

Life Is On

**eliwell**<sup>™</sup>  
by Schneider Electric

SOLUTIONS for  
Refrigeration  
North America Catalog

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<b>Introduction</b>		<b>4-7</b>
<b>Solutions for Small Stores</b>		<b>8-25</b>
Solutions for Small Stores	<i>Connected any time, anywhere</i>	<b>8</b>
Right Controller for Every Application	<i>For self-contained equipment</i>	<b>9</b>
EcoStruxure™ for Small Stores	<i>Ensuring your business is always on the go</i>	<b>10</b>
EcoStruxure™ for Restaurants	<i>Ensuring asset protection and a welcoming ambiance</i>	<b>11</b>
nEW	<i>Replace electromechanical</i>	<b>12</b>
EWPlus Series	<i>Applications with energy saving features for DOE</i>	<b>13</b>
EWPlus EO Series	<i>High energy saving solutions</i>	<b>14</b>
EWPlus 978	<i>Solutions for double evaporator and double compressor</i>	<b>15</b>
KDE-KDT-ECPlus series user interfaces	<i>User interfaces for RT family</i>	<b>16</b>
RTN400 Series	<i>Connectable controllers for self contained equipments</i>	<b>17</b>
Selection guide for controllers		<b>18-19</b>
EWSense	<i>Wireless system for temperature and humidity monitoring</i>	<b>20-21</b>
EcoStruxure™ Machine Advisor	<i>Digital service platform for machine builders</i>	<b>22</b>
EcoStruxure™ Facility Expert	<i>Optimizing the operational cost of your Stores</i>	<b>23</b>
Eliwell™ TelevisAir	<i>Eliwell connectivity Solution for RTN400 by RTN400 Wireless tool for Service team</i>	<b>24</b>
TM172P Datalogger Application	<i>Thru Wifi or BMS in a store/restaurant by service team</i>	<b>25</b>
<b>Solutions for Large Stores</b>		<b>26-41</b>
Innovative Solutions for Supermarkets		<b>26</b>
Compressor Rack Managers Product Range	<i>Scalable from simple condensing unit to CO2 transcritical Racks</i>	<b>27</b>
Architecture of Large Store	<i>Refrigeration control and remote maintenance</i>	<b>28-29</b>

TM1710 Condensing Unit Application	<i>Improve efficiency &amp; allow connectivity</i>	<b>30</b>
EWCM 400D PRO	<i>Parametric compact controllers for compressor racks</i>	<b>31</b>
TM172 Condensing Unit "Title 24"	<i>Compliant with California Title 24</i>	<b>32</b>
TM172 for Case- Cold Box Control	<i>Optimal control and asset management</i>	<b>33</b>
EWCM 9000 PRO-HF HFC-HFO	<i>Programmable controller with single and double circuit compressor rack</i>	<b>34</b>
CO2 Transcritical System	<i>Transcritical CO2 booster / parallel compression application</i>	<b>35</b>
TM171VEV	<i>EVV Stepper System</i>	<b>36</b>
EEV Stepper System	<i>V910 driver for motorized electronic valve control</i>	<b>37</b>
TelevisGo	<i>Monitoring and maintenance system via web</i>	<b>38-39</b>
EcoStruxure™ Building Operation & TelevisGo	<i>Seamless integration for greater productivity in your supermarket</i>	<b>40</b>
EcoStruxure™ Augmented Operator Advisor	<i>Real-time information at your fingertips</i>	<b>41</b>
<b>Variable Speed Drives</b>		<b>42-44</b>
TM172P for Condenser Control	<i>Peak performance and maximum energy savings</i>	<b>45</b>
<b>Sensors</b>		<b>46-49</b>
NTC, PTC & TC Probes	<i>NTC semi-conductor temperature probes</i>	<b>46</b>
<b>Humidity &amp; Temperature Sensors</b>		<b>47</b>
EWPA 007 - 030 - 050	<i>Pressure transducers &amp; Radiometric transducers</i>	<b>48-49</b>
<b>Electromechanical</b>		<b>50-58</b>
D17P	<i>Adjustable single pressure controllers</i>	<b>50-51</b>
D17P	<i>Adjustable dual pressure controllers</i>	<b>52-53</b>
D16T	<i>Adjustable temperature controllers</i>	<b>54-55</b>
Accessories D Controls	<i>Accessories for D pressure and temperature controllers</i>	<b>56</b>
DeviceManager	<i>Controller configuration software</i>	<b>58</b>

# Introduction

Introducing Schneider Electric EcoStruxure™

## Introducing Schneider Electric EcoStruxure™

Schneider Electric EcoStruxure™ is our open, interoperable system architecture and platform realizing the benefits of the Industrial Internet of Things, or IIoT, for our customers. This allows for the delivery of enhanced value and safety, reliability, efficiency, sustainability, and connectivity. It leverages advancements in IoT, mobility, sensing, cloud, analytics and cybersecurity to deliver innovation at every level. To date, EcoStruxure™ has been deployed in 450,000+ installations, with the support of 9,000 system integrators, connecting over 1 billion devices.



**EcoStruxure™** brings all the innovation that makes up the IIoT into an architecture that can benefit you as an OEM. This allows you to more easily incorporate IIoT-based innovations into your machines to differentiate yourself from competitors and meet your customer's expanding need for connected solutions.

The EcoStruxure™ architecture is based on a three-tiered technology stack, bringing energy, automation and software together for you. The stack includes:

- **Connected Products** – Intelligent products that serve as the foundation for smarter machines, buildings and plants for incorporation into your machine designs.
- **Edge Control** – Control systems that enable simple design, commissioning, and monitoring requiring less complexity for you to manage.
- **Apps, Analytics and Services** – A full portfolio of hardware-agnostic software, apps, and analytics to enable optimization within your customer's existing system, avoiding a costly 'rip and replace' solution.

**EcoStruxure™ for Retail Chains** brings together Energy, Automation and Software technology into one integrated architecture resulting in a convergence specific to the refrigeration industry. This architecture brings together smart, connected products with monitoring capabilities and management software to help you design, build and maintain more efficient, cost-effective products.

# Introduction

Introducing Schneider Electric EcoStruxure™

In addition to meeting customer demands for sustainability, we are bringing IoT-enabled systems and devices to retail industry to provide better planning and management, boost efficiency, prevent business loss, and create an engaging, unique shopping experience for customer with exciting in-store technology.

Building on 100+ years of Schneider Electric expertise and technology, EcoStruxure™ for Retail Chains makes the complex simple and ensures connectivity across your portfolio, giving you best-in-class refrigeration, environment, energy and security control across your assets. We offer a tailored view to provide relevant information to the store operator right through to the CEO. For example, operational costs are identified and managed proactively through IoT devices.

EcoStruxure™ for Retail Chains is an IoT architecture and platform which provides the bridge between the traditional store operations to cloud-based I.T applications, with the exponential shift towards IoT deployment, this ensures that operations are future proofed, and customers have the confidence that emerging technologies will be integrated seamlessly.

**Business Continuity:** Ensuring the business remains operational 24/7 and protecting the bottom line through loss prevention.

**Operational Efficiency:** Saving costs on staff by providing intelligent and connected systems for store operators. We aim to have a real-time platform to reduce staff work load so they can concentrate on serving customers.

**Customer Experience:** Providing a comfortable, engaging environment to boost customer satisfaction and increase revenue. With IoT's help, also an opportunity to engage in-store technology to bring the customer experience to the maximum level, such as beacons to notify customers about promotions.

**Energy & Sustainability:** Delivering IoT-based, multi-store analytics and reporting systems to the supermarket industry, helping brands to achieve sustainability KPIs and meet environmental regulations.

Improve sustainability, efficiency and traceability in your operations

**EcoStruxure™ program results**

- Environmental sustainability**  
Reduce carbon and water footprint
- Operational efficiency**  
Eliminate the Energy Waste from your facility
- Total cost of ownership**  
Reduce capital and operating expenditure needs
- Flexibility and brand promise**  
Meet consumer demand with the right products at the right time
- Machine safety and consumer information**  
Protect both consumer and shareholder value

**EcoStruxure™ Machine Advisor** for OEMs self-contained equipment, to follow up equipment's during warranty period

**EcoStruxure™ Facility Expert** for Integrators or store owner to optimize efficiency in Small Stores and Restaurants

**EcoStruxure™ Building Operation** for OEMs or integrators to optimize operation cost in Supermarkets

**EcoStruxure™ Augmented Operator Advisor** for service teams (OEMs, integrators) to simplify maintenance in supermarkets

# Refrigeration Control

From Self-Contained Equipment...

## Small Stores

- Convenience, discount and liquor stores
- Mostly self contained cases & cold boxes
- Trend for RDMC to improve maintenance
- Restaurants & food service



**Schneider**  
Electric

**EcoStruxure™ Machine Advisor**

**EcoStruxure™ Facility Expert**

- Monitoring and remote maintenance
- Cloud based



**Self Contained Cases**

- Full line offering from optimized to performance
- Propane with variable speed compressor



**Condensing Units**

- Medium and Low temperature



**Reach-In Cases**

- Anti-sweat control
- Lighting control

## Neighborhood & Large Stores

- Neighborhood stores, warehouse clubs
- Compressor racks, remote cases & cold boxes
- Ideal for multi-site applications



### EcoStruxure™ Building Operation

- Local & remote monitoring and maintenance
- Instant alarming, 24/7 service
- Energy management



- Small systems
- HFO - HFC
  - Rooftop formats



- CO2 racks
- Transcritical
  - Booster and Parallel Compression
  - Remote Condenser



- Remote cases
- Trend towards decentralized systems
  - EEV control



- Cold rooms
- EEV control

# Solutions for Small Stores

Connected any time, anywhere

## Industry Challenges

- **ENERGY COSTS:** With increasing energy costs, it is paramount to improve energy efficiencies of refrigeration equipment running 24/7.
- **GOVERNMENT REGULATIONS:** Increasing regulatory demands with DOE 2017, EPA, Energy Star and California Title 24 on efficiencies, refrigerants, and insulating materials.
- **REFRIGERANT REQUIREMENTS:** With the EPA ban of common refrigerants and the need to improve efficiency, new refrigerants such as R290 and CO<sub>2</sub> are becoming more prevalent.
- **COMPETITIVENESS IN A CHANGING MARKETPLACE:** New strategies and technologies are emerging to meet new challenges, all while achieving a quick ROI.



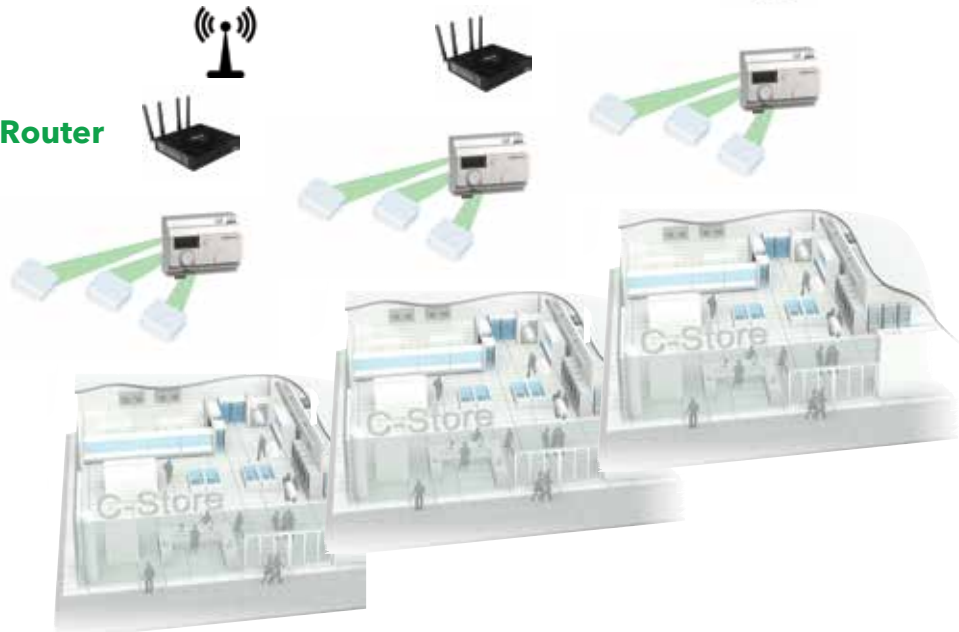
### EcoStruxure™ Facility Expert for Chain Maintenance Managers



### EcoStruxure™ Machine Advisor for HVAC/R OEM



### Router



### EWSense

- Temperature, humidity and CO<sub>2</sub> acquisition via wireless sensors.



# The Right Controller for Every Application

For self-contained and warming equipment



### Modicon M171O

- Fully customized solutions



### RTN 400SM

- Controller for variable speed compressor

### RTN 400

- For connectable cases
- Semi-customizable modular controller and keypad system



### User Interfaces KDT - KDEPlus - ECPlus

- Touch user interfaces

### Mid-Temp Models 961/971



### Low-Temp Model 974



### EWPlus EO Smart

- Enhanced energy savings with self-learning requires less set-up and commissioning

### EWPlus EO

- EW Plus with enhanced algorithms saving up to 39% over electro-mechanical and 19% over traditional controls

### EWPlus

- Versatile cooling and heating applications, display colors, with energy saving features for DOE 2017

### nEW

- Cost effective replacement for electro mechanical controls with energy saving features for DOE 2017

# EcoStruxure™ for Small Stores

Ensuring your business is always running efficiently

INTRODUCTION

SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL

## Schneider Electric EcoStruxure™ Machine Advisor



Internet Router

BACnetIP

Modbus



RTN400



KDEPlus



EWSense Gate



TM172



EWSense Gate



EWSense Temp



Humidity & CO<sup>2</sup> Sensor



Altivar



EWSense Temp



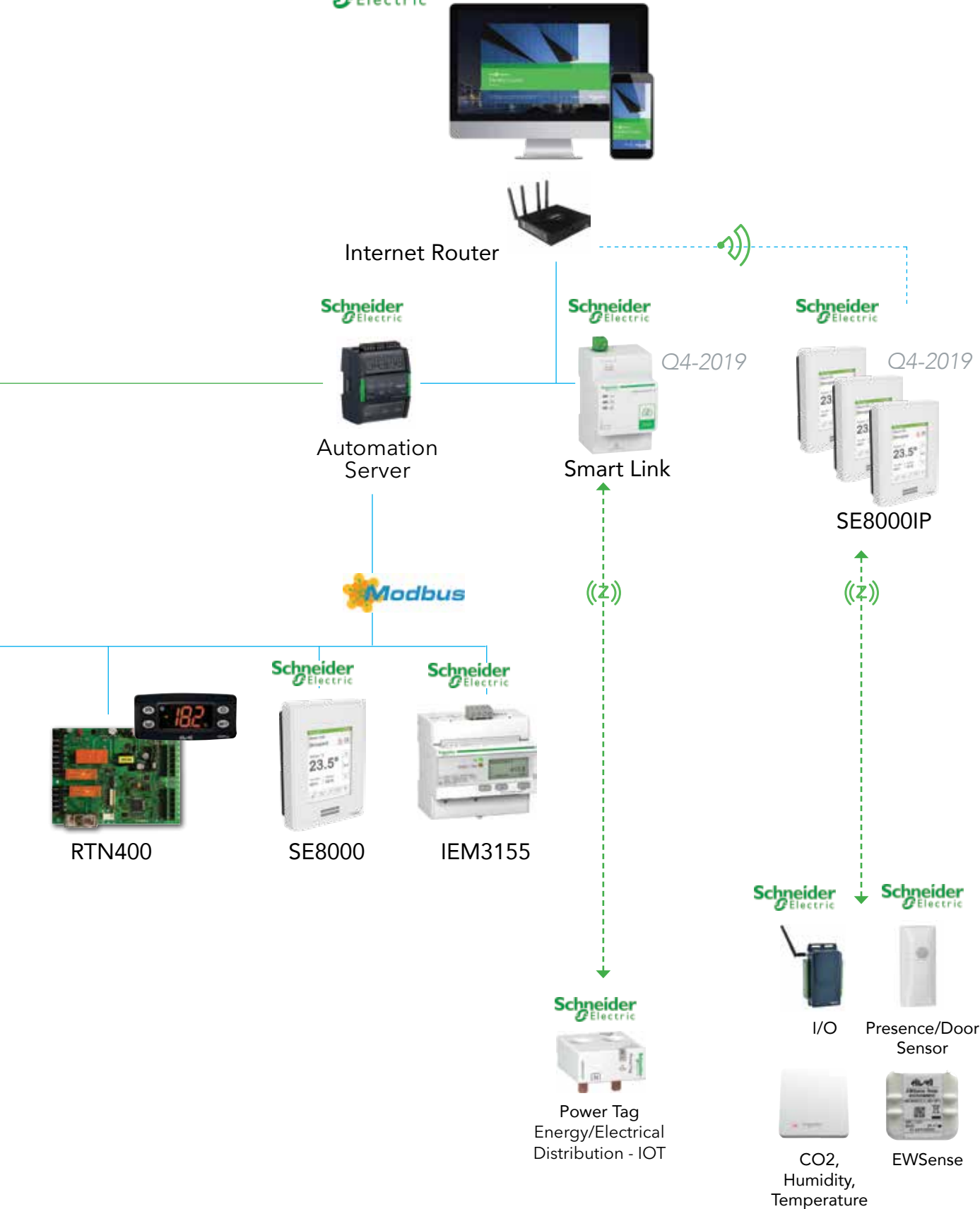
Humidity & CO<sup>2</sup> Sensor

Coolers, Freezers,  
Self-Contained Equipment & Hood Management

# EcoStruxure™ for Restaurants

Ensuring asset protection and a cozy, welcoming ambiance for guests

## Schneider Electric EcoStruxure™ Facility Expert



Complete mini-BMS including refrigeration, lighting, HVAC and electrical distribution

INTRODUCTION

SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL

- Installation made easier with rapid connectors and frontal mounting
- Front panel and connections protected from water



### Applications

The **nEW** series is the standard Eliwell solution for large production volumes. Thanks to the flexibility of the platform and the library of available functions, **nEW** is the best solution for manufacturers who are looking for an innovative solution with the advantages of electronic control and at the same time easy to install and use.

### Common features

Direct load management up to 2Hp	Use of factory screw connectors for quick, versatile hookup
Universal power supply switching from 100 to 240Vac 50/60Hz in a single model	Copy cards which can be used for quick programming

Model	Application	Notes
<b>nEW 961</b>	Static units	2Hp power relay for compressor piloting
<b>nEW 971</b>	Ventilated units	2Hp relays, 1 defrost output
<b>nEW 974</b>	2Hp relays, 1 configurable output	2 Hp/1.5Hp* relay, defrosting output and fans

\* depending on the model

Our low cost parametric control replacement for any simple electro mechanical control adds visual display, reliable industry load switching relays and more parametric options to choose from

# EWPlus Series

Versatile applications with energy saving features for DOE



- Display with large digits and coloured icons, to understand operating status easily
- Simple, intuitive menus for fast learning
- Suited for applications with hydrocarbons
- ENEC/UL Certifications (check on the device label)

## Applications

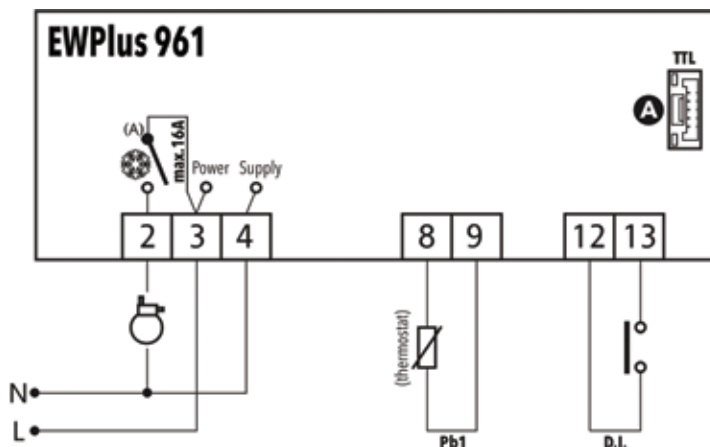
The **EWPlus** series includes flexible, modern design controllers for plug-in refrigerated counters. Thanks to platform versatility and a library of available functions, Eliwell is the best answer for manufacturers seeking custom solutions for energy saving requirements and simplification of production processes.

## Common features

- Direct load management up to 2Hp and power supply of 230Va or 115Va
- Use of removable/faston/screw connectors for quick, versatile hookup
- Unicard USB for customizing even small lots
- Industrial packaging 60 pieces

Model	Application	Notes
<b>EWPlus 961</b>	Static units	2 Hp power relay
<b>EWPlus 971</b>	Ventilated units	2Hp relays, 1 configurable output (defrost/fans/lights/alarm/stand-by)
<b>EWPlus 974</b>	Ventilated units	2Hp relays, 2 configurable outputs (defrost/fans/lights/alarm/stand-by)

- Variety of display colors
- Complete management of compressor, lights, defrost, fans and alarms
- Energy savings realized with R290, smart defrost, evaporative fan duty cycle and economy mode
- Moisture protection with front panel gasket and back cover
- Direct control of compressors up to 1 HP
- Customized OEM branding
- Factory friendly connections, programming, and barcodes



# EWPlus EO Series

High energy saving solutions

INTRODUCTION



- Advanced control algorithms contribute to **energy saving up to 39%\*** with no modification of counter structure needed
- Self-adaptation of the energy saving functions based on the conditions of use of the refrigerator
- The product is **compatible with the new ecological refrigerants R290, R600**, in compliance with IEC 60079-15-2005
- Optimized temperature management when switching from night to day mode
- No supplementary sensors needed thanks to the **virtual door switch**
- Management of a 2nd compressor on the basis of a differentiated temperature threshold and a delay
- Advanced algorithms for defrost management on the 2nd evaporator
- Voluntary certification: ENEC/UL (check on device label)
- **4 easily selectable configurations** pre-loaded in a single controller
- **Internal RTC** (depending on model)

SOLUTIONS FOR SMALL STORES

## Applications

The **EWPlus EO** series controllers are designed to combine high energy savings with maximum ease of installation and use, easily applicable also replacing prior series controllers.

Thanks to platform versatility and a library of available functions, Eliwell can design custom solutions for energy saving requirements and simplification of production processes.

SOLUTIONS FOR LARGE STORES

## Common features

Direct load management up to 2 Hp and power supply of 230V~ or 115V~  
Integrated protection of loads against voltage fluctuations controllable by parameter

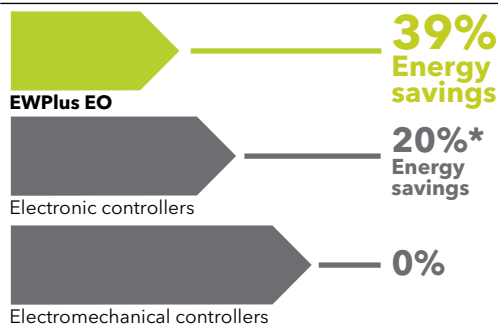
Use of removable/faston/screw connectors for quick, versatile hookup  
Unicard USB for customizing even small lots  
Industrial packaging 60 pieces

VARIABLE SPEED DRIVES

Model	Application	Notes
<b>EWPlus 961 EO</b>	Static units	2Hp relay, 1 analogue input, 1 digital input
<b>EWPlus 971 EO</b>	Ventilated units	2 Hp relay, 2 configurable outputs (defrost/fans/lights/alarm/stand-by), 2 analogue inputs, 1 digital input
<b>EWPlus 974 EO</b>	Ventilated units	2Hp relay, 3 configurable outputs (defrost/fans/lights/alarm/stand-by) 2 analogue inputs, 1 digital input
<b>EWPlus 978 EO</b>	Ventilated units	2Hp relay, 4 configurable outputs (defrost/fans/lights/alarm/stand-by), 2 analogue inputs, 1 digital input
<b>EWPlus 974 EO Smart Control</b>	Ventilated units	2Hp relay, 3 configurable outputs (defrost/fans/lights/alarm/stand-by) 2 analogue inputs, 1 digital input
<b>EWPlus 978 EO Smart Control</b>	Ventilated units	2Hp relay, 4 configurable outputs (defrost/fans/lights/alarm/stand-by), 2 analogue inputs, 1 digital input

SENSORS

## LOW ENERGY CONSUMPTION



## HIGH ENERGY CONSUMPTION

\*energy saving certified by the independent laboratory INTERTEK

ELECTROMECHANICAL



## Longer-lasting components

- Protection of compressor against voltage fluctuations thanks to incorporated low and high voltage detector LVD (patent in the registration process).
- Advanced control algorithms for long-lasting performance with no need to modify counter structure.



**EWPlus EO**

# EWPlus 978

Solutions for double evaporator and double compressor



↳ Solution for combined counters, double evaporator or double compressor

- Compact solution for control of small mono-blocks
- Suited for applications with hydrocarbons

## Applications

The **EWPlus 978** series controllers are designed to combine high energy savings with maximum ease of installation and use, easily applicable also replacing prior series controllers.

Thanks to platform versatility and a library of available functions, Eliwell can design custom solutions for energy saving requirements and simplification of production processes.

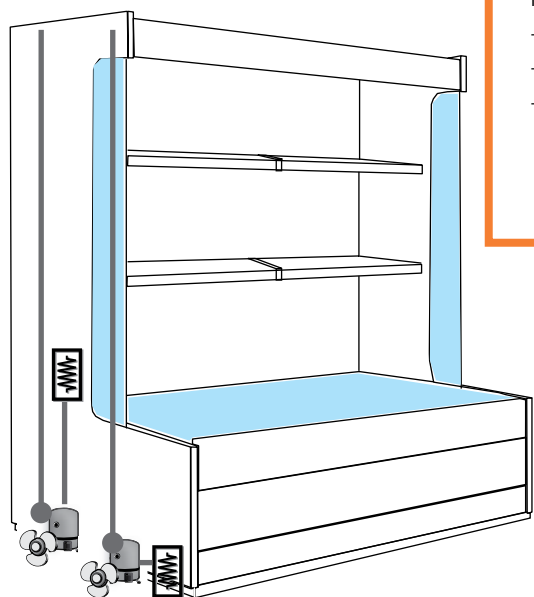
## Common features

4 configurable output relays for double compressor control and single or double defrost

Power supply 120V

Unicard USB for customizing even small lots

Model	Application	Notes
EWPlus 978	Combined counters Monoblocs	Single or double compressor Single or double evaporator



## ↳ Application examples

In a combined cold case, **EWPlus 978** can manage the double compressor with:

- delayed compressor start/initiation
- ignition based on differentiated temperature threshold and delay

In this case, the controller can manage the set sequence or rotation between two compressors.

It can also manage double defrosting:

- delayed
- with independent defrost end temperatures
- with common defrost time-out

## EWPlus 978

# KDE-KDT-ECPlus Series User Interfaces

User interfaces for RT family



- **ECPlus, KDEPlus:** compatible with controllers in the RT series
- **KDT:** keyboard with touch technology, compatible with controllers in the RT series
- **KDT (horizontal):** customizable for OEM solutions

## Applications

**KDEPlus** is a user terminal for integral display and programming of controllers for remote and plug-in refrigerated cabinets.

Each power board can be connected to a single keyboard and, if required, to an ECPlus module for remote display by means of the special connector.

The remote **ECPlus** display can be used to view displayed date from up to 325' away, differentiating it from the data displayed on KDEPlus terminals.

The **KDT** keyboards, made using backlit screen-printed plexiglass, can be used to carry out all procedures currently offered by membrane and standard 32x74 keyboards, but with a perfectly smooth and easy to clean surface, combined with a modern look and the natural feeling of touch-sensitive keys with light and sound feedback. The special construction of the keyboards, with its glued-on installation option, offers reduced installation times, precise positioning and a protection rating of IP65. The simplicity of the KDT keyboards stems from Eliwell's experience in studying solutions for design and installation simplification.

Technical data	Horizontal KDT	Vertical KDT	KDEPlus	ECPlus
Casing:	Polymethylmethacrylate (PMMA) front panel	Polymethylmethacrylate (PMMA) front panel	PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys	Body and window in polycarbonate
Dimensions:	front panel 7.1" x 1.6", depth 0.06"	front panel 3.4" x 5.3", depth 0.06"	front panel 2.9" x 1.3", depth 1.2"	front panel 1.9" x 1.1", depth 0.6"
Installation:	panel mounting, can be set for a distance of up to 325', with 5.9" x 1.2" drilling template	panel mounting, can be set for a distance of up to 325', with 2.6" x 4.7" drilling template	panel-mounting, with 2.8" x 1.1" (+0.2/-0.1") drilling template	panel mounting with 1.8" x 1" (+0.2/-0.1") drilling template
Display:	3 digits+sign, 8 coloured icons colours can selected from: amber/red/blue/white 6 capacitive touch keys	3 digits+sign, 8 coloured icons colours can selected from: amber/red/blue/white 6 capacitive touch keys	with decimal point ° 3 digits + sign	with decimal point ° 3 digits + sign
Display range:			see power board	see power board
Connections:			• screw terminals for low voltage connection • JST for ECPlus display connection	• screw terminals for low voltage connection • JST for KDWPlus or KDEPlus user terminal connection
Power supply:			from power board	from power board
Power consumption:			-	-
Ambient operating temperature:			23...130°F	23...130°F
Ambient storage temperature:			-22...185°F	-22...185°F
Ambient operation and storage humidity:			10...90% RH (non-condensing)	10...90% RH (non-condensing)

## Adaptive Defrost

Defrost cycle starts if one of the following conditions happens:

- The cumulative compressor operation time (dit parameter) has elapsed since the last defrost (with dit≠0);
- compressor has been switched on continuously for dtt time;
- The evaporator temperature drops below the dSS threshold (without delay);
- The evaporator temperature falls below the dynamic threshold, with active compressor

The dynamic threshold is determined in the following way:

- The temperature measured by the evaporator probe is stored at the end of the first compressor state cycle after a defrost cycle. At the power-on is stored the temperature measured by the evaporator probe at the end of the first compressor state cycle;
- An offset is subtract, dOS parameter



# RTN400 Series

Connectable controllers for self contained equipments



- Connectible through Modbus
- Single or dual compressor control
- Advanced resistance defrost
- Evaporator fan control in Night&Day mode
- Fixed duty-cycle frame heater control
- Pre-programmed, easy-to-select configurations.
- Adaptive control for variable speed compressors

## Applications

**RTN400** are compact controllers for plug-in and remote cabinets with thermostatic valve control.

RTN400 controllers are compact and stand out for the high-performance and high flexibility they offer through energy-saving algorithms and the direct control of compressor and fans.

**RTN400 SM** provides energy savings in supermarkets and commercial food distribution and storage applications; it is suitable for the control of EMBRACO VNEU and SECOP CCD variable speed compressors, obtaining maximum performance through a control algorithm with self-learning of operating parameters. It also combines optimised defrost cycle management, dewpoint-based heating and anti-condensation element modulation and cold room set point modulation, with automatic identification of open/closed operational time bands.

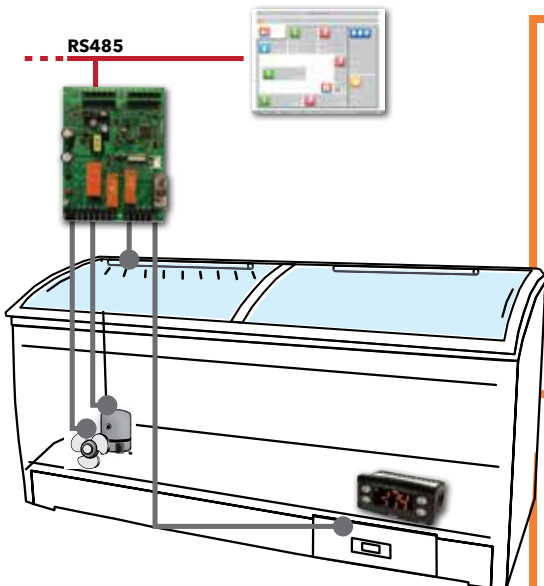
**RTN400** controllers can be interfaced with **KDEPlus** and **KDWPlus** keyboards and with the **ECPlus** display module. It's important to note here that this control can be used with no display as well, a trend starting to take hold by many OEM's.

## Features

Power boards in compact bare box (121x92mm)

5 temperature probes and 1 configurable digital input

Model	Application	Notes
<b>RTN400</b>	Supermarket counters	Bare board with fast power connections, faston type
<b>RTN400 SM</b>	Supermarket counters with variable speed compressor	Bare board with fast power connections, faston type
<b>KP00Q150 of the Modbus adaptor</b>	RS485 Plug-in module	Modbus serial adaptor to EcoStruxure™



### Application examples

In a **plug-in counter**, RTN400 is used to control compressor, lights and fans connected to a monitoring system via RS-485 network (the optional board is needed for RS-485 connectivity).

**RTN400**

### Plug-in R290 tank with variable speed compressor

RTN 400 SM can control all aspects of the application, including compressor, fans, lights and defrosting.

The innovative self-learning algorithm for control of variable speed compressors significantly reduces the time required for commissioning, ensuring maximum energy efficiency in all conditions and a longer motor life.

The advantages of this type of application are:

- Smaller compressor
- Reduced refrigerant charge
- Continuous control of cooling capacity
- Fewer compressor start-ups and consequently longer compressor life

**RTN400 SM**

# Selection guide for self-contained controllers

INTRODUCTION

SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL

Applications					Characteristics						
					Energy Efficiency*	Outputs		Inputs		User Interface	Connections (Power + Inputs)
Medium Temp	Low Temp	Dual Compressor	Warming / Dispenser / Beer Tap	Relays <sup>3,4</sup> @ 120Vac		DI	NTC Probes	Power	Display Color		
					1 Output						
√	√				NN	1 - 16FLA (1HP)	1	1	100-240Vac	red	Spade + RAST
√	√		√ <sup>2</sup>		NN	1 - 16FLA (1HP)	1	1	120 or 240Vac	amber, red, blue <sup>7</sup>	Spade + Plug
				√	NNN	1 - 16FLA (1HP)	1	1	120 or 240Vac	amber, red, blue <sup>7</sup>	Screw Terminal
					2 Outputs						
√	√		√ <sup>1</sup>		NN	1 - 16FLA 2 - 3A (2FLA)	1	2	100-240Vac	red	Spade + RAST
√	√		√ <sup>1</sup>		NN	1 - 16FLA (1HP) 2 - 8A (4FLA)	1	2	100-240Vac	red	Spade + RAST
√	√				NN	1 - 16FLA 2 - 5A (2FLA)	1	2	120 or 240Vac	amber, red, blue <sup>7</sup>	Spade + Plug
√	√				NN	1 - 16FLA (1HP) 2 - 8A (4FLA)	1	2	120 or 240Vac	amber, red, blue <sup>7</sup>	Spade + Plug
					3 Outputs						
√	√		√ <sup>1</sup>		NN	1 - 16FLA (1HP) 2 - 8A (4FLA) 3 - 5A (2FLA)	1	2	100-240Vac	red	Spade + RAST
√	√	√			NN	1 - 16FLA (1HP) 2 - 8A (4FLA) 3 - 5A (2FLA)	1	2	120 or 240Vac	amber, red, blue <sup>7</sup>	Spade + Plug
√	√	√			NNN	1 - 16FLA (1HP) 2 - 8A (4FLA) 3 - 5A (2FLA)	1+16	2+16	120 or 240Vac	amber, red, blue <sup>7</sup>	Spade + Plug
√	√				NNNN	1 - 16FLA (1HP) 2 - 8A (4FLA) 3 - 5A (2FLA)	2	2	120 or 240Vac	amber, red, blue <sup>7</sup>	Screw Terminal
					4 Outputs						
√	√	√			NN	1 - 10FLA 2 - 8A (4FLA) 3 - 5A (2FLA) 4 - 5A (2FLA)	1+16	2+16	120 or 240Vac	amber, red, blue <sup>7</sup>	Phoenix Plug-In
					5 Outputs						
√	√	√			NNN	1 - 16FLA (1HP) 2 - 8FLA (1/2HP) 3 - 8A (4FLA) 4 - 8A (4FLA) 5 - SSR <sup>5</sup>	1+5 <sup>6</sup>	56	100-240Vac	amber, red, blue, white <sup>7</sup>	Spade + Screw Terminal

★★★ Evap. fan cycling, reduced setpoint mode, smart defrost

★★★★ Advanced algorithms, demand defrost, modulating defrost

★★★★★ Advanced self-learning algorithms

# Selection guide for self-contained controllers

Options / Acces. <sup>11</sup>				Models <sup>13</sup>	Standard Part Number *(Blue Display, 120 VAC)
Plexiglass Cover	Rear Cover Drip Guard	Front Panel Gasket	Bezel Color Options		
Y	Y	Incl <sup>12</sup>	red	nEW 961	NW17DIHMCEF80
Y	Y	Y	Gray, Silver	EW Plus 961	EW17DIHMB9C80
Y	Y	Y	Gray, Silver	EW Plus 961 EO	Contact Sales
Y	Y	Incl <sup>12</sup>	red	nEW 971	NW22DIHMBGF80
Y	Y	Incl <sup>12</sup>	red	nEW 971-SPDT	NW29DIHMBGF80
Y	Y	Y	Gray, Silver	EW Plus 971	EW22DIHMC9C80*
Y	Y	Y	Gray, Silver	EW Plus 971-SPDT	EW29DIHMC9C80*
Y	Y	Incl <sup>12</sup>	red	nEW 974	NW2EDIHMBGF80
Y	Y	Y	Gray, Silver	EW Plus 974	EW4DLHMC9M99*
Y	Y	Y	Gray, Silver	EW Plus 974 EO	EW2EDIGMC9C80*
Y	Y	Y	Gray, Silver	EW Plus 974 EO Smart	Contact Sales
Y	Y	Y	Gray, Silver	EW Plus 978	Contact Sales
			Custom Graphics	RTN (Control Module)	Contact Sales
				Customizable KDT (User Interface Module)	Contact Sales
				KDE (Std. User Interface)	KDE400E006080

<sup>1</sup> Display values up to 199°F

<sup>2</sup> Display values up to 230°F

<sup>3</sup> Suitable for hydrocarbons; IEC 60335-2-89 for GWT & flammable gas; use of relay with wash tight variants (bubble test 33.5 IEC 60079-15)

<sup>4</sup> Assignable relays on all models

<sup>5</sup> Open Collector output to drive external SSR

<sup>6</sup> Input used as either DI or probe

<sup>7</sup> Standard option is blue, other colors available as custom part number

<sup>8</sup> When remote display is used, external communications are not available; contact sales for remote display and buzzer options. All models have factory communications interface and some have external Modbus capabilities; contact sales.

<sup>9</sup> Requires gasket as a separate item, responsibility of customer to ensure IP rating in the application

<sup>10</sup> Factory purposes only

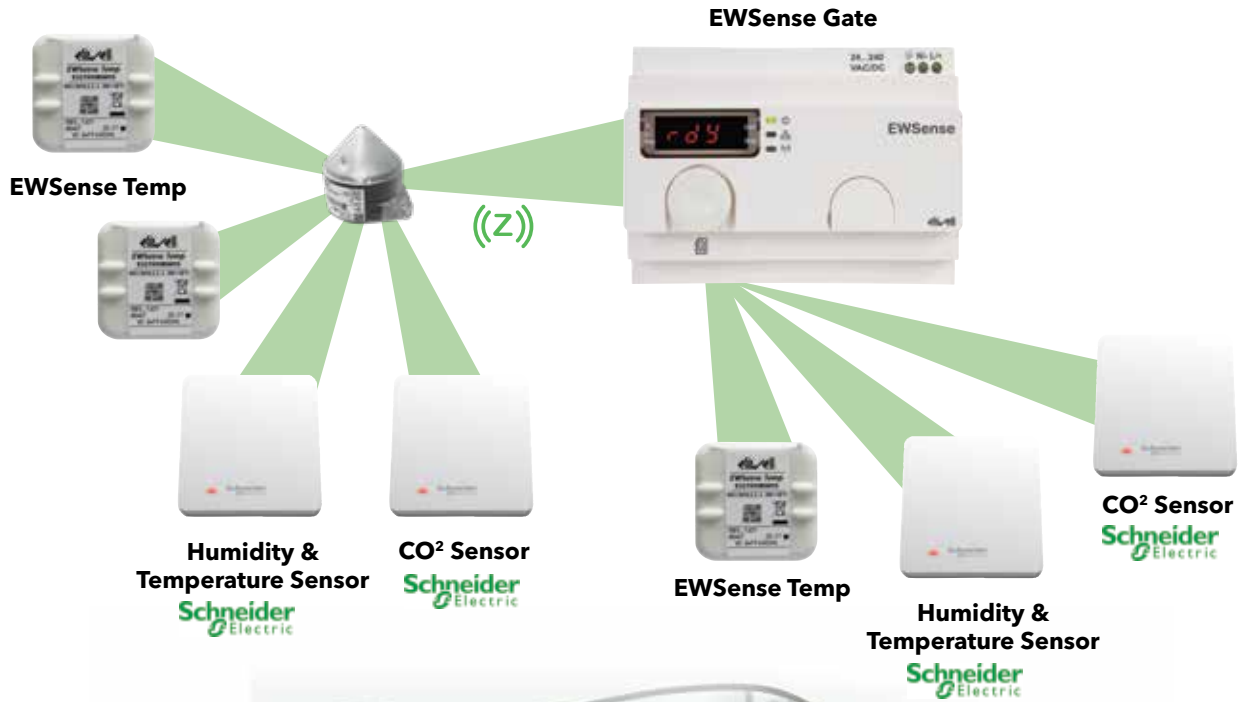
<sup>11</sup> All products can be custom branded and factory pre-programmed

<sup>12</sup> Gasket is already integrated with the plastics

<sup>13</sup> cUR and NSF certified

# EWSense

Wireless system for Temperature, humidity and Co2 monitoring



## EWSense Temp - wireless temperature sensor

- Food Zone installation material: NSF
- Metering range: -22°F to 131°F, Transmit interval: 2 minutes, 2 years life, battery powered sensor
- Max transmit distance: 300' (line of sight)
- Mounting / Dimension: Adhesive / 1.58" x 1.54" x 0.65"
- Mounting options: Plastic tie, Velcro, Metal plate with screw

## EWSense Repeater - wireless signal repeater module

- Power Supply: 24V...240Vac/dc
- Max transmit distance: 300' (line of sight)
- Typical transmit distance: 30'
- No configuration needed

## Humidity Sensor

- Wireless CO<sub>2</sub> sensor with room temperature and humidity
- Wireless sensor with room temperature & humidity



Codes	Descr.	Notes
<b>ESG0010700</b>	EWSense Gate ZBRN12	ZigBee receiver with RS-485 Modbus/RTU serial port
<b>ESARJC200</b>	EWSense 2 x RJ45 serial cable 3.3'	Kit with 2 cables with RJ45 connector for RS-485 serial connection
<b>ESST1010800</b>	EWSense Temp	ZigBee Green Power wireless temperature sensor
<b>ESR0012700</b>	EWSense Repeater ZBRA12	16' Cable
<b>ESST010B0400</b>	4 x EWSense Temp	Kit of 4 EWSense Temp sensors
<b>ESAMPL000</b>	EWSense Metal Plate KIT x4	Kit for panel fixing with metal plates for 4 EWSense Temp
<b>SED-TRH-G-5045</b>	Temperature and Humidity Sensor	
<b>SED-CO2-G-5045</b>	CO-2, Temperature and Humidity Sensor	

## Applications

EWSense is a wireless system for measuring the temperature of food storage and processing equipment and rooms. The wireless and battery-operated sensors make the system extremely easy to install; they can also be replaced, avoiding the need to periodically re-calibrate the system. The EWSense Temp sensor is made from plastic, suited to food-grade environments with protection rating IP65 and measures the ambient temperature where it is installed between -22°F and 131°F for over 2 years, thanks to the integrated battery and the ZigBee 3.0 Green Power wireless communication.

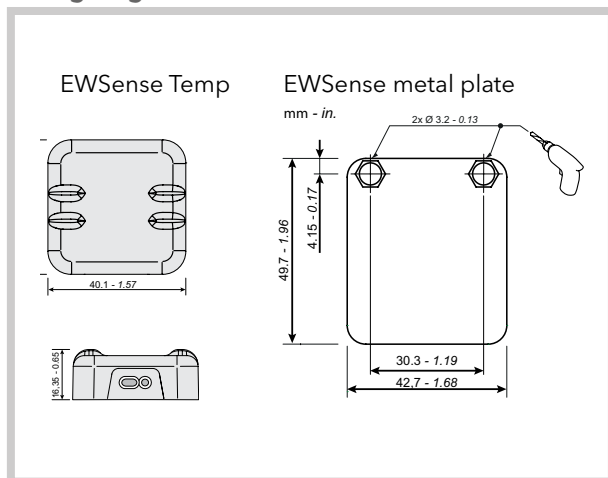
The EWSense Gate receiver manages up to 60 sensors positioned in a radius of 300 feet (line of sight), indicatively 33 feet in standard installations. The RS-485 Modbus/RTU line allows monitoring systems to acquire temperature date, signal level and battery level, for full system diagnostics.

## Common features

- Low-consumption ZigBee Green Power wireless communication
- Up to 60 EWSense Temp sensors for each EWSense Gate receiver

Technical data	EWSense Gate	EWSense Temp	EWSense Repeater
Dimensions (in.)	4.37 x 3.89 x 2.74" (LxHxD)	1.57 x 1.54 x 0.65" (LxHxD)	3.6 x 3.6 x 2.5
Installation	on DIN Omega bar support	Gluing on flat surface with double sided tape (supplied)	Wall
Power supply	24V...240Vac/dc	Integrated battery, not replaceable. Duration more than 2 years of operation.	24V...240Vac/dc
Connectivity	RS-485 for connection to TelevisSystem monitoring and systems based on Modbus protocol ZigBee 3.0 receiver	ZigBee 3.0 Green Power Standard IEEE 802.15.4 transmitter Frequency: 2,405 GHz Distance: 300' (in free field)	ZigBee 3.0 Green Power Standard IEEE 802.15.4 transmitter Frequency: 2,405 GHz Distance: 300' (in free field)
Protection rating	---	IP 65	IP 65
Measurement range	---	-22°F ... 131°F	-----
Measurement accuracy	---	±0.6°F	-----

## Wiring diagrams



Humidity Sensor	
Dimensions	3.26" x 2.85" x 0.72"
Operating temperature	32°F to 122°F
CO <sup>2</sup> accuracy at NTP	±60ppm +3% of reading (400-2,000ppm range)
CO <sup>2</sup> measurement pressure dependency	0.13% of reading per mm Hg (normar atmospheric conditions of ~100Kpa)
CO <sup>2</sup> resolution at NTP	±20ppm at 800ppm
Transmission protocol	Zigbee 3.0 Green Power (encrypted, bi-directional)
Transmission range	Up to 328' free field 66' to 98' indoor
Protection	IP20



**EcoStruxure™ Machine Advisor** is a digital, cloud-based services platform for remote accessing operating machines. It enables machine builders to provide new services to machine operators for each installed machine in any production site worldwide. The machine builder can now support the machine operator by creating the optimum framework conditions for perfect and reliable machine operation.



Building on its deep expertise in the OEMs segment, Schneider Electric's EcoStruxure™ Machine Advisor offers new levels of efficiencies and growth by turning data into key insights for machine builders. It provides a fully connected framework for reliable machine operation through three key functionalities:

- **Track:** OEMs can visualize the location of all their machines, with real-time access to documentation and history, such as bill of materials, manuals, maintenance logs and task management schedules.
- **Monitor:** The cloud-based software allows OEMs to collect and visualize machine data in real time, giving a comprehensive analysis of Overall Equipment Effectiveness (OEE), widgets for performance against key KPIs and other trends, and dashboards to monitor machine availability and output quality.
- **Fix:** A service enabled by a mobile app to facilitate maintenance and operations with contextual information, the help of step-by-step procedures and remote expertise by leveraging augmented reality. Furthermore, Fix provides remote access to the engineering software in the cloud enabling service technicians to use "Software-as-a-Service" to always have the right version and libraries by hand.

# Schneider Electric EcoStruxure™ Facility Expert

Optimizing the operational cost for chain maintenance managers

**EcoStruxure™ Facility Expert** provides an integrated, IoT-based platform, fully adapted to retail chains projects that optimizes business continuity, improves operational efficiency, energy consumption and comfort of customers, at once.

Whether used on PC, smartphone, tablet, online or offline, EcoStruxure™ Facility Expert offers a collaborative technology that remains you connected to equipment and stores involving very simple information sharing, remote monitoring and control across your portfolio that helps stores owners and their contractors to:

## Optimize operations

- Reduce over-spend thanks to maintenance plan, task manager and task reminders to ensure and organize maintenance
- Speed up troubleshooting: access equipment log history and doc repository, prepare intervention and get on-field support from colleagues if needed
- Automate your manual readings (positive/negative temperatures) and generate reports in a single click to ensure traceability, regulations compliance and reduce administrative tasks

## Gain control on energy consumption

- Monitor energy 24/7 to point out equipment, zone and usage deviations and identify contributors to peak consumption
- Settle targets and parameters to avoid utility penalties and be alerted in case of overconsumption
- Evaluate performance: benchmark all your sites, compare to local scales, meet energy standards (ISO 50001, LEEDS, NABERS), monthly score cards
- Costs monitoring

## Provide comfortable environment for customers

- Remote control of connected thermostat: On/Off, setpoints, mode selection, operation sequence, compressor auxiliary interlock
- Control and modify your schedules from anywhere, anytime
- Monitor comfort (temperatures, humidity, CO<sup>2</sup> level ) of your sales areas

## Reduce business interruption losses

Wireless technology delivers enhanced protection on your key assets with minimal interruption to business.

- Monitor and localize all your equipment (cold room, chillers, rooftops, built-in fridges)
- Be alerted in case of equipment breakdown or malfunction
- Diagnose remotely and repair faster with alarms details



*Monitor equipment:  
electrical, refrigeration, HVAC*



*Monitor energy consumption*



*Monitor comfort*



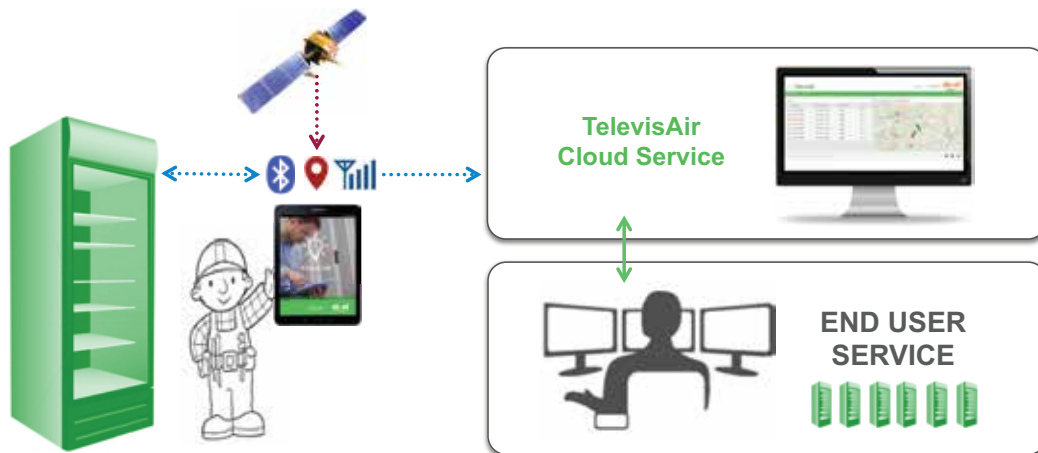
Model	Application
<b>ADBT4200000000</b>	DONGLE BTLE 4.2 BASIC AIR
<b>ADBT4200001000</b>	DONGLE BTLE 4.2 DATALOG AIR

**TelevisAir is the wireless service tool for the RTN controller installed on self-contained equipment's such as:**

- Bottle cooler
- Drink dispenser
- Ice cream freezer
- Display cabinet

**It is based on the following pillars:**

- BTLE (Bluetooth Low Energy) Dongle
- Eliwell AIR APP
- TelevisAir Cloud



### BTLE Dongle Basic

The BTLE (Bluetooth Low Energy) Dongle is an accessory to be plugged into the TTL port of the Eliwell RTN400 controller to implement Bluetooth communication

### BTLE Dongle Datalog

BTLE Dongle version equipped with a local memory storage

### Eliwell AIR APP

Available for Android and iOS operating systems, offers the following features:

- Smart local interface with the controller
- Verify the status of the controller and its operating variables
- Operate the controller functions and parameters from the smart device
- Download and upload the parameters through the smart device
- Download the data stored in the BTLE Dongle Datalog to the smart device
- Synchronize with TelevisAir CLOUD the GPS location and the data stored in the BTLE Dongle Datalog

### TelevisAir CLOUD

CLOUD portal providing, upon service activation:

- Display the location and general status of the cooler network
- Access the individual cooler data and trends
- Activate threshold alerting messaging for each operating variable of the cooler



# TM172P Datalogger Application

Thru Wifi or BMS in a store/restaurant by service team



Model	Application	Notes
TM172PGD18R	Datalogger	See all communication capabilities hereunder

- Monitor the status of the coolers, adjust Archive data locally (SD card /USB ) HACPP
- Local access with phone/ tablet to web server thru Wifi
- Embedded connection to building management system



No. of I/Os	Input Channels	Output Channels	Embedded Communications Ports	Display	References
18	2 Digital Inputs	6 Digital Outputs	1 Ethernet 1 Micro SD 1 CAN expansion bus 2 RS 485 1 USB (type A) 1 USB Mini-B 1 Communication Port 1 uSD Card Slot	Remote Display (optional)  Built-in Display 128x64 LCD with backlight	TM172PBG18R  TM172PDG 18R  TM172PDG18S
	2 High Speed Counters Dry Contact	1 SPDT Relay 1A 2 SPST 3A with the same common 1 SPST 3A 2 SPST 3A with the independent common Optional 2 SSR with independent common for TM172PDG18S only			
	8 Analog Inputs (configurable by pair) 8 NTC or PT1000, or PTC, or 0-20mA, or 4-10 mA, or hOhm, or daOhm, or Digital Input				

# Innovative Solutions for Supermarkets

Optimize your total cost of operations

INTRODUCTION

SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL

## Industry Challenges

- ENERGY COSTS:** With increasing energy costs, it is paramount to improve energy efficiencies of refrigeration equipment running 24/7.
- GOVERNMENT REGULATIONS:** Increasing regulatory demands with DOE 2017, EPA, Energy Star and California Title 24 on efficiencies, refrigerants, and insulating materials.
- REFRIGERANT REQUIREMENTS:** With the EPA ban of common refrigerants and the need to improve efficiency, new refrigerants such as R290 and CO<sub>2</sub> are becoming more prevalent.
- TOTAL COST OF OWNERSHIP:** With increasing complexity and format evolution in supermarkets, simplicity and ease of maintenance enables quicker ROI

### Management & monitoring



### Compressor racks



### Cold rooms



### Cabinets



### Energy metering

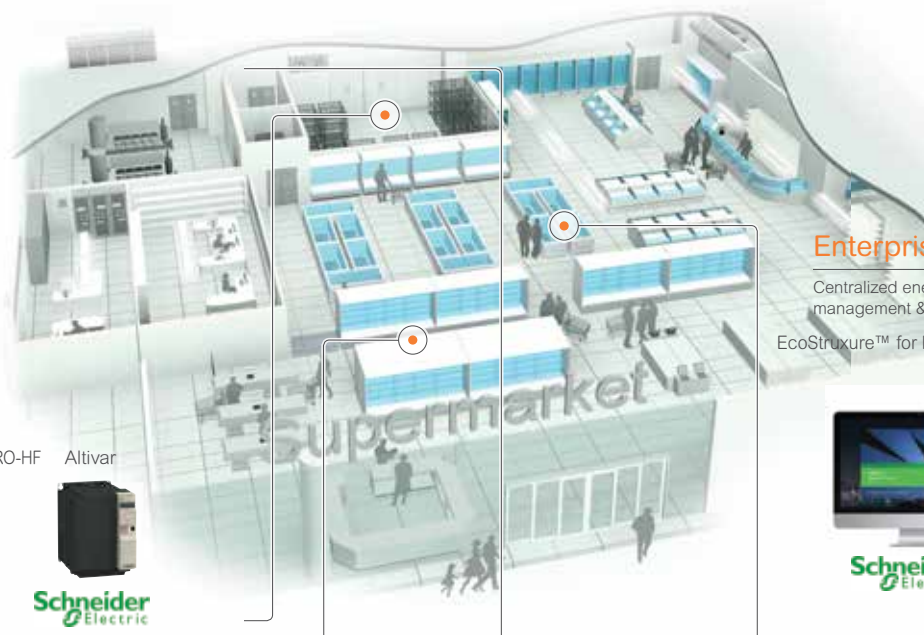


### Wireless monitoring



### Enterprise BMS

Centralized energy management & maintenance  
EcoStruxure™ for Building Operation



# Compressor Rack Managers Product Range

Scalable from simple condensing unit to CO2 transcritical Racks



## CO2 Transcritical racks booster & parallel compression



## Medium to large compressor racks HFC / HFO refrigerants



## Small racks inverter & digital scrolltype compressors, CRii type compressors



## Small racks inverter & digital scroll type compressors



## Title 24 Condensing Unit



## Condensing units



## EWCM 9000 PRO-HF /CO2T

- CO2 transcritical booster (2 circuits)
- CO2 transcritical PC (3 circuits)
- Up to 8 + 8 + 4 compressor
- Inverter modulating compressors
- Modulating / steps gas cooler fans
- HP & FG valve control
- 2x heat recovery including pumps
- Oil management
- Modbus/RTU, Modbus/TCP, CAN connectivity
- Programmable application baseline extendable with Web server and Bacnet

## EWCM 9000 PRO-HF / HFC-HFO

- Programmable application baseline
- Up to 2 circuits
- Up to 8 + 8 compressors
- Inverter modulating compressors
- Modulating / steps condenser fans
- Common condensation option
- Cascade system (stepper valve)
- Floating HP / LP
- Secondary fluid pump management
- Full diagnostic
- Modbus/RTU, Modbus/TCP, CAN connectivity
- Web server - Bacnet

## EWCM 400P PRO /STD EWCM 400D PRO /STD

- Single circuit
- Control on pressure
- Up to 4 compressors w/ up to 4 steps
- Digital Scroll / Inverter modulation
- Modulating / steps condenser fans
- Floating HP

## EWCM 436D PRO /CRii

- Single circuit
- Up to 4 compressors
- CRii modulation - up to 3 heads
- Modulating / steps condenser fans
- Floating HP

## TM172P

- Single Compressor with up to two unloaders
- Floating Head Pressure Control
- Modulating Evaporator/Condenser Fans
- Regulation
- Embedded web server

## TM1710

- Programmable application baseline
- Single circuit
- Modulating fans
- Floating HP

# Architecture of Large Store

Refrigeration control and remote maintenance

INTRODUCTION

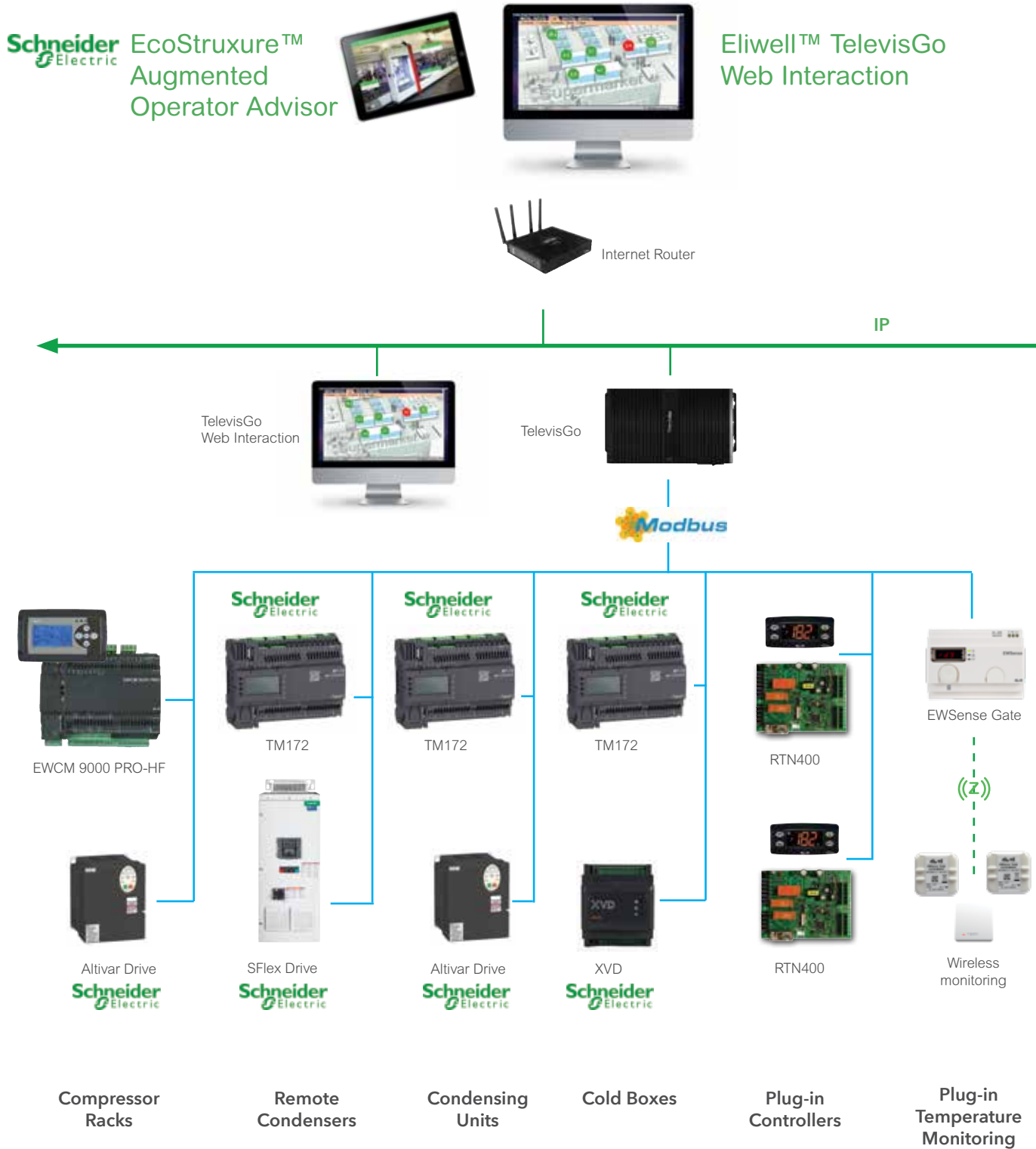
SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL



Refrigeration Control and Remote Maintenance

# Architecture of Large Store

Complete building and energy management

**Schneider Electric** EcoStruxure™  
Building Operation



IP



Automation Server

Bacnet IP



MP-C



MP-V



TM172

HVAC & Lighting



Automation Server



Multimeter



Inverter



NSX

Electrical Distribution & Metering



MPM



SE8000



Wireless Sensors



SPC Web



Smartcard



Pelco Wireless Server

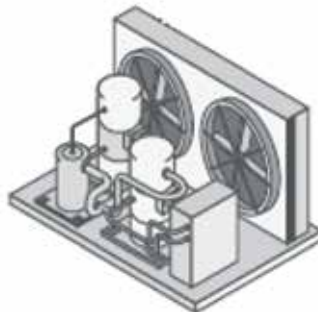
Security Intrsion Video

Electrical Distribution, Air Conditioning, Security

# TM1710 Condensing Unit Application

Improve efficiency & allow connectivity

INTRODUCTION



SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

Model	Application	Notes
TM1710FM22R	Condensing Unit	With Condensing Unit Application

### Multiple parameter configuration levels

Refrigerant types, sensor configuration, pressure or temperature, units of measure (°F/PSI, °C/bar)

### Compressor Management

Compressor type ,digital control of 1 compressor with or without unloader

algorithms: cut-in / cut-out, PID with VSD, low pressure or temperature control , offsets

Increase compressor life, bump start, min & max run times, fault operations, pump down time

### Fans Management

Control of up to 2 condenser fans based on HP, evap. fan control different controls strategies

### Defrost

Type: interval time, time of day, demand defrost, defrost delay / cycle initiation, display information, defrost heater duty cycle

### Historical data

Compressor operations, fan operations, alarms

### Alarm codes & fault operations

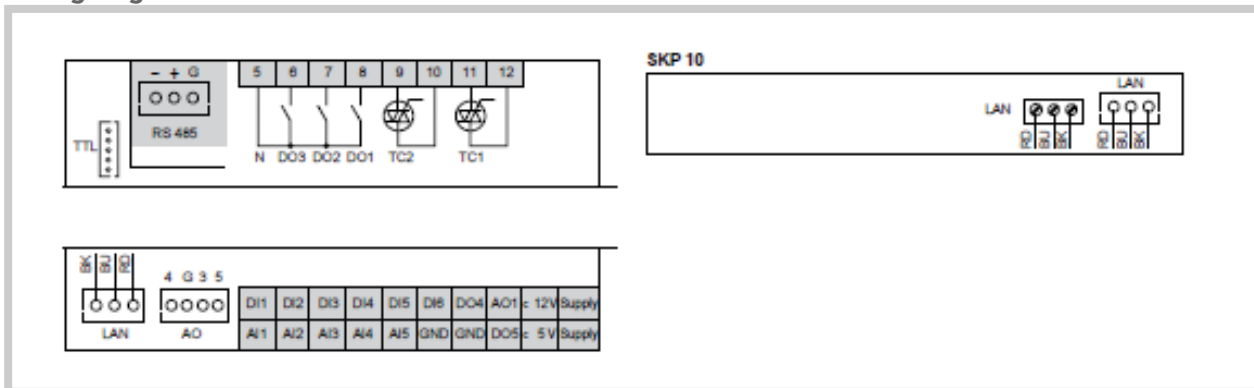
Compressor # of fault retries, min/max case temperature, min/max pressures independent of external safety controls

### Field diagnostics mode, RTU Modbus open protocol

VARIABLE SPEED DRIVES

No. of I/Os	Input Channels	Output Channels	Embedded Communications Ports	Display	References
22	6 Digital Inputs 5 Configurable Analog Inputs (configurable by pair) 3 NTC or Digital Input, or 0-20mA, or 4-10 mA, or 0-10V, or 0-5V, or 0-1V or Digital Inputs	6 Digital Outputs 3 SPST 3A with the same common 2 SPST (2A, 230Vac) with the independent common 1 Open Collector 5 Analog Outputs 2 Open Collector for 12V PWM/PPM 3.0-10V	1 LAN Expansion Bus 1 RS 485 1 Lan Expansion Bus	Built-in Display	TM1710FM22R

### Wiring diagrams



SENSORS

ELECTROMECHANICAL

# EWCM 400D PRO

Parametric compact controllers for compressor racks



Codes	Descr.	Notes
EPDT1PCR24U0A	EWCM 436D PRO CC /A-CRII KIT W/CABLES	CRii compressor - 4 DIN - 2 embedded SSR
EPDT1PSTD4U0A	EWCM 436D PRO CC /A-STD KIT W/CABLES	Digital scroll/inverter - 4 DIN - 2 embedded SSR
EPD01PSTD4U0A	EWCM 455D PRO CC /A-STD KIT W/CABLES	Digital scroll/inverter - 4 DIN - external SSR
EPE01PSTD4U0A	EWCM 455P PRO CC /A-STD KIT W/CABLES	Digital scroll/inverter - flush mount - external SSR
EP55000004U0A	EXP 455D PRO CC KIT W/CABLES	4 DIN expansionModule for digital scroll/inverter

## Applications

The new series of controllers for EWCM 400D PRO compressor racks are designed to manage small central cooling units with capacity modulation plus two-step or inverter modulation for condensation fans. The range of models manages modulation for CRii, Digital Scroll and Inverter compressors and is available in both flush mount and DIN rail mount. The floating condensation management according to the external temperature conditions completes the characteristics offering energy saving features.

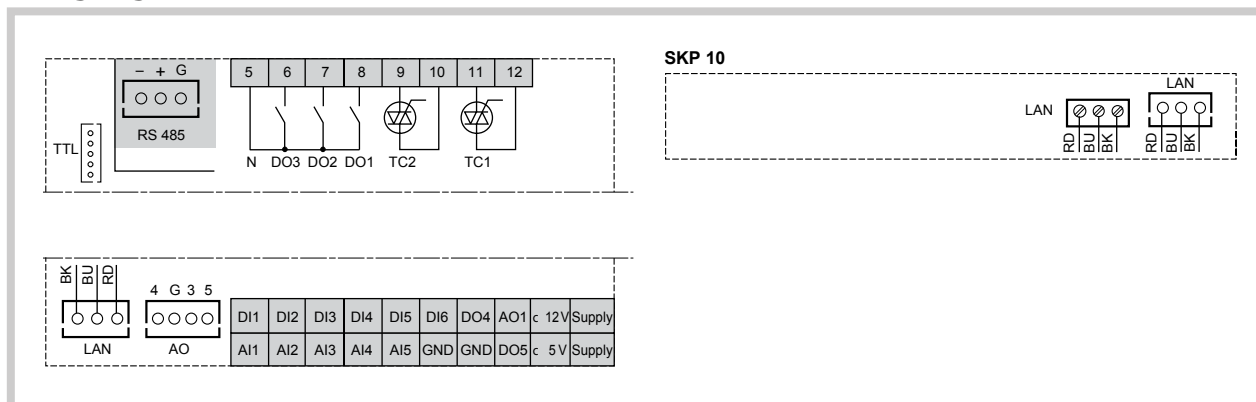
## Common features

Control of compressor racks up to 4 compressors and condenser fans	Energy saving with floating condensation
Modulation of the capacity for CRii series compressors up to 3 valves	RS-485 serial and Modbus RTU open supervision protocol
Two-step or inverter fan control	

## Technical data

	EWCM 400D PRO	EWCM 455D PRO	EWCM 455P PRO	EXP 455D PRO
I/O	<b>Description</b>			
Analogue Inputs	3 configurable analogical, clean contact digital, NTC inputs 2 voltage/current analogue configurable inputs, clean contact digital inputs			
Digital Inputs	6 clean contact digital inputs			
Analogue outputs	TC1, TC2: TRIAC 3 A - 230 Vac output TRIAC high voltage 1 PWM analogue output (2) low voltage (SELV) 2 analogue outputs 0 ... 10 V, low voltage (SELV) 1 analogue output 0 ... 10 V / 4 ... 20 mA / 0 ... 20 mA, low voltage (SELV)	2 PWM analogue output (2) low voltage (SELV) 2 analogue outputs 0 ... 10 V, low voltage (SELV) 1 analogue output 0 ... 10 V / 4 ... 20 mA / 0 ... 20 mA, low voltage (SELV)		
Digital outputs	3 relay outputs 2 A - 230 Vac 2 low voltage open collector outputs (SELV)	5 relay outputs 2 A - 230 Vac 1 low voltage open collector outputs (SELV)		
Connectivity	TTL programming port for MFK, DMI, UNICARD			-
Clock	Present			-
Power consumption	12 ... 24V~ not insulated			

## Wiring diagrams



# TM172 Condensing Unit Application "Title 24"

Compliant with California Title 24



Model	Application	Notes
TM172P...	Condensing Unit	With Condensing Unit Application

## Enhanced Control Methodology to meet the requirement of California Building Energy Efficiency Standards Title 24:

- Floating Head Pressure Control  
Continuously variable speed condenser fans serving a common condenser high side in unison with reset table condensing temperature in response to ambient dry-bulb temperature.
- New Energy Saving options for parameterized Evaporator Fan control

### Features:

- Complete Schneider Electric solution for both hardware and software
- Implemented control methods for multi-evaporator applications.
- Embedded web server and Remote Display for easy accessibility.
- Multiple network solutions: Modbus/Ethernet/BACnet/LONworks
- Superheat regulation for evaporators

### Multiple configuration levels

Refrigerant types, Sensor configuration, Pressure or temperature, Units of measure (°F/PSI, °C/bar)

### Condenser and Evaporator Fans Management

Support ECM fan motor controls, VSD controls

### Defrost

Activation type: interval time, time of day, demand defrost, Defrost delay / cycle initiation, Display information, Defrost type: Air defrost, Electrical heater

### Historical data

Fan and Compressor operations, Alarms, Historical temperature/pressure readings.

### Alarm codes & fault operations

Min/max case temperature, Min/max pressures independent of external safety controls

### Compressor

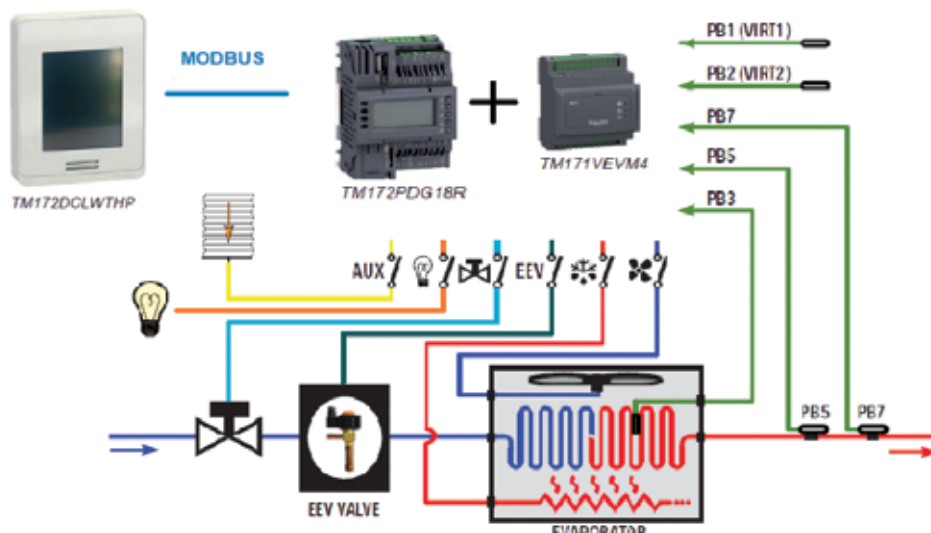
Compressor with up to 2 unloaders, Multiple Refrigerant Types supported





# TM172 for Case- Cold Box Control

Optimal control and asset management



Model	Application	Notes
TM172PDG18R	Evaporator Cold Box Control	IO Expandable configuration for multiple evaporator application
TM172PDG28R		
TM172PDG42R		

## Main Features:

- Expandable I O configuration for multi-evaporator applications.
- Remote Display for easy accessibility.
- Multiple network solutions: Modbus/Ethernet/BACnet/Lonworks
- Super heat regulation

## Multiple configuration levels

Refrigerant types, Sensor configuration, Pressure or temperature, Units of measure (F/PSI, C/bar)

## Fans Management

Support ECM fan motor controls, VSD controls

## Defrost

Activation type : interval time, time of day, demand defrost, Defrost delay / cycle initiation, Display information, Defrost type : Freewheel/Air defrost, Electrical heater

## Historical data

Fan operations, Alarms, Historical temperature/pressure readings.

## Alarm codes & fault operations

Min/max case temperature, Min/max pressures independent of external safety controls

No. of I/Os	Input Channels	Output Channels	Embedded Communications Ports	Display	References
18	2 Digital Inputs 2 High Speed Counters Dry Contact 8 Configurable Inputs (configurable by pair) 8 NTC or PT1000, or PTC, or 0-20mA or 4-10 mA, or hOhm, or daOhm or Digital Inputs	6 Digital Outputs 1 SPDT Relay 1A 2 SPST 3A with the same common 1 SPST 3A 2 SPST 3A with the independent common Optional 2 SSR with independent common for TM172PDG18S only 2 Analog Outputs 2.0-10V, or 4-20mA or PWM (2kHz, 24V)	1 Ethernet 1 Micro SD 1 CAN expansion bus 2 RS 485 1 USB (type A) 1 USB Mini-B 1 Communication Port 1 uSD Card Slot	Remote Display (optional) Built-in Display 128-64 LCD with backlight	TM172PBG18R TM172PDG18R TM172PDG18S

# EWCM 9000 PRO-HF HFC-HFO

Programmable controller with single and double circuit compressor rack



Code	Descr.	Notes
<b>EPAS1FCHA5U0</b>	EWCM 9000 PRO - HF 42D SSR CC /HFC-HFO	With integrated display and SSR output
<b>EPK010000U0</b>	EVK PRO DISPLAY /GR CC	Remote Display
<b>TM172E28RCC1</b>	M172 Opt. & Perf. expansion 28 I/Os CC	
<b>TM171EP14RCC1</b>	M171 Perf. expansion 14 I/Os CC	

## Applications

EWCM 9000 PRO - HF HFC - HFO is a programmable controller with an application baseline suitable to control traditional compressor racks with single and double circuit; inverter and digital scroll compressor modulation; staged or inverter modulated condenser fans. The library includes defrost management and efficiency algorithms such as Floating condensation management. The basic library provided by Eliwell allows for the development times to be reduced thanks also to the debugging systems, simulation and diagnostics, even remotely, that can be found in the SoMachine HVAC software suite. Furthermore, Eliwell has a team specialised in supporting the developers and a network of partners capable of assisting clients in devising customised solutions.

## Features

Controller freely programmable with SoMachine HVAC	Expandable up to 12 modules and 2 remote keyboards
Basic library for single and double circuit compressor rack	Modbus/RTU, Modbus/TCP, CAN, Web server/http connectivity
Diagnostic and simulation tools	

Technical data	EWCM 9000 PRO-HF / HFC-HFO	Expansion 14 I/O	Expansion 28 I/O	EVK PRO
Dimensions	5.7" x 4.3" front panel, depth 2.4"	2.8" x 3.4" front panel, depth 2.4"	2.8" x 3.4" front panel, depth 2.4"	7.5" x 3.8" front panel, depth 0.4", total depth 1.4"
Power supply	24 Vac / 20...38 Vdc	24 Vac / 24 Vdc	24 Vac / 20-38 Vdc	24 Vac / 24 Vdc
Power consumption	35 VA / 15 W	16 VA / 7 W	24 VA / 15 W	5W
Analogue inputs	12 configurable inputs: NTC -40..275°F DI NTC -58..230°F PT1000 -325..1560°F PTC -67..300°F 0-20 mA 4-20 mA 0-10 V 0-5 V 0-5 V ratiometric	4 configurable inputs NTC -40..275°F DI NTC -58..230°F PT1000 -325..1560°F PTC -67..300°F 4-20 mA 0-10 V 0-5 V	16 configurable inputs NTC -40..275°F DI NTC -58..230°F PT1000 -325..1560°F PTC -67..300°F 0-20 mA 0-10 V 0-5 V 0-5 V ratiometric	-
Digital inputs	10 SELV +24 V ac/dc opto isolator inputs 2 rapid opto isolator inputs, up to 2 kHz	4 safety extra low voltage SELV	4 SELV + 24V ac/dc opto insulator inputs up to 2kHz	-
Analogue outputs	4 outputs 0-10 V 2 configurable outputs 0-10 V 4-20 mA Open Collector	2 x 0-10V	2 configurable outputs 0-10 V 4-20 mA Open Collector	-
Digital outputs	8 3 A SPST +250 V a.c. relays 2 1 A SPDT +250 V a.c. relays 2 SSR x 0.5 A +240 V c.a.	3 3 A SPST +250 V a.c. relays 1 1 A SPDT +250 V a.c. relays	10 3 A SPST +250 V a.c. relays	-
Display	128x64px backlit graphic LCD 4 status LEDs	-	-	128x64px backlit graphic LCD 3 status LEDs
Connectivity	CAN Bus of expansion 2 RS 485 protocol Modbus RTU serials 1 USB type A (Host) Mass Storage (FAT32) 1 mini USB type B (Device) for PC connection 1 Ethernet port 10 Modbus/TCP protocol	CAN Bus of expansion	CAN Bus of expansion	CAN Bus of expansion
Memory	MicroSD expansion slot for diagrams up to 16GB	-	-	-

# CO2 Transcritical System

Control solution with transcritical CO2 booster / parallel compression application



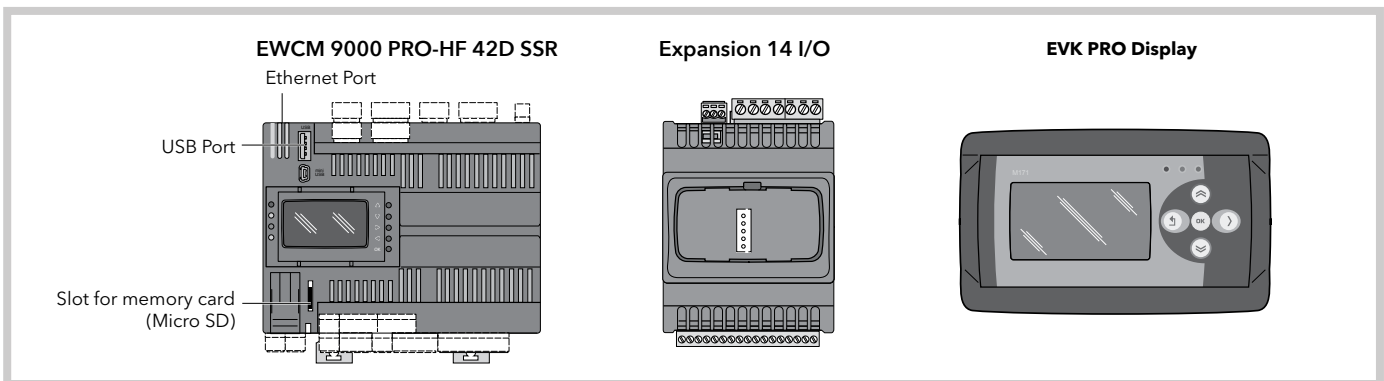
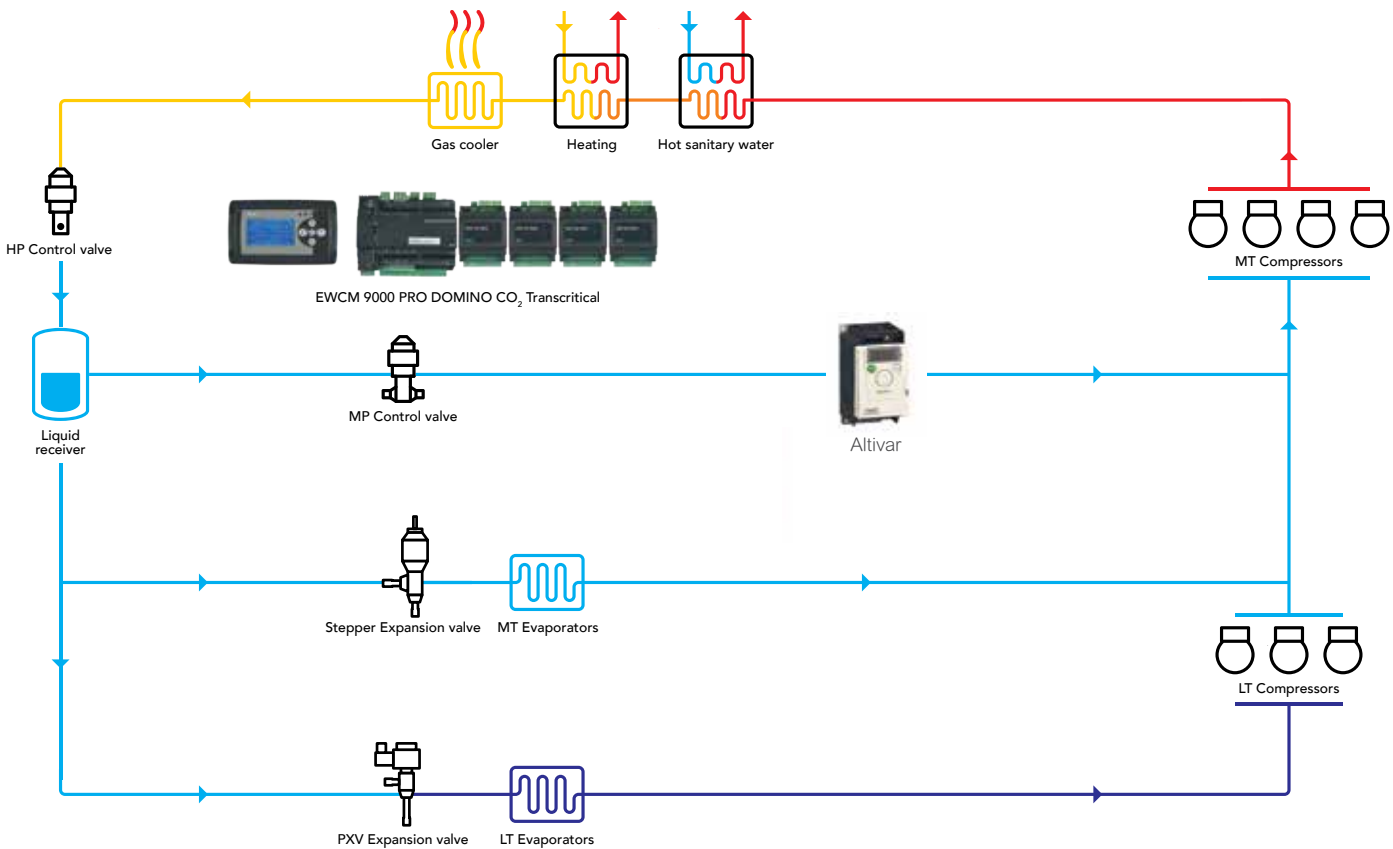
Code	Descr.	Notes
<b>EPAS1FCTA5U0</b>	EWCM 9000 PRO-HF 42D SSR CC /CO2T	w/integrated display & SSR output
<b>EPK010000U0</b>	EVK PRO DISPLAY /GR CC	Remote Display
<b>TM171EP14RCC1</b>	M171 Perf. expansion 14 I/Os CC	Expansion module 14/ I/O

## Applications

EWCM 9000 PRO-HF allows for the controller to be adapted to specific needs thanks to the options of integrating and changing the applicative controller software. The FREE Studio development tool allows for all the controller's maximum performance to be taken advantage of, re-configuring the I/O and making the most of the vast field connectivity and that of the system found on the controller. The basic library provided by Eliwell allows for the development times to be reduced thanks also to the debugging systems, simulation and diagnostics, even remotely, that can be found in the FREE Studio system. Furthermore, Eliwell has a team specialised in supporting the developers and a network of partners capable of assisting clients in devising customised solutions.

## Features

Management of 2 circuits up to 8 compressors	Expandable up to 12 Expansion 14 I/O modules
Parallel booster/compression management up to 4 compressors	Up to 2 optional remote displays
Management of modulating condensation fans	



# TM171VEV

EEV Stepper System



Code	Description
TM171VEVM4CC1	EEV Driver, Autonomous & Modbus CC

## Applications

The driver for the proportional motorized valve M171 EEV Driver is designed to optimize energy efficiency and the refrigerated utilities performance. Its wide compatibility with refrigerants and with the valves on the market, whether unipolar or bipolar, makes this product particularly flexible.

## Features

<b>Container</b>	PC+ABS UL94 V-0 plastic resin casing
<b>Usage time</b>	23...130°F
<b>Storage temperature</b>	-4...185°F

## Technical data

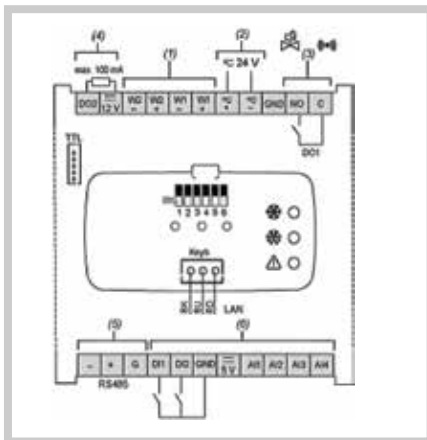
	TM171VEV
Dimensions:	2.75" x 3.42" frontal panel, depth 2.42"
Installation:	on DIN Omega bar support
Analogue inputs:	2x NTC/Pt1000/4...20mA/0-5VC/0-10VC* 2x NTC/Pt1000
Digital inputs:	2 voltage free
Connections:	<ul style="list-style-type: none"> <li>• TTL (Keyb) for connection to Unicard/MFK/DMI</li> <li>• TTL for Televis/Modbus connection</li> <li>• RS485 for connection Televis/Modbus</li> </ul>
Digital outputs:	1 SPST: N.O. 5A 250V~ 1 Open Collector 12VC max 100mA
Accuracy:	better than 0.5% of end of scale
Resolution:	0.1°C
Power supply:	24V~/C ±10% 50/60 Hz
Power consumption:	30VA / 25W

## STEPPER valve compatibility\*

Models	Brand
SXVB 24V Bipolar	Eliwell
ETS50 12V Bipolar, ETS100 12V Bipolar	Danfoss
EX5 24V Bipolar, EX6 24V Bipolar, EX7 24V Bipolar, EX8 24V Bipolar	Alco
SER(I) G, J, K, B, C, D 12V Bipolar	Sporlan
SER 1.5 TO 20 12V Bipolar	Sporlan
SEI-30 12V Bipolar, SEI-50 12V Bipolar	Sporlan
SEH 12V Only bipolar model	Sporlan

\*if using other valves, contact Eliwell Technical Support

## Wiring diagram



# EEV Stepper System

EEV Stepper System



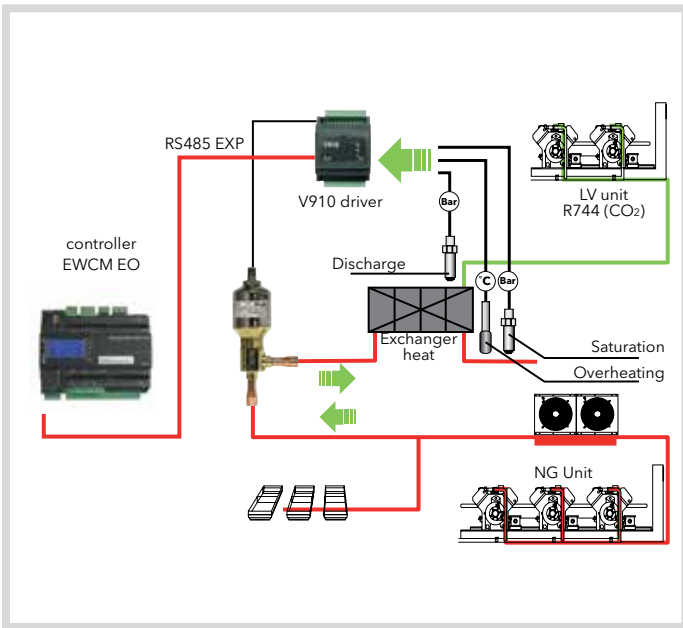
Codes	Descr.
<b>EVD4A31BS21U0</b>	V910 V3 EEVD STEP VALVE 24V RS485 CC

## Applications

The V910 driver for motorized electronic valve control is designed for excellent control of heat exchangers in cascade systems with CO<sub>2</sub>, HFC and HFO refrigerants. Its flexible configuration makes it ideal for the control of hot gas bypass systems, compressor supply temperature / pressure and liquid subcooling.

## Features

<b>Container</b>	PC+ABS UL94 V-0 plastic resin casing
<b>Working Temperature</b>	23...130°F
<b>Storage temperature</b>	-4...185°F



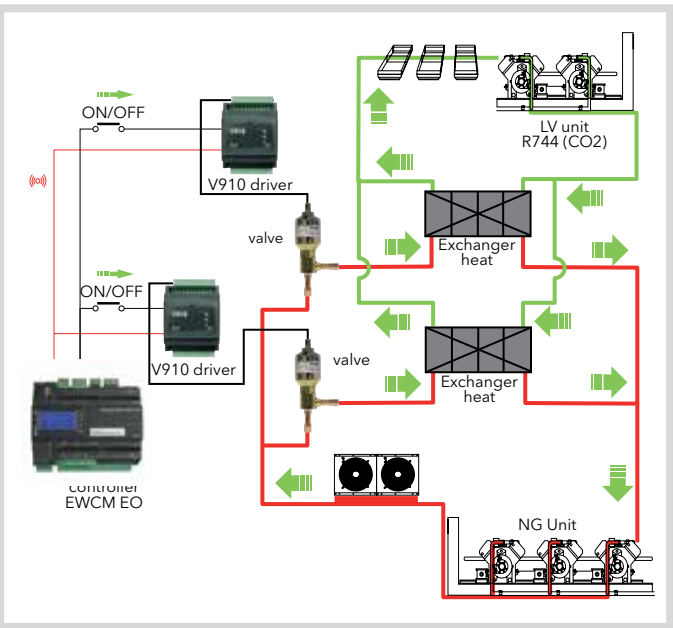
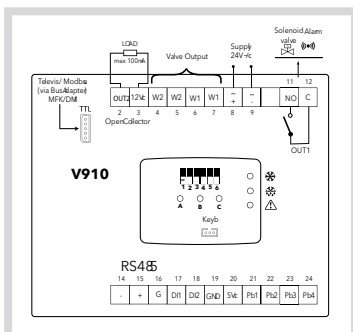
### Modbus connected solution

The high-precision PID control of the V910 module can be controlled by EWCM 9000 PRO-HF series controllers through the serial port dedicated to share real-time configuration and the heat exchanger control status.

## Compatible Valves

Brand	Model	Reference document
DANFOSS	models ETS 50 / ETS 100	RK0YG302 dated 04/2007
SPORLAN	models SER / SERI / SEI / SEH	Bulletin 100-20-1 dated 05/2004
ALCO	models EX4 / EX5 / EX6 / EX7 / EX8	A3,5,008,5 dated 07/2004

## Wiring diagram



### Solution for dual heat exchanger

V910 is designed also for operation independent from the central controller, thus providing the option for configurations with multiple heat exchangers in series or parallel to provide better power modulation and greater safety thanks to a redundant configuration.



Model	Description	Application
<b>TGOCSE2H1U00K</b>	TelevisGo SSD NA /224 KIT SerialAdapter	up to 224 controllers
<b>TGOCSE601U00K</b>	TelevisGo SSD NA /60 KIT SerialAdapter	up to 60 controllers
<b>BT111124</b>	PowerAdapter TelevisGo DC 100/240V 12V 5A 60W NA	spare power supply unit
<b>SAT1AMM100000</b>	SAT1AMM100000	spare / additional serial line, includes RS-232 cable

### Applications

TelevisGo is a family of devices to monitor, control and manage installations from a distance.

The product is based on a PC Embedded standard platform to offer calculation power, data filing space with solid state disc (SSD) and easy system expansion using standard peripherals available on the market.

The Off-Line Configuration function is used for even faster installation and the repetition of settings on other plants.



#### Data recording and alarm management

- Recording temperature / pressure / humidity / digital inputs and outputs / functional statuses
- Recording alarm conditions and sending a signal by email and SMS



#### Energy reports

- Connection to energy meters with MODBUS protocol
- Dashboards dedicated to the real time and historic display of energy consumption
- Graphic display of energy consumption combined with the functional parameters of the system



#### Graphic display of the system

- Display and access to data and parameters of the controllers by means of a freely configurable graphic interface
- HTML interface accessible by most browsers for PC, tablet and smartphone (Internet Explorer, Mozilla, Firefox)
- The graphic interface can be planned off-line with the tools freely available for download from the site [www.eliwell.com](http://www.eliwell.com)



#### Web connectivity

- All TelevisGo functions are accessible in remote mode with a web browser
- It is possible to access all the historic and real time information and to interact with each controller connected to the system to change its parameters and activate the functions
- The complete management of TelevisGo is included (configuration, updating, restarting of the device)
- TelevisGo can be connected to the Internet with ADSL, 3G or 4G connections, or by configuring the LAN/WAN network to which the device is connected



#### Activity automation

- Automation of recurrent activities such as switching the lights on and off for energy saving
- Periodic sending by e-mail of detailed reports in PDF format
- Periodic transfer of data to centralized systems for performance analysis



#### Algorithms and Expandability with IEC 61131

- System extensions with new Plug & Play algorithms installable from the web interface
- Algorithms for management of floating evaporation, faulty pressure probe backup and distribution of the dewpoint for energy saving functions
- System for the development of new algorithms for distributed management of the installation based on EcoStruxure™ Machine Expert - HVAC with standard languages IEC 61131

### Features

<b>For the end user</b> <ul style="list-style-type: none"> <li>• recording of HACCP temperatures</li> <li>• information on energy consumption</li> <li>• complete, easy to use system</li> <li>• open, expandable system</li> </ul>	<b>For supermarket chains and system integrators</b> <ul style="list-style-type: none"> <li>• solution can be scaled to suit the size of the installation</li> <li>• instruments for off line configuration, plant cloning and configuration modification in series</li> <li>• compatibility with third-party Modbus devices: energy measurement and HVAC controls</li> <li>• XML protocol open:                         <ul style="list-style-type: none"> <li>- data sent periodically (push function)</li> <li>- transmission of data and alarms as they occur</li> <li>- real-time data acquisition</li> <li>- querying of data and alarm history</li> <li>- execution of commands / modification of controller parameters in remote mode</li> <li>- SOCKS protocol integrated for routing of TCP and UDP communications</li> </ul> </li> </ul>
<b>For the maintenance technician</b> <ul style="list-style-type: none"> <li>• compact, reliable, ready-to-use system</li> <li>• intuitive user interface easy to learn</li> <li>• alarm signalling via email and SMS, with priority configuration</li> <li>• remote web access for diagnostics and control</li> <li>• dedicated devices for maintenance: device parameters, controls, detailed diagnostics and recording of all functional statuses</li> <li>• complete remote system updating via web: software, languages, controller drivers</li> <li>• devices for offline configuration and quick modification of settings</li> </ul>	

### Technical Data

#### TelevisGo 10 / 30 / 60 / 224

User interface:	from web browser
Browsers supported:	<ul style="list-style-type: none"> <li>• Internet Explorer 7 or later</li> <li>• Mozilla Firefox 3.5 or later</li> <li>• Google Chrome 16.0.x or later</li> </ul>
User language interfaces pre-loaded:	IT - EN - FR - DE - ES - PT - PL - NL - RU - CN
Operating System:	MS Windows 7 Embedded
Power supply:	12VC with external power supply 100...240V~ ±10%
Power consumption:	10W max
Connections:	4 USB ports 2 RS-232 ports (for analogue modem or GSM) 2 RS-232 ports (for <b>Serial</b> Adapter) 1 Ethernet port (LANRJ45) VGA monitor connection PS2 keyboard connector

### Management & monitoring



### Compressor racks



### Cold rooms



### Cabinets



### Energy metering



### Humidity/ Temperature monitoring



### Enterprise BMS

Centralized energy management & maintenance

EcoStruxure™ Building Operation





EcoStruxure™  
Building Operation



SmartX Server  
Schneider  
Electric

Today's smart retails require simple integration across systems, access to the latest IoT devices and comprehensive safety solutions. With an open and secure software integration framework, EcoStruxure™ Building Operation allows collaboration across complex third-party systems to create innovative solutions. It supports standard open protocols, and includes BTL certifications across the system's SmartX hardware and software. This helps integrate connected products and create future-proof architecture for retails, restaurants, and supermarkets. EcoStruxure™ Building Operation securely facilitates the exchange of data from Schneider Electric and third-party energy, lighting, HVAC, refrigeration (Eliwell offer), fire safety, security systems.

EcoStruxure™ Building Operation server is the core of the system and performs key functionality, such as control logic, trend logging, and alarm supervision.

### **A complete and secured IP backbone architecture**

Backed by advanced cybersecurity and supports industry standard and IP-based open protocols to facilitate the secure exchange of data and analytics between critical systems from Schneider Electric and third-party providers (IP addressing, TCP communications, DHCP, DNS, HTTP/HTTPS, NTP, SMTP or SMTPS, SNMP...).

### **Open building protocol support**

Support for open standards. The Enterprise Server can natively communicate with the most popular standards for buildings: BACnet, LonWorks, and Modbus.

### **Global view of the system / Centralized alarms and data management**

The entire site, can be accessed and configured through the Enterprise and SmartX servers, are collected by the Enterprise Server for centralized logging, display, and management. Users can also view event logs and trend logs from multiple servers.

Manage alarms, users, schedules, and trend logs. Data from the Enterprise Server can be delivered directly to the user or to other EcoStruxure™ BMS servers and field devices throughout the site or enterprise.

### **Seamless integration of Refrigeration System**

Easy integration of TelevisGo Eliwell refrigeration monitoring system with IP connectivity and pre-configured "widgets" for refrigeration equipment. Dedicated service tool for refrigeration engineers with TelevisGo web interaction. On site HACCP recordings up to 1 year and automated reports for food preservation sent to inbox.



Eliwell™ TelevisGo





## Real-time information at your fingertips

EcoStruxure™ Augmented Operator Advisor combines contextual and local dynamic information for mobile users, enabling them to experience a fusion of the physical, real-life environment with virtual objects.

### Reduce downtime

Open electrical cabinet doors virtually.

### Speed up operation and maintenance

Find information faster with immediate access in the field to real-time data, user manuals, instructions, diagrams, etc.

### Reduce human errors

Locate the right equipment and guide operators step-by-step to complete maintenance procedures.

Download and try it now

- Visit the App Store or Google Play Store and download the EcoStruxure Augmented Operator Advisor app to your tablet
- Open the app, then log into "Demo" mode (no username or password required)
- Click "Sample" then select the demo Water Plant or Wood Machine, then click 'Scenes' and the start button
- Point the application at the selected image above and points of interest will automatically appear on the screen



# Variable Speed Drives

For code compliance and more energy efficiency

VFD control of motors for pumps, fans and compressors is increasingly a requirement in specification and government regulations. Altivar 212 drives enable you to ensure compliance with requirements and optimize the energy efficiency of the system.

- With a structured programming menu system, the Altivar 212 enables fast commissioning of pumps, fans, and scroll compressors.
- Tested and certified by AHRI standard 1210 (IP) the Altivar 212 drives provide high efficiency and low harmonic performance



Altivar 212 and S-Flex models certified by AHRI for efficiency.



## Scroll Compressor Control

Adapted to all types of motors

Induction, BLDC and PM

Dedicated Functions

- Pre-start management on "RUN"
- Periodic oiling cycle management
- Low speed operation oiling management
- Oil injection valve management for high-speed running

## Asset Protection Functions

- STO (ATV320)
- Overload avoidance
- Overpressure/overtemperature avoidance
- Casing heating for condensation avoidance

## Pump & Fan Control

- Plug and start on basic applications
- More energy efficient motor control
- Compact low harmonic  
~ TDHi <35% (ATV212)
- 98% efficiency

## Operating Functions

- Embedded PID regulator
- Damper control and feedback
- Sleep/Wake
- Catch-on-the-fly

# Variable Speed Drives

Selection guide Schneider Electric ATV 212, 320, 630, SFlex

Step 1: Select your application	<b>Compressors</b>	<b>Scroll, Rotary, Reciprocating</b>	<b>Scroll, Rotary</b>	<b>Scroll, Rotary</b>	<b>Screw, Centrifugal</b>
	<b>Pumps</b>	<b>All</b>	<b>Centrifugal</b>	<b>Centrifugal</b>	<b>All</b>
	<b>Fans</b>	<b>All</b>	<b>All</b>	<b>All</b>	<b>All</b>

Step 2: Select your motor type	<b>Motor Type</b>	BLDC, Induction, PM	BLDC, Induction, PM	BLDC, Induction, PM	Induction, PM
	<b>Motor HP Range</b>	Up to 15kW - 20Hp	Up to 75kW - 100Hp	Up to 75kW - 100Hp	Up to 800kW - 1,000Hp
	<b>Voltage, Phase</b>	240V 1ph-3ph, 480V 3ph, 600V 3ph	240V 3ph, 480V 3ph	240V 3ph, 480V 3ph	240V 3ph, 480V 3ph, 600V 3ph

Step 3: Select your features	<b>Basic</b>	<b>Compact Low Harmonic</b>	<b>Packaged Bypass</b>	<b>Optimum (Premium)</b>
	STO Modbus IP20	Scroll advanced functions Bacnet, Lon, modbus IP21, IP55, UL type 1	ATV212 features Bypass 2 or 3 contactors Full text keypad UL type 12	Advanced application functions Bacnet, Modbus, Ethernet IP Graphic keypad IP21, IP55, UL type 1

Step 4: The right drive for your application	<b>ATV320</b>	<b>ATV212</b>	<b>S-Flex</b>	<b>ATV630, ATV650</b>
				

# S-Flex Enclosed Drive

For outdoor applications

The S-Flex drive revolutionizes harmonic mitigation with its innovative reduced harmonic technology (RHT). Achieved within the diode capacitor and power conversion section of the variable frequency drive, eliminating the need for a line reactor or bus reactor

- Higher equipment efficiency
- Reduced equipment cost
- Fewer points of electrical failure
- Smaller enclosure size
- Lighter weight
- Horsepower range:
  - 1 – 40 hp at 208 VAC and 230 VAC
  - 1 – 100 hp at 460 VAC
- Optional three-phase AC line reactor for line transient protection and even further line harmonic reduction S-Flex drive uses an Altivar 212 drive power converter with RHT and an IGBT inverter with pulse-width modulated output
- Optional LCD text keypad
- Built-in communication: Modbus, BACnet®, Metasys® N2, APOGEE® P1 communication capability, and options for LonWorks®,
- Smoke purge override and fan damper control in both adjustable frequency controller (AFC) and bypass modes of operation
- Simple Hand/Off/Auto and VFD/ByPass selector switch for operational mode control

- Optional drive input disconnect switch provides an input line power disconnect switch between the main power disconnect and the power converter
- Optional line contactor provides an electrically interlocked line contactor between the main power disconnect and the power converter
- Power-on mode red LED indicator
- Bypass mode green LED indicator
- Terminal block for customer's control connections
- Full-voltage bypass contactors
- 100 kA SCCR and full voltage bypass Square D circuit breaker for disconnect and overcurrent protection
- Available in Type 1, 12 and 3R enclosures
- Conduit knockouts on bottom of the enclosure for quick and easy wiring



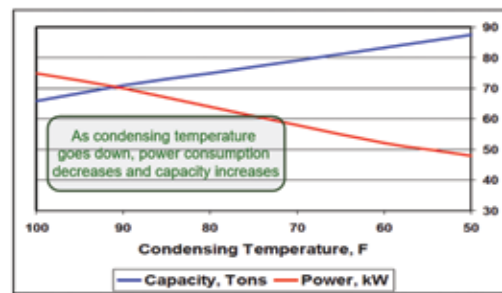
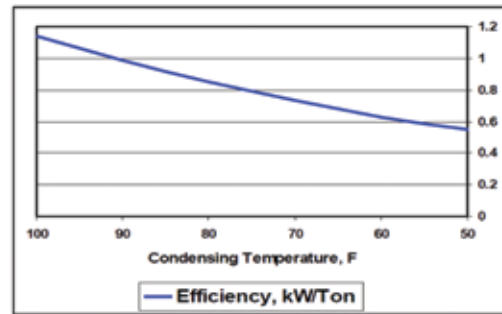
# TM172P for Condenser Control

Peak performance and maximum energy savings

## Are you getting peak performance and maximum energy savings with your Refrigeration System?

With Eliwell's Floating High Pressure Algorithm you'll bring out additional energy savings while delivering peak performance in your refrigeration equipment.

Lower high pressure at the compressor  
+  
Lower condensing temperature at the condenser  
**Energy \$s Saved!**



## Optimize Performance & Energy Usage with M172P - Floating High Pressure Control

### Main characteristics

Optimum efficiency regardless of outdoor air temperature  
Compliance with Energy specifications for new and existing cooling and refrigeration existing equipment  
Precise control of condensers fan with VSD or contactors  
Variable High pressure control according to outside air temperature evolution

Control fan motors frequency and/or on/off state  
Smooth and efficient operation with floating high pressure control by reducing stress on the compressor  
Reduce short cycling of the compressor

### Customer benefits / Performance

- Machine energy consumption reduction by average of 20%
- Machine condenser noise level reduction
- Extended machine life - reduced life cycle cost.



Modcon 172



ATV-122 VSD



S-Flex Enclosed VSD



# NTC, PTC & TC Probes

NTC semi-conductor temperature probes



## NTC Probes

Codes	Description	Tip material	Tip dimensions	Cable type	Isolation	level of protection	Operating temperature	Length	Connector	Control Family
PB691151	NTC 1.5m IP67 6X15 PVC tip -50+110°C black JST	Thermoplastic rubber	6x15 mm	Thermoplastic Rubber	1500 Vac	IP67	-50..120 °C	1.5 Meters	JST	EWPlus-RTN
PB691301	NTC 3.0m IP67 6X15 PVC tip -50+110°C black JST							3.0 Meters		
PB691150	NTC 1.5m IP67 6X15 PVC tip -50+110°C Black							1.5 Meters	Ferrules	any w/screw connection
PB691300	NTC 3.0m IP67 6X15 PVC tip -50+110°C Black							3.0 Meters		
PB8DED11502CO	NTC 1.5m IP68 5x20 TPE tip -50+110°C Grey	Thermoplastic rubber	5x20 mm	Thermoplastic Rubber (ext) Polypropilene (int)	2000 Vac	IP68	-50..110 °C	1.5 Meters	Ferrules	any w/screw connection
PB8DED1150BCO	NTC 1,5m IP68 5x20 TPE tip -50+110°C Grey RAST								RAST	nEW
PB8DED1150CCO	NTC 1,5m IP68 5x20 TPE tip -50+110°C Grey JST								JST	EWPlus-RTN
PB8DED13002CO	NTC 3.0m IP68 5x20 TPE tip -50+110°C Grey							3.0 Meters	Ferrules	any w/screw connection
PB8DED1300BCO	NTC 3.0m IP68 5x20 TPE tip -50+110°C Grey RAST								RAST	nEW
PB8DED1300CCO	NTC 3.0m IP68 5x20 TPE tip -50+110°C Grey JST								JST	EWPlus-RTN
PB8DAE11502CO	NTC 1,5m IP 68 6x20 -50+110°C GRIGIO	Stainless steel AiSi 304	6x20 mm	Thermoplastic Rubber (ext) Polypropilene (int)	2000 Vac	IP68	-50..110 °C	1.5 Meters	Ferrules	any w/screw connection
PB8DAE1150BCO	NTC 1,5m IP68 6x20 SS tip -50+110°C Grey RAST								RAST	nEW
PB8DAE1150CCO	NTC 1.5m IP68 6x20 SS tip -50+110°C Grey JST								JST	EWPlus-RTN
PB8DAE1300BCO	NTC 3,0m IP68 6x20 SS tip -50+110°C RAST							3.0 Meters	RAST	nEW
PB8DAE1300CCO	NTC 3.0m IP68 6x20 SS tip -50+110°C Grey JST								JST	EWPlus-RTN
PB8TPD4150BE0	NTC 1.5m 6x25 PVC tip -50+110°C RAST								Thermoplastic rubber	6x25 mm
PB8TPD4300BE0	NTC 3.0m 6x25 PVC tip -50+110°C RAST	3.0 Meters	RAST	nEW						
SN8DEP12002CO	Food Probe simulator, 2M cable, -50+110°C	Thermoplastic rubber	∅ 110 mm	Thermoplastic Rubber (ext) Polypropilene (int)	2000 Vac	-50..110 °C	2.0 Meters	Ferrules	any w/screw connection	
SN8DEP15002CO	Food Probe simulator, 5M cable, -50+110°C						5.0 Meters	Ferrules	any w/screw connection	

## PTC probes

Codes	Description	Tip material	Tip dimensions	Cable type	Isolation	level of protection	Operating temperature	Length	Connector	Control Family
PB750A1500	PTC 6X40 1.5m SILICONE	Stainless steel AiSi 304	6x40 mm	Silicone	2000 Vac	IP67	-50..120 °C	1.5 Meters	Ferrules	M172 EWCM 9000
PB750A3000	PTC 6X40 1.5m SILICONE							3.0 Meters		

## Pt1000 probes

Codes	Description	Tip material	Tip dimensions	Cable type	Isolation	level of protection	Operating temperature	Length	Connector	Control Family
PB950A2500	PT1000 6X40 2.5m SILICONE	Stainless steel AiSi 304	6x40 mm	Silicone	2000 Vac	IP67	-50..200 °C	2.5 Meters	Ferrules	M171, M172 EWCM, EEV Driver

# Humidity & Temperature Sensors


Monitoring and managing asset performance

## References

Designation	Use Applications	Description	Reference
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### Measurement accessories

#### Temperature control


<b>NTC probe</b> 	Outside air ■ Temperature control: -50...100 °C (-58...212 °F)	- IP 65 - Wall mounting - NTC 10kOhm /25°C	<b>TM1STNTCW69755</b>
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<b>NTC probe</b> 	Inside air (room) ■ Temperature control: -25...40 °C (-13...104 °F)	- IP 30 - Indoor wall mounting - NTC 10kOhm /25°C	<b>TM1STNTCWN75750</b>
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#### Humidity control

<b>Humidity probe</b> 	Multi-purpose ■ Humidity control: 0...100%	- IP 65 - Wall mounting - 4-20 mA	<b>TM1SHC4</b>
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#### Humidity & temperature control

<b>Humidity &amp; temperature probes</b> 	Multi-purpose ■ Humidity control: 0...100% ■ Temperature control: -40...60 °C (-40...140 °F)	- IP 65 - Wall mounting - 4-20 mA, NTC 10kOhm /25°C	<b>TM1SHTCN4</b>
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<b>Humidity &amp; temperature probes</b> 	Multi-purpose ■ Humidity control: 0...100% ■ Temperature control: -40...60 °C (-40...140 °F)	- IP 65 - Wall mounting - 2x 4-20 mA	<b>TM1SHTCC4</b>
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<b>Humidity &amp; temperature probes</b> 	Multi-purpose	- IP 65	<b>TM1SHTM4</b>
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# EWPA 007 - 030 - 050

Pressure transducers

INTRODUCTION



SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL

## Applications

EWPA pressure transducers are sensors capable of transmitting a signal by way of a current output to the measuring instruments with which they are connected.

Technical data	EWPA 007	EWPA 010	EWPA 030	EWPA 050
Operating range	0..7 Bar g	0..10 Bar g	0..30 Bar g	0..50 Bar g
Output signal	2 wires 4...20 mA			
Overload	2 times pressure range			
Power supply	8...32V			
Accuracy	± 0.5% FS max (linearity, hysteresis, repeatability)			
Compensated temperature	0...120°F			
Electrical connections	2 m cable with Packard connector			
Mechanical connections	male connector / female connector ¼ SAE (7/16"-20UNF)			
Operating temperature	-40...212°F			
Global error at T 0...50°C	max. ± 1.0% FS			
Global error at T -10...80°C	max. ± 1.5 FS			
Response time	(0...99%) <5ms			
Material exposed to environment	AISI 316L Viton outer seal			
Enclosure rating	Packard: IP67 cable: IP54			

Codes	Description	Fitting	Electrical connection
TD24A007	EWPA 007	Male 1/4 SAE (7/16 20UNF)	Packard
TD24A030	EWPA 030		
TD24A050	EWPA 050		
TD34A007	EWPA 007	Female 1/4 SAE (7/16 20UNF)	
TD34A010	EWPA 010		
TD34A030	EWPA 030		
TD34A050	EWPA 050		
CO00096	2 meter cable		Packard



# EWPA 007 - 030 - 050

Ratiometric pressure transducers



Codes	Description	Fitting	Electrical connection
TD42A010	EWPA 007	Female 1/4 SAE (7/16 20UNF)	Packard
TD42A030	EWPA 030		
TD42A050	EWPA 050		
CO000096	2 mt. Cable		Packard

## Applications

EWPA ratiometric pressure transducers are sensors capable of transmitting a signal by way of a voltage output to the measuring instruments with which they are connected. They offer accurate performance across a wide temperature range.

Technical data	EWPA 010	EWPA 030	EWPA 050
Operating range at 0.5...4.5V	0...10 bar (relative)	0...30 bar (relative)	0...50 bar (relative)
Output signal	3 wires 0.5...4.5V ratiometric	3 wires 0.5...4.5V ratiometric	3 wires 0.5...4.5V ratiometric
Overload	2.5 times pressure range	2.5 times pressure range	2.5 times pressure range
Power supply	5.0Vdc ± 0.5V	5.0VAC ± 0.5V	5.0VAC ± 0.5V
Accuracy	± 0.25% FS max (linearity, hysteresis, repeatability)	± 0.25% FS max (linearity, hysteresis, repeatability)	± 0.25% FS max (linearity, hysteresis, repeatability)
Energy consumption	max 8 mA	max 8 mA	max 8 mA
Load resistance	> 5KΩ	> 5KΩ	> 5KΩ
Electrical connections	2 m cable with packard connector	2 m cable with packard connector	2 m cable with packard connector
Mechanical connections	female connector ¼ SAE (7/16"-20UNF)	female connector ¼ SAE (7/16"-20UNF)	female connector ¼ SAE (7/16"-20UNF)
Operating temperature	-40...257°F	-40...257°F	-40...257°F
Global error at T 0...50°C	max. ± 1.0% FS	max. ± 1.0% FS	max. ± 1.0% FS
Global error at T -10...80°C	max. ± 1.5% FS	max. ± 1.5% FS	max. ± 1.5% FS
Response time	(0...99%) <5ms	(0...99%) <5ms	(0...99%) <5ms
Material exposed to environment	AISI 316L Viton outer seal	AISI 316L Viton outer seal	AISI 316L Viton outer seal
Enclosure rating	IP67	IP67	IP67

## Drip protection - Plexiglass protection

Protections for 32x74 controllers



## Applications

These accessories can be used with devices in the ID, IC, IDPlus, EW, EWPlus series.

The drip protection, applied to the rear of the instrument, are a valid support in protecting electrical connectors against dripping liquid.

The plexiglass accessory, equipped with a surface easy to clean, is particularly suitable for use in outdoor environments or characterized by a high degree of dirt.

Code	Description	Details
ZZ000270	Drip protection	Pack of 20
ZZ000272	Plexiglass protection for controllers 32x74	Pack of 10



### Applications

D16P are electromechanical pressure controllers for high and low pressure, equipped with an SPDT switch that closes and opens as the pressure increases or decreases.

### Technical data

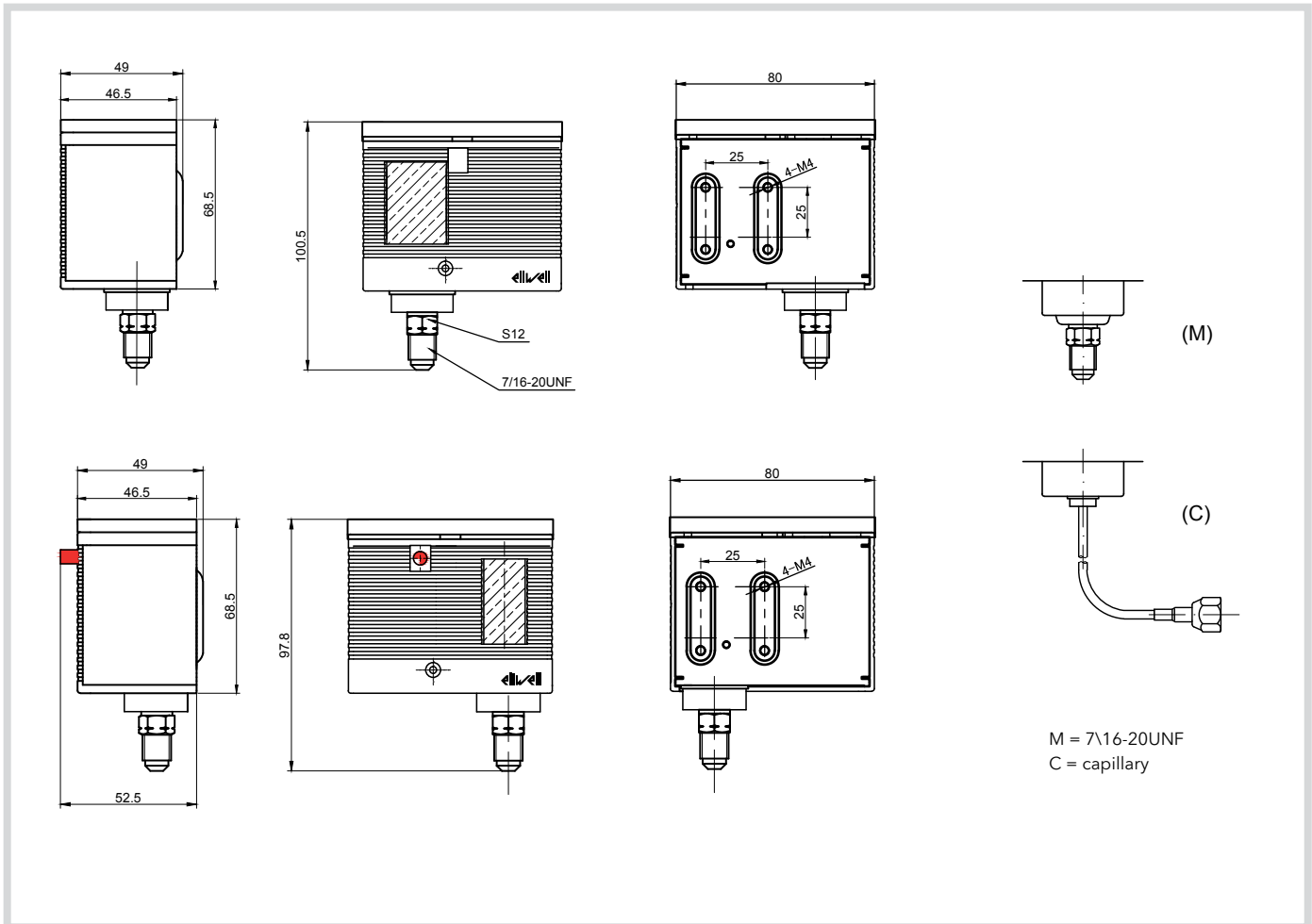
### D16P

Compatible refrigerants	R22, R407A, R407C, R134a, R404A, R410A, **	
Maximum Temperature System (TS)	120 °C (248 °F)	
Working ambient temperature	-40 ...65 °C (-40 ... 149 °F)	
Storage and transport conditions	-40 ...70 °C (-40 ... 158 °F)	10...90 %RH (no condensing)
Contact configuration	SPDT	
Electrical load and rated current	<p><b>ENEC</b></p> 16 (16) A resistive inductive 240 Vac 1(1) A resistive inductive 240 Vac	<p><b>UL</b></p> 16 FLA - 96 LRA 240 Vac 3 HP 240 Vac 2 HP 120 Vac
Degree of protection provided by enclosure	IP44 automatic reset with top cover IP30 manual reset with top cover IP20 without top cover	
Maximum Pressure System (PS)	<p><b>RANGE</b></p> -0.3 ... 7 bar (-4.35 ... 101 psi) 7 ... 20 bar (101 ... 290 psi) 7 ... 31 bar (101 ... 449 psi) 10 ... 45 bar (145 ... 652 psi)	<p><b>PS</b></p> 17 bar (246 psi) 25 bar (362 psi) 35 bar (507 psi) 50 bar (725 psi)
Burst Pressure	<p><b>RANGE</b></p> -0.3 ... 7 bar (-4.35 ... 101 psi) 7 ... 20 bar (101 ... 290 psi) 7 ... 31 bar (101 ... 449 psi) 10 ... 45 bar (145 ... 652 psi)	<p><b>BURST PRESSURE</b></p> 80 bar (1160 psi) 100 bar (1450 psi) 140 bar (2030 psi) 200 bar (2900 psi)
Mounting	Threaded holes on back of the case for M4x5 screws	
Adjustment	hexagonal headshape and cross profile screws, for range and differential	

\*\* please contact Eliwell sales dept. for not listed refrigerants.

code	type	pressure range bar (psi)	differential bar (psi)	reset	fitting	accessories included in standard individual packing
D16P07A01MS200	Low press control auto reset	-0.3...7 (-0.4...100)	Adjustable 0.6...4 (9...58)	Automatic	Male 7/16-20UNF	top cover, knob, Instruction Sheet
D16P07A01CS200	Low press control auto reset	-0.3...7 (-0.4...100)	Adjustable 0.6...4 (9...58)	Automatic	Capillary & Flare Nut 1mt	top cover, knob, Instruction Sheet
D16P07M01MS200	Low press control manual reset	-0.3...7 (-0.4...100)	fixed >= 0.6 (9)	Manual	Male 7/16-20UNF	top cover, knob, Instruction Sheet
D16P07M01CS200	Low press control manual reset	-0.3...7 (-0.4...100)	fixed >= 0.6 (9)	Manual	Capillary & Flare Nut 1mt	top cover, knob, Instruction Sheet
D16P20A01MS200	Fan press control auto reset	7...20 (100...290)	Adjustable 1.5...6 (21...87)	Automatic	Male 7/16-20UNF	top cover, knob, Instruction Sheet
D16P20A01CS200	Fan press control auto reset	7...20 (100...290)	Adjustable 1.5...6 (21...87)	Automatic	Capillary & Flare Nut 1mt	top cover, knob, Instruction Sheet
D16P30A01MS200	high press control auto reset	7...31 (100...450)	Adjustable 2...8 (35...115)	Automatic	Male 7/16-20UNF	top cover, knob, Instruction Sheet
D16P30A01CS200	high press control auto reset	7...31 (100...450)	Adjustable 2...8 (35...115)	Automatic	Capillary & Flare Nut 1mt	top cover, knob, Instruction Sheet
D16P30M01MS200	high press control man. reset	7...31 (100...450)	fixed >= 3.0 (45)	Manual	Male 7/16-20UNF	top cover, knob, Instruction Sheet
D16P30M01CS200	high press control manual reset	7...31 (100...450)	fixed >= 3.0 (45)	Manual	Capillary & Flare Nut 1mt	top cover, knob, Instruction Sheet
D16P45A01MS200	high press control auto reset	10...45 (145...650)	Adjustable 5...15 (70...215)	Automatic	Male 7/16-20UNF	top cover, knob, Instruction Sheet
D16P45M01MS200	high press control manual reset	10...45 (145...650)	fixed >= 4.0 (58)	Manual	Male 7/16-20UNF	top cover, knob, Instruction Sheet

### Dimensions





### Applications

D17P are electromechanical dual pressure controllers for high and low pressure, equipped with 2 independent SPDT switches that closes and opens as the pressure increases or decreases.

### Technical data

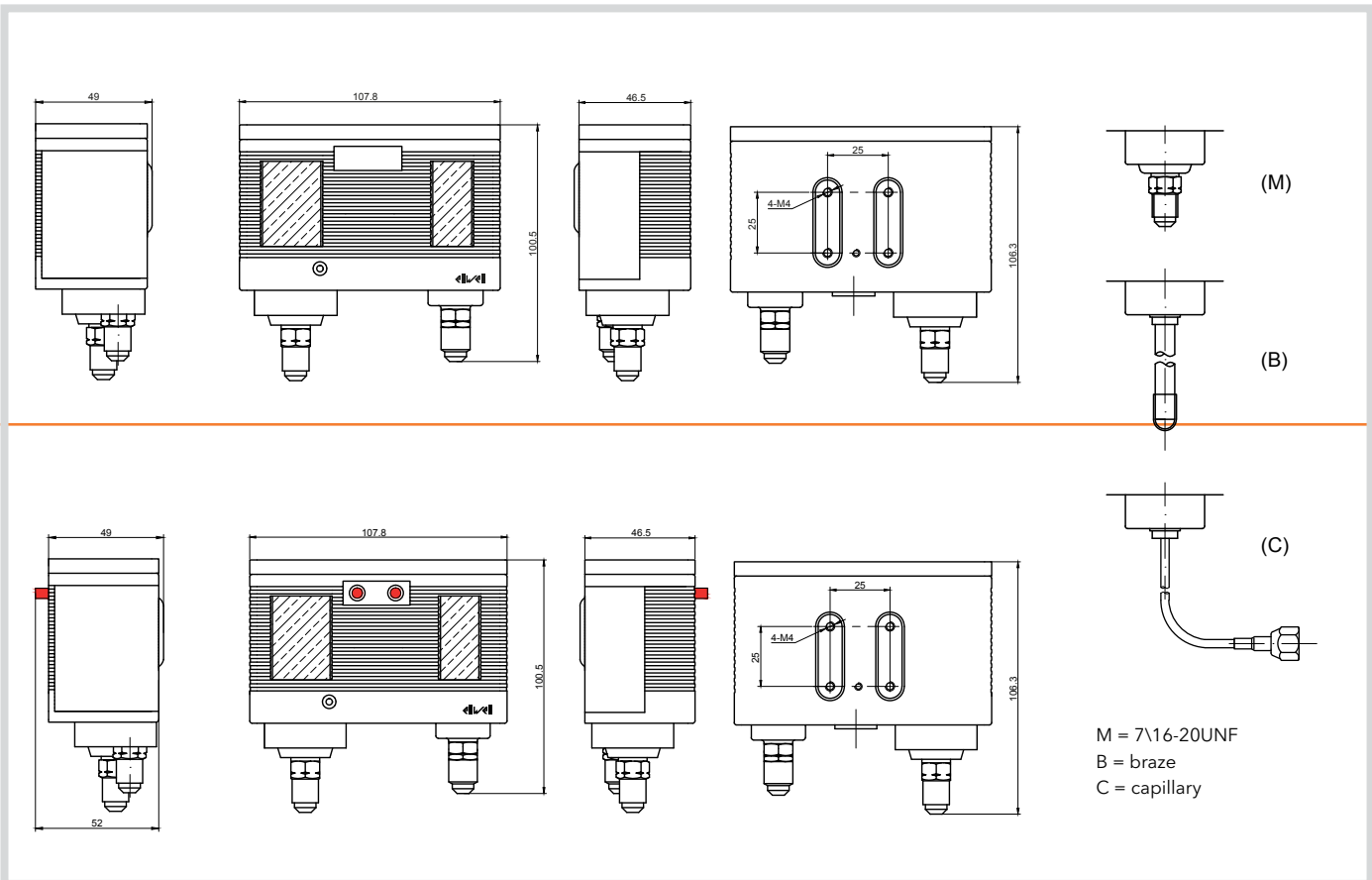
### D17P

Compatible refrigerants	R22, R407A, R407C, R134a, R404A, R410A **	
Maximum Temperature System (TS)	120 °C (248 °F)	
Working ambient temperature	-40 ...65 °C (-40 ... 149 °F)	
Storage and transport conditions	-40 ...70 °C (-40 ... 158 °F) 10...90 %RH (no condensing)	
Contact configuration	2 x SPDT	
Electrical load and rated current	<p><b>ENEC</b></p> <p>16 (16) A resistive inductive 240 Vac</p> <p>1(1) A resistive inductive 240 Vac</p>	<p><b>UL</b></p> <p>16 FLA - 96 LRA 240 Vac</p> <p>3 HP 240 Vac</p> <p>2 HP 120 Vac</p>
Degree of protection provided by enclosure	<p>IP44 automatic reset with top cover</p> <p>IP30 manual reset with top cover</p> <p>IP20 without top cover</p>	
Maximum Pressure System (PS)	<p><b>RANGE</b></p> <p>-0.3 ... 7 bar (-4.35 ... 101 psi)</p> <p>7 ... 31 bar (101 ... 449 psi)</p> <p>10 ... 45 bar (145 ... 652 psi)</p>	<p><b>PS</b></p> <p>17 bar (246 psi)</p> <p>35 bar (507 psi)</p> <p>50 bar (725 psi)</p>
Burst Pressure	<p><b>RANGE</b></p> <p>-0.3 ... 7 bar (-4.35 ... 101 psi)</p> <p>7 ... 31 bar (101 ... 449 psi)</p> <p>10 ... 45 bar (145 ... 652 psi)</p>	<p><b>BURST PRESSURE</b></p> <p>80 bar (1160 psi)</p> <p>140 bar (2030 psi)</p> <p>200 bar (2900 psi)</p>
Mounting	Threaded holes on back of the case for M4x5 screws	
Adjustment	hexagonal headshape and cross profile screws, for range and differential	

\*\* please contact Eliwell sales dept. for not listed refrigerants.

code	type	pressure range bar (psi)	differential bar (psi)	reset	fitting	accessories included in standard individual packing
D17P30AA1MS100	Dual press control auto-auto reset	-0.3...7; 7...31 (-0.4...100; 100...450)	LP Adjustable 0.6...4 (9...58); HP fixed >= 3.0 (45)	Automatic - Automatic	Male 7/16-20UNF	top cover, Instruction Sheet
D17P30AA1CS100	Dual press control auto-auto reset	-0.3...7; 7...31 (-0.4...100; 100...450)	LP Adjustable 0.6...4 (9...58); HP fixed >= 3.0 (45)	Automatic - Automatic	Capillary & Flare Nut 1mt	top cover, Instruction Sheet
D17P30AM1MS100	Dual press control auto-manual reset	-0.3...7; 7...31 (-0.4...100; 100...450)	LP Adjustable 0.6...4 (9...58); HP fixed >= 3.0 (45)	Automatic - Manual HP	Male 7/16-20UNF	top cover, Instruction Sheet
D17P30AM1CS100	Dual press control auto-manual reset	-0.3...7; 7...31 (-0.4...100; 100...450)	LP Adjustable 0.6...4 (9...58); HP fixed >= 3.0 (45)	Automatic - Manual HP	Capillary & Flare Nut 1mt	top cover, Instruction Sheet
D17P30MM1MS100	Dual press control manual-manual reset	-0.3...7; 7...31 (-0.4...100; 100...450)	LP fixed 0.6 (9); HP fixed >= 3.0 (45)	Manual - Manual	Male 7/16-20UNF	top cover, Instruction Sheet
D17P30MM1CS100	Dual press control manual-manual reset	-0.3...7; 7...31 (-0.4...100; 100...450)	LP fixed 0.6 (9); HP fixed >= 3.0 (45)	Manual - Manual	Capillary & Flare Nut 1mt	top cover, Instruction Sheet
D17P45AA1MS100	Dual press control auto-auto reset	-0.3...7; 10...45 (-0.4...100; 145...650)	LP Adjustable 0.6...4 (9...58); HP fixed >= 4.0 (58)	Automatic - Automatic	Male 7/16-20UNF	top cover, Instruction Sheet
D17P45AM1MS100	Dual press control auto-manual reset	-0.3...7; 10...45 (-0.4...100; 145...650)	LP Adjustable 0.6...4 (9...58); HP fixed >= 4.0 (58)	Automatic - Manual HP	Male 7/16-20UNF	top cover, Instruction Sheet

### Dimensions



# D16T

Adjustable temperature controllers

INTRODUCTION



SOLUTIONS FOR SMALL STORES

## Applications

D16T are electromechanical temperature controllers equipped with an SPDT switch that closes and opens as the temperature increases or decreases.

## Technical data

Working ambient temperature  
Storage and transport conditions  
Contact configuration  
Electrical load and rated current

## D16T

-40 ...65 °C (-40 ... 149 °F)  
-40 ...70 °C (-40 ... 158 °F) 10...90 %RH (no condensing)  
SPDT

### ENEC

16 (16) A resistive inductive 240 Vac  
1(1) A resistive inductive 240 Vac

### UL

16 FLA - 96 LRA 240 Vac  
3 HP 240 Vac  
2 HP 120 Vac

Degree of protection provided by enclosure

IP44 automatic reset with top cover

IP30 manual reset with top cover

IP20 without top cover

Mounting

Threaded holes on back of the case for M4x5 screws

Adjustment

hexagonal headshape and cross profile screws, for range and differential

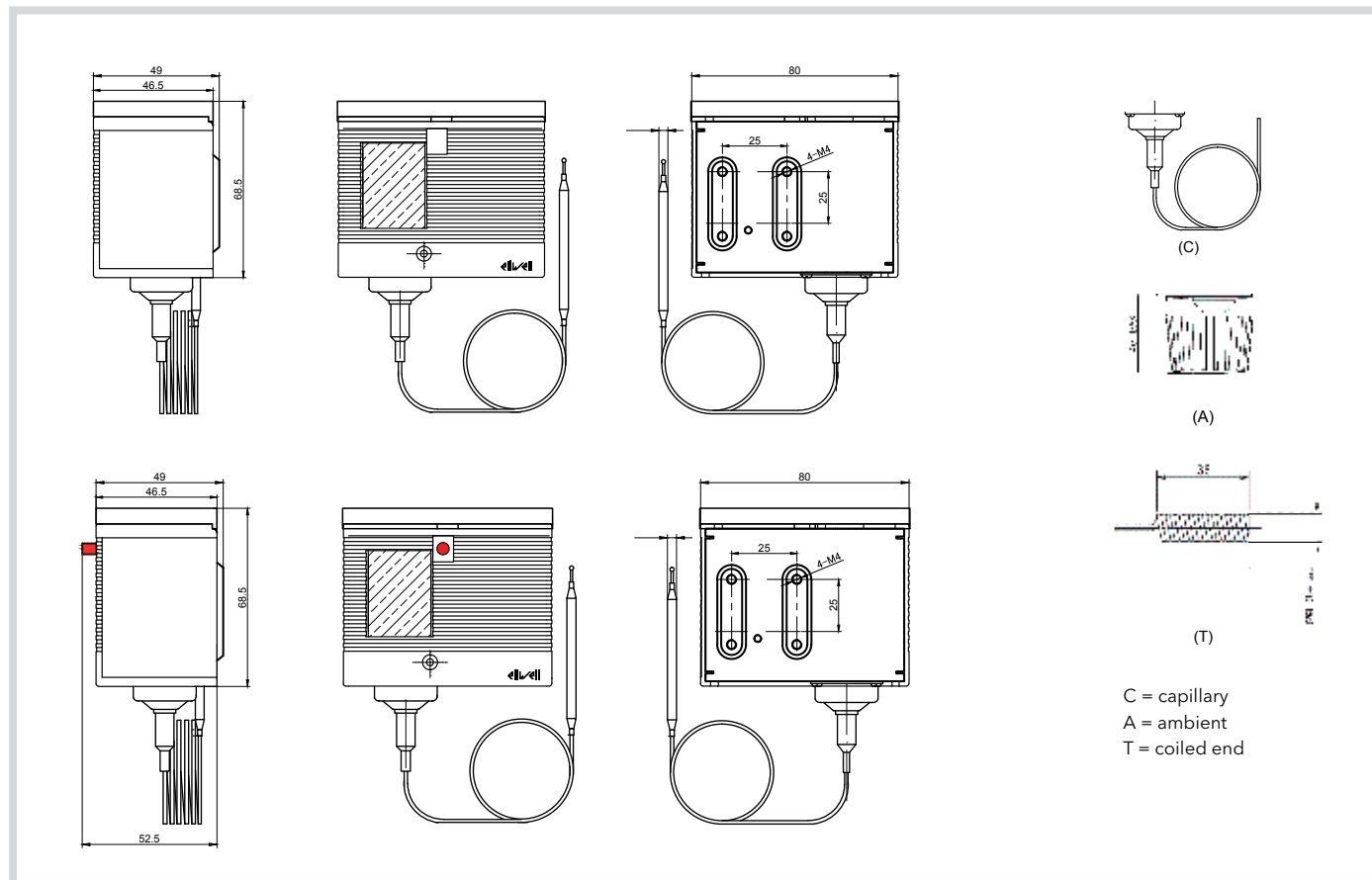
## Dimensions

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL



code	type	temperature range °C (°F)	differential °C (°F)	reset	sensor type	sensor length	accessories included in standard individual packing
D16T15AAC2S200	Temperature control auto-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	straight capillary	2m	top cover, knob, Instruction Sheet
D16T15AAC3S200	Temperature control auto-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	straight capillary	3m	top cover, knob, Instruction Sheet
D16T15AAC6S200	Temperature control auto-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	straight capillary	6m	top cover, knob, Instruction Sheet
D16T15AAC1S200	Temperature control auto-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	straight capillary	12m	top cover, knob, Instruction Sheet
D16T15AFC2S200	Temperature control auto-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	automatic	straight capillary	2m	top cover, knob, Instruction Sheet
D16T15AFC3S200	Temperature control auto-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	automatic	straight capillary	3m	top cover, knob, Instruction Sheet
D16T15AFC6S200	Temperature control auto-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	automatic	straight capillary	6m	top cover, knob, Instruction Sheet
D16T15AFC1S200	Temperature control auto-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	automatic	straight capillary	12m	top cover, knob, Instruction Sheet
D16T15MFC2S200	Temperature control manual-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	manual	straight capillary	2m	top cover, knob, Instruction Sheet
D16T15MFC3S200	Temperature control manual-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	manual	straight capillary	3m	top cover, knob, Instruction Sheet
D16T15MFC6S200	Temperature control manual-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	manual	straight capillary	6m	top cover, knob, Instruction Sheet
D16T15MFC1S200	Temperature control manual-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	manual	straight capillary	12m	top cover, knob, Instruction Sheet
D16T15AAT2S200	Temperature control manual-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	coiled end Ø 9.3x40mm	2mt overall	top cover, knob, Instruction Sheet
D16T15MFT2S200	Temperature control manual-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	manual	coiled end Ø 9.3x40mm	2mt overall	top cover, knob, Instruction Sheet
D16T15AAB2S200	Temperature control auto-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	bulb Ø 6 x 70mm	2mt overall	top cover, knob, Instruction Sheet
D16T15AAA0S200	Temperature control auto-reset	-20\+15 (-4\+59)	adjustable 2...5 (3.5...9)	automatic	cage Ø 40mm	40mm	top cover, knob, Instruction Sheet
D16T15AFA0S200	Temperature control auto-reset	-20\+15 (-4\+59)	fixed 2 (3.5)	automatic	cage Ø 40mm	40mm	top cover, knob, Instruction Sheet
D16T25AAC2S200	Temperature control auto-reset	-10\+25 (+14\+77)	adjustable 5...10 (9...18)	automatic	straight capillary	2m	top cover, knob, Instruction Sheet
D16T25AAC3S200	Temperature control auto-reset	-10\+25 (+14\+77)	adjustable 5...10 (9...18)	automatic	straight capillary	3m	top cover, knob, Instruction Sheet
D16T25AAT2S200	Temperature control auto-reset	-10\+25 (+14\+77)	adjustable 5...10 (9...18)	automatic	coiled end Ø 9.3x40mm	2mt overall	top cover, knob, Instruction Sheet
D16T25AAB2S200	Temperature control auto-reset	-10\+25 (+14\+77)	adjustable 5...10 (9...18)	automatic	bulb Ø 6 x 70mm	2mt overall	top cover, knob, Instruction Sheet
D16T25AAA0S200	Temperature control auto-reset	-10\+25 (+14\+77)	adjustable 5...10 (9...18)	automatic	cage Ø 40mm	40mm	top cover, knob, Instruction Sheet
D16T25AFA0S200	Temperature control auto-reset	-10\+25 (+14\+77)	fixed 2 (3.5)	automatic	cage Ø 40mm	40mm	top cover, knob, Instruction Sheet
D16T40AAA0S200	Temperature control auto-reset	+5\+40 (+41\+104)	adjustable 2...5 (3.5...9)	automatic	cage Ø 40mm	40mm	top cover, knob, Instruction Sheet
D16T40AAB2S200	Temperature control auto-reset	+5\+40 (+41\+104)	adjustable 2...5 (3.5...9)	automatic	bulb Ø 10 x 80mm	2mt overall	top cover, knob, Instruction Sheet
D16T05AAT2S200	Temperature control auto-reset	-40\+5 (-40\+23)	adjustable 2...5 (3.5...9)	automatic	coiled end Ø 9.3x40mm	2mt overall	top cover, knob, Instruction Sheet

# Accessories D Controls

Accessories for D pressure and temperature controllers

INTRODUCTION

SOLUTIONS FOR SMALL STORES

SOLUTIONS FOR LARGE STORES

VARIABLE SPEED DRIVES

SENSORS

ELECTROMECHANICAL



①



②



④



⑤

Code	Description	Note
<b>D00P00FN110100</b>	① D controls coupling 1.0mt w/o valve	D16P-D17P only
<b>D00P00FN115100</b>	D controls coupling 1.5mt w/o valve	D16P-D17P only
<b>D00A00BF100100</b>	② D controls flat mounting bracket	
<b>D00A00BA100100</b>	③ D controls angle mounting bracket	
<b>D00A00TC116100</b>	④ D16 top cover	
<b>D00A00TC117100</b>	⑤ D17 top cover	
<b>D00A00KN100100</b>	⑥ D controls adjusting knob	
<b>D00T0MCC100100</b>	⑦ D controls capillary clip metal	D16T only



# Accessories

# DeviceManager

Controller configuration software



Codes	Descr.
<b>TM171ADMI</b>	M171Opt. Programmable cable
<b>DMI1003002000</b>	W/RTN Device Manager

## Applications

**DeviceManager** is a Windows software used to manage and for the first installation of Eliwell devices. The software can be used to create and save parameter mapping and transfer it to and from the controller with a few clicks.

**DeviceManager** needs the USB communication interface **DeviceManager Interface (DMI)** to communicate with controllers directly and is compatible with Unicard USB and Multi Function Key to transfer maps, parameters and controller firmware updating.

## Features

Graphic interface
Eliwell instrument parameter management
Real-time variable monitoring and management

## System requirements

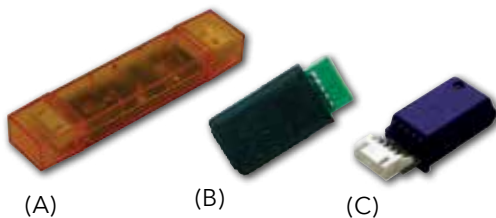
	DeviceManager
Operating system:	<ul style="list-style-type: none"> <li>Windows XP Pro SP2, Italian and English.</li> <li>Windows XP Home SP2, Italian and English.</li> <li>Windows 2000 Professional SP4, Italian and English.</li> <li>Windows 7 Premium, Windows 7 Professional, Windows 7 Ultimate, versions 32bit, Italian-English</li> <li>Windows 10</li> </ul>
Software components required besides operating system:	<ul style="list-style-type: none"> <li>.NET Framework 2.0</li> </ul>
Minimum hardware:	<ul style="list-style-type: none"> <li>graphics resolution 1024x768</li> <li>700MHz CPU</li> <li>RAM 256MB</li> <li>HD 1GB</li> <li>Mouse or equivalent navigation system</li> </ul>
Space required on disk:	Approx. 500 MB for normal installation (2 languages, 50 models)

## Accessories

Code	Description	Details
CO111127	TTL cable	3.3' reinforced cable
COLV00016200	USB-A/A 2MT extension lead	Length 2m

## Unicard - Copy Card - Multi Function Key

Memory for fast configuration and updating of controllers



Codes	Descr.
<b>CCAQBHT00UU00</b>	(A) EW + Unicard
<b>CCOS00A00M000</b>	(B) EW + Copycard
<b>TM171AMFK</b>	(C) M171 Opt. Programming stick
<b>CCOBBOT008004</b>	nEW interface and copycard

## Applications

The new USB/TTL Unicard is a memory device for rapid parameter configuration/duplication, specifically designed for controllers in the IDPlus family.

By downloading the **DeviceManager** software from the [www.eliwell.com](http://www.eliwell.com) website, maps for instruments in the ID and IDPlus families can be read and written on the Unicard device without having to use other interfaces/licences.

Copy Card is a memory device for rapid Eliwell controller parameter configuration/duplication. Multi Function Key is used with **DeviceManager** to transfer maps, parameters and controller firmware updating.

## Common features

Unicard has a **standard USB port** for connection to the most widely-used power supply units and adapters on the market (mains-powered, machine-powered, battery-powered, etc.).

Updating device parameter values
Updating device firmware/applications



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