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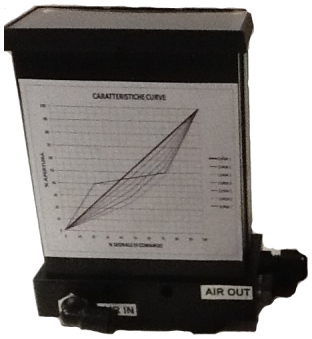
MADE IN ITALY

OPERATING INSTRUCTIONS
ITB-DRIVE E ITB-DRIVE DOME

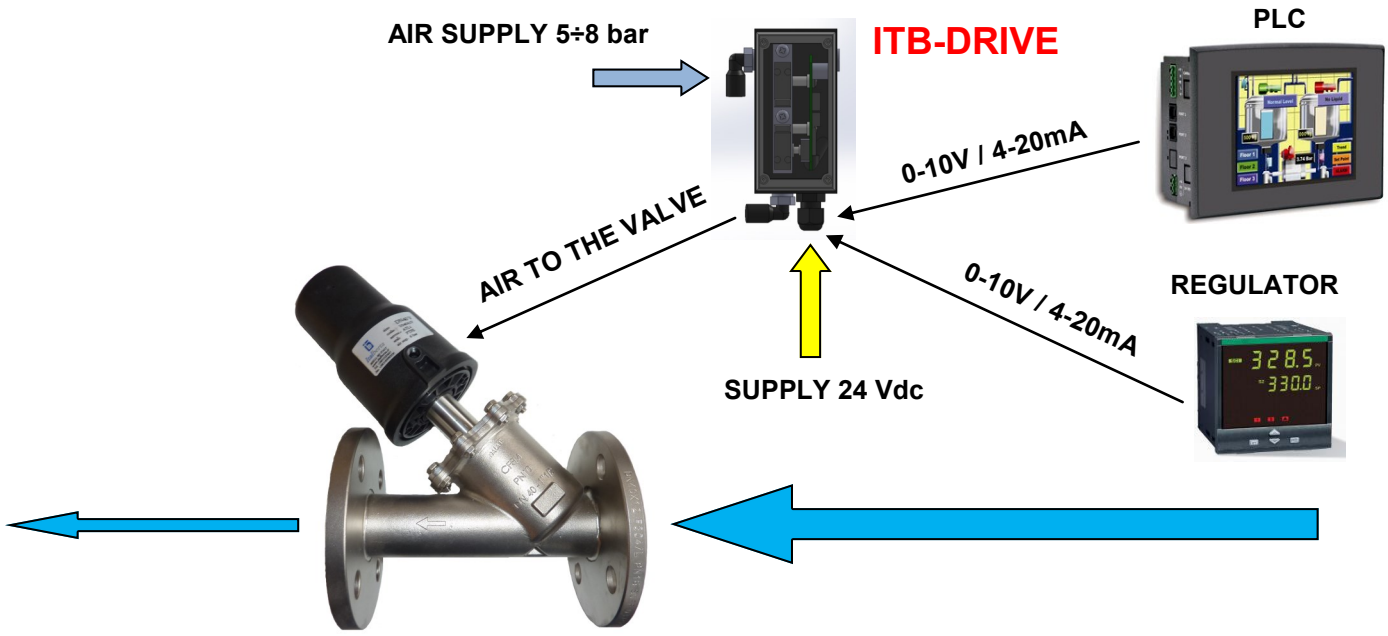


TECHNICAL FEATURES

Supply voltage:	**24 Vdc ±10%**
Command signal:	**0- 10V / 4-20 mA (settable)**
Air supply pressure	**: 5-8 bar**
Degree of protection:	**IP54 (ITB-DRIVE)**
Degree of protection	**IP67 (ITB-DRIVE DOME)**
Protocol MODBUS:	**RS485**
Fixing on bar	**DIN 35 mm ITB-DRIVE**
Direct mounting on the valve	**ITB-DRIVE DOME**

OPERATION DESCRIPTION

Depending on the variable electrical signal received (4-20 mA current or 0-10 Vdc voltage), the device varies the control air pressure in order to modulate the opening of the valve.
The variation of the control air pressure is determined, with the same electrical signal, by the response curve of the system selected from the pre-set ones or the customized one.
It can be connected to any device capable of supplying a variable electrical signal such as: industrial PCs, PLCs, Regulators, Potentiometers, etc.



ADVANTAGES COMPARED TO THE SYSTEMS USED UP TO NOW

- VALVE BODY AND ALL PARTS IN CONTACT WITH THE FLUID TO BE CHECKED IN AISI316 STAINLESS STEEL.
- INCOMPARABLY LOWER WEIGHT AND DIMENSION.
- MORE EFFICIENT REGULATION BECAUSE:

  - The valves have a longer stroke than those equipped with diaphragm control.

- - With the same electrical command signal difference (4-20mA / 0-10Vdc) there is a greater excursion, and therefore greater positioning accuracy of the valve opening.
- THE VALVES CAN BE SUPPLIED WITH A FLANGED BODY, THREADED GAS, OR ALTERNATIVELY WITH HEAD WELDING TO SIGNIFICANTLY REDUCE THE COSTS OF CONSTRUCTION OF THE SYSTEM AND SIMPLIFY MAINTENANCE.

- ELECTRICAL CONNECTIONS

The ITB-DRIVE is supplied pre-wired with a shielded cable 3 meters long, the electrical connections must be made according to the correspondences indicated on the label present, and shown below:

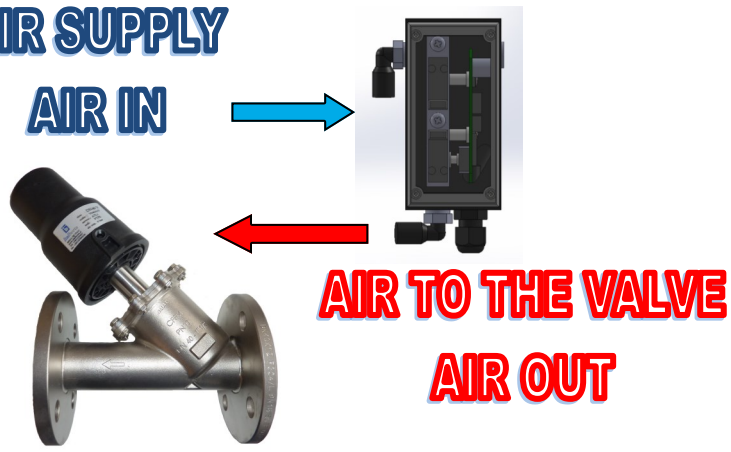
- **BROWN** **+24 Vdc ± 10%**
- **GREEN** **COMMON GROUND (For both the power supply and the analog signal)**
- **WHITE** **Control signal 4-20 mA or 0-10 Vdc (depending on the one selected)**
- **SHIELDING** **Shield braid must be grounded**

- PNEUMATIC CONNECTIONS

Connect the compressed air supply to the fitting identified by the label **AIR IN**

Connect the hose that carries the compressed air from the device to the valve, on the fitting identified by the label **AIR OUT**

N.B: BEFORE YOU TURN ON THE DEVICE MUST BE POWERED WITH COMPRESSED AIR, OTHERWISE IT GOES ERROR



ATTENTION!!! AFTER CARRYING OUT THE ELECTRICAL AND PNEUMATIC CONNECTIONS BEFORE THE FIRST START-UP, CARRY OUT THE FOLLOWING PROCEDURE:

1) **Check the position of the DEEP-SWITCHES relating to the selection of the 4-20 mA or 0-10 Vdc analog control signal type see Page 6**
   If it does not correspond to the desired one, follow the procedure to change it.
2) **Check the position of the DEEP-SWITCHES relative to the selection of the DN nominal diameter of the valve to be controlled, see Page 4**
   If it does not correspond to the desired one, follow the procedure to change it.
3) **Check the position of the DEEP-SWITCHES relative to the selection of the inlet fluid pressure, see Page 5**
   If it does not correspond to the desired one, follow the procedure to change it.
4) **Check the position of the DEEP-SWITCHES relative to the selection of the personalization curve, see Page 7**
   If it does not correspond to the desired one, follow the procedure to change it.

WARNING! At the first start-up or after changing the Nominal Diameter or the Inlet Fluid Pressure value, the device will perform an AUTOTUNING operation.
During this operation (which takes a few seconds) the device will make the valve perform opening and closing movements in order to correctly calibrate the system.

WE RECOMMEND THAT THIS OPERATION BE CARRIED OUT WITHOUT THE PRESENCE OF FLUID INSIDE THE PIPE IF YOU WANT TO AVOID ITS PASSING IN THIS PHASE.

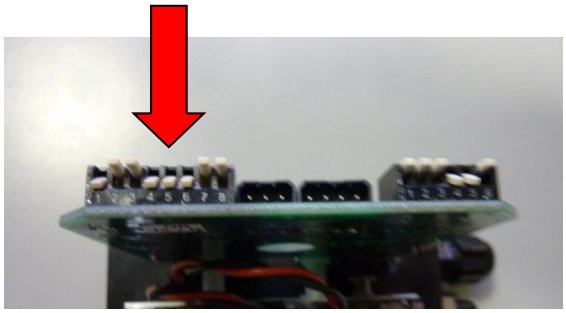
- SELECTION OF NOMINAL DIAMETER OF THE VALVE (DN)

The device is supplied with the nominal diameter value indicated on the label on it. To select a different nominal diameter proceed as follows:

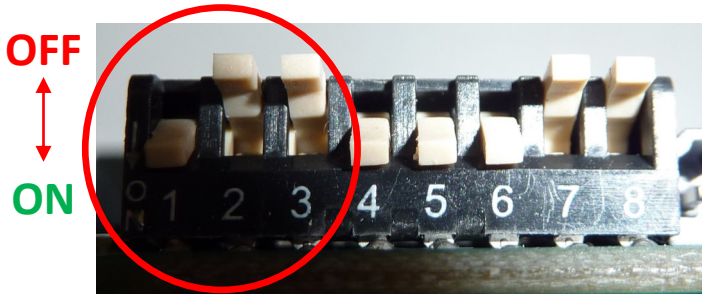
ATTENTION!!! THE SELECTORS MUST BE MOVED WITH THE DEVICE OFF

- Remove the device cover
- Select the Nominal Diameter (DN) using the DEEP-SWITCHES present on the electronic board. According to the combinations indicated in the Table

N.B. For manual entry corresponding to the combination (OFF-OFF-OFF), refer to the operating instructions of the ITB-DRIVE MASTER multifunction display



Selection DN								
POSIZ. 1,2,3	MANUAL	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65
1	OFF	ON	OFF	ON	OFF	ON	OFF	ON
2	OFF	OFF	ON	ON	OFF	OFF	ON	ON
3	OFF	OFF	OFF	OFF	ON	ON	ON	ON



In the example, DN

15 was selected

- INLET FLUID PRESSURE SELECTION

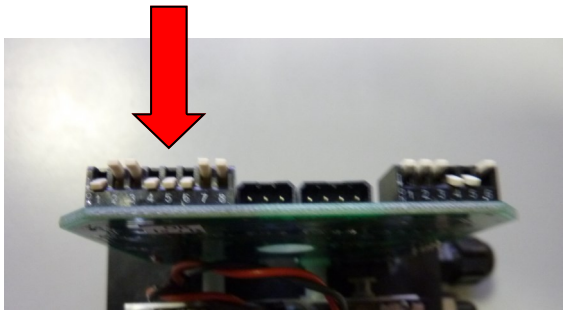
The device is supplied with the inlet fluid pressure value indicated on the label on the device itself.

To select a different Fluid Pressure proceed as follows:

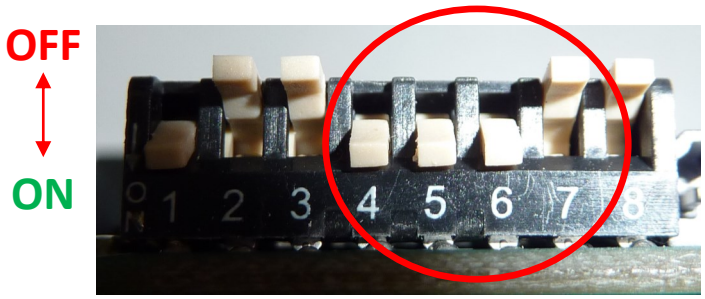
ATTENTION!!! THE SELECTORS MUST BE MOVED WITH THE DEVICE OFF

- Remove the device cover
- Select the inlet fluid pressure using the DEEP-SWITCHES present on the electronic board. According to the combinations indicated in the Table

N.B. For manual entry corresponding to the combination (OFF-OFF-OFF-OFF), refer to the operating instructions of the ITB-DRIVE MASTER multifunction display



Inlet Fluid Pressure Selection (bar)																
POSIZ. 4,5,6,7	MANUAL	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10
4	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
5	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
6	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
7	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON



In the example, a pressure of 6 bar was selected

- SELECTION FOR MICROFLOW VALVE

If the device is combined with a MICROFLOW valve, the selectors of the Nominal Diameter (DN) and those relating to the Inlet Fluid Pressure must be positioned as follows::

POSIZ.	MICROFLOW
1	ON
2	ON
3	ON
4	OFF
5	OFF
6	OFF
7	OFF

- COMMAND SIGNAL SELECTION

ATTENTION!!!
THE SELECTORS MUST BE MOVED WITH THE DEVICE OFF

ATTENTION!!!
ANY OTHER COMBINATION IS NOT VALID AND MAY CAUSE DAMAGE TO THE DEVICE

The modulation device can be controlled with 4-20 mA or 0-10 Vdc analog signal.

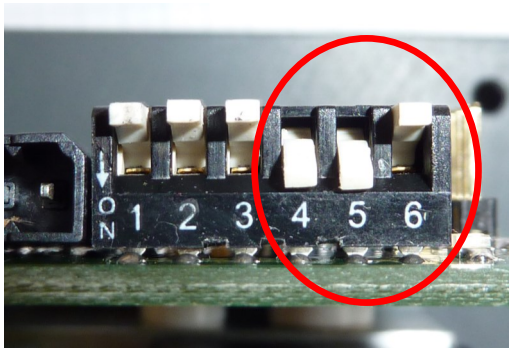
To set the type of control signal, proceed as follows:

- Remove the device cover
- Select the desired type of signal (4-20 mA or 0-10 Vdc) using the DEEP-SWITCHES on the electronic board. According to the combinations given below:

4-20 mA SIGNAL

Switches N. 4 and N. 5 ON

Switches N.6 OFF



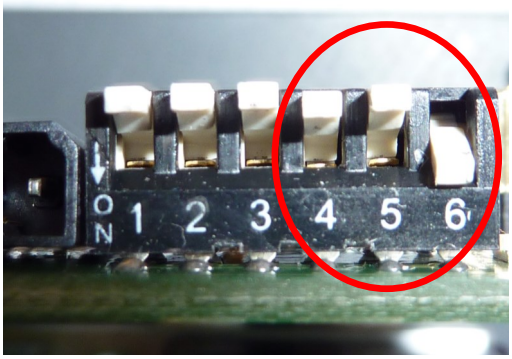
OFF

ON

0-10 Vdc SIGNAL

Switches N. 4 and N.5 OFF

Switches N.6 ON



OFF

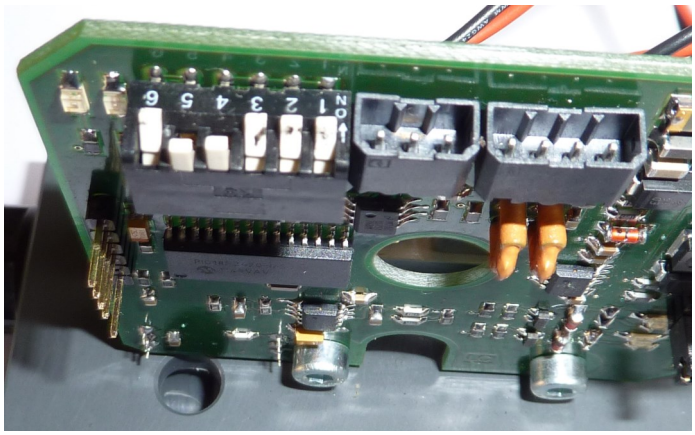
ON

- SELECTION OF CURVES CUSTOMIZATION OPENING

7 pre-set customization curves are available and 1 can be set via the multifunction display (OPTIONAL) this in order to customize the type of valve opening using the modulation device (for the characteristics and functionality of the curves, see the relative chapter). The “directly proportional” curve N.1 is set by DEFAULT.
Their selection takes place using the switches 1, 2, 3 of the selector indicated in the figure, visible immediately after removing the closing cover of the device

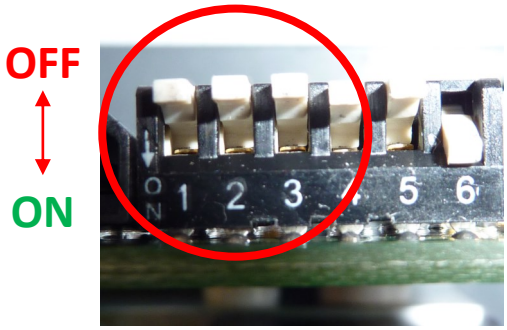
ATTENTION!!!
THE SELECTORS MUST BE MOVED WITH THE DEVICE OFF

ATTENTION!!!
ANY OTHER COMBINATION IS NOT VALID AND MAY CAUSE DAMAGE TO THE DEVICE



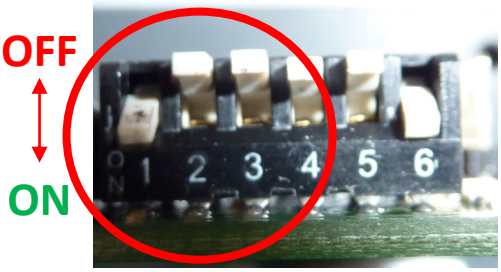
CURVE SELECTION N.1

INTERRUTTORE N.1	OFF
INTERRUTTORE N.2	OFF
INTERRUTTORE N.3	OFF



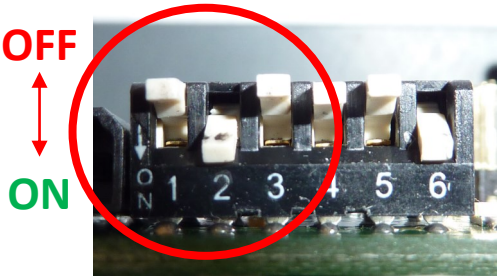
CURVE SELECTION N.2

SWITCH	N.1	ON
SWITCH	N.2	OFF
SWITCH	N.3	OFF



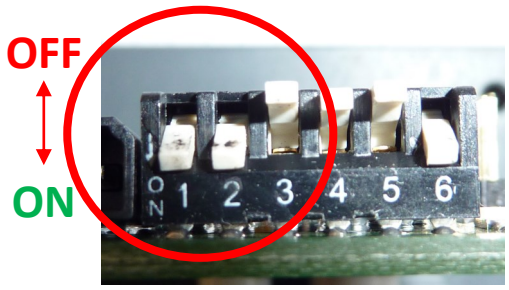
CURVE SELECTION N.3

SWITCH	N.1	OFF
SWITCH	N.2	ON
SWITCH	N.3	OFF



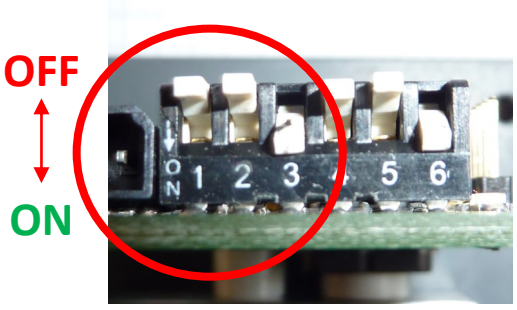
CURVE SELECTION N.4

SWITCH	N.1	ON
SWITCH	N.2	ON
SWITCH	N.3	OFF



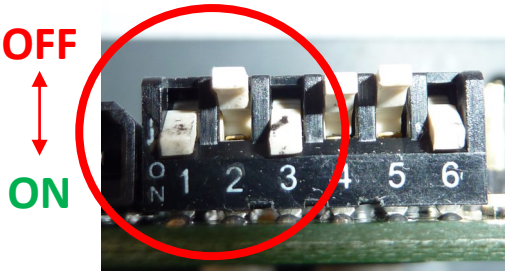
CURVE SELECTION N.5

SWITCH	N.1	OFF
SWITCH	N.2	OFF
SWITCH	N.3	ON



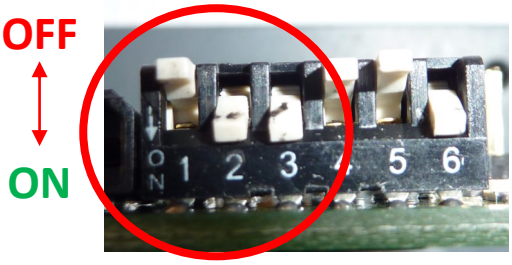
CURVE SELECTION N.6

SWITCH	N.1	ON
SWITCH	N.2	OFF
SWITCH	N.3	ON



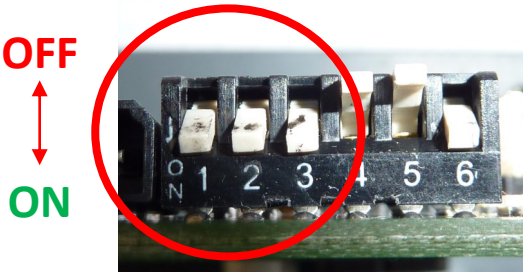
CURVE SELECTION N.7

SWITCH	N.1	OFF
SWITCH	N.2	ON
SWITCH	N.3	ON



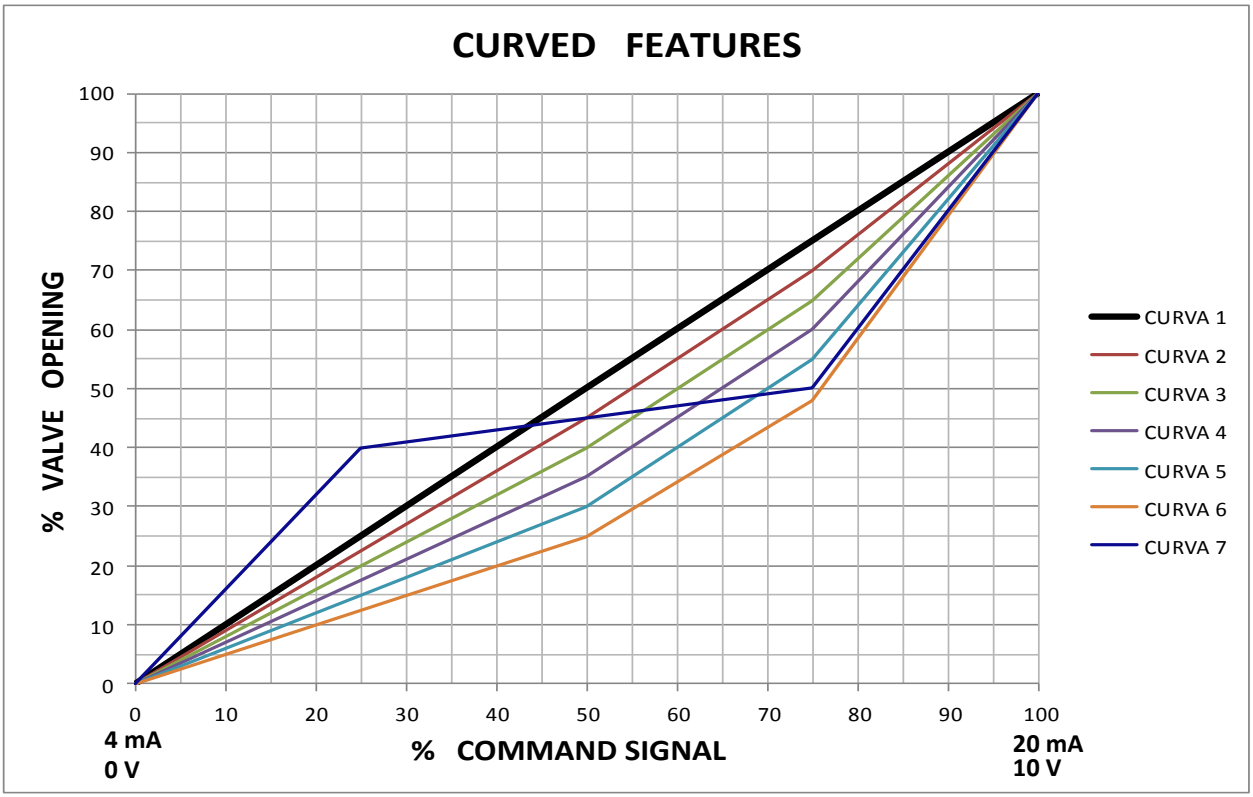
CURVE SELECTION THAT CAN BE SET VIA MULTIFUNCTION DISPLAY (OPTIONAL)

SWITCH	N.1	ON
SWITCH	N.2	ON
SWITCH	N.3	ON



CURVES FOR CUSTOMIZATION OF THE SHUTTER LIFT WITH THE SAME OF THE ELECTRIC COMMAND SIGNAL

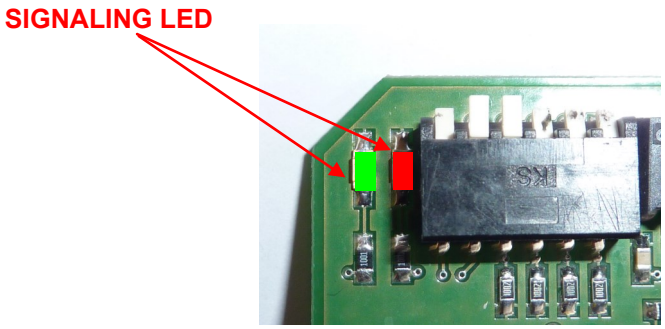
The device is equipped with a customization system, which makes the opening and closing behavior of the valve very flexible with the same electrical input signal.
For example, if the valve sizing is too abundant compared to the real application needs, one of the curves 2-3-4-5-6 can be selected using the Deep-switch inside the device so that of the electrical input signal, the real opening of the valve is lower than the directly proportional one represented by curve 1 set by default. Thus allowing to obtain greater precision in the control of small openings.
The graph below shows the characteristics of the 7 curves stored and selectable by the selectors.



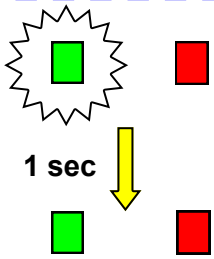
The curves can be used to customize the type of opening and closing of the valve through the device with the same electrical command signal.

- **CURVE N.1** the opening of the valve occurs directly proportional to the command signal. **(The device comes with this DEFAULT selection)**
- **CURVES N.2-3-4-5-6** vary the ratio between the percentage of command signal and the corresponding percentage of valve opening downwards.
- **CURVE N.7** changes the ratio between the command percentage and the corresponding opening percentage of the valve upwards up to 25% of the command signal, in a restricted way up to 75% of the command signal and then quickly rise to 100%
- **CURVE N.8** there is also the possibility to create a customized curve according to your needs **through the use of the OPTIONAL multifunction display.**

ERROR CODES

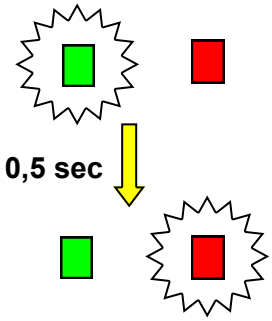


NO ACTIVE ALARM



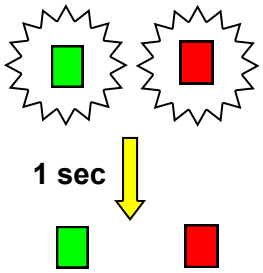
Normal operation, only the GREEN LED flashes once per second

SUPPLY VOLTAGE TOO LOW



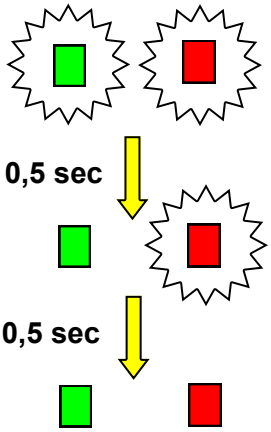
The GREEN LED and the RED LED flash alternately with a frequency of 0.5 seconds

AIR PRESSURE TOO LOW



The GREEN LED and the RED LED flash simultaneously 1 time per second

FAILURE TO POSITION IN THE REQUIRED POINT



The GREEN LED and the RED LED flash simultaneously 1 time per second, but the RED LED turns off every time after half a second