



Brochure

Electricity meters For increased awareness

Strike the perfect balance with EQ meters



In the World Energy outlook for 2012 the International Energy Agency (IEA), states: "A significant share of the potential to improve energy efficiency – four fifths of the potential in the buildings sector and more than half in industry – still remains untapped." Is your company or organization doing enough to reduce its energy consumption? The high-quality, simple-to-install and easy-to-use EQ meters from ABB help save energy, costs and resources.

EQ meters from ABB for sub-metering provide detailed information about energy consumption. Get specific information on tenants energy consumption or see where in a factory

energy is wasted. The EQ meters are high-performing, modular DIN rail-mounted electricity meters that are safe and easy-to-use. Designed for simple integration with any existing or future electrical installation, the EQ meters from ABB can be installed and functioning in no-time. Not only do they provide detailed information about energy consumption, but also act as a tool for building an improved and efficient infrastructure that ultimately leads to a greener world.

Three key drivers

"You can't manage what you don't monitor" is an old saying and rule that applies to energy consumption. Managing



energy is knowing exactly when, where and how it is being used. In order to implement "green" programs like LEED, BREEAM or ISO 50001 to reduce energy, this information is a necessity and it is provided by EQ meters from ABB. Property and facility managers will be able to meet local, national and international mandates, and allocate and distribute costs in an accurate and fair way.

React in advance

To improve energy management, knowledge of consumption patterns is important. Climate concerns, rising energy costs, and to some degree, energy efficiency legislations are driving

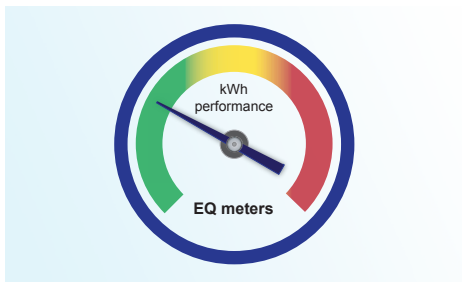
the demands for sub-metering. It is important to acknowledge such trends in an early stage. With a plotted pattern of sub-meters, you can anticipate trends and plan for them in advance. Knowing is half the battle.



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Commercial and public buildings

Fair and accurate cost allocation



Improve net operating income and get a green building. Managers of shopping centers, airports, hotels, offices and other commercial buildings all face a common challenge: to increase energy efficiency while sharing costs among tenants in a fair and accurate way.

With EQ meters, these two goals can go hand in hand. The ability to allocate the consumption of energy by individual tenants, or sources of consumption, accurately and fairly is best facilitated by comprehensive metering. Identification and elimination of sources of energy waste, such as maintaining heated garages during warmer seasons, leads to a reduction of waste and higher efficiency. In the end it will also improve the net operating income due to lower energy costs.

Approved meters eliminate doubt and trouble

EQ meters from ABB are type approved to IEC and MID. The MID-approved meters are certified and have verified meter accuracy, which is a critical factor in establishing fairness in cost

allocation and distribution among tenants. EQ meters from ABB come straight from our factory and are verified at delivery. That means the quality is insured for both the supplier and the receiver of energy.

Energy declarations enforce tougher requirements on buildings in Europe

Based on findings that buildings-related services account for roughly 40 percent of the total EU energy consumption, EU directive 2010/31/EU calls for the reduction of energy demand and separate accounting for electrical consumption such as lighting, heating, air-conditioning, elevators and so on. Data collected from individual sub-meters from ABB help to fulfill the directive and open up creative ways for building management and tenants to make more efficient use of their energy. Data from sub-meters from ABB can be fed into a Building Management System (BMS) that controls and monitors a building's electrical equipment, such as ventilation, lighting, power systems and more. It inspires the user to reduce its energy costs.

Industry and infrastructure

Improve energy efficiency



Identify. Attribute. Control.

There are several reasons to why a plant manager wants to use energy as efficiently as possible. It may be national policy, higher profitability requirements or stakeholders demand for a “greener” approach which drives the demands. To lower utility costs and introduce a “greener” policy, some plants embrace ISO 50001. Metering systems provide the necessary data, used for analysis and actions.

Categorize the usage

Naturally, the first step toward increasing energy efficiency is identifying the source of energy costs. These can be divided by services such as lighting, heating, and so on. Or departmental categories, such as specific product line, function or profit center. The greater the data, the better the control. High quality EQ meters in A series Gold and Platinum level make a difference with their enhanced functionality which provides information beyond just energy usage.

Taking action in the peaks and valleys

A crucial task for metering is tracking not only energy consumption but also the performance of electrical devices.

A sudden change in consumption pattern by one device or assembly line could mean a malfunction requiring maintenance or that a process has ceased operating, triggering action to restore the process. EQ meters provide the data needed to perform the analysis.

EQ meters assist plant managers in their peak shaving efforts by monitoring electricity levels and signaling a warning when penalty levels are close. This is especially useful for manufacturing plants with electricity contracts that specify a maximum power usage before higher tariffs kick in.

Reduce the power supplies impact on profit

A phenomenon known as harmonic and distortion can adversely have an impact on industrial equipment hence productivity. EQ meters in Platinum level meters can identify the presence of harmonics and indicate areas for further analysis in order to reduce the harmonic distortion. Utility penalties for reactive energy over the threshold value can be avoided and verified by measuring with EQ meters. Long term data can also be provided as well as annual consumption forecasts annual consumption forecasts used for best purchase.

Residential

Awareness calls for action



The potential power of sub-metering

Sub-metering is a potentially powerful tool, enabling condominiums, cooperatives, housing and tenants associations to allocate costs among it is tenants or members according to actual consumption. This is, however, subject to local and national legislation. Equally important, it provides tenants with information about their consumption, creating awareness and the knowledge required to reduce their energy use.

Bargain for lower prices

As large buyers of electricity, the associations managers are in an excellent position to negotiate more favorable fees for their tenants, which should lead to lower electricity prices for all members.

Awareness calls for action

Studies have repeatedly shown that when tenants know how much energy they use, they are more likely to lower their consumption. And the more they know, the better. If, for example, they know that using washing machines and dishwashers

during peak hours costs more than off hours, they are likely to time their activities accordingly. Even simple things like knowing whether the standby mode on computers, TVs and other electronic devices consumes electricity or not can make a difference.

Such activities further encourage green behavior. The key is making the device's consumption visible. Generally, behavior follows awareness.

Choose the right meter

Even if there are requirements of formal approvals or not on the types of meters for joint residential sourcing, there can be a problem if meters are unreliable or inaccurate. It pays to use EQ meters from ABB, which are MID-approved and can be completely trusted to function reliably and accurately.

EQ meters are also simple to install. They are small enough to fit into standard DIN enclosures, require no special housing or rebuilding work. Data is normally collected via pulse or serial communication.

EQ meters for various applications

EQ meters from ABB suit various applications in nearly all segments of the market. The obvious task is of course monitoring and billing for the energy usage. But when you utilize the comprehensive power quality and communication features in the EQ meters you will find even better cost-benefit ratios. EQ meters also provide data which can be used for reliability, safety and energy efficiency. The instant values for harmonics, reactive power and power per phase are some examples of data that you can retrieve. When you use them to improve your power quality you will also experience an improved productivity. Fewer disturbances in production, communication systems and other vital functions come along with improved energy efficiency.



Energy efficiency

EQ meters help our customers operate their business in the most energy efficient way. EQ meters contribute significantly to conservative energy use and user involvement.

Our meters provide a proven and interesting solution that is clearly set apart by its convincing cost-benefit ratio.



Wind power

EQ meters serves wind power customers with data at every stage of the process. Our high quality meters provide information from your energy production. Versatile

communication solutions keep you in touch with the information - without climbing a ladder.



E-mobility

Charging should be straightforward, safe and readily accessible – whether you do it at home, 'in town' or on the road. Approved EQ meters keep track of the energy flows

between the grid and the car and ensures correct billing.



Water industry

Use the EQ meters in the complete water cycle. From collection, through purification and transportation to distribution and reuse. All over the water industry there are

pumps and other electrical equipment where deviations in the pattern of energy usage may be an early indication of problems.



Solar power

EQ meters are suitable for the smallest residential applications, right up to large sized power plants. Our high quality meters provide information from your energy production but also various other data from your solar energy

system which ultimately ensure high return on investment.



Rail

Railways help to keep the world moving with a low carbon footprint. EQ meters help the railway industry to keep track of energy use and power quality enabling it to operate with efficiency and reliability. EQ meters A and B series

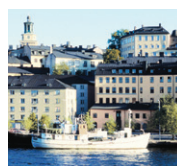
are IRIS certified.



GenSet and UPS

Critical applications, like hospitals, airports, communications systems and data centers, require a constant and reliable power supply to keep fundamental services running.

EQ meters provide a set of data for the GenSet and UPS allowing both monitoring and billing for usage.



Buildings and infrastructure

The future will see even greater focus on energy efficiency and climate care, not least in terms of our infrastructure. EQ meters ensure correct billing and help to reduce

energy consumption in airports, ports, tunnels and public buildings such as hospitals, sports arenas, shopping malls and residential housing.

Why choose EQ meters?



EQ meters serve as the 'building blocks' in a sub-metering system with several options for seamless integration into a system solution. The reason to choose EQ meters is to find the right meter that is easy to use and ensures measurements of high quality.

The wide range of EQ meters allows users to easily find the right meters according to the specific requirements and needs. EQ meters include the necessary features, from basic to the most advanced. EQ meters provide information to the user and helps them make the right decisions while keeping track of their installation's energy usage. EQ meters come with options for communication, such as inbuilt Modbus or M-Bus, and are also possible to use with EQ meters gateway that could be used in small to big sub-metering systems

EQ meters are fast to install. Easy to configure and use.

EQ meters are made for easy and fast installation. With its compact and clean design EQ meters are suited to be installed in many kinds of installation, from consumer units to distribution boards. With its user-friendly interface configuration of settings is fast and the meter is up and running in no time. The big and clear displays are perfect for reading energy registers and instrumentation values.

EQ meters are made with ABB quality

All EQ meters are made of highest quality to ensure a trouble-free use. Having a meter to trust in any situation was the aim when developing the EQ meters. All meters are made with high quality components and are all carefully tested. EQ meters fulfill national and international standards, such as IEC standards, and are type tested and approved according to MID and IEC. These requirements ensure the high quality of EQ meters from ABB while also proving they can be used worldwide.

General information

EQ meters

EQ meters is the new range of meters for sub-metering and energy efficiency from ABB. The EQ meters are divided into three products series with up to five functionality levels each. They come in both single and three phase versions.

The C series is a product range intended for simple energy measurement up to 40 A direct connected.

The B series is a basic meter product range for installations up to 65 A direct connected or transformer connected (CT).

The A series is a product range of meters with advanced functions, 80 A direct connected or transformer connected (CTVT).

The functionality of the EQ meters is grouped in five levels ranging from Steel to Platinum.

The Steel level includes metering of active energy in accuracy class 1 (MID Class B), instrument values (voltage, current, power and power factor), alarm function and an output for pulses or alarm.

The Bronze level includes the functions of Steel and the following additional functions: import and export of energy,

energy measurement per phase, reactive and apparent energy measurement.

The Silver level adds four tariff registers to the Bronze level. The pulse output board in the Steel and Bronze products is replaced by an input and output board with two inputs and two outputs. Transformers connected meters with Silver functionality are also available in accuracy class 0,5 S (MID class C).

The Gold level adds time dependent functions to the Silver level. These time dependent functions include Previous Values for day, week or month and demand (max and min) function. The built-in clock can be used to control tariff switching times and to set outputs.

The Platinum level adds advanced load profiles (8 channels) and harmonics measurement up to 16th harmonic and an evaluation of TDH¹. The input and output board in Silver and Gold is replaced by a configurable I/O board with four I/O's that can be selected to operate as input or output.

The A and B series can be delivered with a communication interface for RS-485 or M-Bus. All meters in the A and B series are equipped with an infrared port on the side for communication with a Gateway, Serial communication adapter or similar equipment.

¹Total harmonic distortion

Features and functionality overview

	Connection	Max. Amp.	Communication	Functionality	
Single Phase	C11	Direct	40A	-	Steel
	B21	Direct	65A	IR, M-Bus, RS-485	Steel, Bronze, Silver
	A41	Direct	80A	IR, M-Bus, RS-485	Steel, Bronze, Silver, Gold, Platinum
	A42	CTVT	6A	IR, M-Bus, RS-485	Steel, Bronze, Silver, Gold, Platinum
Three Phase	C13	Direct	40A	-	Steel
	B23	Direct	65A	IR, M-Bus, RS-485	Steel, Bronze, Silver
	B24	CT	6A	IR, M-Bus, RS-485	Steel, Bronze, Silver
	A43	Direct	80A	IR, M-Bus, RS-485	Steel, Bronze, Silver, Gold, Platinum
	A44	CTVT	6A	IR, M-Bus, RS-485	Steel, Bronze, Silver, Gold, Platinum

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EQ meters

A diverse meter range for most standard single and three phase applications. EQ meters are suitable for installation in panels, distribution boards and small consumer units. The wide temperature range allows them to be installed in various environments. Navigating and configuring EQ meters is easily done via the push-buttons below the display.

All EQ meters are type approved according to IEC and MID. The A and B series meters are also IRIS approved. As standard the A and B series are also verified according to MID which is optional for C series.

All EQ meters have as minimum the following instrumentation values:

- Active power
- Voltage
- Current
- Power factor

C series can be used in many applications where the meter is expected to be installed in stand-alone applications.

General features

Truly compact meters with large digits LCD display.

Output

The meters have a solid state relay output that can be used as pulse or alarm output. Used as pulse output it generates pulses proportionally to the measured energy. Used as alarm the preferred quantity and levels are easily configured on the meter with the push button.



B series is compact meters with outstanding performance and features.

General features

The EQ meters B series has a big backlighted LCD display that clearly presents values.

Communication

Built-in serial communication interfaces for M-Bus, Modbus RTU or EQ bus. Infrared port is standard for backward compatibility with communication adapters like the ABB SCA.

Tariffs

Some B series meters have tariff handling of up to four tariffs. The tariffs are controlled via inputs or communication.

Instrumentation

In addition to the standard instrumentation values, the B series also supports the following dependent on version of meter:

- Apparent power
- Reactive power
- Frequency

Inputs and outputs

The B series have two options of one output or two inputs and two outputs in a fixed configuration. Inputs can be used for counting pulses or reading status from external devices. Outputs can be used as pulse outputs or controlling an external apparatus.

Installation

The B series meters come with an automatic installation check that indicates problems in the installation.

The A series meters ranges from basic up to advanced functionality without any comparison.

General features

The backlighted pixel-oriented display can display up to four quantities at the same time. The wide voltage range minimizes the need for transformers and article numbers.

The main terminals, designed in compliance with DIN 43857, are accessible from below the meters and are suitable for all applications.

Communication

Built-in serial communication interfaces for M-Bus, Modbus RTU or EQ bus. Infrared port is standard for backward compatibility with communication adapters like the ABB SCA.

Tariffs

Some A series meters have tariff handling of up to four tariffs. The tariffs are controlled via inputs, via communication or via the internal clock depending on type.

Instrumentation

In addition to the standard instrumentation values, the A series also supports the following dependent on version of meter:

- Apparent power
- Reactive power
- Frequency
- Harmonics
- Total harmonic distortion

Optional functionality

A series meters with a functionality level of Gold or Platinum have an internal clock for advanced functionality:

- Previous values
- Event log
- Maximum demand
- Load profile

Inputs and outputs

The A series support up to four I/O's. It can be one output, two inputs and two outputs in a fixed configuration or four I/O points that are freely configured as input or output. Inputs can be used for counting pulses or reading status from external devices. Outputs can be used as pulse outputs or controlling an external apparatus.

Installation

The A series meters come with an automatic installation check that indicates problems in the installation. This helps the installer to make a correct installation.

The EQ meter gateway is used as an access point to all of the EQ meters, for optimal configuration. When connected to the EQ meter, the EQ gateway provides data over the encrypted EQ bus and allows the user to perform settings using high level programming language JSON or through a web browser.

Data from the A and B series meters is preferably collected via built-in serial communication interfaces for M-Bus or Modbus RTU (RS-485) and standard equipment. When safety and maximum functionality is of importance the EQ bus will make it fully utilized over the EQ meter gateway. Meters with RS-485 can be used for Modbus or EQ bus.

General features

The gateway is the interface between EQ meters and the system side. The gateway features both RS-485 and M-Bus interfaces towards the meter side. On the up-stream side there is a RJ 45 connector for Ethernet. Security is ensured on the Ethernet by the use of SSL encryption.

EQ bus

EQ bus provides safety and maximum functionality, the comprehensive functionality of EQ meters needs EQ bus to be fully utilized. The protocol is based on standards which ensure a well proven solution for information security — a major concern for many users.

M-Bus

Previous versions of meters from ABB with M-Bus can be connected to the gateway.



JSON

JSON (JavaScript Object Notation), is a lightweight data-interchange format. It is easy for humans to read and write and it is also easy for machines to parse and generate. JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages and many others. These properties make JSON an ideal language for system developers.

Web server

The easiest way to read a meter is by simply logging in to the gateway via your browser. Data from all EQ meters that are connected to the gateway can be read online and you can perform settings and write tariff schedules. Access to the web server is given by an administrator to ensure safe management. The different user profiles created by the administrator then control the meters.

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