

A1400, A1410 ALPHA (AMC) Meters

ALPHA meters are a comprehensive family of meters from Class 0,2S to Class 1 according to the IEC 61036 and 60687. The meters are intended for advanced use from industrial to high voltage transmission applications.

The ALPHA meters can measure and register active, reactive and apparent power one by one or in combinations thereof. Combining these values for a bi-directional meter is easy. Maximum demand and instrumentation values are also available within the ALPHA range. Their unique flexibility and modularity allows you to include most of the external equipment under the same housing as the meter. For instance, you can include functions for time switch and load profile registration as well as different communication interfaces.

ALPHA meters are unique in their modularity and new options will be developed to meet the current demands on metering equipment. The software modularity also offer unique possibilities to remote upgrading of the meter via modem or on site via the optical port which is a standard feature of the meter. Communication options are the most extensive area of metering. ALPHA meters featuring a RS232 (or other digital port) output will be able to fulfill the needs for future communication media, such as LON, telephone lines, cellular phone systems and others.

The adaptation to the communication media is done outside the actual meter and without disconnecting it. When you have an ALPHA Meter on site you can always choose the most economic communication media at the time. Changing the communication module is an easy operation that can be done in minutes.



A1400 ALPHA (AMC 1400) Meter

An advanced Class 0,5S A1400 ALPHA meter measures both active, reactive and apparent power

A1410 ALPHA (AMC 1410) Meter

An advanced Class 0,2S A1410 ALPHA meter measures both active, reactive and apparent power

Measured values may be registered in both directions or in combinations of the four quadrants. Maximum demand with programmable intervals is standard. The A1400 can be programmed for load profile, which may be recorded in up to eight channels. Extra load profile capacity may be added. The meter has an optical communication port in accordance with IEC 61107. One of the following types of optional ports can be added: RS232, RS485 or 20mA Current loop. One pulse output is standard on the meter and five more can be added.

Features

- Modular design in both hardware and software
- Possible to upgrade both hardware and software
- Demand metering
- Total active energy
- Total energy hours for additional energy input (kVAh or kvarh)
- Fixed or rolling maximum demand
- Cumulative demand
- Programmable demand threshold
- Programmable outage times to trigger demand forgiveness
- Separate demand thresholds for each tariff
- Previous billing period information (total kWh, maximum demand, and cumulative demand at the time of the last demand reset)
- Programmable manual demand reset lockout
- Programmable demand forgiveness after power outage
- Internal real time clock automatically adjusting for leap year, seasons, daylight savings time, holidays, month, day of month, and day of week
- Up to four seasons in a year
- Up to four day types per week per season
- Up to four tariffs
- Optical interface according to IEC 61107 (FLAG) as standard
- Optical communications up to 9600 BPS
- Communication modems outside the meter sealing for easy access
- Communication interface for RS232, 20mA Current Loop and RS485
- Up to 255 meters possible in one multidrop configuration
- One pulse output as standard
- Power up for reading during power absence

- External power supply
- Super capacitor for maintaining time during power failure
- Non volatile memory for billing data and security related quantities
- Event log: Power fail, Time change and Demand resets
- System warning and error displays
- Programmable display for quantities, in any order, with identifiers for billing quantities and any 3 digit display identifier
- Alternate display sequence
- Programmable number of digits (5 to 8) and number of decimal places (0 to 3) for energy quantities
- Programmable number of digits (3 to 6) and number of decimal places (0 to 3) for demand quantities
- Programmable leading zero suppression of billing quantities
- Exchangeable LCD in field
- Real time clock automatically adjusting for leap year, seasons, daylight savings time, holidays, month, day of month, and day of week
- Cumulative energy for each tariff period
- Maximum demand with its time and date for each tariff
- Cumulative demand for each tariff
- Storage of tariff and total energy data at the last season change
- Storage of tariff and total energy data at the last demand reset
- Additional security features: cumulative power outage time, start and stop times of the last power outage, date of the last demand reset, date of last optical port data modification, date of last reprogramming, and test of the battery

Intended Uses/Users

Intended for use by:

- Power producers
- Net companies
- Utilities
- Industries

Intended for use in:

- Power stations
- Distribution line applications
- Net stations
- Sub stations
- Commercial applications
- Domestic houses

Designed for:

- Collect energy use and demand data
- Process energy use and demand data
- Store energy use and demand data
- Collect up to four tariff values

Option Boards:

- Tariff control inputs
- Ripple control
- Extra pulse outputs
- Relay outputs
- External power supply
- Communication boards
- Extended loadprofile

Communications Media:

- GSM
- Optical port communications
- Remote port communications
- Telephone modem capabilities when the RS232 board is used

Technical data

Accuracy (IEC 687)	Class 0,5 (AMC 1400) Class 0,2 (AMC 1410)
Voltages (Un) Voltage variations	3x230/400, 3x230, 3x57/100, 3x63/110, 3x100, 3x100 V +/- 20 % of Un
Other voltages in the range Voltage variations	3 x 46-300/80-520 V 3 x 80-520 V Both are specified as min and max voltage
Frequency	50 Hz (+/-5%)
Ext. power supply at terminals Ext. power supply at connector	48 VDC or 35 VAC +/- 20 %. Umax 60 VDC or 42,4 VAC peak value 12 VDC
Current base/nominal current Ib / In max. current Imax starting current	1 A 10 A 1 mA
Power consumption Voltage circuit Current circuit	max 2 W/phase, typically 1 W/phase. Depends on the type and number of installed optional boards 0,52 VA at 230 V < 0,02 VA
Internal metering constant	50.000 imp/kWh
LED frequency	Variable, set in production Default value 5.000 imp/kWh
Pulse output frequency	Default value 1000 imp/kWh
Degree of protection Meter Terminal	IP 51 IP 20
Wire size Current Voltage	1.5 to 10 mm 0.5 to 2.5 mm
Number of value digits	Programmable up to 8 value digits possible for energy and 6 for power measurements, with a maximum of 3 decimals
Temperature range	-40 °C to + 70 °C
Max. impulse voltage	10 kV on meter terminals 6 kV on other terminals
Optoport	IEC 1107 mode C and D
Internal clock Accuracy Frequency	1 ppm (1 ppm = 0,0001 %) 32,7 kHz
Pulse outputs	Acc. to IEC62053-31