XEV20D

Stepper Valve Actuator

Contents

COPELAND

1   General Warnings

PLEASE READ BEFORE USING THIS MANUAL

⚠ CAUTION	• This manual is part of the product and should be kept near the instrument for easy and quick reference. • The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device. • Check the application limits before proceeding.

SAFETY PRECAUTIONS

⚡ WARNING	• Check if the supply voltage is correct before connecting the instrument. • Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation. • Warning: Disconnect all electrical connections before any kind of maintenance. • Fit the probe where it is not accessible by the end user. The instrument must not be opened. • In case of failure or faulty operation send the instrument back to the distributor or to • "Dixell S.p.A." with a detailed description of the fault. • Consider the maximum current which can be applied to each relay (see Technical Data). • Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining. • In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2   General Description

XEV20D is a stepper valve actuator intended either for **bipolar** stepper valves or **unipolar** stepper valves. This device has been used with **ISaGRAF®** environment and with programmable devices of **iPro series** or in combination with instruments of **i-CHILL 200CX** series.

The maximum configuration of hardware is equipped with:

- 2 configurable valve outputs to drive bipolar or unipolar valves
- Pb1/Pb2 configurable analog inputs: NTC/PTC/Pt1000
- Pb3/Pb4 configurable analog inputs: 4 to20mA/0 to5V/Pt1000
- CanBus serial line
- LAN to communicate with instrument of the same series or devices of i-CHILL 200CX series

3   Absolute Maximum Power

XEV20D is able to drive a wide range of stepper valves, in the following table are indicated the maximum values of current that the actuator can supply to the stepper wiring. Select the current transformer depending on application seeing the following table, for each kind of driving and functioning is reported the Dixell transformer to use.

NOTE: The electrical power absorption of the valve can be unrelated to refrigeration power that valve has. Before using the actuator, please read the technical manual of the valve supplied by the manufacturer and check the maximum current used to drive the valve in order to verify that they are lower than those indicated below.
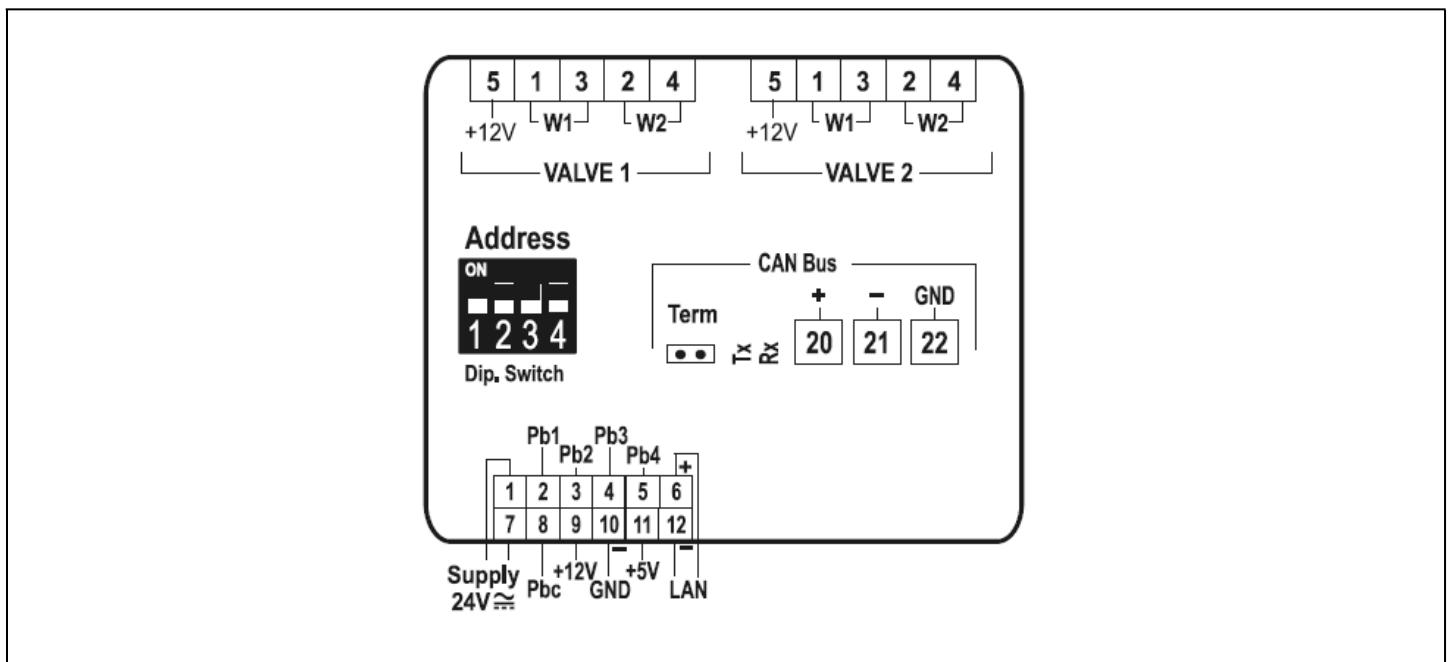
		CONFIGURATION	
		ONE VALVE	TWO VALVES
	Driving Mode	Full Step	Full Step
Valve Type	Bipolar Valves (4 wires)	Current 0.9A max > TF20D	Current 0.9A max for each valve > TF40D
	Unipolar Valves (5-6 wires)	Current 0.33A max > TF20D	Current 0.33A max for each valve > TF20D

4   Wiring Diagram
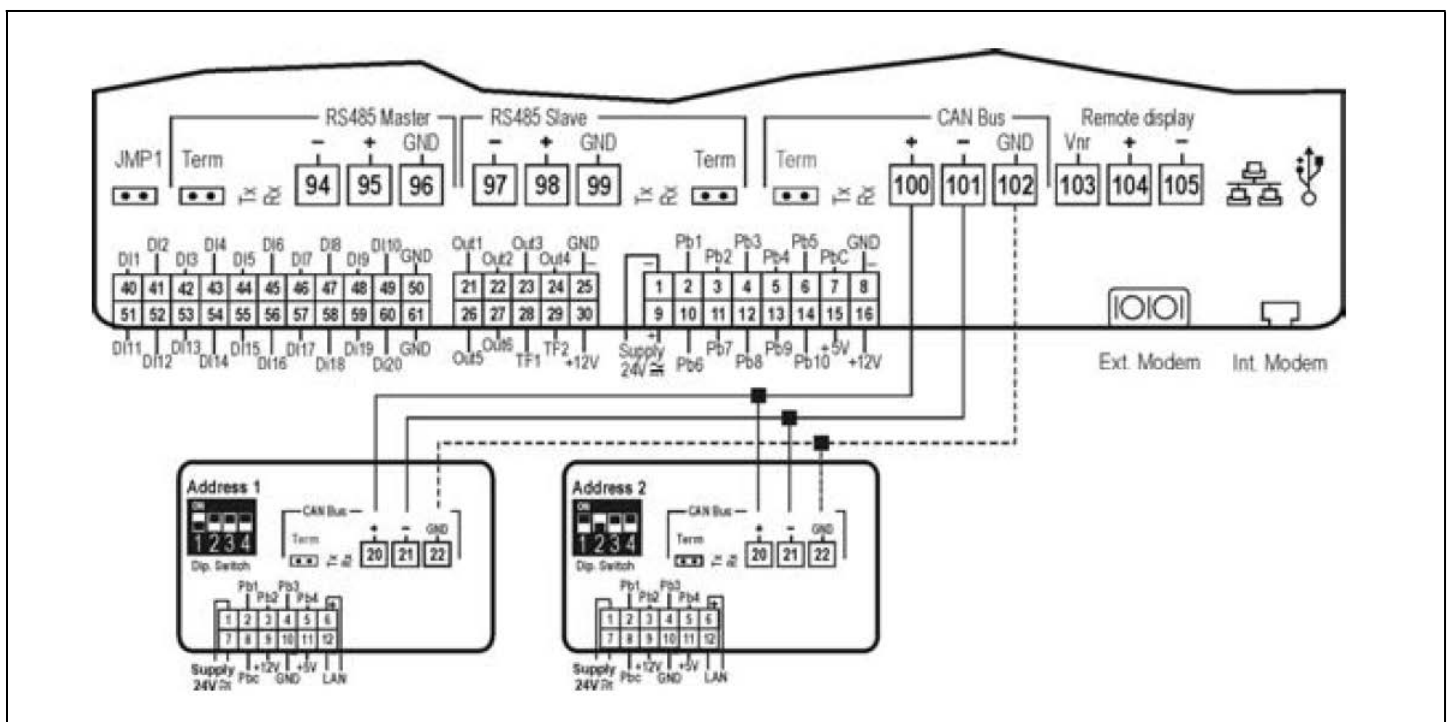
4.1   One Valve Configuration
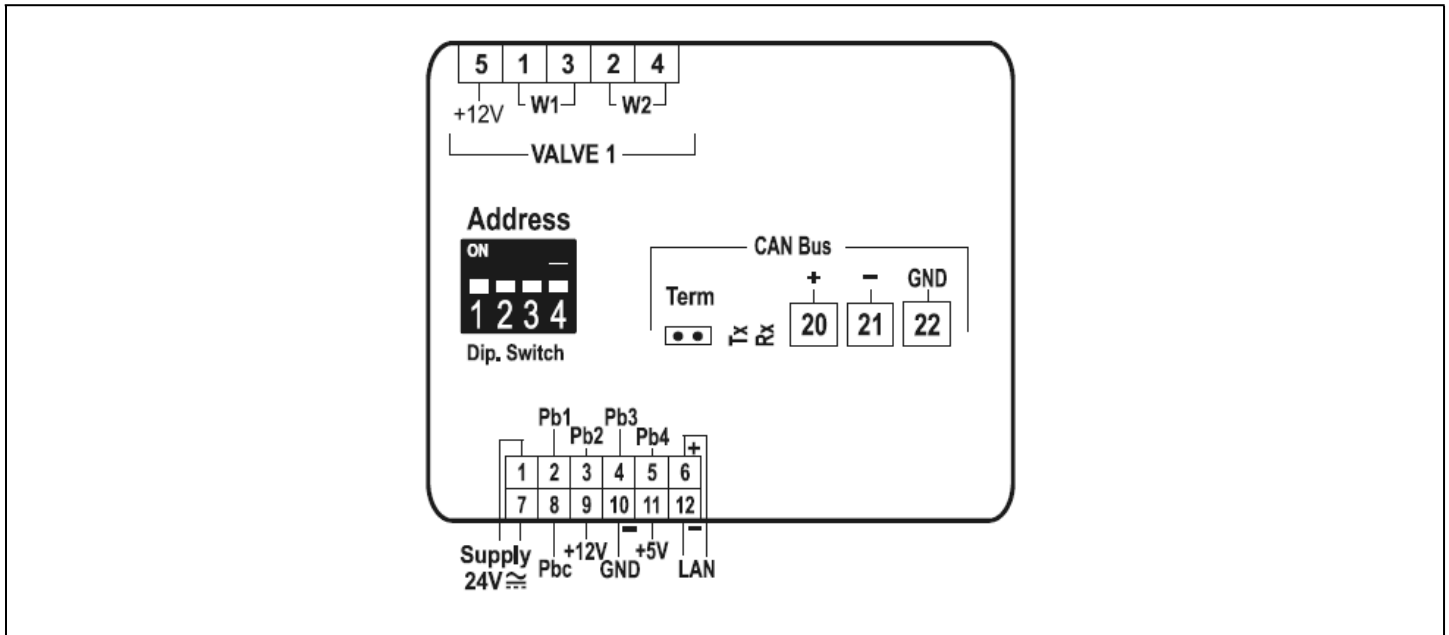
4.2   Two Valves Configuration

4.3   iPro Connections

5   Valve Connections

Pay attention to the following table for a quick reference on the connection mode for valves of different manufacturers:

4 WIRES VALVES (BIPOLAR)

Connection Numbering	ALCO EX*	ALCO EX5/6	SPORLAN SEI-SHE	DANFOSS ETS
4	White	Blue	White	Black
2	Yellow	Brown	Black	White
3	Brown	Black	Red	Red
1	Green	White	Green	Green
5 - Common	----	----	----	----

5-6 WIRES VALVES (UNIPOLAR)

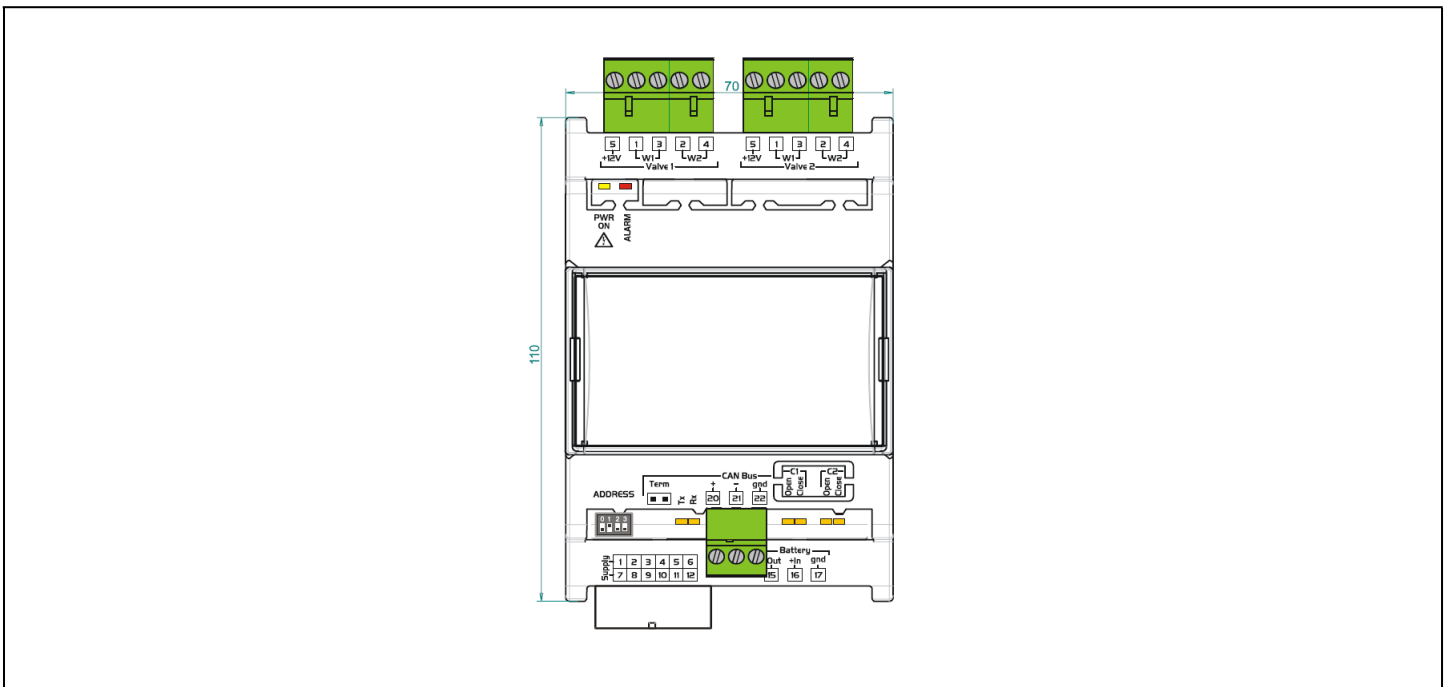| Connection Numbering	SPORLAN	SAGINOMIYA
4	Orange	Orange
2	Red	Red
3	Yellow	Yellow
1	Black	Black
5 - Common	Gray	Gray

Figure 5-1 - XEV20D Device

6 Serial Line - CanBus

The device can communicate through CanBus serial line only when a correct address is set. The addressing is made through the dip-switch called **Address** as you can see in the following drawing:
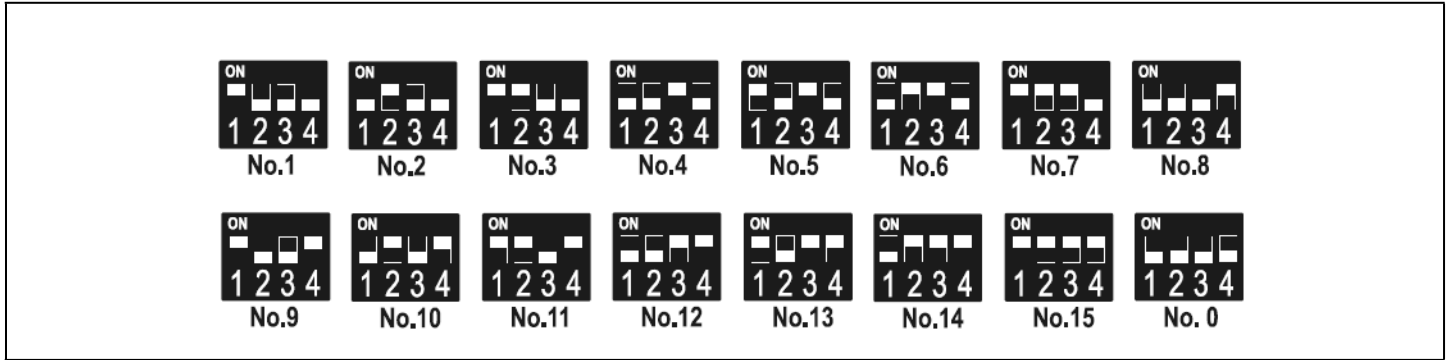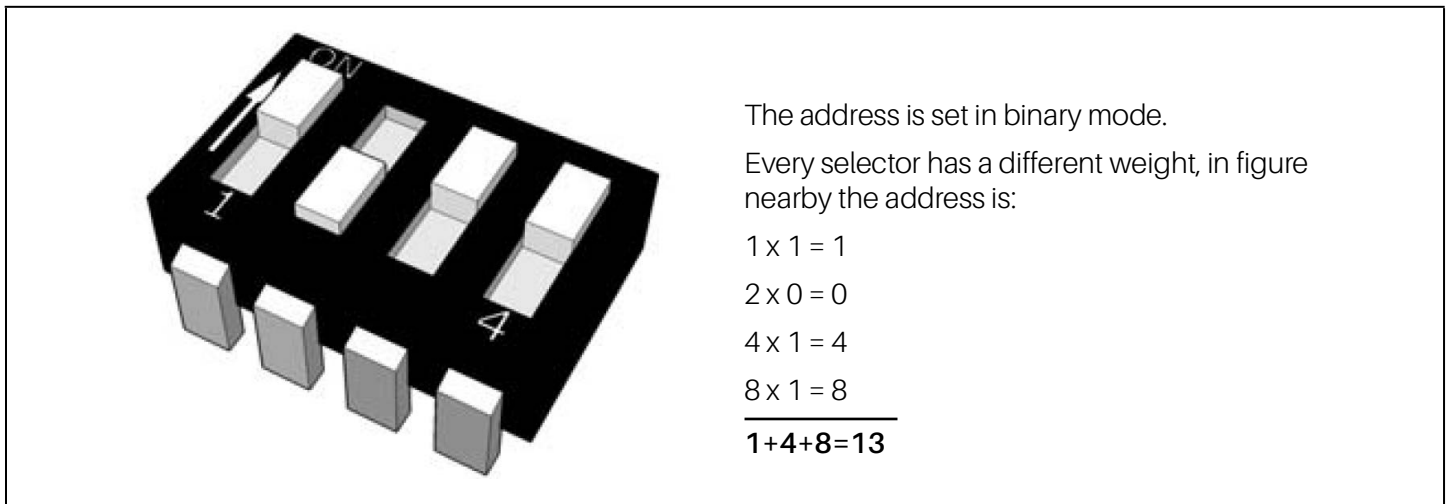

Figure 6-1 - CanBus Serial Line

The address is set in binary mode.

Every selector has a different weight, in figure nearby the address is:

$1 \times 1 = 1$

$2 \times 0 = 0$

$4 \times 1 = 4$

$8 \times 1 = 8$

$\overline{1+4+8=13}$

Figure 6-2 - CanBus Device

The following table has to be used to configure ISaGRAF lines to connect the valve actuator.

LINE	GEN_LINE	GEN_AO	GEN_AO	GEN_AO	GEN_A1	GEN_DI
channel number		4	2	7	4	3
line_num	CanBus Number	CanBus Number	CanBus Number	CanBus Number	CanBus Number	CanBus Number
name	CAN					
par_1	CanBus Number	CanBus Number	CanBus Number	CanBus Number	CanBus Number	CanBus Number
par_2	CAN node address	16	17	26	1	31
par_3	10					
I/O 1		EVV_StepsOutput Valve 1	EEV_OutRateValve 1	EVV_ProbeTConfiguration Valve 1	EVV_Temperature Valve 1	EVV_ValvePosition Valve 1

LINE	GEN_LINE	GEN_AO	GEN_AO	GEN_AO	GEN_A1	GEN_DI
I/O 2		EVV_StepsOutput Valve 2	EEV_OutRateValve 2	EVV_ProbeTConfiguration Valve 2	EVV_Temperature Valve 2	EVV_ValvePosition Valve 2
I/O 3		EVV_Steps MaxValve 1		EVV_ProbePConfiguration Valve 1	EVV_PressureValve 1	
I/O 4		EVV_Steps MaxValve 2		EVV_ProbePConfiguration Valve 2	EVV_PressureValve 2	
I/O 5				EVV_OutPhasCurrent Valve 1		
I/O 6				EVV_OutPhasCurrent Valve 2		
I/O 7				EVV_OutValveConfiguration		
I/O 8						

7   LEDs Meaning

The following table has to be used to configure ISaGRAF lines to connect the valve actuator.

LED	MODE	MEANING
PWR ON	On	The device is correctly powered
ALARM	On	An alarm is present
TX/RX	Blinking	CanBus or LAN activity, communication activated
TX/RX	On	No link
OPEN V1	Blinking	Valve 1 is opening
OPEN V1	On	Valve 1 completely opened
CLOSE V1	Blinking	Valve 1 is closing
CLOSE V1	On	Valve 1 completely closed
OPEN V2	Blinking	Valve 2 is opening
OPEN V2	On	Valve 2 completely opened
CLOSE V2	Blinking	Valve 2 is closing
CLOSE V2	On	Valve 2 completely closed

8   Technical Data

Case	4 DIN
Connectors	Disconnectable terminal block ≤ 2,5 mm2 for valve outputs and minifit connector for low voltage section
Power Supply	24Vac/dc; **Absorption:** 40VA max.
Probe Inputs	2 configurable as NTC/PTC/Pt1000 2 configurable as NTC/PTC/Pt1000/4 to 20mA/ to 5V
Valve Output(s)	See table on *page 3*
Serial Connection	CanBus and LAN for iCHILL200CX
Data Storing	Non volatile memory (EEPROM)
Kind of Action	1B; **Pollution Grade:** 2; **Software Class:** A
Rated Impulsive Voltage	2500V; **Over-voltage Category:** II
Operating Temperature	10 to 60 °C; **Storage Temperature:** -30 to 85 °C
Relative Humidity	20 to 85% (no condensing)
Measuring and Regulation Range	**PTC Probe:** -50 to150°C **NTC Probe:** -40 to110°C **Pt1000 Probe:** -50 to 100°C **Pressure Transducer:** -1.0 to 50.0 Bar
Resolution	0,1°C or 1 °F; **Precisione@ 25°C:** ±0,1 °C ±1 digit

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