

IEV12/14D

Drivers for the control of unipolar EEV

PN 11/18 JUNE



Dixell presents new **IEV** drivers designed for the control of the **unipolar** motorized expansion valves. The IEV controller family enables optimal control of the unit from superheating, ensuring maximum machine performance in all operating conditions, and thus helping to improve energy efficiency.

The driver is available as **IEV12D** and **IEV14D** models for the control of one or two expansion valves and, using a proper configuration, you can set the operation in stand-alone mode or in combination with **IC100 & IC200 EVO** series; select the valve model and set the main operating parameters (PID control, set point value of MOP, LOP...).

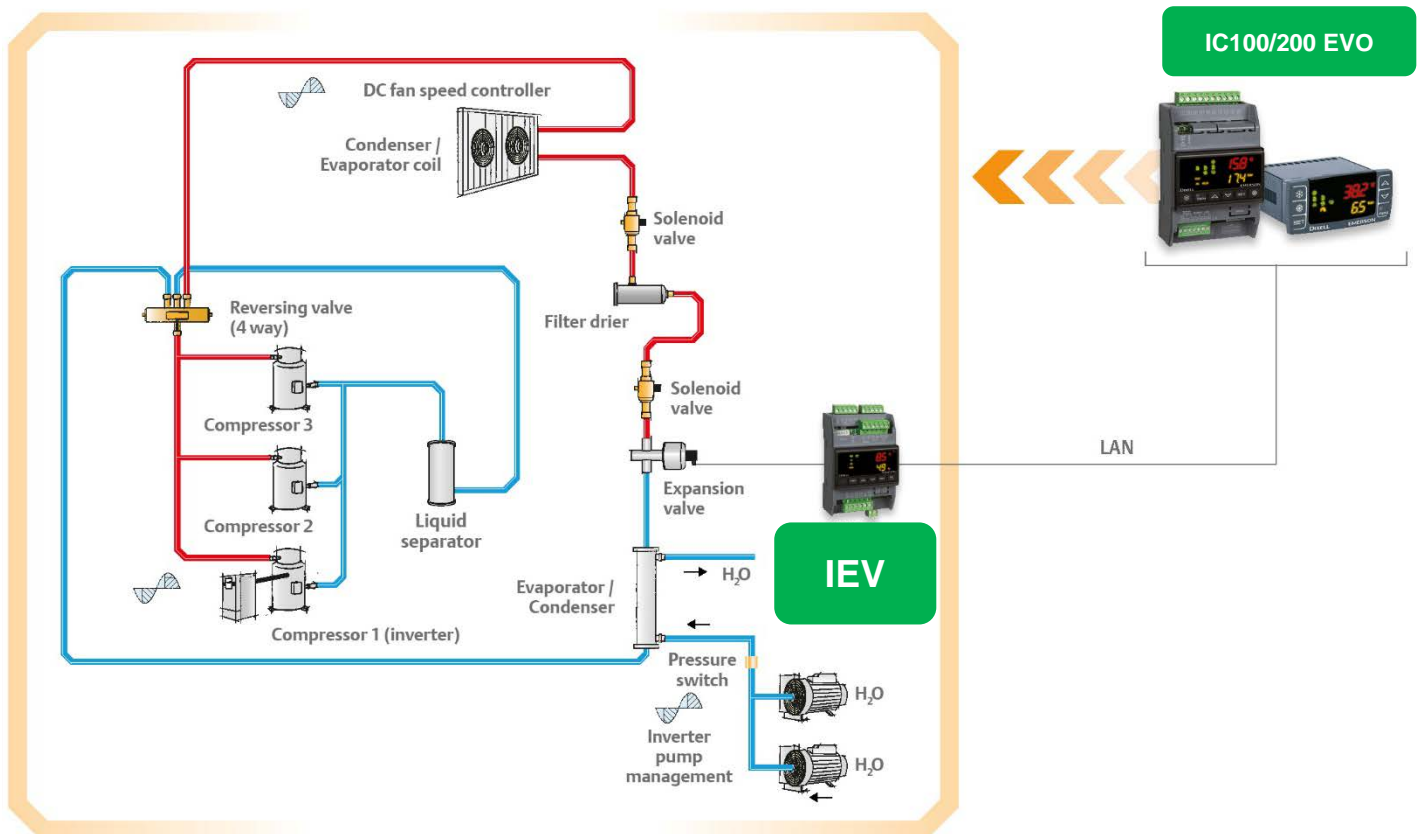
1. Main applications

The IEV driver is used for air conditioning in all those applications where it is necessary to control the superheat of the refrigerant.

Thanks to the two available models it can be used for chillers or heat pumps:

- single circuit with two-way valve (IEV12D);
- single circuit with mono-directional valves, one for the cooling mode and one for the heating mode (IEV14D);
- bi-circuits with two-way valves (IEV14D).

1.1 Application for single circuit heat pump with 3 compressors



2. Main features

2.1 Flexibility

The IEV valve driver can be used in a stand-alone operation or in combination with an IC100 or IC200 EVO series parametric controller.

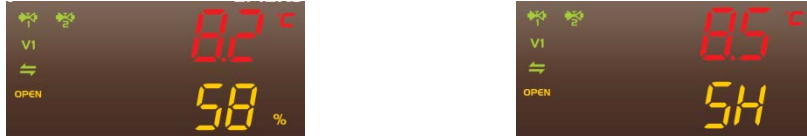
The stand-alone mode allows its use in existing applications, in case of replacement of the driver or system retrofit.

The digital inputs can enable regulation and the selection of the summer or winter operation mode, allowing the driver to work even if there's no serial connection with the controller of the chiller or of the heat pump.

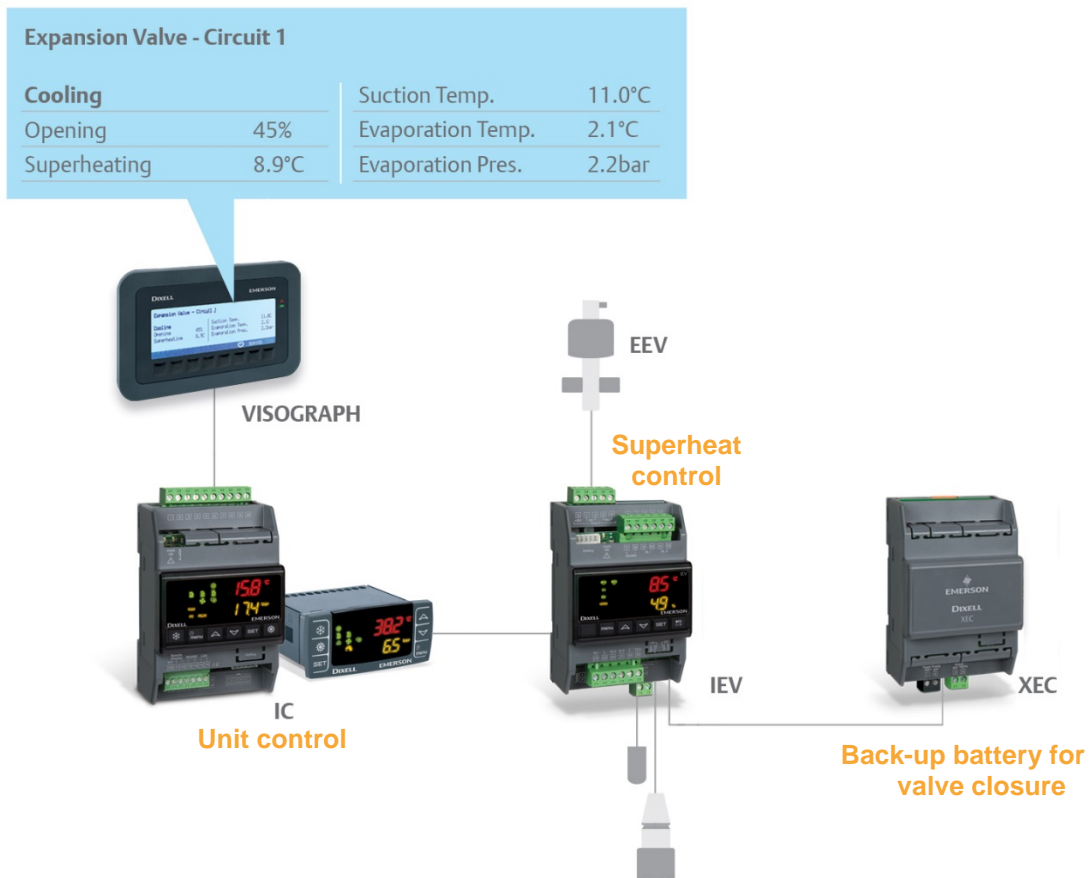
If used in combination with IC100 or IC200 EVO (via LAN), the system management is complete thanks to the possibility to adjust the unit and to control the superheat; in this way the total synchronism between the two devices is guaranteed, in case of ordinary operations, or of alarm or critical situations. In addition, this configuration requires a single pressure transducer, shared among unit settings (ventilation control, defrost, low pressure alarm) and superheat calculation.

2.2 User interface

The double-digit display lets you see the superheat value and the percentage of valve opening (the user can choose the kind of data to display via appropriate parameters); it is also possible to read, via menu navigation, all the main operating data such as: evaporation temperature, superheated gas temperature, evaporation pressure, superheat set point, percentage valve opening, manual or auto-adaptive operation, in addition to all alarm messages or critical operation warnings.



In systems requiring the use of IC100 or IC200 EVO, connected both to IEV and to Visograph 2.0 terminal, the data concerning the functioning of the driver can be viewed in a full and detailed way on Visograph interface.



2.3 High compatibility with major refrigerants

The selection of the gas used in the system is enabled via an appropriate parameter; the user can choose among the main gases for air conditioning applications; for example: R407c, R410a, R1234ZE and CO₂, gas used more and more frequently in the low environmental impact systems.



2.4 Supercap

The IEV valve driver can be connected to the **XEC Supercap** module to enable the closing of the valve in case of power failure, thus preventing the migration of liquid from the condenser to the evaporator; this would damage the compressor at its restart.

The use of the Supercap module allows to remove the solenoid valve from the liquid line.

2.5 Functionality

2.5.1 PID or autoadaptive control

Two different control types are available: **manual PID** or **auto-adaptive**.

The manual PID adjustment, which needs the setting of the PID control parameters by the user, allows to adapt and refine the adjustment according to the features of the plant, even if perturbed by variations in the operating conditions (for example pump heat with defrosting).

The auto-adaptive control does not require the setting of PID parameters as it is automatically calculated by the driver; this adjustment can be used on systems where the working conditions are stable, a situation that allows the driver to find the optimal value for the adjustment parameters.

2.5.2 PID parameters for summer or winter adjustment

The IEV valve driver allows to **adjust the parameters of the PID control**, for both summer and winter settings. This distinction ensures greater control accuracy regardless of the working mode.

2.5.3 High and low superheating control, MOP and LOP

The driver, in addition to superheat control, in case of critical operation due to high superheating, low superheating, MOP or LOP, enables the controls necessary for the restoration of optimal regulation conditions.

2.5.4 Alarm relay

The driver has two relays for alarm signaling or, through appropriate configuration of the parameters, for the critical operating situations (MOP, LOP, high and low superheating).

2.5.5 Serial connection

The **RS485** serial connection allows to connect the IEV driver to a PC for parameters programming through **Wizmate software** or to the **XWEB monitoring system**.

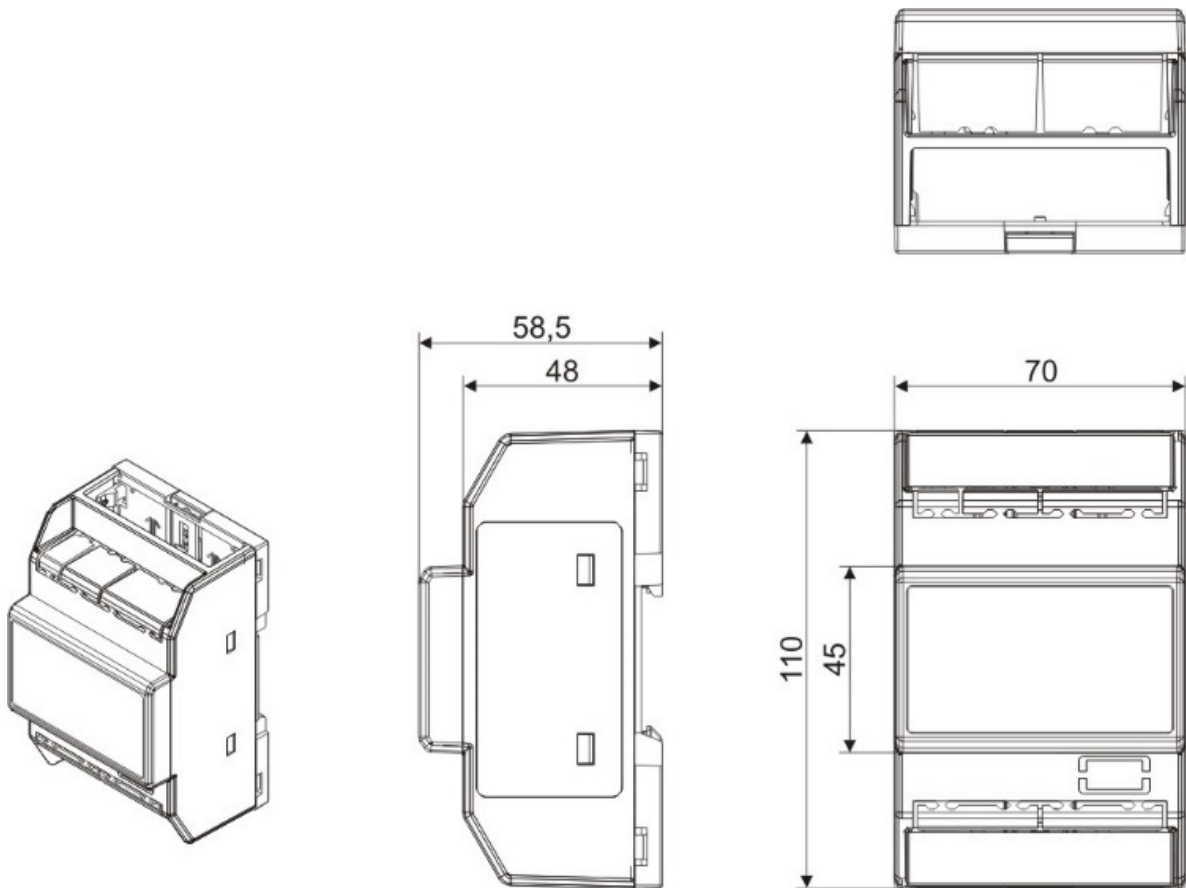
3. Hardware features

3.1 Technical features

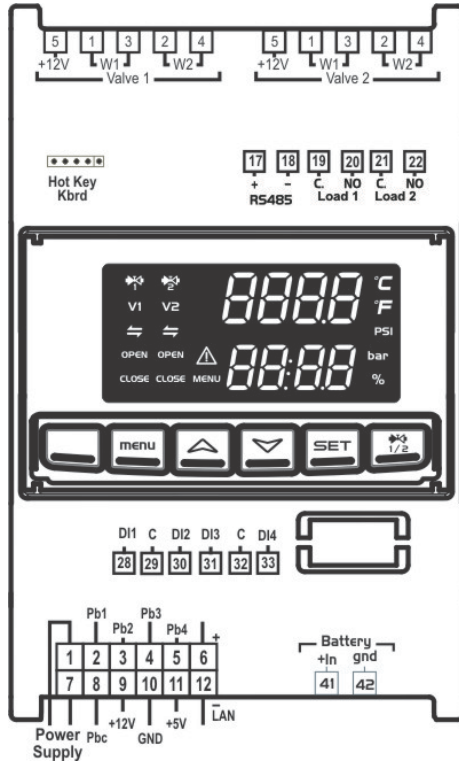
| | |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Housing | Self-extinguishing ABS |
| Connections | Wiring harness for power supply, inputs and outputs. Removable screw terminals for valve outputs and relays, for digital inputs, for the RS485 connection. |
| Power consumption | max 20VA with 1 valve max 40VA with 2 valves |
| Data storing | on the non-volatile memory (EEPROM) |
| Kind of action | 1B |
| Software class | A |
| Operating temperature | -10÷55°C |
| Storage temperature | -30÷85°C |
| Relative humidity | 20÷85% no condensing |

| | IEV12D | IEV14D |
|-----------------------------|-----------------------------------|-----------------------------------|
| Valves N° | 1 | 2 |
| Display | double | double |
| Power supply | 24Vac/dc (from TF20D transformer) | 24Vac/dc (from TF40D transformer) |
| Configurable probe inputs | 4÷20mA/0÷5V PT1000/NTC | 4÷20mA/0÷5V PT1000/NTC |
| Configurable digital inputs | 4 free contacts | 4 free contacts |
| Relais outputs | 2 (24V 0.5A) | 2 (24V 0.5A) |
| Other outputs | TTL RS485 LAN | TTL RS485 LAN |



3.2 Dimensions



3.3 Wiring diagrams



4. Main accessories

| | |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|  | <p>XEC Supercap module for the closing of the valve in case of power failure</p> |
|  | <p>DWXE30 Wiring for IEV (3m)</p> |
|  | <p>HOT-KEY Programming hot-key</p> |

| | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>WIZMATE PROG-TOOL-KIT Tool that allows you to quickly and easily change the parameters of the instrument by using WIZMATE software.</p> <ul style="list-style-type: none"> • reading and writing of the controller parameters • storage for maps • exportation of maps in excel format • comparison among two or more maps |
|  | <p>XJ485USB-KIT USB to RS485 (2-wire) converter that allows to monitor one or more controllers networked to a computer by an USB port (through software WIZMATE)</p> |
|  | <p>TF20D Transformer with 20 VA output, available in versions: 230/24 Vac</p> <p>TF40D Transformer with 40 VA output, available in versions: 230/24Vac e 110/24Vac</p> |
|  | <p>Probes A complete series of probes and transducers available on Dixell catalogue guarantees the final user the right level of precision and the most appropriate answer time in every situation</p> |
|  | <p>KIT SIMULATORE UNIVERSALE Simulator of inputs and outputs to test the applications developed for IEV drivers. The simulator has 230Vac power supply and it is equipped with dedicated wirings for IEV drivers.</p> |

5. Supervision

XWEB EVO is the family for the control and supervision systems by Dixell that guarantees the ability to remotely monitor the IEV12/14D and, consequently, the machine through the analysis of superheating.

6. How to order

IEV1_D - 1 **BCD**0

| B | | C | | D | |
|-------------------|--------|----------------|--------|------------------|--------|
| Temperature probe | | Pressure probe | | Measurement unit | |
| P | PT1000 | 0 | 0÷5V | 0 | °C/bar |
| N | NTC | 1 | 4÷20mA | 1 | °F/PSI |

7. Prices

Please contact our sales department for prices and further information.

8. Availability and orders

The models are available; please contact our sales department for delivery time.