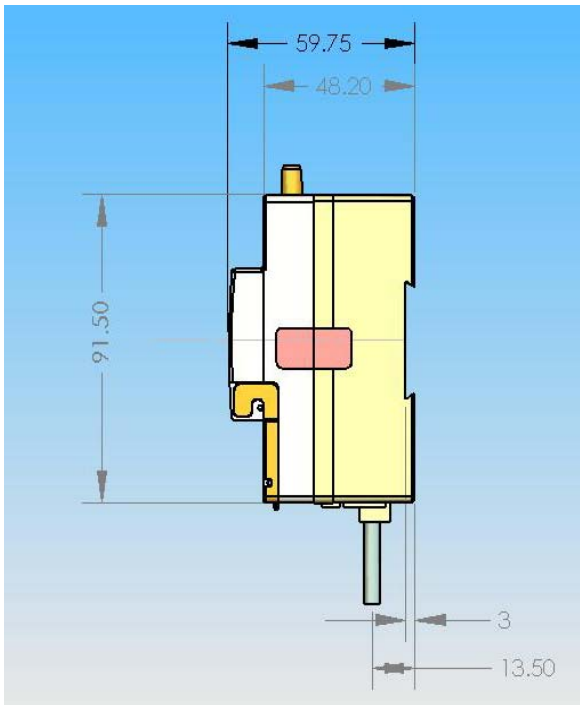
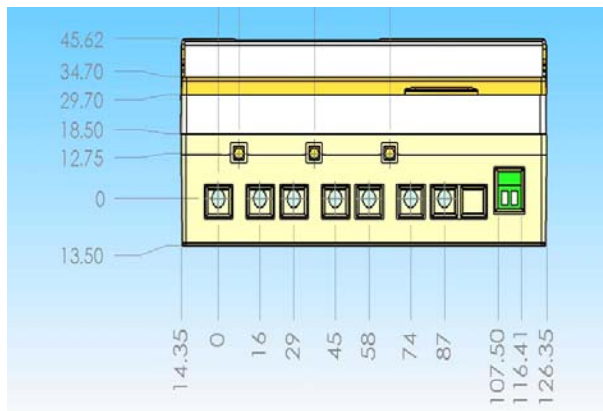


Figure 3 Right Side View



**Figure 4 View of Connector End**

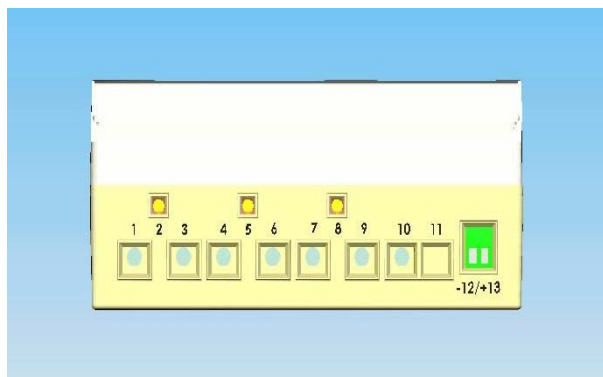
## Installation

This product is only to be installed by qualified electrical personnel. The Specifications given are only applicable if the product is installed in compliance with local Standards of Practice. If uncertain about such procedures or standards, qualified personnel must be consulted.

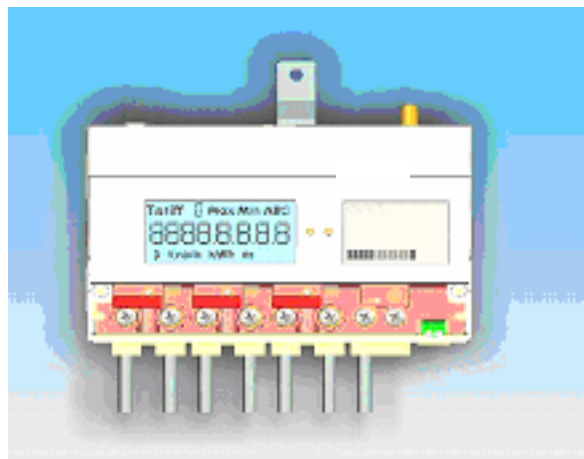
Lethal Voltages are present at the base terminals of an electric power meter.

## Connections

The base connections of the PowrTec Meter is presented below:



**Figure 5 Base Connections**



**Figure 6 Screw Attachment Lugs for Power Leads**

Figure 6 shows the connection points for each of the base-connected power leads. Properly sized and stripped power leads should be inserted into the base terminals (Screw Lugs) for each Phase current and potential connection. Insure that the Neutral connection(s) are made in compliance with local code.

**Table 1 Base Connection**

TERMINAL	FUNCTION	LEVEL
1	Phase A In	Direct or Transformer Connection In
2	Phase A Potential	180 – 250 VAC
3	Phase A Out	Direct or Transformer Connection I
4	Phase B In	Direct or Transformer Connection I
5	Phase B Potential	180 – 250 VAC
6	Phase B Out	Direct or Transformer Connection I
7	Phase C In	Direct or Transformer Connection I
8	Phase C Potential	180 – 250 VAC
9	Phase C Out	Direct or Transformer Connection I
10	Neutral	180 – 250 VAC
11	Neutral	180 – 250 VAC
12	SO Pulse +	Isolated – Pull up to + voltage
13	SO Pulse -	Isolated - Common

When properly connected, the LCD will show a solid figure and the symbol “A, B, C” will be displayed. If any phase is improperly connected or voltage is not present, the Phase indicator will flash.

## Operation

### LCD Display

The two buttons on the meter cover are used to scroll the display among the available fields. These fields are programmed using the IEC 601107 Mode C interface and the supplied software. The default fields that are displayed are presented in the table below:



**Figure 7 LCD Display**

**Table 2 Default Displayed Fields on LCD**  
(to be modified by customer specification)

FIELD	READING	LEVEL
1	Total Energy	KiloWatt Hours
2	All Segment Check	-
3	Total Hourly Demand	KiloWatts
4	Date	MM:DD:YY
5	Time	HH:MM:SS
6	Energy in Current Tariff	KiloWatt Hours
7	Calibration Constant	XXXXXX
8	Error Message	Text

## Setting the Date and Time

This process can be accomplished only by using the IEC 601107 interface and authorized passwords to prevent unauthorized change to the values.

## AC Voltage Monitor

The Powrtec three phase meter creates has the ability to store the instant AC RMS potential reading on all phases. The meter creates a DC equivalent of the AC value and can store this value in a register. This register can be read through the GSM modem in a SMS or GPRS message. This reading can be read at any time. Alternately the reading can be sent in an AMR message.

## The Optional Infrared Interface

The PowrTec Meter includes an IEC 601107 Mode C interface for use with industry-standard optical reading equipment. The meter is provided with software that may be operated from hand-held, laptop or desktop computers. The distribution disk for the provided software includes installation and operation directions for this software.

## ISM Band Radio Option

The PowrTec Meter includes an option for ISM band radio. This radio can be used to collect data from :

- Other energy meters
- Gas/heaters
- Water meter

## GSM Option

The PowrTec Meter includes a GSM Cellular data modem for SMS or GPRS data connection to available data systems. The GSM modem is connected internally by serial port to the meter display measurement and display electronics. A robust 2-Ampere power supply is provided for full-power operation of the cellular phone. Antenna connection is included at the top of the meter.

- Module Carrier Approvals in Asia, Europe and USA
- SMS Point to Point, Cell Broadcast, Text and PDU
- Multi Slot 115Kbps GPRS
- Optional battery operation
- Tri-Band GSM

Using the GSM modem operators can access the following data:

- Meter ID

- Hourly KWH readings
- Meter status
- Power Fail monitor
- Demand (Optional)
- Up to 8 tariff readings (Optional)

## Specifications

	<b>SINGLE TARIFF METER CONFIGURATION</b>	<b>OPTIONAL MULTI-TARIFF METER CONFIGURATION</b>
Specifications:	IEC Class 1.0 Energy Meter with DIN attachment and Power Connections	IEC Class 1.0 Energy Meter with DIN attachment and Power Connections
Power:	3 X 65/80 A, 3 X 200 – 240 VAC 50 Hz, Single Phase, Two-Wire. DIN-standard base terminals. Active Power, Demand, Voltage and Current Readings.	3 X 65/80 A, 3 X 200 – 240 VAC 50 Hz, Single Phase, Two-Wire. DIN-standard base terminals. Active Power, Demand, Voltage and Current Readings.
Stand-Alone Capability	GSM functionality depends on at least one phase operating.	Meter controls and display operational without any external power. Network Interfaces operate without system power. GSM functionality depends on at least one phase operating.
Multi-Tariff	-	Eight Tariffs and computation of Demand
Time of Use	-	Interval Recording of Energy Usage Per Phase for up to 3 Months with intervals from 15 minutes to 24 hours
Pulse Output	SO pulse output with Kh of 1,000 or 3200 impulses per kWh	SO pulse output with Kh of 1,000 or 3200 impulses per kWh
AC Voltage Monitor	Meter calculates instantaneous AC RMS voltage on all phases. This can be read by the customer at any time. Alternately it can be sent in the AMR message	Meter calculates instantaneous AC RMS voltage on all phases. This can be read by the customer at any time. Alternately it can be sent in the AMR message
Display	Wide Temperature range (-40 to +70 Degrees Celsius), 8 digits with programmable decimal, annunciator for function and phase status	Wide Temperature range, 8 digits with programmable decimal, annunciator for function and phase status
Power Fail Battery Operation	No	Optional
Environment	-25 to +55 Degrees Celsius operating; -40 to +70 Degrees Celsius Storage, Humidity 0 – 100 percent, non-condensing, Altitude to 4,000 meters. IP51 housing for indoors use.	-25 to +55 Degrees Celsius operating; -40 to +70 Degrees Celsius Storage, Humidity 0 – 100 percent, non-condensing, Altitude to 4,000 meters. IP54 housing for indoors or rain tight outdoor use.
Optical I/O	IEC 601103 Mode C at 300 - 9600 baud	IEC 601103 Mode C at 300 - 9600 baud
Serial I/O	Internal TTL Serial I/O	Optional RS-485 Isolated Serial Communications; 9.6 – 116 kBaud
Network	SMS GPRS GSM	Ethernet, Fiber Optic, GSM Interface Adaptors mounted within the meter enclosure
Pushbuttons	-	Dual Hermetic
Burden	Without GSM Power Supply less than 1.5 VA, less than 0.5 VA per phase	Without GSM Power Supply less than 1.5 VA, less than 0.5 VA per phase
Mechanical	140 x 91.5 x 59.75 mm with DIN Rail attachment. Wire and Pin attachment at 13.5 mm from wall.	140 x 60 x 25 mm IEC

Surge and Immunity to ESD	To IEC 601036, with extended specifications to common Scandinavian requirements available as NC Option	To IEC 601036, with extended specifications to common Scandinavian requirements available as NC Option
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