

Life Is On

eliwellTM
by Schneider Electric

FREE Way

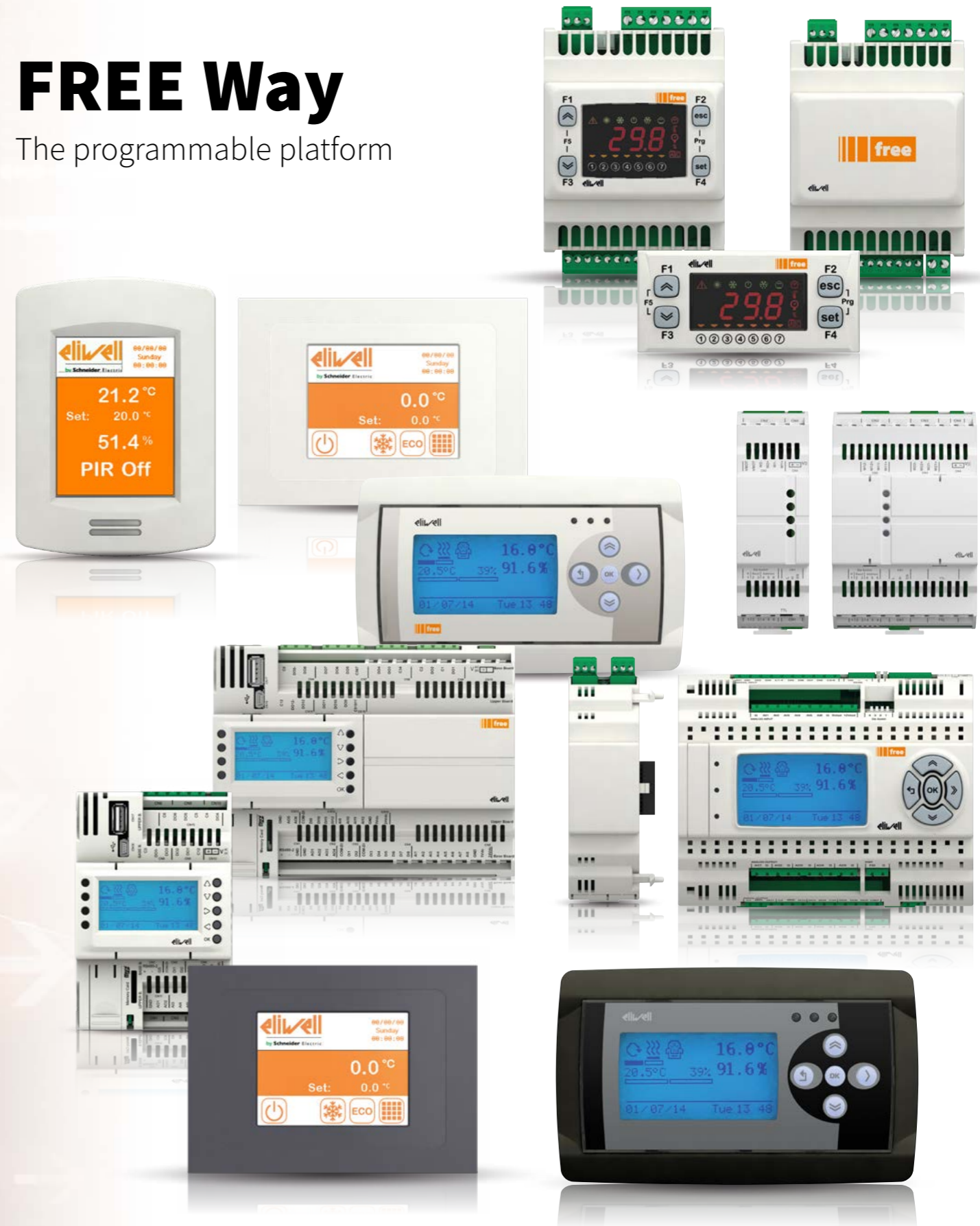
The programmable platform



www.eliwell.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



FREE Panel EVP



FREE Advance



FREE Evolution



FREE Smart

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.

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

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.

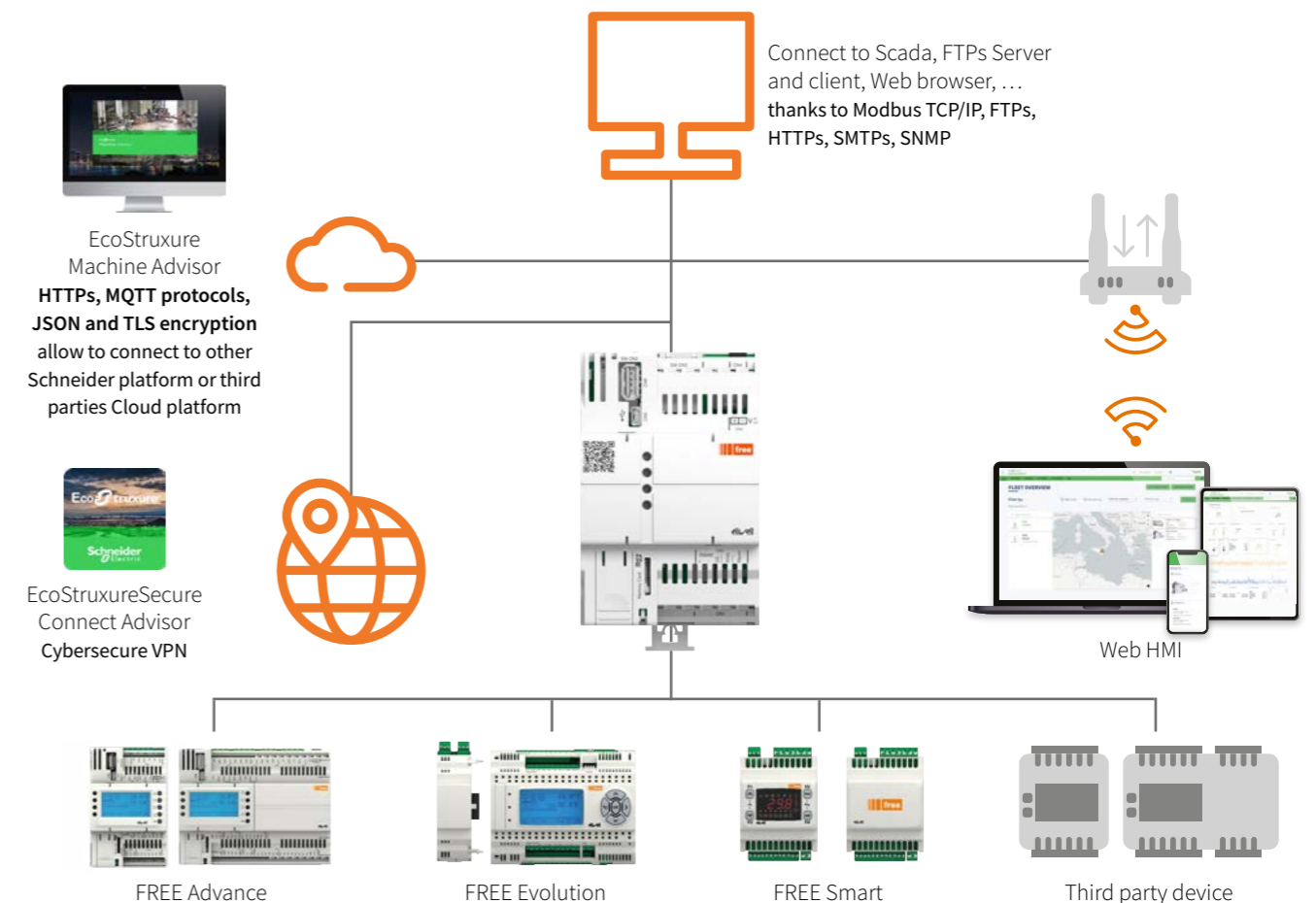
Machine to Plant

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



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

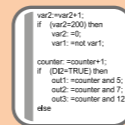
The working environment allows:

- 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

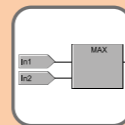
On-line Help to assist the programmer in every program development phase, accessed from the context by just pressing the F1 button.

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

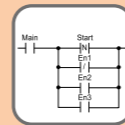
Baselines and Libraries, ready to use and available for download via web



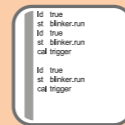
ST



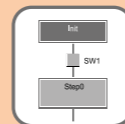
FBD



LD



IL



SFC

System and installation requirements

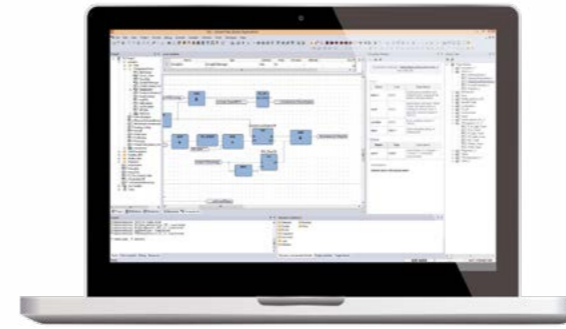
Operating Systems

- Windows 10 English

Supported browser

- Internet Explorer 11 or greater

The installation setup, software updates, libraries and documentation are available on the eliwell.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

- FREE Studio Plus installation setup
- 1 FREE Advance AVD8400/C/L/U
- Mini-USB cable for PC connection
- FREE Advance power transformer

AVAILABLE RESOURCES The IEC programmer includes the following resources:

CPU	120 MHz - 16 MByte RAM
available memory for Application	1 MByte
RAM memory - automatic mapping for Application and User Interface	512 kByte + 512 kByte
RAM memory - Modbus mapping	5000 word

FREE SMART

MINIMUM KIT FOR SYSTEM DEVELOPERS

- 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

AVAILABLE RESOURCES(mod. /C/S, msk 412) The IEC programmer includes the following resources:

CPU	14.7 MHz
available memory for Application	190 KByte
RAM memory - automatic mapping	2300 Byte
RAM memory - Modbus mapping	1024 Byte
EEPROM variables	1024 Byte

FREE SMART

AVAILABLE RESOURCES (mod. /C/S, msk 412) The IEC programmer includes the following resources:

CPU	120MHz, 132 kB RAM	72 MHz, 32 MByte RAM
available memory for Application + User Interface	736 kByte	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

Expansions EVE7500, EVE4200



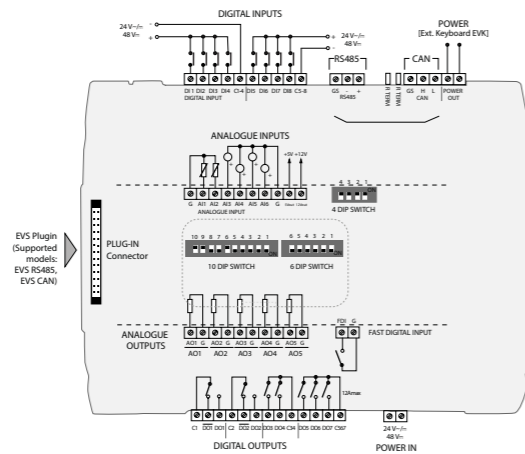
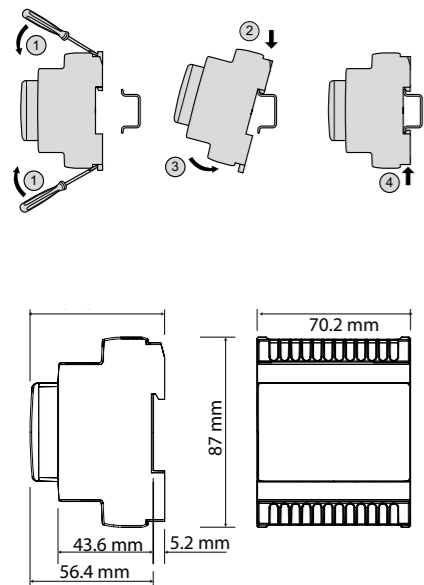
EVE7500

EVE4200

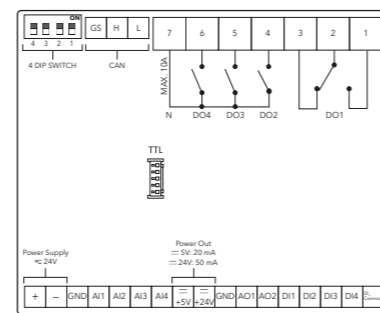
Technical data

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

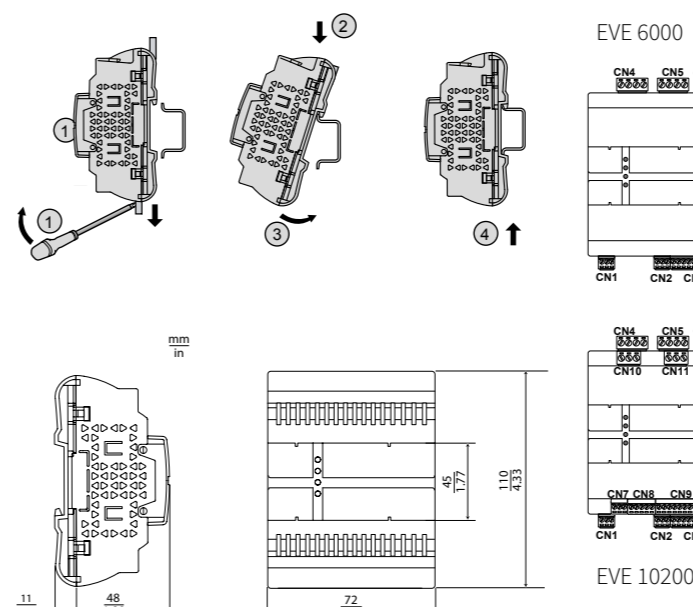
Electric, mount and dimensional diagrams



EVE7500

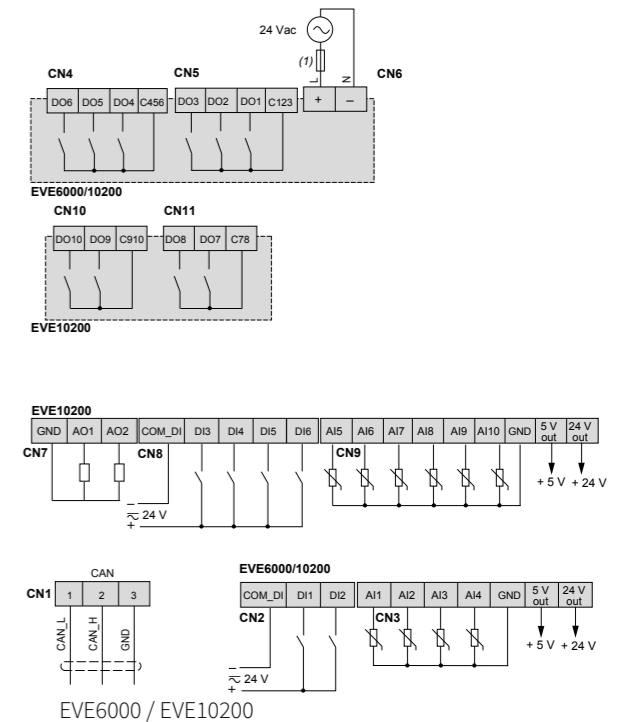


EVE4200



EVE 6000

EVE 10200



EVE6000 / EVE10200

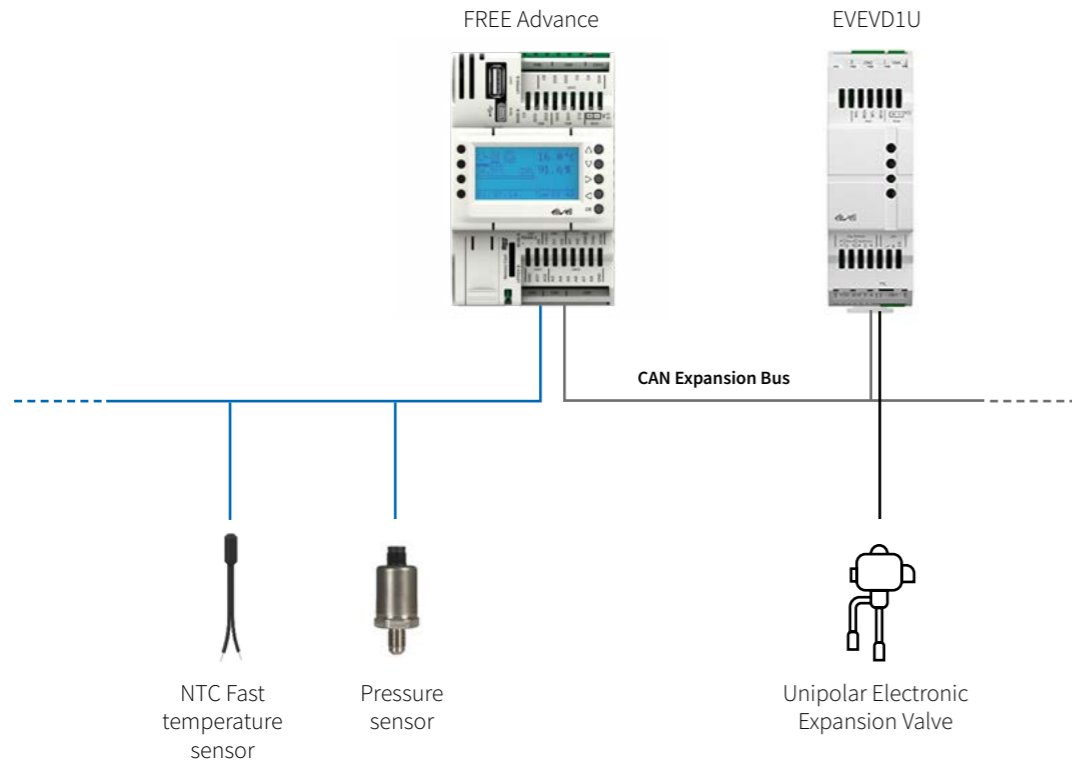
Technical data

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

Electric, mount and dimensional 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 Panel & Keypad

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

⁽¹⁾ Only for AVP models

FREE Evolution

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

FREE Expansion modules

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

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

Note