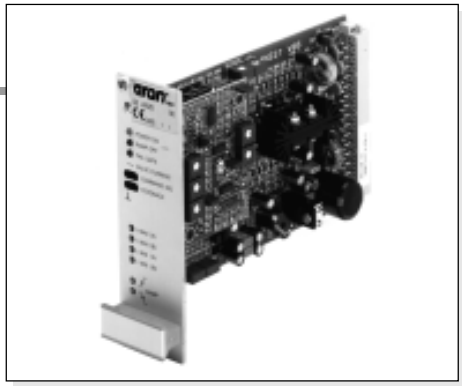

SE.3.AN228... ELECTRONIC CARDS FORMAT EUROCARD
FOR POSITIONAL TRANSDUCER VALVES CONTROL

SE.*.AN228...	
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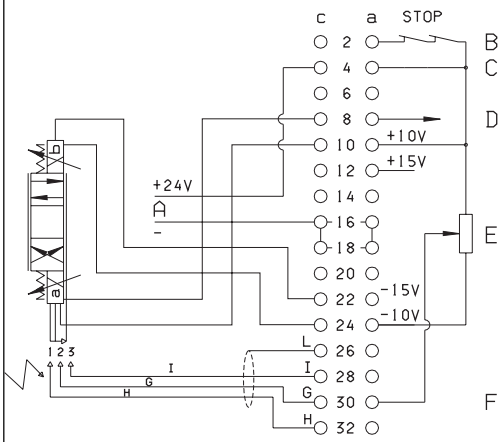
The electronic cards type SE.*.AN228.*.. have been planned for controlling single and double solenoid proportional valves of the series XDC3.... equipped with position transducer type LVDT.
The card has a EUROCARD format for being assembled on a connector type DIN 41612 D 32.
The output stage operates on the basis of the Pulse Width Modulation (PWM) and is subject to the current feedback so that it is possible to obtain an output solenoid current directly proportional to the input signal.
The regulator is supplied with standard calibration for proportional valve control.
The card is equipped with a control module type PID which compares the reference signal with the position transducer signal: the eventual error is used for optimizing the regulation.
It is possible to carry out further regulations by operating on the relative trimmers placed on the frontal panel (see picture).

TABLE A - EXAMPLE OF CONNECTION FOR CARD WITH POTENTIOMETER OPERATION



A Supply voltage (24V)
B Card enabling (connect *a2* to *a10*)
C Ramp off (connect *a4* to *a10*)
D Current valve test point (1V = 1A)
E Recommended potentiometer value 10KΩ
F Input *a30* ±10V
G Output +24V (supply LVDT)
H Input signal (from LVDT)
I, L GND

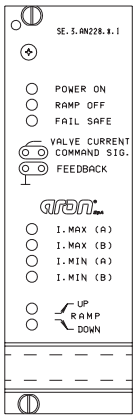
• The connection between the card and the solenoid must be direct • The common one of return to proportional solenoid mustn't be shared between other valve connections or electrical equipment worker.

ORDERING CODE

SE	Electronic card format EUROCARD DIN 41612
3	NG06
AN228	Closed loop valves with positional transducer type XDC.3...
******	**08** = 0.88 A **16** = 1.76 A
00	No variant
1	Serial No.

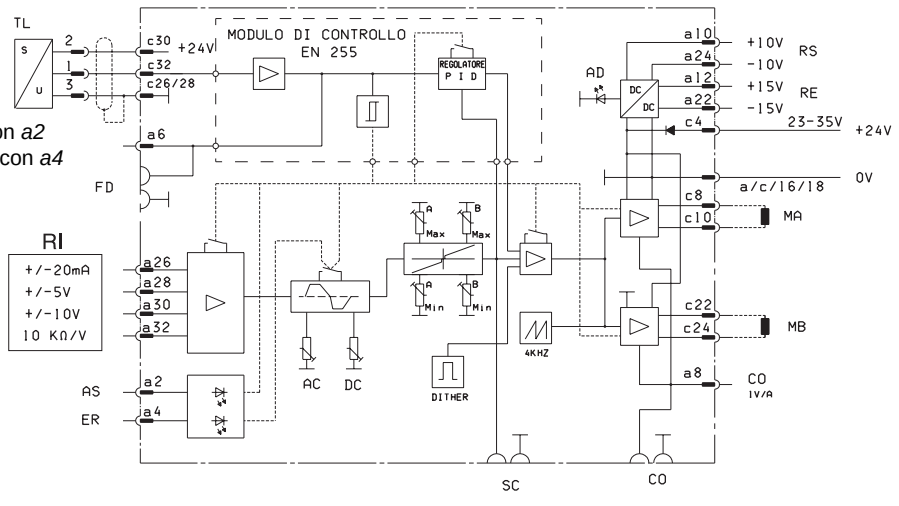
ADJUSTMENT PANEL FOR CARD

Power on	Green - Supply 24V
Ramp off	Red - Ramp off
Fail safe	Red - Alarm short circuit
Valve current	Solenoid A/B (1V = 1A) test point
Command sig.	Command signal test point
I max. (A)	Solenoid A maximum current adjustment
I max. (B)	Solenoid B maximum current adjustment
I min. (A)	Solenoid A minimum current adjustment
I min. (B)	Solenoid B minimum current adjustment
Ramp up	Ramp up adjustment
Ramp down	Ramp down adjustment
Feedback	Feedback signal test point



ELECTRICAL CIRCUIT AND CONNECTIONS

AD	Power on LED
AS	Card enabling connecting *a10* con *a2*
ER	Ramp exclusion connecting *a10* con *a4*
AC	Ramp up
DC	Ramp down
RS	Stabilized reference output for external potentiometer
RE	Not stabilized reference output
MA	Solenoid A
MB	Solenoid B
CO	Current solenoids A/B test point (1V = 1A)
SC	Command signal test point
FD	Feedback signal test point
TL	Positional transducer type LVDT
RI	Reference input



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Instructions for use

For proportional valves with code
XDC.3C..G. (**SE.3.AN228.08**)
XDC.3.C.F. (**SE.3.AN228.16**)

Power electric supply
24 VDC nominal
23÷32 VDC rectified and stabilized (30W max.)
The supply is possible with non-stabilized voltage (only rectified voltage): 18÷25V value.
If the valve carries a 24V magnet, a supply voltage of about 30÷35V. is necessary.

Reference voltage
The card gives 2 stabilized voltage values:
+10V 10mA ±0.5% (*a10*) and -10V 10mA ±0.5% (*a24*)
the card also gives two non- stabilized voltage values:
+15V 25mA ±5% (*a12*) and -15V 25mA ±5% (*a22*)

Available inputs
±10V (input impedance 100KΩ) *a30*
±5V (input impedance 50KΩ) *a28*
±20mA (input impedance 100Ω) *a26*
free input (input sensitivity 10KΩ/V) *a32*
Calibration by choice, modifiable by replacing the resistor R1000 on the card (standard value: R1000 = 100KΩ).

Card enable
Usually the card is not enable.
For enabling it, apply in *a2* a voltage between 2.5 and 24 VDC.
Example: connect *a10* to *a2*

Ramp exclusion
Ramps are usually on.
In order to disable them apply *a4* a voltage between 2.5 and 24 VDC.
Example: connect *a10* (+10 VDC) to *a4*

Calibration procedure
Connect the card according to the scheme (see table A).
Set zero the reference potentiometer.
Before applying the voltage, make sure that the hydraulic system does not move suddenly causing damages to people or things.
Apply the voltage to the card: the green led will start blinking. Enable the card and disconnect the ramps ("FAIL SAFE" led off and "RAMP OFF" led on).

Minimum current regulation
A channel: put the reference signal (*a26 / a38 / a30*) on 3÷5% of the max. value. Turn the minimum current trimmer clockwise (I_{min} A) until the actuator moves; then turn the trimmer counterclockwise until the actuator stops.

B channel: repeat the above procedure for the A channel by operating on the I_{min} B trimmer for negative values of the reference signal.

Maximum current regulation.
A channel: put the reference signal (*a26 / a38 / a30*) on the max. (positive) value and turn the gain trimmer (I_{max} A) slowly, until the max. speed requested is reached. Now the speed can be varied by changing the reference signal.
B channel: repeat the above procedure for the A channel by operating on the I_{max} B trimmer and by putting the reference signal on the max. negative value.

Ramp time calibration
Connect the ramps ("RAMP OFF" led off). The ramp time is the time which is necessary for going from the minimum current value to the max. current value and vice versa. The time can be set from a minimum value of 0.1 sec. (ramp excluded) up to a maximum value of 10 sec. (valve max. opening) whether downwards or upwards. By turning the trimmers clockwise the ramp time increases.

Notes
The ramp down time influences the lock position of the actuator. By setting to zero the reference signal, the actuator keeps moving until the ramp time set (in a downward direction) has passed. For this reason it is necessary to carry out the adjustment carefully and properly.
The card block (FAIL SAFE) is automatically reset after that the error has been eliminated.

LVDT connection
See the preceding page:
- terminal 1 LVDT *c32* of the card (signal input)
- terminal 2 LVDT *c30* of the card (+20V)
- terminal 3 LVDT *c26* / *c28* of the card (GND)

Use screened cable with earth braid.

Solenoid current test point
On the frontal card panel: 1V = 1A ±5%

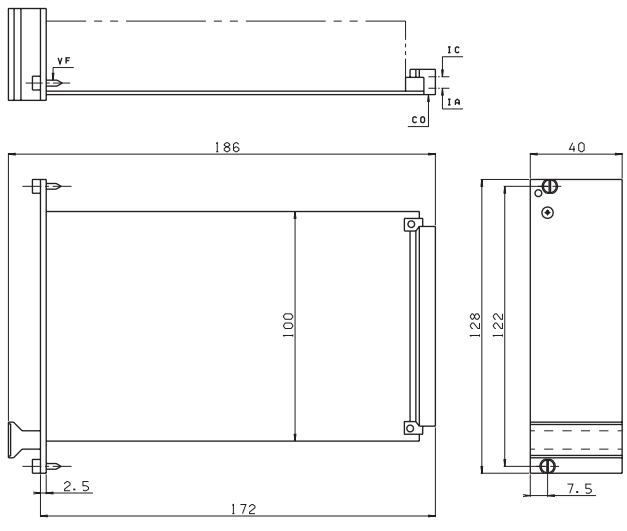
Command signal test point
On the frontal card panel: ± 10V according to the command signal

Feedback signal test point
On the frontal card panel: ± 5V according to the spool position

Ambient temperature range
0°÷50°C

Electric connections
The connections concerning the reference potentiometers must be carried out with a wire having a section of ≥0.75 mm².
It is advised to use a screened cable with earth braid.

OVERALL DIMENSIONS



VF Fixing screws M2.5x13
CO Connector DIN 41612 D32
Ordering code: X30770000
IC Connector C
IA Connector A

Weight Kg. 0,25

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