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0888-0579/00033601 • I/O KNX/EIB • 2.0 • DD • 05/07 • Printed in Germany, JA • Subject to design changes

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WAGO® INNOVATIVE CONNECTIONS

AUTOMATION

KNX/EIB in the WAGO-I/O-SYSTEM

Breakthrough to more performance

WAGO® INNOVATIVE CONNECTIONS

List of contents

Inter-sectional building automation 4
Overview of modern building automation

Intelligent functions for more convenience 6
Lighting, shading, heating/ventilation and much more

Compact, modular and fieldbus-independent: The WAGO-I/O-SYSTEM 8
Universal base modules for many options

Innovative building automation: The WAGO KNX/EIB concept 10
An overview

Powerful modules intelligently combined 12
KNX/EIB components in detail

Solutions for every application 14
Examples of applications and uses

Simple configuration with pre-designed applications 16
For beginners

Seminars and training 17
Learn today the things that we will be influencing tomorrow

WAGO online 17
The very latest at the click of a mouse

Good reasons for anyone with major projects in mind 18
Advantages for designers, electrical installers, system integrators and users

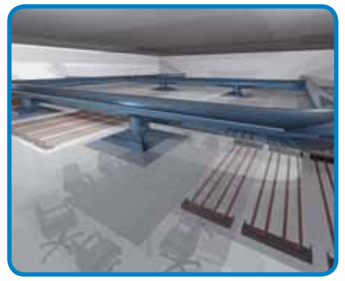
Inter-sectional building automation

For perfect interaction:

Automatic control of heating and ventilation equipment increases comfort and improves the climate within a building with maximum economy and minimum energy costs. Central monitoring and remote access included.

For safety and comfort:

A weather station records relevant data for the automatic building control system, such as wind speed, precipitation, brightness and outside temperature.



For a good room climate:

Optimum control provides a good room climate and increases the efficiency of the people using the room.

For comforting warmth:

A precision individual room controller creates the right room temperature, adapts itself automatically to the user's wishes and recognizes the heat requirement during the day.

Added value by optimizing the operating costs

The requirements of building for comfort, safety, flexibility and an efficient use of energy are continuously increasing. In the future, it will be possible to easily and quickly adapt a building to suit the requirements and offer flexible conversions. Modern building automation extends a communications network throughout the whole building, and create individual sections. This will increase the value of the property and optimize the operating costs. It will also provide a fault management and security functions.

For glare-free working:

An automatic blind controller creates glare-free lighting and well-regulated shade - depending on the room usage. It provides a pleasant room climate by optimizing the heat introduced and the amount of shade.

For a comfortable working atmosphere:

Whether office, reception, laboratory or conference room: the individual use determines the required brightness and lighting atmosphere. The lighting controller automatically adjusts the lighting conditions and can be incorporated into comprehensive energy-saving concepts.

Intelligent functions for more convenience

Lighting

A modern building automation system can do much more than switch and dim lights. It provides the convenience of an automatic control system and at the same time creates the freedom for individual settings. In doing so, the user can switch lights as well as select lighting scenarios and adapt these as required to suit their personal needs. The automatic system makes optimum readjustments depending on the presence detector and the outside lighting level.

Shade

The anti-glare controller evaluates the current weather conditions and adjusts the settings of the blinds and slats accordingly. In doing so, the outside temperature, the position of the sun, the wind and precipitation are automatically taken into account. The user of the room can set the parameters individually and combine the dimming and lighting control for presentations to form a scenario, for example.

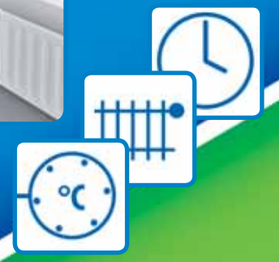
SECTIONAL

INTER-

Modern building automation using a standardized bus system enables all subsections to be networked to form a comprehensive building management system. The individual settings can be made from one central location and provide remote access.
This provides the operations data and fault messages to be recorded and documented to be reviewed centrally to maintain the building. The value of this type of data collection can be used for preventive maintenance to keep costs at a minimum.

BUILDING

AUTOMATION



Individual room control

If the employee feels comfortable then his performance will be good. They can choose the room temperature and the automatic system will control it accordingly. In doing so, outside temperature, room occupation, air quality, reduced levels at night and much more are taken into account. In this way you make a double saving. On the energy costs and due to satisfied and healthy staff.

Heating, air-conditioning and ventilation control centers

Even the basic building supplies require considerable effort on the part of the user. By combining them in a building management system, consumption can be optimized and adapted to suit the room occupation. Complex control functions can be easily implemented. Operating data, alarms and fault messages reach those that need them: the house technician on site, the maintenance company in the neighborhood, the user anywhere in the world.

Compact, modular and fieldbus-independent: The WAGO-I/O-SYSTEM

The WAGO-I/O-SYSTEM 750 makes it possible: complete in-the-field wiring of the I/O modules, without definition of the final fieldbus. The modularity of the system enables almost any combination of digital/analog inputs and outputs and complex sub-bus modules to be assembled on a fieldbus node. As well as communications tasks on the network, the controllers also take care of stand-alone open and closed loop control tasks with regard to lighting, shading, heating, ventilation, air conditioning and other applications.

Both as part of a higher-level control system, e.g. multiple axes, and directly at room level. This guarantees high availability of the sub-applications, simple structures and fast response times while maintaining the fullest flexibility.

BACnet

LonWorks®

KNX/EIB

Digital inputs
2/4 channel
5/24/48 V DC
24/120/230 V AC
0.2/3/50 ms

Digital outputs
2/4 channel
5/24 V DC
125/230/250 V AC
0.02/0.3/0.5/1/2
/.../16 A/Relay module

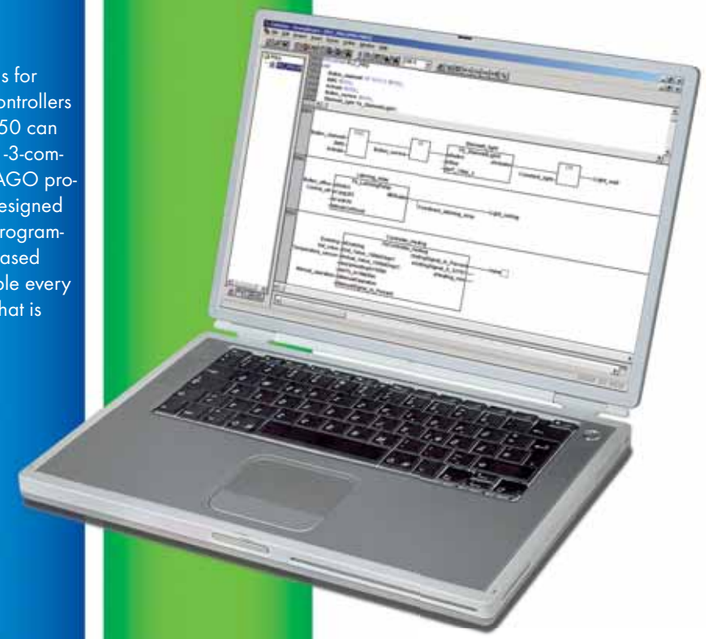
Special modules
Supply modules
AC/DC 0-230 V
Counters and other functions

Analog inputs
2/4 channel
0-10/±10 V DC
0-20/4-20 mA
PT 100, PT 1000
Ni 1000

Analog outputs
2 channel
0-10/±10 V DC
0-20/4-20 mA

WAGO-I/O-PRO CAA

High-performance applications for buildingautomation and the controllers of the WAGO-I/O-SYSTEM 750 can be created with the IEC 61131-3-compatible programming tool. WAGO provides a large number of pre-designed functions in order to simplify programming. Six graphical and text-based programming languages enable every user to choose the language that is right for them.



Features

- 6 graphical and text editors
- FBD, IL, LD, ST, FC (IEC 61131-3) CFC
- Comprehensive test and diagnostics functions
- Online change and source code download
- Creation of web visualization

ENABLED BY enocean
KNX®
MP-BUS
M-Bus
AS-i
RS 232
RS 485

DALI Master

The DALI Master module is used for controlling up to 64 electronic ballasts in accordance with the DALI standard. This enables complex lighting applications to be easily parameterized and controlled with status of every individual lamp reported.

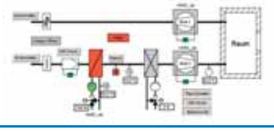
EnOcean Radio Receiver

The wireless EnOcean switches and sensors can be conveniently installed on glass walls, for example, and moved to a different position without cabling. Thanks to this innovative battery-free technology, the components are absolutely maintenance-free over the life of their service.

Function blocks

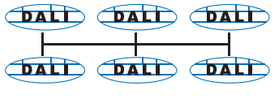
Room applications

- Lighting
- Dimmers
- Lighting scenarios
- Constant light control
- Anti-glare protection
- Fade-out
- and others



Heating, ventilation, air conditioning

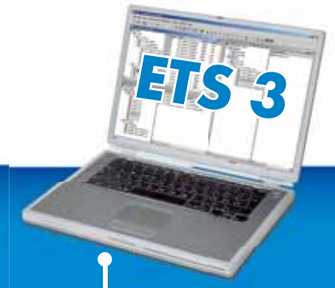
Combined, standardized heating and ventilation macros with associated web-based user interface (e.g. incoming air temperature control with circulating air mixing) lead to enormous time savings. Additional function blocks, such as PID controllers, enable the system to be expanded at will and thus adapted to suit specific project requirements.



Communication

- EnOcean/ DALI/ MP-Bus
- KNX/EIB
- M-Bus
- AS Interface
- E-mail/ SMS
- Modbus
- and others

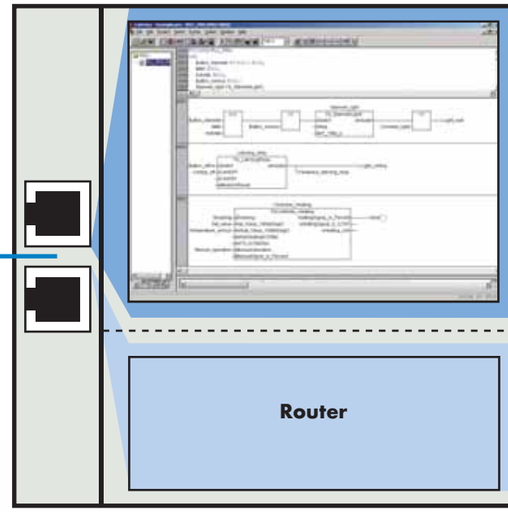
Innovative building automation: The WAGO KNX/EIB concept

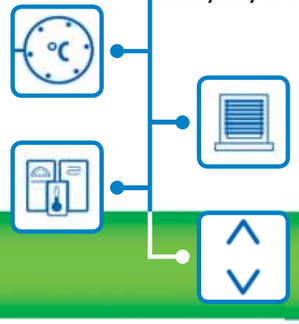


Ethernet

In recent years, global communications options "without" speed limits have afforded great success to Ethernet as a medium for automation, as Ethernet offers several advantages: high speed between devices, incorporation into an already existing infrastructure, seamless access from any location, web technology. Further advantages of KNXnet/IP as a transmission protocol on Ethernet as a medium include the fact that KNX/EIB knowledge already acquired can be applied, and the familiar and proven ETS 3 software can be used for commissioning.

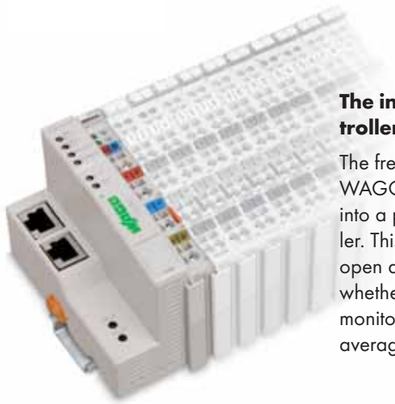
With the KNXnet/IP controller and the KNX/EIB/TP1 module, WAGO provides an innovative concept for building automation. Complex applications, which were unthinkable up to now, can be created with these components. The KNX/EIB/TP1 module provides the connection to existing TP1 networks; conventional sensors and actuators as well as complex connections to DALI, EnOcean, etc. can be brought together cost-effectively on the KNXnet/IP controller.





Powerful modules intelligently combined

Controller



The intelligent application controller for rooms and zones

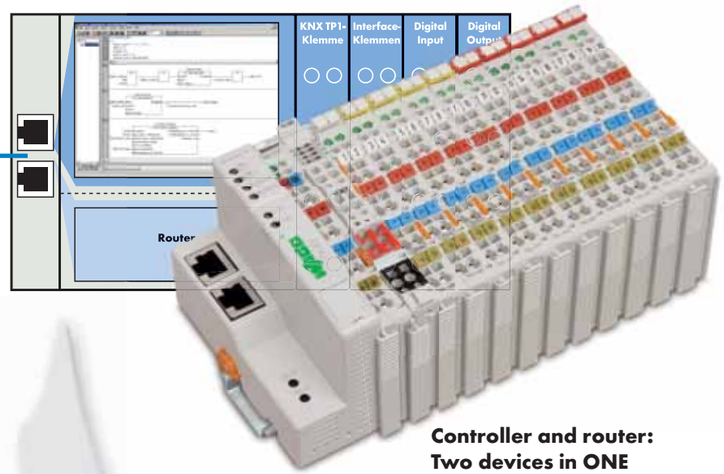
The free programmability makes the WAGO KNXnet/IP controller 750-849 into a powerful room and zone controller. This makes it possible to solve any open and closed loop control task - whether logical operations for window monitoring, computations for forming average and limiting values, extensive heating and ventilation controllers, complex scenario controllers, presence simulation or higher-level central functions. Graphical web pages for configuring and interrogating the status of the application can be cost-effectively, quickly and easily created using the programming tool.

Module

The **KNX/EIB-TP1 module** 753-646 provides two separate functions, which set themselves up automatically depending on the application. For example, it can be used as a KNX/EIB interface to freely programmable controllers of the WAGO-I/O-SYSTEM 750. In this case, it constitutes a standard KNX/EIB bus node on the KNX/EIB side, which is incorporated into a KNX/EIB network by means of the ETS 3. Furthermore, the module can also be used as a TP1 interface for the KNXnet/IP router.

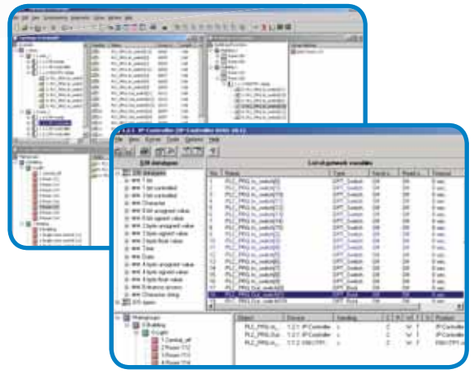
Controller and Router

Together, the KNXnet/IP controller and the KNX/EIB/TP1 module make up a **KNXnet/IP router**, which connects classical TP1 networks to the Ethernet. The transmission speed in the KNX/EIB network can therefore be increased considerably. It enables a high level of data traffic on the backbone, and the bottleneck to a higher-level visualization system is avoided. The KNXnet/IP router also acts as a network interface for the ETS 3 for configuration and parameter setting.



Controller and router: Two devices in ONE

With only two components, the KNXnet/IP controller and the KNX/EIB-TP1 I/O module, the WAGO I/O SYSTEM 750 becomes a multifunctional KNX/EIB device. It provides functionalities for which several different EIB devices are currently required. The modular design and free programmability enable flexible adaptation to suit project-specific applications and individual customer requirements.



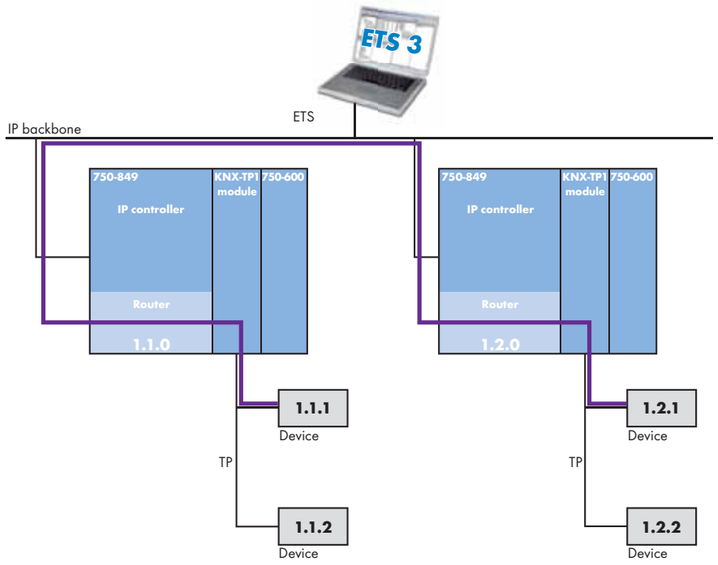
Easy commissioning

The WAGO KNXnet/IP controller is configured using the standard programming tool, ETS 3. A plug-in specially developed by WAGO supports the user with the assignment of group addresses and the downloading of applications.

Project-specific parameter setting in applications can be carried out via the graphical user interface in the web server. Light and shade units, for example, can be operated from any PC using a standard web browser.

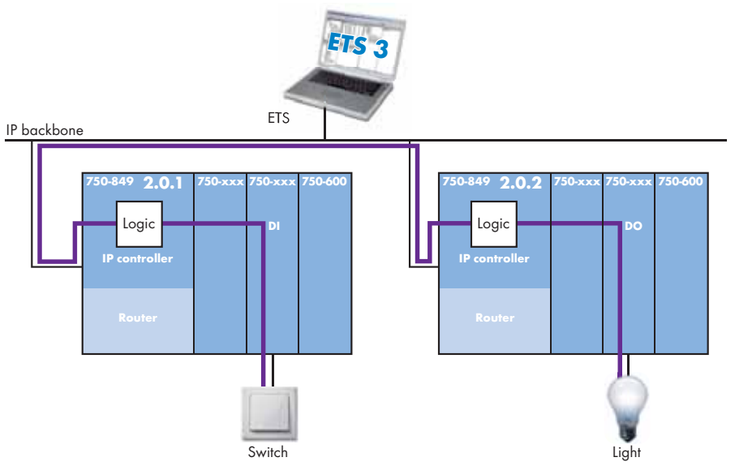
Solutions for every application

KNXnet/IP router



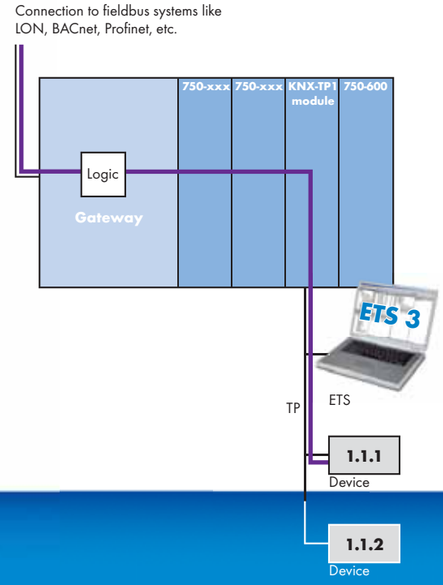
In this application example, the WAGO KNXnet/IP controller with the KNX/EIB/TP1 module is used as a router on an IP backbone (Ethernet). No IEC application is required for the router functionality. The ETS 3 is connected on the Ethernet side and has access to all devices, which are connected via the KNX/EIB/TP1 modules in the TP1 networks shown. A device in the TP1 network on the left can communicate with a device in a TP1 network on the right via the IP backbone.

KNXnet/IP application controller with I/O modules



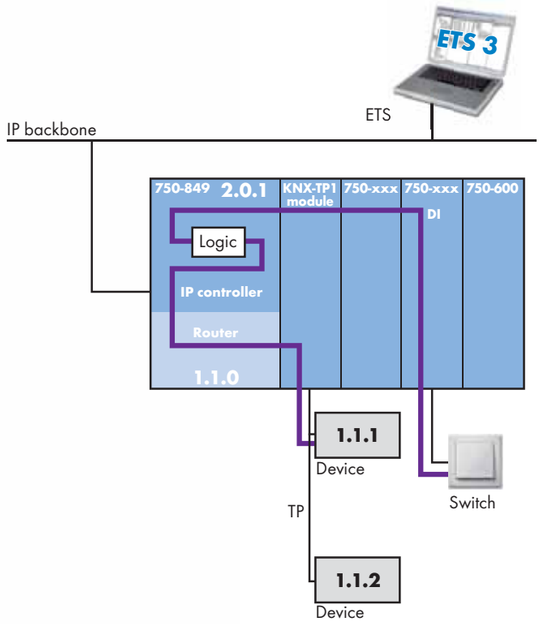
The KNXnet/IP controller can also be used as a pure application controller with standard digital/analog input and output modules and with special module

Fieldbus controller with KNX/EIB/TP1 module as gateway



In this application example, the KNX/EIB/TP1 module is used not on a KNXnet/IP controller, but on a different controller from the WAGO 750 Series. In this case, the KNX/EIB/TP1 module acts as a gateway. The ETS 3 is inserted in the TP1 line.

KNXnet/IP application controller with I/O modules and router



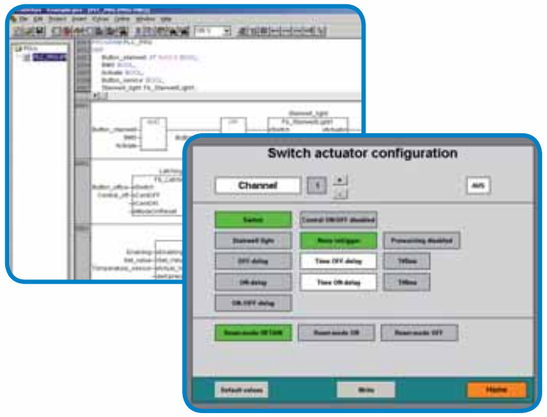
This application shows the processing of data from two devices in the same TP1 network and the integration of further modules of the WAGO 750/753 Series. Switches, for example, can be connected to these modules. Data from the switches and data from the devices on the TP1 network can be processed together in the IEC application.

Easier use with pre-designed applications

From the simple lighting controller to the complex and extensive heating and ventilation control system, WAGO provides the user with a selection of comprehensive libraries with pre-programmed function blocks, which have been specially matched to the requirements of building automation.

Beginners can call upon completed applications with a recommendation for the appropriate hardware configuration for the controller. The web pages for the control and for displaying status messages are already included here.

All applications can be used either directly for existing projects or as a template for carrying out project-specific modifications retrospectively. This makes it easier
for KNX/EIB experts who do not have PLC experience to use the components.



Examples:

- Single room automation (lighting, shade, heating/cooling)
- Multi-axis room automation
- DALI lighting control with conventional switches (or EnOcean radio buttons)
- Multiple blind actuator
- Multiple switch actuator
- and others

Seminars and training

Learn today the things that we will be influencing tomorrow

Innovative solutions demand creativity and knowledge: specific know-how on products and processes, comprehensive detailed knowledge of applications and procedures.

This applies particularly to the complex requirements of building automation. It is for this reason that we provide training for our staff and partners. Targeted, continuous and specific.

In seminars and training courses at the highest level, individually tailored to topics and participants. Every WAGO employee and partner thus keeps pace with the dynamic development of new technologies – and is optimally informed and qualified at all times for solving his problems. A solid basis from which to guide you as part of our service.

WAGO online

The very latest at the click of a mouse

Yesterday's information will not get anyone anywhere. You can therefore access our latest data at any time with the WAGO building technology portal at www.wago.com. Under the building technology portal, you will find everything you want to know about building automation – with the most up-to-date product information, links to take you further, particulars of the next seminar dates, and much more. It is worth a virtual visit. Regularly. Come and see for yourself.

And ask us if you can't find an answer on our web site. We look forward to hearing from you.

www.wago.com

Good reasons for anyone with major projects

A good component manufacturer is distinguished by the fact that he offers development, products, advice and training. Wherever the customer needs them.

It is exactly this that distinguishes WAGO: a mixture of quality, good products, innovative force and worldwide presence, perfectly matched to the customers' requirements.

Even the innovative WAGO KNX/EIB components are seamlessly integrated in the WAGO-I/O-SYSTEM. This provides a large choice of input and output modules, special modules to sub-bus systems such as DALI, and controllers for higher-level networks such as Ethernet.

Once selected, configurations are not fixed. Changes and expansions are possible at any time, at the planning stage, during the building phase and even several years later.

The WAGO-I/O-SYSTEM can be used as a simple application controller, and also as an open programmable control system according to IEC 61131-3. Web servers are automatically integrated within the Ethernet-based controllers as an operator interface. The control units replace several individual KNX/IEB components cost-effectively as room and zone controllers.

The WAGO-I/O-SYSTEM has been used in building technology for many years and is thus accepted by many designers, electrical installers, system integrators and users - an important sales argument in the competition for your valuable orders.

It is no coincidence that components and composition have the same roots. Components are more than individual parts but are perfectly matched elements of a complete composition.

With this level of market acceptance, the technical features and the continuous development by WAGO, the WAGO-I/O-SYSTEM provides the security of investment that modern, flexible buildings need.

Designer

- Existing systems can be expanded using new, previously unavailable functions
- All subsections can be planned using one manufacturer
- All applications can be implemented with one device
- The whole system provides flexibility for customer wishes
- Positive energy balance by bringing together several functions; long system life
- Same components used for industrial and building applications
- Compliance with the norms/certificates well beyond the building technology standard

Installer

- WAGO-ETS 3 plug-in provides the familiar operator interface
- New applications (from simple logic functions to complex control tasks)
- Standard applications can be easily created using pre-designed applications and the free programming facility; project-specific applications can be flexibly expanded
- Connection technology provides familiar safety during installation

System integrator

- New applications possible, e.g. in the heating and ventilation field
- WAGO-ETS 3 plug-in provides the familiar user interface
- One hardware system for different technologies
- Economic due to universal use across many subsections
- Large number of data points on one controller
- Function blocks available for general applications, heating and ventilation and other applications (E-mail, SMS, etc.)
- Operator interface can be implemented via web server

User

- Existing systems can be expanded using new, previously unavailable functions
- Long system life with guaranteed continuity of supply
- Cost-effective web-based service and maintenance interface automatically incorporated
- Single spare parts holding
- Free choice of service providers for the comprehensive overall system
- Service-friendly thanks to easy changing of individual modules