

Class 0.2S and 0.5S High Precision Meters Q402/405

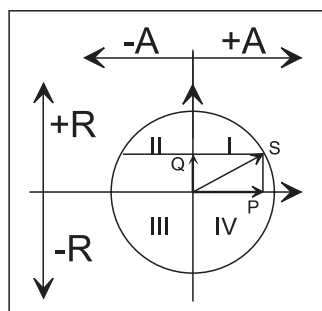
Enermet's class 0.2S and 0.5S high precision meters offer the most reliable and precise measurement of electric energy.

The meters' design is based on the proven MSA (Mark Space Amplitude) Multiplier measuring principle. The design combines excellent accuracy with high performance in the measuring of electric energy.



Versatile Measurements

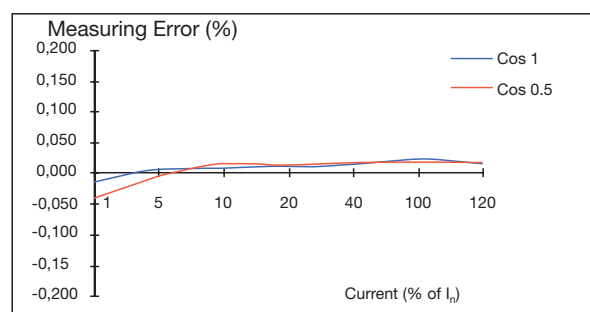
The 402/405 Precision Meters provide class 0.2S and 0.5S measurement of active, or both active and reactive energy. The wide range of meters offers perfect solutions for different metering



applications. The range of meters contains products from an active one-directional meter to an active bi-directional/reactive full four quadrant meter. All this is done by a single wall or rack mounted meter allowing simple, compact, and error free installation.

Proven and Precise Measurements

The design of the meters is based on the well proven Mark Space Amplitude measuring principle, as well as compensated



and precise current transformers, and voltage dividers. The intelligent design of the meters, carefully selected high quality components and the support of our qualified calibration laboratory provide the most reliable and accurate meters for power station measurement applications. The meters are also well-suited for multi-quadrant measurement of large-scale industrial customers.

Monitoring Functions

Example of Alarm Messages:

Alarm 12	Number of alarms
00 $\bar{U} < 70\%$ L2	Ph voltage too low
00 $\bar{U} = 0$ L1, L3	Ph voltage missing
00 $\bar{U} > 130\%$ L3	Ph voltage too high

The 402/405 Precision Meters have, as standard, a basic alarm function (f), which monitors the voltage circuits. The meters can be equipped, as an option, with a unique expanded alarm function (F). This function monitors the operation of the meter as well as the stability and accuracy of measurement. The alarm functions enable the user to react quickly in case of possible network and metering errors.

Pulse and Alarm Relays

The meters are equipped with up to eight pulse output relays for energy management. The basic and expanded alarm functions have separate output relays. In normal operation the relay contacts are open and they close in case of error. The relay contacts use Opto-Mos technology, which is safe for the environment as it does not involve the use of mercury.

The meters carry several LED indicators, which complement the display information by giving realtime information about the relay outputs and pulse inputs.

Informative Display

The user-friendly display uses normal plain text. The data on the display is divided into six different display groups. The first group is for the stored energy values. The other groups are for the meter ID data, alarms, power data, configuration data and the voltage/current data. The display is operated by two pushbuttons, one of which is for selecting the display group and the other for scrolling the display.

Serial Communication

The meters have an optical port for local communication. The communication is based on IEC 1107. The software for communication is run under MS Windows®.



Communication can be blocked out and sealed so that the meter cannot be configured or adjusted without breaking the seals.

Q402/405 Technical Specification



Metrological Requirements

- According to IEC 687

Case

- Wall mounted
- 19" rack mounted

Measurement System

- 3 element, 4 wire connection
- 3 element, 3 wire connection
- 2 element, 3 wire connection

Outputs

- Opto Mos solid state AC or DC operated
- Max. 250V, 120mA
- 1 to 8 pulse output relays
- 1 to 2 alarm relays

Temperature Range

- Operating -20 ... +60 °C
- Storage -40 ... +60 °C

Current

- $I_n = 1A$
- $I_n = 2A$
- $I_n = 5A$
- Max. current: 120% or 200% of I_n
- Starting current: 0.05% of I_n

Voltage

- $U_n = 3x100: \sqrt{3} / 100V$ or $3x100V$
- $U_n = 3x110: \sqrt{3} / 110V$ or $3x110V$
- $U_n = 3x200: \sqrt{3} / 200V$
- $U_n = 3x220: \sqrt{3} / 220V$
- $U_n = 3x230: \sqrt{3} / 230V$
- Measuring range: 80-115% of U_n

Auxiliary voltage

- External
- $U_{AUX} = 100... 110 V AC$
- $U_{AUX} = 220... 230 V AC$

Power Consumption

- Current: < 0.05VA
- Voltage: < 0.03VA
- Aux. voltage: < 4.0 VA