Smart Dupline®
SBWEB BACnet Controller
Type SB2WEB24

- **BACnet Controller for HVAC and lighting systems**
- **Ethernet port for BACnet/IP and Modbus/TPC communication**
- **Modbus-RTU master RS485 port for connection of Carlo Gavazzi energy meters**
- **Functions for control of lighting, blinds, temperature, logic, scheduling, sequencing, alarms and data logging**
- **Functions and parameters can be monitored and controlled via BACnet/IP objects**
- **BACnet/IP objects are automatically created for all Dupline® and Energy Meter data points**
- **Manages up to 7 Dupline® Master Generators**
- **BTL certified**
- **User-friendly PC-based configuration tool**
- **Dimension: 2-DIN housing**
- **12 to 28 VDC Power Supply**

Product Description

The SB2WEB24 programmable BACnet Controller is the brain and central unit in Carlo Gavazzi's integrated concept for HVAC and lighting control in smart buildings. On one hand the SB2WEB24 can manage the complete lighting control system based on Dupline® sensors/actuators and DALI actuators, and on the other hand it can operate as Dupline® – BACnet/IP gateway thus allowing DDC controllers to use Dupline® I/O modules and sensors as decentralized I/O via BACnet objects. The SB2WEB is also able to operate as Modbus/TCP slave. The SB2WEB provides functions for control of lighting, blinds, temperature, logic, scheduling, sequencing, alarms and data logging. The functions can be controlled, monitored and operational parameters changed via BACnet objects. The SB2WEB24 can manage data points from up to 7 Dupline® networks, each driven by a Dupline® Master Channel Generator (SH2MCG24) connected via the right side connector or via an external RS485 link. Only Dupline® modules supporting the Smart Dupline® protocol can be used. The SB2WEB24 is also equipped with an RS485 port for communication with CG energy meters. All electrical parameters from the energy meters are made available as BACnet objects. Via the PC-based configuration tool the user defines which modules are connected to the SB2WEB24 and the SH2MCG24s and the unique SIN-address for each Dupline® module is entered. Subsequently the configuration tool will automatically configure all connected Dupline® modules via the bus, and create the relevant BACnet objects.

Ordering Key

SB 2 WEB 24

- **SB** — Smart Building
- **2** — 2-DIN housing
- **WEB** — CPU module
- **24** — Power supply

Type Selection

Housing	Mounting	Supply: 15 to 24 VDC ± 20%
2 DIN	DIN-rail	**SB2WEB24**

Supply Specifications

Power supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage	15 to 24 VDC ± 20%
Rated impulse voltage	500V (1,2/50µs) (IEC 60664-1, tab. F.1)
Rated operational power	5 W
Protection against reverse polarity	Yes
Connection	A1 (+) and A2 (-)
Power off delay	1 s

RS485 Communications Ports

Number of ports	1
Purpose	COM2: for energy meters (EM21- 72D, EM24-DIN, EM26-96 and EM33-DIN)
Type	Multidrop, bidirectional (static and dynamic variables)
Connections	2-wire. Max. distance 1000m
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”

Main Hardware Characteristics

Communication ports	
RS485	1 port
Ethernet	1 port, for LAN connection
Auxiliary bus	HS BUS
Right side	Compatible with SH2MCG24

Ethernet Port

Rated inputs	HTTP
IP configuration	Static IP / Netmask / Default gateway
DNS	Primary and secondary DNS as a static or dynamic management (using DHCP server if configured)
Connections	RJ45 10/100 BaseTX Max. distance: 100m
Insulation	See “Insulation between inputs and outputs” table.

Max. Number of Energy Meters which can be managed by one SB2WEB24

Maximum number of energy meters
Up to 32
RS485 communication port: • The information acquired from each single energy meter complies to the “Stored set of variables coming from every energy meter” table.

HS Bus Specs (right side)

Bus type	RS485 high speed bus
Function	Connection to master channel generator module (SH2MCG24)
Number of slave	Max 7
Connection	By local bus on the right side **Note:** All the SH2MCG24 modules have to be connected on the right side of the SB2WEB24.

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SB2WEB24 Based Insulation between Inputs and Outputs

Type of input/output	DC Power supply	RS485 - COM 1	RS485 - COM 2	Ethernet	USB port "H"	USB port "D"	SH2UMMF124
DC Power supply	-	2kV	2kV	0.5kV	0kV	0kV	0kV
RS485 - COM 1	2kV	-	0.5kV	2kV	2kV	2kV	2kV
RS485 - COM 2 (energy meter)	2kV	0.5kV	-	2kV	2kV	2kV	2kV
Ethernet (LAN/Internet)	0.5kV	2kV	2kV	-	0.5kV	0.5kV	0.5kV
USB port "H" (Host)	0kV	2kV	2kV	0.5kV	-	0kV	0kV
USB port "D" (Service)	0kV	2kV	2kV	0.5kV	0kV	-	0kV
SH2UMMF124	0kV	2kV	2kV	0.5kV	0kV	0kV	-

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

General Specifications

Operating temperature	-20 to +50°C (-4°F to 122°F) (R.H. < 90% non-condensing @ 40°C)
Storage temperature	-30 to +70°C (-22°F to 158°F) (R.H. < 90% non-condensing @ 40°C)
Overvoltage category	Cat. III (IEC 60664, EN60664) For inputs from string: equivalent to Cat. I, reinforced insulation.
Dielectric strength	4000 VAC RMS for 1 minute
Noise rejection	
CMRR	65 dB, 45 to 65 Hz
Standard compliance	
Safety	IEC60664, IEC61010-1 EN60664, EN61010-1
Protection degree	
Front	IP40
Screw terminals	IP20
Housing	
Dimensions (WxHxD)	17.5 x 90 x 67 mm
Material	Noryl, self-extinguishing: UL 94 V-0
Weight	Approx. 150 g (packing included)
Mounting	DIN-rail

Approvals	cULus, according to UL60950 UL notes: Max room temperature: 40°C.Equipment must be supplied by a separately certified NEC class 2 (LPS) power unit. BTL certified
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)

Connections

Ethernet	RJ-45 connector (10/100Base-T)
RS485 Cable cross-section area Screws tightening torque	3 screw terminals per port 1.5 mm^2 max Min. 0.4 Nm, Max. 0.8 Nm
Power supply Cable cross-section area Screws tightening torque	2 screw terminals 1.5 mm^2 max Min. 0.4 Nm, Max. 0.8 Nm

Mode of Operation

The SB2WEB24 BACnet gateway needs to be configured to become operational. When the SB2WEB24 is connected to the TCP/IP network, the user can scan the system via the PC-based configuration tool to discover all Dupline® and DALI modules connected. It is also possible to enter the modules manually in offline mode. Each Dupline® module has a so-called SIN address (printed on the packaging and on the module) which must be entered during the configuration process to provide a unique identification of the item. Subsequently, the tool will automatically configure the connected Dupline® modules over the bus. Once all modules with data points have been defined, it is possible to define the functions that use them. Some of the functions are predefined (e.g. lighting, alarm, temperature) with inputs, outputs and operational parameters, while others are standard types, such as logic, timers, real-time, sequence, data logging etc. In order to ease testing and troubleshooting during commissioning, the configuration tool also provides the option to monitor live data from the SB2WEB24.

All physical data points in the system are automatically made available as BACnet/IP objects, thus making it easy for external DDC controllers to use them as a remote I/O. In addition, BACnet objects are created that allow monitoring and control (trigger) of the functions, as well as changing operating parameters (e.g. lux set-point for constant light function).

LEDs Indication

Green LED: ON
ON: power ON
OFF: power OFF
Flashing: 200ms ON 200ms OFF writing in progress on the µSD memory, do not remove it.

Yellow LEDs:
COM 1
OFF: no communications on RS485 A.
Flashing: 200ms ON 600ms OFF, no answer from the slave.
Flashing: 200ms ON 200ms OFF, communications OK.

COM 2
OFF: no communications on RS485 B.
Flashing: 200ms ON 600ms OFF, no answer from the slave.
Flashing: 200ms ON 200ms OFF, communications OK.

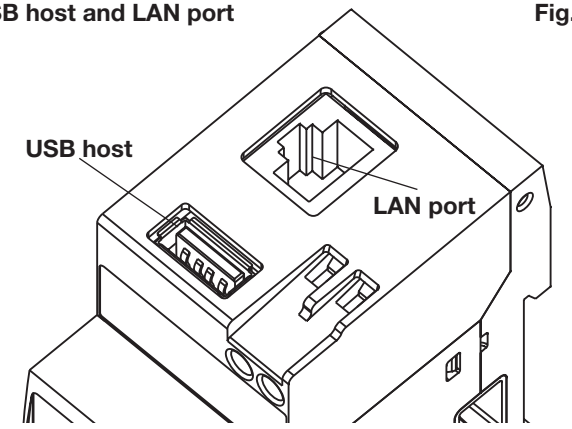
BUS
OFF: no communication is present on the HSbus.
ON: communication error on HSbus.
Flashing: communication OK on HSbus.

Blue LED: USB
ON: acknowledged device, no writing in progress, device can be removed; OFF: neither acknowledged device nor connected device; Flashing: acknowledged device and writing cycle in progress, device cannot be removed.

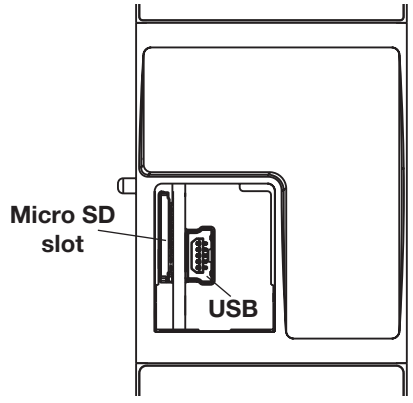
Red LED: STATUS
ON: NO configuration present.
OFF: configuration present in the SB2WEB24.
Flashing: SB2WEB24 is connected to the SHTool.

Connections

USB host and LAN port **Fig. 1**

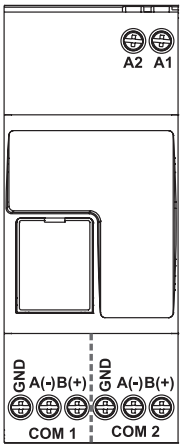


Micro SD slot and USB "device" cable connection Fig. 2

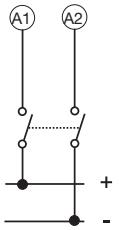


Connections (cont.)

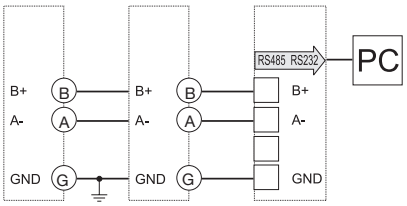
Frontal connectors **Fig. 3**



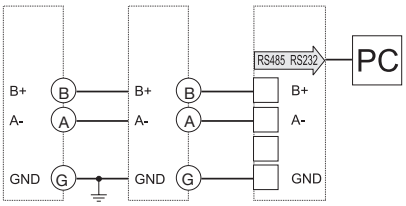
Power supply **Fig. 4**



RS485 port COM1 **Fig. 5**



RS485 port COM2 **Fig. 6**



Dimensions