

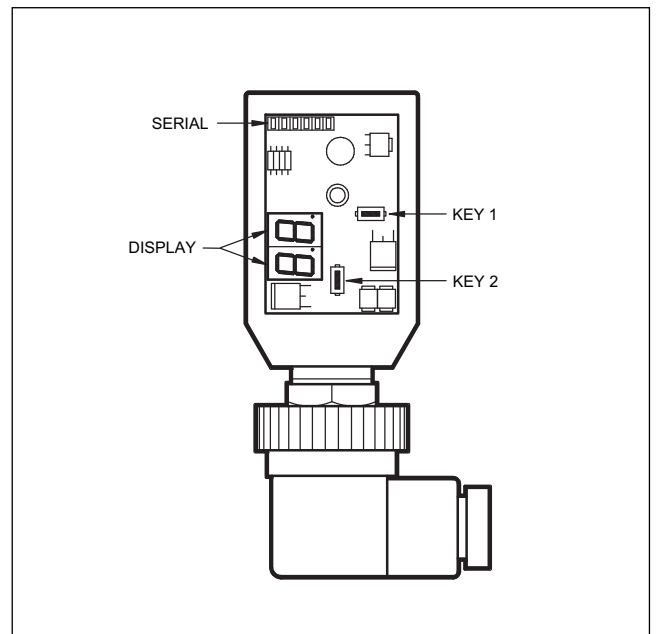
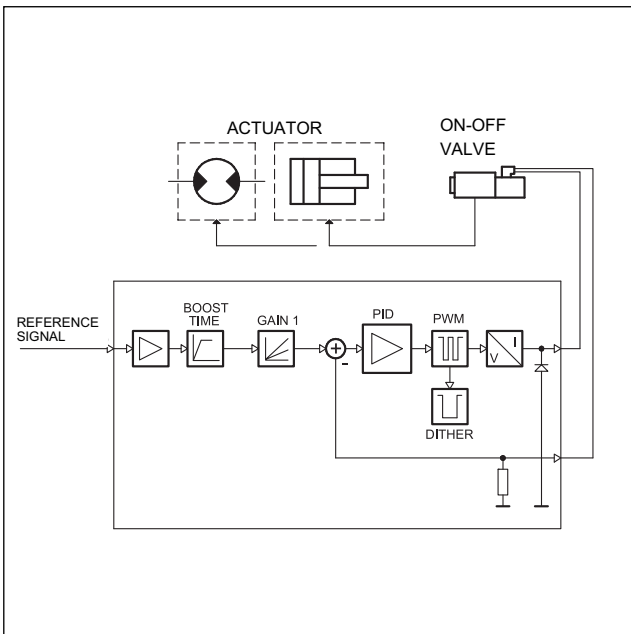
# ECF

## AMPLIFIED CONNECTOR FOR FAST COMMAND (RAPID) ON-OFF VALVES SERIES 20



### PLUG VERSION

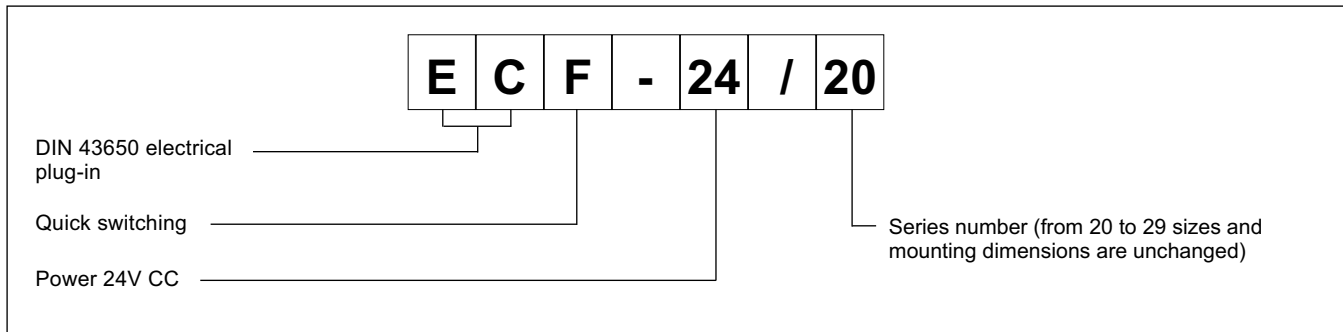
#### OPERATING PRINCIPLE



#### TECHNICAL CHARACTERISTICS

Power supply	V DC	24 ± 30 ripple included
Required power	W	min 50 - max 150 (see paragraph 2.1)
Output current	mA	max 3000 (see paragraph 1)
Power supply electrical protections		- overload over 33V - polarity inversion
Output electrical protections		Short-circuit
Analogue electrical protections		up to 30 V DC
Reference signal	V DC	24
Connector type		DIN 43650
Electromagnetic compatibility (EMC) - emissions CEI EN 61000-6-4 - immunity CEI EN 61000-6-2		according to 2004/108/CE standards (see paragraph 5 - <b>NOTE 1</b> )
Protection to atmospheric agents		IP 65 - 67
Operating temperature range	°C	-20 / +70
Mass	kg	0,10

## 1 - IDENTIFICATION CODE



The ECF connector is a digital amplifier controlling open loop on-off valves.

The unit supplies a set current independently from temperature variations or load impedance.

A quick solenoid energizing is possible in two different ways, according to the used coil type (12V o 24V)

Setting is possible by buttons and display inside the case, or with a PC by RS232 with the software EDC-PC, (see paragraph 6.2).

## 2 - FUNCTIONAL SPECIFICATIONS

### 2.1 - Electric power supply

The connector requires a power supply of 24V DC (terminals 1 and 2). The power supply voltage must be rectified and filtered, and it has not to be higher than 6A.

N.B. The value of the power supply voltage on the connector must be higher than the rated working voltage of the solenoid to be controlled.

The power required by the card depends on the power supply voltage and on the maximum value of the supplied current.

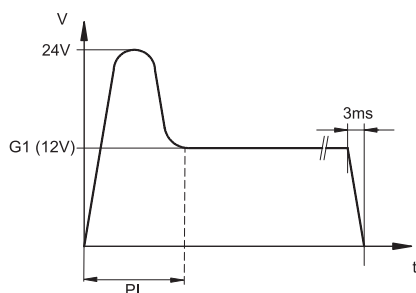
### 2.2 - Electrical protection

The connector is protected against overvoltage and polarity inversion. On the output a protection against any short circuit is foreseen.

### 2.3 - Functioning with 12V coils

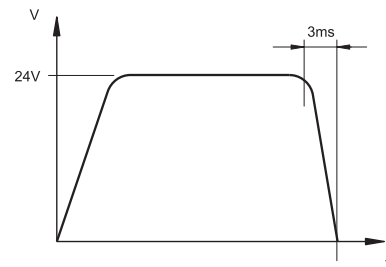
With the employment of 12V coils, the ECF valve allows a quick solenoid energizing, overboosting the solenoid just the time to energize it (PI). Then, the voltage will be lowered at the rated value (G1). The de-energizing is fast, and is 3 ms.

At overboosting time, the power-supply unit must be able to provide a 6 A intensity current strength.



### 2.4 - Functioning with 24V coils

24V coils do not require overboosting. A quick de-energizing is guaranteed.



## 3 - SIGNALS

### 3.1 - POWER ON (Power supply)

Displays indicate the connector is ON and with +24 V DC.

## 4 - ADJUSTMENTS

There are two way adjustments: variables view and parameters editing. The first one enables the real time monitoring of the control values, for both required and read current, on both channels. The second modality enables the operating parameters view and editing.

### 4.1 - Variables view

The card is switched on at the variables view modality, and it shows the first variable value, that is the C1 parameter, current solenoid.

C1: current supplied from ECF to the solenoid read on real time

### 4.2 - Parameters editing

To access the parameter editing, press the key (2) for at least 3 seconds.

The first parameter displayed is G1. To modify it, press the key (1) for two seconds, until the display starts blinking. Use the key (2) to increase the value and the key (1) to decrease it. To save the new value, press both the keys. The display stops blinking.

Pressing the key (2) again is possible to scroll all the parameters. To modify some the parameter, repeat the steps above-mentioned for the G1 parameter.



DISPLAY VIEW EXAMPLE:

REFERENCE (V)	VARIABLES (Ampere)
0	0.0 (mA)
24	2.6 (A)

The variables that can be selected are:

- G1:** "I Max" current, expressed in Ampere.  
It sets the maximum current to the solenoid, when the reference signal is at the maximum value +24 V. It is used to limit the maximum value of the supplied current.  
Default value of I<sub>max</sub> = 2000 mA  
Range = 0 ÷ 100% of I<sub>max</sub>
- PI:** Overboosting time.  
It determines the regulation of solenoid overboosting time and it is measured by milliseconds.  
Default value = 40 ms  
Range = 0 ÷ 500 ms
- Fr:** PWM frequency, in Hertz.  
It sets the PWM frequency, which is the pulsating frequency of the solenoid current.  
Default value = 200  
Range = 100 ÷ 500Hz

## 5 - INSTALLATION

The connector type electronic unit is suitable for direct assembly on the solenoid of the relative on-off valve. With the 4-core connector for supply and for the reference signal.

**NOTE:** To observe EMC requirements it's important that the control unit electrical connection is in compliance with the wiring diagram of chapter 7.

As a general rule, the valve and the electronic unit connection wires must be kept as far as possible from interference sources as power wires, electrical motors, inverters and electrical switches.

In environments where there are critical electromagnetic interferences, a complete protection of the connection wires can be requested.

## 6 - START UP, CONTROL SETTINGS AND SIGNAL

### 6.1 - Set up

Settings can be changed by either acting on the (1) and (2) keys located on the card front panel, or using the EDC-PC software kit.

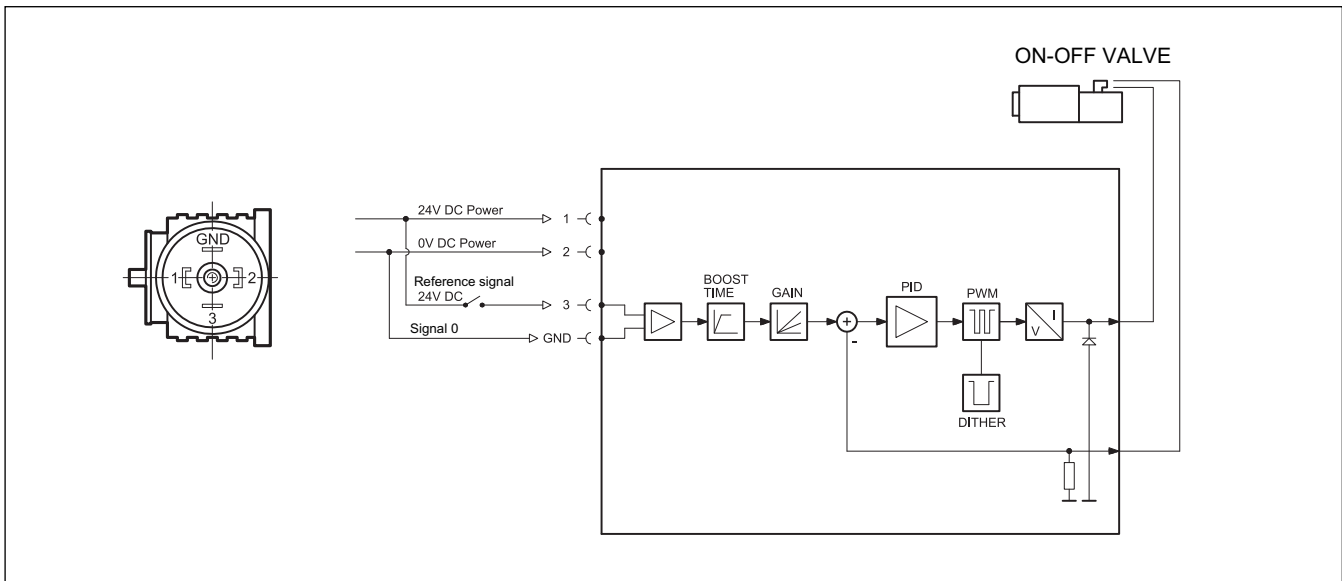
### 6.2 - EDC-PC Software (code 3898301001)

The relevant hardware and software kit (to be ordered separately) allows to read the values and to set the connector easily.

The software communicates, through a flat cable, to the ECF; the connector is behind the protecting gate.

The EDC-PC software compatibility is guaranteed only on Windows XP® operating systems.

## 7 - WIRING DIAGRAM



## 8 - OVERALL AND MOUNTING DIMENSIONS

