

Variety of devices for flexible load management

ABB already offers a wide range of KNX-enabled devices.

Marc Fleischer from ABB explains how they interact to perform load management. It all starts with measuring.

„Because if you can't measure something, you can't improve it“, Marc Fleischer quotes the physicist Lord Kelvin. According to Marc Fleischer, Product Marketing Specialist at ABB Stotz-Kontakt, when applied to today's world, this means: „If you check consumer behaviour and make consumption transparent, then you can divide up the costs precisely, for example to create internal invoices.“ This can achieve two things: Firstly, consumer behaviour can be changed, but secondly, it has also created an approach to automation: Load management can be set up, and installations can be monitored. In this way, „energy thieves“ can be identified and incentives created to save energy.

This works like a constantly repeating cycle that begins and ends with the measurement of energy consumption. The data obtained from the measurement is used as the basis for metering, i.e. for the flexible and simple calculation of performance and energy consumption. The consumption and load status is then displayed and monitored via the subsequent monitoring. Now the prerequisites for energy management are in place: The energy flow and loads can be intelligently controlled. At the end, there is the control measurement again, in order to start the cycle anew with the current data, to check the measures taken and to be able to readjust and optimise them if necessary. For this purpose, ABB Stotz-Kontakt has developed the EQmatic (Energy Analyzer QA/S 1.16.1 KNX), which helps to create transparency of costs and consumption. The objective is to improve energy efficiency, reduce energy consumption and lower costs. It complies with ISO 50001, a worldwide standard according to which a systematic energy management system can be established. It is capable of recording, visualising and processing sub-meter data. „We have developed a compact web-based device based on the concept of bridging the gap between meters



Mark Fleischer

and higher level software applications, targeting energy and facility managers and small and medium commercial building operators in general.“

The EQmatic Analyser is connected to the network to enable access to the web server. The various meters (energy, heat, water, gas) are connected to the QA / S via KNX to provide the corresponding consumption values. The KNX meter interface module ZS / S and EQmeters can be used to provide the measured values. Based on this measurement, the analyzer can perform load disconnections over eight different load levels if necessary.

In addition, other values such as temperature, CO₂ concentration and humidity can be recorded and displayed in the form of a graph, for example, to optimise the ventilation of rooms. Besides KNX, the QA / S also has M-Bus and Modbus interfaces.





ABB's EQmatic product range

To collect the data, among other things, the energy module and the energy actuator are used. The energy actuator can be integrated into the load management by switching connected loads off and on via calculated load levels. The energy module does not have any relays, it is only intended to record the data of the connected loads and to control the loads as a master. This is important because not every load may be switched off, but the consumption must still be metered. Refrigerators or freezers are examples of this.

Independent of a higher-level energy management system, the two devices can already perform load management. The actuator can be both master and slave. The module can only be the master because it is not equipped with relays. One master can receive data from up to ten actuators as slaves. When needed, the master sends switch-off steps to the bus if the parameterised load limits are exceeded. The switch-off can take place channel by channel.

The ZS S1.1 meter interface makes it possible to make the ABB meter range KNX-capable in residential and functional buildings as well as industrial plants, because it enables remote reading to make the data from the meters available for display and visualisation. The data can be used for cost centre billing, energy optimisation, installation monitoring and smart metering.

A new addition to the family of energy suppliers is the SA/S Professional switch actuator with energy function. The units are designed for high capacity loads (16 and 20 A) and extensive functionality that meets all requirements for their use in industrial environments. Like their predecessors, they can measure the current per channel, but can also calculate the performance. It can be calculated with a fixed or dynamic voltage and the power factor. The energy consumption is calculated by multiplying the current by the time. The switching actuator SA/S with energy function can perform load evaluations in relation to threshold values independently of the higher-level energy management.

In addition to the switching actuator with energy functions, all other ABB switching actuators can be integrated into the load step disconnection. These include Combi, Standard, Professional. This makes it possible to switch off even small consumers as accurately as possible.

In the future, ABB's DGS 6451 DALI Gateway can also be integrated into the load disconnection to optimise operating costs and avoid expensive load peaks.

Within the EQmatic series, ABB offers various devices that can be used to perform flexible load management in the smart home, in commercial buildings and in industry. Marc Fleischer, Product Marketing Specialist of ABB Stotz-Kontakt: „We have closed the gap between meters and higher level software applications and want to address energy and facility managers as well as operators of small and medium-sized commercial buildings in general.“