

Generally

Unipower APM300B is a measurement transducer that measures power in kW on 3-phase asymmetric loads according to the formula:

$$P = \sqrt{3} \times U \times I \times \cos\varphi$$

- * Suitable for mains voltages from 3x400V to 3x460V
- * To be used with external CT's (N/1 or N/5). Measurement range is only limited by external CT's.
- * 0(4)-20mA and 0(2)-10V analogue output
- * SO1 output for kWh pulses
- * Programmable averaging function
- * Galvanic isolation between mains net and digital inputs and analog outputs



Features

Voltage input

The APM300B is suitable for mains voltages between 3x400V and 3x460V. Supply voltage and measurement voltage are common. The unit is factory calibrated to a standard mains voltage. Calibration data will be printed on the side label.

Current input

The APM300B is to be used with N/1A or N/5A CT's. CT selection is done, by using input S1 in accordance with the table in figure 2.

kWh output

The APM300B generates 1000 pulses/h at 100% load. The pulses are available on output SO1. Calculation from pulses to kWh is to be done by the user. Calibrated measurement ranges are shown in table 1.

Example: 3x400V, 100A => Measurement range = 69,2 kW. Each pulse equals 69,2 kWh/1000 = 0,0692 kWh.

Filter

At fluctuating loads a filter function is available using S2. When S2 is activated the measured value is an average of 16 "normal" measurement values.

Analogue output

The APM300B integrates a voltage output and a current output. By using input (S3) these outputs are set to either 0-20mA (0-10V) or 4-20mA (2-10V). It is not possible to generate 0-10V and 4-20mA simultaneously.

Digital input

Three digital inputs marked S1-S3 are used to configure the APM300B. S2 is changeable during operation. S1 and S3 are "read" during power up. S1-S3 are active (ON) when connected to GND.

LED indicators

The APM300B is equipped with 3 LED indicators. LED marked "On" indicates that the unit is connected to mains supply. LED marked "Load" is lit when the load exceeds 3% of max. load. The LED marked "kWh" reflects the SO1 output, i.e. 1000 pulses/h at 100%.

Mounting

When mounting the APM300B it is important that this is done in accordance with the schematics on page 2. Each CT must be mounted correctly in the corresponding phase and indicated direction of current must be taken into consideration.

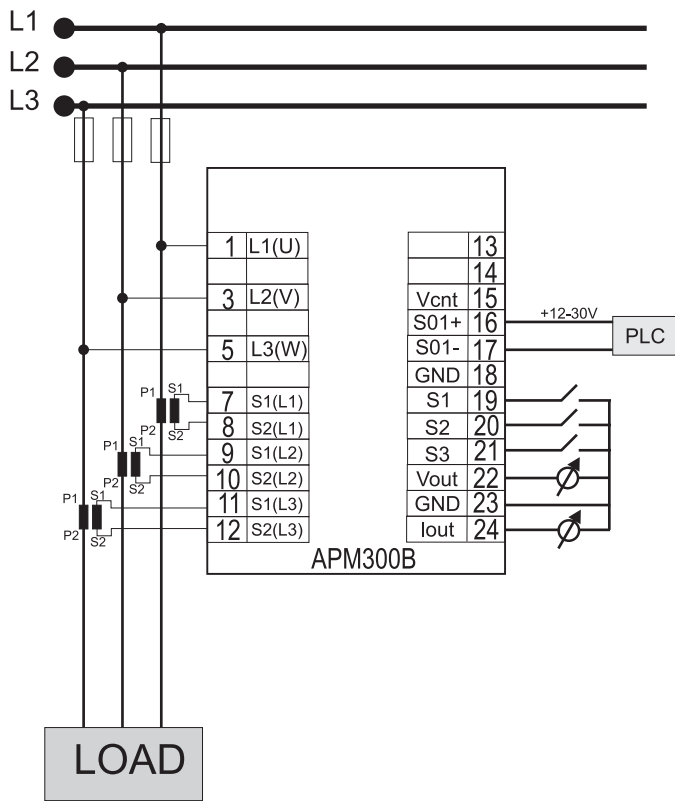
Technical Specifications

Mechanical

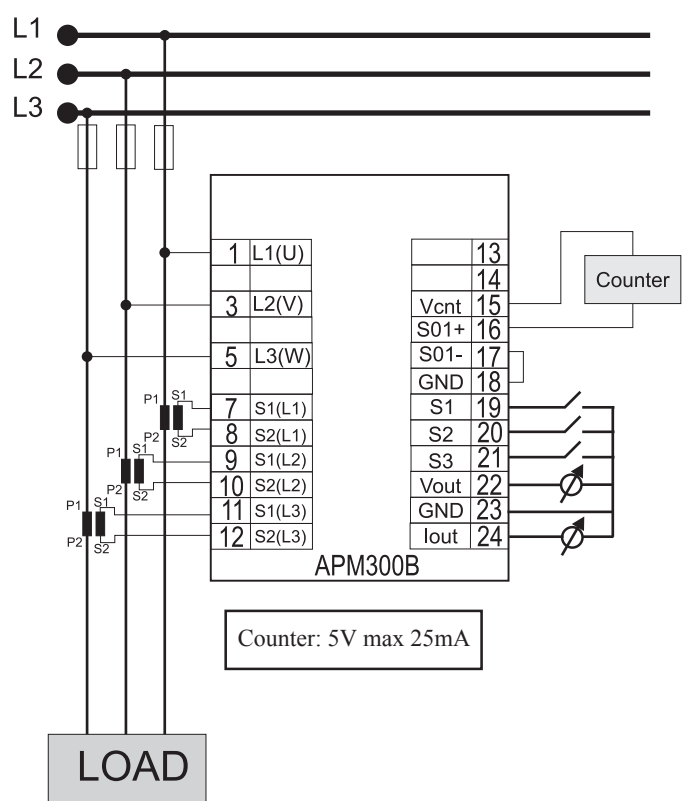
| | |
|------------|---|
| Housing: | Lexan UL94V-0 (top) Noryl UL94V-0 (bottom) |
| Mounting: | M36 for 35 mm DIN rail |
| IP class: | Housing IP40. Terminals IP20 |
| Terminals: | Max 16A. Max 2,5 mm ² Max torque 0,6 Nm |
| Temp.: | -15 to +50 grad C |
| Weight: | 300 g |
| Dimens.: | D 58 x W 70 x H 86 mm |
| CE mrk: | EN61326-1, EN61010-1 |

Electrical

| | |
|----------------------|---|
| Supply: | 3x400-3x460Vac ± 10% |
| Measurement voltage: | See technical info on the unit |
| Current input | External CT: N/1A, N/5A |
| Input resistance: | 10mΩ |
| Frequency: | 45-65 Hz |
| Accuracy: | Class 2% |
| Analogue output 1: | 0(4)-20 mA max 300Ω |
| Analogue output 2: | 0-10V min load 10kΩ |
| kWh output: | 1000 imp/time/fs, 200ms |
| SO1 output: | Passive optocoupler, current limited to 25 mA |



Typical connection between APM300B and PLC



Typical connection between APM300B and counter

Measurement range

As the APM300B is always mounted with external CT's (N/1 or N/5) the measurement range (Pmax) is calculated as follows:

$$P_{max} = P_{nom} \times CT$$

where CT equals the primary current of the CT and Pnom is dependent on the nominal voltage (Unom):

| | | | | |
|------------------|------|------|------|------|
| U _{nom} | 400 | 415 | 440 | 460 |
| P _{nom} | 0.69 | 0.72 | 0.76 | 0.80 |

Fig.1

Example:

Nominal voltage: 400V
External CT: 100A

$$P_{max} = 0,69 \times 100 = 69 \text{ kW}$$

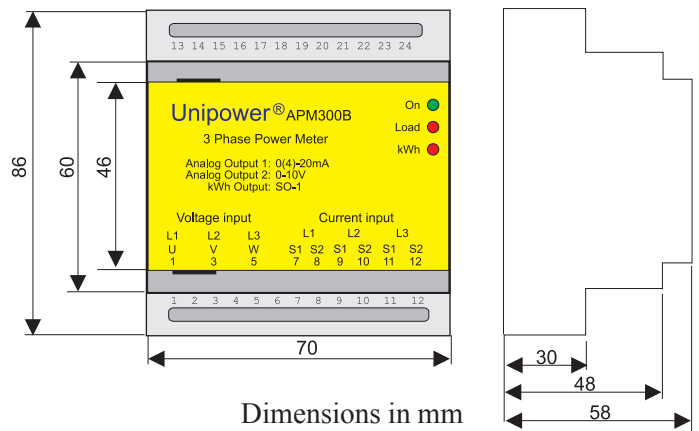
20mA (10V) on the analog output is reached at nominal power (Pmax). In the example above 20mA (10V) is reached at 69 kW. If measurement is done on a lower voltage - e.g. 380V - 20mA (10V) is still reached at 69 kW but at a higher current (105A).

Digital Inputs

| | | |
|----|---------------|-----|
| S1 | N/5A | Off |
| | N/1A | On |
| S2 | Filter x1 | Off |
| | Filter x16 | On |
| S3 | 4-20mA(2-10V) | Off |
| | 0-20mA(0-10V) | On |

Fig.2

Dimensions



Dimensions in mm