

# free Way

Programmable platform



# General description

## Eliwell's programmable platform

**FREE Way:** the new Eliwell approach to programmability, giving customers the tools to find their own faster and more effective solutions.

Our FREE Way programmable platform consists of the **FREE Studio** software Suite, **FREE Smart**, **FREE Panel** and **FREE Evolution**, the programmable controller range available in various sizes to chose from.

FREE Studio software suite, simple and flexible, is compatible with the 5 standard programming languages (**IEC 61131-3**), and is structured to manage a whole range of controllers of different sizes and with varying levels of complexity, in order to satisfy all the customer's system customisation requirements.




FREE Smart

## Specifications


### FREE Studio

- Quick and easy programming
- Single software suite
- Complete and effective online Help
- Advanced debugging and simulation options
- Protection of applications and Different use levels
- Application revision log
- Customisable interface


### FREE Smart

- User interface with configurable keys.
- Available in three formats, in versions 100...240V~ and 12...24V~ / 24V= :
  - **FREE Smart SMP** 32x74mm with LED display
  - **FREE Smart SMD** 4 DIN with LED display
  - **FREE Smart SMC** 4 DIN with no display
- Can be connected to RS-485, Modbus RTU
- Can be connected to standard Eliwell peripherals and user interfaces.
-  certification based on the model indicated in the UL reference file no. E233482

### FREE Panel

- **FREE Panel EVP** system controller, with gateway functions and backlit LCD graphic display
- High connectivity: can be integrated in industrial systems and BMS
- Connects to standard Eliwell and third-party peripheral devices
- Can be panel or wall-mounted
-  certification based on the model indicated in the UL reference file no. E233482

### FREE Evolution

- Fully customisable graphic user interface.
- Available in two formats
  - **FREE Evolution EVD** 8 Din with backlit LCD graphic display
  - **FREE Evolution EVC** 8 Din with no display
- High connectivity: integrates into industrial systems and BMS using expansion plug-in modules.
- Connects to standard Eliwell peripheral devices (including FREE Smart)
- Connects to standard third-party peripheral devices.
-  certification based on the model indicated in the UL reference file no. E233482



FREE Panel



FREE Evolution



## Speed

One of the main goals of the FREE programmable platform is to give customers the tools to find faster, more effective solutions for their customers. Many features of FREE make it possible to effectively reduce the time between defining a new application and putting it into production.

## Compact dimensions

The new FREE programmable platform enables customers to keep costs at a competitive level. The FREE controllers are made with particular emphasis placed on technological solutions and physical size, for significant results in terms of simplicity, modularity and compactness. The integrated solutions and small size of FREE controllers provide real, immediate economic advantages for customers.

## Efficiency

The FREE programmable platform, complete and scalable across various levels of complexity, offers customers great freedom in choosing the solution they feel is best suited to their own requirements. This makes it easier to find solutions which take account of costs and/or the reduction of product codes, including solutions which are more open to future development or future system requirements, with particular reference to connectivity.

## Reliability

The high quality of the new FREE Way programmable platform allows customers to reduce any costs linked to a lack of quality, during both the production process and on-site installation procedures. The **FREE Smart**, **FREE Panel**, **FREE Evolution** controllers and **FREE Studio** development environment were designed using innovative but carefully reconstructed criteria, adopting advanced and stable technological solutions as well as certified, monitored production processes. Eliwell has always been associated with reliability.

## FREE Way targets many applications in the HVAC and Refrigeration industry

### Manufacturers of:

- A.T.U. (Air Treatment Units)
- Chillers
- Heat Pumps
- Rooftops
- Precision conditioning systems
- Compressor Racks

### Installers/integrators of:

- All air systems
- Hydronic systems
- Combo systems (air/water)
- Commercial automation



# FREE Studio

**FREE Studio** software suite is compatible with all 5 standard programming languages (**IEC61131-3**).

Each project may be composed of several programs; the developer can use one or more languages in the same project.

Each new program offers the choice of 5 programming languages, 2 text-based and 3 graphics-based:

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

## IEC61131-3 development software

### Main functions

#### Display variables with application running

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

#### Function libraries

Management of default function libraries and/or those created by the developer.  
Any additional boards are managed by that developer.

#### Display variables graph

Debugging of variables by displaying their status in graphics-based format when the application is running and connected to FREE Smart, FREE Panel and FREE Evolution

#### Reading / writing of variables.

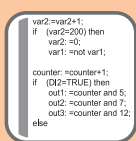
The operating environment makes the following possible:

- Creation of custom menus to be shown on the controller display.
- Reading and writing BIOS parameters (parameters + I/O values)
- Reading and writing parameters and variables defined by the developer in Application linked to the menu.

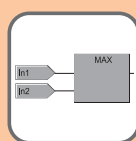
**Online Help** for programmers at all stages of the programme development process, accessible from the work screen by simply pressing F1.

The entire help is also available in a printable pdf.

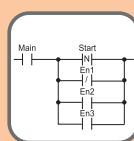
**Baselines and Libraries** ready for use for downloading from the web



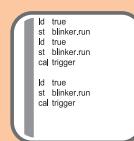
**ST**



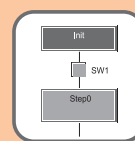
**FBD**



**LD**



**IL**



**SFC**

## Components

FREE Studio allows the developer to program in different work environments, having releases at his disposal that are always updated with new functions and optimizations, available in the dedicated area of the Eliwell site.



## Baselines

**Applications** ready for use, in compliance with the rules of architecture, easily modified and adapted to one's unique requirements.

The applications and object **libraries** will help to speed up your work even more, making FREE Studio easier to use.



## Application

Component for software developers to allow them to develop and modify applications in the 5 standard programming languages.



## Device

Component dedicated to less skilled users for the management of parameters, application downloads, field tests, etc.



## Connection

Configuration component for both field and open networks, for integration with other systems.



## User Interface

Component for developing and customising the graphic user interface.



## Simulation

Component for simulating the application on a PC.

## Installation and system requirements

### Operating Systems

- Windows 8
- Windows 7 Home / Professional / Ultimate
- Windows XP Home / Professional SP2 or SP3

Installation setup, software updates, reference libraries and documentation are also available from the Restricted Area of the website [eliwell.com](http://eliwell.com) once you have registered.

# FREE Smart Models

The models are available as a DIN rail-mounted version (SMD with display, SMC with no display) and in the compact 32x74 Eliwell (SMP) size for panel-mounting.

Various expansion modules (SE, SME) and terminals (SKP, SKW) are also supplied for use in conjunction with the corresponding models in the FREE Smart range.

All inputs and outputs are independent and configurable to maximise the units' adaptability to any system



## FREE Smart 12...24V~ / 24V... /C indicates the presence of real-time clock (RTC)

Model	Part number	Digital outputs dangerous voltage	TRIAC outputs dangerous voltage	O.C. outputs: PWM/PPM safety extra low voltage SELV	Analogue outputs safety extra low voltage SELV	Digital inputs no voltage	Analogue inputs safety extra low voltage SELV	O.C. outputs	RS 485 on board
<b>SMP5500/C/S</b>	SMP5500050400	5	-	2	3	6	5	1	yes
<b>SMP5500/C</b>	SMP5500010400	5	-	2	3	6	5	1	-
<b>SMD5500/C/S</b>	SMD5500050400	5	-	2	3	6	5	1	yes
<b>SMD3600/C/S</b>	SMD3600050400	3	2	1	3	6	5	1	yes
<b>SMC5500/C/S</b>	SMC5500050400	5	-	2	3	6	5	1	yes
<b>SMC5500/C</b>	SMC5500010400	5	-	2	3	6	5	1	-

### Expansion modules

<b>SE632</b>	SE63020310400	3	-	2	-	6	3	1	-
<b>SE655</b>	SE6502351044	5	-	2	3	6	5	1	-

## FREE Smart 100...240V~ /C indicates the presence of real-time clock (RTC); /S indicates integrated RS485 serial port

Model	Part number	Digital outputs dangerous voltage	O.C. outputs: PWM / DI safety extra low voltage SELV	Outputs 0...10V safety extra low voltage SELV	Outputs 4...20mA 0...20mA	Analogue inputs safety extra low voltage SELV
<b>SMD4500/C/S</b>	SMD4500050H00	4	2	2	1	5
<b>SMC4500/C/S</b>	SMC4500050H00	4	2	2	1	5

### Expansion module

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

Model	Part number	Installation	Dimensions	Display	Analogue inputs safety extra low voltage SELV
<b>SKP10</b>	SKP1000000000	Panel	74x32x30 mm	LED / 4 digit	-
<b>SKW22</b>	SKW2200000000	Wall	137x96.5x31.3 mm	LCD	1 integrated NTC 1 NTC/DI/4...20mA input
<b>SKW22L</b>	SKW22L0000000	Wall	137x96.5x31.3 mm	Backlit LCD	1 integrated NTC 1 NTC/DI/4...20mA input
<b>SKP22</b>	SKP2200000000	Panel; Wall: see page 17 (accessories)	160x96x10mm	LCD	1 NTC input 1 NTC/DI/4...20mA input

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

### Resources available - FREE Smart (model /C/S, msk 412)

The IEC programmer includes the following resources:

<b>CPU</b>	14.7 MHz
Available memory for <b>Application</b>	190 KByte
RAM memory - automatic mapping	2300 Byte
RAM memory - Modbus mapping	1024 Byte
EEPROM variables	1024 Byte

### Minimum kit for the developer - FREE Smart

- FREE Studio installation setup
  - 1 FREE Smart SMxxxx\*
  - 1 DMI 100-3 Manufacturer + yellow TTL cable
  - 1 optional MFK + blue TTL cable
  - FREE Smart\*power cables and transformer
- \* alternatively, request the Demo Case

# FREE Smart Connectivity

FREE Smart controllers are equipped with a serial port for easy integration with the supervision systems of the plant in which they are installed.

ModBus standard protocol makes it possible to access all the controller resources, thereby guaranteeing complete system control.

All models have TTL supplied as standard; /S models have an integrated RS485 serial port.

A special firmware version also offers Modbus MASTER functions.



## FREE Smart maximum configuration

- Max 1 FREE Smart model
- Max 1 SE / SME expansion module via LAN serial port
- Max 1 SKP10 terminal with controller ECHO function
- Max 1 SKW22(L) or SKP22 terminal with dedicated menu, with the possibility of monitoring the environment temperature and humidity
- Maximum LAN distance: 100 m

## FREE Smart Update Function

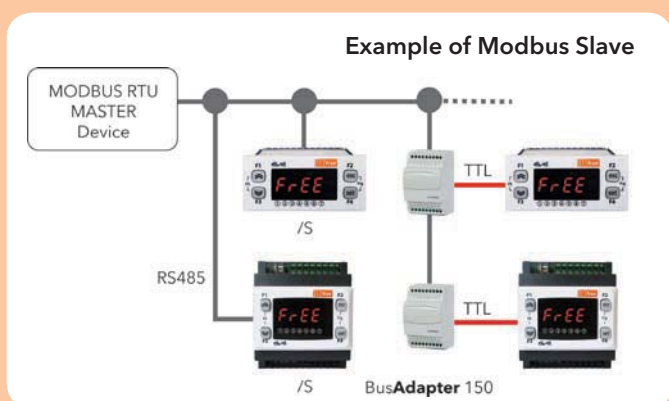
The Multi Function Key (MFK 100) can be used to upload and download the parameters map for rapid configuration, to upload IEC and BIOS applications.

Multi Function Key / DMI PC → ← FREE		
use <b>blue TTL cable</b> for DMI - MFK connection		
Direction of download	→	←
Parameters map	-	-
IEC application	✓	-
BIOS	✓	-

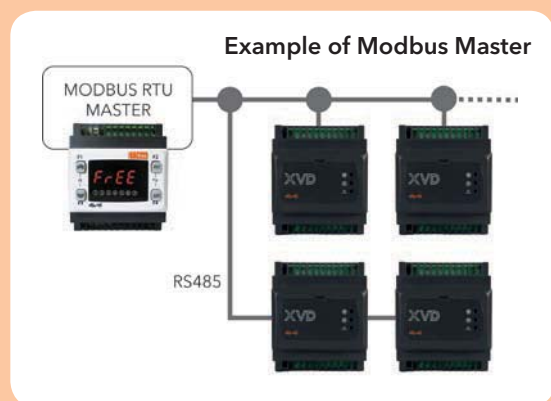
Multi Function key MFK → ← FREE		
use <b>yellow TTL cable</b> for MFK - target connection		
Direction of download	→	←
Parameters map	✓	✓
IEC application	✓	-
BIOS	✓	-

Network PC → ← FREE		
use <b>yellow TTL cable</b> for DMI - target connection		
Direction of download	→	←
Parameters map	✓	✓
IEC application	✓	-
BIOS	✓	-

## Example of connection in Modbus Slave or Master mode



For models without RS485 use exclusively BusAdapter 150



# SMP, SMD, SMC5500



SMP5500



SMD5500

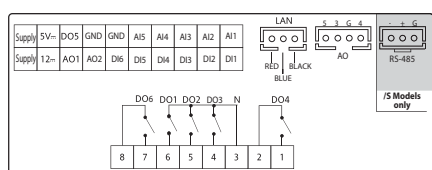
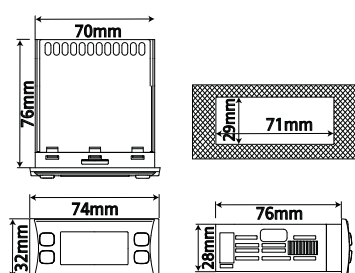


SMC5500

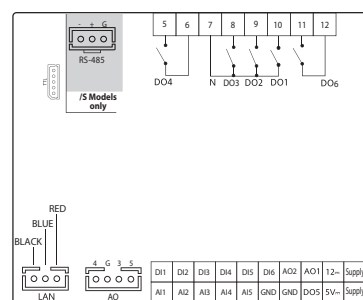
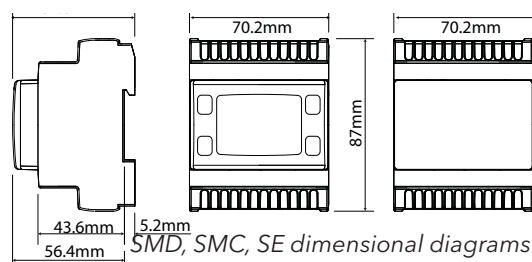
## Technical data

	SMP5500	SMD5500	SMC5500
format	32x74x80mm (Lxhxd)	4DIN	4DIN
display	LED 4 digits - 7 segments	LED 4 digits - 7 segments	-
power supply	12...24V~ / 24V=	12...24V~ / 24V=	12...24V~ / 24V=
relay digital outputs	5 x 2A 250V~	5 x 2A 250V~	5 x 2A 250V~
analogue outputs	2 x O.C. PPM/PWM 3 x 0...10V	2 x O.C. PPM/PWM 3 x 0...10V	2 x O.C. PPM/PWM 3 x 0...10V
O.C. digital outputs	1 x Open Collector	1 x Open Collector	1 x Open Collector
digital inputs	6 voltage free	6 voltage free	6 voltage free
analogue inputs	3 x NTC/ D.I. 2 x NTC/ D.I. / 0...20mA / 4...20mA / 0-10V / 0-5V / 0-1V	3 x NTC/ D.I. 2 x NTC/ D.I. / 0...20mA / 4...20mA / 0-10V / 0-5V / 0-1V	3 x NTC/ D.I. 2 x NTC/ D.I. / 0...20mA / 4...20mA / 0-10V / 0-5V / 0-1V
connectivity	TTL RS485 (only /S models) LAN for connection to SKP/SKW terminal or to SE expansion module	TTL RS485 LAN for connection to SKP/SKW terminal or to SE expansion module	TTL RS485 (only /S models) LAN for connection to SKP/SKW terminal or to SE expansion module
operating temperature	-20...+55°C	-20...+55°C	-20...+55°C

## Wiring, assembly and dimensional diagrams



SMP5500/C - SMP5500/C/S



SMD5500/C/S - SMC 5500/C - SMC5500/C/S



# SMD3600, SE Expansion modules



SMD3600



SE632

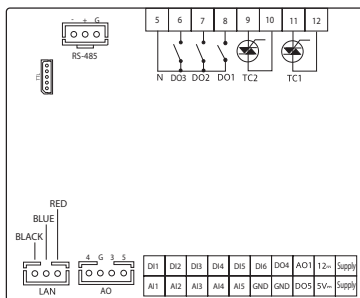


SE655

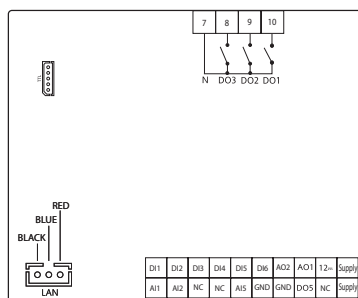
## Technical data

	SMD3600	SE632	SE655
format	4DIN	4DIN	4DIN
display	LED 4 digits - 7 segments	-	-
power supply	12...24V~	12...24V~ / 24V=	12...24V~ / 24V=
relay digital outputs	3 x 2A 250V~	3 x 2A 250V~	5 x 2A 250V~
analogue outputs	2 x TRIAC 3A250V~ 1 x Open Collector PPM/PWM 3 x 0...10V	1 x TRIAC 3A250V~ 2 x Open Collector PPM/PWM 3 x 0...10V	1 x TRIAC 3A250V~ 2 x Open Collector PPM/PWM 3 x 0...10V
O.C. digital outputs	2 x Open Collector	1 x Open Collector	1 x Open Collector
digital inputs	6 voltage free	6 voltage free	6 voltage free
analogue inputs	3 x NTC/ D.I. 2 x NTC/ D.I. / 0...20mA / 4...20mA / 0-10V / 0-5V / 0-1V	3 x NTC/ D.I. -	3 x NTC/ D.I. 2 x NTC/ D.I. / 0...20mA / 4...20mA / 0-10V / 0-5V / 0-1V
connectivity	TTL RS485 LAN for connection to SKP/SKW terminal or to SE expansion module	TTL - LAN for connection to FREE Smart	TTL - LAN for connection to FREE Smart
operating temperature	-20...+55°C	-20...+55°C	-20...+55°C

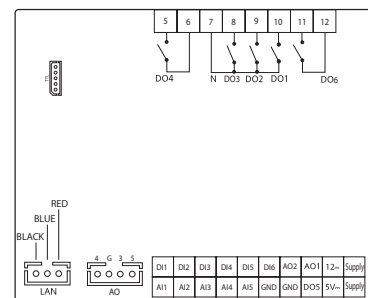
## Wiring diagrams



SMD3600/C/S



SE632



SE655

# SMD, SMC4500, Expansion module SME4500



SMD4500



SMC4500

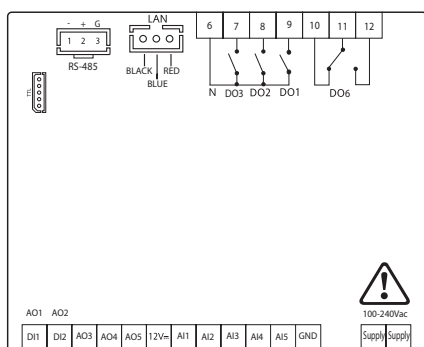


SME4500

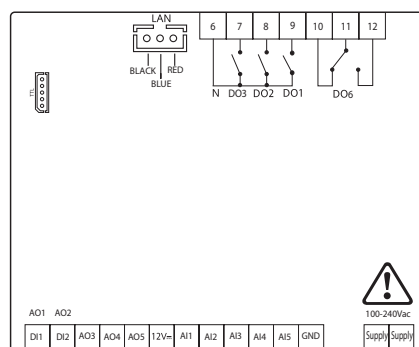
## Technical data

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

## Wiring diagrams



SMD4500/C/S - SMC4500/C/S



SME4500 expansion module

# Interfaces, FREE Smart terminals



SKP10



SKW22/22L

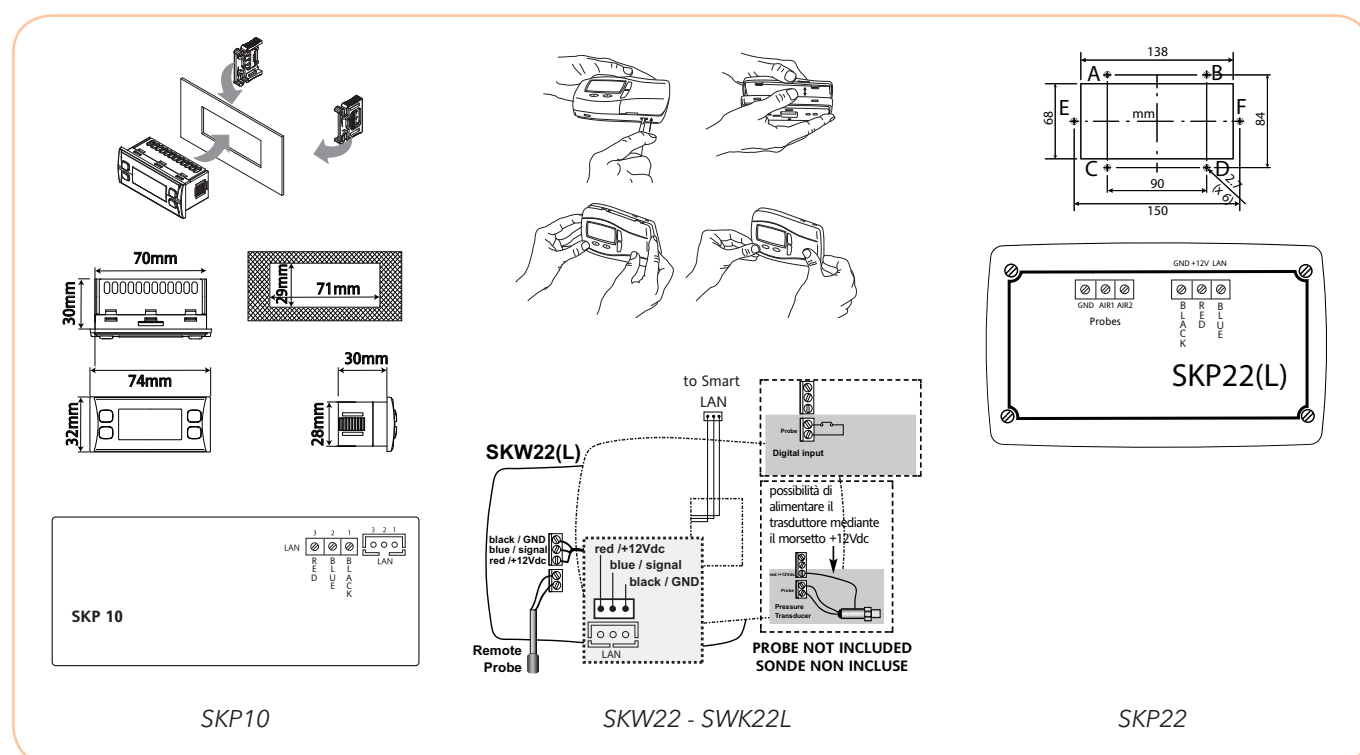


SKP22

## Technical data

	SKP10	SKW22 - SKW22L	SKP22
format (LxDxH)	74x32x30 mm	4DIN	4DIN
Mounting	Panel	Wall	Panel
Display	LED 4 digits - 7 segments	LCD ( <b>model 22L</b> : backlit LCD)	LCD
power supply	From base	From base	From base
analogue inputs	-	1 x integrated NTC	1 x remote NTC
	-	1 x NTC/ D.I. / 0...20mA / 4...20mA remote	1 x NTC/ D.I. / 0...20mA / 4...20mA remote
connectivity	LAN for connection to FREE Smart	LAN for connection to FREE Smart	LAN for connection to FREE Smart
wiring	cable COLV000033200 Included in the package	cable COLV000033200 Included in the package	cable COLV000033200 Included in the package
operating temperature	-20...+55°C	-5...+60°C	-5...+60°C
humidity module	-	KP100000 - not included (see Accessories page)	-

## Wiring and assembly diagrams



# FREE Panel models

**FREE Panel (EVP)** is an HMI and communications based controller with the same FREE Evolution programming capabilities making it ideally suited for distributed control systems, a centralized gateway device, and linking other FREE Evolution and FREE Smart or third-party controllers.

FREE Panel guarantees high performance in terms of memory, connectivity and user interface as well as straightforward programming, maintenance and servicing.

The FREE Panel is designed for panel mounting, and can also be wall-mounted using a special backplate, available as an accessory.



FREE Panel

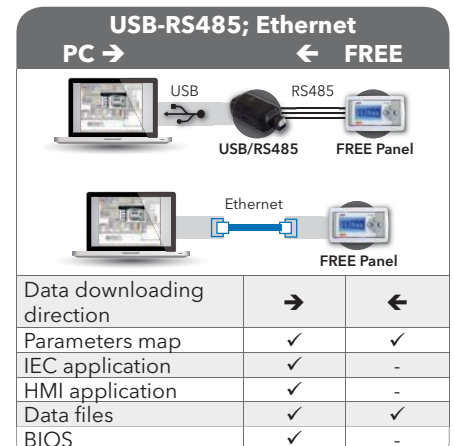
**FREE Panel** /C indicates the presence of the RTC - Real Time Clock. /RH: humidity sensor

Model	Part number	Installation	Display	Inputs safety extra low voltage SELV	Serial
<b>EVP3300/C</b>	EVP3300010B00	Panel (for wall-mounting see Accessories page)	LCD backlit	1 x NTC integrated; 1 x NTC remote; 1 x 4...20mA remote	CANbus; RS485; Ethernet
<b>EVP3300/C/RH</b>	EVP3500010B00	Panel (for wall-mounting see Accessories page)	LCD backlit	1 x NTC integrated; 1 x NTC remote; 1 x integrated %RH	CANbus; RS485; Ethernet

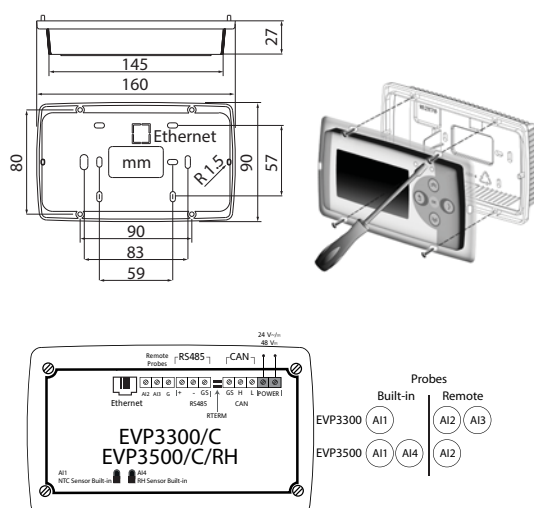
KEY: SELV = Safety Extra Low Voltage

## Technical data

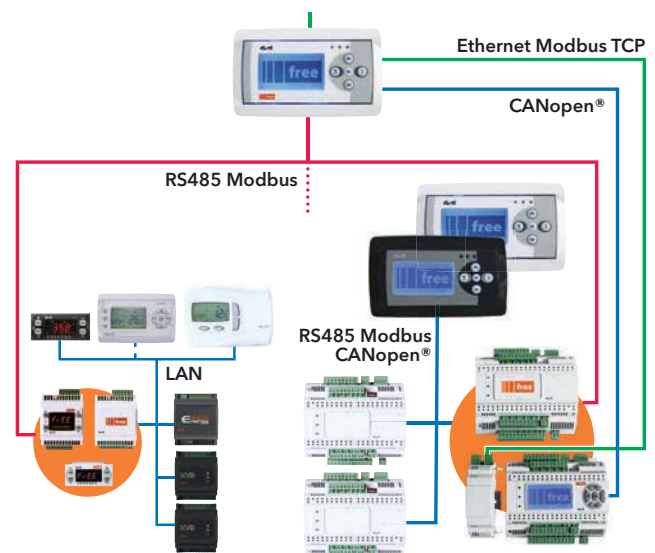
	<b>EVP3300/C</b>	<b>EVP3300/C/RH</b>
format	160x96x10mm	160x96x10mm
display	LCD graphic display 128x64px backlit	LCD graphic display 128x64px backlit
power supply	24V~/~ - 48V~	24V~/~ - 48V~
analogue inputs	<b>A11</b> 1 x integrated NTC	<b>A11</b> 1 x integrated NTC
	<b>A12</b> 1 x remote NTC / D.I.	<b>A12</b> 1 x remote NTC / D.I.
	<b>A13</b> 1 x 4...20mA / 0-5V / 0-10V remote	<b>A14</b> 1 x integrated %RH
connectivity	CANBus: CANopen	CANBus: CANopen
	RS485: Modbus RTU, BACnet MSTP	RS485: Modbus RTU, BACnet MSTP
	Ethernet: Modbus TCP - BACnet IP - HTTP	Ethernet: Modbus TCP - BACnet IP - HTTP
operating temperature	-5...+55°C	-5...+55°C



## Wiring, assembly and connectivity diagrams



EVP3300/C - EVP3300/C/RH



FREE Smart, FREE Panel and FREE Evolution connectivity



# FREE Evolution models



FREE Evolution

**FREE Evolution** models (**EVD** with display, **EVC** without display) are available in the 8 DIN rail-mounted version, with disconnectable screw terminals to make installation easier and faster.

Each EVD or EVC can be expanded by CANbus (field) up to 12 expansion modules and 2 terminals (EVK). By CANbus (network) it is also possible to connect up to 10 controllers to one another.

Up to 127 devices can be managed with the Modbus Master, by RS485.

## FREE Evolution with or without display /C indicates the presence of the RTC - Real Time Clock; RS485 and CANbus integrated as standard

Model	Part number	Relay outputs dangerous voltage	SSR Outputs	Analogue outputs safety extra low voltage SELV <b>A04/A05</b> configurable as Open Collector 12V $\approx$ 100mA max each	Digital inputs safety extra low voltage SELV	Digital inputs no voltage	Analogue inputs 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

## Expansion modules RS485 (EVE7500 only) and CANbus integrated as standard

Model	Part number	Relay outputs dangerous voltage	SSR Outputs	Analogue outputs safety extra low voltage SELV <b>A04/A05</b> configurable as Open Collector 12V $\approx$ 100mA max each	Digital inputs safety extra low voltage SELV	Digital inputs no voltage	Analogue inputs safety extra low voltage SELV
<b>EVE7500</b>	EVE7500000B00	7	-	5	8	1	6
<b>EVE4200</b>	EVE4200000B00	4	-	2	-	4	4

## Terminals

Model	Part number	Installation	Dimensions	Display	Serial
<b>EVK1000</b>	EVK1000000B00	Panel (for wall-mounting see Accessories page)	160x96x10mm	Backlit LCD	CANBus

## Plug-in 2DIN models; power supply from the base EVD / EVC

Model	Part number	Output dangerous voltage	Connectivity protocol
<b>EVS RS232</b>	EVS10R2000000	1 x SPDT 5A 250V~	Modbus ASCII
<b>EVS RS485</b>	EVS00R4000000	-	Modbus RTU
<b>EVS CAN</b>	EVS00CA000000	-	CANopen
<b>EVS ETH</b>	EVS00ET000000	-	Modbus TCP - BACnet IP - HTTP
<b>EVS Profibus</b>	EVS00PB000000	-	Profibus DP Slave-V0
<b>EVS Bacnet</b>	EVS00BM000000	-	Modbus RTU - BACnet MSTP
<b>EVS ETH/RS485</b>	EVS00EB000000	-	Modbus RTU - BACnet MSTP - Modbus TCP - BACnet IP - HTTP

KEY: SSR = Solid State Relay; SELV = Safety Extra Low Voltage

## Resources available - FREE Panel, FREE Evolution

The IEC programmer includes the following resources:

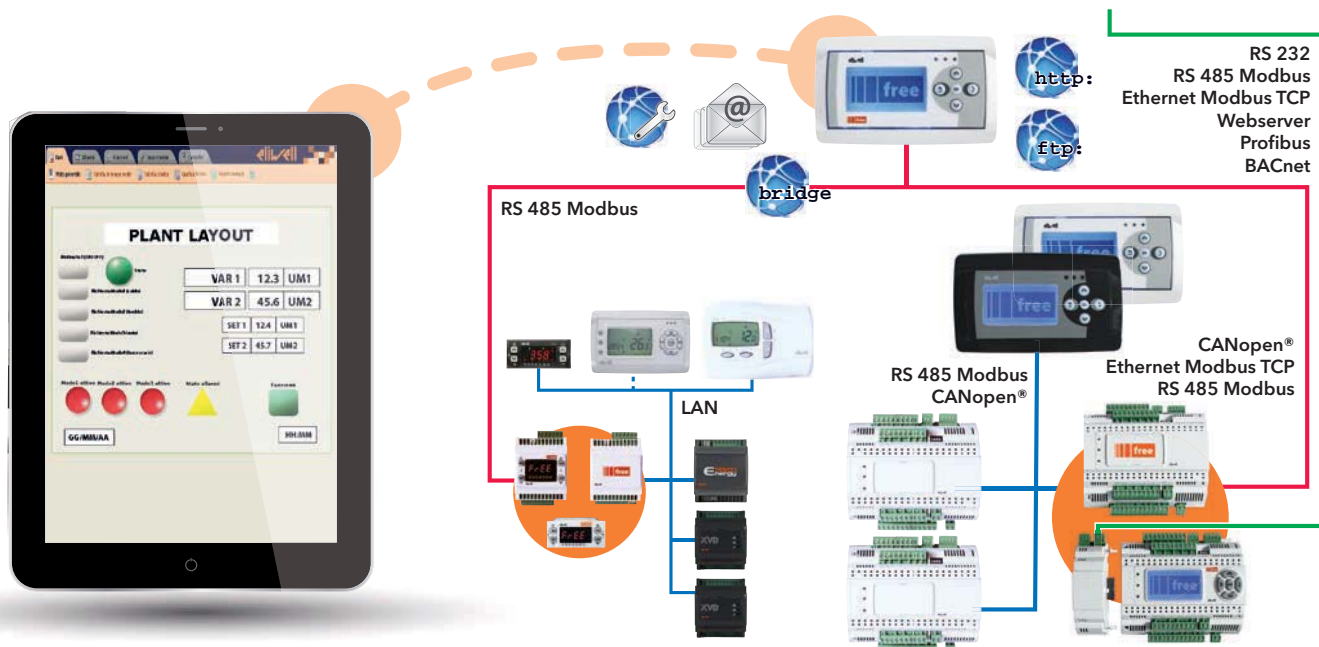
<b>CPU</b>	72 MHz, 32MB RAM
Available memory for <b>Application</b>	1 MByte
Available memory for <b>User Interface</b>	1.5 MByte
FLASH memory data	128 MByte
RAM memory - automatic mapping	512 KByte
RAM memory - Modbus mapping	5000 word
EEPROM variables	4000 word

## Minimum kit for the developer - FREE Evolution

- FREE Studio installation setup.
- 1 FREE Evolution EVD7500/C/U
- USB/RS485 converter or Ethernet plug-in for PC connection
- FREE Evolution power transformer



**FREE Evolution** models have RS-485 and CANbus serials integrated as standard. They can be integrated into industrial systems, BMS and Ethernet networks through the range of plug-ins and 2DIN modules that connect quickly and intuitively to the main EVD/EVC module.



## WEB functionalities

FREE Evolution and FREE Panel are WEB-enabled, giving machine manufacturers and system integrators integral remote access.

Having a web-based connection in machines significantly reduces support and maintenance costs.

This is also beneficial for end users, who can control their system from multiple devices.

- Web-based access.
- Remote reading and support.
- Local and remote system control, including alarms management.
- Preventive and predictive maintenance.
- Email alarm alerts.
- Next generation system interface on PC, Tablet and Smartphone

	USB →	← FREE
Data downloading direction	→	←
Parameters map	✓	✓
IEC application	✓	-
HMI application	✓	-
Data files	✓	✓
BIOS	✓	-

	→	←
Data downloading direction	→	←
Parameters map	-	-
IEC application	✓	✓
HMI application	✓	✓
Data files	✓	✓
BIOS	-	-

**USB-RS485 / Ethernet + Plugin PC**

USB → RS485

USB-RS485 FREE Evolution

Ethernet

FREE Evolution + EVS ETH

# EVD7500, EVD75SS, EVC7500



EVD7500



EVD75SS

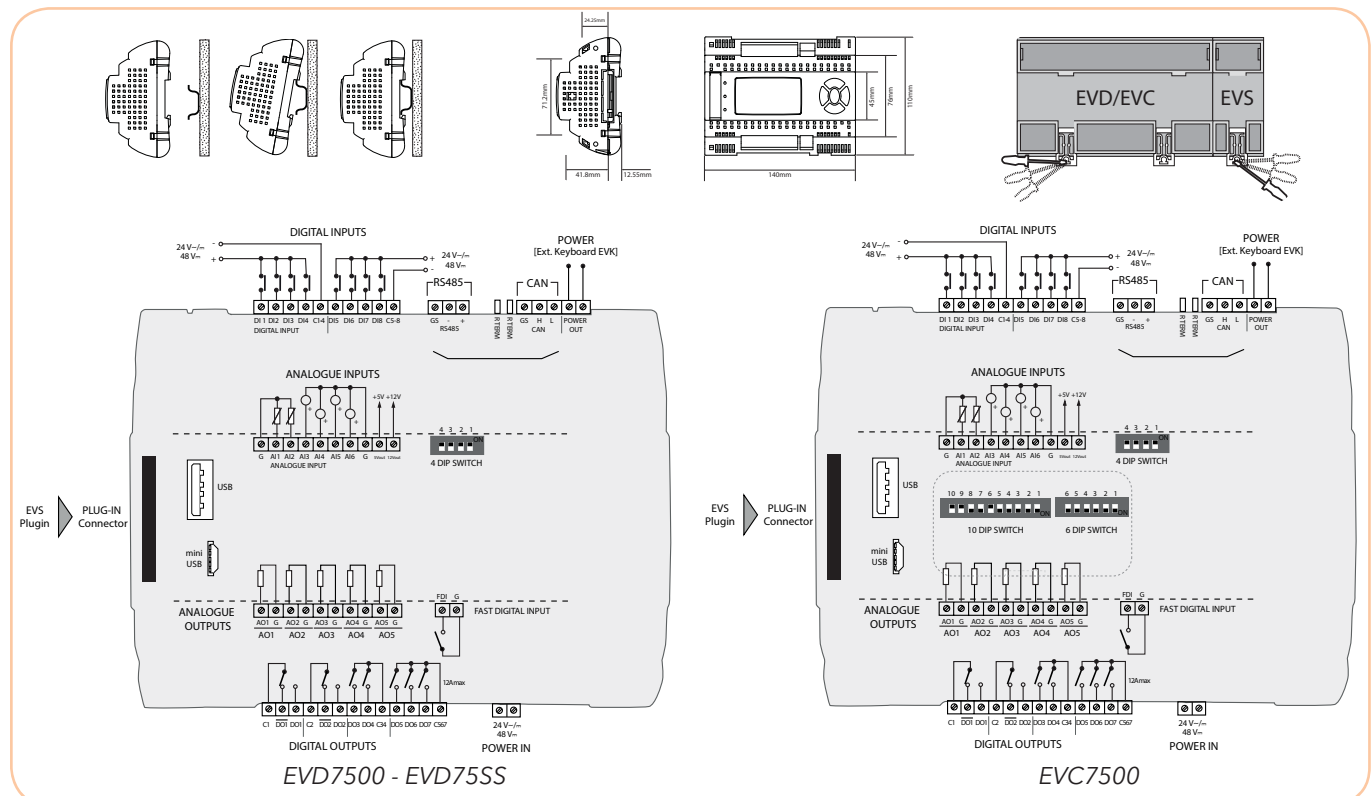


EVC7500

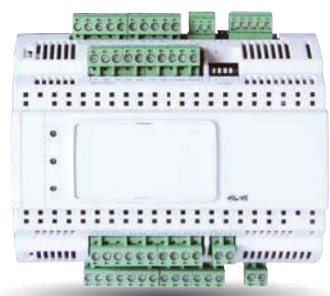
## Technical data

	EVD7500	EVD75SS	EVC7500
format	8DIN	8DIN	8DIN
display	128x64 pixel graphic LCD backlit	128x64 pixel graphic LCD backlit	-
power supply	24V~/- - 48V~	24V~/- - 48V~	24V~/- - 48V~
digital outputs	2 x 8A 5 x 5A 250V~	2 x 8A 3 x 5A 250V~ <b>SSR:</b> 2 x 1A 250V~	2 x 8A 5 x 5A 250V~
analogue outputs	5 x 0-10V / 4...20mA / ON-OFF (switch 0...20mA) A04/A05 configurable as O.C. 12V~ 100mA max each	5 x 0-10V / 4...20mA / ON-OFF (switch 0...20mA) A04/A05 configurable as O.C. 12V~ 100mA max each	5 x 0-10V / 4...20mA / ON-OFF (switch 0...20mA) A04/A05 configurable as O.C. 12V~ 100mA max each
digital inputs	8 safety extra low voltage SELV 1 voltage free	8 safety extra low voltage SELV 1 voltage free	8 safety extra low voltage SELV 1 voltage free
analogue Inputs	2 x NTC 103AT / NTC NK103 / DI 4 x NTC 103AT / NTC NK103 / DI / Pt1000 / 4...20 mA / 0-10V / 0-5V	2 x NTC 103AT / NTC NK103 / DI 4 x NTC 103AT / NTC NK103 / DI / Pt1000 / 4...20 mA / 0-10V / 0-5V	2 x NTC 103AT / NTC NK103 / DI 4 x NTC 103AT / NTC NK103 / DI / Pt1000 / 4...20 mA / 0-10V / 0-5V
connectivity	USB; CANbus; RS485; EVS plug-in	USB; CANbus; RS485; EVS plug-in	USB; CANbus; RS485; EVS plug-in
operating temperature	-10...+55°C	-10...+55°C	-10...+55°C

## Wiring and assembly diagrams



# Expansion modules EVE, Terminal EVK, Plugin EVS



EVE7500



EVE4200



EVK1000

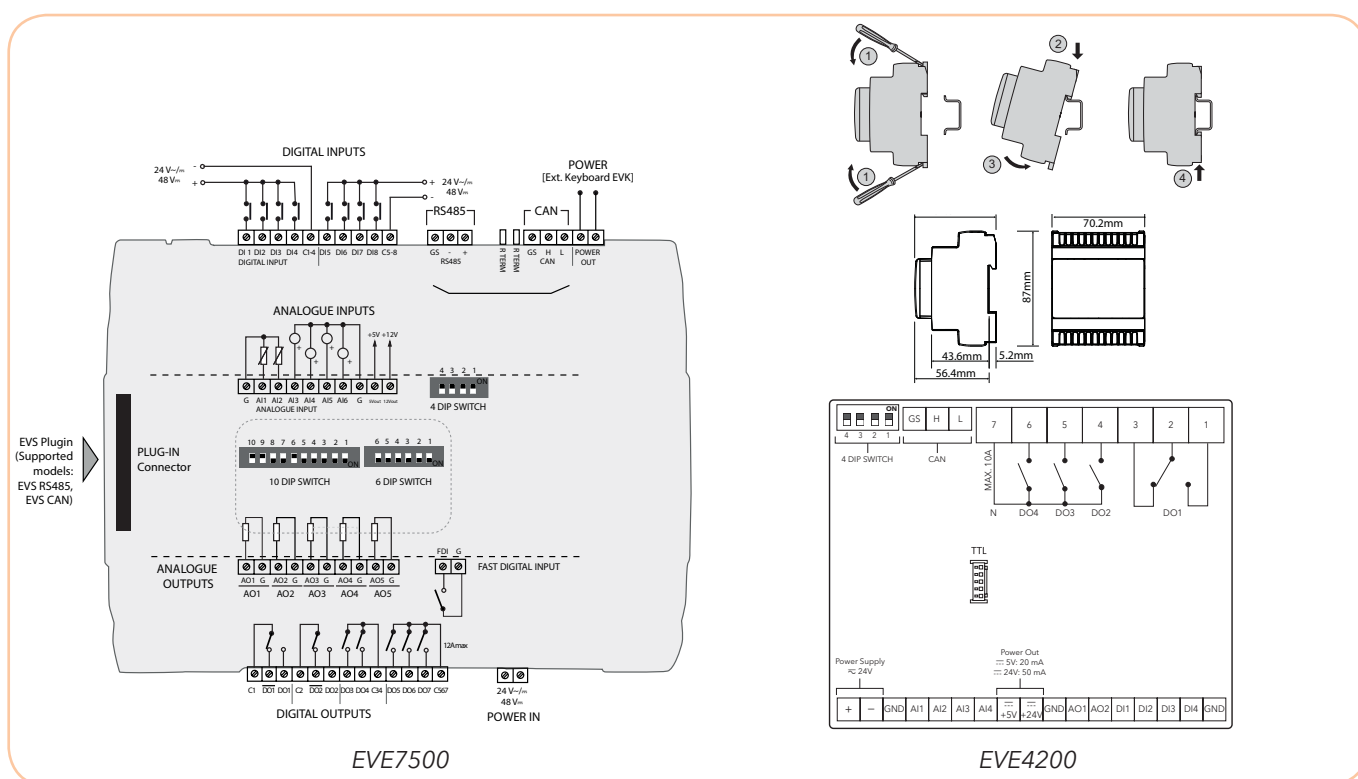


EVS

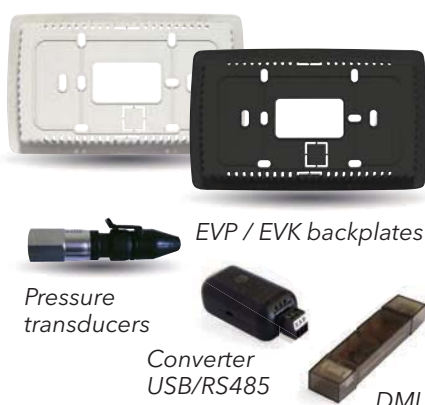
## Technical data

	EVE7500	EVE4200	EVK1000	EVS
format	8DIN	4DIN	160x96x10mm	see table on page 13
mounting	on DIN rail	on DIN rail	panel-mounted (for wall-mounting see Accessories page)	
display	-	-	Backlit LCD	
power supply	24V~/~ - 48V~	24V~/~ not insulated	12...24V~ / 24V~	
digital outputs	2 x 8A 250V~	1 x 5A 250V~	-	
analogue outputs	5 x 0-10V / 4...20mA / ON-OFF (switch 0...20mA)	3 x 3A 250V~	-	
digital inputs	8 safety extra low voltage SELV 1 x voltage free	4 voltage free	-	
analogue inputs	2 x NTC 103AT / NTC NK103 / DI 4 x NTC 103AT / NTC NK103 / DI / Pt1000 / 4...20 mA / 0-10V / 0-5V	4 x NTC 103AT / NTC NK103 / DI / Pt1000 / PTC / 4...20 mA / 0-10V / 0-5V	-	
connectivity	RS485 / CANbus / Plug-in (EVS RS485, EVS CAN only)	CANbus / TTL non-isolated	CANbus	
operating temperature	-10...+55°C	-10...+55°C	-5...+55°C	

## Wiring, assembly and dimensional diagrams







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

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

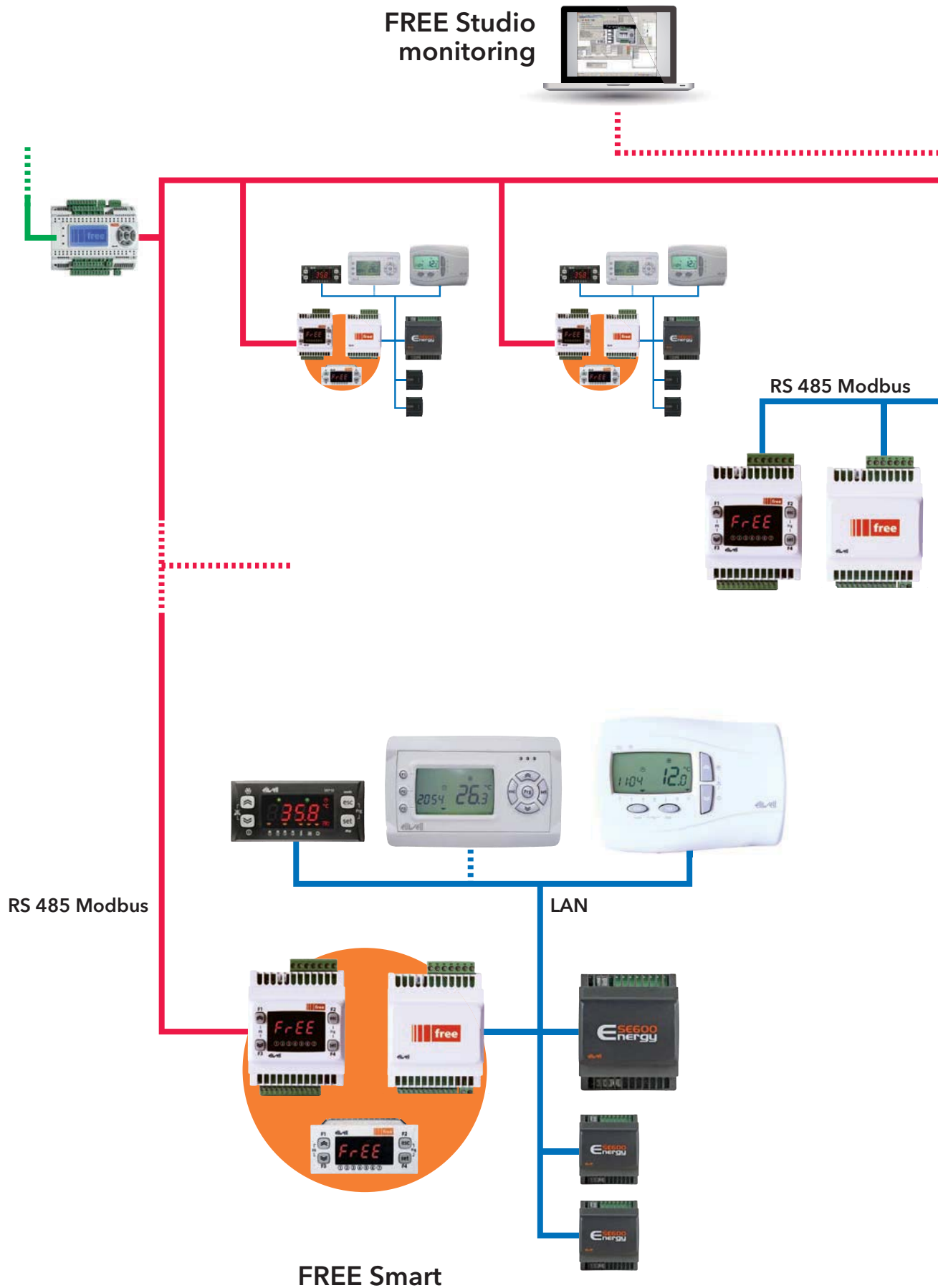
The connection of ratiometric pressure sensors, external modules (e.g. fan modules) and terminals does not require the use of any other serial interfaces.

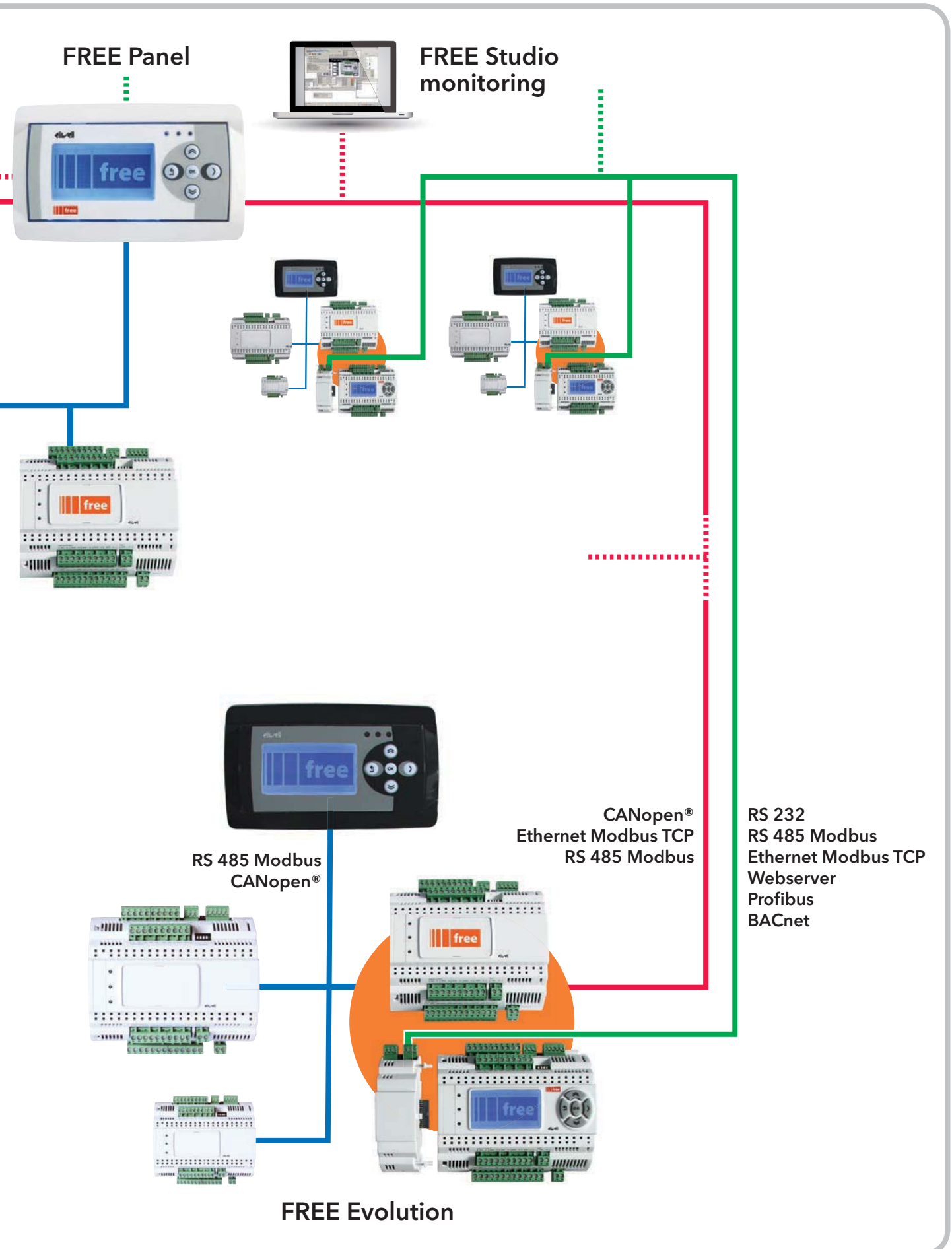
	Part number	Description	Details
<b>Converters, interfaces, programming keys</b>			
	<b>SAR0RA00X701</b>	USB/485 MINI KIT converter	-
	<b>DMI1003002000</b>	Interface module DMI100-3 Manufacturer	FREE Smart only
	<b>MFK100T000000</b>	MFK: programming key for uploading/downloading parameters, applications	FREE Smart only
<b>Wiring</b>			
	<b>COLV0000E0100</b>	Wiring for I/O connection - safety extra low voltage SELV - 1 m cable	FREE Smart only 12...24V
	<b>COLV000035100</b>	Wiring RS485	FREE Smart only 12...24V
	<b>COLV000042100</b>	Wiring AO3-4-5 - cable 1m	FREE Smart only 12...24V
<b>Connectivity</b>			
	<b>BA10000R3700</b>	BusAdapter 150 TTL-RS485	FREE Smart only
<b>Backplates</b>			
	<b>EVA00WMRC0000</b>	White backplate kit (4 pcs) for wall mounting.	For EVP/EVK
	<b>EVA00WMRC0001</b>	Black backplate kit (4 pcs) for wall mounting.	For EVP/EVK
<b>Humidity module</b>			
	<b>KP100000</b>	%RH Humidity module	For SKW terminal
<b>Demo Case</b>			
	<b>VAL00031K</b>	Demo Case for FREE Smart	-
	<b>VAL00033K</b>	Demo Case for FREE Evolution	-
<b>Temperature probes*</b>			
	<b>SN8DED11502C0</b>	NTC 103AT 5X20 1.5m TPE IP68	-
	<b>SN8DAD11502C0</b>	NTC 103AT 6X20 1.5m TPE IP68	-
	<b>SN9DAE11502C6</b>	Pt1000 6X20 1.5m IP68	FREE Smart 4500/FREE Evolution
	<b>SN9DED11502C6</b>	Pt1000 5X20 1.5m IP68	FREE Smart 4500/FREE Evolution
<b>Transformers</b>			
	<b>TF411205</b>	230V~/12V 6VA transformer (protected)	FREE Smart only
	<b>TF411210</b>	230V~/12V 11VA transformer (protected)	FREE Smart only
	<b>TF111211</b>	220V~/24V-24V 16VA transformer	FREE Smart only
	<b>TF111202</b>	230V~/24V 25VA transformer Mounting on DIN rail	FREE Evolution only
	<b>TF111205</b>	230V~/24V 35VA transformer. Mounting on DIN rail	FREE Evolution only
<b>Pressure transducers</b>			
	<b>TD220050</b>	EWPA050 4...20mA / 0..50bar IP54** cable 2m	1/4 SAE male
	<b>TD220007</b>	EWPA007 4...20mA / -0.5..7bar IP54** cable 2m	1/4 SAE male
	<b>TD320050</b>	EWPA050 4...20mA / 0..50bar IP54** cable 2m	1/4 SAE female
	<b>TD320007</b>	EWPA007 4...20mA / -0.5..7bar IP54** cable 2m	1/4 SAE female
<b>Ratiometric transducers</b>			
	<b>TD420010</b>	EWPA 010 R 0/10bar IP67 cable 2m (Packard connector)	Female connector
	<b>TD420030</b>	EWPA 030 R 0/30bar IP67 cable 2m (Packard connector)	Female connector
	<b>TD420050</b>	EWPA 050 R 0/50bar IP67 cable 2m (Packard connector)	Female connector
<b>Expansion modules, fan modules</b>			
	<b>MW320100</b>	EXP11 250V 10A expansion module with DIN rail-mounted base	Open Collector Output
	<b>MW991012</b>	CFS05 TANDEM TRIAC 5+5A 250V	-
	<b>CFS modules</b>	CFS - Single-phase speed regulators for currents from 2A to 9A	Various codes available

KEY: SELV = Safety Extra Low Voltage

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

# FREE Smart, Panel, Evolution





**Eliwell Controls Srl**

Via dell'Industria, 15 Z. I. Paludi  
32010 Pieve d' Alpago (BL) - Italy  
+39 (0)437 986 111

**Sales**

+39 (0)437 986 100 (Italy)  
+39 (0)437 986 200 (other countries)  
saleseliwell@schneider-electric.com

**Technical support**

+39 (0)437 986 250  
eliwell.freeway@schneider-electric.com



CT123262 - EN - rel. 09/14  
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