

Life Is On

eliwell™  
by Schneider Electric

# FREE Way

The programmable platform



[www.elowell.com](http://www.elowell.com)



# FREE Way

The programmable platform



# FREE Way: the programmable controller platform

**FREE Way** includes various PLC families that differ in size and performance: the most compact version FREE Smart, the panel mounted controllers FREE Panel, the versions on DIN rail FREE Evolution and FREE Advanced with Ethernet connectivity.

**FREE Studio Plus** is the universal programming software suite for the whole FREE Way range, which simplifies all machine design and commissioning phases.

## The applications

Air Treatment Units • Chillers • Heat Pumps • Rooftop • Precision conditioning systems • Installer Compressor racks • All air systems • Hydronic systems • Mixed (air/water) systems • Commercial automation



FREE Panel AVP

### Plus points

#### Speed

One of the FREE programmable platform's main aims is to enable customers to create solutions for their customers fast. Many FREE features significantly cut the times between design of a new application and its production release.

#### Compactness

The FREE programmable platform makes customers cost-competitive. FREE controllers were designed with a strong focus on technology and physical size, with impressive results in terms of simplicity, modularity and compactness. FREE controllers' integrated solutions and small size generate real, immediate financial savings for customers.

#### Efficiency

Complete and scalable to different complexity levels, the FREE programmable platform gives customers great freedom to choose the solution they consider best for their application. This allows easy identification of solutions that cut costs or item numbers, facilitating solutions more open to future developments or future system demands, especially with regard to connectivity.

#### Reliability

The FREE Way programmable platform's high quality standards enable customs to save on the costs generated by quality nonconformities both in their production processes and in installations in the field. **FREE Smart**, **FREE Panel**, **FREE Advance** and **FREE Evolution** controllers and the **FREE Studio Plus** development environment were all designed with innovative but carefully defined criteria, using state-of-the-art yet stable technology solutions and certified, monitored production processes. Eliwell has always been famed for its reliability.



FREE Panel EVP



FREE Advance



FREE Evolution



FREE Smart

# Connect your machine to the IIoT world quickly, easily and cyber-safely!

**Secure Interface** is an Edge device that belongs to the FREE Way platform; despite the intrinsic complexity of digitalisation, it makes the IIoT – Industrial Internet of Things - world available to all, at the same time offering the highest standards of cybersecurity.

**Secure Interface** not only connects to the FREE Way PLC but also to any device fitted with a Modbus bus over RS485, collecting data and conveying it to the Cloud, where specific applications analyse the data and enable predictive maintenance.

The **Secure Interface** device has a client to open a VPN thus ensuring safe and immediate remote access to the machine. All the protocols in the Secure Interface are cybersafe; the device can be used as a simple Modbus gateway, or for more complex operations and connectivity, with various programming levels.

#### Machine to Cloud

Connection to cloud Apps, Analytics and Services with EcoStruxure Machine Advisor.

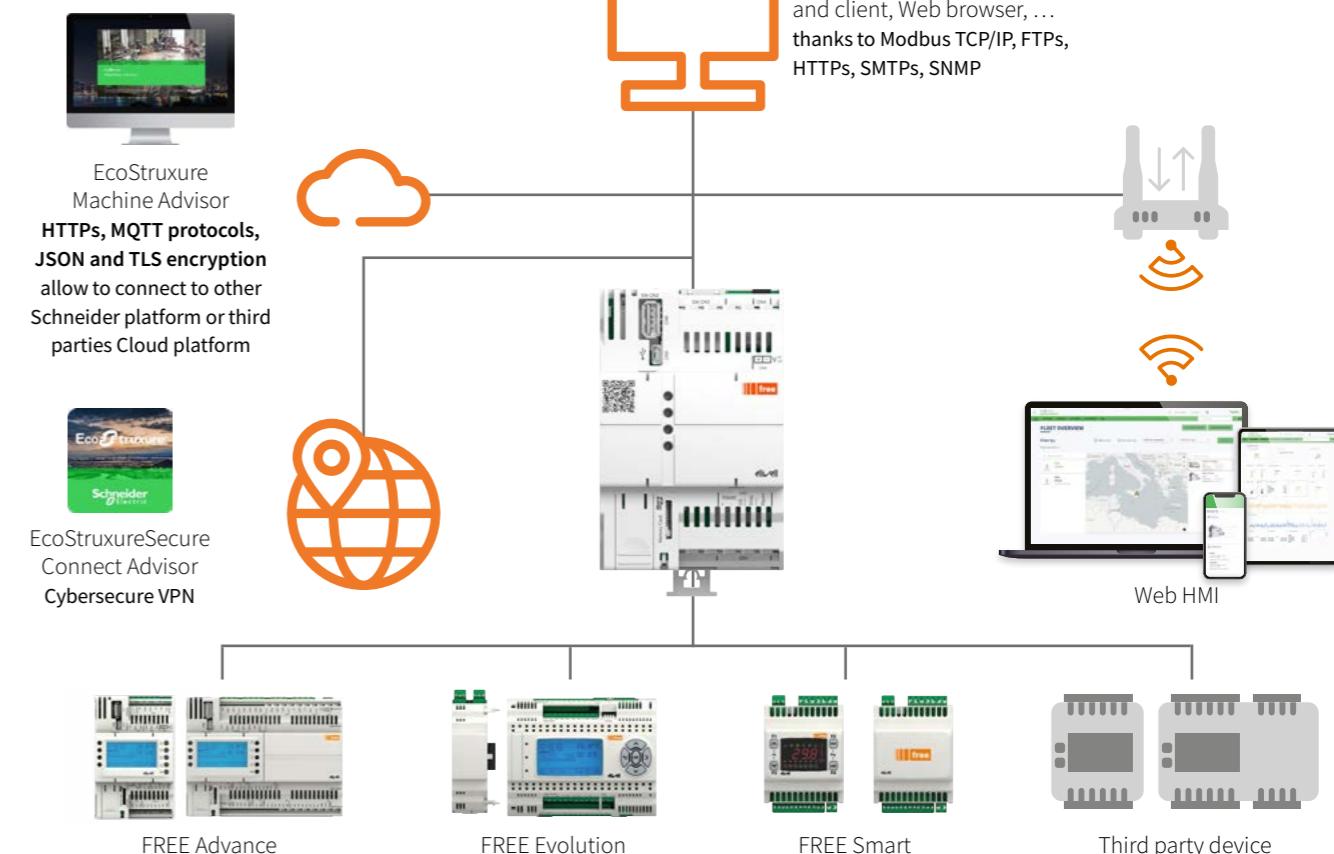
#### Machine to Plant

Easily integrate machine into plant/BMS thanks to Modbus TCP/IP. Allow direct communication to IT system.

#### Machine to Human

Improve and reduce time for commissioning and maintenance.

## Cybersecurity - Encrypted communications



## The FREE Way targets

### Constructors of:

- AHUs (Air Handling Units)
- Chillers
- Heat Pumps
- Rooftop Units
- Precision air-conditioners
- Compressor Rooms

### Installers/system integrators of:

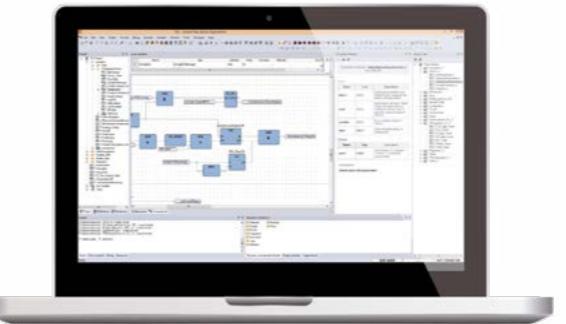
- All-air systems
- Hydronic systems
- Air-water systems
- Commercial automation

# FREE Studio Plus

The **FREE Studio Plus** software suite is compatible with all 5 standard programming languages (**IEC61131-3**). Every project may comprise several programs; developers can use more than one language in the same project.

Every new program has a choice of 5 programming languages, 2 textual and 3 visual:

- **ST, Structured Text**
- **FBD, Functional Block Diagram**
- **LD, Ladder**
- **IL, Instruction List**
- **SFC, Sequential Function Chart**



## IEC61131-3 development software

### Main functions

#### Variable display with application running

Debugging of variables through display of their status in numerical format when the application is running and connected to FREE Smart, FREE Panel, FREE Advance and FREE Evolution

#### Function Library

Management of default and/or developer-created function libraries. Any additional cards are managed by the developer himself

#### Variable graphic display

Debugging of variables through display of their status in graphic format when the application is running and connected to FREE Smart, FREE Panel, FREE Advance and FREE Evolution

#### Variable reading / writing

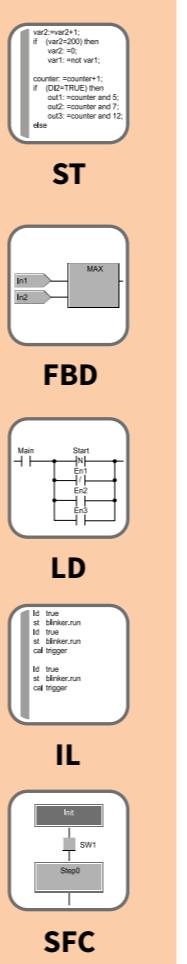
The working environment allows:

- creation of a dedicated menu to be shown on the device's display
- reading and writing of BIOS parameters (parameters + I/O values)
- reading and writing of the parameters and variables defined by the developer in Applications associated to the menu

**On-line Help** to assist the programmer in every program development phase, accessed from the context by just pressing the F1 button.

The whole on-line help guide is also available in printable pdf format

**Baselines and Libraries**, ready to use and available for download via web



## System and installation requirements

### Operating Systems

- Windows 10 English

### Supported browser

- Internet Explorer 11 or greater

The installation setup, software updates, libraries and documentation are available on the elowell.com website, after registration for access to the private area.

## Components

**FREE Studio Plus** is the universal programming software for machines automated by the **FREE Way** logic controllers. It simplifies each of the steps in machine design and commissioning:

**FREE Studio Plus** allows developers to program in various working environments, since they can access constantly updated with new functions and optimizations, available in the specific area of the Eliwell web site.

- 1 Unique, simple and flexible software suite software or the entire **FREE Way** range
- Compatible with the 5 standard programming languages (IEC 61131-3) to cover all needs with graphic or text languages
- Advanced debug and simulation options plus complete and effective online Help
- Tools for easy commissioning
- Advanced communication features such as remote control and download
- Webpage creation from the software
- Advanced communication features as remote control and download
- Webpage creation for the software



## Baselines

**Applications** supplied ready to use, compliant with architecture rules, easily modified to all requirements.

**Libraries** of objects to save you even more time, by making FREE Studio Plus easier to use.

FREE ADVANCE		
MINIMUM KIT FOR SYSTEM DEVELOPERS	AVAILABLE RESOURCES	The IEC programmer includes the following resources:
• FREE Studio Plus installation setup • 1 FREE Advance AVD8400/C/L/U • Mini-USB cable for PC connection • FREE Advance power transformer	CPU available memory for Application RAM memory - automatic mapping for Application and User Interface	120 MHz - 16 MByte RAM 1 MByte 512 kByte + 512 kByte RAM memory - Modbus mapping
		5000 word
FREE SMART		
MINIMUM KIT FOR SYSTEM DEVELOPERS	AVAILABLE RESOURCES(mod. /C/S, msk 412)	The IEC programmer includes the following resources:
• FREE Studio Plus installation setup • 1 FREE Smart SMxxxx* • 1 DMI 100-3 Manufacturer + yellow TTL cable • 1 optional MFK blue TTL cable • FREE Smart* wiring and transformer * alternatively, request the Demo Case	CPU available memory for Application RAM memory - automatic mapping RAM memory - Modbus mapping EEPROM variables	14.7 MHz 190 KByte 2300 Byte 1024 Byte 1024 Byte

FREE SMART	FREE PANEL AVP	FREE PANEL EVP
AVAILABLE RESOURCES	(mod. /C/S, msk 412) The IEC programmer includes the following resources:	
CPU available memory for Application + User Interface	120MHz, 132 kB RAM 736 kByte	72 MHz, 32 MByte RAM 1 Mbyte + 1.5 Mbyte = 2.5 Mbyte
FLASH memory data	4 MByte (images + font)	128 MByte
RAM memory - automatic mapping for Application + User Interface	78 kByte	512 kByte + 512 kByte
RAM memory - Modbus mapping	5000 word	5000 word
EEPROM variables	4000 word (app)	4000 word (application) + 10000 word (BACnet objects)

FREE EVOLUTION
MINIMUM KIT FOR SYSTEM DEVELOPERS
• FREE Studio Plus installation setup • 1 FREE Evolution EVD7500/C/U • USB cable • FREE Evolution power transformer

# Secure Interface

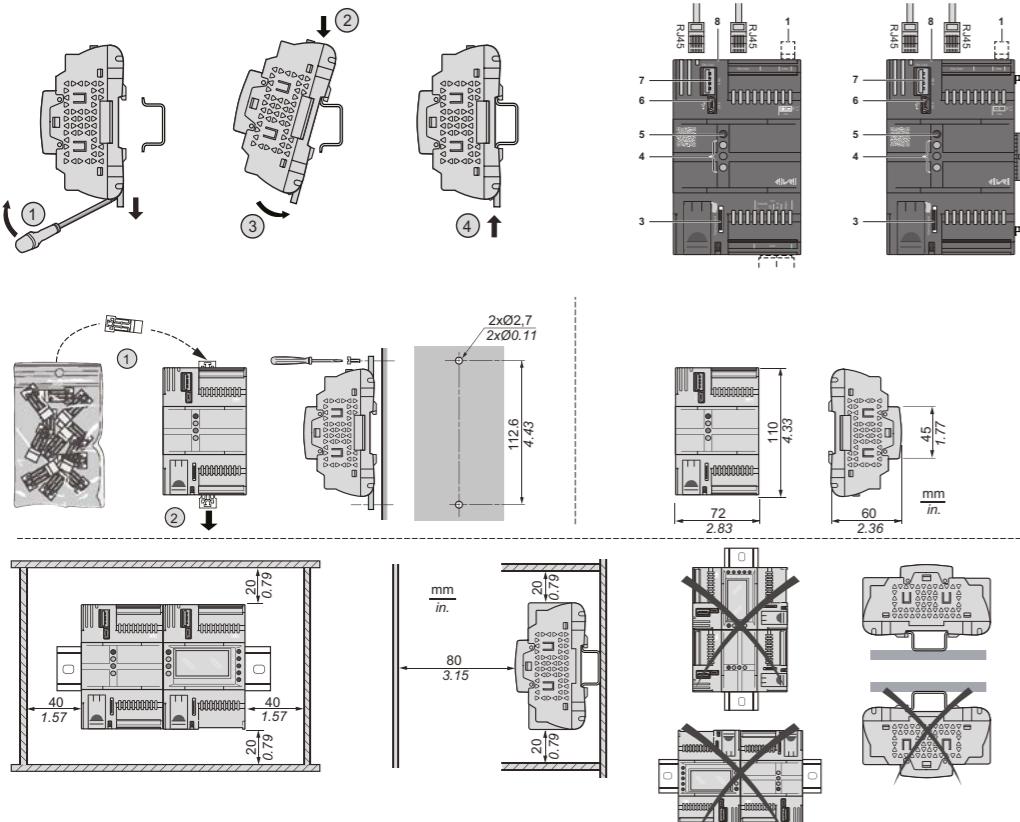
An Edge device for connecting HVAC machines and more:

- provides a **connection to the Machine Advisor cloud** or any platform based on **AWS** or **Microsoft Azure**;
- With the VPN Secure Connect Advisor, it enables a cyber-safe connection to any Modbus device;
- it is a Modbus gateway or can become a programmable device for more complex connections and logics;
- it provides protocols including FTPs, HTTPs, SMTPs, SNMP.

## Technical data

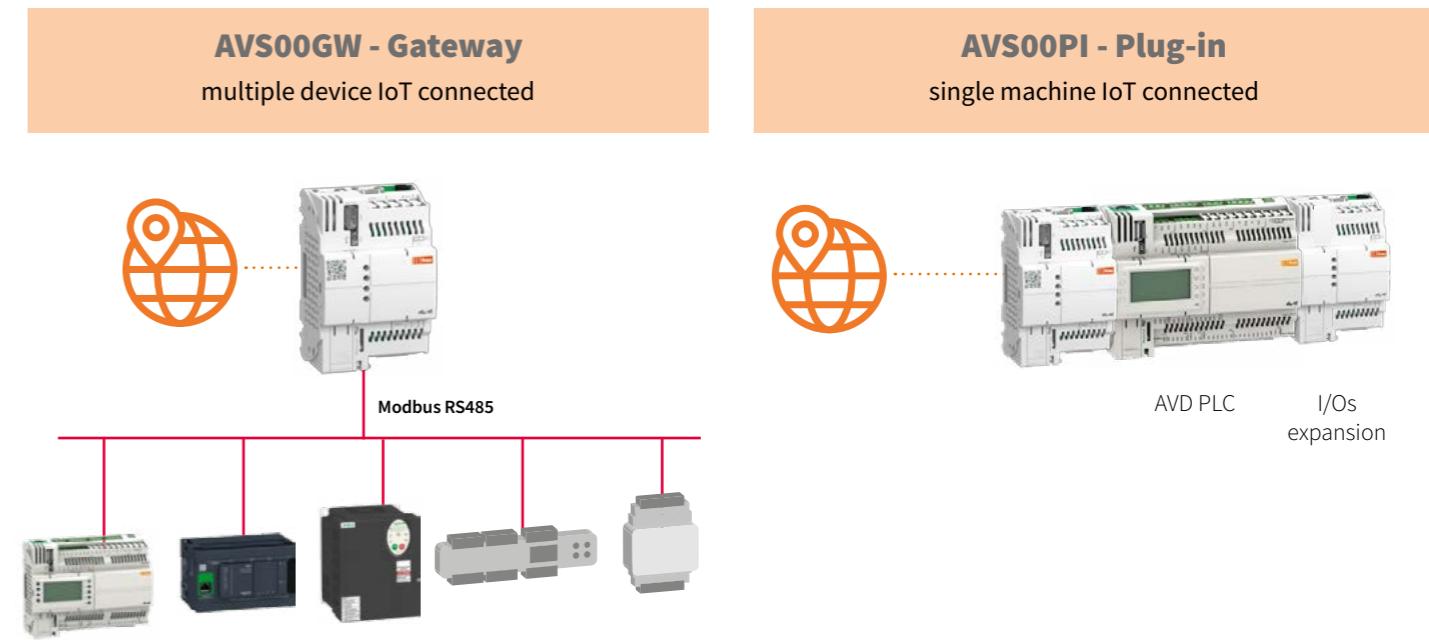
	AVS00GW	AVS00PI
<b>size</b>	2 DIN	
<b>mount</b>	on DIN rail	
<b>display</b>	24 Vac ± 10% 50/60 Hz 20...38 Vdc (UL/CSA) 24 Vdc (IEC)	
<b>communication ports</b>	USB (type mini-B) 2 x Ethernet RS485	USB (type mini-B) 2 x Ethernet
<b>operating temperature</b>	-20...55 °C	

## Connections, mounting and sizes



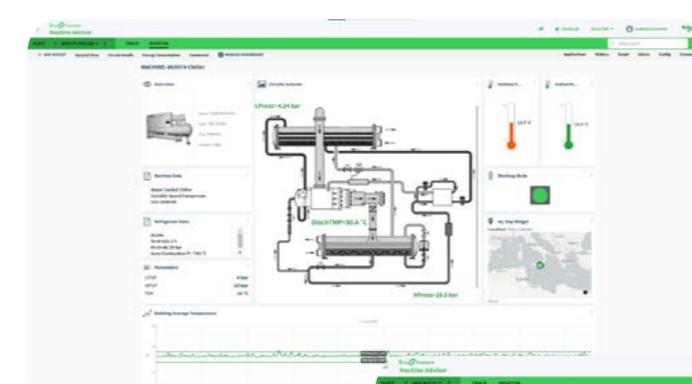
## The two versions of Secure Interface

**Secure Interface** is available in **two versions, gateway and plug-in**: the first can connect to several Modbus devices via the RS485 port at the bottom of the device, the second is intended for connection to a FREE Advance PLC via the local bus on the right-hand side of the Secure Interface.

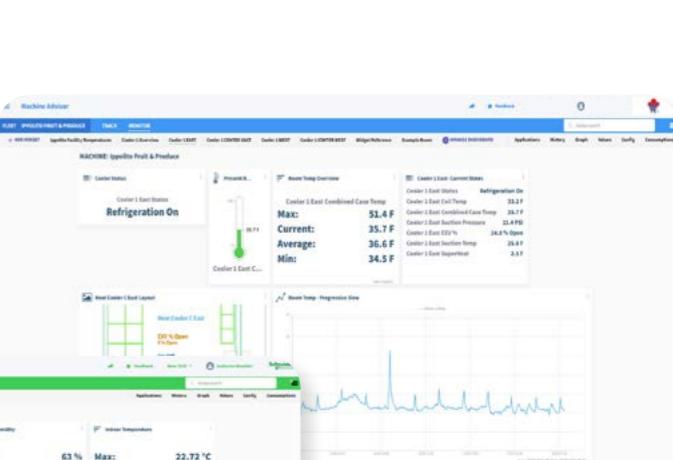


**Secure Interface** enables connection to the Schneider Electric Machine Advisor cloud platform designed explicitly for machine monitoring. The **Machine Advisor** dashboards are easily and intuitively configured to allow the user to easily create the interface that best suits their needs.

Examples for monitoring different types of applications are shown below.



Dashboard for Chiller monitoring



Dashboard for supermarket monitoring



Dashboard for air treatment unit monitoring

# FREE Smart models

Models are available both DIN rail mount version (SMD with display, SMC without display) and in the 32x74 Eliwell standard version (SMP) panel mount version.

The offering is completed by various expansions (SME) and terminals (SKP, SKW) for combination with FREE Smart series models.

All inputs and outputs are independent and configurable to ensure adaptability to any system.



**FREE Smart 12...24 Vac / 24Vdc** /C identifies units with RTC – Real Time Clock —/S identifies units with built-in RS485 serial output

Model	Code	Digital Outputs at hazardous voltage	TRIAC Outputs at hazardous voltage	O.C. outputs: PWM / PPM at safety extra low voltage (SELV)	Analog outputs 0-10 V at safety extra low voltage (SELV)	Digital Inputs voltage free	Analogue Inputs at safety extra low voltage (SELV)	O.C. Outputs	RS 485 built-in
<b>SMP5500/C/S</b>	SMP5500050450	5	-	2	3	6	5	1	yes
<b>SMP5500/C</b>	SMP5500010450	5	-	2	3	6	5	1	-
<b>SMD5500/C/S</b>	SMD5500050450	5	-	2	3	6	5	1	yes
<b>SMD5500/C</b>	SMD5500010450	5	-	2	3	6	5	1	-
<b>SMD3600/C/S</b>	SMD3600050450	3	2	1	3	6	5	1	yes
<b>SMC5500/C/S</b>	SMC5500050450	5	-	2	3	6	5	1	yes
<b>SMC5500/C</b>	SMC5500010450	5	-	2	3	6	5	1	-

## Expansions

<b>SME3200</b>	SME3200000400	3	-	2	-	6	3	1	-
<b>SME5500</b>	SME5500000450	5	-	2	3	6	5	1	-

**FREE Smart 100...240 Vac** /C identifies units with RTC – Real Time Clock —/S identifies units with built-in RS485 serial output

Model	Code	Digital Outputs at hazardous voltage	O.C. outputs: PWM / DI at safety extra low voltage (SELV)	Outputs 0...10 V at safety extra low voltage (SELV)	Outputs 4...20 mA / 0...20 mA	Analog inputs at safety extra low voltage (SELV)
<b>SMD4500/C/S</b>	SMD4500050H00	4	2	2	1	5
<b>SMD4500/C</b>	SMD4500010H00	4	2	2	1	5
<b>SMC4500/C/S</b>	SMC4500050H00	4	2	2	1	5

## Expansion

<b>SME4500</b>	SME4500000H00	4	2	2	1	5
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## Terminals with power supply from base

Model	Code	Mount	Dimensions	Display	Analog inputs at safety extra low voltage (SELV)
<b>SKP10</b>	SKP10G000000	panel	74x32x30 mm	LED / 4 digits	-
<b>SKW22</b>	SKW220G000000	wall	137x96.5x31.3 mm	LCD	1 built-in NTC 1 NTC input / DI / 4...20 mA
<b>SKW22L</b>	SKW22LG000000	wall	137x96.5x31.3 mm	Backlit LCD	1 built-in NTC 1 NTC input / DI / 4...20 mA
<b>SKP22</b>	SKP220G000000	panel; wall: see Accessories page	160x96x10 mm	LCD	1 NTC input 1 NTC input / DI / 4...20 mA

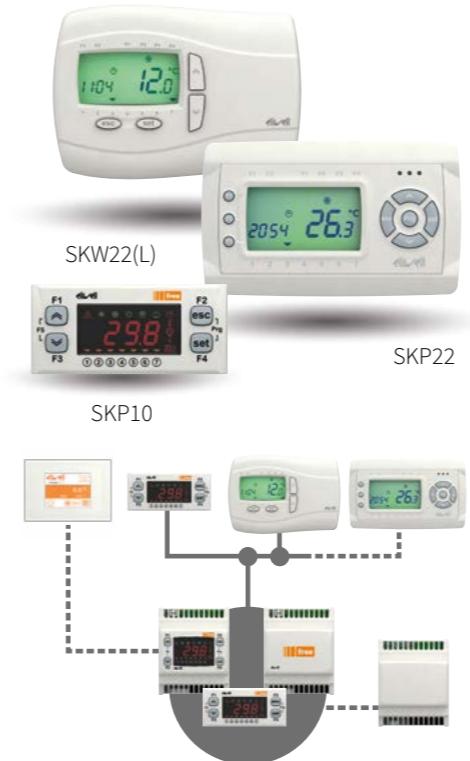
KEY: SELV = Safety Extra Low Voltage; PPM = Pulse Position Modulation; PWM = Pulse Width Modulation; O.C. = Open Collector

# FREE Smart connectivity

FREE Smart controllers are equipped with a serial port for easy integration with the supervision systems of the installation plant.

All controller resources can be accessed via standard Modbus communication protocol, guaranteeing complete control of the plant.

All models have TTL port as standard; /S models have built-in RS485 serial port. A special Firmware version also provides the Modbus MASTER function.

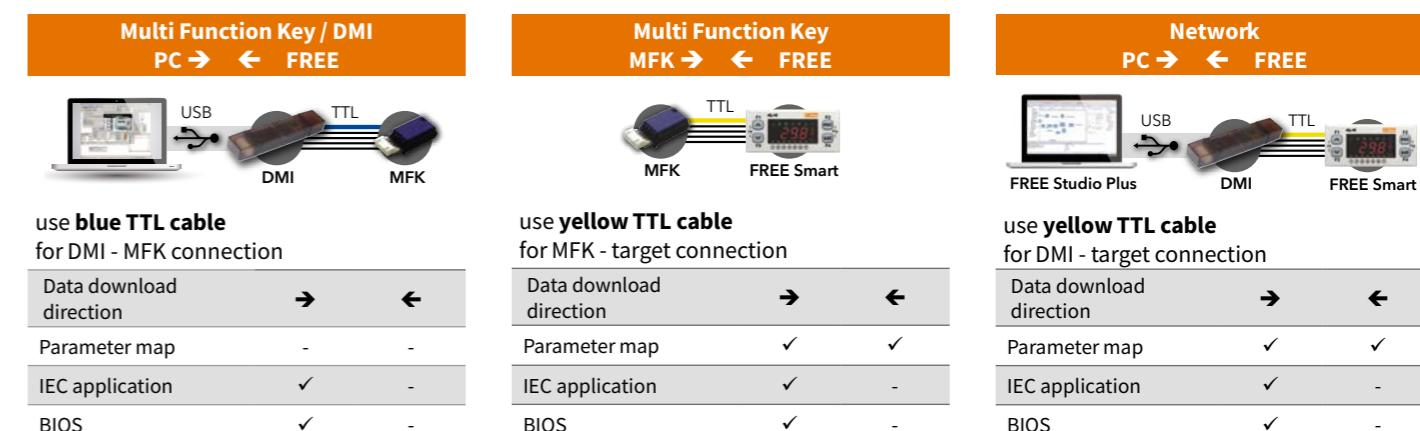


## FREE Smart maximum configuration

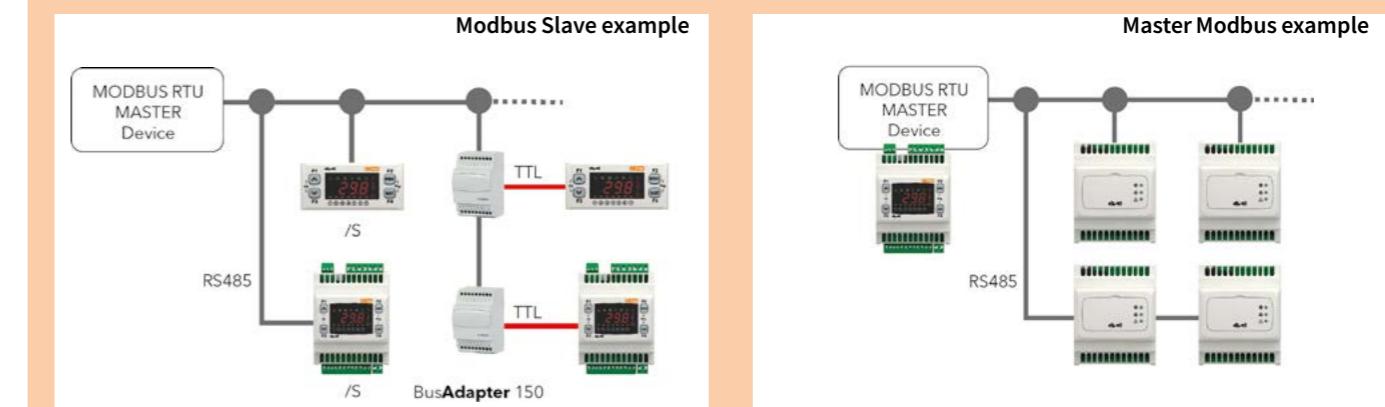
- max 1 FREE Smart model
- max 1 SME expansion by LAN serial line
- max 1 SKP10 terminal with controller ECHO function
- max 1 SKW22(L) or SKP22 terminal with dedicated menu, allowing ambient temperature and humidity monitoring
- LAN maximum distance: 100 m

## FREE Smart update function

Multi Function Key (MFK 100) for uploading and downloading parameter map for quick configuration, and uploading the IEC application and BIOS.



## Modbus Slave or Master mode connection examples



For models without RS485 use only BusAdapter 150

# SMP, SMD, SMC5500



SMP5500



SMD5500

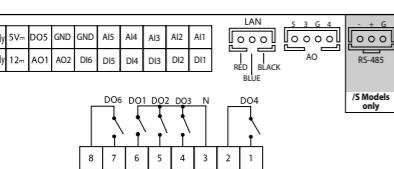
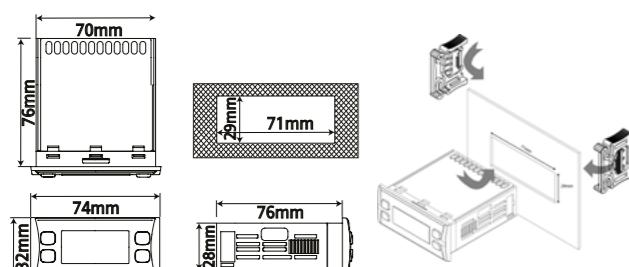


SMC5500

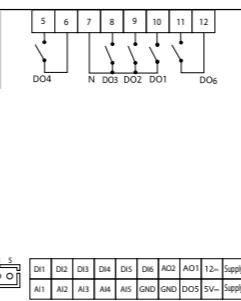
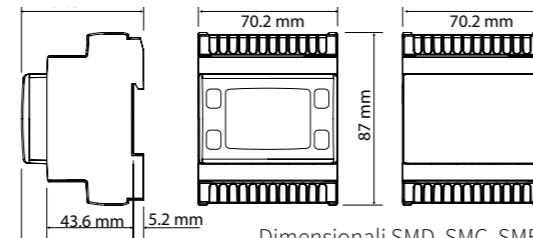
## Technical data

	SMP5500	SMD5500	SMC5500
<b>size</b>	32x74x80 mm (Lxhxwd)	4DIN	
<b>display</b>	LED 4 digit - 7 segments		-
<b>power supply</b>	12...24 Vac / 24 Vdc		
<b>relay digital outputs</b>	5 x 2 A 250 Vac		
<b>analog outputs</b>	2 x O.C. PPM/PWM 3 x 0...10 V		
<b>O.C. digital outputs</b>	1 Open Collector		
<b>digital inputs</b>	6 voltage free		
<b>analog inputs</b>	3 x NTC / D.I. 2 x NTC / D.I. / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V / 0-1 V		
<b>connectivity</b>	TTL RS485 isolated (only /S models) LAN for connection to SKP/SKW terminal or SME expansion		
<b>operating temperature</b>	-20...+55 °C		

## Electric, mount and dimensional diagrams



SMP5500/C - SMP5500/C/S



SMD5500/C/S - SMC5500/C - SMC5500/C/S

# SMD3600, SME Expansions



SMD3600



SME3200

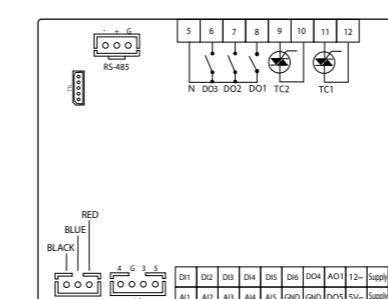


SME5500

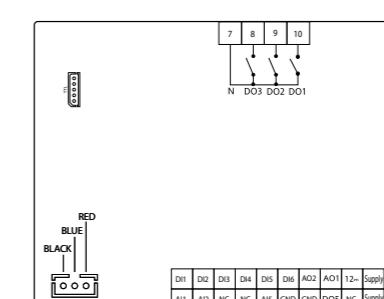
## Technical data

	SMD3600	SME3200	SME5500
<b>size</b>	4DIN		
<b>display</b>	LED 4 digit - 7 segments	-	-
<b>power supply</b>	12...24 Vac		12...24 Vac / 24 Vdc
<b>relay digital outputs</b>	3 x 2 A 250 Vac		5 x 2 A 250 Vac
<b>analog outputs</b>	2 x TRIAC 3 A 250 Vac 1 x Open Collector PPM/PWM 3 x 0...10 V	1 x Open Collector PPM/PWM 3 x 0...10 V	2 x Open Collector PPM/PWM 3 x 0...10 V
<b>O.C. digital outputs</b>	2 Open Collector		1 Open Collector
<b>digital inputs</b>	6 voltage free		
<b>analog inputs</b>	3 x NTC / D.I. 2 x NTC / D.I. / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V / 0-1 V	3 x NTC / D.I. - / 0-10 V / 0-5 V / 0-1 V	3 x NTC / D.I. 2 x NTC / D.I. / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V / 0-1 V
<b>connectivity</b>	TTL RS485 isolated LAN for connection to FREE Smart	TTL - LAN for connection to FREE Smart	TTL - LAN for connection to FREE Smart
<b>operating temperature</b>	-20...+55 °C		

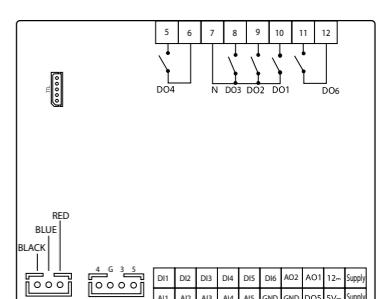
## Electric diagrams



SMD3600/C/S



SME3200



SME5500

# SMD, SMC4500, SME4500 Expansion



SMD4500



SMC4500



SME4500

# Interfaces, FREE Smart Terminals



SKP10



SKW22/22L

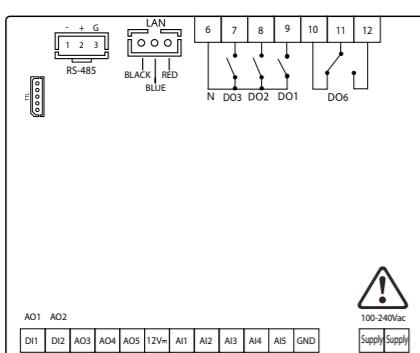


SKP22

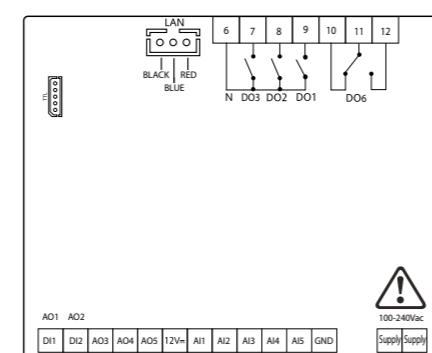
## Technical data

	SMD4500	SMC4500	SME4500
<b>size</b>		4DIN	
<b>display</b>	LED 4 digit - 7 segments	-	-
<b>power supply</b>		100...240 Vac	
<b>relay digital outputs</b>		4 x 2 A 250 Vac	
<b>analog outputs</b>		2 x Open Collector PWM/D.I. 2 x 0...10 V 1 x 4..20 mA / 0...20 mA	
<b>analog inputs</b>	3 x NTC / Pt1000 / D.I. 2 x NTC / D.I. / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V / 0-1 V	3 x NTC / D.I. 2 x NTC / D.I. / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V / 0-1 V	
<b>connectivity</b>	TTL RS485 LAN for connection to SKP/SKW terminal or SME expansion	TTL -	LAN for connection to FREE Smart
<b>operating temperature</b>	-20...+55 °C		

## Electric diagrams



SMD4500/C/S - SMC4500/C/S

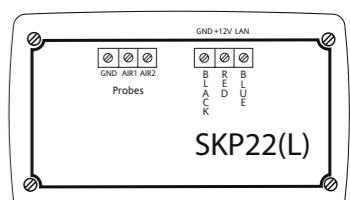
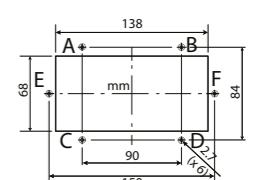
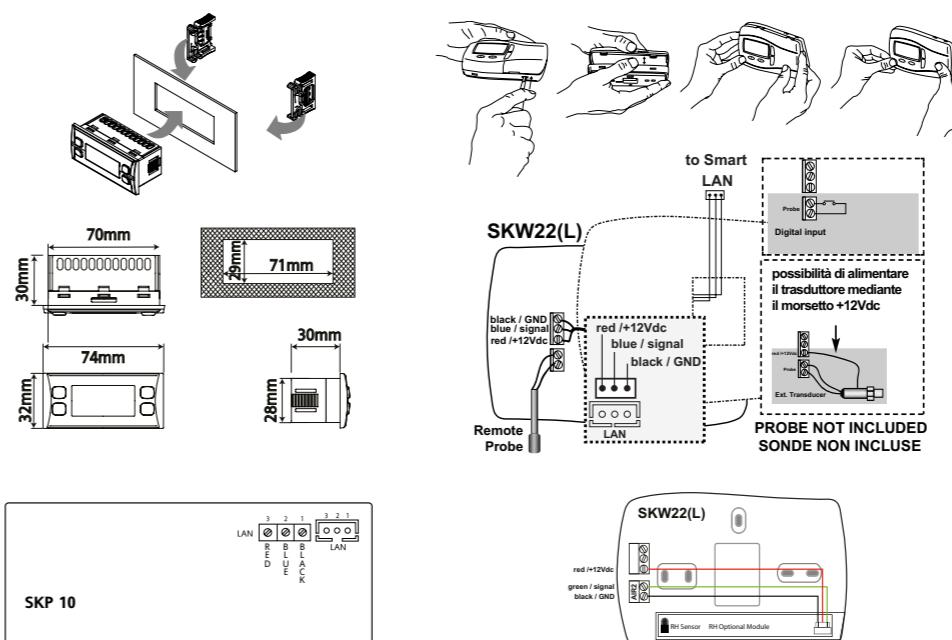


SME4500 Expansion

## Technical data

	SKP10	SKW22 - SKW22L	SKP22
<b>size (LxDxH)</b>	74x32x30 mm		4DIN
<b>mount</b>	panel	wall	panel
<b>display</b>	LED 4 digit - 7 segments	LCD (model 22L: Backlit LCD)	LCD
<b>power supply</b>		from base	
<b>analog inputs</b>	-	1 x built-in NTC 1 x NTC / D.I. / 0...20 mA / 4...20 mA remote	1 x remote NTC 1 x NTC / D.I. / 0...20 mA / 4...20 mA remote
<b>connectivity</b>		LAN for connection to FREE Smart	
<b>wiring</b>		COLV000033200 cable included in pack	
<b>operating temperature</b>	-20...+55 °C		-5...+60 °C
<b>humidity module</b>	-	KP100000 - not included (see Accessories page)	-

## Electric and mount diagrams



SKP 10

SKP10

SKW22 - SWK22L

SKP22

# FREE Panel models

**FREE Panel AVP** is the completely customizable solution for creating an easily maintained and serviced zone controller with backlit color graphic touchscreen display, mounting on vertical surfaces, Modbus Slave connectivity, and integral temperature, humidity and presence probes.

The panel version adds Modbus Master connectivity with option of installation inside a machine, also on DIN rail.

**FREE Panel EVP** is the version with LCD graphic display suitable for use as system controller, with gateway functions, used in association with the other FREE Advance, FREE Evolution and FREE Smart controllers or third party devices.

FREE Panel EVP delivers excellent performance in terms of memory, user interface, Master/Slave connectivity and expandability (up to 7 expansions via field CANbus), and is easy to program, maintain and service.

A special base plate is available as wall mount accessory.



FREE Panel AVP



FREE Panel EVP

**FREE Panel AVP /C** identifies units with RTC – Real Time Clock /P identifies panel mount

Model	Code	Mount	Display	Built-in probe	Serial
<b>AVP1000 /P WHITE</b>	AVP100W0P0500	panel*	color touchscreen display 3.5" 320x240	-	RS485** - Modbus SL USB Micro-B
<b>AVP1000 /P GREY</b>	AVP100G0P0500	panel*	color touchscreen display 3.5" 320x240	-	RS485** - Modbus SL USB Micro-B
<b>AVP1100 /C</b>	AVP1100W0500	wall***	color touchscreen display 3.5" 320x240	temperature	RS485** - Modbus SL USB Micro-B
<b>AVP1200 /C</b>	AVP1200W0500	wall***	color touchscreen display 3.5" 320x240	temperature & relative humidity	RS485** - Modbus SL USB Micro-B
<b>AVP1300 /C</b>	AVP1300W0500	wall***	color touchscreen display 3.5" 320x240	temperature, relative humidity and presence	RS485** - Modbus SL USB Micro-B

\*both horizontal and vertical (for vertical surface mount see Accessories page)

\*\*RS485 Master or Slave

\*\*\*Vertical mount. Horizontal mount if built-in probes are not used.

**FREE Panel EVP /C** identifies units with RTC – Real Time Clock

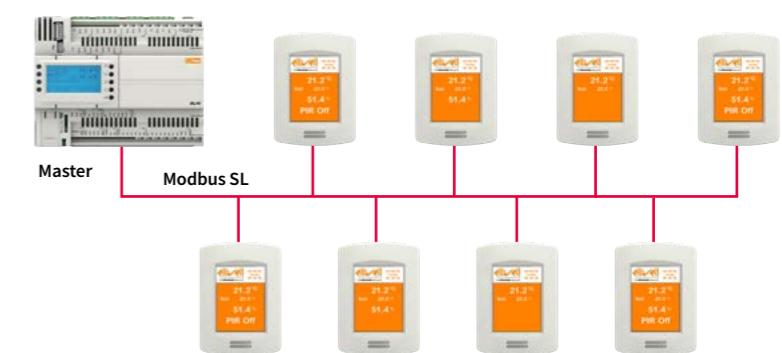
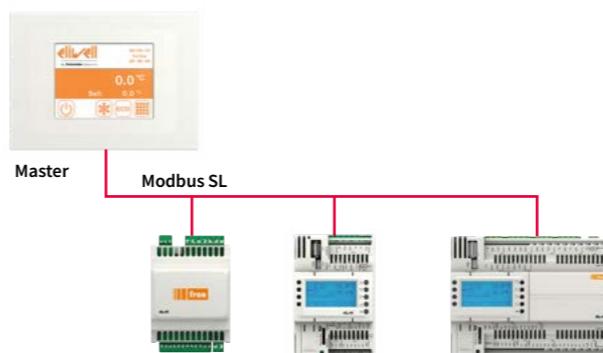
Model	Code	Mount	Display	Inputs at safety extra low voltage (SELV)	Serial
<b>EVP3300/C</b>	EVP3300010B00	panel*	Backlit LCD	1 x built-in NTC; 1 x remote NTC; 1 x remote 4...20 mA / 0-5 V / 0-10 V	CANbus; RS485; Ethernet

(for wall mount see Accessories page)

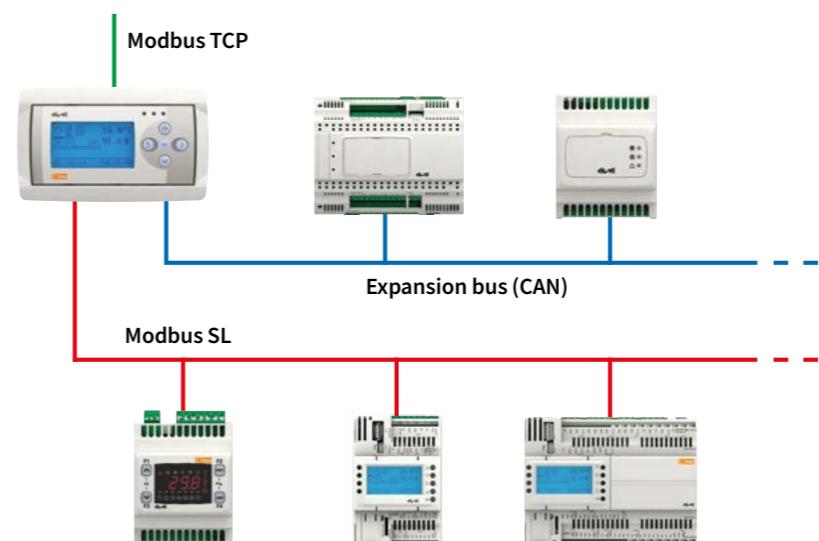
KEY: SELV = Safety Extra Low Voltage

# FREE Panel connectivity

## AVP



## EVP



## Connectivity and functions

FREE Panel AVP delivers excellent performance in terms of memory, color user interface with resistive touchscreen display and Modbus Master/Slave connectivity, and is easy to program, maintain and service.

FREE Panel EVP delivers excellent performance in terms of memory, user interface, Master/Slave connectivity and expandability (up to 7 expansions via field CANbus), and is easy to program, maintain and service.

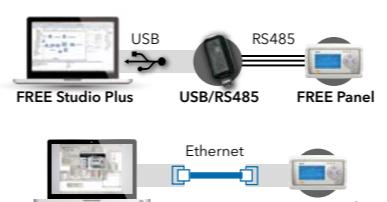
**FREE Panel EVP /C** identifies units with RTC – Real Time Clock

Model	Code	Mount	Display	Inputs at safety extra low voltage (SELV)	Serial
<b>EVP3300/C</b>	EVP3300010B00	panel*	Backlit LCD	1 x built-in NTC; 1 x remote NTC; 1 x remote 4...20 mA / 0-5 V / 0-10 V	CANbus; RS485; Ethernet

(for wall mount see Accessories page)

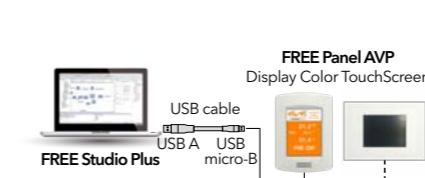
KEY: SELV = Safety Extra Low Voltage

### USB-RS485; Ethernet PC → ← FREE



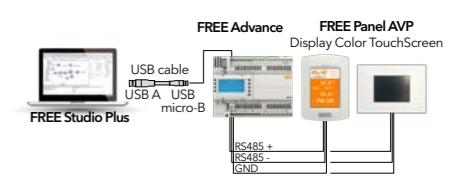
Data download direction	→	←
Parameter map	✓	✓
IEC application	✓	-
HMI application	✓	-
Data files	✓	✓
BIOS	✓	-
Commissioning	✓	✓

### USB Host PC → ← FREE



Data download direction	→	←
Parameter map	✓	✓
IEC application	✓	-
HMI application	✓	-
Data files	-	-
BIOS	✓	-

### Ethernet PC → ← FREE



Configuration permissible with FREE Advanced in Bridge mode and AVP in Slave mode

Data download direction	→	←
Parameter map	✓	✓
IEC application	✓	-
HMI application	✓	-
Data files	-	-
BIOS	✓	-



AVP1000/P WHITE



AVP1000/P GREY



AVP1100/C



AVP1200/C

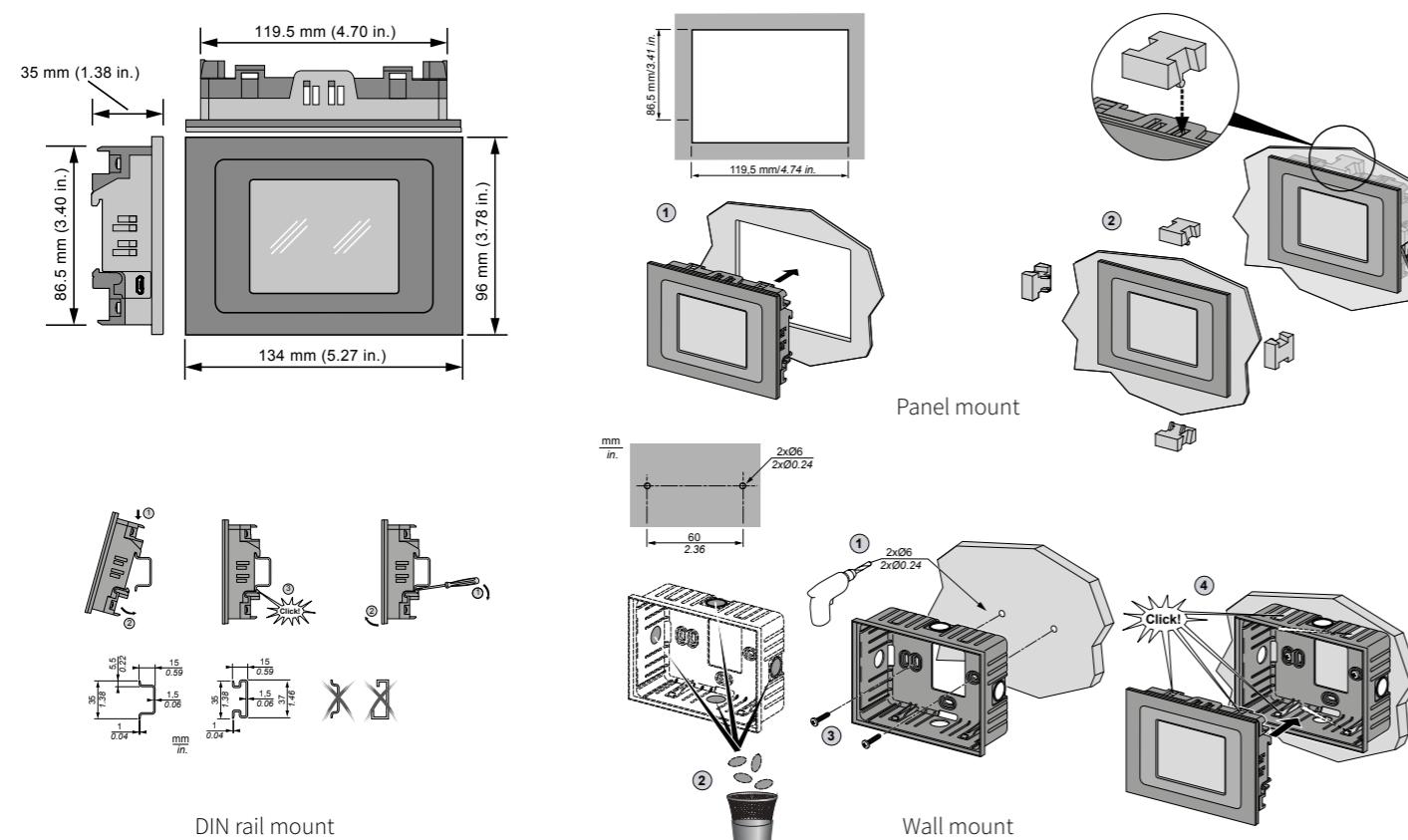


AVP1300/C

## Technical data

	AVP1000/P WHITE	AVP1000/P GREY
<b>size</b>	134x96x35 mm	
<b>enclosure rating</b>	IP 65 on front panel	
<b>display</b>	color touchscreen display 3.5" 320x240	
<b>power supply</b>	24 Vac/dc (Type T 500 mA UL recognized fuse)	
<b>analog inputs</b>	none	
<b>connectivity</b>	RS 485 - Modbus SL USB Micro-B (programming and debug)	
<b>operating temperature</b>	-20...60 °C	

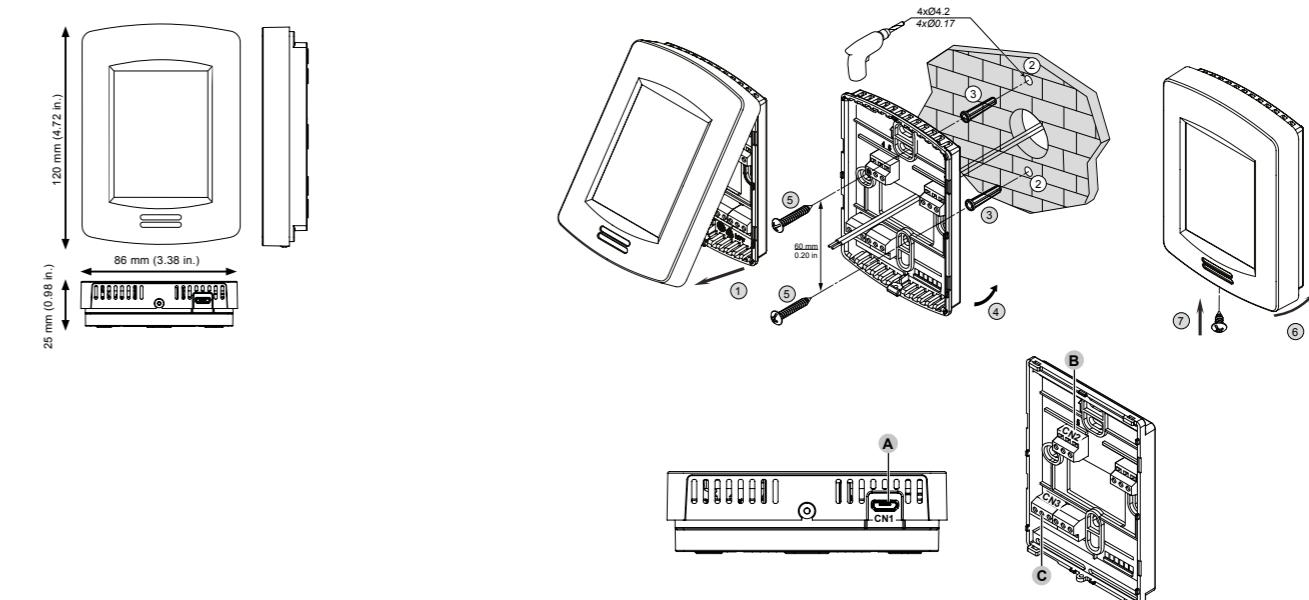
## Dimensional and mount diagrams



## Technical data

	AVP1100/C	AVP1200/C	AVP1300/C
<b>size</b>	120x86x25 mm		
<b>display</b>	color touchscreen display 3.5" 320x240		
<b>power supply</b>	24 Vac/dc		
<b>analog inputs</b>	1 x built-in NTC	1 x built-in NTC 1 x built-in %RH	1 x built-in NTC 1 x built-in %RH 1 x built-in PIR (presence probe)
<b>connectivity</b>	RS485 - Modbus SL USB Micro-B (programming and debug)		
<b>operating temperature</b>	0...+50 °C		

## Electric and mount diagrams

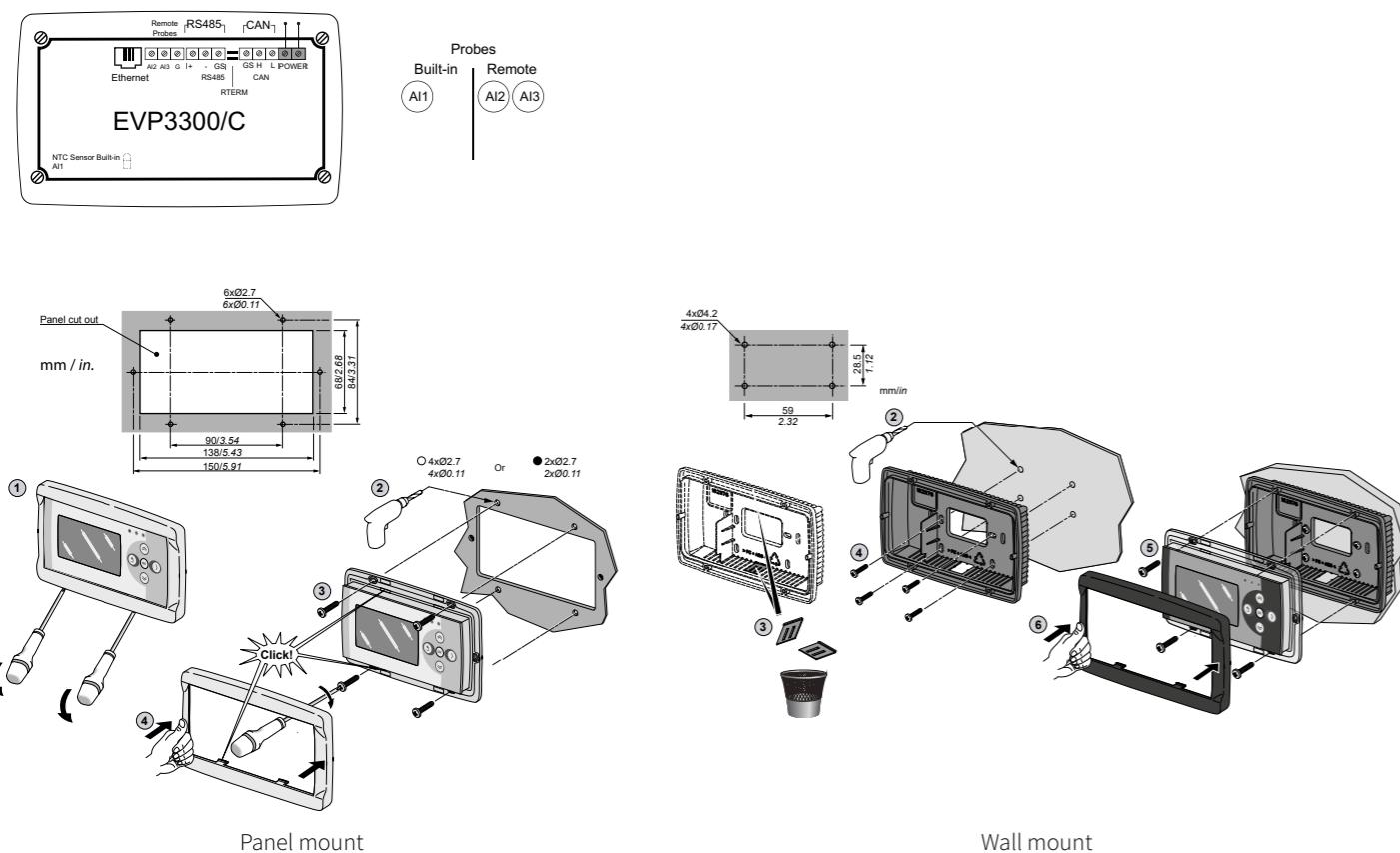




EVP3300/C

**Technical data**

	EVP3300/C
<b>size</b>	
<b>display</b>	backlit LCD 128x64 px graphic display
<b>power supply</b>	24 Vac/dc - 48 Vdc isolated
<b>analog inputs</b>	AI1 1 x built-in NTC AI2 1 x remote NTC / D.I. AI3 1 x remote 4...20 mA / 0-5 V / 0-10 V
<b>connectivity</b>	CANBus isolated: CANopen RS485 isolated: Modbus RTU, BACnet MSTP Ethernet: Modbus TCP - BACnet IP - WebServer
<b>operating temperature</b>	-5...+55 °C

**Electric and mount diagrams****FREE Advance models**

FREE Advance

**FREE Advance** models (**AVD** with display, **AVC** without display) are available in versions for assembly on 8 DIN rail, with disconnectable screw terminal blocks for quick, easy installation.

Every AVD or AVC is expandable via CANbus (field) up to 7 expansions and 2 terminals (AVK/EVK). Up to 10 controllers can also be connected together via CANbus (network).

Up to 127 devices can be controlled with Modbus Master, via RS485.

**FREE Advance with or without display** /C indicates units with RTC – Real Time Clock; built-in RS485 and CANbus as standard

Model	Code		Relay outputs at hazardous voltage	SSR outputs	Analog outputs at safety extra low voltage (SELV)	Digital inputs (SELV) 2 fast pulse/frequency counters up to 2 KHz included	Analog inputs at safety extra low voltage (SELV)
<b>AVD3000/C/L/U</b>	AVD3000060500	Isolated	3	-	-	2	2
<b>AVC3000/C/L/U</b>	AVC3000060500	Isolated	3	-	-	2	2
<b>AVD6200/C</b>	AVD6200050500	Isolated	6	-	2	2	8
<b>AVC6200/C</b>	AVC6200050500	Isolated	6	-	2	2	8
<b>AVD6200/C/L/U</b>	AVD6200060500	Isolated	6	-	2	2	8
<b>AVD6200/C/L/U/SSR</b>	AVD62SS060500	Isolated	4	2	2	2	8
<b>AVC6200/C/L/U</b>	AVC6200060500	Isolated	6	-	2	2	8
<b>AVC8400/C/L/U</b>	AVC8400060500		8	-	4	8	8
<b>AVD8400/C/L/U</b>	AVD8400060500		8	-	4	8	8
<b>AVD8400/C/L/U/SSR</b>	AVD84SS060500		6	2	4	8	8
<b>AVC12600/C/L/U</b>	AVC1260060500		12	-	6	12	12
<b>AVD12600/C/L/U</b>	AVD1260060500		12	-	6	12	12
<b>AVD12600/C/L/U/SSR</b>	AVD126S060500		10	2	6	12	12
<b>AVC8400/C/L/U/I</b>	AVC840006I500	Isolated	8	-	4	8	8
<b>AVD8400/C/L/U/I</b>	AVD840006I500	Isolated	8	-	4	8	8
<b>AVD8400/C/L/U/SSR/I</b>	AVD84SS06I500	Isolated	6	2	4	8	8
<b>AVC12600/C/L/U/I</b>	AVC126006I500	Isolated	12	-	6	12	12
<b>AVD12600/C/L/U/I</b>	AVD126006I500	Isolated	12	-	6	12	12
<b>AVD12600/C/L/U/SSR/I</b>	AVD126S06I500	Isolated	10	2	6	12	12
<b>AVC8400/C/I</b>	AVC840005I500	Isolated	8	-	4	8	8
<b>AVD8400/C/I</b>	AVD840005I500	Isolated	8	-	4	8	8
<b>AVC12600/C/I</b>	AVC126005I500	Isolated	12	-	6	12	12
<b>AVD12600/C/I</b>	AVD126005I500	Isolated	12	-	6	12	12

**Expansions RS485 (EVE7500 only) and built-in CANbus as standard**

Model	Code	Relay outputs at hazardous voltage	SSR outputs	Analog outputs (SELV) <b>A04/A05</b> configurable as Open Collector 12 Vdc 100 mA max each	Digital inputs at safety extra low voltage (SELV)	Digital inputs voltage free	Analog inputs at safety extra low voltage (SELV)
<b>EVE10200</b>	EVE1020000500	10	-	2 (AO1/AO2 30 mA)	4+2**	-	10
<b>EVE4200</b>	EVE4200000500	4	-	2 (AO1/AO2 30 mA)	4	-	4

FREE Advance controllers are compatible also with EVE7500. \*fast pulse/frequency counter 1 KHz. \*\*fast pulse/frequency counter 2 KHz.

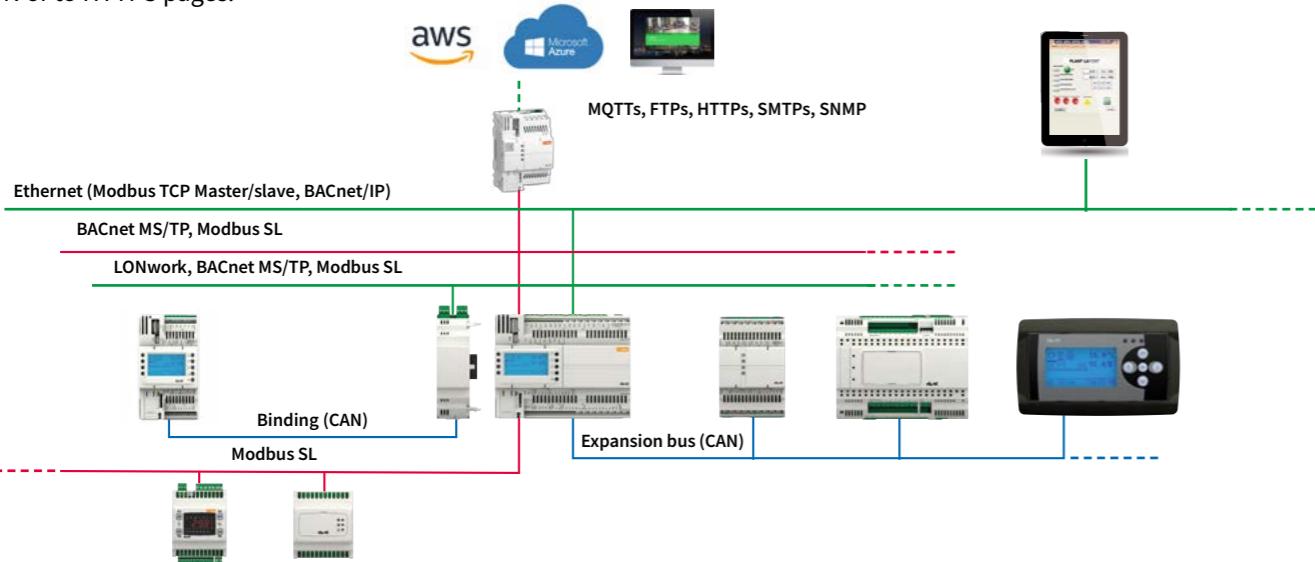
**Driver EEVD**

Model	Code	Description	Details	Communication Ports	Power Supply	Classification
<b>EVEVD1U</b>	EVEVD1U0000500	EEVD Expansion 1 EEV Unipolar	1 Unipolar (up to 6 wires)			
<b>EVEVD1B</b>	EVEVD1B0000500	EEVD Expansion 1 EEV Bipolar	1 Bipolar (4 wires)			
<b>EVEVD2B</b>	EVEVD2B0000500	EEVD Expansion 2 EEV Bipolar	2 Bipolar (4 wires + 4 wires)			
<b>EVEVDBAT</b>	EVEVDBA0000000	EEVD battery backup	-			
				CAN Expansion Bus (isolated from power supply - Functional Insulation)	24 Vac ± 10% 50/60 Hz / 20...38 Vdc	Expansion
						Accessory

# FREE Advance connectivity

The **FREE Advance** models are equipped with an Ethernet port, two RS-485 serial ports and a CANbus port. They can therefore be integrated locally into industrial automation systems and BMS and through the range of plug-ins and 2DIN modules that connect quickly and intuitively to the main AVD/AVC module.

The Secure Interface raises the connection of FREE Advance PLCs to the highest level of IIoT, providing connection to the cloud, the VPN or to HTTPS pages.



## Connectivity and web functions

FREE Advance, FREE Evolution and FREE Panel are WEB-enabled, giving machine manufacturers and system integrators integral remote access, incorporating Ethernet, BACnet protocols as well as optional LON protocol via plug-in. Furthermore, via the Secure Interface, the protocols FTPs, SMTPs, MQTTs and SNMP, used especially in datacenters, are also available. If the cloud is not necessary, the FREE Advance range in any case has an integrated WebServer and can be completely configured for an economic yet effective remote access solution.

With a wide range of remote access possibilities, even end users have many benefits for their own systems, depending on their needs:

- Integrated WebServer
- Local and remote system control, including alarms management and e-mail notifications.
- Preventive and predictive maintenance via cloud and related analytics
- Next generation system interface on PC, Tablet and Smartphone
- VPN for a safe connection

SD card Datalogging SD card → ← FREE		USB Host PC → ← FREE		Ethernet / USB Device / RS485 PC → ← FREE	
<b>FREE Advance</b>		<b>FREE Advance</b>		<b>FREE Advance</b>	
Micro SD				Ethernet RJ45	FREE Advance
Data download direction	→ ←	Data download direction	→ ←	Data download direction	→ ←
Parameter map	- -	Parameter map	✓ ✓	Parameter map	✓ ✓
IEC application		IEC application	✓ ✓	IEC application	✓ -
HMI application	✓	HMI application	✓ ✓	HMI application	✓ -
Data files	✓ ✓	Data files	✓ ✓	Data files	✓ ✓
BIOS	- -	BIOS	✓ -	BIOS	✓ -

# AVD3000/C/L/U, AVC3000/C/L/U



AVD3000

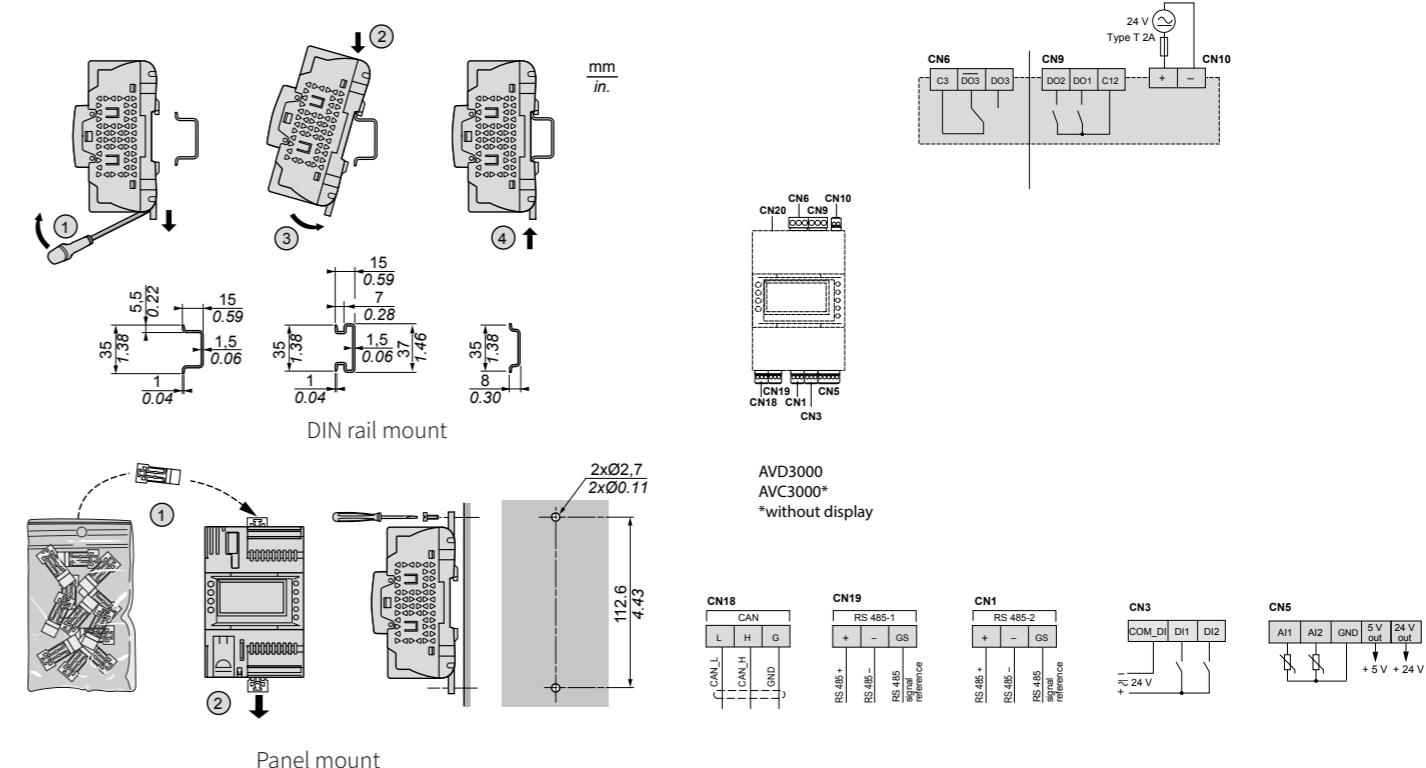


AVC3000

## Technical data

	AVD3000	4 DIN	AVC3000
<b>size</b>		4 DIN	
<b>display</b>	backlit LCD 128x64 pixel graphic display		-
<b>power supply</b>		24 Vac isolated 20...38 Vdc isolated	
<b>digital outputs</b>	3: 3 x 3 A 250 Vac		3: 3 x 3 A 250 Vac
<b>digital inputs</b>		2 x SELV can operate as pulse/frequency counters up to 2 kHz	
<b>analog inputs</b>	2 x NTC 103AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V		
<b>connectivity</b>	Ethernet: Bacnet IP, Modbus TCP Master/Slave, Webserver, Ftp Client/Server, SNTP CANBus: CANopen 2 x RS485: Modbus RTU (of which 1 x RS485: also Bacnet MS/TP) USB (type A); USB (type mini-B)		
<b>operating temperature</b>		-20...+60°C	

## Electric and mount diagrams



# AVD6200/C, AVC6200/C



AVD6200/C



AVC6200/C

# AVD6200/C/L/U, AVD6200/C/L/U SSR, AVC6200/C/L/U



AVD6200/C/L/U



AVD6200/C/L/U SSR

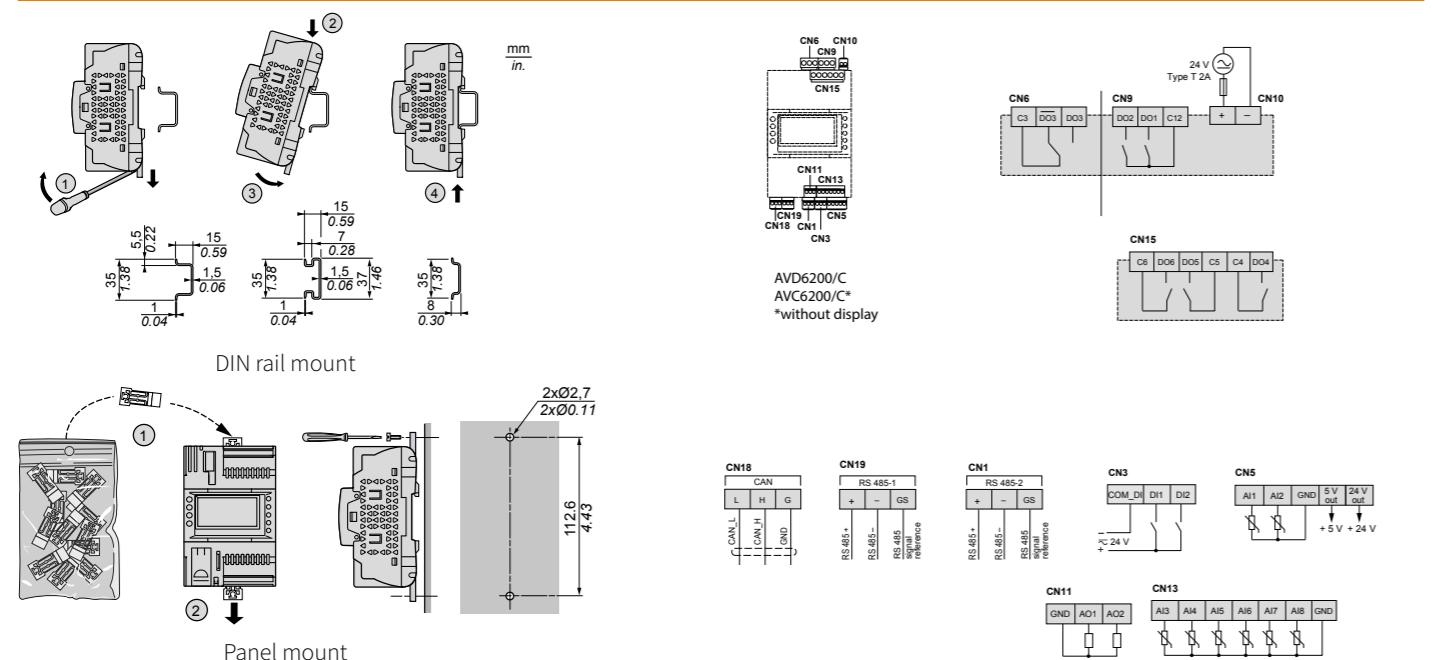


AVC6200/C/L/U

## Technical data

	AVD6200/C	AVC6200/C
<b>size</b>	4 DIN	
<b>display</b>	backlit LCD 128x64 pixel graphic display	-
<b>power supply</b>	24 Vac isolated 20...38 Vdc isolated	
<b>digital outputs</b>	<b>6: 6 x 3 A 250 Vac</b>	<b>6: 6 x 3 A 250 Vac</b>
<b>analog outputs</b>	<b>2: 2 x 0-10 V, 2 x 0-10 V/4...20 mA / ON-OFF / PWM / O.C. 24 Vdc 50 mA max</b>	
<b>digital inputs</b>	<b>2 x SELV</b> can operate as pulse/frequency counters up to 2 kHz	
<b>analog inputs</b>	<b>8 x NTC C 103 AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V</b>	
<b>connectivity</b>	CANbus: CANopen 2 x RS485: Modbus RTU (of which 1 x RS485: also BACnet MS/TP) USB (type mini-B); 1 x plug-in EVS: Ethernet: BACnet IP, Modbus TCP Master/Slave, Webserver, Ftp Client/Server, SNTP via specific EVS ETH plug-in module	
<b>operating temperature</b>	-20...+60 °C	

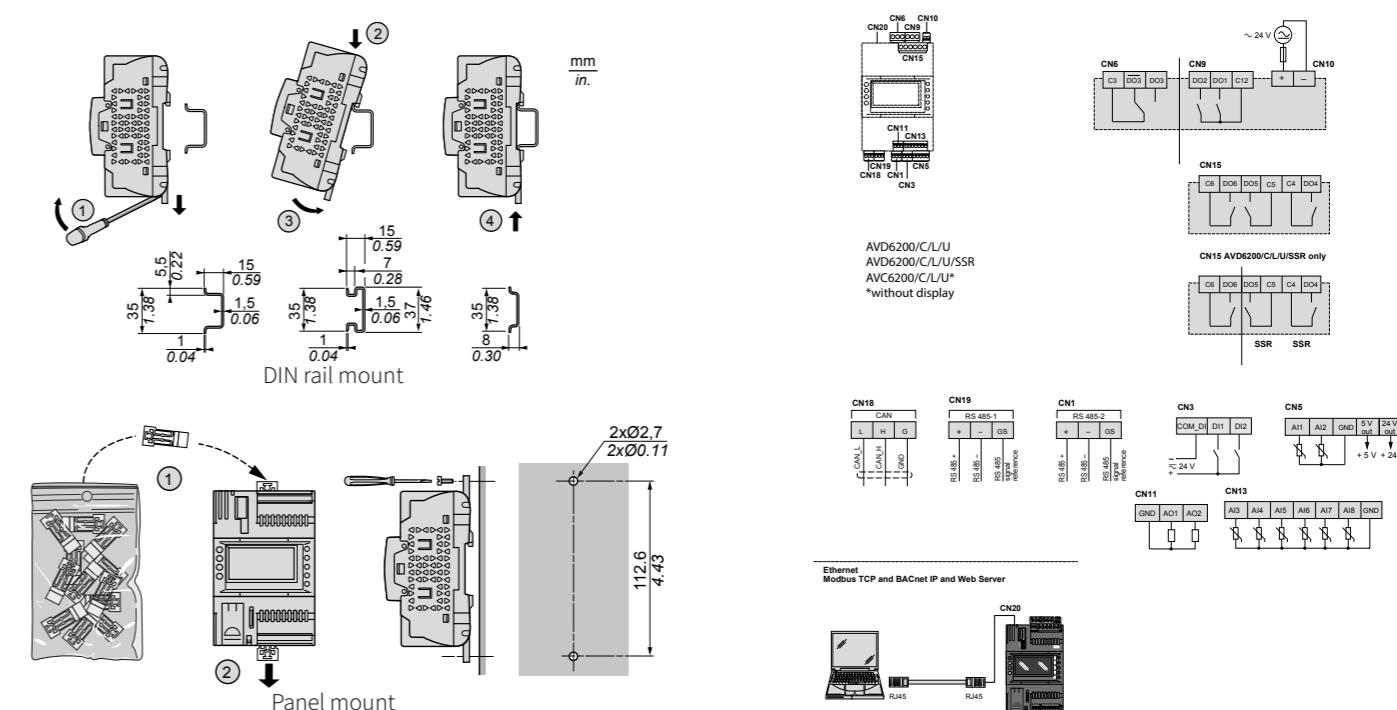
## Electric and mount diagrams



## Technical data

	AVD6200/C/L/U	AVD6200/C/L/U SSR	AVC6200/C/L/U
<b>size</b>	4 DIN		
<b>display</b>	backlit LCD 128x64 pixel graphic display	-	
<b>power supply</b>	24 Vac isolated 20...38 Vdc isolated		
<b>digital outputs</b>	<b>6: 6 x 3 A 250 Vac</b>	<b>4: 4 x 3 A 250 Vac</b> <b>SSR: 2 x 0.2A 240 Vac</b>	<b>6: 6 x 3 A 250 Vac</b>
<b>analog outputs</b>	<b>2: 2 x 0-10 V, 2 x 0-10 V/4...20 mA / ON-OFF / PWM / O.C. 24 Vdc 50 mA max</b>		
<b>digital inputs</b>	<b>2 x SELV</b> can operate as pulse/frequency counters up to 2 kHz		
<b>analog inputs</b>	<b>12 x NTC 103 AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V</b>		
<b>connectivity</b>	Ethernet: Bacnet IP, Modbus TCP Master/Slave, Webserver, Ftp Client/Server, SNTP CANbus: CANopen 2 x RS485: Modbus RTU (of which 1 x RS485: also BACnet MS/TP) USB (type A); USB (type mini-B); 1 x plug-in EVS		
<b>operating temperature</b>	-20...+60 °C	-20...+55 °C	-20...+60 °C

## Electric and mount diagrams



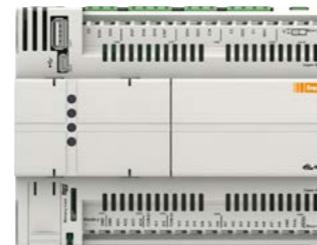
# AVD8400, AVD8400 SSR, AVC8400 /C/L/U (/I)models



AVD8400



AVD8400 SSR

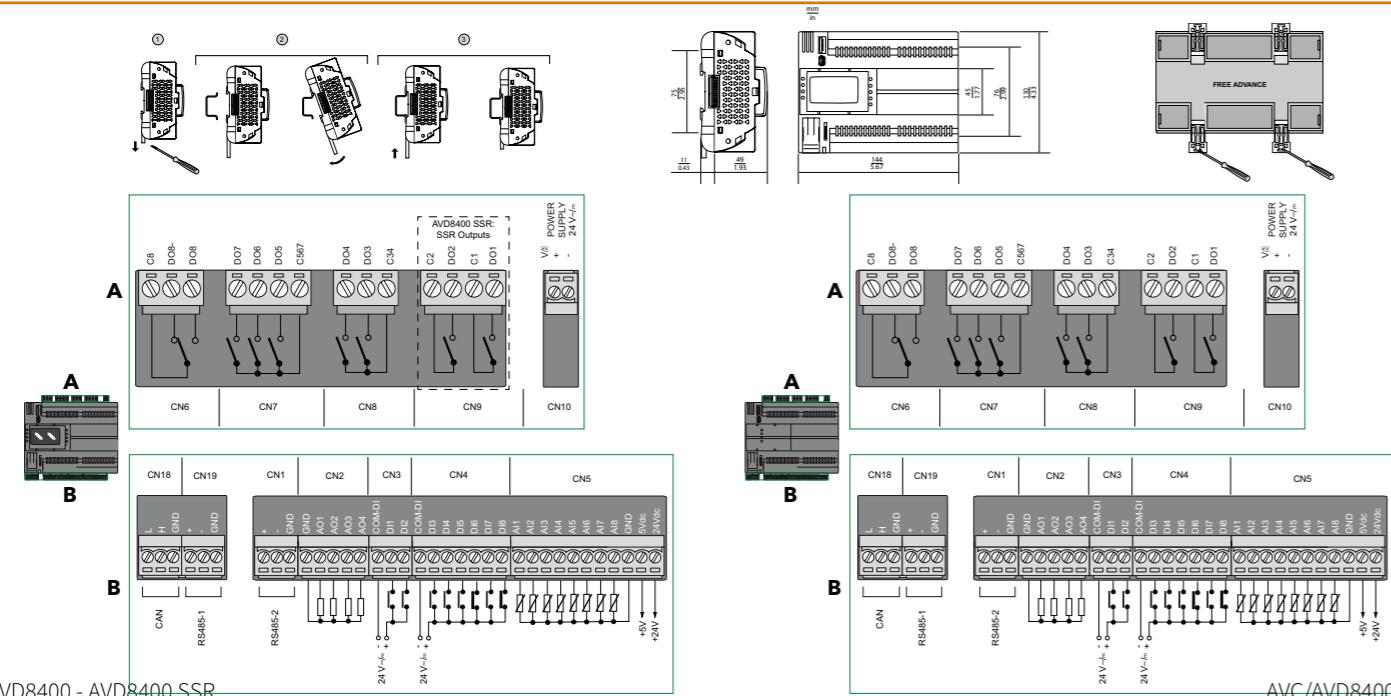


AVC8400

## Technical data

	AVD8400	AVD8400 SSR	AVC8400
<b>size</b>	8 DIN		
<b>display</b>	backlit LCD 128x64 pixel graphic display		
<b>power supply</b>	24 Vac (isolated, /I models only) 20...38 Vdc (isolated, /I models only)		
<b>digital outputs</b>	<b>8:</b> 7 x 3 A, 1 x 1A 250 Vac <b>SSR:</b> 2 x 0.5 A 240 Vac	<b>6:</b> 5 x 3 A, 1 x 1 A 250 Vac	<b>8:</b> 7 x 3 A, 1 x 1 A 250 Vac
<b>analog outputs</b>	<b>4:</b> 2 x 0-10 V, 2 x 0-10 V / 4...20 mA / ON-OFF / PWM / O.C. 24 Vdc 30 mA max		
<b>digital inputs</b>	<b>6 x SELV</b> 2 x pulse/frequency counters up to 2 kHz		
<b>analog inputs</b>	<b>8 x NTC 103AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V</b>		
<b>connectivity</b>	Ethernet: BACnet IP, Modbus TCP Master/Slave, Webserver, Ftp Client/Server, SNTP CANBus: CANopen 2 x RS485: Modbus RTU (of which 1 x RS485: also BACnet MS/TP) USB (type A); USB (type mini-B); 1 x plug-in EVS		
<b>operating temperature</b>	-20...+60 °C -20...+65 °C (/I models)		

## Electric and mount diagrams



# AVD12600, AVD12600 SSR, AVC12600 /C/L/U (/I)models



AVD12600



AVD12600 SSR

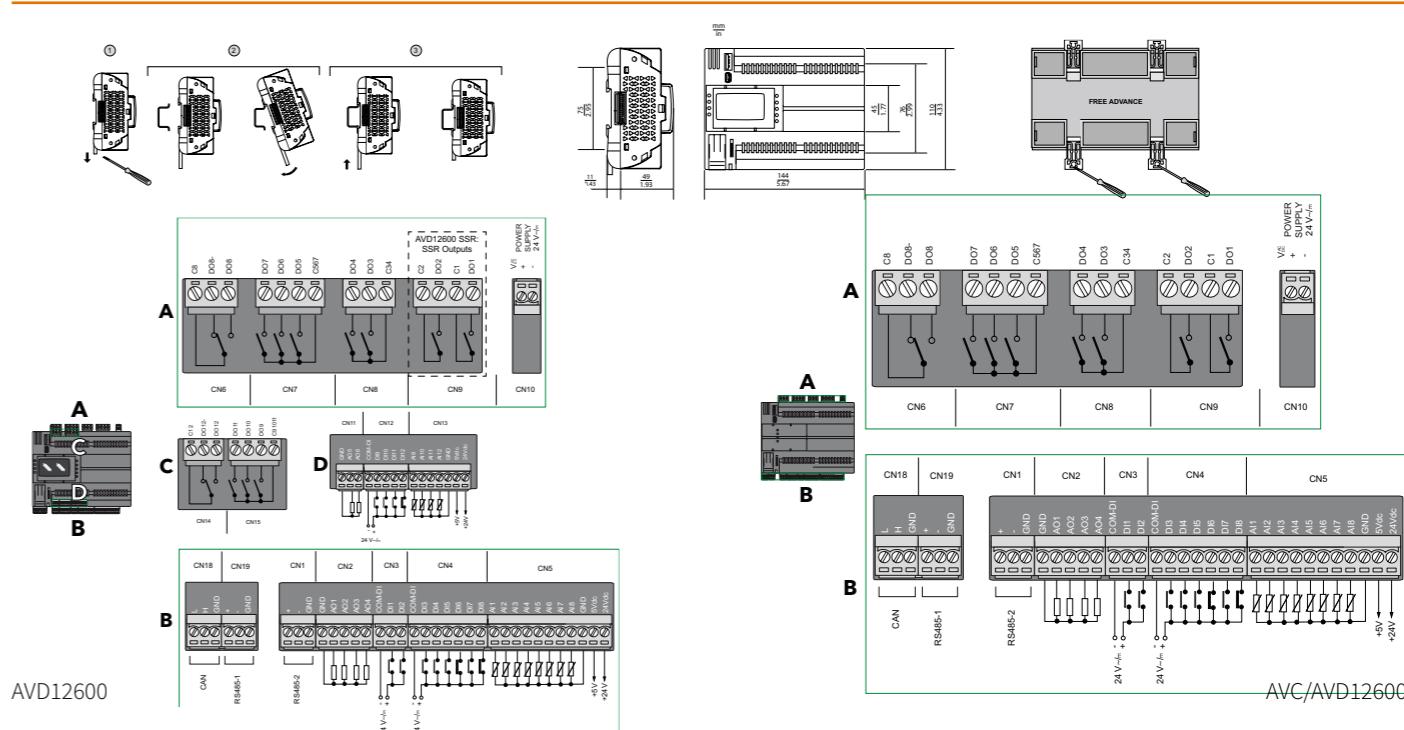


AVC12600

## Technical data

	AVD12600	AVD12600 SSR	AVC12600
<b>size</b>	8 DIN		
<b>display</b>	backlit LCD 128x64 pixel graphic display		
<b>power supply</b>	24 Vac (isolated, /I models only) 20...38 Vdc (isolated, /I models only)		
<b>digital outputs</b>	<b>12:</b> 10 x 3 A, 2 x 1 A 250 Vac <b>SSR:</b> 2 x 0.5A 240 Vac	<b>10:</b> 8 x 3 A, 2 x 1 A 250 Vac	<b>12:</b> 10 x 3 A, 2 x 1 A 250 Vac
<b>analog outputs</b>	<b>6:</b> 4 x 0-10 V, 2 x 0-10 V / 4...20 mA / ON-OFF / PWM / O.C. 24 Vdc 30 mA max		
<b>digital inputs</b>	<b>10 x SELV</b> 2 x pulse/frequency counters up to 2 kHz		
<b>analog inputs</b>	<b>12 x NTC 103 AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V</b>		
<b>connectivity</b>	Ethernet: Bacnet IP, Modbus TCP Master/Slave, Webserver, Ftp Client/Server, SNTP CANbus: CANopen 2 x RS485: Modbus RTU (of which 1 x RS485: also BACnet MS/TP) USB (type A); USB (type mini-B); 1 x plug-in EVS		
<b>operating temperature</b>	-20...+60 °C -20...+65 °C (/I models)		

## Electric and mount diagrams



# AVD / AVC 8400, AVD / AVC 12600 /C/I models



AVD8400

AVC8400

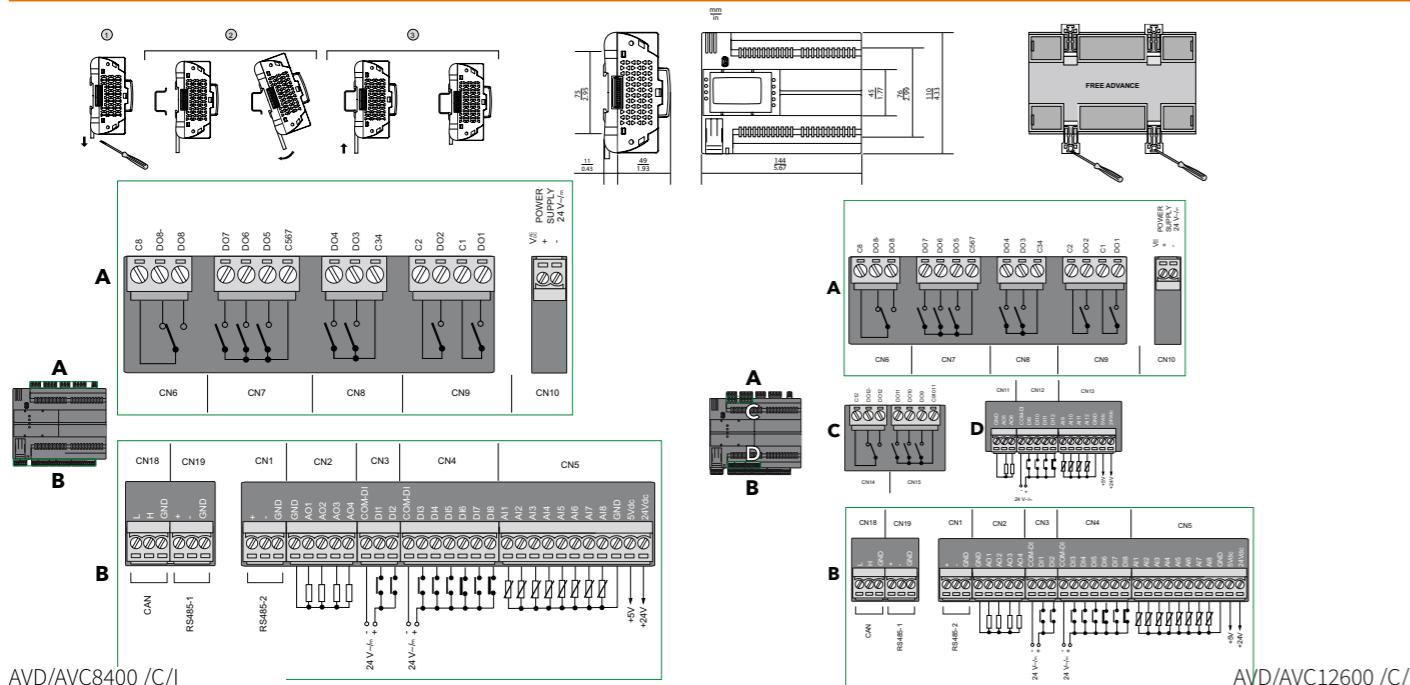
AVD12600

AVC12600

## Technical data

	AVC8400	AVD8400	AVC12600	AVD12600
<b>size</b>	8 DIN			
<b>display</b>	-	backlit LCD 128x64 pixel graphic display	-	backlit LCD 128x64 pixel graphic display
<b>power supply</b>	24 Vac isolated 20...38 Vdc isolated			
<b>digital outputs</b>	8: 7 x 3 A, 1 x 1A 250 Vac		12: 10 x 3 A, 2 x 1A 250 Vac	
<b>analog outputs</b>	6: 4 x 0-10 V, 2 x 0-10 V / 4...20 mA / ON-OFF / PWM / O.C. 24 Vdc 30 mA max			
<b>digital inputs</b>	6 x SELV 2 x pulse/frequency counters up to 2 kHz			
<b>analog inputs</b>	8 x NTC 103AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V	12 x NTC 103 AT / NTC NK103 / D.I. / PTC KTY81 / Pt1000 / 0...20 mA / 4...20 mA / 0-10 V / 0-5 V		
<b>connectivity</b>	CANBus: CANopen 2 x RS485: Modbus RTU (of which 1 x RS485: also BACnet MS/TP) USB (type mini-B); 1 x plug-in EVS: Ethernet: BACnet IP, Modbus TCP Master/Slave, Webserver, Ftp Client/Server, SNTP via specific EVS ETH plug-in module			
<b>operating temperature</b>	-20...+65 °C			

## Electric and mount diagrams



# FREE Evolution models



FREE Evolution

**FREE Evolution** models (**EVD** with display, **EVC** without display) are available in versions for assembly on 8 DIN rail, with disconnectable screw terminal blocks for quick, easy installation.

Every EVD or EVC is expandable via CANbus (field) up to 7 expansions and 2 terminals (EVK). Up to 10 controllers can also be connected together via CANbus (network).

Up to 127 devices can be controlled with Modbus Master, via RS485.

FREE Evolution with or without display /C indicates units with RTC – Real Time Clock; built-in RS485 and CANbus as standard							
Model	Code	Relay outputs at hazardous voltage	SSR outputs	Analog outputs (SELV) <b>A04/A05</b> configurable as Open Collector 12 Vdc 100 mA max each	Digital inputs at safety extra low voltage (SELV)	Digital inputs voltage free	Analog inputs at safety extra low voltage (SELV)
<b>EVD7500/C/U</b>	EVD7500060B00	7	-	5	8	1*	6
<b>EVD75SS/C/U</b>	EVD75SS060B00	5	2	5	8	1*	6
<b>EVC7500/C/U</b>	EVC7500060B00	7	-	5	8	1*	6

\*Fast counter 1 kHz

\*\* Also compatible with EVE4200 and EVE10200

## Expansions RS485 (EVE7500 only) and built-in CANbus as standard

Model	Code	Relay outputs at hazardous voltage	SSR outputs	Analog outputs (SELV) <b>A04/A05</b> configurable as Open Collector 12 Vdc 100 mA max each	Digital inputs at safety extra low voltage (SELV)	Digital inputs voltage free	Analog inputs at safety extra low voltage (SELV)
<b>EVE7500</b>	EVE7500000B00	7	-	5	8	1*	6
<b>EVE4200</b>	EVE4200000500	4	-	2	4	-	4

\*Fast counter 1 kHz

**USB Host**  
USB → ← FREE



Data download direction	→	←
Parameter map	✓	✓
IEC application	✓	✓
HMI application	✓	✓
Data files	✓	✓
BIOS	✓	-

**USB Device**  
PC → ← FREE



Data download direction	→	←
Parameter map	-	-
IEC application	✓	✓
HMI application	✓	✓
Data files	✓	✓
BIOS	✓	-

**USB-RS485 / Ethernet + Plugin**  
PC → ← FREE



Data download direction	→	←
Parameter map	✓	✓
IEC application	✓	-
HMI application	✓	-
Data files	✓	✓
BIOS	✓	-

# EVD7500, EVD75SS, EVC7500



EVD7500



EVD75SS

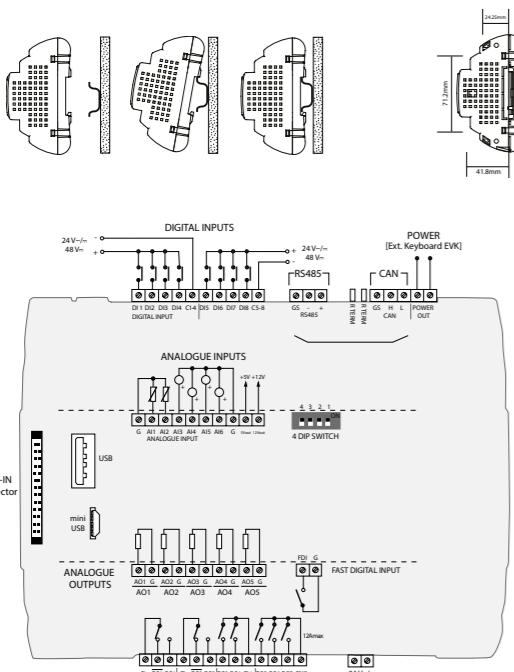


EVC7500

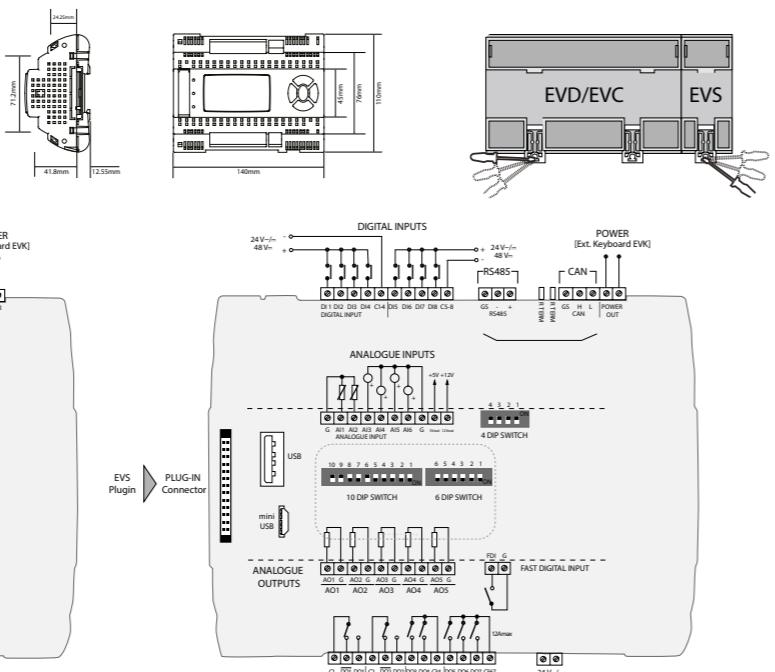
## Technical data

	<b>EVD7500</b>	<b>EVD75SS</b>	<b>EVC7500</b>
<b>size</b>		8 DIN	
<b>display</b>		backlit LCD 128x64 pixel graphic display	
<b>power supply</b>		24 Vac/dc - 48 Vdc isolated	
<b>digital outputs</b>	7: 2 x 8 A, 5 x 5 A 250 Vac -	5: 2 x 8 A, 3 x 5 A 250 Vac SSR: 2 x 1 A 250 Vac	7: 2 x 8 A, 5 x 5 A 250 Vac -
<b>analog outputs</b>		5 x 0-10 V / 4...20 mA / (switch 0..20 mA) AO4/AO5 configurable as O.C. 12 Vdc 100 mA max each	
<b>digital inputs</b>		8 x SELV 1 x voltage free fast counter 1 kHz	
<b>analog inputs</b>		2 x NTC 103 AT / NTC NK103 / D.I. 4 x NTC 103 AT / NTC NK103 / D.I. / Pt1000 / 4...20 mA / 0-10 V / 0-5 V	
<b>connectivity</b>		USB; 1 x Plug-in EVS CANBus isolated: CANopen RS485 isolated: Modbus RTU	
<b>operating temperature</b>		-10...+55 °C	

## Electric and mount diagrams



EVD7500 - EVD75SS



EVC7500

# EVK1000 terminal



AVK1000

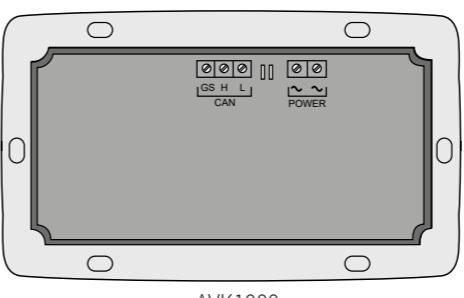


EVK1000

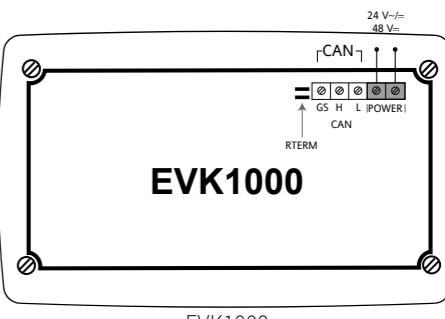
## Technical data

	<b>AVK1000</b>	<b>EVK1000</b>
<b>size</b>		160x96x10 mm
<b>Mounting</b>		panel (for wall mount see Accessories page)
<b>Display</b>		Backlit LCD
<b>power supply</b>	24 Vac/dc	24 Vac/dc - 48 Vdc isolated
<b>connectivity</b>		CANBus isolated: CANopen
<b>operating temperature</b>	-20...+55 °C	-5...+55 °C
<b>code</b>	AVK1000000500	EVK1000000B00

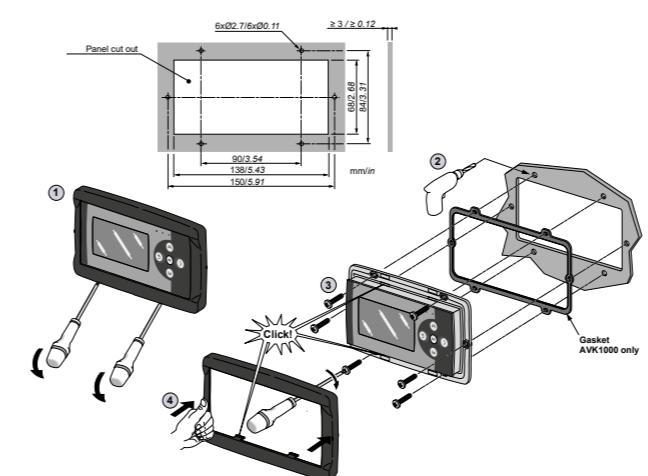
## Electric, mount and dimensional diagrams



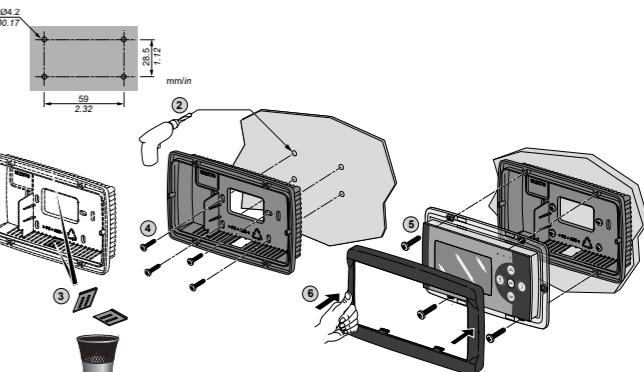
AVK1000



EVK1000



Panel mount

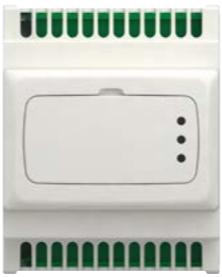


Wall mount

# Expansions EVE7500, EVE4200



EVE7500

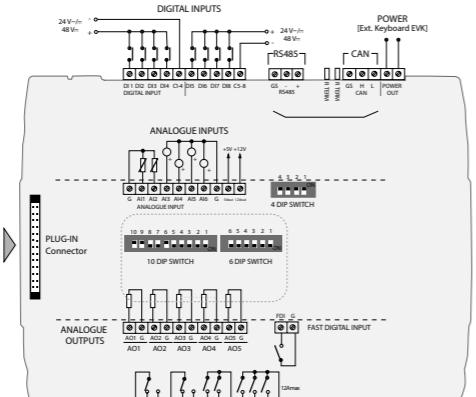
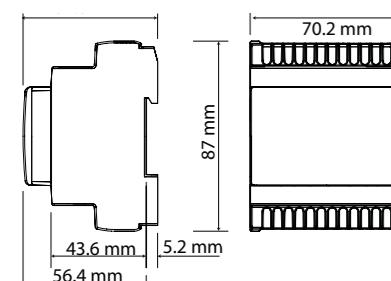
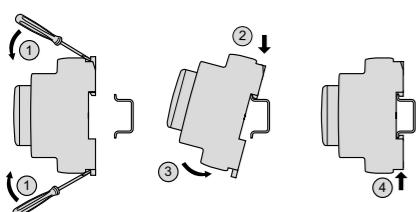


EVE4200

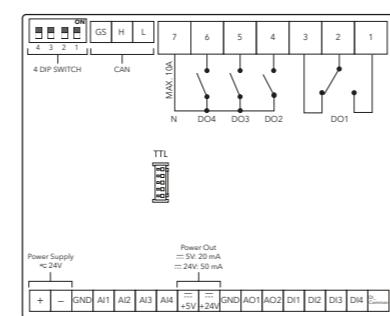
## Technical data

	<b>EVE7500</b>	<b>EVE4200</b>
<b>size</b>	8 DIN	
<b>mount</b>	on DIN rail	
<b>display</b>	-	
<b>power supply</b>	24 Vac/dc - 48 Vdc isolated	24 Vac/dc
<b>digital outputs</b>	2 x 8 A 250 Vac	1: 1 x 5 A 250 Vac
	5 x 5 A 250 Vac	3: 3 x 3 A 250 Vac
<b>analog outputs</b>	5 x 0-10 V / 4...20 mA / switch 0..20 mA	2 x 0-10 V
<b>digital inputs</b>	8 x SELV	4 x SELV
	1 x voltage free fast counter 1 kHz	
<b>analog inputs</b>	2 x NTC 103 AT / NTC NK103 / D.I. 4 x NTC 103 AT / NTC NK103 / D.I. / Pt1000 / PTC / / 0-10 V / 0-5 V	4 x NTC 103AT / NTC NK103 / D.I. / Pt1000 / PTC / 4...20 mA / 0-10 V / 0-5 V
<b>connectivity</b>	CANBus isolated: CANopen RS485 isolated: Modbus RTU 1 x EVS Plugin (only EVS RS485, EVS CAN)	CANBus: CANopen -
<b>operating temperature</b>	-10...+55 °C	-10...+55 °C

## Electric, mount and dimensional diagrams



EVE7500

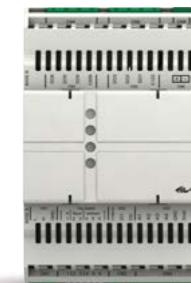


EVE4200

# Expansions EVE6000, EVE10200



EVE6000

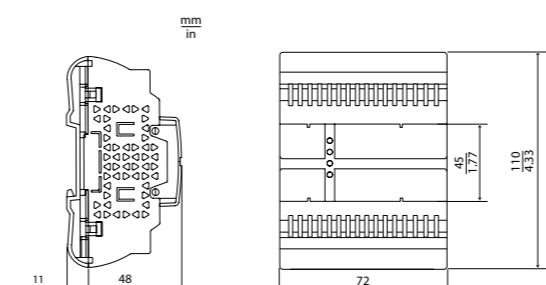
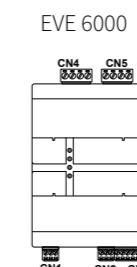
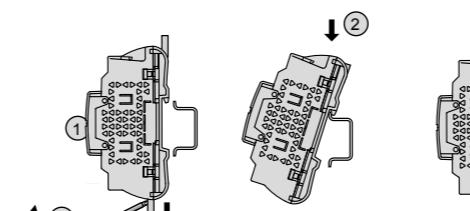


EVE10200

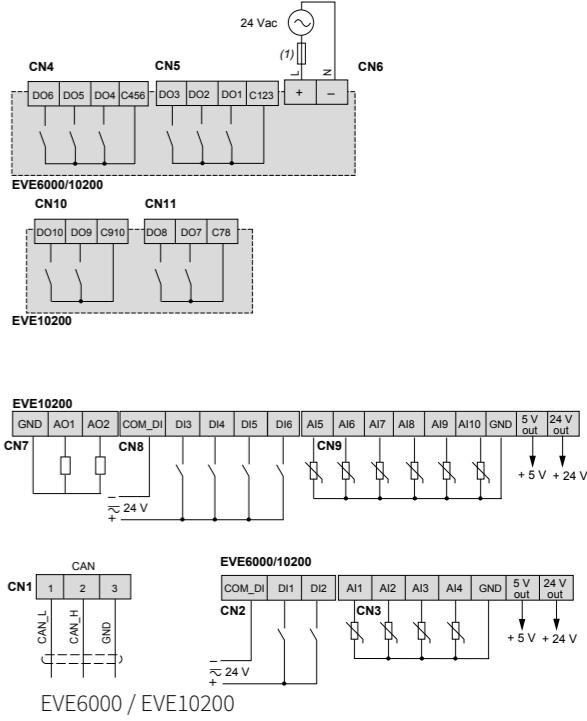
## Technical data

	<b>EVE6000</b>	<b>EVE10200</b>
<b>size</b>	4 DIN	
<b>mount</b>	on DIN rail	
<b>power supply</b>	24 Vac 20...38 Vdc	
<b>digital outputs</b>	6: 6 x 3 A 250 Vac	10: 10 x 3 A 250 Vac
<b>analog outputs</b>	-	2: 2 x 0-10 V, 2 x 0-10 V / 4...20 mA / ON-OFF / PWM / O.C. 24 Vdc 30 mA max
<b>digital inputs</b>	-	4 x SELV
<b>analog inputs</b>	2 x pulse/frequency counters up to 2 kHz	2 x pulse/frequency counters up to 2 kHz
<b>connectivity</b>	CANBus: CANopen	
<b>operating temperature</b>	-20...+65 °C	

## Electric, mount and dimensional diagrams



EVE 10200



EVE6000 / EVE10200

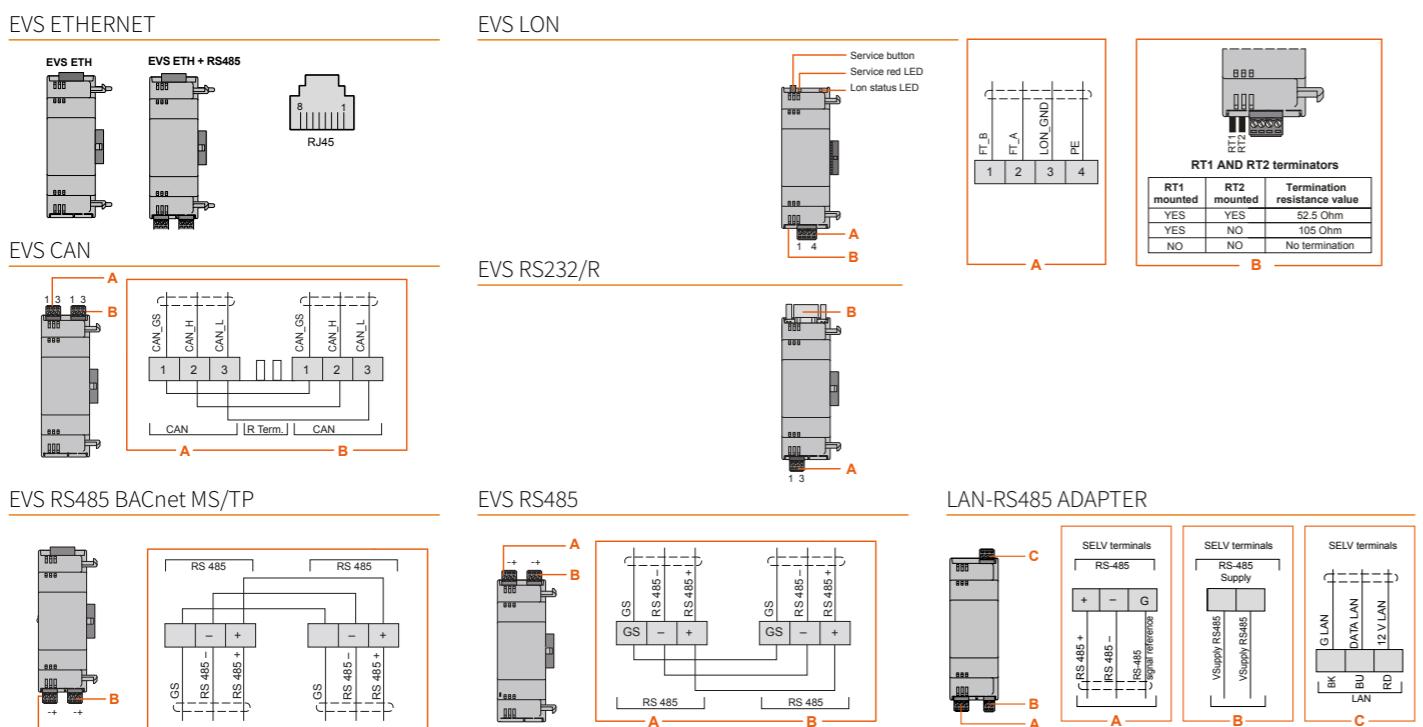
# Plugin EVS



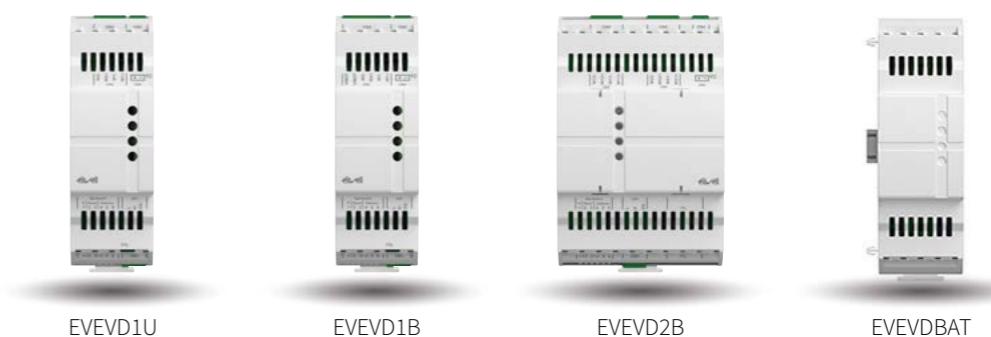
## Technical data

EVS				
size	2 DIN			
mount	on DIN rail			
power supply	from base EVD/EVC/AVD			
<b>Connectivity</b>				
Model	Code	Hazardous voltage output	Connectivity protocol	Compatibility
EVS RS232	EVS10R2000000	1 x SPDT 5A 250 Vac	Modbus ASCII	FREE Advance - FREE Evolution
EVS RS485	EVS00R4000000	-	Modbus RTU	FREE Advance - FREE Evolution
EVS CAN	EVS00CA000000	-	CANopen	FREE Advance - FREE Evolution
EVS Bacnet	EVS00BM000000	-	Modbus RTU - BACnet MSTP	FREE Advance - FREE Evolution
EVS LONWORKS	EVS0L0N000000	-	LON	FREE Advance - FREE Evolution
EVS ETH	EVS00ET000000	-	Modbus TCP - BACnet IP - WebServer	FREE Advance /C/I - FREE Evolution
EVS Profibus	EVS00PB000000	-	Profibus DP Slave-V0	FREE Evolution
EVS ETH/RS485	EVS00EB000000	-	Modbus RTU - BACnet MSTP - Modbus TCP - BACnet IP - Webserver	FREE Evolution
LAN-RS485 ADAPTER	SMALAN4850400	-	Modbus SL (RS485)	FREE Smart

## Electric, mount and dimensional diagrams



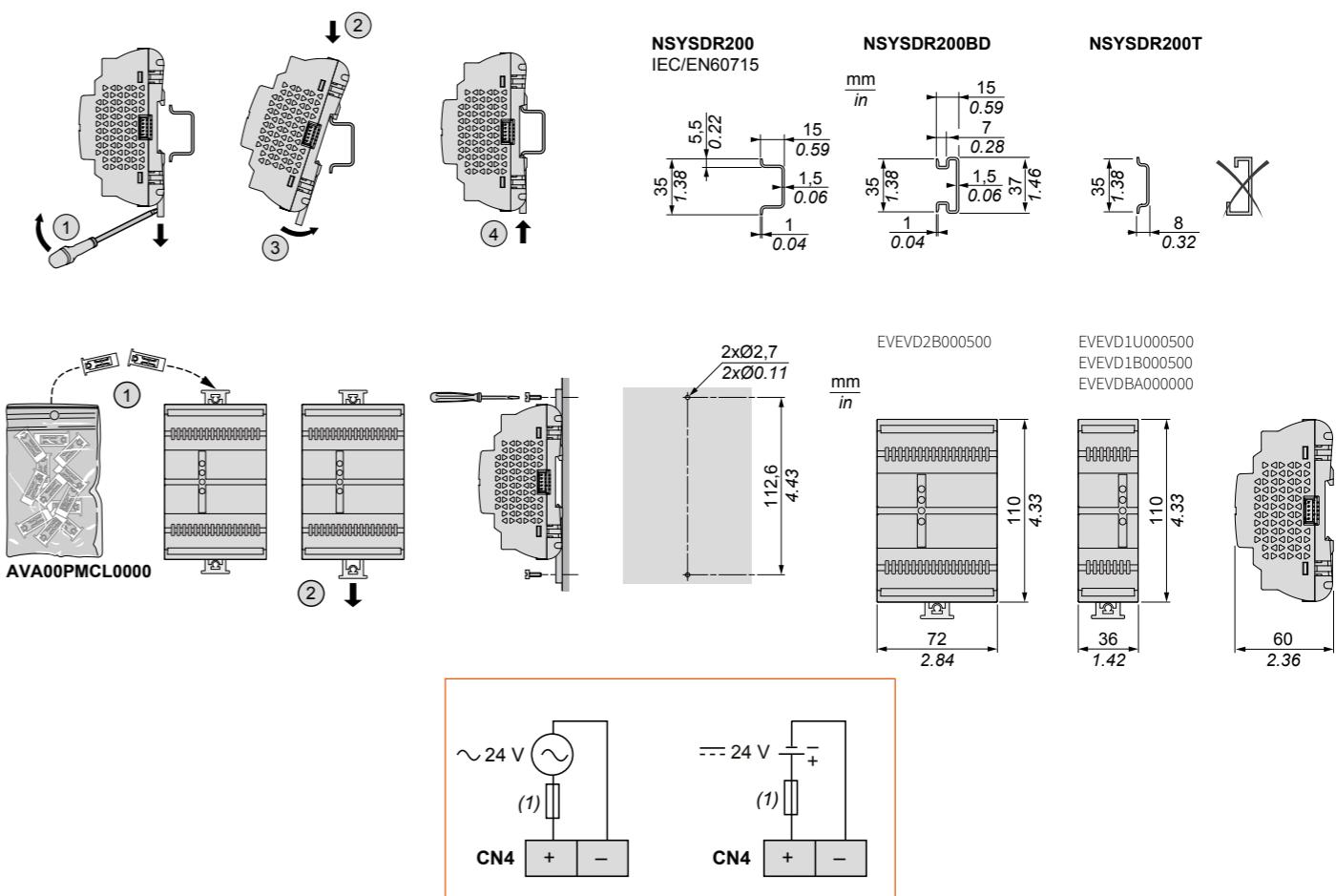
# Driver for electronic valves



## Technical data

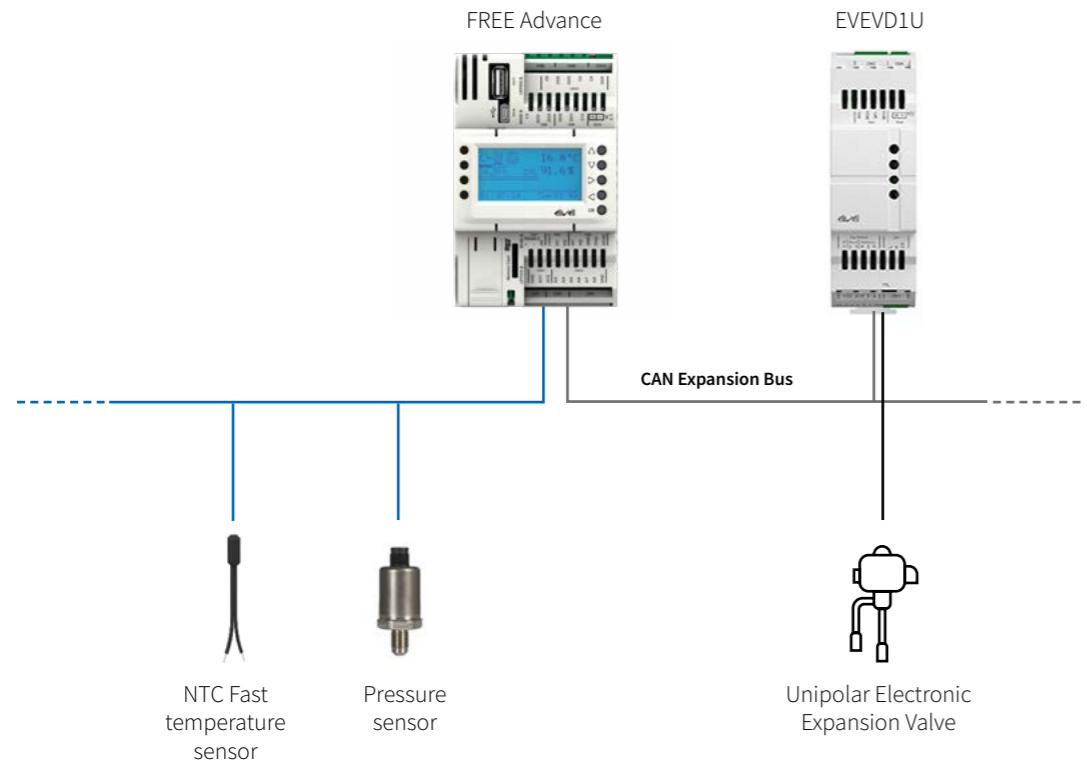
	EVEVD1U	EVEVD1B	EVEVD2B	EVEVDBAT
size	2 DIN	2 DIN	4 DIN	2 DIN
power supply	24 Vac ± 10% - 50/60 Hz / - 20...38 Vdc functional Insulation			
valve control output	1 unipolar			
connectivity	CANBus			
operating temperature	-20...+65 °C			

## Electric and mount diagrams



# Electronic valve control

The new EVEVD driver for electronic valves offers a flexible, eco-efficient solution for controlling various machines such as chillers, heat pumps, compressor racks, etc.



## The advantages of the new valve driver

- Scalable:** an expansion module that connects easily to our successful FREE Advance controllers
- Easy to use:** direct configuration from the PLC via FREE Studio Plus, so without the need to configure the driver
- Open:** available with preconfigured sets of parameters for the main valve manufacturers (Parker-Sporlan, Sanhua, Danfoss, Emerson-Alco, Saginomiya) and configurable for other models
- Flexible:** solution covering all OEM needs - for machines of various sizes
- Efficient:** integrated overheating algorithm that can be customised to increase efficiency and develop any application
- Safe:** backup battery to protect the evaporator

# Accessories

In association with FREE Smart, FREE Panel, FREE Evolution and FREE Advance, Eliwell supplies a vast range of accessories, from a protected transformer to IP68 temperature probes, ratiometric pressure transducers and pressure switches.

Single-phase (with currents from 2 to 9A) and three-phase fan modules are available.

No additional serial interfaces are required for connection of ratiometric pressure probes, external modules (such as fan modules) or terminals.

## FREE Smart accessories

### Converters, interfaces, programming keys

Code	Description	Details
SAR0RA00X701	USB/485 MINI KIT converter	-
DMI1003002000	DMI100-3 Manufacturer interface module	For FREE Smart only
MFK100T000000	MFK: programming key for parameter, application upload/download	For FREE Smart only

### Wiring

Code	Description	Details
COLV0000E0100	I/O connection wiring - safety extra low voltage (SELV) - 1 m cable	FREE Smart 12...24V only
COLV000035100	RS485 Wiring	FREE Smart 12...24V only
COLV000042100	Wiring AO3-4-5 -1 m cable	FREE Smart 12...24V only

### Connectivity

Code	Description	Details
BA10000R3700	BusAdapter 150 TTL-RS485	For FREE Smart only

### Humidity module

Code	Description	Details
KP100000	Humidity module %RH	For SKW terminal

### Demo Case

Code	Description	Details
VAL00031K	Demo Case for FREE Smart	-

### Temperature probes\*

Code	Description	Details
SN8DED11502C0	NTC 103AT 5X20 1.5 mt TPE IP68	-
SN8DAE11502C0	NTC 103AT 6X20 1.5 mt TPE IP68	-
SN9DAE11502C6	Pt1000 6X20 1.5 mt IP68	FREE Smart 4500
SN9DED11502C6	Pt1000 5X20 1.5 mt IP68	

### Transformers

Code	Description	Details
TF411205	Transformer 230 Vac/12 V 6 VA (protected)	For FREE Smart only
TF411210	Transformer 230 Vac/12 V 11 VA (protected)	For FREE Smart only
TF111211	Transformer 220 Vac/24 V-24 V 16 VA	For FREE Smart only

KEY: SELV = Safety Extra Low Voltage

\*different cable lengths available on request

## FREE Advance, FREE Evolution and FREE Panel accessories

### Converters, interfaces, programming keys

Code	Description	Details
SAR0RA00X701	USB/485 MINI KIT converter	-
EVA00USCA0000	USB/CAN converter	-



### Base plates

Code	Description	Details
EVA00WMRC0000	Kit (4 Pcs) White base plate for wall mount	For EVP/AVK/EVK
EVA00WMRC0001	Kit (4 Pcs) Black base plate for wall mount	For EVP/AVK/EVK
AVA00WMRC0000	White base plate for wall mount	For AVP1000
AVA00WMRC0001	Grey base plate for wall mount	For AVP1000



### Demo Case

Code	Description	Details
VAL00033K	Demo Case for FREE Evolution	-
VAL00034	Demo Case for FREE Advance	-



### Temperature probes\*

Code	Description	Details
SN8DED11502C0	NTC 103 AT 5X20 1.5 m TP IP68	-
SN8DAE11502C0	NTC 103 AT 6X20 1.5 m TP IP68	-
SN9DAE11502C6	Pt1000 6X20 1.5 m IP68	FREE Evolution / FREE Advance
SN9DED11502C6	Pt1000 5X20 1.5 m IP68	FREE Evolution / FREE Advance



### Transformers

Code	Description	Details
TF111202	Transformer 230V~/24 V 25 VA	For FREE Evolution only
TF111205	Transformer 230V~/24 V 35 VA DIN rail mount	FREE Evolution / FREE Advance



### FREE range accessories

#### Pressure transducers

Code	Description	Details
TD220050	EWPA050 4...20 mA / 0...667 psi / 0.50 bar IP54** 2 m cable	1/4 SAE MALE
TD220007	EWPA007 4...20 mA / -7...101.5 psi / -0.5..7 bar IP54** 2 m cable	1/4 SAE MALE
TD320050	EWPA050 4...20 mA / 0...667 psi / 0.50 bar IP54** 2 m cable	1/4 SAE FEMALE
TD320007	EWPA007 4...20 mA / -7...101.5 psi / -0.5..7 bar IP54** 2 m cable	1/4 SAE FEMALE



#### Ratiometric transducers

Code	Description	Details
TD420010	EWPA 010 R 0...145 psi / 0...10 bar IP67 2 m cable (packard connector)	Female connection
TD420030	EWPA 030 R 0...508 psi / 0...30 bar IP67 2 m cable (packard connector)	Female connection
TD420050	EWPA 050 R 0...667 psi / 0...50 bar IP67 2 m cable (packard connector)	Female connection



#### Expansions, fan modules

Code	Description	Details
MW320100	EXP11 250 V 10 A expansion with DIN rail mount base	Open Collector Output
MW991012	CFS05 TANDEM TRIAC 5+5 A 250 V	-
CFS Modules	CFS - Single-phase speed regulators for currents from 2 A to 9 A	Various articles available



KEY: SELV = Safety Extra Low Voltage

\*different cable lengths available on request \*\*optional IP67 version with packard connector

## Code tables

### FREE Smart

SMD5500050400	SM	D	5	5	00	05	0	4	00
Product family	FREE Smart series								
Physical feature	D = Built-in Display, DIN-rail mounting C = Blind, DIN-rail mounting P = Panel mounting 32x74 E = I/O Expansion module, DIN-rail mounting								
Number of digital outputs	5 4 3 2								
Number of analog outputs	6 5 2								
Not relevant	00								
Embedded Communication & Real Time Clock	05 = RTC and RS-485 01 = RTC								
Not relevant	0								
Power supply	4 = 12...24 Vac, 24 Vdc H = 100...240 Vac <sup>(1)</sup>								
Customization	00 = standard other values = variants & customization on demand								

<sup>(1)</sup> Only for SMD, SMC and SME models

### FREE Advance

AVD1260060500	AV	D	12	6	0	06	0	5	00
Product family	FREE Advance series								
Physical feature	D = Built-in Display C = Blind								
Number of digital outputs	3 6 8 12								
Number of analog outputs	0 2 4 6								
Digital output type	00: The digital outputs are relay SS: 2 digital outputs are SSR NOTE: Only one digit in case of 12 digital outputs								
Embedded Communication	06 = RS-485 and Ethernet based communication protocols 05 = RS-485 based communication protocols								
Power supply isolation <sup>(1)</sup>	0 I: Power Supply Isolated								
Power supply	5 = 24 Vac/dc								
Not relevant	00								

<sup>(1)</sup> Only for 28 and 42 I/O

## FREE Advance Panel & Keypad

AVP11000W0500	AV	P	1	1	00	0W	0	5	00
<b>Product family</b>	FREE Advance Panel series								
<b>Physical feature</b>	P = Programmable Panel with PLC capability K = Remote display with keypad								
<b>Number of digital inputs</b>				1					
<b>Number of analog inputs</b>					3 2 1 0				
<b>Color option<sup>(1)</sup></b>						00: standard, if no options are available 0G: grey plastics 0W: white plastics			
<b>Mounting option<sup>(1)</sup></b>						00: default for AVK 0W = vertical surface mounting 0P = panel mounting			
<b>Not relevant</b>						0			
<b>Powersupply</b>							5 = 24 Vac/dc		
<b>Customization</b>								00 = standard other values = variants & customization on demand	

<sup>(1)</sup> Only for AVP models

## FREE Evolution

EVD7500060B00	EV	D	7	5	00	06	0	B	00
<b>Product family</b>	FREE Evolution series								
<b>Physical characteristic</b>	D: Built-in Display C: Blind								
<b>Number of digital outputs</b>			7	0					
<b>Number of analogue outputs</b>				5 0					
<b>Digital output type</b>					00: Relay digital outputs SS: 2 SSR digital outputs				
<b>Integrated communication protocol and RTC</b>						06: RTC and USB port 01: RTC			
<b>Not relevant</b>						0			
<b>Powersupply</b>							B: 24 Vac, 24...48 Vdc		
<b>Customisation</b>								00 = standard other values = variants and customisations on request	

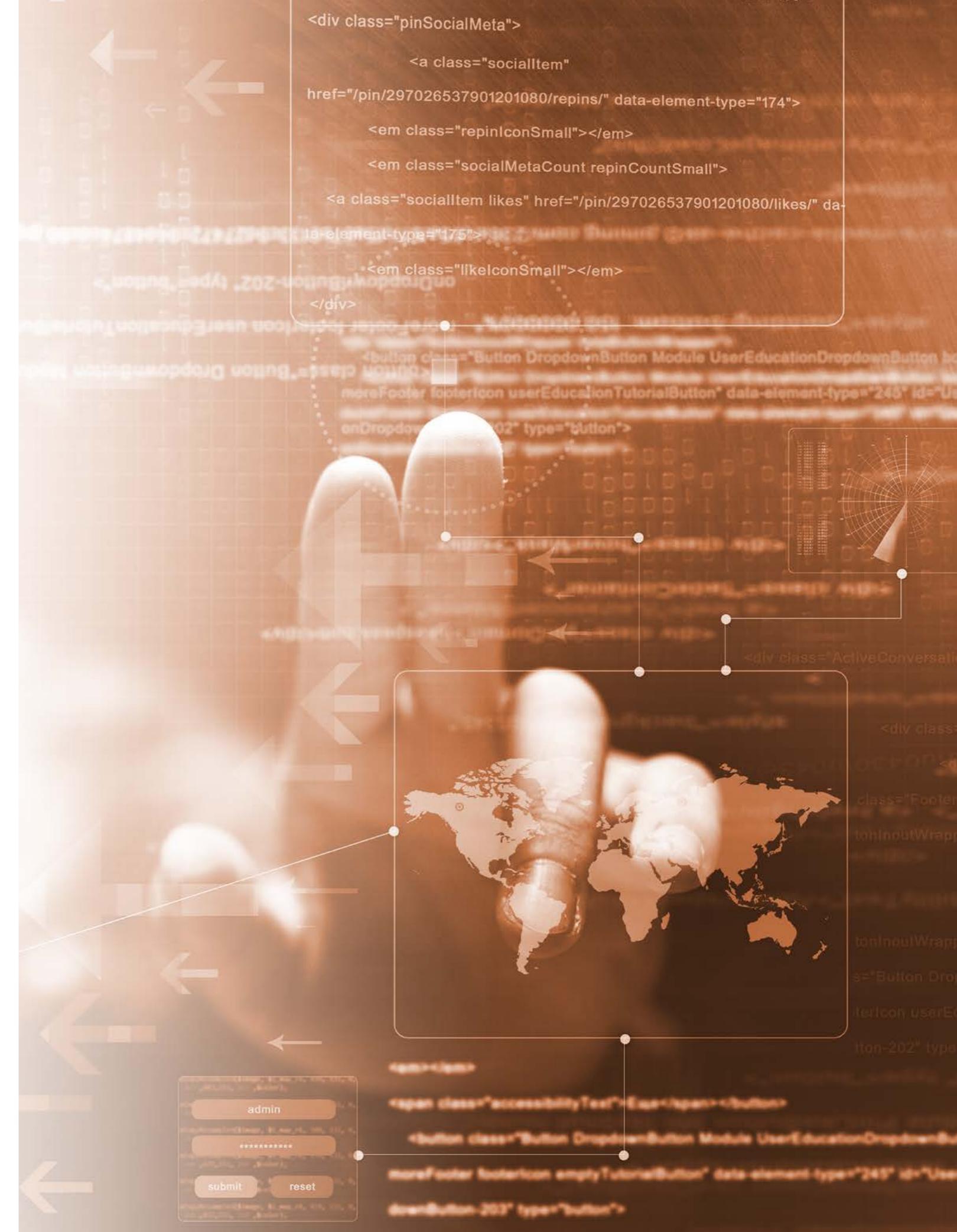
## FREE Expansion modules

EVE1020000500	EVE	10	2	0	00	0	5	00	
<b>Product family</b>	FREE Expansion modules series								
<b>Number of digital outputs<sup>(1)</sup></b>		10 7 6 4							
<b>Number of analog outputs<sup>(1)</sup></b>			0 2 4 5 6						
<b>Main feature<sup>(2)</sup></b>	VD = valve driver								
<b>Digital output type<sup>(1)</sup> Valve driving capability<sup>(2)</sup></b>				00: The digital outputs are relay <sup>(1)</sup> SS: 2 digital outputs are SSR <sup>(1)</sup> NOTE: Only one digit in case of 10+ digital outputs <sup>(1)</sup> 1U: single unipolar valve <sup>(2)</sup> 1B: single bipolar valve <sup>(2)</sup> 2B: double bipolar valve <sup>(2)</sup> BA: battery backup module <sup>(2)</sup>					
<b>Not relevant</b>				00					
<b>Not relevant</b>					0 I: Power Supply Isolated				
<b>Powersupply</b>						5: 24 Vac/dc B: 24 Vac, 24...48Vdc 0: powered by the controller <sup>(2)</sup>			
<b>Customization</b>						'00: standard other values: variants & customization on demand			

<sup>(1)</sup> Only for I/O expansions <sup>(2)</sup> Only for Valve Drivers

## Note

## Note



Life Is On



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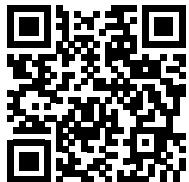
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