UWP 3.0



Universal web platform



Description

UWP 3.0 is a monitoring gateway and controller that allows the monitoring and controlling of installations where Energy Efficiency Management, Building Automation and Car Park Guidance functions are needed.

The system monitors and controls connected devices via its local bus management functions; it includes a web server with a powerful and intuitive user interface to display customised dashboards and interact with local devices and remote systems; the UWP 3.0 embedded automation server allows data to be exchanged locally or remotely via standard Internet protocols.

UWP 3.0 can manage the complete lighting control system based on DALI actuators and it can operate as a BACnet/IP gateway.

Benefits

- Flexibility. UWP 3.0 is the core of a powerful system which includes a complete range of meters, sensors and actuators
- Integration. UWP 3.0 includes all the necessary software tools to set up and operate the required solution. No subscriptions or additional services are required
- Interoperability. By leveraging its automation-server functions, it is easy to exchange data with other systems via FTP, SFTP, FTPS, SMTP, Rest-API, MQTT, Modbus and BACnet
- **Scalability**. It is easy to scale up the system, by leveraging its comprehensive set of monitoring, controlling and communication functions
- Fast installation and set up. Each function can be programmed with ease by means of the free configuration tool
- Reliability. The system is secure against cyber-attacks and computer viruses. It is the ideal Edge unit for providing local control and data redundancy to distributed applications
- High storage capability. Thanks to its 4GB of Storage memory, UWP 3.0 can store complex configurations and log history and events
- IoT Ready. UWP 3.0 is Microsoft Azure Certified for IoT
- **Powered by AWS**. UWP 3.0 is compatible with Amazon AWS IoT.
- Awareness. By means of scheduled reports and email/SMS alerts, users are constantly advised about installation status
- **Compact Size**. All of the above is available in a 2 DIN module



UWP 3.0 is suitable for applications in Building Automation, Energy Efficiency Performance Management, Car Parking Guidance and all their combinations are suitable application for UWP 3.0. Its comprehensive set of functions, small dimensions and reliability are the key factors for depending onUWP 3.0 as the local monitoring/controlling unit in a wider distributed scenario.



Main functions

- · Monitoring energy control systems so as to check energy efficiency status and improvements.
- Recording, displaying and transmitting information (events and history)
- · Defining logical functions, reacting to abnormal conditions and control actuators
- · Setting up and operating Building Automation functions
- · Setting up and operating Lighting Control functions and DALI
- Setting up and operating Car Parking Guidance systems



Main features

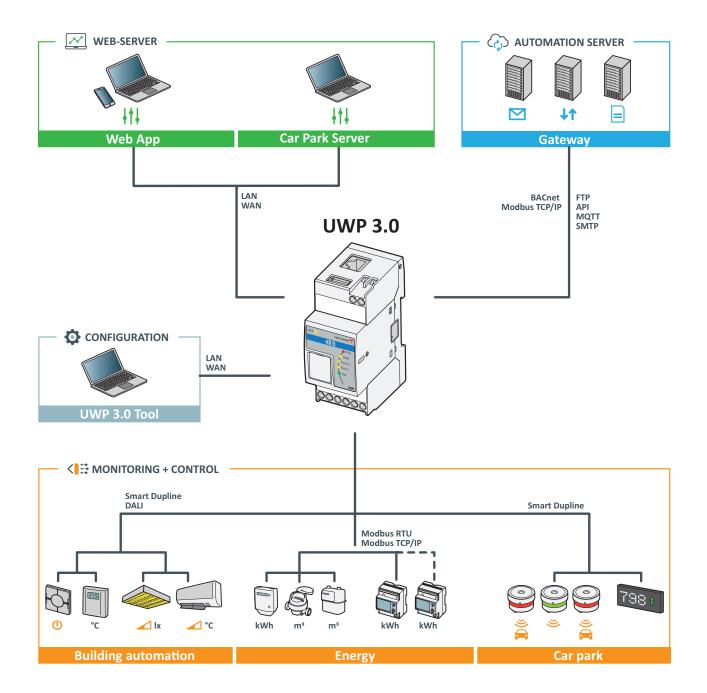
- Up to 5000 managed signals (including variables, I/Os) shared among Energy Management, Building Automation and Car Park applications*.
- Up to 128 Modbus devices connected to RS485 ports (64 devices each port).
- Up to 5 users concurrently connected to the Web-App.
- Up to 5 concurrent M2M connections (API connections, BACnet clients, Modbus masters).
- Up to 150 different products from the CG range can be connected to UWP 3.0

· BTL certified.

*Note: when the Car Park system is active, there will be 2000 signals available for the other applications (Energy Management and Building Automation).



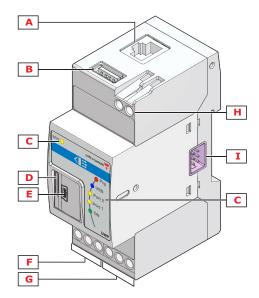
Architecture



UWP 3.0



Structure



Description		
Ethernet port		
USB port (host function)		
Indication LEDs: Green (ON) ON - Power ON OFF - Power OFF Yellow (BUS) ON - Communication ON on the HS-bus Flashing - Communication error on the HS-bus Flashing - Communication error on the HS-bus Yellow (Port 1) OFF - Communication disabled Flashing 200 ms ON, 600 ms OFF - No communications on RS485 COM1 Flashing 200 ms ON, 200 ms OFF - Communications OK Yellow (Port 2) OFF - Communication disabled Flashing 200 ms ON, 600 ms OFF - No communications on RS485 COM2 Flashing 200 ms ON, 200 ms OFF - No communications on RS485 COM2 Flashing 200 ms ON, 200 ms OFF - No communications OK Blue (USB) ON - NUSB device is present OFF - No USB device is present Red (Prg) ON - No configuration is present OFF - Configuration present in the UWP Flashing - UWP is connected to the UWP 3.0 Tool		
Micro SD memory card slot		
Mini-USB port (Device function) RS485 COM1 port terminals		
RS465 COM port terminals		
Power supply connection block		
Local bus ports (left side and right side)		

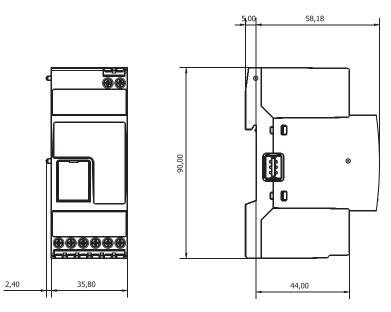


Features



General

Material	Noryl, self-extinguishing V-0 (UL94)
Dimensions	2-DIN module
Weight	150 g
Protection degree	Front: IP40; Screw terminals: IP20
Dielectric strength	4000 VAC RMS for 1 minute
Rejection (CMRR)	>65 dB, from 45 to 65 Hz
Terminals	8 terminals, screw-type; Section: 1.5 mm ² maximum; Torque: from 0.4 to 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

Power Supply

Power supply	15-28 VDC
Consumption	≤ 5 W



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.

Compatibility and conformity

	Electromagnetic compatibility (EMC) - immunity: EN61000-6-2
Standards	Electromagnetic compatibility (EMC) - emissions: EN61000-6-3
	Safety: EN60950
	EMC 2014/30/EU
Directives	LVD 2014/35/EU
	RoHS 2011/65/EU
Approvals	



Ports



Ethernet

	12 000 (7
Standard	ISO9847
LAN Configuration	Static or DHCP
	IP Address; Net Mask; Default Gateway, DNS (primary, secondary)
DYNDNS	dyndns.it, dyndns.org, freedns.afraid.com, zoneedit.com, no-ip.com, easydns.com, 3322.
	org, sitelution.com, dnsoimatic.com, tunnelbroker.net, tzo.com, dhis.com
Drotocolo	HTTP, HTTPS, FTP, FTPS, SFTP, Modbus TCP/IP, DP (Data Push), SMTP, NTP, Azure IoT
Protocols	Hub, Modbus Gateway TCP/RTU, BACnet IP
	WEB server: Port: 80; 5 connections
Client connections	TOOL: 1 connection
	Modbus TCP/IP: 5 connections
Connection type	RJ45 connector (10 Base-T, 100 Base-TX); maximum distance: 100m



Number of ports	2		
Function	COM1: Master or slave (gateway function) COM2: Master		
Number of slaves	COM1: up to 64 COM2: up to 64		
Connections	2-wire. Max. distance 600 m		
Protocol	Modbus RTU		
Data format	Selectable: 1 start bit, 7/8 data bit, no/odd/even/ parity, 1/2 stop bit		
Baud-rate	Selectable: from 110 to 256000 bits/s		
Driver input capability	1/8 unit load Up to 256 nodes on a network		



Туре	Hi-speed 2.0 Type-A	
Mode	Host	
Communication speed	60MB/s	
Function	Setting IP	
Supported Device Type	USB mass storage: direct connection to UWP 3.0 USB modem/router: via additional module SH2DSP24	
Supported File System FAT32, ext2, ext3, ext4		
Note	Disabled automatically when SH2DSP24 is connected	

Mini-USB

Туре	Hi-speed 2.0 mini-B		
Mode	Device		
Speed	60 MB/s		
Function	RNDIS (Virtual Ethernet) Network Access via IP: 192.168.254.254		



Micro SD slot

Туре	Industrial (from -25 to +85 °C / -13 to + 185 °F)	
Capacity	SD and SDHC Up to 32 GB	
Function	Setting IP	
Supported File System	FAT32,ext2,ext3,ext4	



Bus type	RS485 high speed bus
Function	Connection to master channel generator modules (SH2MCG24, SH2WBU230x, SH2DUG24 and SBP2MCG324)
Number of slaves	Maximum 7
Connection	By local bus on the right hand side Note: All the SH2MCG24, SH2WBU230x, SH2DUG24 and SBP2MCG324 modules have to be connected on the right hand side of the SH2WEB24.
Terminalisation	Always required on the last module
Max distance	600 m



TCP/IP Ports

Inbound communication

Port number	Description	Purpose
80	HTTP	Access to the internal web-server, API functions
443	HTTPS	Access to the internal web-server, API functions
52325	SSH	Remote service (reserved to support personnel)
10000	UWP 3.0	Configuration and maintenance (UWP 3.0 Tool)
10001	UWP 3.0	Configuration and maintenance (UWP 3.0 Tool)
10002	UWP 3.0	Configuration and maintenance (UWP 3.0 Tool)

Outbound communication

Port number	Description	Purpose
53	DNS	Domain name resolution
123	NTP	Network time services access
21	FTP	Data upload to FTP server
25	SMTP	Email message dispatching
80	HTTP	DP (data push communication)

Modbus TCP/IP

Function	TCP Port	Purpose
Modbus TCP/IP Slave	502 (selectable)	Modbus TCP data communication
Modbus bridge TCP/RTU	5013 (Selectable)	Bridge function for accessing (read and write) RTU me- ter connected to the UWP RTU ports

Data management

	INPUT from: Modbus RTU, Modbus TCP/IP, Dupline
tion	OUTPUT to: Modbus RTU, Modbus TCP/IP, BACnet, Dupline, DALI
Embedded Database Embedded database for storing system configuration, variables, events Flexible data model based on signals definition and functions creation	
Automation server	Automation server for exchanging data with other systems via: FTP, SFTP, FTPS, Rest-API, SMTP, MQTT



Functions

Local monitoring and control

Connectable devices	Carlo Gavazzi Meters Smart Dupline sensors and actuators BACnet masters Modbus RTU, Modbus TCP/IP slaves (any Modbus slave can be integrated thanks to the		
Monitoring functions	Free Modbus Editor tool) Logging of variables and events Average, Maximum, Minimum calculation Creation of triggers based on events		
User Interface functions	Responsive web interface Customised dashboards Charting tools for displaying and analysing history data Cost centres base navigation tree Energy Summary display Dedicated widgets for monitoring control functions		
Automation Server func- tions	M2M communication via: Rest-API, FTP, SFTP, FTPS, MQTT, SMTP, Modbus TCP/IP, BAC- net Email or SMS alerts Multi-site data aggregation via Em ² -Server Microsoft Azure certified for IoT Amazon AWS IoT compatible		
Reporting	Online or scheduled reports in XLSX, XML, CSV format XLSX report templates with free variable selection		

Local control

	Carlo Gavazzi Meters	
Connectable devices	Smart Dupline sensors and actuators	
	Modbus RTU, Modbus TCP/IP slaves and DALI ballasts	
	ON/OFF switching	
	Standard Light Control functions, including DALI and dimming	
	Advanced Light Control, including Tunable White Control and Constant Light	
	Temperature control	
	Roller Blind control	
	BMS integration via Modbus TCP/IP and BACnet	
	Logic functions, timers, analog comparators	
Control functions	Calendar scheduler	
	Math function	
	Analogue (0-10 V) Output	
	Smoke, Water, Intruder alarms	
	Astronomical clock	
	Hour counter	
	Commands over Modbus	
	Modbus driver writing / reading functions for any Modbus device	
	Responsive web interface	
User Interface functions	Customised dashboards	
	Dedicated widgets for monitoring control functions and events	
Automation Server func-	Integration into BMS systems via BACnet and Modbus TCP/IP	
tions	Email or SMS alerts	
Reporting	Online or scheduled reports in XLSX, XML CSV format for events	



Car parking guidance

Connectable devices	Carlo Gavazzi Car Park sensors and actuators	
Control functions	Car Park Guidance	
User Interface functions Real time Car Park zones/bays mapping Analysis of historical occupation Commands and indicators display		
Automation Server func- tions	Scalability via Carlo Gavazzi CPY system	



Software and interfaces UWP 3.0 Tool

UWP 3.0 Tool is the UWP 3.0 configuration software. It allows the user to:

- carry out the system commissioning
- · define the automation and control logics
- set the measuring instruments and sensors monitoring.

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Main functions

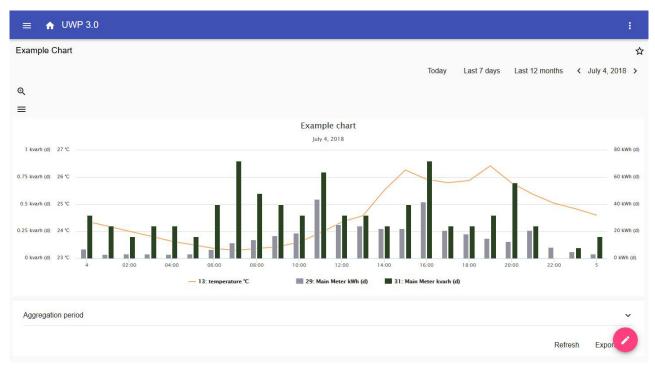
- · To configure interfaces and communication protocols
- · To execute the Dupline modules automatic scan for fast commissioning
- To configure and manage the connected modules
- To define the control and automation functions
- To generate a driver to monitor third party Modbus devices
- · To set the data and events collection and storage from Carlo Gavazzi or third party instruments
- To configure the Carlo Gavazzi Car Park system
- To setup the Carpark devices (sensors, indicators, displays)
- To develop Modbus drivers for UWP 3.0 with both reading and writing functions for any Modbus device
- To save a configuration offline for backup or any subsequent use



UWP 3.0 Web App

The UWP 3.0 Web App is the UWP 3.0 Web Interface, accessible through Web browsers from mobile or desktop devices. Through widgets contained in predefined and customised dashboards, it allows the user to:

- view and export collected data
- control the automation functions
- define specific settings (User Interface and Server Automation).





Main functions

- To view collected data as real time values or charts
- To generate data and events reports
- · To manage and adjust the functions parameters (for example, modify temperature set points)
- To send commands (for example, switching on/off or select scenarios)
- To configure Data Push Services to FTP/SFTP/FTPS servers or Em²-Server (Carlo Gavazzi)
- To configure MQTT link to IoT Hubs (Amazon AWS and Microsoft Azure).



Car Park Server

The Car Park solution includes the setup of the system and the monitoring of the installation. It allows the user to:

- define the configuration of the user interface
- view and export statistics for the car park occupancy.

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	Graph Table				
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					Server time: 2018-04-17 10:52 AM



- To collect data from ultrasonic sensors
- · To elaborate statistics: real time and historical occupation data from groups of sensors or single bays
- To command displays and indicators
- To represent data using with real time maps on the built-in car park web server
- To set the zone counter function for rooftop car park control or complete indoor/outdoor monitoring.

Note: The Car Park and the Data Push (to Em²-Server and IoT Hubs) functions can not be used concurrently.

UWP 3.0 CARLO GAVAZZI

Connection Diagrams

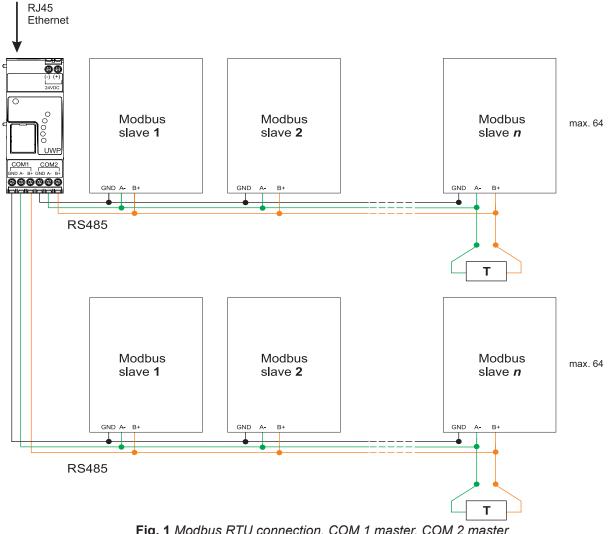


Fig. 1 Modbus RTU connection. COM 1 master, COM 2 master

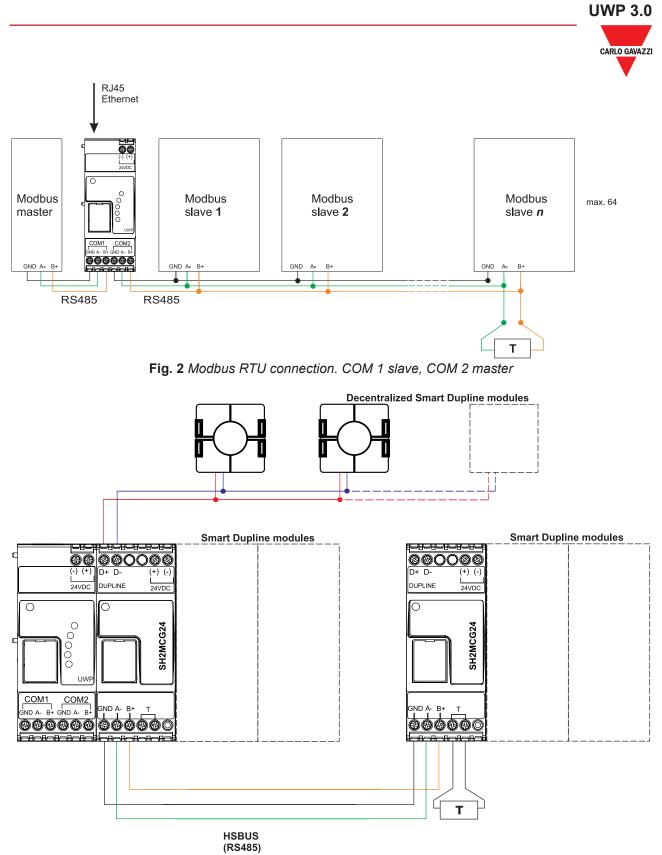


Fig. 3 Example of Smart Dupline modules connection using master channel generators



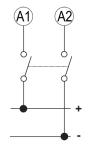


Fig. 4 Power supply

References

Further reading

Information	Document	Where to find it	
Hardware manual	UWP 3.0 HW man-	www.productselection.net/MANUALS/UK/uwp3.0 system.pdf	
Tialuwale manual	ual		
Software manual	UWP 3.0 Tool man-	www.productselection.net/MANUALS/UK/uwp3.0 tool.pdf	
Soltware manual	ual	www.productselection.net/wiAmOALS/OK/uwp5.0_tool.pdf	
Wireless manual	UWP 3.0 wireless	www.productselection.net/MANUALS/UK/uwp3.0_wireless.pdf	
	installation manual		
White paper	UWP 3.0 for Azure	www.productselection.net/Pdf/UK/CGC-W-EE-IoT-002.pdf	
White paper	IoT- whitepaper	www.produciselection.net/Pdi/OK/CGC-W-EE-101-002.pdf	
	UWP 3.0 Web App	www.productselection.net/MANUALS/UK/uwp3.0 web app eim.pdf	
Web App manual	- Instruction manual	www.productselection.net/wANOALS/OK/uwps.0_web_app_elm.pdf	

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