

# POLAR STAR

## PROJECT DESCRIPTION:

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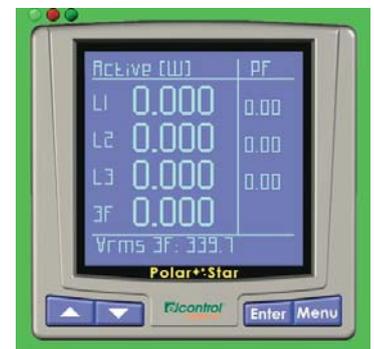
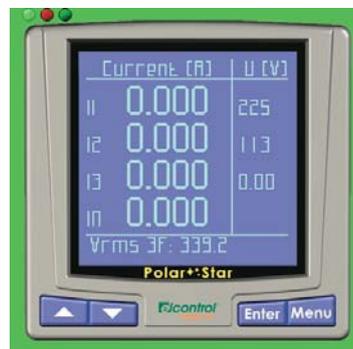
The following document is a preliminary description.  
Any feature or data is subject to further modifications at any time.

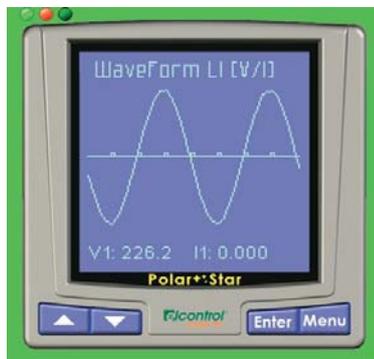
### 1) PRODUCT RANGE STRUCTURE:

The "POLAR STAR" product range will be based on a "BASIC" and "ADVANCED" model, characterised by different functions and specifications. Both models will be equipped with two expansion slots that can be used to fit expansion modules.

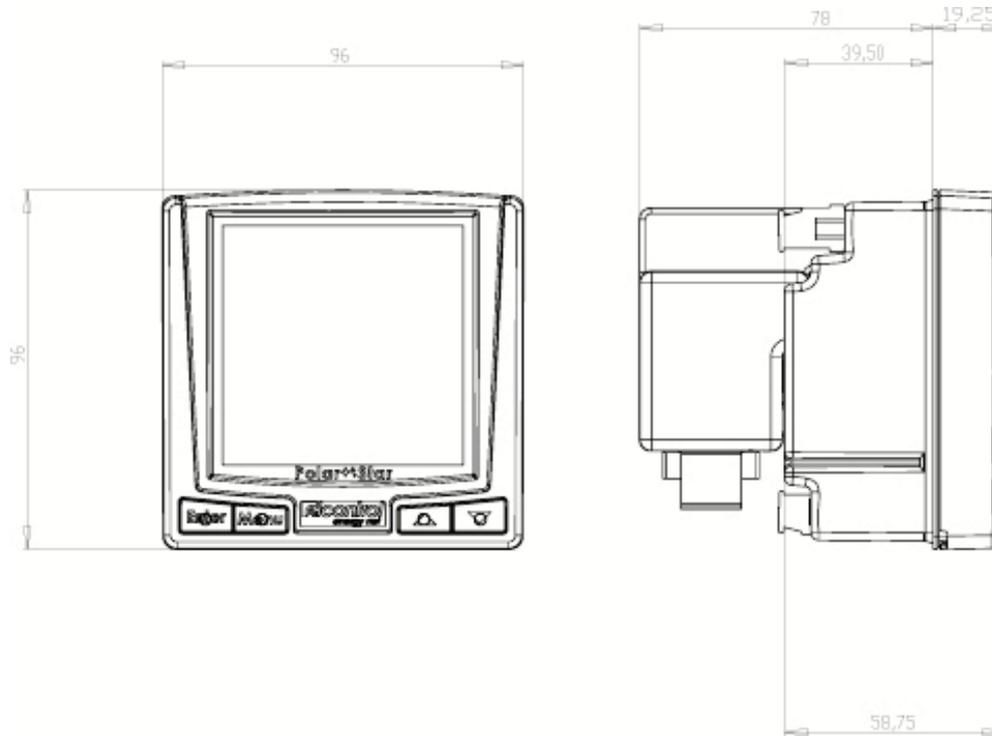
### 2) MECHANICAL SPECIFICATIONS/CHARACTERISTICS:

- New Look
- Protection Level: Front IP40 (probably IP52) Rear IP30
- Paint-finished front panel (ADVANCED Model only)
- 128x128 STN Graphical LCD Display with white symbols on blue background.





### DIMENSIONS



### 3) ELECTRICAL SPECIFICATIONS

- **Power Supply:** switching 90/230 Vac - 90/300 Vdc  $\pm$  10%
- **Voltage Inputs:** 3 voltage measurement channels (3+C) 10÷600V CAT III, Accuracy 0,25%
- **Current Inputs:** 4 current measurement channels 10mA÷5A, Accuracy 0,25%
- **Internal CTs (ADVANCED Model only):** the 4 current measurement inputs will be isolated by internal CTs.
- **Screw-fixed terminal blocks:** the terminal blocks for the input connectors will be fixed to the instrument case by screws in order to prevent accidental disconnections. Max. wire cross-section 2.5mm<sup>2</sup>.
- **Front-accessible programming/interface connector:** the interface connector (used for programming or upgrading the instrument's firmware) will be accessible from the front and will not require opening the instrument's case.
- **Real-Time Clock:** (ADVANCED Model only)
- **Internal Memory:** (ADVANCED Model only)
- **Expansion Slots:** 2 slots for expansion modules. The expansion modules will be automatically recognised by the meter and the related menus and functions will be immediately available after rebooting the instrument.

**The first modules to be release will be:**

**OPTION RS485**

**2 RELAY OUTPUTS**

**OPTION 2 DIGITAL INPUTS**

**OPTION 24/48VDC POWER SUPPLY**

Other Option Modules will be developed and released upon completion of the project. At this stage, it seems that the most important direction for this development will be the expansion of the data-transfer capabilities, mainly towards Ethernet-TCP/IP communication and GSM/GPRS (either a module integrating the GSM modem or a module acting as an interface to an external GSM modem). Further ideas and proposal will be taken into consideration and studied, if compatible with the performances of the hardware.

#### **4 MEASUREMENT FUNCTIONS**

**- Capability of measuring various systems:**

- a) 1-Phase
- b) 2-Phase
- c) 3-Phase/3-Wire – Unbalanced
- d) 3-Phase/4-Wire – Unbalanced
- e) 3-Phase/3-Wire – Balanced (1 current/3 voltage connection)
- f) 3-Phase/4-Wire – Balanced (1 current/3 voltage connection)

**Note 1:** Polar Star will be capable of measuring 3-Phase/3-Wire systems with ground-connected phase.

**Note 2:** Polar Star will be capable of “splitting” the current inputs in order to measure two loads using a single meter.

**- Standard Measurements:** V, I, P, Q, A, F, PF, THD%, instantaneous/min/max/avg values, absorbed and generated energy counters. Where possible, the calculation procedures will be compliant with the EN61000-4-30 standard.

**- Harmonic Analysis:** on 7 channels up to 31<sup>st</sup> order. Graphical and numerical display.

**- Interruptions (ADVANCED Model only):** Polar Star will log in a circular buffer the last 5 interruptions with date/time of the interruptions start/end.

**- Dips (ADVANCED Model only):** Polar Star will log in a circular buffer the last 5 voltage dips with date/time of start/end and minimum value reached during the dip.

**- Swells (ADVANCED Model only):** Polar Star will log in a circular buffer the last 5 voltage swells with date/time of the swells start/end and maximum value reached during the swell.

#### **5 OTHER FUNCTIONS**

**- Trend Display (ADVANCED Model only):** Polar Star will be capable of displaying graphical trends of up to 6 selected measures:

**- Hourly Trend:** 60 RMS values (1minute intervals)

**- Daily Trend:** 96 RMS values (15 minutes intervals)

**- Weekly Trend:** 84 RMS values (2 hours intervals)

**- Monthly Trends:** 31 RMS values (1 day intervals)

**- Tariff-Band energy metering (ADVANCED Model only):** Polar Star will be capable managing up to 4 tariff bands. The tariff band will be user-defined and include the possibility of setting working-days and holidays.

**- Enhanced RS485 Management:** Polar Star will be compatible with previous RS485/Modbus products from Elcontrol (same register map) but will include some new functions such as RS485 status display (no signal, msg received but not recognised, communication OK, etc.) and the possibility to synchronise the real-time clock of all instruments via RS485.

**- Alarm Management:** Polar Star will support the setup of multiple alarm conditions. Alarms will be notified on the screen as well as stored into an alarm-log. If the meter is equipped with alarm relays, it will be possible to link the alarm condition to a relay.

**- Automatic voltage/current connection test:** the user can choose to run an automatic test to determine if the voltage and current connections are correct. Errors will be signalled and-if possible- corrected via software.

**- Multi-language display**

**- Custom Display Setup:** the user can define a page displaying a customised set of measures and/or choose two measurement parameters that will be displayed on top/bottom of each page.

**- Instrument/Network Setup SW:** Polar Star should be provided with a PC Software that can be used to setup one or multiple meters via RS485 connection.

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