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Технические характеристики

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Building automation system

Building automation today is a lot more than lighting control, it is a way to save energy and to improve wellbeing and people efficiency. Like a person, an automated building/house can change over time, following evolving needs, easily adapting itself to new solutions. The automation in buildings means energy saving, reduced CO_2 emissions and improvement of the environment in compliance with the national and international guideline.
The new building automation system by Carlo Gavazzi offers this new way of living to its customers: let's discover all the advantages and applications!

A dynamic and evolving system

Carlo Gavazzi delivers a new way of designing a house or a building, thanks to its flexibility and modularity.
It is based on a patented digital bus, the two-wire Dupline® bus, very powerful in transmitting all the information needed in building automation. Thanks to the bus concept, the system can be expanded at any time without important structural changes in the installation and with excellent management of the costs. Furthermore, the functions can be changed and/or updated very easily by means of a software at any time and from anywhere, also remotely. Thanks to this, the system is always alive, dynamic, and easily adapted to the evolving requirements of the home owner and to the fast-progressing world of high technology. Carlo Gavazzi's system delivers complete solutions for home and building automation, including lighting scenarios to select the best ambience, shutter control to regulate perfect light and shade, temperature management to combine optimum comfort with optimum efficiency, intrusion, flooding and smoke monitoring to protect from any burglary or damage to the house, a scheduler to program all events and basic functions. All this creates very special automation. The system also includes energy monitoring, logging power, water and gas consumption and whatever information is present on the bus (temperatures, humidity, light level, ….). All this data is available on graphs, just by using a smart device or a PC, thanks to the embedded webserver. Moreover, the system is an open platform designed for easy and fast integration with products from other companies, since we use protocols based on TCP/IP, for which we deliver the complete documentation.

Fast commissioning without any addressing

One of the most innovative features is that no addressing of modules is needed: the installer just has to mount all the modules, launch a network scan and the system will find and automatically recognise the connected devices without the need to go around the whole installation making association or addressing. This means time and cost savings and an error free configuration process.

Diagnostic function for easier troubleshooting

If any trouble should occur, the system provides powerful diagnostic functions in order to make the fault finding much easier: the bus is always monitored, giving information about shortcircuits, bus voltage and bus load, noise level and quality of the bus signals. The presence of the programmed devices is always monitored in order to give an immediate message if one is faulty. All this information is logged in a file so that the installer can check at any time what is happening.

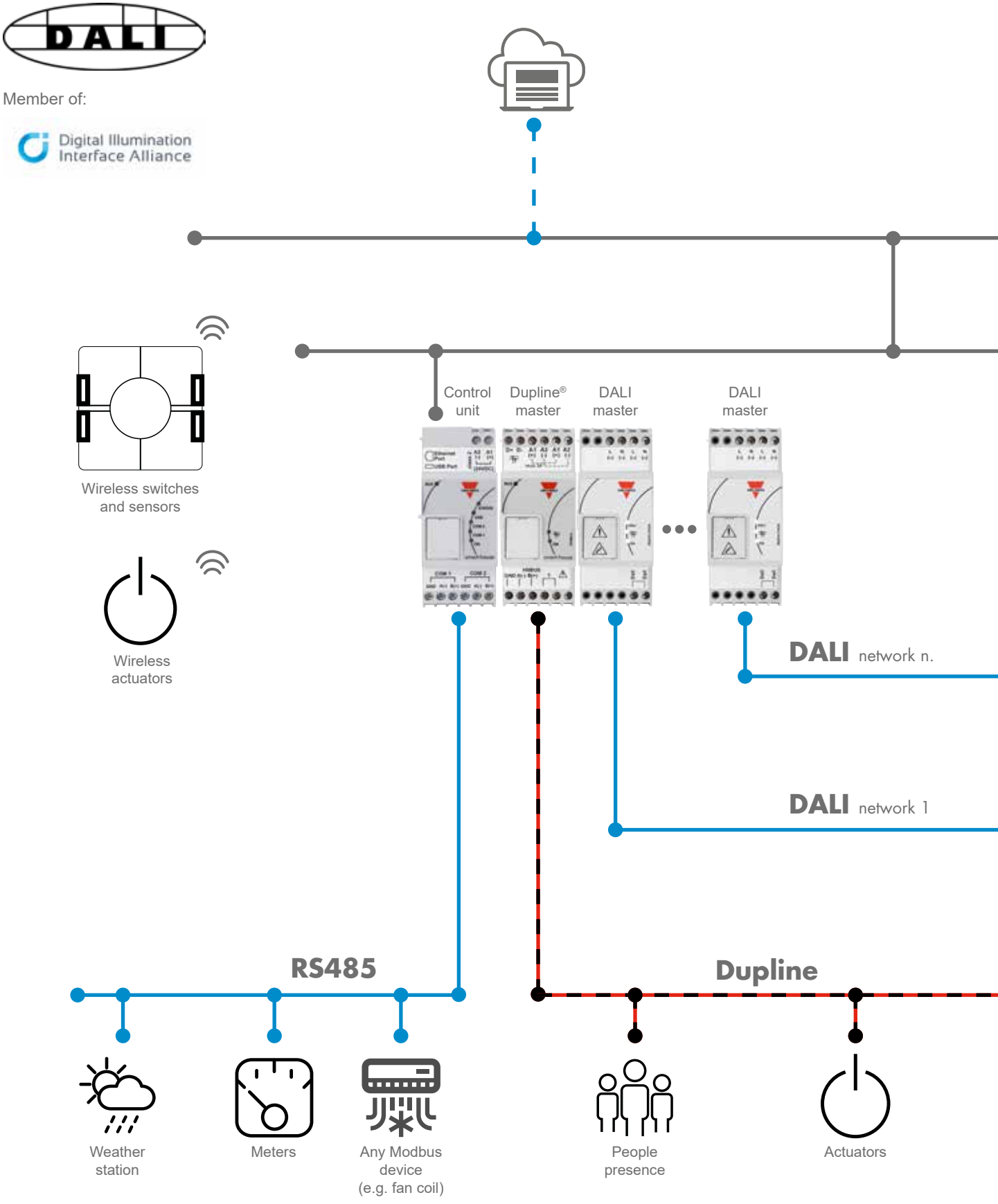
State of the art software to guide users

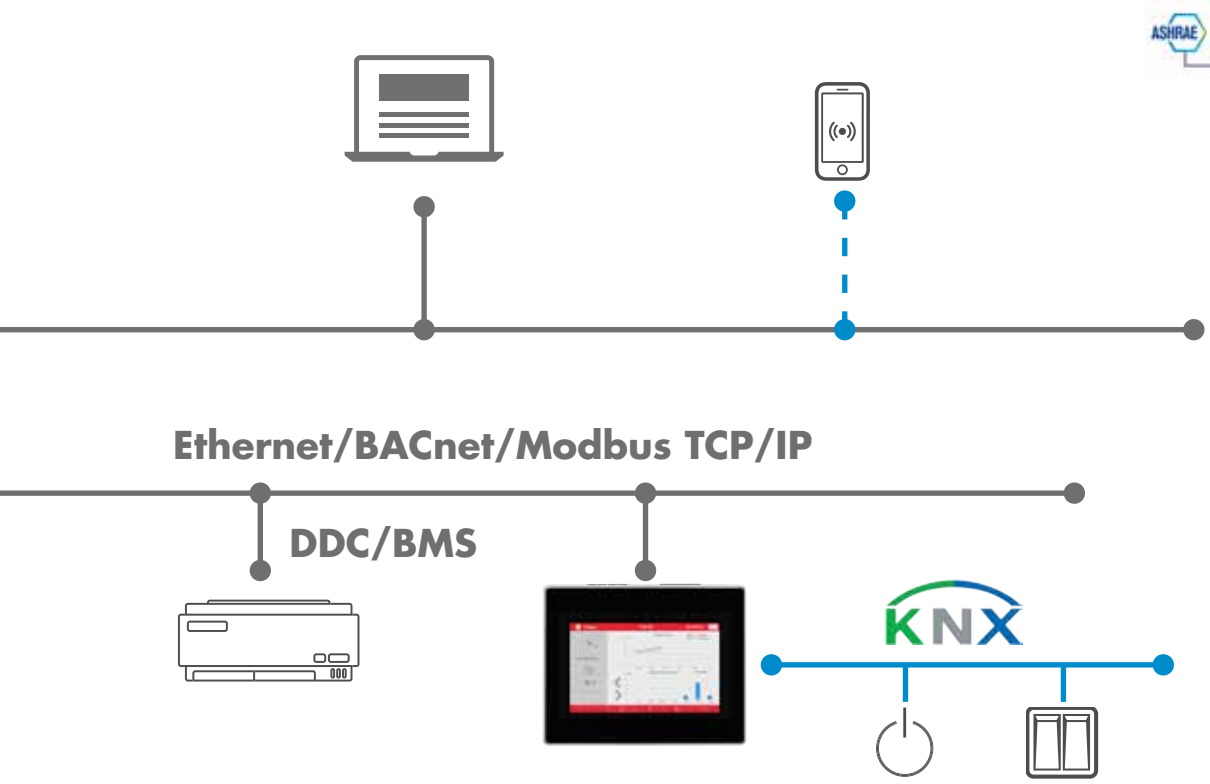
The configuration of the system is easily carried out with the free Sx tool that is downloadable from the Carlo Gavazzi website. The software has been developed using a state of the art concept in order to have a user friendly interface that guides the user in a fast and error free system configuration. At the same time, thanks to many basic functions, the most skilled user can also create customised applications. Furthermore, the Sx tool has many debug features to make testing easier .

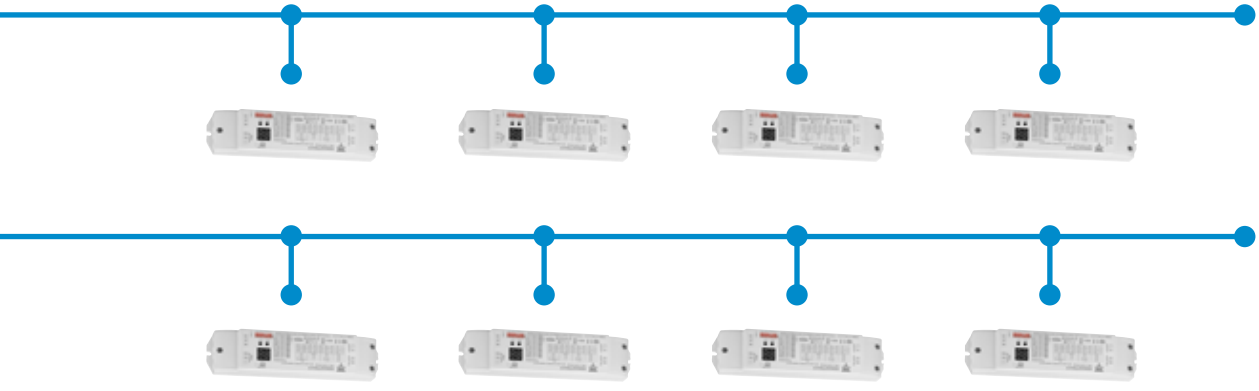
Carlo Gavazzi's comprehensive system

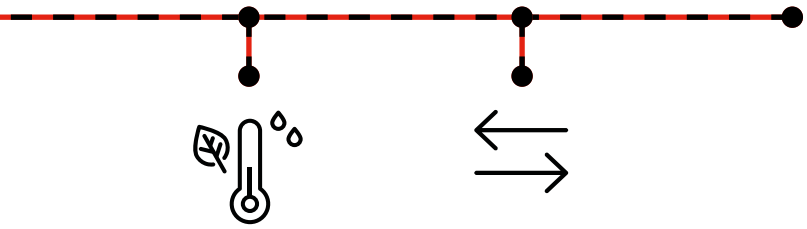
Member of:

Digital Illumination Interface Alliance









Environmental sensors (temperature, himidity, CO_2

Analogue inputs/outputs (4-20mA, 0-10V...)

Brain and communication

SH2WEB24/SB2WEB24/SA2WEB24: the controller

Carlo Gavazzi's system is based on a central CPU, the Sx2WEB24, a Linux based embedded PC that manages all the smart functions. It is programmed by means of powerful software, the Sx tool. The Sx2WEB24 has the Ethernet communication capability to be remotely controlled and monitored by smart-devices/PCs; it is also a datalogger that can record any value/event coming from the many buses it can connect to (Wireless and Dupline® buses, two RS485 ports, Ethernet). This master unit is also provided with an sd-card and USB port to upload/download data and system configurations

Fast commissioning

The innovative concept of the local bus makes commissioning very easy, fast and error free: the installer only has to plug the DIN modules next to one another without wiring any bus cable in the cabinet, saving time and drastically reducing installation costs.
The wiring of the decentralised modules such as light switches, movement sensors, etc is also made very straightforward thanks to the screwless and detachable connectors: wires only need to be plugged in and everything is done!

The heart

The bus generators

If the Sx2WEB24 is the brain of the system, the two bus generators are the pulsating heart that makes all the information flow. They are connected to the Sx2WEB24 via the high speed bus that is present both on the local bus and on the terminals at the bottom. This means that the connection is very fast and easy in a cabinet, since the modules only have to be plugged together without any wiring, and at the same time it is very straightforward if the bus generators have to be mounted in different cabinets. Up to 7 bus generators can be connected to one Sx2WEB24.

SH2MCG24: the wired smart Dupline® bus generator

The SH2MCG24 is the smart Dupline® bus generator that enables the Dupline® bus to communicate with the local bus and with the terminals at the top. Thanks to this the DIN-rail slave modules (dimmers, relays, rollerblind modules, etc...) can just be plugged into the SH2MCG24, without the need for any wiring.

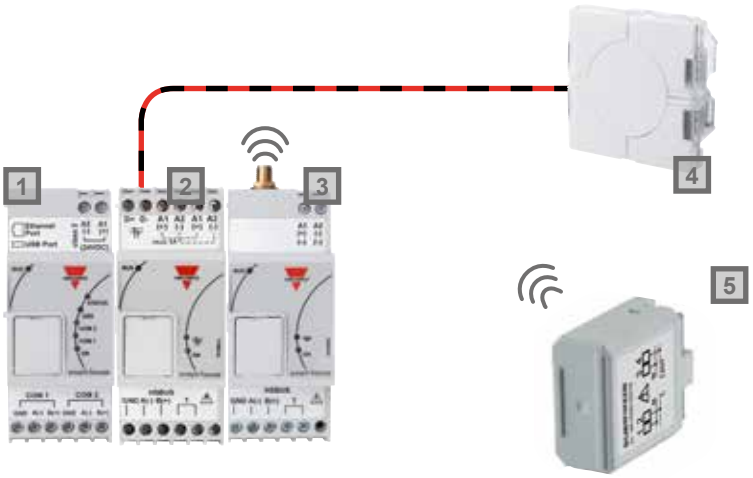
The decentralised modules, such as light switches, PIR sensors, temperature display, ...are connected to the SH2MCG24 by the two wires coming from the Dupline® terminals at the top. Up to 250 modules can be connected to one SH2MCG24.

SH2WBU230N: the wireless wiDup bus generator

The system also provides a solution for when it is not possible to use wires. The SH2WBU230N is the wireless bus generator that can control wireless light switches and output relay modules. The wireless bus is based on the standard IEEE 802.15.4 @2.4Ghz. Up to 250 modules can be managed by one SH2WBU230N. The open space operating distance is 700m.

Wired and wireless buses work together

1 SH2WEB24
2 SH2MCG24
3 SH2WBU230N
4 SHA4XLS4TH
5 SHJWRE10AE230
Dupline® bus.



Functionalities

DALI lighting control

The DALI control system by Carlo Gavazzi not only provides cutting edge lighting control for commercial and residential lighting requirements but also within the same single system structure, a comprehensive shading and temperature control. The clear driving force today in lighting control is to make the best use of the energy consumed by the building under design. A key area for potential energy savings, and therefore a focus for legislators, is lighting provision. It may be as simple as proper timed control, the use of sensors and dimming technology for daylight harvesting or precise control for individual task lighting. Furthermore, alterations or additions in DALI systems are easy to achieve as the installation can be reused over and over, saving you money and downtime.

1 SHA4XLS4P90L
SHE5XLS4P90L
Light switch with integrated 90° PIR sensor and luxmeter

2 SHJWD200WE230
Wirless dimmer with energy reading

3 SH2RE16A4
4-relay module

4 Junction box

—: Dupline® BUS

Temperature and CO_2 control

The temperature control function has been developed to suit the needs of both small homes and big buildings thanks to the management of independent zones. The SB2WEB controller is empowered with the BACnet protocol so that it provides the link to upper level BMS and DDC client via BACnet/IP. All the functions and I/Os are controlled and managed via BACnet for example adjusting operating parameters or reading environmental data.
Air quality is another important aspect to consider in building automation: it is recommended that the content of CO_2 should be below 1,000 ppm in an indoor environment. Some of the benefits with a low CO_2 level are better concentration, wellbeing, higher learning capability and improved patience recovery.
Carlo Gavazzi delivers specific CO_2 sensors and ventilation control to assure occupant health.

1 SHSUCOTHD
Temperature, humidity and CO_2 sensor

2 SHPOUTV224
0-10V analogue output module

3 BDA-RE13A-U
Relay output module

4 Junction box

—: Dupline® BUS

Functionalities

Tunable white stimulation

"Human centric lighting" is a new term what emphasizes light as a main factor influencing human behaviour in his life space. It simultaneously takes into account our requirements for good vision as well as our emotional and biological needs.
Typical use cases of tunable white lamps in various segments are:

Education - Decreased fatigue and shortened wake-up times, extended and deepened concentration periods.
Office - Increased employee motivation and commitment, individualized maximization of concentration and energy.
Wholesale and retail - Daylight-compatible product presentations, extended daytime in shopping malls. Inviting a customer to buy goods and suggesting freshness and positive mood.
Hospital - Enhanced drug efficiency, e.g., of antidepressants, reduced therapy times and capacity requirements.
Carlo Gavazzi solution helps you tailor the colour and feel of a space to user needs and desires.

1 SB2DALIT8230
DALI master

2 SBQP360L24MF
Movement sensor with integrated luxmeter

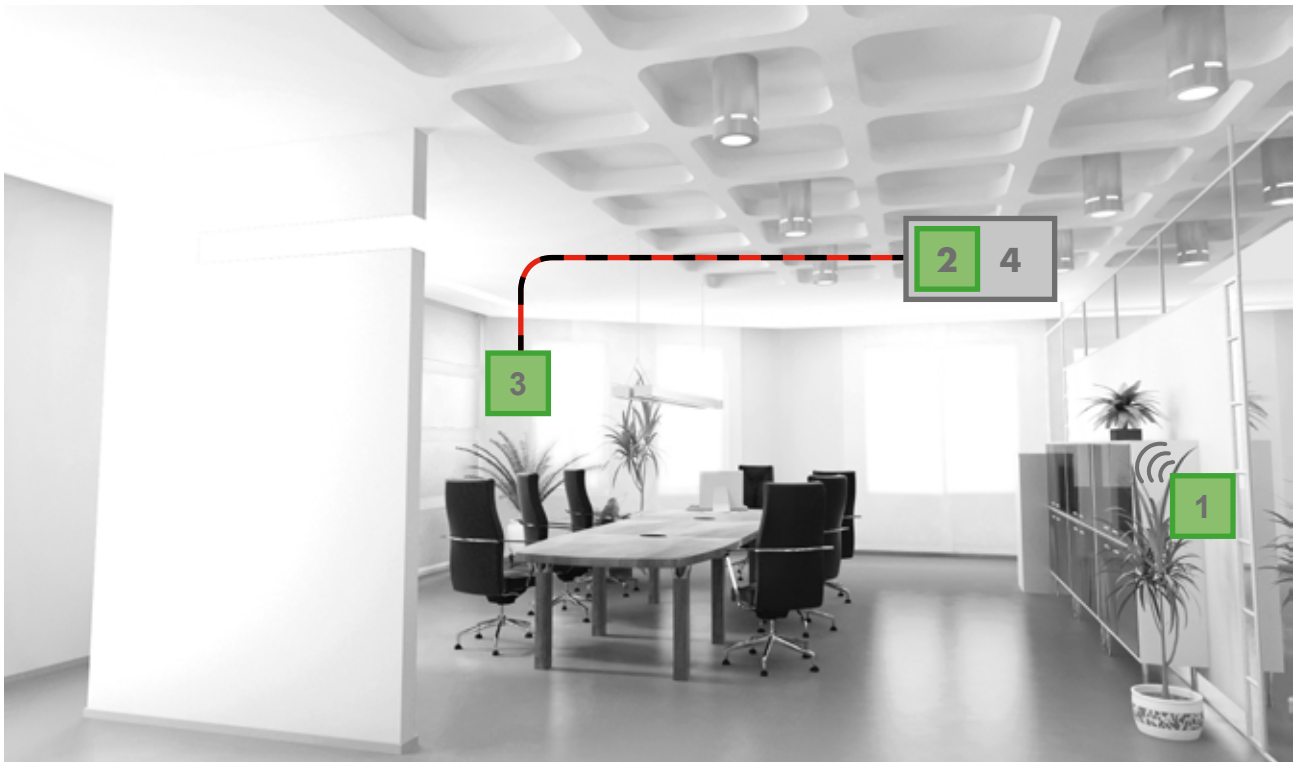
3 SHE5XWLS4BFT
Wireless light switch and temperature sensor

4 Junction box

—: Dupline® BUS

Shade control

Carlo Gavazzi functions for automated blinds can help control lighting, temperature and privacy, as well as enhancing comfort and security. The user can move these manually, using the same kind of switches as are used for light, or have them automatically moved according to predefined light levels, rain and wind presence, temperatures and the scheduler.
Carlo Gavazzi system for building automation also manages curtains with tilting flaps in a very efficient way.
The blinds and windows can be controlled individually or by group: this choice can be defined once the installation is finished and at any time later.
Energy saving is achieved also by means of a proper use of blinds and curtains.



1 SHE5XWLS4BFT
Wireless light switch and temperature sensor

2 SH2RODC224
Roller blind module

3 SHSPP90L
PIR sensor with integrated luxmeter

4 Junction box

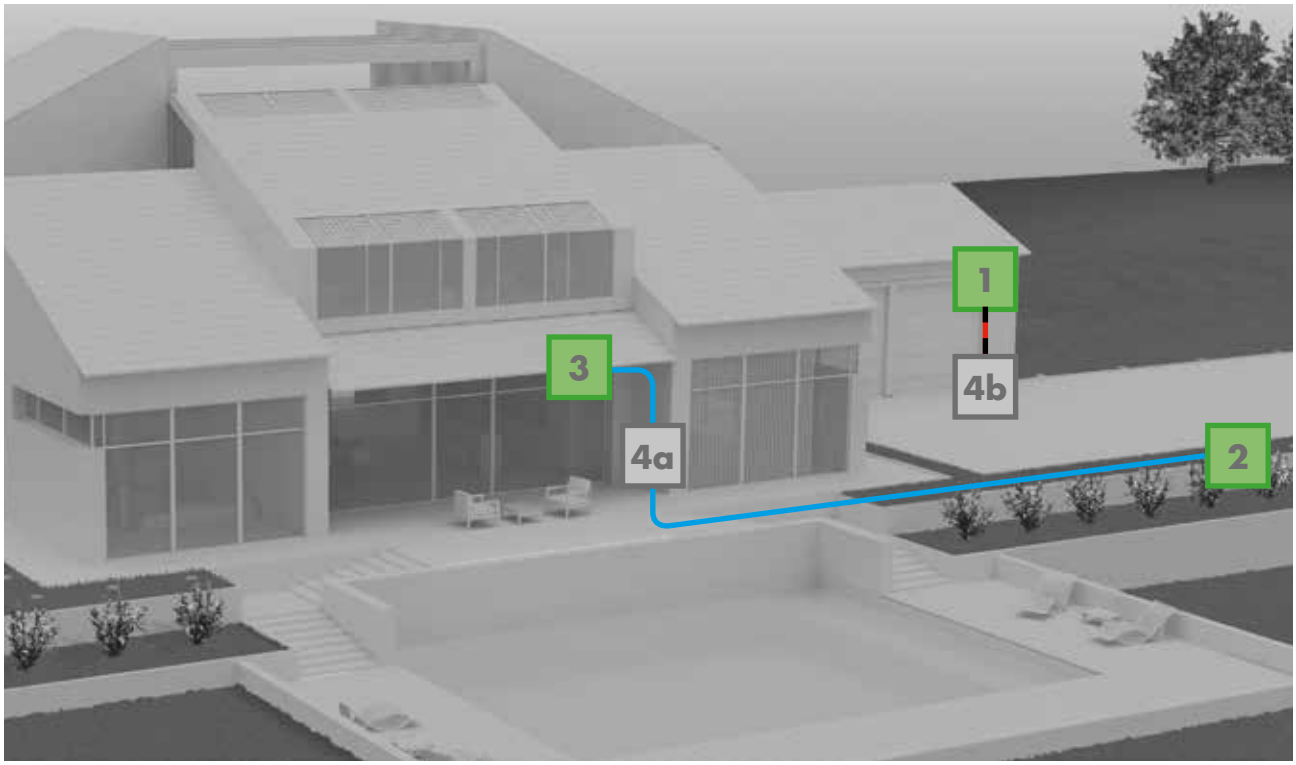
—: Dupline® BUS

Functionalities

Sequences: one click to do many things

Sequences is a powerful tool offered by the system: the user can put together the functions already created to activate/deactivate them with just one click. For example, when the home owner activates the "Good bye" sequence when exiting his house, the intruder alarm is activated, all the lights are switched off, all the blinds go down and the temperatures are set to the economy level. In the same way, when he comes back home, by activating the "Welcome" sequence all the required lights are switched on, the blinds go up, soft music or the television can be turned on, and so on … there are no limits to the possibilities offered by the smart-house system.

Waking up in the morning can be programmed to be very gentle in a smart-house: the blinds go up to a predefined level very slowly so that the light intensity is not too strong, soft music starts and the temperature is programmed to reach the comfort level required.



1 SHOWEAGPS
Weather station

2 SH2RE16A4
4-relay module

3 SH2D10V424
Dimmer module

4 a: Cabinet
b: Junction box

—: Dupline® BUS

—: Load control

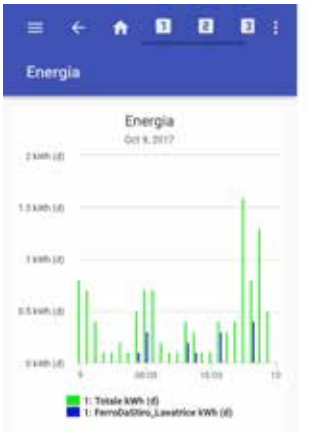
Energy monitoring and data logging

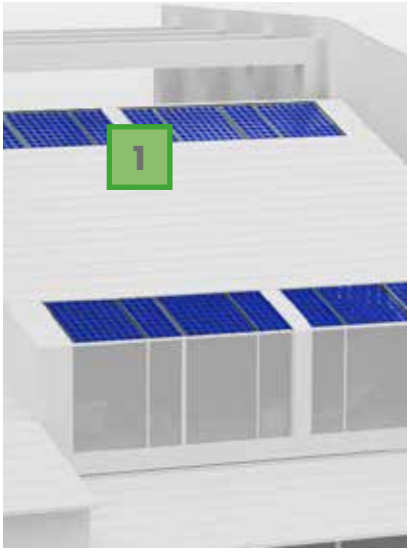
The system reads and logs the electrical values and displays them in graphics, comparing them with the previous day, or presents them in downloadable excel and csv files.
The reading can be done using:

- Any Modbus device (e.g. meters, analysers, fan coils, heat pumps,...).
- The Dupline® output modules with energy reading capability (dimmer module, DIN-rail relay module and wireless relay output module): the information is sent via the Dupline® bus.
- The Dupline® DIN-rail pulse counter connected to an energy meter: the information is sent via the Dupline® bus.

At the same time, the installer can create simple logic to switch the loads off automatically if the consumed power exceeds the pre-set threshold, or they can be activated only according to a defined time table at cheaper electricity tariffs.
In the same user friendly format, the user can also view the consumption of gas and water.

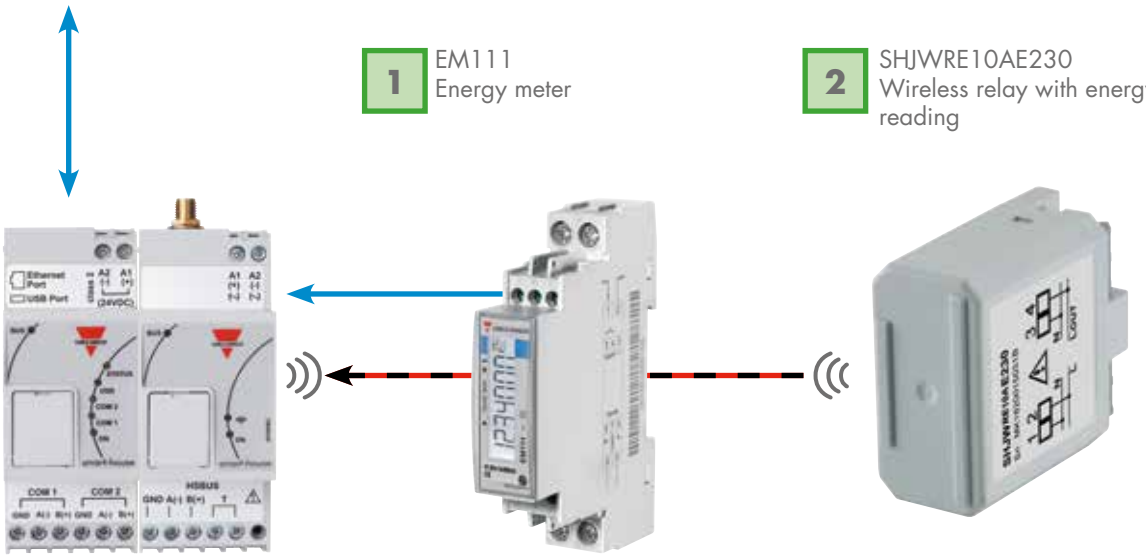
As with all the electrical values, the system can log any analogue value and present it in graphs.
The graphs and instant values can be seen by using smart-devices such as mobile phones, tablets, PCs.





1 EM111
Energy meter

2 SHJWRE10AE230
Wireless relay with energy reading



SH2WEB24
SH2WBU230N

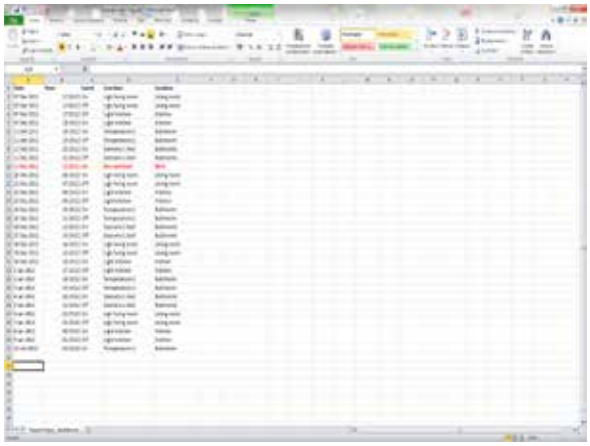
: RS485

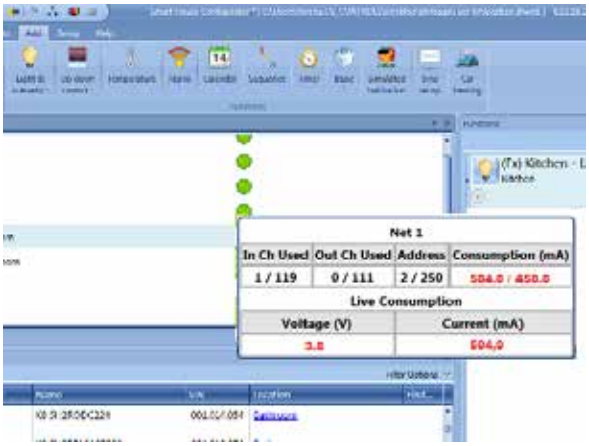
: Dupline® BUS or wireless wiDup

Software

Diagnostic function

The Carlo Gavazzi's system provides information about its working status and makes it available by using the Sx tool and the webserver.
During commissioning, the installer is always aware of the working status of the connected buses bus, since the bus voltage, bus load and short-circuit are monitored, as well as the quality of the signal: thanks to this, if any fault should occur, the installer will be informed without going all around the installation to look for it, thus saving time and money.
At the same time, each module is monitored to check if it is alive, working well and without any alarm/warning message such as over current, over voltage or over temperature, and the result is always available via smart-devices, so that the home owner can also be alerted in advance if any fault is going to occur.
The system also advises if a lamp or, in general a load , is broken or not working anymore, reminding the user to change or repair it.
All the diagnostic events are logged in a file that can be accessed locally or remotely, providing the installer with a way to look into the problem even if it occurred in the past.





SmartHub: the touch display

In the living room or at the entrance, the SmartHub display is the ideal solution to control a smart-house with a finger touch. It is connected to the Sx2WEB24 master unit via Ethernet and it is configured by the easy-to-use Wizard software, which automatically reads the Modbus TCP/IP variables of the master unit and assists the installer in creating the user interface with a comprehensive object library and templates. All the functions such as lights, scenario, light and shade, alarms, temperatures, …can be controlled by the SmartHub. It can also be linked to external monitoring systems, such as surveillance IP cameras, to monitor parts of a building directly from the touch panel. Furthermore, audio/video systems with Modbus TCP/IP capability can be connected to control music and entertainment.

Sx tool: the configuration software

The master unit is programmed by means of the configuration software Sx tool, downloadable free from the Carlo Gavazzi website. The Sx software has been developed to make commissioning fast, easy and error free: the wizard tool guides the user step by step in the creation of predefined functions. As soon as the software is connected to a master unit, it scans the network and finds all the connected modules. Thanks to this feature, the installer doesn't have to worry about any addressing of the modules, since it is done automatically, saving a lot of time and drastically reducing the numbers of errors. In a very intuitive way, the user can create a map of the installation where he will place the required modules and create all the automation, either with predefined functions or by using special logic with the basic functions.

Create a "tree" map of the installation.

1

Add all the installed modules with an automatic network scan.

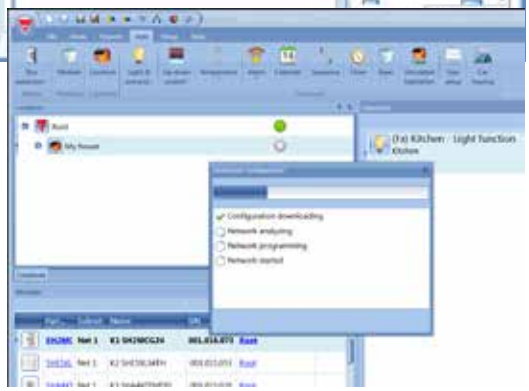
2

Create your functions in a very simple way by means of the wizard tool.

3

Download the configuration locally and remotely into the master unit Sx2WEB24.

4



Our product range

Switches

		Colour/ Dimensions (mm)	Mounting	LED	Power supply	Other functions
	**B4X-LS4-U**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	
	**B5X-LS4-U**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	
	**SHA4XLS4TH**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	With temperature and humidity sensor
	**SHE5XLS4TH**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	With temperature and humidity sensor

Switches with integrated motion detector and luxmeter

		Colour/ Dimensions (mm)	Mounting	LED	Power supply	Main features
	**SHA4XLS4P90L**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	4 push buttons, 90° PIR and luxmeter
	**SHE5XLS4P90L**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	4 push buttons, 90° PIR and luxmeter

Temperature displays

		Colour/ Dimensions (mm)	Mounting	LED	Power supply	Main features
	**SHA4XTEMDIS**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	Measuring range: -10°C to +50°C, 3 setpoints
	**SHE5XTEMDIS**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	Measuring range: -10°C to +50°C, 3 setpoints

Outdoor temperature sensor

		Colour/ Dimensions (mm)	Mounting	Connection	Power supply	Measuring range
	**BSI-TEMANx-U**	White/ 67x35x15	Wall mounting	Cable or plug	By bus	-40°C to +50°C

Movement/Presence detectors

		Colour/ Dimensions (mm)	Mounting	LED	Power supply	Other functions
	**B4X-PIR90-U**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	Operating distance: 8m Angle: 90°
	**B5X-PIR90-U**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	Operating distance: 8m Angle: 90°
	**BSD-PIR90-U**	White/ 104x55x57	Wall mounting	Red	By bus	Operating distance: 10m Angle: 90°
	**BSB-PIR90-U**	White/ Ø 76x25	Ceiling mounting	Blue	By bus	Operating distance: 6m Angle: 90°
	**BSP-PIR90-U**	White/ 67x52x34	Wall mounting	Blue	By bus	Operating distance: 15m Angle: 90°
	**SHA4XP150**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	Operating distance: 8m Angle: 150°
	**SHE5XP150**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	Operating distance: 8m Angle: 150°

Movement/Presence detectors with luxmeter

		Colour/ Dimensions (mm)	Mounting	LED	Power supply	Other functions
	**SHA4XP90L**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	Operating distance: 8m Angle: 90°
	**SHE5XP90L**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	Operating distance: 8m Angle: 90°
	**SHSDP90L**	White/ 104x55x57	Wall mounting	Red	By bus	Operating distance: 10m Angle: 90°
	**SHSBP90L**	White/ Ø 76x25	Ceiling mounting	Blue	By bus	Operating distance: 6m Angle: 90°
	**SHSPP90L**	White/ 67x52x34	Wall mounting	Blue	By bus	Operating distance: 15m Angle: 90°
	**SBQP360L24M...**	White/ Ø 96.5x70.6 Ø 95.0x81.5	Flush or built-in mounting	White and blue	By bus	Operating distance: 24m Angle: 360°
	SHQP360L7M...	White/ Ø 96.5x70.6 Ø 95.0x81.5	Flush or built-in mounting	White and blue	By bus	Operating distance: 7m Angle: 360°
	**SHA4XP150L**	Black, white/ 44x44	Wall box Bticino, Niko, Fuga	White and blue	By bus	Operating distance: 8m Angle: 150°
	**SHE5XP150L**	Black, white/ 55x55	Wall box Elko, Gira, Jung	White and blue	By bus	Operating distance: 8m Angle: 150°

Our product range

Luxmeter for indoor and outdoor installation

		Colour/ Dimensions (mm)	Mounting	Connection	Power supply	Measuring range
	**BSH-LUX-U**	White/ 55x53x36	Wall mounting	Cable	By bus	Measuring range: 0 to 20Klux Operating temperature: -30° to 60°C

Light switch interfaces

		Dimension (mm)	Inputs number and type	Outputs number and type	Ouput voltage	Power supply
	**BDB-INCON4-U**	28x28x10	4, voltage free			By bus
	**BDB-INCON8-U**	28x28x10	8, voltage free			By bus
	**BDB-IOCP8-U**	28x28x10	4, voltage free	4, PNP	3.3 V	By bus
	**BDB-IOCP8A-U**	28x28x10	4, voltage free	4, PNP	8.0 V	By bus

Digital input modules

		Dimension (mm)	Inputs number	Input type	Power supply
	**BDD-INCON4-U**	107x50x110	4	Voltage free or NPN	By bus

Voltage input modules

		Dimension (mm)	Inputs number	Input type	Power supply
	**BDA-INVOL-U**	28x28x10	1	Opto-isolated voltage input 90-265 VAC	By bus

Anemometer

		Dimension (mm)	Type	Mounting	Power supply	Main features
	**BSN-ANE-U**	183x137x145	Cup anenometer	Wall mounting	By bus	Measuring range: 2 m/s to 25m/s Heating system

Weather station

		Dimension (mm)	Measurements	Power supply	Main features
	**SHOWEAGPS**	96x77x118	Light, wind, temperature, GPS receiver	10 to 40 Vdc, 12 to 28 Vac	Operating temperature: -30° C to 50°C Communication: Modbus RTU

Water detector

		Dimension (mm)	Colour	Mounting	Power supply	Main features
	**BSF-WAT-U**	70x39x15.5	White	Wall mounting	By bus	Input for Felson probe, IP67

Smoke detector

		Dimension (mm)	Colour	Mounting	LED	Power supply	Main features
	**BSG-SMO-U**	Ø 100x54	White	Ceiling mounting	1, Red	By bus	Detection area: 60 m^2 Battery back-up (9Vdc battery)
	BSG-SMOA-U	Ø 100x54	White	Ceiling mounting	1, Red	By bus	Detection area: 60 m^2

Programmable keypad

		Dimension (mm)	Mounting	LED	Power supply	Main features
	**BACC-KEYPAD-DC-U**	130x50x8	Wall box indoor and outdoor	3, programmable	12 Vdc	28 user-programmable codes Buzzer output

Environmental sensors

		Mounting	Power supply	Main features	Indication
	SHSUCOT	Wall mounting, 80x90x26 mm	By bus	CO_2 and temperature sensor	
	**SHSUCOTD**	Wall mounting, 80x90x26 mm	By bus	CO_2 and temperature sensor	Display
	**SHSUCOTL**	Wall mounting, 80x90x26 mm	By bus	CO_2 and temperature sensor	RGB LEDs
	SHSUCOTH	Wall mounting, 80x90x26 mm	By bus	CO_2, temperature and humidity sensor	
	**SHSUCOTHD**	Wall mounting, 80x90x26 mm	By bus	CO_2, temperature and humidity sensor	Display
	**SHSUCOTHL**	Wall mounting, 80x90x26 mm	By bus	CO_2, temperature and humidity sensor	RGB LEDs
	SHSUT	Wall mounting, 80x90x26 mm	By bus	Temperature sensor	
	**SHSUTD**	Wall mounting, 80x90x26 mm	By bus	Temperature sensor	Display
	SHSUTH	Wall mounting, 80x90x26 mm	By bus	Temperature and humidity sensor	
	**SHSUTHD**	Wall mounting, 80x90x26 mm	By bus	Temperature and humidity sensor	Display

Our product range

Analogue input modules

		Dimension (mm)	Inputs number and type	Power supply
	**SHPINV324**	50x30x18	3, 0 to 10 V	24 Vdc
	**SHPINV2T1P124**	50x30x18	2, 0 to 10V; 1, thermistor 10K3; 1, potentiometer 1-11Ω	24 Vdc
	**SHPINT1P1**	50x30x18	1, thermistor 10K3; 1, potentiometer 1-11Ω	By bus
	**SHPINNI2**	50x30x18	2, configurable pt1000/ni1000	By bus
	**SHPINA224**	50x30x18	2, 0-20mA/ 4-20mA	24 Vdc

Analogue output modules

		Dimension (mm)	Outputs number and type	Power supply
	**SHPOUTV224**	50x30x18	2, 0 to 10 Vdc	24 Vdc

Dupline® transparent module

		Mounting	Main features
	**SH1DUPFT**	DIN rail (1 module)	Transparent Dupline® module

Energy meter

		Mounting	Inputs number	Input type	Power supply	Main features
	**SH2EM16A230**	DIN rail (2 modules)	1	Monophase	230 Vac	Load: 16 A, 230 Vac

Dimmer modules

		Mounting	Outputs number	Dimming type	Power supply	Main features
	**SH2D500WE230**	DIN rail (2 modules)	1	230 V dimmable bulbs, LEDs	230 Vac	Power dimmer up to 500W, energy reading, local bus
	**SH2D500W1230**	DIN rail (2 modules)	1	230 V dimmable bulbs, LEDs	230 Vac	Power dimmer up to 500W, local bus
	**SH2D10V424**	DIN rail (2 modules)	4	1 to 10V dimmable ballast, LEDs	24 Vdc ±20%	Four independent outputs, local bus

Ouput modules

		Mounting	Outputs number	Output type	Power supply	Main features
	**BDA-RE13A-U**	Decentral	1	Bistable relay	By bus	Load: 16 A, 230 Vac
	**SH2RE16A2E230**	DIN rail (2 modules)	2	Bistable relay	230 Vac	Load: 16 A, 230 Vac x 2, with energy reading, local bus
	**SH2RE16A4**	DIN rail (2 modules)	4	Bistable relay	By bus	Load: 16 A, 230 Vac x 4, local bus
	**SH2RE1A424**	DIN rail (2 modules)	4	NO, voltage free contact	24 Vdc ±20%	Load: 5 A, NO x 4, local bus
	**SH2SSTRI424**	DIN rail (2 modules)	4	Solid state relay	24 Vdc ±20%	Load: 10 W x 4, local bus

Rollerblind modules

		Mounting	Outputs number	Motor type	Power supply	Main features
	**SHDRODC230**	Decentral	1	AC	230 Vac	Up/down control, tilting, local bus
	**SH2ROAC224**	DIN rail (2 modules)	2	AC	24 Vdc ±20%	Up/down control, tilting, local bus
	**SH2RODC224**	DIN rail (2 modules)	2	DC	24 Vdc ±20%	Up/down control, tilting, local bus

Digital input module/Pulse counter

		Mounting	Inputs number	Type	Power supply	Main features
	**SH2INDI424**	DIN rail (2 modules)	4	NPN, PNP, voltage free, pulse counter	24 Vdc ±20%	Configurable inputs, local bus
	**SHPINCNTS04**	Decentral	4	NPN, PNP, voltage free, pulse counter	By bus	Configurable inputs, S0 class B inputs
	**SHPINCNT4**	Decentral	4	NPN, PNP, voltage free, pulse counter	By bus	Configurable inputs

DALI

		Mounting / Dimensions	Power supply	Main features
	**SB2DALIT8230**	DIN rail (2 modules)	230 Vac	DALI master and power supply to control up to 64 ballasts
	**SBBADT8CCT**	210 x 50 x 32 mm	230 Vac	DALI driver for type 6 and type 8 LED

Our product range

Wireless modules, transmission based on IEEE 802.15.4, at 2.4 GHz

		Module type	Power supply	Main features
	**SHA4XWLS4**	Black/White light switch	Battery	44x44; 4 push buttons; LED indication; wall box Bticino, Niko and Fuga
	**SHE5XWLS4**	Black/White light switch	Battery	55x55; 4 push buttons; LED indication; wall box Elko, Gira and Jung
	**SHE5XWLS4BF**	Black flat light switch	Battery	55x55; 4 push buttons; LED indication; wall box Elko and Gira
	SHE5XWLS4BFT	Black flat light switch and temperature sensor	Battery	55x55; 4 push buttons; LED indication; wall box Elko and Gira
	**SHE5XWLS4WF**	White flat light switch	Battery	55x55; 4 push buttons; LED indication; wall box Elko and Gira
	SHE5XWLS4WFT	White flat light switch and temperature sensor	Battery	55x55; 4 push buttons; LED indication; wall box Elko and Gira
	**SHJWD200WEWLS230**	White dimmer, light switch and energy meter	230 Vac	Dimmer with integrated energy meter and 2 white pushbuttons, for Bticino frame
	**SHJWD200WEBLS230**	Black dimmer, light switch and energy meter	230 Vac	Dimmer with integrated energy meter and 2 black pushbuttons, for Bticino frame
	**SHJWD200WE115**	Dimmer and energy meter	115 Vac	Dimmer with integrated energy meter to be mounted into eurobox
	SHJWD200WE230	Dimmer and energy meter	230 Vac	Dimmer with integrated energy meter to be mounted into eurobox
	**SHJWEM16A115**	Energy meter	115 Vac	Energy meter to be mounted into eurobox
	SHJWEM16A230	Energy meter	230 Vac	Energy meter to be mounted into eurobox
	**SHJWRE10AEWLS230**	White relay, light switch and energy meter	230 Vac	Relay with integrated energy meter and 2 white pushbuttons, for Bticino frame
	**SHJWRE10AEBLS230**	Black relay, light switch and energy meter	230 Vac	Relay with integrated energy meter and 2 black pushbuttons, for Bticino frame
	**SHJWRE10AE115**	Relay and energy meter	115 Vac	Relay with integrated energy meter to be mounted into eurobox
	SHJWRE10AE230	Relay and energy meter	230 Vac	Relay with integrated energy meter to be mounted into eurobox
	**SHJWINS04xxx**	Input and pulse counter	230/115 Vac	Four programmable input: normally open, normally closed, pulse counter according to S0 class B
	**SHDWWISENxxx**	Window sensor	Battery	Door/window opening detected through sensor's body and a magnet separation with addition voltage free input

Smart dupline® repeater

		Mounting	Power supply	Main features
	**SB2REP230**	DIN rail (2 modules)	230 Vac	Smart Dupline® signal repeater that regenerates Dupline® signal and boosts power to extend the network lenght

Bus generators

		Mounting	Power supply	Main features
	**SH2MCG24**	DIN rail (2 modules)	24 Vdc ±20%	Smart Dupline® bus generator, up to 250 slave modules can be connected
	**SH2WBU230N**	DIN rail (2 modules)	24 Vdc +/-20% 115-240 Vac 50/60 Hz +/-10%	Wireless bus generator, up to 250 slave modules can be connected, based on IEEE EEE 802.15.4, @ 2.4 GHz
	**SH2DUG24**	DIN rail (2 modules)	24 Vdc ±20%	Dupline generator for BH8-CTRLx compatibility

Controllers (CPU)

		Mounting	Power supply	Main features
	**SH2WEB24**	DIN rail (2 modules)	24 Vdc ±20%	Home automation controller with datalogging capability. Linux based PC with 2 USB ports, Ethernet port, 2 RS485 ports, local bus
	**SB2WEB24**	DIN rail (2 modules)	24 Vdc ±20%	Building automation controller with datalogging capability and Bacnet. Linux based PC with 2 USB ports, Ethernet port, 2 RS485 ports, local bus
	**SA2WEB24**	DIN rail (2 modules)	24 Vdc ±20%	Room controller for hotel rooms and flats in condominium blocks

USB adaptor for dongle modem

		Mounting	Power supply	Main features
	**SH2DSP24**	DIN rail (2 modules)	24 Vdc ±20%	For USB dongle modem D-Link DWM 156 and 157, Huawey MS2131
	**HUAWEIMS2131**	USB port	By SH2DSP24	USB 3G DONGLE MODEM
	**SH-MODEMKIT**	-	-	Kit including SH2DSP24 and HUAWEIMS2131

Touch display

		Dimension (mm)	Power supply	Main features
	**BTM-T7-24**	187x147x47	24 Vdc ±20%	Windows CE, 7'', 800 x 480 pixel, Ethernet port
	**BTM-T4-24**	147x107x56	24 Vdc ±20%	Windows CE, 4.3'', 480 x 272 pixel, Ethernet port

BTM family

HMI colour touch panel

Description

BTM panels are completely configurable HMI touch devices available in three models, 7”, 10” and 15.6”.

The 7” and 10” models have a resistive touchscreen, the 15” has a capacitive unit.

They can be configured by means of the dedicated BTM-PC-IDE software that offers a wide range of widgets and communication protocols to develop projects that meet all the user requirements in several applications.

BTM panels come with Ethernet, serial and USB ports that match a wide range of use cases.

They are fully integrated into the UWP 3.0 ecosystem which includes a complete range of meters, sensors and actuators.

Benefits

- **High-performing** device with a powerful CPU for a wide range of applications in building automation and energy monitoring.
- **High definition TFT widescreen (16:9)** color touch panel with dimmable LED backlight available in three different sizes.
- **Fully programmable** by the dedicated IDE software with a vast library of widgets, functions and communication protocols.
- **Connectable to UWP 3.0 and to third-party field devices** via BACnet IP, BACnet MS/TP or Modbus TCP/IP, Modbus RTU and KNX IP.
- **Interoperability**: IIoT data distribution via MQTT and OPC UA.
- **Reliability**: Industrial grade hardware powered by Linux OS.

Applications

Monitoring and active control for building automation

The BTM panel can be connected to the UWP 3.0 controller via Modbus TCP/IP, RTU or via BACnet IP to manage and control, as a powerful HMI interface, all the building automation functions (i.e. lighting control, HVAC regulation, fire dampers, alarms handling and others). The parameters of the functions can be imported easily to the IDE software from the Modbus map or the BACnet EDE files generated from the UWP 3.0 Tool. This way, user can link those functions to the widgets available in the Widgets Gallery.

The BTM panel can also be connected to third-party devices, by using the available communication protocols, the connection to SCADA or the BMS systems.

Data logging and data automation with local display for grouping meters data into a switchgear or a machine

The BTM panel can be installed in a cabinet and connected to energy meters or analyzers to read the variables and the alarm events about electric, water or gas consumptions. Such data can be analyzed, aggregated, or displayed in trends, bar graphs or digital dashboards on the BTM screens, according to the user's requirements. The measurement data collected and stored can be saved, exported or exchanged with other systems via FTP, SMTP or by using the available protocols.

Local and remote custom dashboards

The integrated web server allows users to access HMI and web HMI projects via standard web browsers or mobile devices such as tablets or smart-phones. Users can create HTML5-based web projects to show the graphical pages displayed locally on the BTM screen so to provide remote access to the system.

Main functions

- Local HMI and remote Web-HMI for custom dashboards
- Data logger and gateway for creating data automation solutions
- IIoT Edge device for interfacing the field and the Cloud via secure protocols and OPC UA or MQTT standards

Main features

Protocols and communication

- Connectible to the UWP 3.0 controller via Modbus TCP/IP, Modbus RTU and BACnet IP
- Connectible to third-party devices via Modbus TCP/IP, Modbus RTU, BACnet IP, BACnet MS/TP, KNX IP and KNX TP*
- Up to 32 Modbus devices connectible to the RS485 port
- Remote monitoring and control with MAIA Cloud**
- OPC UA server / client for Industry 4.0 applications to exchange data among HMI, PLC and equipments.
- MQTT service for IIoT messaging compatible with any MQTT broker, including those offered by providers such as Amazon, Microsoft, IBM, Microsoft.

**through an expansion optional module for BTM-T15-PLUS*
***MAIA Cloud will be available from 2022*

Web capabilities

- Integrated web HMI with HTML5 and Javascript support
- Custom web interface with user's permission management

BTM-Txx-RSE structure

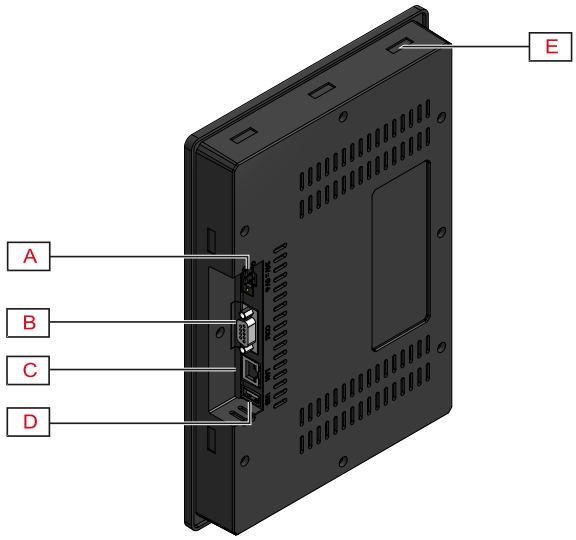


Fig. 1 *Structure*

Area	Description
A	Power supply
B	Serial port
C	Ethernet port 0 (10/100 Mb)
D	USB port
E	Holes for fixing brackets: 4x BTM-T7-RSE / 11x BTM-T10-RSE *Note: the fixing brackets are included*

BTM-T15-RSE structure

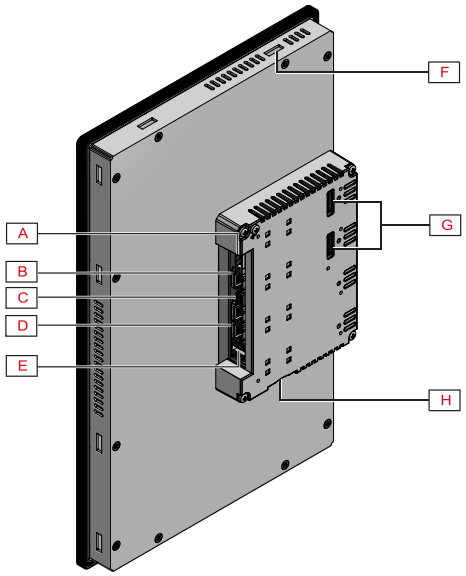


Fig. 2 *Structure*

Area	Description
A	Power supply
B	Ethernet port 0 (10/100 Mb)
C	Serial port
D	Ethernet port 1 and 2 (10/100 Mb)
E	USB port 1 and 2
F	Holes for fixing brackets: 4x BTM-T7-RSE / 11x BTM-T10-RSE *Note: the fixing brackets are included*
G	Expansion slots for plug-in module (I/O module)
H	SD Card slot

Features

General

Model	BTM-T7-RSE	BTM-T10-RSE	BTM-T15-PLUS
Material	Plastic		Aluminum
Dimensions (HxWxD)	See fig. 1		See fig. 2
Weight	0.6 Kg	1.0 Kg	4.1 Kg
Colour	Black	Black	Grey (back) Black (front)
Protection degree	IP66 (front), IP20 (back)		

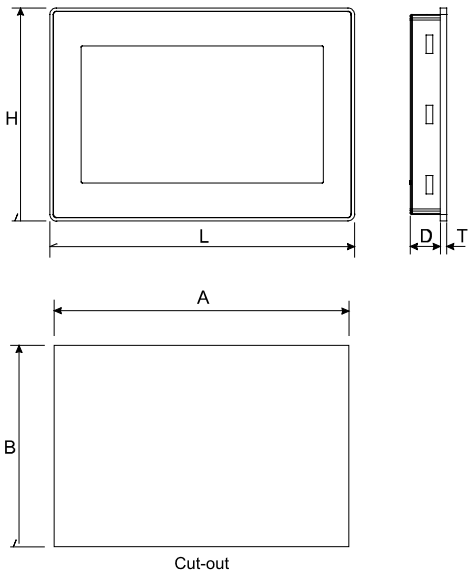


Fig. 3 *Dimensions BTM-Txx-RSE*

Model	L	H	D	A	B	T
BTM-T7-RSE	187 mm / 7.36”	147 mm / 5.79”	29 mm / 1.14”	176 mm / 6.90”	136 mm / 5.35”	5 mm / 0.19”
BTM-T10-RSE	282 mm / 11.10”	197 mm / 7.75”	29 mm / 1.14”	271 mm / 10.66”	186 mm / 7.32”	6 mm / 0.23”

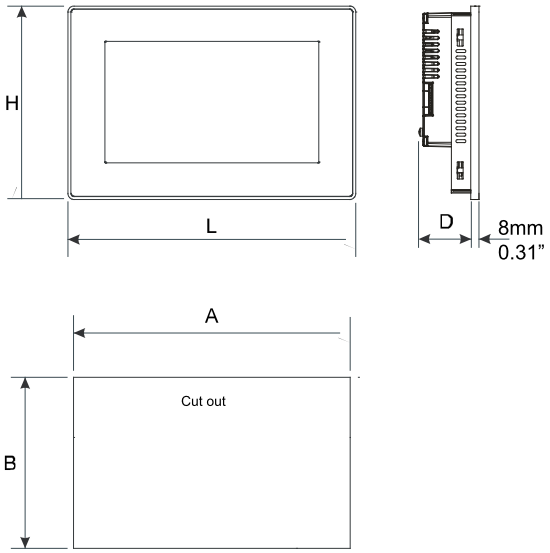


Fig. 4 *Dimensions BTM-T15-PLUS*

Model	L	H	D	A	B
BTM-T15-PLUS	422 mm / 16.60”	267 mm / 10.50”	56 mm / 02.20”	411 mm / 16.18”	256 mm / 10.00”

Environmental specifications

Model	BTM-T7-RSE	BTM-T10-RSE	BTM-T15-PLUS
Operating temperature	0° to 50°C		-20°C to +60°C
Storage temperature	-20°C to +70°C		
Humidity	from 5 to 85% R.H. non-condensing		

Compatibility and conformity

Model	BTM-T7-RSE	BTM-T15-PLUS
CE	Emission EN 61000-6-3 for installation in residential environments EN 61000-6-2 for installation in industrial environments	
c UL us LISTED	cULus: UL508 cULus: Class 1 Div 2	cULus: UL61010-1 / UL61010-2-201 cULus: Class 1 Div 2

Power supply

Model	BTM-T7-RSE	BTM-T10-RSE	BTM-T15-PLUS
Power supply	24 V dc: 10-32 V dc		
Max. current consumption to 24 V dc	0.3 A	0.38 A	1.2 A
	Note: Make sure the power supply has enough power capacity for the device to work.		
Input protection	Automatic		Electronic
RTC backup	Yes (super capacitor)		1 metal lithium battery (3V 50 mAh), rechargeable, not replaceable by the user, model VL2330; 0.03g.
Battery recharge			At the first installation, the battery must be charged for 48 hours. When the battery is fully charged, it guarantees a 3-month period of data backup at 25° C

Note: the BTM-T15-PLUS model contains 1 metal lithium battery. For the sending, you must comply with the relevant packaging and labeling regulations.

System resources

Model	BTM-T7-RSE	BTM-T10-RSE	BTM-T15-PLUS
Display - colour	7” TFT 16:9 - 64 K	10.1” TFT 16:9 - 64 K	15.6” TFT LED - 16 M
Resolution	800 x 480, WVGA	1024 x 600, WVGA	1366 x 768, HD
Brightness	200 Cd/m2 typ.		400 Cd/m2 typ.
Dimming	Yes		to 0%
Touchscreen	Resistive		True glass Projected Capacitive, Multi-touch
CPU	ARM Cortex-A8 1 GHz		ARM Cortex-A9 quad-core 800 MHz
Operating system	Linux 3.12		Linux RT
Flash	4 GB		8 GB
RAM	512 MB		2 GB
Real Time Clock, RTC Back-up, Buzzer	Yes		

BTM Studio Suite

BTM Studio is a software suite that includes the following applications.

BTM-PC-IDE

It is an integrated development environment for easily designing and managing custom HMI thanks to a large embedded library of widgets. A unified design approach for native and web HMI projects that permits user to create pages optimized for display on the BTM panels, XAP 1.0, BTM-PC-RUNTIME and any web client (PC or smart devices). The design and management can be carried out in a single development environment so to reduce the application development and maintenance costs.

BTM-PC-CLIENT

BTM-PC-CLIENT is a standalone application that provides remote access to the BTM panels, XAP 1.0 and PC on which the BTM-PC-RUNTIME is operating. It is a lightweight Microsoft® Windows® application released for free in the BTM Studio suite. BTM-PC-CLIENT acts as remote client and communicates with the Runtime software. This way, users can view the HMI project on the BTM panel or BTM-PC-RUNTIME on the same network, even if they are installed in different installation locations.

BTM-PC-RUNTIME*

It is a powerful application that turns the Microsoft® Windows® computer into a HMI panel. This is the Windows® version of the HMI Runtime software that operates on the BTM panels. The BTM-PC-RUNTIME provides a set of HMI and data automation features of the BTM panels with a PC flexibility and expandability. BTM-PC-IDE permits user to design and manage the BTM-PC-RUNTIME projects.

**You need a BTM-PC-RUNTIME software license for any PC on which the Runtime operates.*

The BTM-PC-IDE software provides the following key-features for the areas presented below:

Design and UI experience

- It provides a widget gallery with a lot of symbols and vector objects and native support of SVG graphical objects and TrueType fonts.
- The data can be numbers, texts, bar graphs, analog indicators and graphical image formats for a high user interface experience.
- Users can change the properties of basic and advanced widgets. The widgets can be managed dynamically to control their visibility, transparency, position and other features.
- The HMI and web projects can be easily created and managed in multiple languages so to meet global requirements.
- A rich set of state-of-the-art HMI features permits to create a fully operational application for data acquisition and recording, presentation of trends, alarm management, schedulers, security and user management, e-mail.

- On-/Offline simulation to test HMI project on real time.
- Efficient scripting tool to create embedded functions.

Communication protocols

- A wide communication protocols permits user to meet all the different applications' requirements.
- Thanks to the gateway/routing capabilities, the communication among different communication protocols is possible.
- Easy integration into the UWP 3.0 ecosystem through plug'n play import of Modbus maps and EDE BACnet files.

Design and planning

- The same tool software for the development and management of the HMI / HMI web projects and data automation for BTM panels, XAP 1.0 and BTM-PC-RUNTIME.

Below the resources table for HMI projects:

Resource	BTM Panels	BTM-PC-RUNTIME
Data points	**10.000**	
Schedulers	**30**	
Alarms	**2.000**	10.000
Data transfer items (conversion between different protocols)	**1.000**	
Actions programmable per button state	**32**	
Trend buffers	**30**	
Tags per trend buffer	**200**	
Number of curves per trend widget	**5**	
Number of physical protocols	**4**	
Widget		
Basic widgets	**2000 per page**	
Recipes	**32**	
Parameter sets for a recipe	**1.000**	
Elements per Recipe	**1.000**	
Pages and pop-up		
Pages	**1000**	
Dialogue pages (pop-up)	**50**	
Dialogue pages that can be opened at the same time	**5**	
Number of templates pages	**50**	
Number of languages	**24**	
User and Groups		

Resource	BTM Panels	BTM-PC-RUNTIME
Number of user groups	**50**	
Number of users	**500**	
Number of concurrent remote clients	**4**	
JavaScript	**YES**	
Concurrent FTP sessions	**4**	
FTP additional folders	**5**	
PDF report generation	**YES**	

Configuration

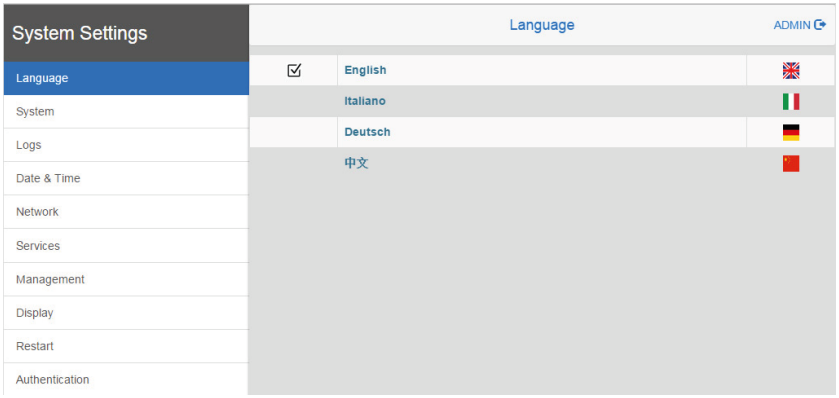
Connect the BTM panel to the computer with an Ethernet connection and power it on. To access the settings page of the panel, enter the following parameters in a browser:

Parameters	Default value
Settings	https://ip_address/machine_config
Username	admin
Password	Gav@zzi!2015

By default the Ethernet ports are configured as follows:

Port	Default settings
ETH0 / WAN	DHCP
ETH2 / LAN*	DHCP
ETH2 / LAN*	IP Address 192.168.0.1 Subnet mask: 255.255.255.0

Note: (only for BTM-T15-PLUS model)



Connection Diagrams

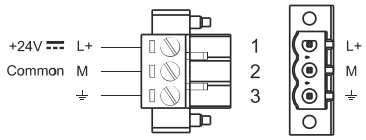
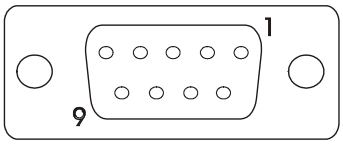


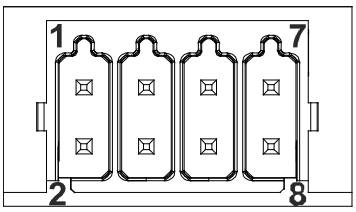
Fig. 5 *Power supply*



To operate in RS485 pins 4-3 and 8-7 must be connected externally.

Pin	RS485	RS422	RS232
1	GND		
2			
3	CHA-	CHA-	TX
4	CHB-	CHB-	RX
5			
6	+5V output		
7	CHB+	CHB+	CTS
8	CHA+	CHA+	RTS
9			

Fig. 6 *Serial port pinout BTM-Txx-RSE*



To operate in RS-485 pins 1-2 and 3-4 must be connected externally.

Pin	RS485	RS422	RS232
1	CHA-	CHB-	RX
2	CHB-	CHA-	TX
3	CHB+	CHB+	CTS
4	CHA+	CHA+	RTS
5	+5V output		
6	GND		
7			
8	SHIELD		

Fig. 7 *Serial port pinout BTM-T15-PLUS*

Connection diagram for RS485

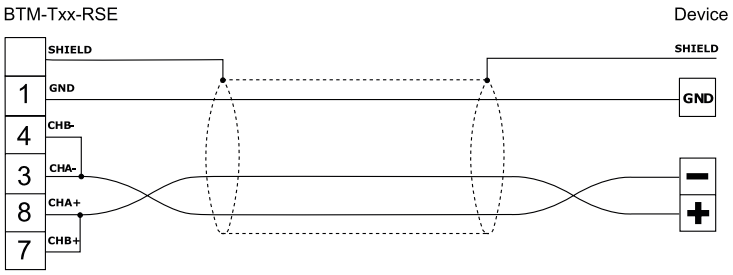


Fig. 8 *Connection diagram for RS485***

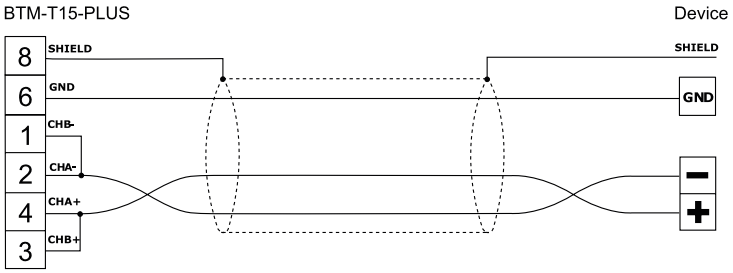


Fig. 9 *Connection diagram for RS485***

**The serial port is software programmable. Make sure you select the appropriate interface in the programming software.*
***It can be used as reference when the pinout of the PLC is not known.*

Note: different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, RS-485.

References

Further readings

Information	Document	Where to find it
BTM Studio manual	User manual	
Installation manual	BTM-T7-RSE	
	BTM-T10-RSE	
	BTM-T15-PLUS	

Order code

Component name/code	Description
BTM-T7-RSE	HMI 7” colour display with resistive touchscreen, 1 Ethernet, 1 Serial, 1 USB
BTM-T10-RSE	HMI 10.1” colour display with resistive touchscreen, 1 Ethernet, 1 Serial, 1 USB
BTM-T15-PLUS	HMI 15.6” colour display with capacitive touchscreen, 3 Ethernet, 1 Serial, 2 USB

Accessories

Component name/code	Description
BTM-T7-BOX1	Wall mounting box for BTM-T7-RSE
BTM-T10-BOX1	Wall mounting box for BTM-T10-RSE
BTM-KNX	Plug-in KNX module for BTM-T15-PLUS and for the XAP10RSEXX controller

Software

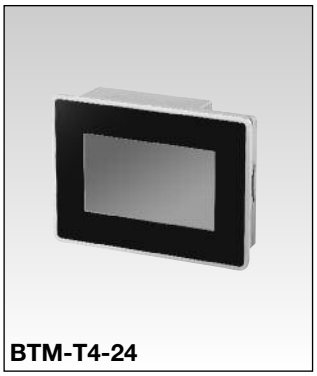
Component name/code	Description
BTM-PC-IDE-LICENCE	BTM-PC-IDE licence code
BTM-PC-RT-LICENCE	BTM-PC-RUNTIME licence code
BTM-PC-CLIENT	Microsoft® Windows® freeware client application

CARLO GAVAZZI compatible components

Scope	Component name/code	Notes
Monitor and control	UWP30RSEXXX	See relevant data sheet

SmartHUB
Home Automation Touchscreen and Energy Data Logger
Types BTM-T7-24, BTM-T4-24


BTM-T7-24


BTM-T4-24

- **High definition 7” and 4.3” colour touchscreen**
- **Easy setup of graphic pages and functions with the powerful software Wizard**
- **Remote access**
- **Activation of internet links through touch buttons**
- **Alarms management**
- **Support viewing from IP cameras**
- **Ready for Modbus TCP/IP**
- **Gateway KNX/EIB by means of a plug-in module BTM-KNX**

Product Description

SmartHUB is a completely configurable touch display. It is available in two versions, 7” and 4.3” wide, featuring a bright TFT widescreen (16:9) display with LED backlight. By means of the configuration software, the installer can create his own HMI interface or adapt the template downloadable from the Carlo Gavazzi website, define the electrical values he needs to show/log, configure any Modbus RTU device very easily by just reading a csv file, read the smart-house configuration file and link the smart-house variable to images/pushbutton.

Energy monitoring

SmartHUB shows and logs the data collected from our Energy Meter on Modbus RTU or from inverters with Modbus RTU communication capability. It offers a wide range of analysis options: daily, monthly and annual graphs, relative and absolute yields, monetary yields, etc.

Home/Building automation

Connected via Modbus TCP/IP to the Carlo Gavazzi smart-house controller, SmartHUB is an elegant interface which can control all the home automation functions such as lights, scenarios, temperature, rollerblinds, alarms,… and can give information about everything that is happening in a house.

*** Optional plug-in BTM-KNX provides a gateway between Smart Dupline and KNX/EIB bus.**

Ordering Key

BTM-T7-24

Display
Inches
Power supply

Type Selection

Active display area	Resolution	Supply: 24 VDC
7” diagonal	800 x 480 pixel	**BTM-T7-24**
4.3” diagonal	480 x 272 pixel	**BTM-T4-24**

Optional Plug-in *

Module type	Application	Module
External plug-in	KNX/EIB	**BTM-KNX**

Supply Specifications

Power supply voltage	24 VDC (18 to 30 VDC)
BTM-T7-24	24 VDC
BTM-T4-24	24 VDC
BTM-KNX	By BTM-Tx-24
Current consumption	0.7 A at 24 VDC (max.)

Specifications

Operating System		Windows CE 6.0
Display		
Type		TFT
Resolution		
	T7	800 x 480 pixel
	T4	480 x 272 pixel
Active display area		
	T7	7” diagonal
	T4	4.3” diagonal
Colours		64K
Backlight		LED
Brightness		150 cd/m2 typ.
Dimming		Yes

CPU	ARM, 600 MHz
User Memory	128 MB Flash
RAM	256 MB DDR
Front Panel	
Touch screen	Analogue resistive
System LEDs	1
COM Ports	RS-232, RS-485, RS-422 software configurable
Ethernet Port	2 10/100 Mbit with integrated switch
USB Port	1 host interface, version 2.0

Specifications (cont.)

Memory Card		SD card slot
Enviromental Conditions		
Operating temperature		0 to +50°C
Storage temperature		-20 to +70°C
Operating and storage humidity		5 to 85% RH non-condensing
Protection class		IP66 (front panel) IP20 (rear)
Dimensions		
Faceplate		
	T7	187 x 147 mm (7.36x5.79”)
	T4	147 x 107 mm (5.79x4.21”)
Cutout		
	T7	176 x 136 mm (6.93x5.35”)
	T4	136 x 96 mm (5.35x3.78”)
Mounting depth		
	T7	47 + 4 mm (1.85+0.16”)
	T4	56 + 4 mm (2.40+ 0.16”)

Weight		
	T7	Approx. 1.5 Kg
	T4	Approx. 1.0 Kg
Battery		Replaceable Lithium battery
Fuse		Automatic
Approvals		cULus (UL508 Listed Haz. Loc. Class I, Division 2, Groups A,B,C and D
CE marking		Yes
EMC		Elektromagn. kompatibilitet
Emission		EN 61000-6-4
Immunity		EN 61000-6-1 for installation in industrial environments

Specifications (BTM-KNX)

Dimensions	
Faceplate	65.3x41.2mm (2.57x1.62”)
Mounting depth	16.6 mm (0.65”)

Mode of Operation

Intelligent functions
The SmartHUB touch display can be connected to the smart-house controller via Modbus TCP/IP to manage all home automation functions, to the energy meter (EM21, EM24, EM26, WM30) via Modbus RTU to manage the consumed energy, to the inverters, again via Modbus RTU, to supervise the produced energy of a residential photovoltaic plant.

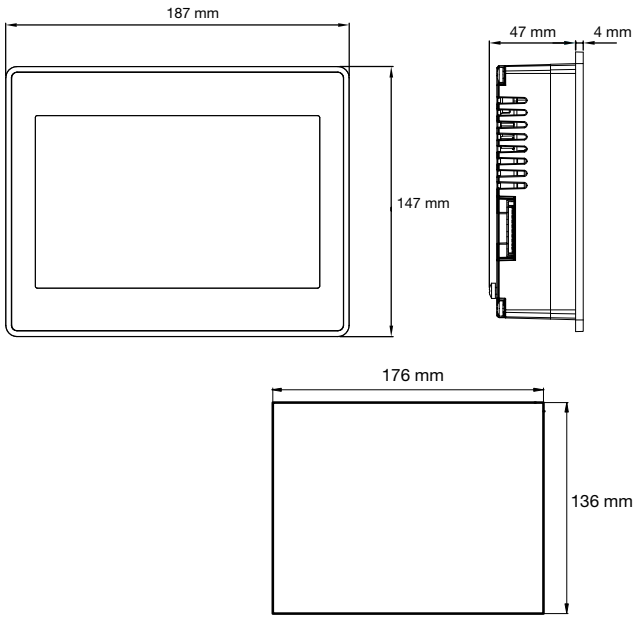
Wizard software
The Wizard software offers full vector graphic capabilities and plenty of connection options.
The Wizard software supports:
- Full object dynamics: control visibility and transparency, movement, resizing or rotating of any object on screen, also changing properties of basic and complex objects.
- TrueType fonts
- Multi-language applications. Easily create and manage your applications in multiple languages to meet global requirements. Languages supported include European and Far Eastern. Wizard tools ease third-party integration and help to reduce development and maintenance costs of the application.
- Data can be displayed in numerical, text, bargraph, analogue gauges and graphic image formats.
- Rich set of state-of-the-art HMI features: data acquisition, alarm handling, calender based with real-time clock scheduler for timed actions (daily and weekly schedulers, exception dates), recipes, users and passwords, e-mail and RSS feeds, rotating menus.
- Remote monitoring and control. Client-Server functionality. Mobile clients supported.
- Off-line and On-line simulation with Wizard.
- Rich gallery of symbols and objects.
- Project templates.

Home automation
You can use the SmartHUB to switch lamps on and off, to dim them, to control scenarios, rollerblinds, alarms, temperatures and all the functions defined in your installation. The system can be connected to the Internet, enabling you to access e-mails and the weather forecast. The panel can also be linked to external monitoring systems, such as surveillance cameras, to monitor parts of a building directly from the touch panel. Furthermore, an audio/video system can be connected to control music and entertainment.

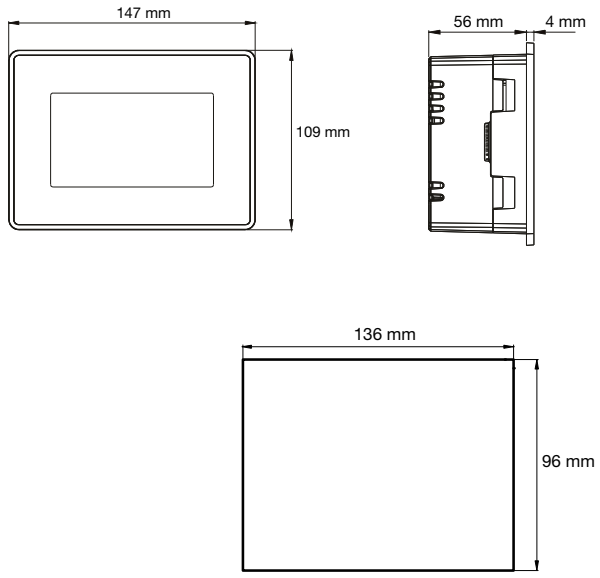
Energy management
The SmartHUB logs all the electrical variables collected from Carlo Gavazzi energy meters (EM21, EM24, EM26, WM30). Instant values are shown in a line chart coupled with icons (e.g. emoticons) in order to let the user see and understand the various consumptions. All the logged data is then shown on a bar graph so that a weekly, monthly or yearly overview can be seen by the home owner.
The various consumptions of electric, water and gas are expressed according to the entered tariffs, with the opportunity to manage them divided into 4 time bands.

Photovoltaic plant
Innovative, user-friendly and easy to install: SmartHUB is the perfect system for monitoring and managing domestic photovoltaic plants up to 10 KWp. It allows you to monitor all aspects of the system, such as the amount of produced power, the energy yield, the return on investment (ROI) and the control of CO_2 emissions, storing data for 20 years. The today production is shown together with the yesterday one to give you a clear indication on how your plant is working. Daily, monthly and yearly yields are depicted in bargraph and logged on downloadable csv file.

Dimensions

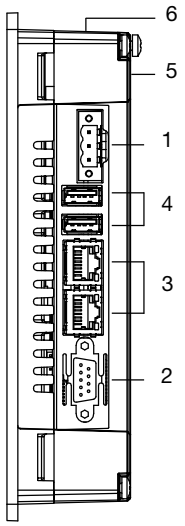


BTM-T7-24 Cut-out



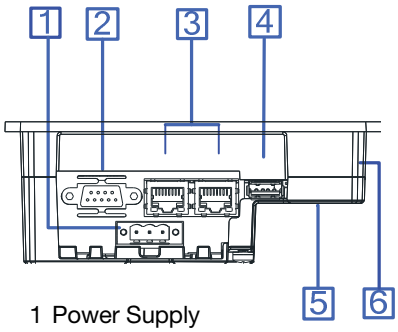
BTM-T4-24 Cut-out

System Overview



1 Power Supply
2 Serial Port
3 2 Ethernet Ports
4 USB Port
5 Expansion slot for Plugin module BTM-KNX
6 SD Card Slot

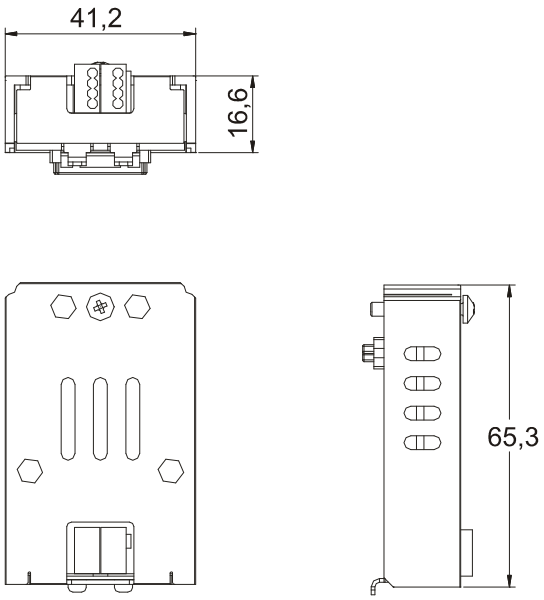
BTM-T7-24



1 Power Supply
2 Serial Port
3 2 Ethernet Ports
4 USB Port
5 Expansion slot for Plugin module BTM-KNX
6 SD Card Slot

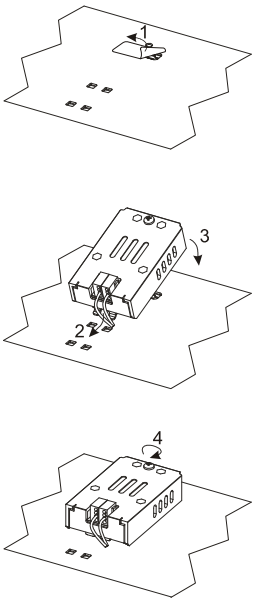
BTM-T4-24

Dimensions



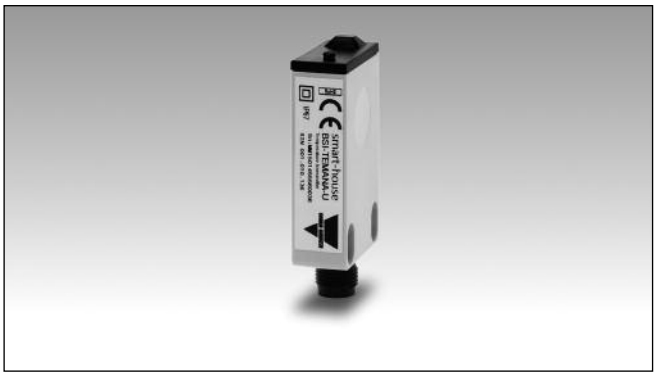
BTM-KNX

Mounting the module



BTM-KNX

Smart Dupline®
Temperature Sensor
Type BSI-TEMANA-U



- **Temperature sensor**
- **Temperature range: -40°C to +60°C**
- **Plug and cable versions**
- **Easily mountable**
- **No power supply is needed**

Product Description

The BSI-TEMANA-U is a temperature sensor for indoor and outdoor applications. It is part of the smart-house concept and it can be used in the functions supported by the smart-house controller where a temperature value is needed.
The environmental data read from the smart-house sensor (temperature and humidity) are logged into the SH2WEB24.

Ordering Key

BSI TEMANA U

Decentral module
Temperature sensor
Smart dupline®

Type Selection

Connection	Supply by Dupline®
M12 plug	**BSI-TEMANA-U**
2 m cable	**BSI-TEMANAB-U**

Input Specifications

Temperature	
Sensor range	-40° to + 60°C° (-40° to 140°F)
Accuracy	-40° to -20°C (-40° to -4°F), 1°C -20° to +60°C (-4° to 140°F), 0.5°C

Supply Specifications

Power supply	Supplied by Dupline®

Dupline Output Specifications

Voltage	8.2 V
Maximum Dupline® voltage	10 V
Minimum Dupline® voltage	5.5 V
Maximum Dupline® current	1 mA

Connections

M12 plug with terminals	Pin 1: D+ Pin 2: N/C Pin 3: N/C Pin 4: D-
Standard cable with M12 plug (IEC 60947-5-2) with 4 wires:	Black: D- Brown: D+ Blue: D-

Note: All wires must be connected.

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General Specifications

Address assignments / channel programming	If it is used with the Sx2WEB24 the address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the Sx tool. If it is used with the BH8-CTRL-230, the channels have to be programmed by the BGP-COD-BAT
Environment	
Degree of protection	IP 67
Operating temperature	-40° to +60°C (-40° to 140°F)
Storage temperature	-55° to +85°C (-67° to 185°F)
Humidity (non-condensing)	20 to 80 RH
Connection	
Plug BSI-TEMANA-U	M12
Cable BSI-TEMANAB-U	3 x 0.34 mm^2
Housing	Flat-pack
Dimensions	68.3 x 35 x 15 mm
Housing material	Polycarbonate
Plug material	Nylon
Color	Light grey
Mounting	Direct wall mounting
	Note: To measure the air temperature, the sensor should not be wall-mounted, but it should be exposed to air flow.

Weight	338 g
Approvals	cULus according to UL60950
CE Marking	Yes
EMC	
Immunity	EN 61000-6-2
- Electrostatic discharge	EN 61000-4-2
- Radiated radiofrequency	EN 61000-4-3
- Burst immunity	EN 61000-4-4
- Surge	EN 61000-4-5
- Conducted radio frequency	EN 61000-4-6
- Power frequency magnetic fields	EN 61000-4-8
- Voltage dips, variations, interruptions	EN 61000-4-11
Emission	EN 61000-6-3
- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

Mode of Operation

The sensor is mounted right at the location where the temperature is to be measured. The sensor measures the temperature and transmits the value to the smarthouse controller. To measure the air temperature, the sensor should not be wall-mounted, but should be exposed to air flow.

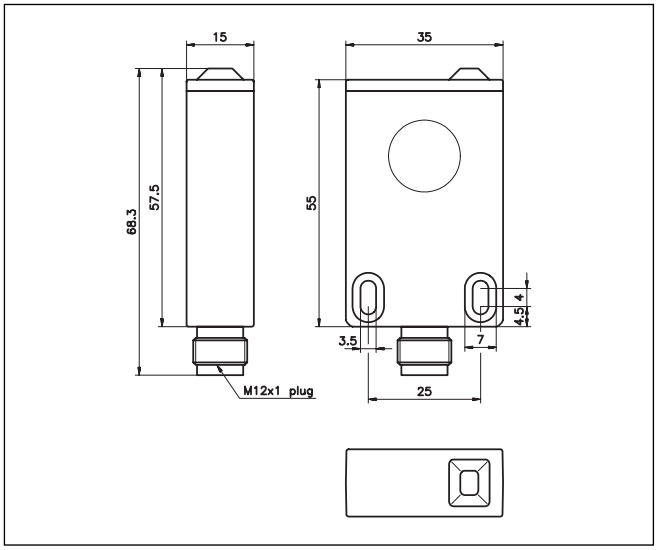
BSI-TEMANAx-U connected to the Sx2WEB24 Coding/Addressing

If the temperature sensor is connected to the Sx2WEB24 controller, no addressing is needed since the module is provided with a specific identification number (SIN): the user has only to insert the SIN number in the Sx tool when creating the system configuration.

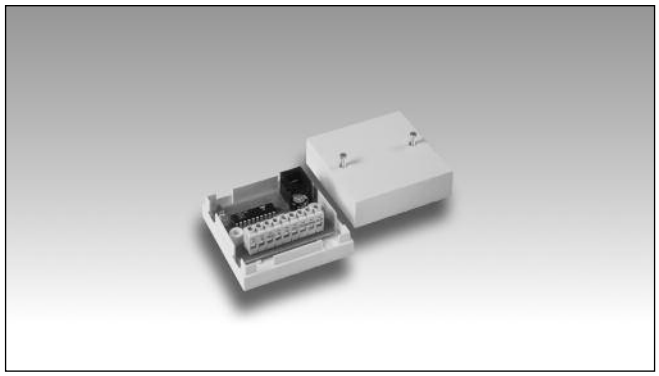
BSI-TEMANAx-U connected to the BH8-CTRLX-230 Coding/Addressing

If the sensor is connected to the BH8-CTRLX-230 controller, the user has to program the dupline channels using the BGP-COD-BAT: this module has 1 analink output channel.

Dimensions



Smart Dupline®
Input Module
Type BDD-INCON4-U



- **Input module for building automation applications**
- **4-contact or NPN transistor inputs**
- **LED indications for supply and Dupline® bus**
- **Red LED: programmable function status**
- **3-wire system with Dupline® and supply of module through external power supply**
- **Open PCB with terminal connection**

Product Description

The BDD-INCON4 is an input module to be connected to voltage free outputs or NPN transistor outputs. It allows a flexible installation and connection concept to third party devices (e.g. alarm arming devices) in building automation installations. It is part of the smarthouse concept and it can be used with all the functions supported by the smarthouse controller.

Ordering Key

BDD INCO N 4 U

- **Decentral module**
- **Input module**
- **NPN**
- **Number of inputs**
- **Smart Dupline®**

Type Selection

Inputs	Contact input	LEDs	Bus Supplied
4	Voltage free, NPN	3	**BDD-INCON4-U**

Input Specifications

Inputs Open loop voltage Open loop voltage	4 contacts or NPN-transistor External supply: 8.0 VDC Bus supply: 5.3-7.6 VDC
Short-circuit current	≤ 100 µA
Input voltage signal "1"	≤ 1 V
Input voltage signal "0"	≥ 1.6 V
Contact resistance	< 1 kΩ
Cable length	< 3 m

Dupline® Specifications

Voltage	8.2 V
Maximum Dupline® voltage	10 V
Minimum Dupline® voltage	5.5 V
Maximum Dupline® current	2 mA

Supply Specifications

Power supply DC types	Overvoltage cat III (IEC 60664)
Rated operational voltage (VDD_{in})	10-30VDC (ripple included)
Ripple	≤ 3 V
Reverse polarity protection	Yes
Current consumption	≤ 15 mA + Load on DC+
Max Load on DC+	≤ 250 mA
Inrush current	≤ 1A
Power dissipation	≤ 0.5 W
Transient protection voltage	800 V
Dielectric voltage Supply - Dupline® bus Supply - Inputs	 None None

General Specifications

Address assignments / channel programming	If it is used with the SH2WEB24 the address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the SH tool. If it is used with the BH8-CTRL-230, the channels have to be programmed by the BGP-COD-BAT.
LED's Indication	
Supply ON	1, green
Dupline® carrier	1, yellow
Armed	1, red
Environment	
Operating temperature	-20° to +50°C (-4° to 122°F)
Storage temperature	-50° to +85°C (-58° to 185°F)
Humidity (non-condensing)	20 to 80%
Dimensions	107 x 50 x 110 mm

Weight	50 g
CE Marking	Yes
EMC	
Immunity	EN 61000-6-2
- Electrostatic discharge	EN 61000-4-2
- Radiated radiofrequency	EN 61000-4-3
- Burst immunity	EN 61000-4-4
- Surge	EN 61000-4-5
- Conducted radio frequency	EN 61000-4-6
- Power frequency magnetic fields	EN 61000-4-8
- Voltage dips, variations, interruptions	EN 61000-4-11
Emission	EN 61000-6-3
- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

Mode of Operation

The BDD-INCON4 is fully programmable via the SH Tool: each input can be individually associated to one or more functions supported by the smart-house system.

BDD-INCON4 connected to the SH2WEB24
Coding/Addressing
If the input module is connected to the SH2WEB24 controller, no addressing is needed since the module is provided with a specific identification number (SIN): the user has only to insert the SIN number in the configuration tool when creating the system configuration.
The red LED is also configurable via the SH Tool: the user can associate it to any function as a feedback led.
Used channel: 4 input channels, 1 output channel

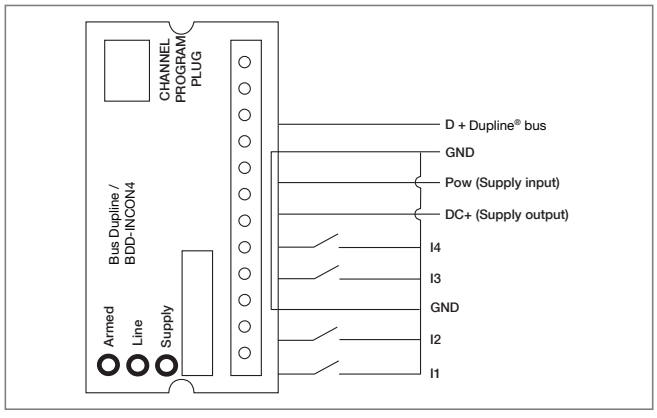
BDD-INCON4-U connected to the BH8-CTRLX-230
Coding/Addressing
If the input module is connected to the BH8-CTRLX-230 controller, the user has to program the Dupline® channels using the BGP-COD-BAT: this module has 4 input and 1 output (red LED) channels.

LED indication
The three LEDs are illuminated only if the input module is supplied with an external power supply.

Green LED: power status
ON: power supply ON
OFF: power supply OFF
Yellow LED: Dupline® status
ON: Dupline® bus connected
OFF: Dupline® bus not connected or faulty

Red LED: feedback led
Programmable by the user.

Wiring Diagrams



Counter
Type G4420 7401

CARLO GAVAZZI

- **4 individual counter inputs**
- **Selectable operating mode: Impulse Count or ON-time Summarizing.**
- **Reset feature**
- **32 multiplexing addresses**
- **Memory in case of power failure**
- **For DIN-rail mounting**
- **LED-indication for Operational Status**

Product Description

The Counter enables impulse counting on up to 4 channels or entry of up to 4 periods of operation with cyclic transfer on the Dupline® Bus.
The device has DIP-switches for operating mode, for reset of counter via Dupline® and for selection of measuring range with 2 to 8 decades. The Two rotary switches enable individual assignment of device address.
The counter readings can be displayed on a Touch Screen panel or by means of visualization software.
Upon voltage failure, the counter values will be stored and be available after return of the voltage.

Ordering Key

G 4420 7401

Type: Dupline®
"H2"- Housing
Transmitter
32 Channels
4 inputs
Contact Input

Type Selection

Supply	Ordering no.
15-30 VDC	**G 4420 7401 724**
230 VAC	**G 4420 7401 230**

Input/Output Specifications

Inputs	4
Type	Contact inputs
Rated current	2 mA @ 24 VDC / Channel
Max. length of cable	5 m
Impulse counting	
Resolution	14 Hz
Signal (Pulse/Pause)	40 ms/40 ms
ON-time Summarizing	
Resolution	1 s
Accuracy	> 0.5 %

Supply Specifications

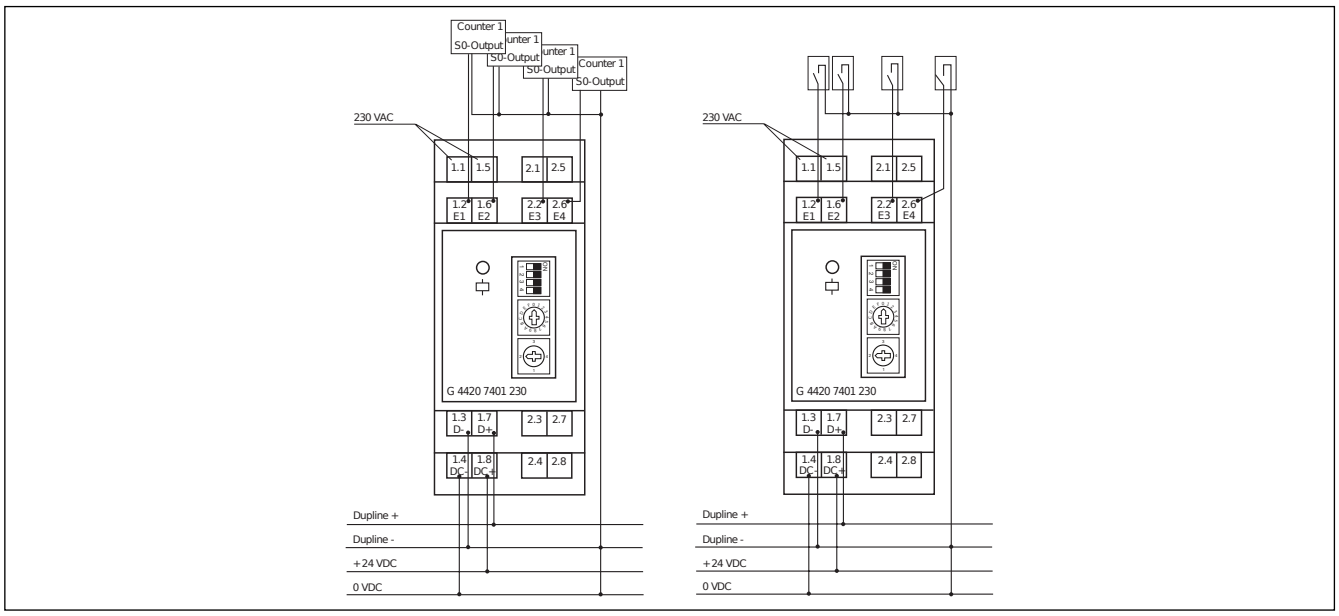
Power Supply	
Rated operational voltage	230 VAC ± 15% (IEC 60038) 15 - 30 VDC
Rated operational current	10 mA

General Specifications

Power ON delay	Undefined
LED-indication for	
Degree of protection	IP40
Operational status	On: OK OFF: Device disturbance or Power failure
Environment	
Operating temperature	-20 to +60°C
Humidity (non-condensing)	Max. 95% (moisture condensation not allowed)
Housing	Distribution-board housing for DIN-rail mounting acc. to DIN EN50022
Material	Polycarbonate
Dimensions	36 x 85 x 58 / 2 PD
Terminals	U-clamp terminals
Terminal capacity	Min. 0,4 mm up to max. 2,5 mm
Approvals	CE acc. To EN55022 / EN50081-1 and EN55024 / EN50082-1

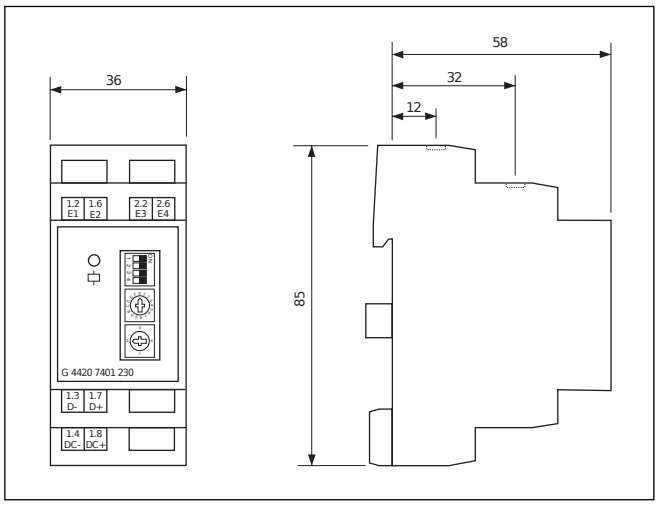
CARLO GAVAZZI

Wiring Diagrams

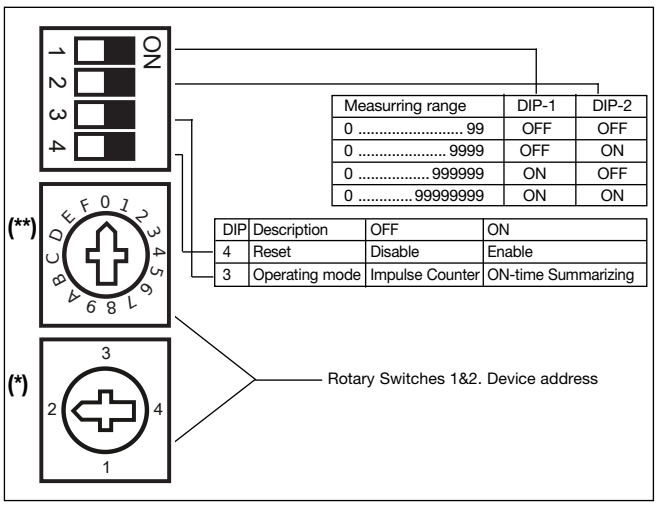


In order to avoid disturbances, the length of the cable between the counter inputs of G4420 7401 and the impulse output should not exceed 5 m. ***NOTE: The G4420 7401 724 is pure DC-supplied. The G4420 7401 230 has the possibility of two powersupplies, both a DC and a AC. If using the DC Supply, the minus of the supply is used as common wire for the inputs of the module.***

Dimensions



Dip-switch Settings



Measurring range	DIP-1	DIP-2
0 99	OFF	OFF
0 9999	OFF	ON
0 999999	ON	OFF
0 99999999	ON	ON

DIP	Description	OFF	ON
4	Reset	Disable	Enable
3	Operating mode	Impulse Counter	ON-time Summarizing

Terminal Assignment

Terminal	Function
1.2	Counter Input 1
1.6	Counter Input 2
2.2	Counter Input 3
2.6	Counter Input 4
1.3	Dup. Gnd
1.7	Dupline® Signal
1.4	0 VDC
1.8	+24 VDC
1.1	230 VAC
1.5	230 VAC

Accessories

For counting electric energy, Carlo Gavazzi offers a wide range of energy meters, which can be used in connection with Dupline counters. The below energy meters can be supplied with a DIN 43 864 pulse output:

EMI-DINAV81DPX
EM3-DINAV?3?O
EM4-DINAV?3?OXX
WM22-DINAV?3?OXX
SPT90AV???P??XXX
WM2-96AV?3?O1X
WM3-96AV?3?XXXXO1XXX
WM3-96AV?3?XXXXO2R2
WM3-96AV?3?XXXXO2R102
WM3-96AV?3?XXXXO2R204
WM4-96???3?XXXXO1XXX
WM4-96???3?XXXXO2R2
WM4-96???3?XXXXO2R102
WM4-96???3?XXXXO2R204

CARLO GAVAZZI

Mode of Operation

G4420 7401 has 4 DIP-switches for selection of Operating mode and 2 rotary switches for selection of device address.

Selection of device address (rotary switches)
Selection of device address is performed by means of the two rotary switches at the front. In multiplex mode, up to 32 devices with 4 channels each (128 counter values) can operate on the same Dupline® network simultaneously.
The address selection is deliberately kept simple: all that is needed is to assign a unique address to the first of the four channels of G 4420 7401. The following addresses are then automatically assigned to the three other channels. If several G 4420 7401 are used, the settings must look as follows:

Device	Rotary Switch		Dupline®Channel				
Address	1 (*)	2 (**)	B2	B3	B4	B5	B6
0	2/4	0	0	0	0	0	0
1	2/4	1	0	0	0	0	1
2	2/4	2	0	0	0	1	0
3	2/4	3	0	0	0	1	1
4	2/4	4	0	0	1	0	0
5	2/4	5	0	0	1	0	1
6	2/4	6	0	0	1	1	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
14	2/4	E	0	1	1	1	0
15	2/4	F	0	1	1	1	1
16	1/3	0	1	0	0	0	0
17	1/3	1	1	0	0	0	1
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
27	1/3	B	1	1	0	1	1
28	1/3	C	1	1	1	0	0
29	1/3	D	1	1	1	0	1
30	1/3	E	1	1	1	1	0
31	1/3	F	1	1	1	1	1

The 4 counter inputs can be selected individually as follows:

Input	Dupline® Channel	
Counter	B7	B8
1	0	0
2	0	1
3	1	0
4	1	1

A change of address during operation has immediate effect, but does not influence the counter value. After the change, the G 4420 7401 transmits updated values to the new address.

The Dupline® multiplex operation makes it possible to transmit several counter or analog values to the same address so that the number of addresses in use remains relatively low. By means of a special addressing mechanism, it is possible to transmit up to 128 signals on channels B2 to B8.
If a device detects the address of one of its channels, it will transfer the data to the bus in the same cycle. The addresses used for counting start with C1 and – depending on the measuring range – go up to F8. The address is created as a binary value.

RESET Feature (Dip-switch 1)
The G 4420 7401 makes it possible to reset each of the four counter values induvidually via the Dupline-Bus. In order to prevent unwanted resetting, this function can be disabled for all channels via Dip-Switch 1.

Dip-switch 1 OFF: Reset Disabled
Dip-switch 1 ON: Reset Enabled

The Reset of a value takes place through address B1. If the address is set to “1” during the reading of the value, the G 4420 7401 automatically sets the counter value to “0”. It is also possible to reset the respective multiplex address by setting B1 to “1” and then back to “0”.

Operating Mode (DIP switch 2)
It is possible to select operating mode for all channels with DIP switch 2. Two modes can be selected:

Dip-switch 2 OFF: All channels operates as impulse Count
Dip-switch 2 ON: All channels operates as impulse Count or ON-time Summarizing

When operating as an impulse counter (position “OFF”), the G 4420 7401 counts impulses at the inputs of up to 14 Hz. When DIP switch 2 is set to “ON”, G 4420 7401 counts the operating hours and sums up the time for which the contact connected to the input is enabled. Min. time is 1 s.

Selection of measuring range DIP switches 3 & 4
DIP switches 3 & 4 make it possible to select measuring ranges with 2 to 8 digit positions in two steps. If the measuring range is exceeded, the counter rolls over and starts from zero.

Data channels
Data transmission by G 4420 7401 always starts on the first address in channel group C. The number of addresses needed depends on the selected measuring range. The value “59” lies in the range from 0 – 99 and looks as follows:

Factor	80	40	20	10	8	4	2	1
Channel	C1	C2	C3	C4	C5	C6	C7	C8
Value	0	1	0	1	1	0	0	1

The value “ 7584” lies in the range from 0 – 9999 and looks as follows:

Factor	8000	4000	2000	1000	800	400	200	100	80	40	20	10	8	4	2	1
Channel	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6	D7	D8
Value	0	1	1	1	0	1	0	1	1	0	0	0	0	1	0	0

SBB2I

Fire damper input module

Benefits

- Ready-to-use junction box housing with transparent lid for fast and easy decentralized installation
- One input module can monitor one fire damper
- Fast and easy wiring to the main controller via the Dupline® bus (free topology and long distance capability)
- Up to 60 fire damper modules can be connected to one Dupline® network
- The system can be interfaced to the BMS via BACnet or Modbus

Description

The SBB2I is a 2-input module designed to monitor the blade position of up to two fire dampers.
It is also possible to use the inputs as standard digital inputs for any type of application.
The module is implemented in a robust junction box for a decentralized installation close to the fire dampers.
The module is part of the smart building products range.
Several modules can be connected to the same Dupline® 2-wire bus and thus the wiring to the controller can be significantly simplified.

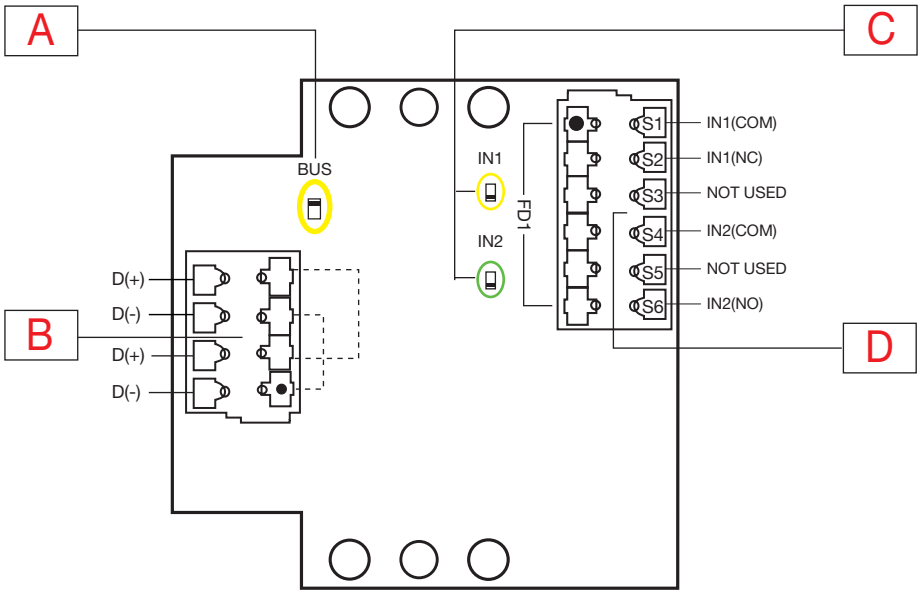
Applications

- Monitoring of fire dampers

Main features

- 2 x contact inputs (voltage free)
- Smart Dupline® protocol
- Powered by the bus

Structure

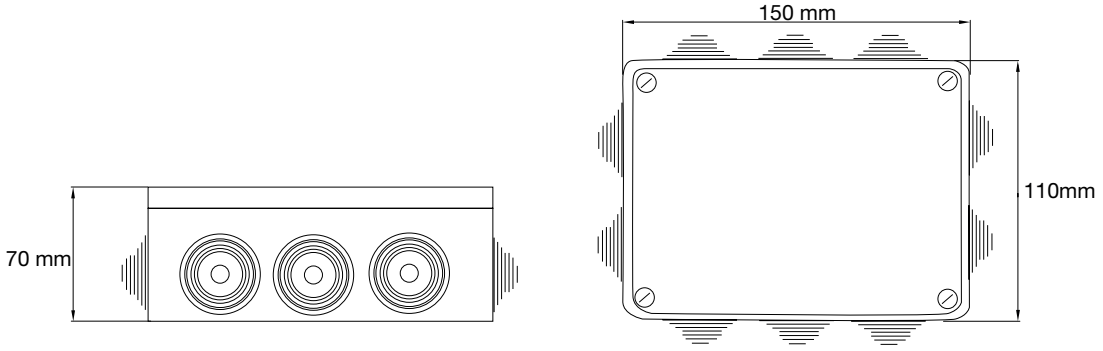


Element	Component	Function
A	Yellow LED	Power supply and Dupline® bus status ON: Supply ON and Dupline® bus OK OFF: No cummunication is present on the Dupline® bus
B	Dupline® terminals	Dupline® terminals connection
C	Yellow LED (IN1) Green LED (IN2)	Input contact status ON: Input closed OFF: Input open
D	Input terminals	Fire damper terminals connection

Features

General

Housing	Standard junction box with transparent lid. 10 knockout openings for M12 or M16 cable.
Material	Box (PC/ABS) / Transparent lid (PC) Halogen free
Dimensions (HxWxD)	150 x 110 x 70 mm
Weight	400 g
Protection grade	IP55
Pollution degree	2 (IEC 60664-1. Par. 4.6.2)
Dielectric strength	Dupline® to input: no insulation



Environmental

Operating temperature	0° to 50°C (-4°F to 122°F)
Storage temperature	-50° to 85°C (-58°F to 185°F)
Humidity (not condensing)	20 to 90%

Compatibility and conformity

Electromagnetic compatibility (EMC) - immunity	EN 61000-6-2
Electromagnetic compatibility (EMC) - emissions	EN 61000-6-3
Approvals	CE

Power Supply

Power Supply	Supplied by bus

Dupline®

Voltage	8.2 V
Maximum Dupline® voltage	10 V
Minimum Dupline® voltage	5.5 V
Maximum Dupline® current	4 mA

Input specifications

Number of inputs	2
Type	Voltage-free contact
Input current	< 100 µA
Max. resistance of the close contact	200 Ω
Cable length	< 3 m

Terminal block

Dupline® bus	4 x spring terminals
Contact inputs	6 x spring terminals
Cross-section area	Max. 2.5 mm^2

Mode of operation

The SBB2I monitors the contact status giving the indication of the damper blade position.
The module is programmable by using the UWP 3.0 configuration tool and the inputs can be individually set as NO or NC, according to the specifications of the fire damper unit.
Please refer to the UWP 3.0 Tool manual for further details about the configuration.

Connection Diagrams

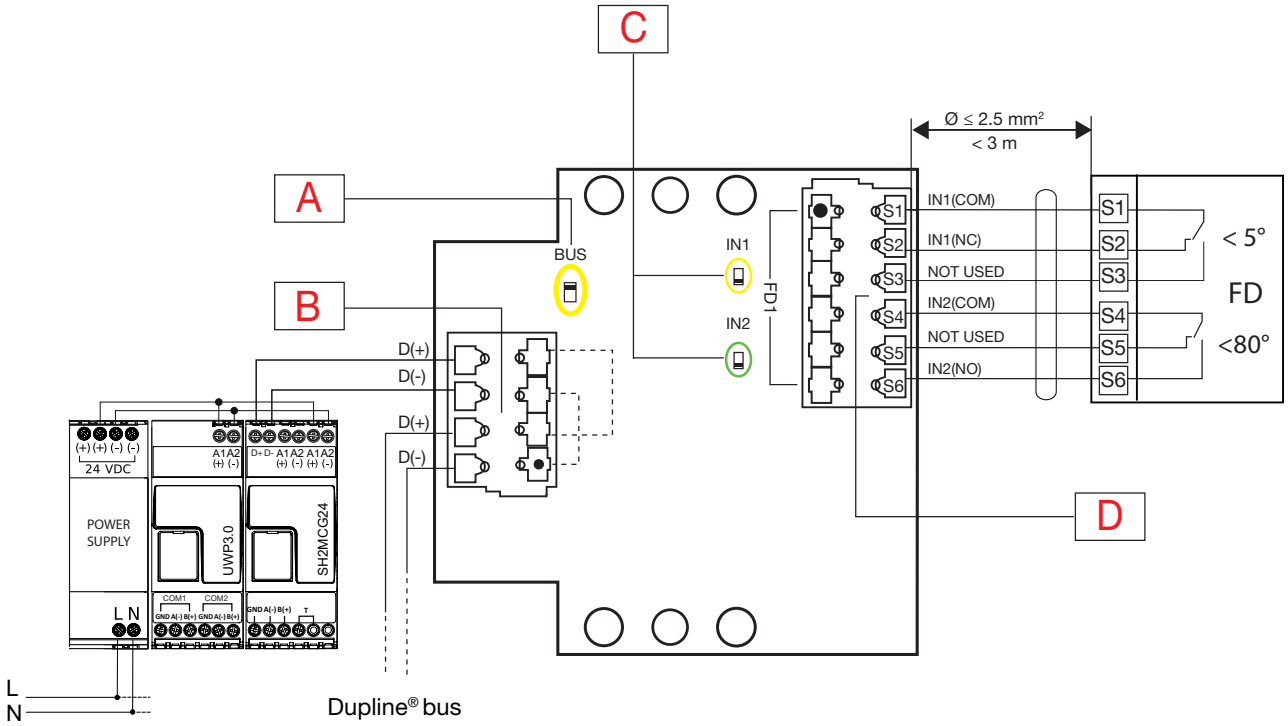


Fig. 1 *Example of a fire damper connection*

The terminals S1 & S2 (NC) are used to monitor the contact for the CLOSED position of the fire damper blade.
The terminals S4 & S6 (NO) are used to monitor the contact for the OPEN position of the fire damper blade.
The terminals S3 and S5 are available for connecting the unused wires.

References

Further reading

Information	Document	Where to find it
UWP3.0 installation guide	System manual	
UWP3.0 software manual	UWP3.0 tool manual	

Order code

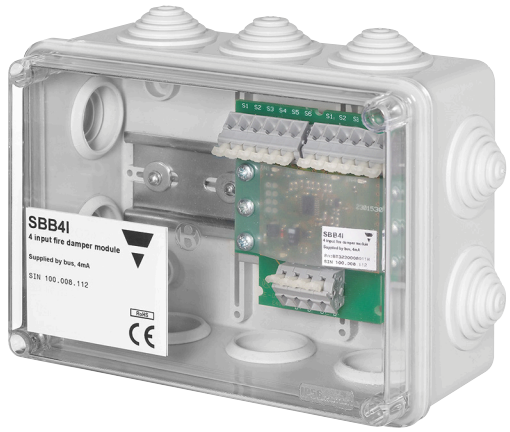
SBB2I

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Controller	UWP 3.0	
Bus generator	SH2MCG24 /SBP2MCG324	

SBB4I

Fire damper input module



Benefits

- Ready-to-use junction box housing with transparent lid for fast and easy decentralized installation
- One input module can monitor up to two fire dampers
- Fast and easy wiring to the main controller via the Dupline® bus (free topology and long distance capability)
- Up to 30 fire damper modules can be connected to one Dupline® network
- The system can be interfaced to the BMS via BACnet or Modbus

Description

The SBB4I is a 4-input module designed to monitor the blade position of up to two fire dampers.
It is also possible to use the inputs as standard digital inputs for any type of application.
The module is implemented in a robust junction box for a decentralized installation close to the two fire dampers.
The module is part of the smart building products range.
Several modules can be connected to the same Dupline® 2-wire bus and thus the wiring to the controller can be significantly simplified.

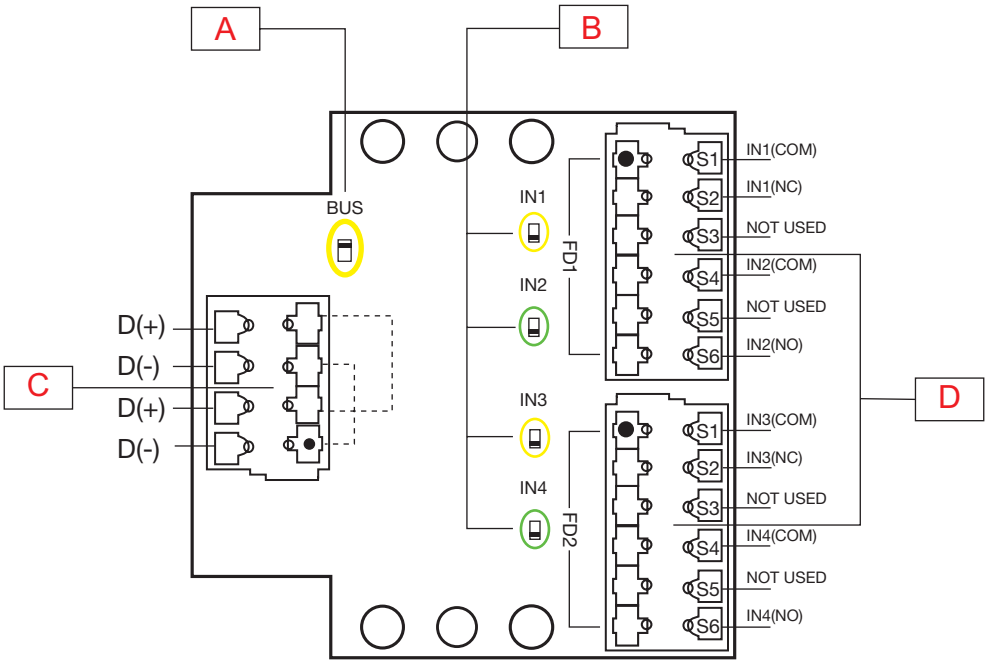
Applications

- Monitoring of fire dampers

Main features

- 4 x contact inputs (voltage free)
- Smart Dupline® protocol
- Powered by the bus

Structure

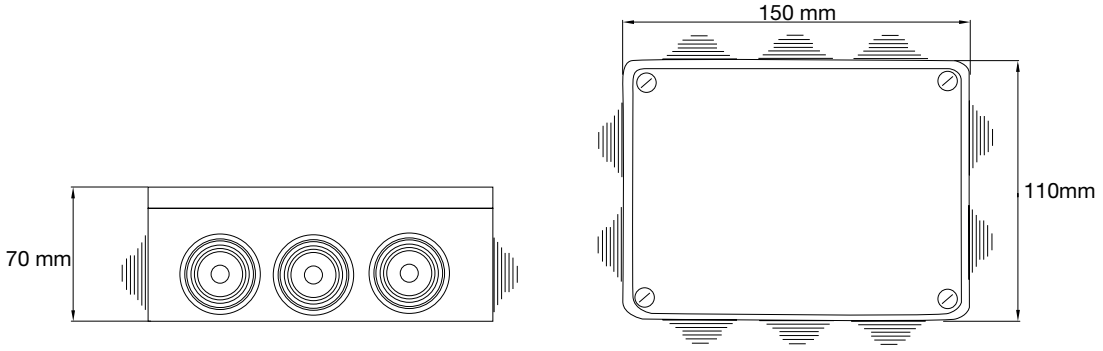


Element	Component	Function
A	Yellow LED	Power supply and Dupline® bus status ON: Supply ON and Dupline® bus OK OFF: No cummunication is present on the Dupline® bus
B	Yellow LED (IN1,IN3) Green LED (IN2,IN4)	Input contact status ON: Input closed OFF: Input open
C	Dupline® terminals	Dupline® terminals connection
D	Input terminals	Fire damper terminals connection

Features

General

Housing	Standard junction box with transparent lid. 10 knockout openings for M12 or M16 cable.
Material	Box (PC/ABS) / Transparent lid (PC) Halogen free
Dimensions (HxWxD)	150 x 110 x 70 mm
Weight	420 g
Protection grade	IP55
Pollution degree	2 (IEC 60664-1. Par. 4.6.2)
Dielectric strength	Dupline® to input: no insulation



Environmental

Operating temperature	0° to 50°C (-4°F to 122°F)
Storage temperature	-50° to 85°C (-58°F to 185°F)
Humidity (not condensing)	20 to 90%

Compatibility and conformity

Electromagnetic compatibility (EMC) - immunity	EN 61000-6-2	
Electromagnetic compatibility (EMC) - emissions	EN 61000-6-3	
Approvals	CE c UL us LISTED	**UL note:** This product is intended to be supplied by limited power sources (LPS) only.

Power Supply

Power Supply	Supplied by bus

Dupline®

Voltage	8.2 V
Maximum Dupline® voltage	10 V
Minimum Dupline® voltage	5.5 V
Maximum Dupline® current	4 mA

Input specifications

Number of inputs	4
Type	Voltage-free contact
Input current	< 100 µA
Max. resistance of the close contact	200 Ω
Cable length	< 3 m

Terminal block

Dupline® bus	4 x spring terminals
Contact inputs	12 x spring terminals
Cross-section area	Max. 2.5 mm^2

Mode of operation

The SBB4I monitors the contact status giving the indication of the damper blade position.
The module is programmable by using the UWP 3.0 configuration tool and the inputs can be individually set as NO or NC, according to the specifications of the fire damper unit.
Please refer to the UWP 3.0 Tool manual for further details about the configuration.

Connection Diagrams

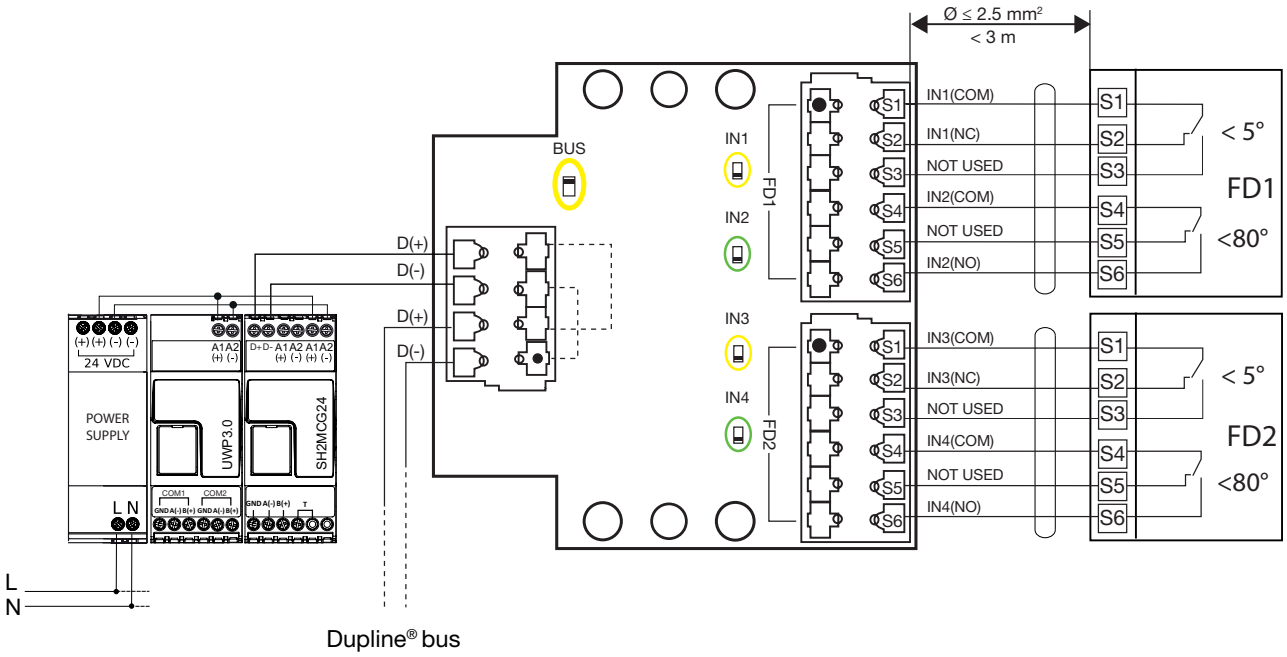


Fig. 1 *Example of two fire dampers connection*

The terminals S1 & S2 (NC) are used to monitor the contact for the CLOSED position of the fire damper blade.
The terminals S4 & S6 (NO) are used to monitor the contact for the OPEN position of the fire damper blade.
The terminals S3 and S5 are available for connecting the unused wires.

References

Further reading

Information	Document	Where to find it
UWP3.0 installation guide	System manual	
UWP3.0 software manual	UWP3.0 tool manual	

Order code

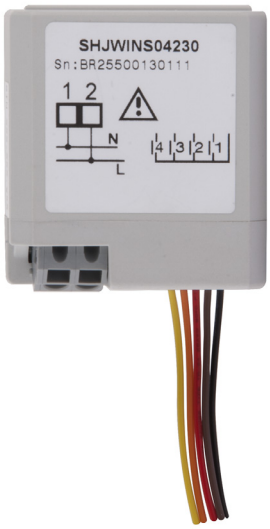
SBB4I

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Controller	Sx2WEB24 / UWP 3.0	
Bus generator	SH2MCG24 /SBP2MCG324	

SHJWINS04

Wireless input and pulse counter module



Benefits

- **Fast and easy installation.** In junction/wall box.
- **Easy to use**. Four programmable inputs - normally closed, normally open, pulse counter.
- **Fully intelligent device**. Counted values are stored in a non-volatile memory.
- **Precise measurement**. The pulse counter inputs are S0 class B.
- **High working distance**. The line of sight is 700 m, indoors 10 to 100 m. The range can be extended three times.
- **Scalability.** New modules can be progressively integrated into the system according to the application needs.

Description

The SHJWINS04 is an input module for counting pulses from energy meters, water meters, gas meters etc, and also includes a people-counting function.
The count values are saved in the non-volatile memory of the module and transferred to the Sx2WEB controller wirelessly.
It is also possible to use the inputs as standard digital inputs. This can be configured via the Sx2WEB tool for each of the inputs.
The compact size of the module makes it possible to fit it in a small junction box or other places where limited space is available.
This module is part of the smart Dupline® concept for building automation applications.

Applications

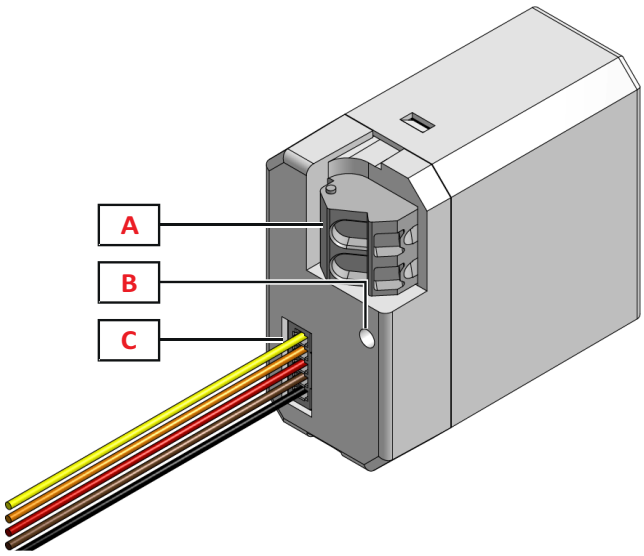
Home and building automation.

Main features

- Wireless transmission based on IEEE 802.15.4, at 2.4GHz.
- Four programmable inputs
- Counts up to 99999999
- Automatic roll-over when max count is reached
- Option for counter reset

- Option for pre-scaler on count inputs

Structure

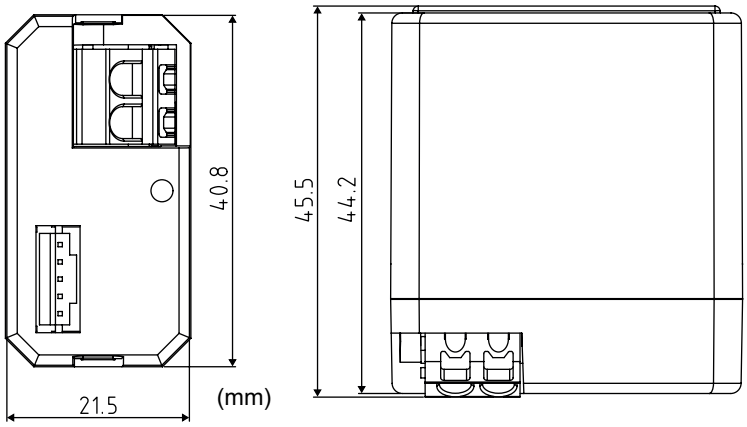


Element	Component	Function
A	Power supply	Power supply terminal (N, L)
B	Information LED	Indicating the following status: Green LED: Power supply Blue LED: WiDup status
C	Inputs	Black: common Brown: input 1 Red: input 2 Orange: input 3 Yellow: input 4

Features

General

Material	Latamid 66
Dimensions (L x W x H)	40.8 x 45.5 x 21.5 mm
Weight	80 g
Protection grade	IP 20
Pollution degree	2



Environmental

Operating temperature	-20° to +50°C (-4° to 122°F)
Storage temperature	-20° to +70°C (-4° to +158°F)
Humidity (non-condensing)	20 to 90% RH

Compatibility and conformity

Electromagnetic compatibility (EMC) - immunity	EN 61000-6-2
Electromagnetic compatibility (EMC) - emissions	EN 61000-6-3
Approvals	CE R&TTE

Power Supply

Power supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage **SH...230** **SH...115**	 220...240 VAC ±10% 110...120 VAC ±10%
Rated impulse voltage	2.5 kV (1.2/50 µs)
Rated operational power	3 VA
Power on delay	Typ. 2 s

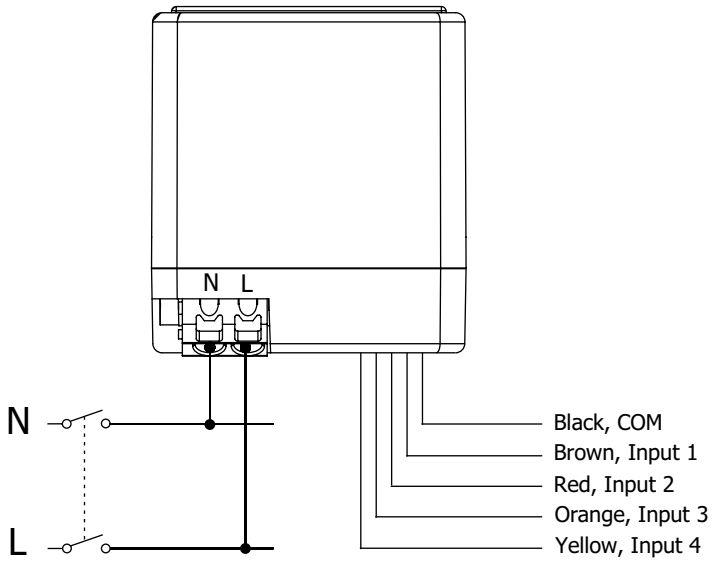
WiDup specification

Bus	Wireless Dupline
Frequency	IEEE 802.15.4, @ 2.4 Ghz for Europe, America and China
Diagnostics	1. Field strength 2. Network activites 3. Devices' presence
Network topology	Star with max three wireless repeaters
Antenna	Internal
Transmission power	According to IEEE 802.15.4
Sensitivity	According to IEEE 802.15.4
Number of slave nodes	Up to 250
Transmission range	<700 m in the open air
Addressing	The address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the Sx tool.

Input specifications

Inputs	4 S0 Class B (EN62053-31)
Input current	Min. 2mA - max. 10 mA
Input voltage drop	< 1 V
Cable length	< 3 m
Cable resistance	< 400 Ohms
Input count frequency	< 100 Hz

Connection Diagrams



References

Further reading

Information	Document	Where to find it
Sx2WEB installation guide	System manual	
Sx2WEB software manual	Sx tool manual	
Sx2WEB wireless installation manual	Wireless manual	

Order code

SHJWINS04115

Ordering key for power supply 115 V

SHJWINS04230

Ordering key for power supply 230 V

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Controller	Sx2WEB24	
Bus generator	SH2WBU230N	

SBP2WREP230

Wireless Repeater

Benefits

- **Fast and easy installation.** In cabinets.
- **Easy to use**. Simplifies the network design.
- **High working distance**. Extends the network length to cover distances longer than 700 m line of sight.
- **Scalability.** New modules can be progressively integrated into the system according to the application needs.

Description

SBP2WREP230 is a wireless Smart Dupline® repeater.
It replicates the wireless command from the wireless base SH2WBU230N to the wireless modules that can not be reached by the SH2WBU230N.

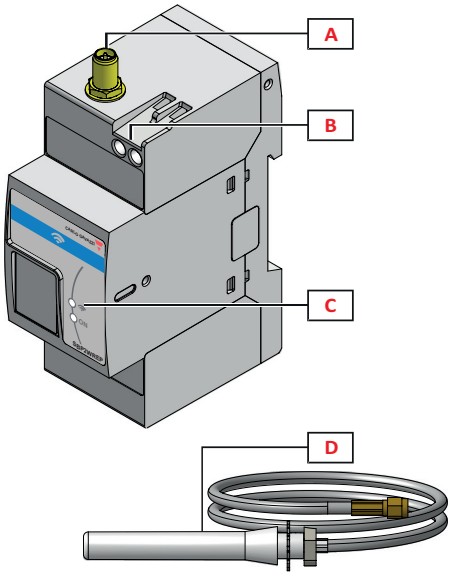
Applications

Parking Guidance Systems, Building automation, Energy Efficiency Performance Management.

Main features

- The route of the repeated wireless signal can be programmed via the configuration tool.
- Maximum four repeaters can be programmed between SH2WBU230N base and the I / O module.
- Wireless transmission based on IEEE 802.15.4, at 2.4GHz.

Structure

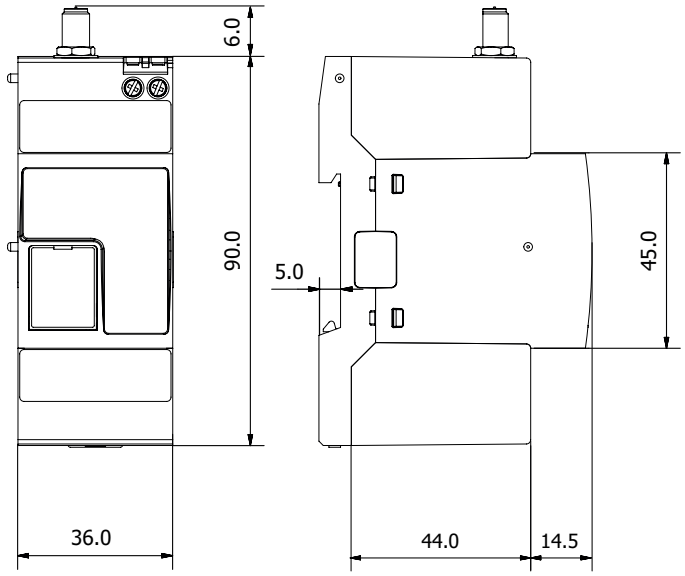


Element	Component	Function
A	Antenna	Connection terminal
B	Power supply	Power supply terminals A1(+), A2(-)
C	Information LED	Indicating the following status: Green LED: Power supply Blue LED: WiDup
D	Antenna	2.4 GHz with 2 meters cable

Features

General

Material	Noryl
Dimensions	2-DIN module
Weight	210 g (including the antenna)
Protection grade	Front: IP50; Screw terminal: IP20
Terminal	2 screw-type; Section: 1.5 mm^2 maximum; Torque: 0.4-0.8 Nm



Environmental

Operating temperature	-20° to +50°C (-4° to 122°F)
Storage temperature	-50° to +85°C (-58° to 185°F)
Humidity (non-condensing)	20 to 80% RH

Compatibility and conformity

Directives	2014/53/EU (RED)
Electromagnetic compatibility (EMC) - immunity	EN 61000-6-2 Electrostatic discharge: EN 61000-4-2 Radiated radiofrequency: EN 61000-4-3 Burst immunity: EN 61000-4-4 Surge: EN 61000-4-5 Conducted radio frequency: EN 61000-4-6 Power frequency magnetic fields: EN 61000-4-8 Voltage dips, variations, interruptions: EN 61000-4-11
Electromagnetic compatibility (EMC) - emissions	EN 61000-6-3 Conducted and radiated emissions: CISPR 22 (EN55022), cl. B Conducted emissions: CISPR 16-2-1 EN55016-2-1) Radiated emissions: CISPR 16-2-3 (EN55016-2-3)
Approvals	FCC ID= SNJWBU

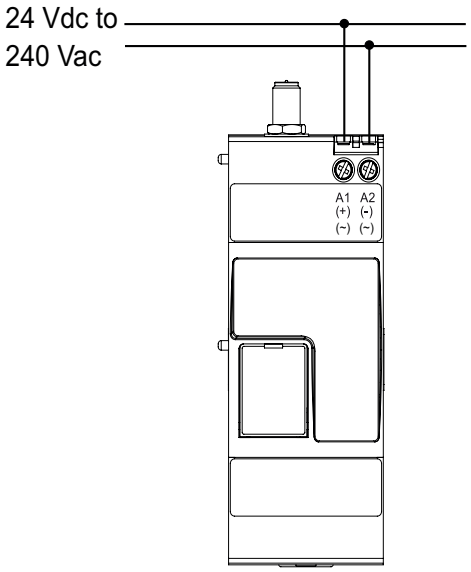
Power Supply

Power Supply	Overvoltage category II (IEC 60664-1, par. 4.3.3.2)
Operational voltage range	24 VDC +/-20%, 115-240VAC 50/60 Hz +/-10%
Rated operational power	2.4 W
Protection for reverse polarity	Yes
Connection	A1 (+) and A2 (-)
Power on delay	Typ. 2 s
Power off delay	1 s

WiDup specification

Bus	Wireless Dupline
Frequency	IEEE 802.15.4, @ 2.4 Ghz
Diagnostics	1. Field strength 2. Network activites 3. Devices' presence
Network topology	Star with max four wireless repeaters
Antenna	External
Transmission power	According to IEEE 802.15.4
Sensitivity	According to IEEE 802.15.4
Number of slave nodes	Up to 250
Transmission range	<700 m in the open air
Addressing	The address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the UWP 3.0 tool.

Connection Diagrams



References

Further reading

Information	Document	Where to find it
UWP3.0 installation guide	System manual	
UWP3.0 software manual	UWP3.0 tool manual	

Order code

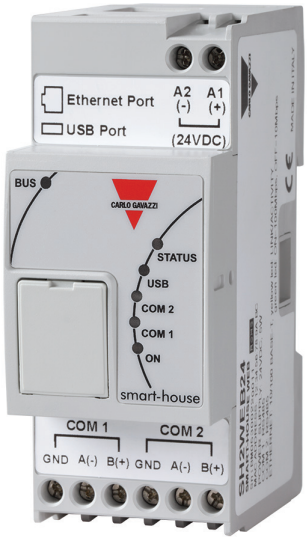
SBP2WREP230

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Controller	UWP 3.0	
Bus generator	SH2WBU230N	

SH2WEB24

Central unit module



Benefits

- **Configurable by software**. Home and building automation functions and energy data logging are configurable by software.
- **Spread sheets compatible.** All data exports are compatible with Excel or other spread sheets.
- **Modularity.** The system is composed by modules so that each installation can be precisely and easily sized.
- **Scalability.** The system can be progressively integrated with new modules according to the application needs.
- **Fast and easy installation.** Completely free topology, no special cable required, no screen or twist. It can go for 2 km and even further with repeaters.
- **Remote control.** All functions can be remotely controlled while the owner is away and moreover a series of actions can be automatically performed.
- **User-friendly.** The system is user-friendly and really anyone can easily learn to master it.

Description

The SH2WEB24 is a programmable integrated unit specially designed for home and building automation applications.
The controller includes dedicated functions for home automation such as light control (DALI), temperature control, roller blind control, alarm monitoring, energy monitoring, etc....
The SH2WEB24 is as default configured without intelligent in- and output functions to run modules on the smart Dupline bus.
In order to set up the intelligent functions, the SH2WEB24 has to be configured by the Windows based configuration software.
This software is free downloadable from Carlo Gavazzi website.

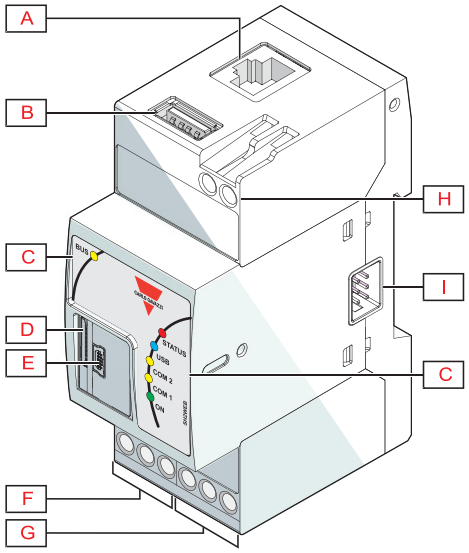
Applications

Smart Dupline® is a bus system that offers unique solutions for a wide range of applications in home and building automation, industrial automation, water distribution, energy management, railway systems and many other areas.

Main features

- Micro PC with Web-server
- Linux embedded operating system
- Two RS485 communication ports (Modbus)
- One Ethernet port
- Two multi purpose USB 2.0 ports
- Data logging
- Internal data storage up to 30 years in a 4GB memory

Structure

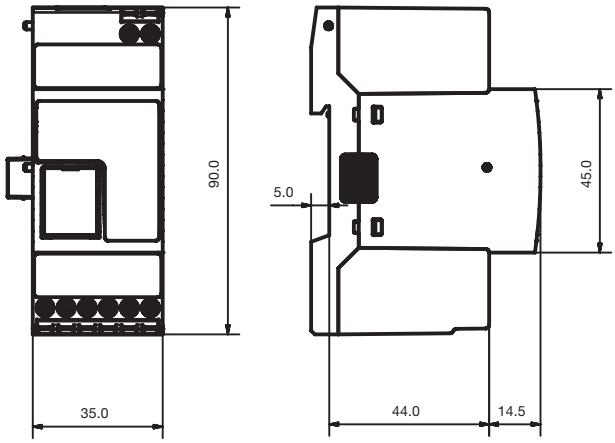


Element	Component	Function
A	Ethernet port	Displaying the web interface and transmitting data to remote systems via wired connection
B	USB Port (Host function)	IP address programming
C	Information LED	Indicating the following statuses: Local bus connection (BUS) Status (STATUS) USB key (USB) RS485 COM1 port (COM1) RS485 COM2 port (COM2) Module power
D	Micro SD memory card slot	IP address programming
E	Mini-USB port (Device function)	Connecting a PC to view the web interface if there are connection problems via Ethernet port and permitting backup to PC
F	RS485 COM1 port terminals	Connecting to any Modbus device
G	RS485 COM2 port terminals	Connecting to any Modbus device
H	Power terminals	Powering the module
I	Local bus port (left side and right side)	Left side: connecting the SH2DSP24. Right side: connecting the SH2MCG24, SH2WBU230N, SH2DUG24.

Features

General

Material	Noryl, self-extinguishing V-0 (UL94)
Dimensions	2-DIN module
Weight	150 g
Protection grade	Front: IP40; Screw terminals: IP20
Dielectric strength	4000 VAC RMS for 1 minute
Rejection (CMRR)	>65 dB, from 45 to 65 Hz
Terminal	12 screw-type; Section: 1.5 mm² maximum; Torque: 0.4-0.8 Nm



Environmental

Operating temperature	-20° to +50°C (-4° to 122°F)
Storage temperature	-30° to +70°C (-22° to +158°F)
Humidity (non-condensing)	20 to 90% RH

Compatibility and conformity

Electromagnetic compatibility (EMC) - immunity	EN 61000-6-2
Electromagnetic compatibility (EMC) - emissions	EN 61000-6-3
Approvals	CE cULus LISTED

Power Supply

Power Supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2); Rated operational voltage: 15 to 24 VDC ± 20%
Rated operational power	5 W
Protection for reverse polarity	Yes
Connection	A1 (+) and A2 (-)

Inputs/outputs insulation

Type of input/ output	DC power supply	RS485 COM1	RS485 COM2	Ethernet	USB port "H"	USB port "D"	SH2UMMF124 and SH2DSP24
DC power supply	-	2 kV	2 kV	0.5 kV	0 kV	0 kV	0 kV
RS485 COM1	2 kV	-	0.5 kV	2 kV	2 kV	2 kV	2 kV
RS485 COM2	2 kV	0.5 kV	-	2 kV	2 kV	2 kV	2 kV
Ethernet	0.5 kV	2 kV	2 kV	-	0.5 kV	0.5 kV	0.5 kV
USB port "H"	0 kV	2 kV	2 kV	0.5 kV	-	0 kV	0 kV
USB port "D"	0 kV	2 kV	2 kV	0.5 kV	0 kV	-	0 kV
SH2DSP24	0 kV	2 kV	2 kV	0.5 kV	0 kV	0 kV	-

- **0kV**: inputs / outputs are not insulated.
- **2kVrms**: EN61010-1, IEC60664-1 - over-voltage category III, pollution degree 2, double insulation on systems with max. 300Vrms to ground.
- **0.5kVrms**: the insulation is functional type Mounting.

Main hardware characteristics

Memory	• Flash (data): 4 GB • RAM 128 MB (internal) • File system: external micro SD or USB memory stick only: FAT32 (VFAT). Up to 2 GB in case of micro SD type and from 4 to 16 GB in case of micro SDHC type (removable), industrial type (-25°C to 85° suggested)
Communication ports	• RS485: 2 ports • Ethernet: 1 port, for Internet/LAN connection
Auxiliary bus (HS BUS)	• Right side: compatible with SH2MCG24, SH2WBU230x and SH2DUG24 units
USB ports	• 1, “B” device function • 1, “E” host function

HS Bus

Bus type	RS485 high speed bus
Function	Connection to master channel generator module (SH2MCG24, SH2WBU230x and SH-2DUG24)
Number of slave	Maximum 7
Connection	By local bus on the right side Note: All the SH2MCG24, SH2WBU230x and SH2DUG24 modules have to be connected on the right side of the SH2WEB24.

Auxiliary Internal Bus

Function	Connection to SH2UMMF124 and SH2DSP24 modules
Number of slave	Maximum 1
Connection	By local bus on the left side Note: On this bus only one GSM module SH2UMMF124 or SH2DSP24 can be connected.

Main functions

Configuration	The configuration and the programming of SH2WEB24 and all other modules connected to either the same local bus or to the managed RS485 ports can be carried out using the Sx configuration software. For the installation of the configuration, please refer to the Sx tool software manual.
Clock	• Functions: universal clock and calendar with automatic synchronisation enabling through internet connection. • Battery life: 10 years.
Event management and messaging	• E-mails configuration: setting of recipient addresses and relevant subject, sender address, sender name, SMTP server, username of SMTP server and password of SMTP server. • Actions: the user can program according to which events the emails and relevant attachments have to be sent. • SMS configuration: setting of phone numbers: - events; - commands; - information on request.
Logging	• **Data**: the data are accessible and downloadable using Ethernet communication port. • Function description: all the variables gathered from both dupline modules and Modbus modules are stored individually into the internal memory. • Stored data type: variables: V, A, W, kWh, temperatures, light levels, wind speed, humidity, in general all the analogue values collected from the smart Dupline modules. • Storage interval: selectable from 1 minute to 24 hours. • Sampling management: the sample stored within the selected time interval results from the continuous average calculation of the measured values. The average is calculated with an interval within two following measurements of approx. 2s. • Storage duration: before overwriting: depending on the storage interval. • Number of variables: see “Stored set of variables.” • Data format: variables, date (dd:mm:yy) and time (hh:mm:ss).
	• **Events**: the data are accessible and downloadable using Ethernet communication port: see “Memory Management” table. • Function description: all the events gathered from the smart Dupline functions can be stored individually into the internal memory. • Number of events: till memory is full. • Data reset: the reset can be carried out through the proper command in the Sx tool. • Data format: event, date (dd:mm:yy) and time (hh:mm:ss).
Memory	Total available memory for database and events: 1.8 GB. Yearly grouped data: 6.0Mb. Single row: 150 bytes. **Notes**: When the 1.8 GB limit is reached, the 5% of the oldest data are deleted to provide the space for new data. The memory used data are relevant to the internal memory only.

Ports

Ethernet

Rated inputs	HTTP
IP configuration	Static IP/Netmask/Default gateway, DHCP
DNS	Primary and secondary DNS as a static or dynamic management (using DHCP server if configured).
WEB server	Port: 80; N. of connections: 3
TOOL	N. of connections: 1
MODBUS TCP/IP	N. of connections: 5
Connections	RJ45 10/100 BaseTX; Max. distance: 100m
Insulation	See “Insulation between inputs and outputs” table

RS485

Number of ports	2
Purpose	COM1: Modbus slave/up to 64 generic modbus devices COM2: up to 64 generic modbus devices
Connections	2-wire. Max. distance 600 m
Addresses	247
Protocol	MODBUS
Data (bidirectional)	All data
Data format	Selectable: 1 start bit, 7/8 data bit, no/odd/even/ parity, 1/2 stop bit
Baud-rate	Selectable: 9600, 19200, 38400, 115200, bits/s
Driver input capability	1/8 unit load Up to 256 nodes on a network
Insulation	See the table “Insulation between inputs and outputs”

USB

Type	High speed 2.0
Connections	“A” type as “Host” function on the top of the housing. “Mini A” type as “Device” function on the front of the housing protected by front cover.
Host function (USB)	Available on the “B” USB port only.
Device function (mini USB)	Available on the “E” USB port only, can be connected to a PC to perform the following functions: service port for firmware upgrading. Note: both USB and mini USB ports are working in parallel, so relevant port functions can work simultaneously.
Working type	Hot swap
Communication speed	60MB/s (480Mbits/s)

Micro SD slot

Type	Industrial (from -25 to +85 °C / -13 to + 185 °F)
Capacity	SD: up to 2 GB SDHC: 4–16 GB
Function	IP address programming

Mini-USB

Type	High speed USB 2.0 - mini
Mode	Hot swap
Speed	60 MB/s
Function	• Accessing the web interface without Ethernet connection* • Configuring the system, updating firmware, and downloading measured data and events
Condition of use	Can be used in parallel with USB port.

Note*: this requires a specific driver be installed on the PC. The driver is downloadable from Carlo Gavazzi website.

Communication protocols

Introduction

The Sx2WEB module collects data from the field, it process collected data and communicates to remote systems. Different TCP/IP based communication protocols can be used. All protocols are supported by wired and wireless connection and managed on both local network (LAN) and remote one (WAN).

Protocol overview

Protocol	Type	Transmission mode from Sx2WEB	Data
HTTP (web browser)	Standard	Pull	All
FTP	Standard	Push	All
Modbus TCP/IP	Standard	Pull	All

Inbound TCP/IP communication

TCP/IP port number	TCP/IP port description	Purpose
80/443	HTTP/HTTPS	Access to the internal web-server
52325	SSH	Remote service (reserved to support personnel)

Outbound TCP/IP communication

TCP/IP port number	TCP/IP port description	Purpose
23	DNS	Domain name resolution
37	NTP	Network time services access
21 (selectable)	FTP	Data upload to FTP server (csv, xlsx, xml file)
25 (selectable)	SMTP	Email message dispatching

Modbus TCP communication

TCP/IP port number	TCP/IP port description	Purpose
502 (selectable)	Modbus (TCP)	Modbus TCP data communication: both master and slave

Connection to the configuration tool

TCP/IP port number	Purpose
10000/10001/10002/80/48007/52325	Connection to the configuration software First connection: the Sx2WEB is by default programmed as DHCP client. It has, anyway, a fixed secondary IP address: 192.168.253.254

Connection Diagrams

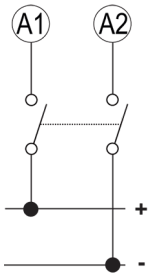


Fig. 1 *Power supply*

References

Further reading

Information	Document	Where to find it
Sx2WEB installation guide	System manual	
Sx2WEB software manual	Sx tool manual	
Sx2WEB wireless installation manual	Wireless manual	

Order code

SH2WEB24

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Controller	Sx2WEB24	
Bus generator	SH2WBU230N, SH2MCG24, SH-2DUG24	

XAP 1.0

Extended Automation Platform

Benefits

- **Integration**. XAP 1.0 includes all the tools to set up and operate building automation functions
- **Scalability**. Together with the UWP 3.0 platform, it offers a complete solution from top to bottom to manage an efficient building
- **Openness.** XAP 1.0 can be easily programmed and connected to other devices thanks to standards such as CODESYS, OPC UA, KNX IP, BACnet
- **Reliability.** Trusted and secure Linux-based operating system
- **Connectivity**. XAP 1.0 is a server platform for connecting multiple and different devices and sub-systems
- **Interoperability**. IoT data distribution via MQTT

Description

XAP 1.0 is a rugged and compact controller designed as a powerful IIoT gateway and a programmable unit for building automation functions. It is empowered by a configurable web interface which makes it an outstanding HMI without screen. It integrates the standard IEC 61131 PLC (Codesys), so that any building automation function can be programmed by means of a standard and well-known tool. Together with the UWP platform, XAP 1.0 delivers a complete solution in building automation from the management level down to the field level. The powerful software Wizard permits an easy setup of graphic pages, functions and protocols.

Applications

XAP 1.0, as IIoT gateway, offers unique solutions for a wide range of applications in building automation and energy efficiency.

Main functions

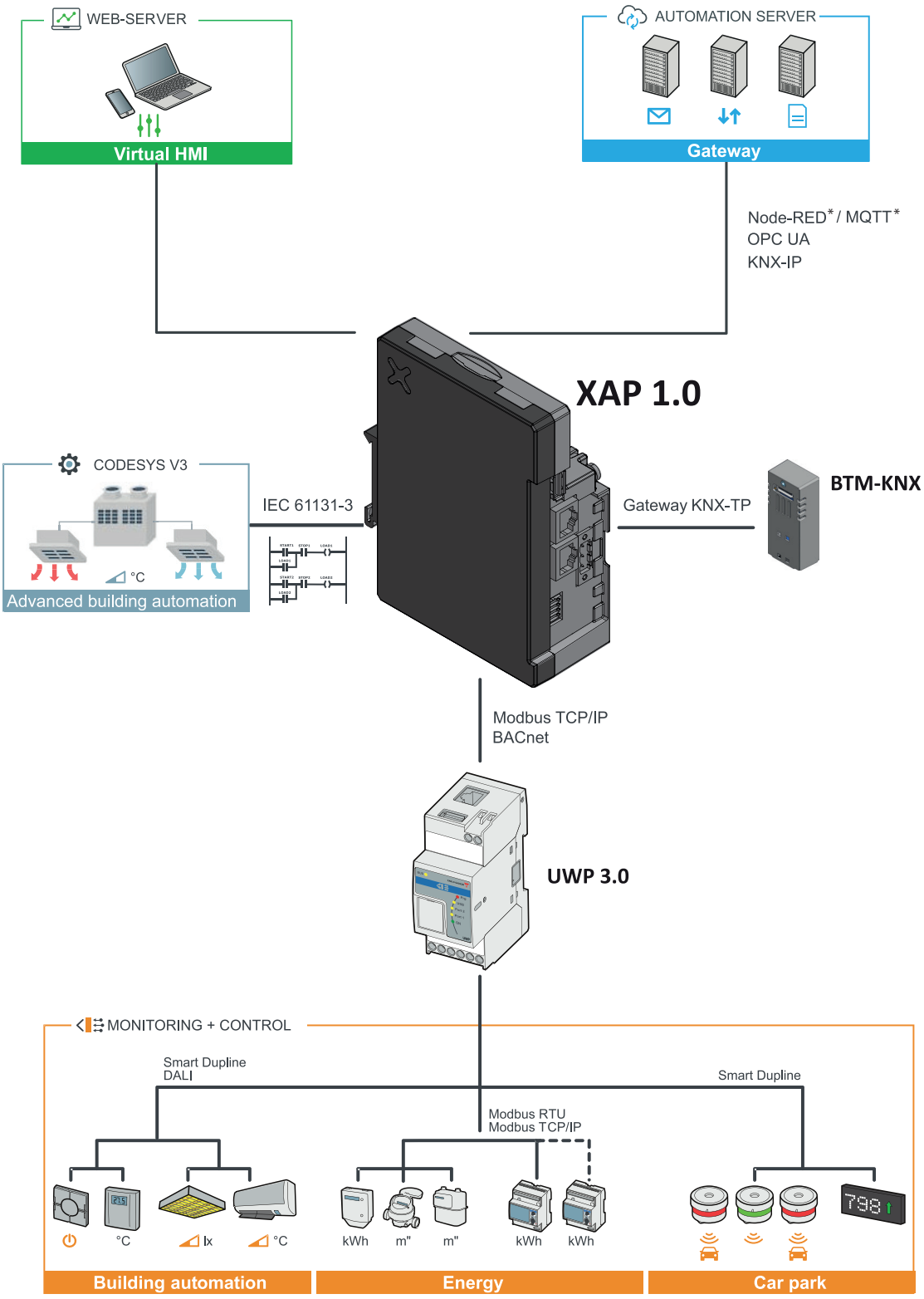
- Controller and gateway, HMI, PLC, PLC for building automation function
- Data communication: OPC UA*
- Cloud connectivity thanks to Node-RED*
- Operating System Linux
- Secure web server access: HTTPS
- Protocols: Modbus RTU/TCP-IP master and slave, BACnet client, KNX IP, KNX TP using an expansion module

**Note: optional*

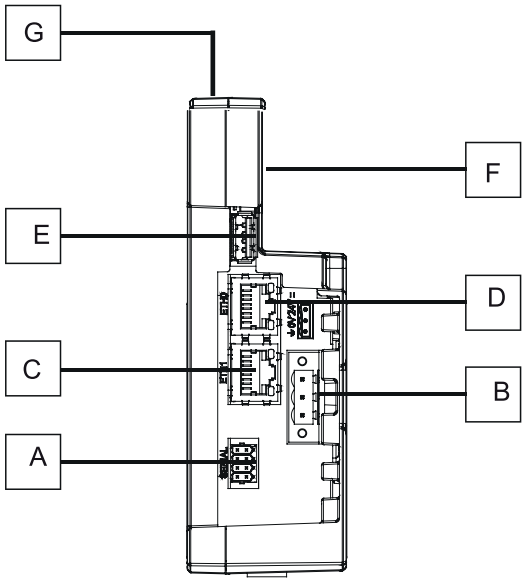
Main features

- Compatible with CODESYS V3: it supports network stacks and local I/O expandability
- 2 Ethernet ports for network separation WAN/LAN
- Customizable web interface, with different access types according to the type of user
- Up to 32 Modbus devices connected to the RS485 port
- Connectible to UWP 3.0 via BACnet or Modbus/TCP

Architecture



Structure

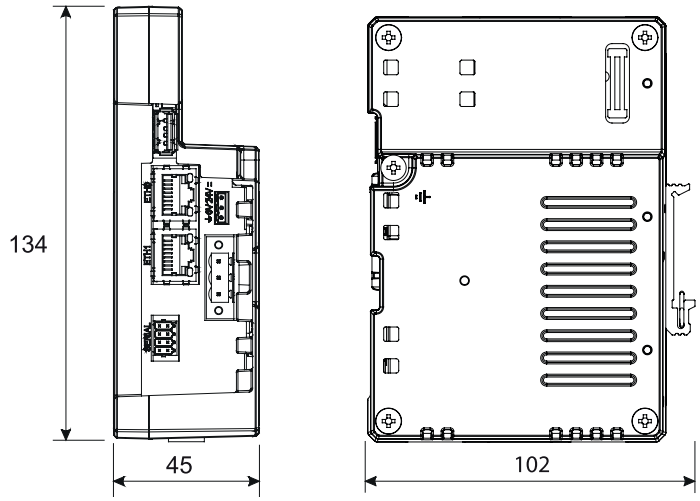


Area	Description
A	Serial port
B	Power supply
C	Ethernet port 1 (10 / 100 Mb)
D	Ethernet port 0 (10 / 100 Mb)
E	USB port 1
F	Expansion slots for plug-in module (BTM-KNX)
G	SD Card slot

Features

General

Material	Metal
Dimensions	2-DIN module
Weight	600 g
Protection degree	IP20
Terminals	8 terminals, screw-type; Section: 1.5 mm² maximum; Torque: from 0.4 to 0.8 Nm



Environmental specifications

Operating temperature	-20° to 60°C
Storage temperature	-20° to +70°C
Humidity (non-condensing)	5 to 85% RH non-condensing
Shock	± 50 g, 11 ms, 3 pulses per axis
Vibration	5 ÷ 9 Hz, 7 mm p-p 9 ÷ 150 Hz, 1 g

Power supply

Power supply	24 Vdc: 10-32 Vdc
Current rating	0.35A @ 24 Vdc

Note: For applications requiring compliance with EN 61131-2 and specifically in reference to 10 ms voltage dips, the power supply range voltage is 18-32 Vdc

Compatibility and conformity

Standards	Electromagnetic compatibility (EMC) - immunity: EN 61000-6-1, EN 61000-6-2
	Electromagnetic compatibility (EMC) - emissions: EN61000-6-3, , EN 61000-6-4
	EN 60945, EMC emissions and immunity for marine applications
	Radiated disturbance test: CISPR 22, CISPR 16-2-3, CLASS A
Directives	EMC 2014/30/EU RoHS 2011/65/EU
Approvals	CE c UL us LISTED

Ports

Ethernet port	2 (eth 0 - 10/100, eth 1 - 10/100)
USB port	1 (Host v. 2.0, max. 500 mA)
Serial port	1 (RS232, RS485, RS422, configurable software)
SD card	Yes
Expansion	1 slot for plug-in modules

Battery

Backup battery	3V 50 mAh Lithium, rechargeable, not user-replaceable, model VL2330.
Recharge	At first installation it must be charged for 48 hours. When the battery is fully charged, it ensures a period of 3 months of data backup at 25°C

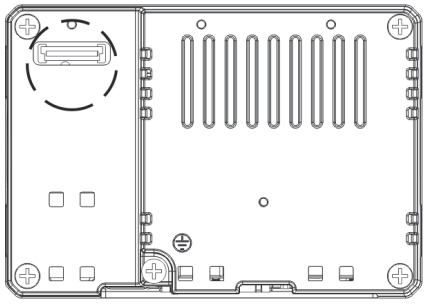


Fig. 1 *Battery*

System resources

CPU	ARM Cortex-A8 1 GHz
Operating System	Linux RT
Flash	4 GB
RAM	512 MB
Real Time Clock	RTC Backup; Buzzer: Yes; Accuracy <100 ppm

Connection Diagrams

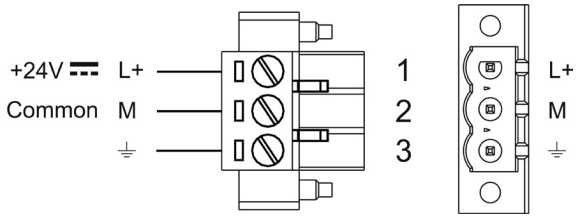
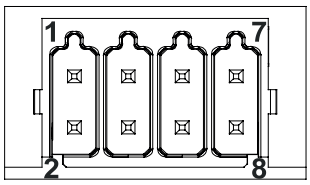


Fig. 2 *Power supply*



To operate in RS485 pins 1-2 and 3 - 4 must be connected externally (see Fig.4).

Pin	RS485	RS422	RS232
1	CHB-	CHB-	RX
2	CHA-	CHA-	TX
3	CHB+	CHB+	CTS
4	CHA+	CHA+	RTS
5	+5V output	+5V output	+5V output
6	GND	GND	GND
7			
8	SHIELD	SHIELD	SHIELD

Fig. 3 *Serial port pinout**

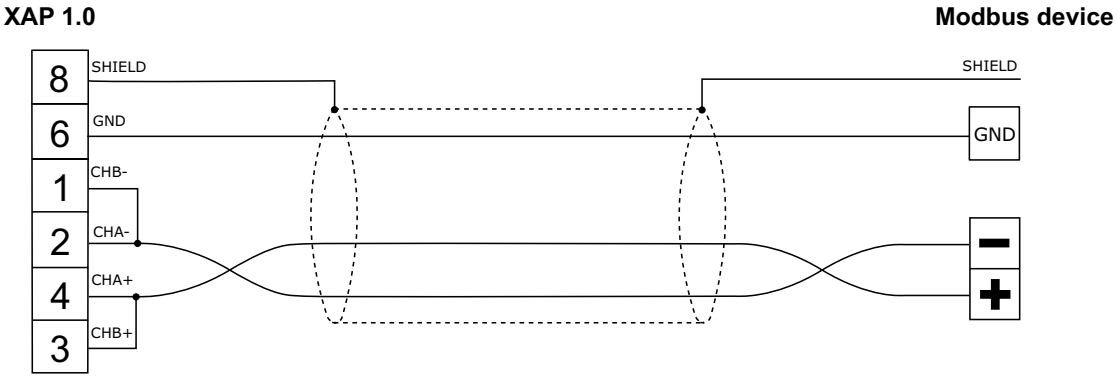


Fig. 4 *Connection diagram for RS485***

*The serial port is software programmable. Make sure you select the appropriate interface in the programming software.

**It can be used as reference when the pinout of the PLC is not known

Carlo Gavazzi Automation Components - Building automation

Carlo Gavazzi Automation Spa - IT Department

BTM-PC-IDE-LICENCE	LICENCE CODE FOR BTM-PC-IDE	
	Short description: LICENCE CODE FOR BTM-PC-IDE	Model: Application software
	Long Description: LICENCE CODE FOR BTM-PC-IDE	Language: English

BTM-PC-RT-LICENCE	LICENCE CODE FOR BTM-PC-RUNTIME	
	Short description: LICENCE CODE FOR BTM-PC-RUNTIME	Model: Application software
	Long Description: LICENCE CODE FOR BTM-PC-RUNTIME	Language: English

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