

## Module Valve Amplifier for Press Brakes

# CybMVA



### CybMVA Amplifier Modules

As part of its complete solutions, we offer a range of CybMVA amplifier modules covering all press brake configurations. CybMVAs are implemented with the CybTouch 15 PS, VisiTouch Pac, VisiTouch Pac MX, VisiTouch 19 and VisiTouch 19 MX controls through a CANopen link.

The CybMVA modules are multichannel valve amplifiers developed to operate simultaneously Y1, Y2 valves (any kind of hydraulic systems), one pressure valve and one crowning valve.

Depending on the model, CybMVA can drive:

- Proportional valves with feedback
- Open-loop proportional valves without feedback
- Proportional valves with integrated amplifier
- Servo valves
- Hybrid press brakes

CybMVA, placed inside the cabinet, also serves as an interface to I/O and analog axes.

### Main useful features

USB interface and its dedicated PC program offer simple parameter setup and diagnostic. LEDs signals for easy function check.

Depending on the type of valves, configuration directly from VisiTouch through CANopen link.

### Customer Benefits

- All in one design
- Manage directional, pressure and crowning valves
- Attractive solution from the same supplier

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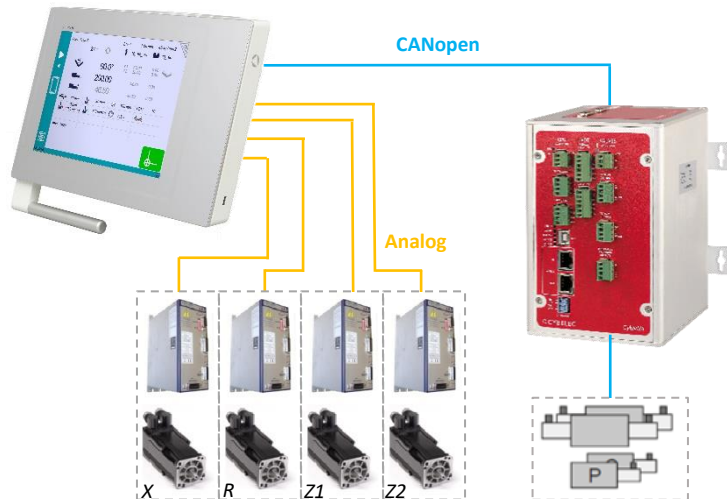
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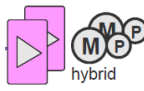




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## OVERVIEW

### CybTouch 15 PS – 6 axes (Y1, Y2, X, R, Z1, Z2)



### Available configurations

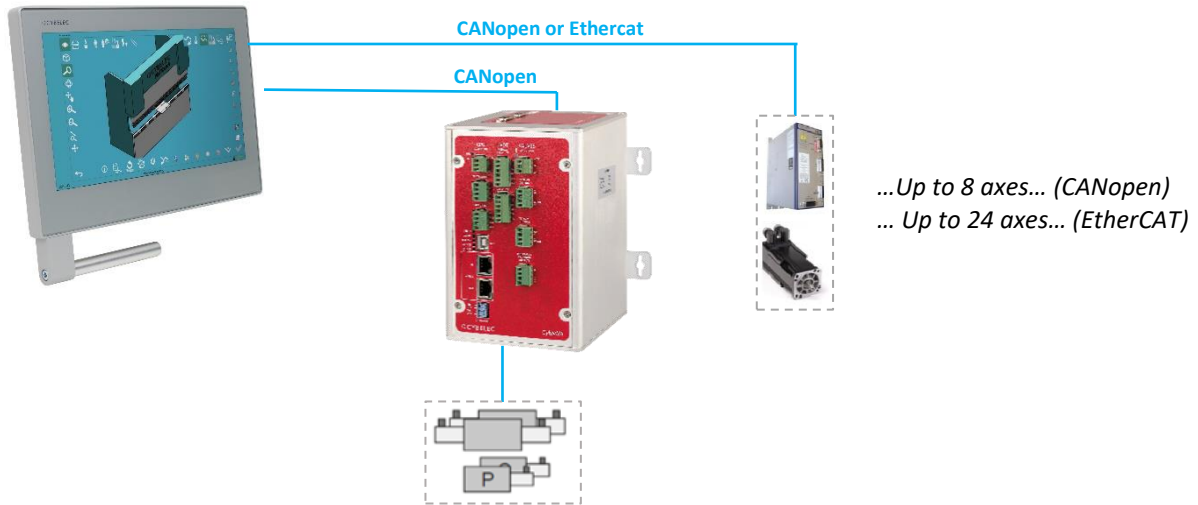
	Proportional valves			Servo Valves	Hybrid
	With Feedback (Hoerbiger valves)	Without feedback	With integrated amplifier (+/-10V analog command)	Required MSV402/A module (50-300 mA)	 hybrid
Pressure & crowning amplifier					
Y1 + Y2 + 2 axis	CybVA6 or MVA-FA2		2 x MVP 100/A	MSV 402/A + 2 x MVP 100/A	
Y1 + Y2 + 4 axis *	MVA-FA2		MVA-AA2	MVA-AA2 + MSV 402/A	MVA-AA2

\* Y1 + Y2 wired on MVA. Electrical analog axis wired on CybTouch 15PS

MSV 402/A: amplifier for Servo-valve

MVP 100/A: amplifier for pressure and crowning (Only for solution without MVA or CybVA6)

## VisiTouch Pac and Pac MX - Up to 24 axes in digital mode (Y1, Y2, + axes)



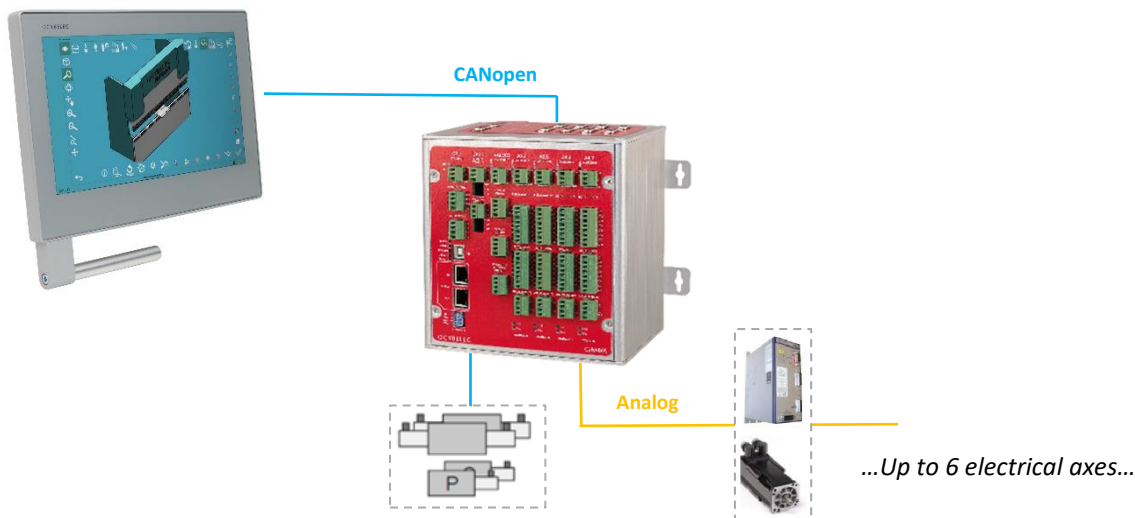
### Available configurations

#### Configurations with digital electrical axes

	Proportional valves			Servo Valves	Hybrid
	With Feedback (Hoerbiger valves)	Without feedback	With integrated amplifier (+/-10V analog command)	Required MSV402/A module (50-300 mA)	
Pressure & crowning amplifier					
Y1 + Y2 + digital axis	MVA-FD2		MVA-AD2	MVA-AD2 + MSV 402/A	MVA-AD2

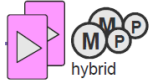




MSV 402/A: amplifier for Servo-valve

## VisiTouch Pac and Pac MX - Up to 8 axes in analog mode (Y1, Y2, + 6/8 axes)



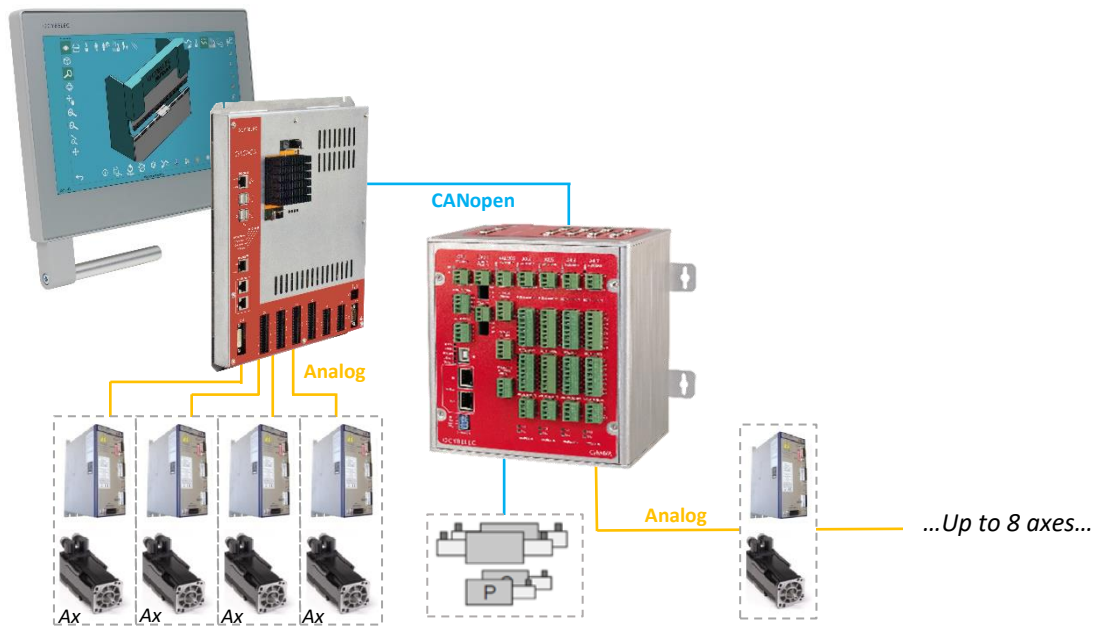
### Available configurations

#### Configurations with analog electrical axes

	Proportional valves			Servo Valves	Hybrid
	With Feedback (Hoerbiger valves)	Without feedback	With integrated amplifier ( $\pm 10V$ analog command)	Required MSV402/A module (50-300 mA)	 hybrid
Pressure & crowning amplifier					
Y1 + Y2 + 2 axis	MVA-FA4		MVA-AA4	MVA-AA4 + MSV 402/A	MVA-AA4
Y1 + Y2 + 4 axis	MVA-FA6		MVA-AA6	MVA-AA6 + MSV 402/A	MVA-AA6
Y1 + Y2 + 6 axis	MVA-FA8		MVA-AA8	MVA-AA8 + MSV 402/A	MVA-AA8
Y1 + Y2 + 8 axis	Please contact Cybelec		MVA-AA10	MVA-AA10 + MSV 402/A	MVA-AA10

MSV 402/A: amplifier for Servo-valve

## VisiTouch 19 and VisiTouch 19MX – Up to 14 axes in analog mode (Y1, Y2, +12 axes)



### Available configurations

#### Configurations with analog electrical axes

	Proportional valves			Servo Valves	Hybrid
	With Feedback (Hoerbiger valves)	Without feedback	With integrated amplifier (+/-10V analog command)	Required MSV402/A module (50-300 mA)	
Pressure & crowning amplifier					
Y1 + Y2	CybVA6 or MVA-FA2		2 x MVP 100/A or MVA-AA2 *	MVA-AA2 + MSV 402/A	MVA-AA2
Y1 + Y2 + 2 axis	MVA-FA4		MVA-AA4	MVA-AA4 + MSV 402/A	MVA-AA4
Y1 + Y2 + 4 axis	MVA-FA6		MVA-AA6	MVA-AA6 + MSV 402/A	MVA-AA6
Y1 + Y2 + 6 axis	MVA-FA8		MVA-AA8	MVA-AA8 + MSV 402/A	MVA-AA8
Y1 + Y2 + 8 axis	MVA-FA10		MVA-AA10	MVA-AA10 + MSV 402/A	MVA-AA10

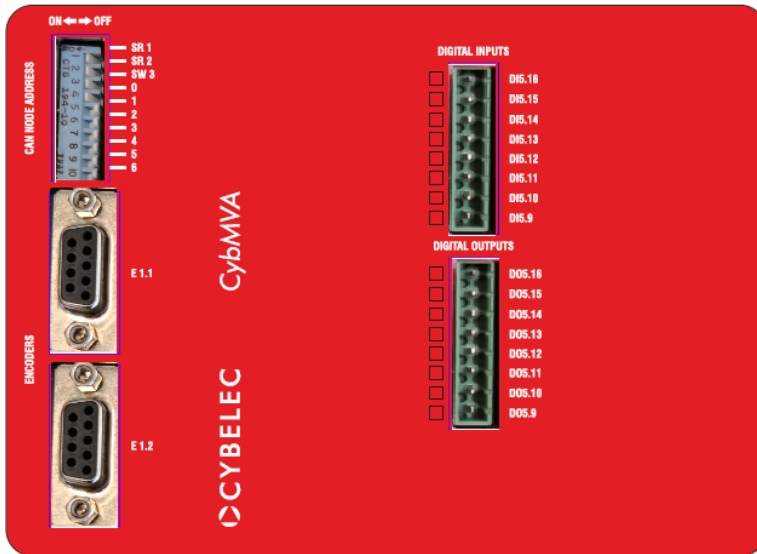
MSV 402/A: additional amplifier for Servo-valve

## OVERVIEW TABLE WITH ALL AVAILABLE CONFIGURATION/ORDERING INFO

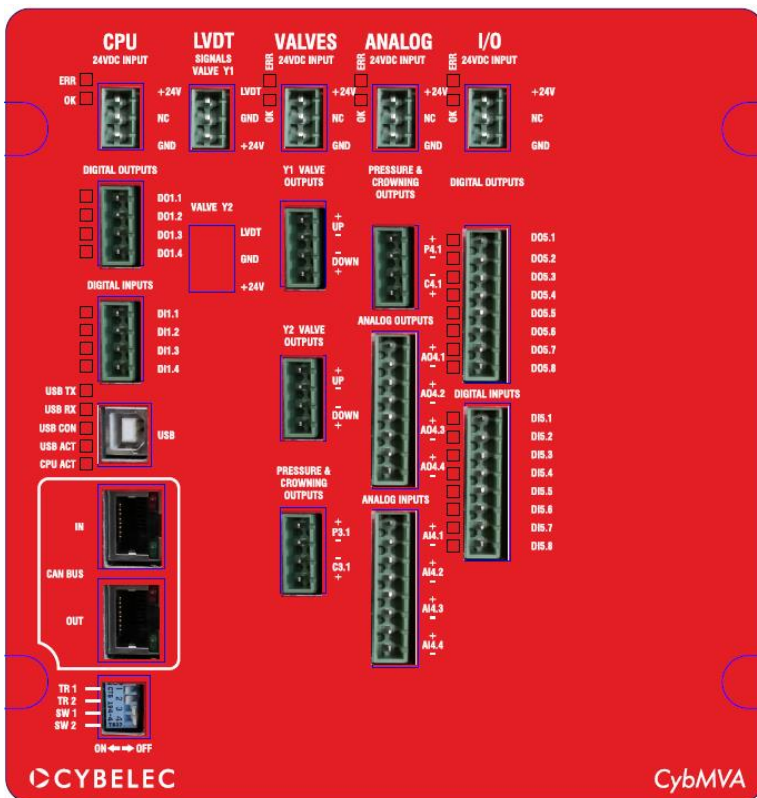
MVA Model	Axes	DI	DO	AI	AO	Y1/Y2	P + C	Version
<i>For machines with digital electrical axes</i>								
MVA-FD2	CPU, LVDT, VALVE, AN, IO	Y1 + Y2 Without analog axis	19	19	4	4	4 AO: 3A Y1/Y2 2AI: for LVDT	2AO: 3A Multi
MVA-AD2	CPU, PW, AN, IO	Y1 + Y2 Without analog axis	19	19	4	4	Via AO (+/-10V) on analog board	2AO: 3A Compact
<i>Amplifier for proportional valves and analog axes</i>								
MVA-FA2	CPU, LVDT, VALVE	Y1 + Y2 Without analog axis	3	3	-	-	4 AO: 3A Y1/Y2 2AI: for LVDT	2AO: 3A Compact
MVA-FA4	CPU, LVDT, VALVE, AN, AX	Y1 + Y2 2 analog axes	11	11	4	6	4 AO: 3A Y1/Y2 2AI: for LVDT	2AO: 3A Multi
MVA-FA6	CPU, LVDT, VALVE, AN, AX, AX	Y1 + Y2 4 analog axes	19	19	4	8	4 AO: 3A Y1/Y2 2AI: for LVDT	2AO: 3A Multi
MVA-FA8	CPU, LVDT, VALVE, AN, AX, AX, AX	Y1 + Y2 6 analog axes	27	27	4	10	4 AO: 3A Y1/Y2 2AI: for LVDT	2AO: 3A Multi
MVA-FA10	CPU, LVDT, VALVE, AN, AX, AX, AX, AX	Y1 + Y2 8 analog axes	35	35	-	8	4 AO: 3A Y1/Y2 2AI: for LVDT	2AO: 3A Multi
<i>For servo-valves, integrated amplifier, hybrid and analog axes</i>								
MVA-AA2	CPU, PW, AN	Y1 + Y2 Without analog axis	3	3	4	4	Via AO (+/-10V) on analog board	2AO: 3A Compact
MVA-AA4	CPU, PW, AN, AX	Y1 + Y2 2 analog axes	11	11	4	6	Via AO (+/-10V) on analog board	2AO: 3A Compact
MVA-AA6	CPU, PW, AN, AX, AX	Y1 + Y2 4 analog axes	19	19	4	8	Via AO (+/-10V) on analog board	2AO: 3A Multi
MVA-AA8	CPU, PW, AN, AX, AX, AX	Y1 + Y2 6 analog axes	27	27	4	10	Via AO (+/-10V) on analog board	2AO: 3A Multi
MVA-AA10	CPU, PW, AN, AX, AX, AX, AX	Y1 + Y2 8 analog axes	35	35	4	12	Via AO (+/-10V) on analog board	2AO: 3A Multi

## STRUCTURE OVERVIEW

### MVA-FD2



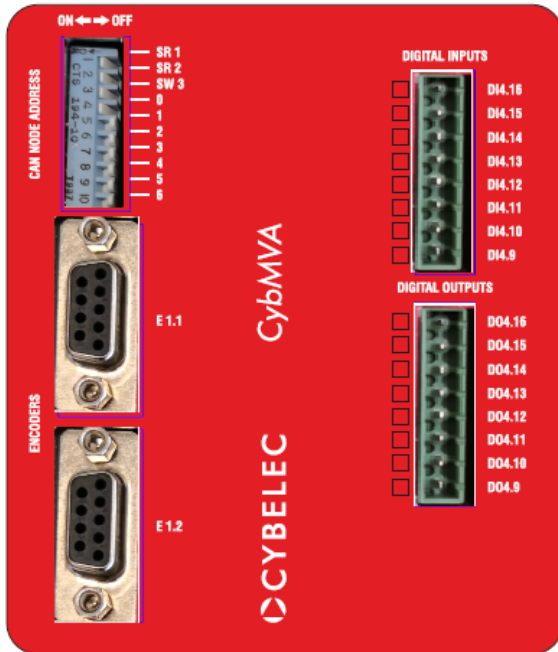
Top view



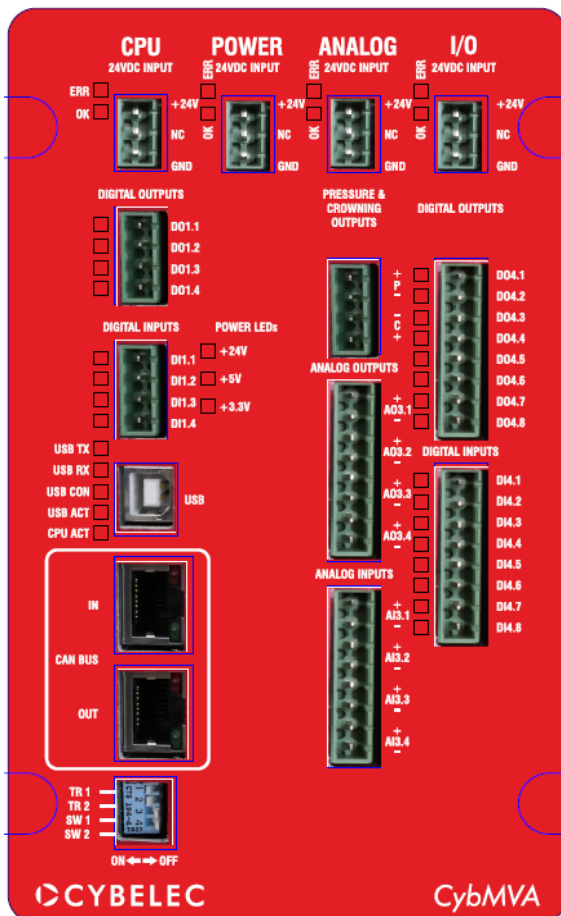
Front view



## MVA-AD2

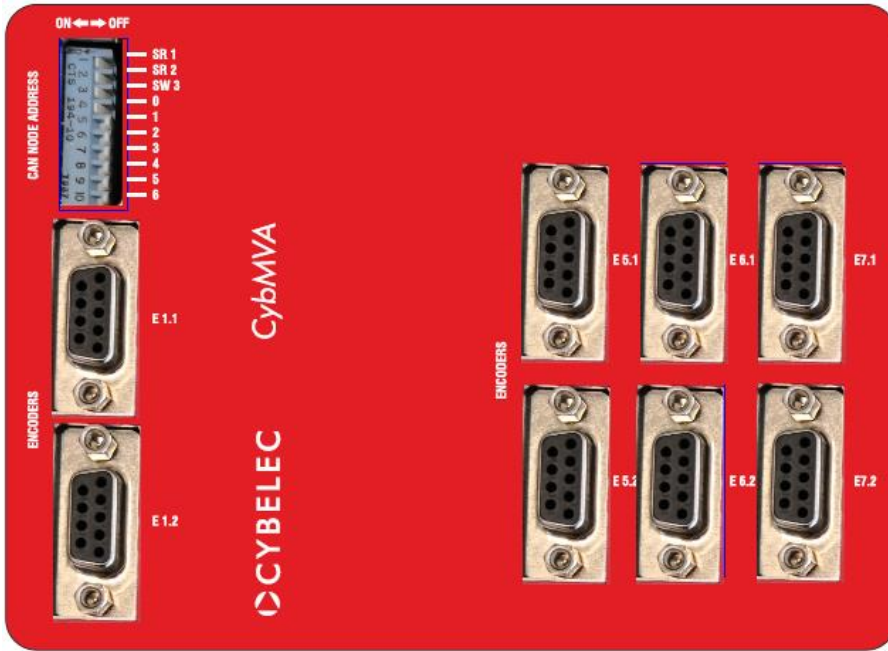


Top view

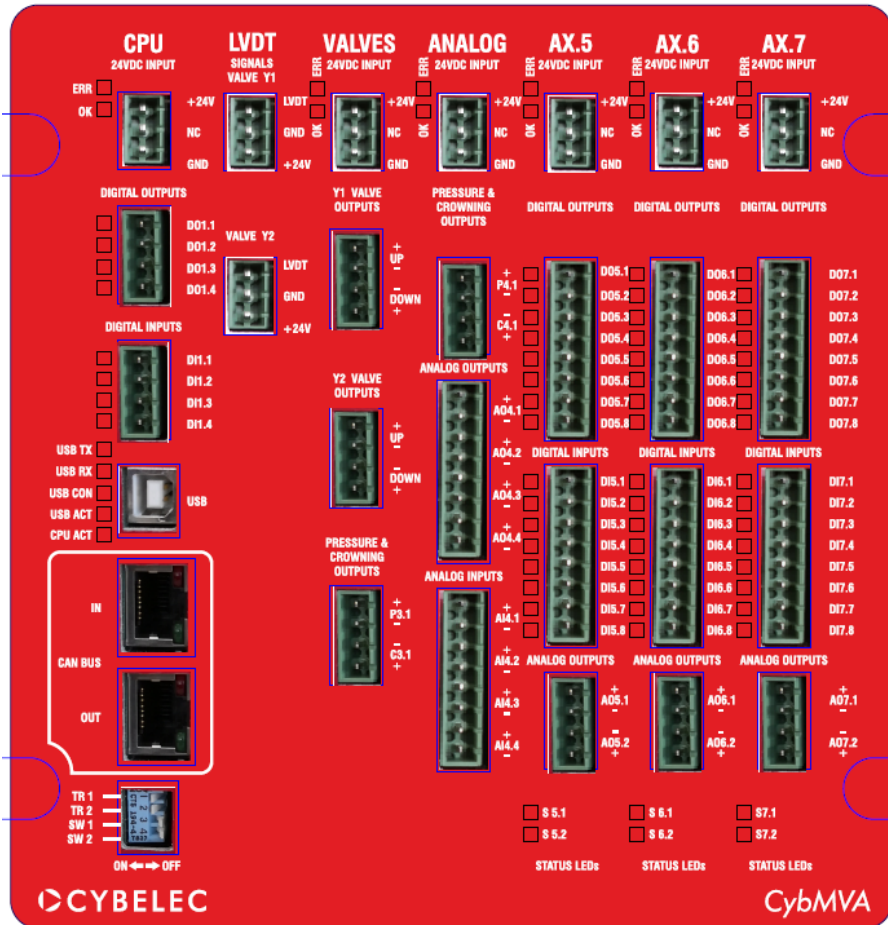
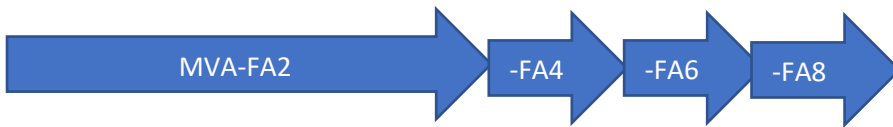


Front view

**MVA-FA2 -> FA8**



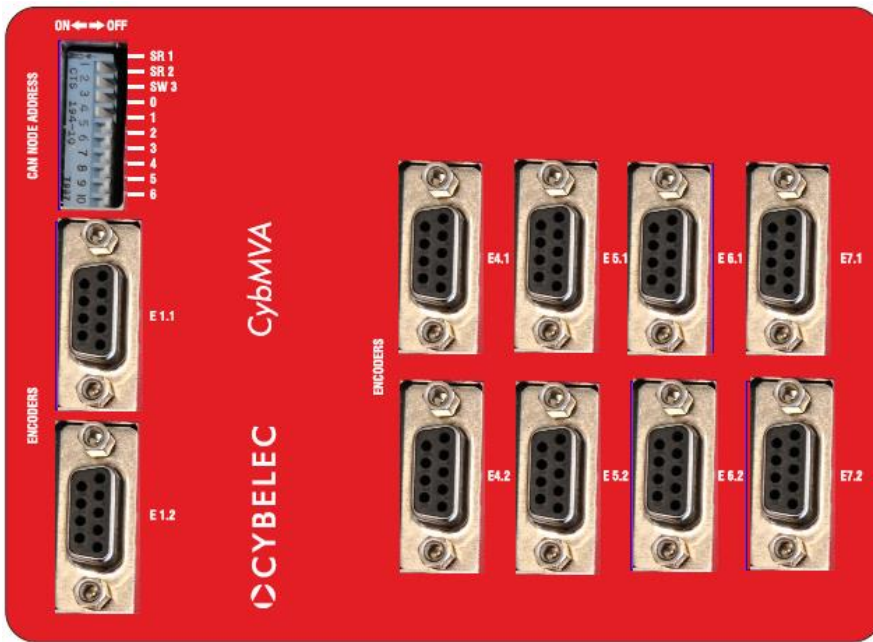
Top view



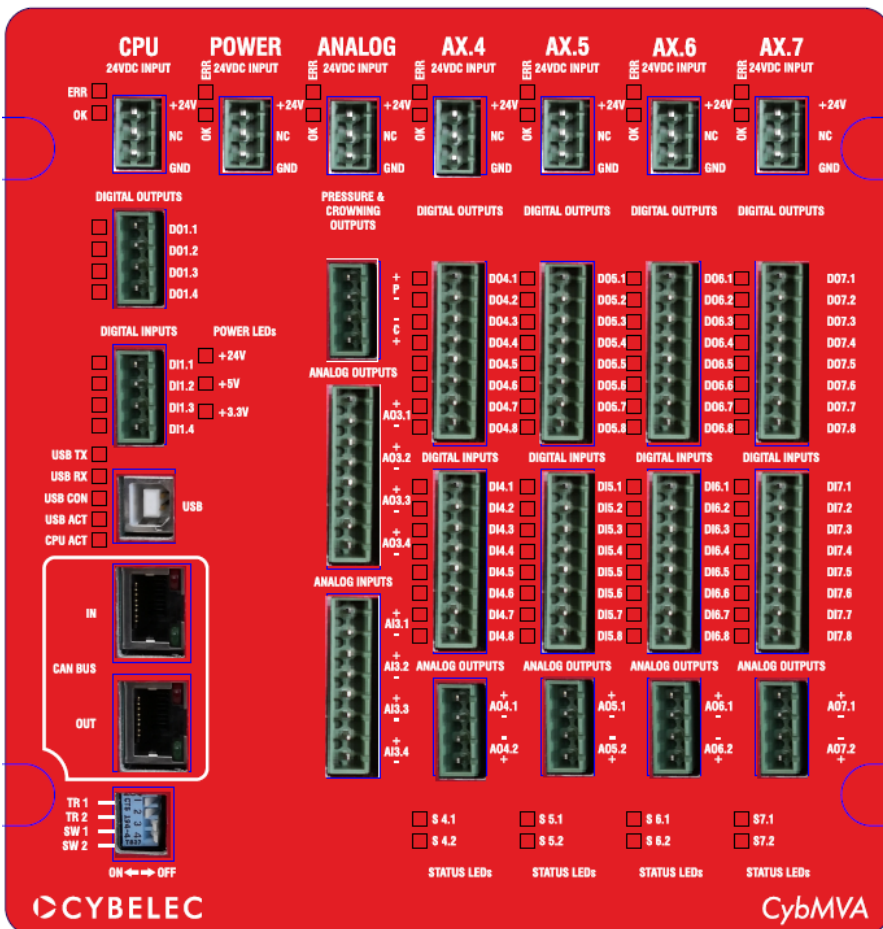
Front view



## MVA-AA2 -> AA10



Top view



Front view

## TECHNICAL CHARACTERISTICS

<b>Main Power Supply for CPU Valves</b>	1 x Isolated power supply for valves and CPU. Stabilized 24VDC 400W, input +/- 20%,
<b>Power consumption (logic sections)</b>	<ul style="list-style-type: none"> <li>▪ CPU Board: 300mW</li> <li>▪ Power Board: 350mW</li> <li>▪ Analog Board: 120mW</li> <li>▪ Encoder Board: 600mW</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>▪ Compact module w/d/h : 99.5 x 132.5 x 181.0mm</li> <li>▪ Extended module w/d/h : 177.0 x 132.5 x 181.0mm</li> </ul>
<b>Operating conditions</b>	Min. -10° Celsius, max. 45° Celsius. Relative humidity 10 to 85% non-condensing.
<b>Cabinet mounting</b>	With 4 screws
<b>EC Directives</b>	IEC61131-2
<b>Power Supply for digital I/O</b>	1 x Isolated power supply for Digital I/Os Stabilized 24VDC 200W, input +/- 20%

## CPU BOARD

<b>Encoder 1 &amp; 2 (top panel)</b>	<ul style="list-style-type: none"> <li>▪ Support <b>2 encoder axes</b></li> <li>▪ D-sub Female 9 pin (1: GND, 2: A-, 3: B-, 4: Z-, 5: +5VDC, 6: A+, 7: B+, 8: Z+, 9: GND)</li> <li>▪ Input Type: Open Collector NPN, Open Collector PNP, Push-Pull, RS422 Line Driver (TTL)</li> <li>▪ Complementary signals are not necessary, but recommended. +5VDC is internally supplied, max 150mA for each encoder. +12VDC or +24VDC must be externally supplied.</li> <li>▪ +5VDC is protected for short circuit with PTC.</li> <li>▪ 10 SPST Switches (SWUP)                             <ul style="list-style-type: none"> <li>○ 256 Different Physical CAN Address Selection with 8 switches</li> <li>○ 4 CAN Bus Speed Selection (1Mbps, 800Kbps, 500Kbps, 250Kbps)</li> </ul> </li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>▪ Stabilized and isolated <b>+24VDC</b> Power supply, ±20% for Digital Inputs and Outputs</li> <li>▪ Reverse polarity protection for Power Supply</li> <li>▪ Power Supply Connection OK and Error LED</li> </ul>
<b>Output</b>	<ul style="list-style-type: none"> <li>▪ <b>4 DO:</b> Isolated Digital Outputs (3 available, 1DO used for “error” diagnosis)</li> <li>▪ <b>+24VDC</b> source mode with LEDs at each output</li> <li>▪ Maximum current: <b>1A</b></li> <li>▪ Optocoupler Isolation</li> <li>▪ Short Circuit Protection</li> <li>▪ All outputs are reverse polarity protection</li> </ul>
<b>Input</b>	<ul style="list-style-type: none"> <li>▪ <b>4 DI:</b> Isolated Digital inputs (3 available, 1DI used for “enable” signal)</li> <li>▪ <b>+24VDC</b> Digital Input</li> <li>▪ Optocoupler Isolation</li> <li>▪ All inputs have LEDs</li> </ul>
<b>USB</b>	<ul style="list-style-type: none"> <li>▪ Full Speed USB 2.0 Slave Device Port</li> <li>▪ Data transfer rates up to 3 Mbaud</li> <li>▪ LED indicators for TX, RX, Cable Connection OK, USB Active (not suspended)</li> <li>▪ LED indicator for Board Active Signal</li> </ul>
<b>CAN</b>	<ul style="list-style-type: none"> <li>▪ 1 CAN Bus Port with CANOpen Protocol Support</li> <li>▪ <b>2 RJ45 Connectors</b> for easy connection (BUS IN and BUS OUT)</li> <li>▪ CAN RUN OK LED</li> <li>▪ CAN ERROR LED</li> </ul>
<b>SW</b>	<ul style="list-style-type: none"> <li>4 SPST Switches (SW)                             <ul style="list-style-type: none"> <li>▪ CAN Bus Terminal Resistor Activation with 2 switches</li> <li>▪ Open/Closed Control Selection and CAN Bus/Analog Selection with 2 switches</li> </ul> </li> </ul>

## VALVE BOARD

<b>USB</b>	<ul style="list-style-type: none"> <li>▪ Full Speed USB 2.0 Slave Device Port (<i>not available on the Standard Version</i>)</li> <li>▪ Data transfer rates up to 3 Mbaud</li> <li>▪ LED Indicators for TX, RX, Cable Connection OK, USB Active (not suspended)</li> <li>▪ LED Indicator for Board Active Signal</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>▪ Stabilized +24VDC Power supply minimum 400W, ±20% for the System (Valves and Logic)</li> <li>▪ Reverse polarity protection for Power Supply</li> <li>▪ Power Supply Connection OK and Error LED</li> </ul>
<b>Valve Y1 and Y2</b>	<ul style="list-style-type: none"> <li>▪ <b>4 AO:</b> available for 4 solenoids. <b>Max 3A/solenoid</b></li> <li>▪ Current Feedback Control</li> <li>▪ PID Parameters are changeable via PC software</li> <li>▪ Open Loop or Closed Loop Control are selectable</li> </ul>
<b>Pressure &amp; Crowning</b>	<ul style="list-style-type: none"> <li>▪ <b>2 AO:</b> available for 2 solenoids. <b>Max 3A. / solenoid</b></li> <li>▪ Current Feedback Control</li> </ul>

## LVDT BOARD

<b>LVDT Y1 &amp; Y2</b>	<ul style="list-style-type: none"> <li>▪ <b>LVDT Feedback for Y1 and Y2 axis</b> <ul style="list-style-type: none"> <li>○ 3VDC to 12VDC (Hoerbiger PIL, PIH and other valves)</li> <li>○ ±10VDC (not available yet)</li> </ul> </li> <li>▪ <b>12-bit Resolution</b></li> </ul>
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## ANALOG BOARD

<b>Power</b>	<ul style="list-style-type: none"> <li>▪ Stabilized and isolated +24VDC Power supply, ±20% for Digital Inputs and Outputs</li> <li>▪ Reverse polarity protection for Power Supply</li> <li>▪ Power Supply Connection OK and Error LED</li> </ul>
<b>Pressure &amp; Crowning Outputs</b>	<ul style="list-style-type: none"> <li>▪ <b>2 AO:</b> Maximum <b>3A</b></li> <li>▪ Current Feedback Control</li> </ul>
<b>Analog Input</b>	<ul style="list-style-type: none"> <li>▪ <b>2AI:</b> 2 channels Analog Inputs <b>±10VDC voltage range</b></li> <li>▪ <b>2AI:</b> 2 channels Analog Inputs <b>0 - 10VDC voltage range</b></li> <li>▪ 12-bit resolution for each channel</li> </ul>
<b>Analog Output</b>	<ul style="list-style-type: none"> <li>▪ <b>4 AO :</b> 4 Channels Analog Outputs</li> <li>▪ <b>±10VDC Voltage Range</b> (approx. 5mV resolution)</li> <li>▪ 12-bit Resolution</li> <li>▪ Impedance &lt; 100 Ω</li> <li>▪ Short Circuit Protected</li> <li>▪ Load ≥ 2 kΩ (max. 15mA)</li> <li>▪ Common Activation Signal for Analog Outputs</li> </ul>

## AXIS BOARD (One board available to manage 2 analog axes)

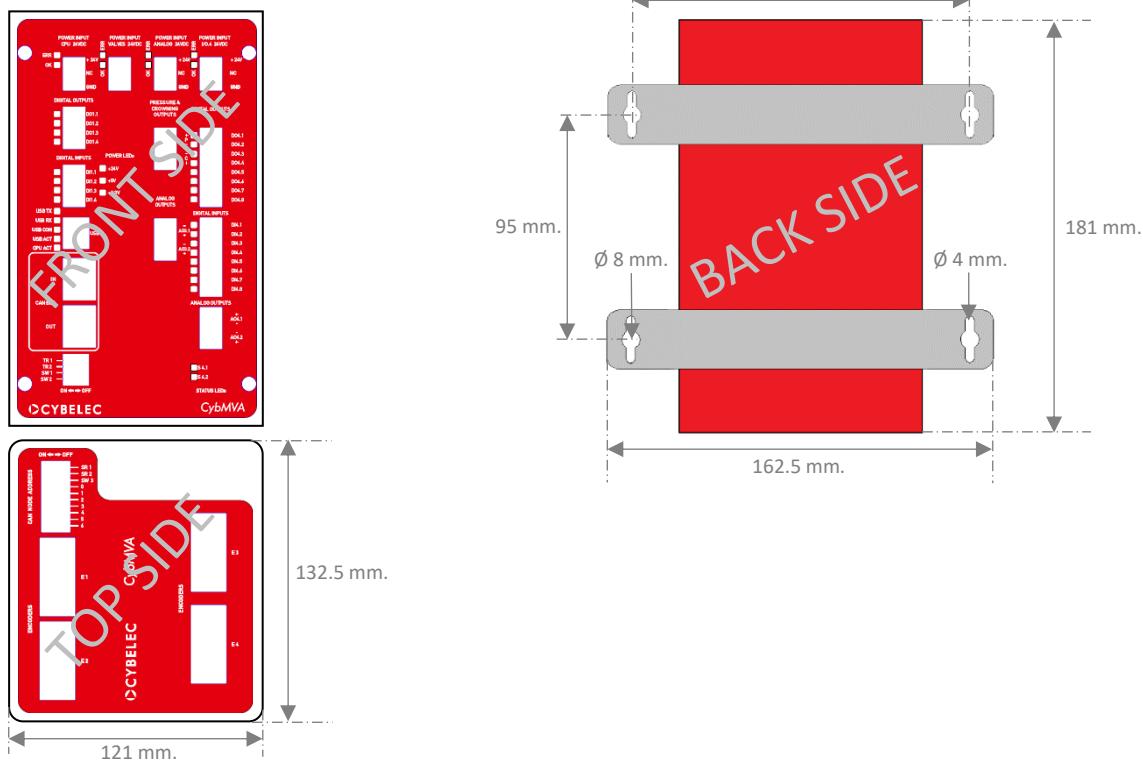
<b>Encoder 1 &amp; 2</b> <i>(top panel)</i>	<ul style="list-style-type: none"> <li>▪ Support <b>2 encoder axes</b></li> <li>▪ D-sub Female 9 pin (1: GND, 2: A-, 3: B-, 4: Z-, 5: +5VDC, 6: A+, 7: B+, 8: Z+, 9: GND)</li> <li>▪ Input Type: Open Collector NPN, Open Collector PNP, Push-Pull, RS422 Line Driver (TTL)</li> <li>▪ Complementary signals are not necessary, but recommended. +5VDC is internally supplied, max 150mA for each encoder. +12VDC or +24VDC must be externally supplied.</li> <li>▪ +5VDC is protected for short circuit with PTC.</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>▪ Stabilized and isolated +24VDC Power supply, ±20% for Digital Inputs and Outputs</li> <li>▪ Reverse polarity protection for Power Supply</li> <li>▪ Power Supply Connection OK and Error LED</li> </ul>
<b>Digital Output</b>	<ul style="list-style-type: none"> <li>▪ <b>8 DO:</b> Isolated Digital Outputs</li> <li>▪ <b>+24VDC</b> source mode with LEDs at each output</li> <li>▪ Maximum current: <b>1A</b></li> <li>▪ Optocoupler Isolation</li> <li>▪ Short Circuit Protection</li> <li>▪ All outputs are reverse polarity protection</li> </ul>
<b>Digital Input</b>	<ul style="list-style-type: none"> <li>▪ <b>8 DI:</b> Isolated Digital inputs</li> <li>▪ <b>+24VDC</b> Digital Input</li> <li>▪ Optocoupler Isolation</li> <li>▪ All inputs have LEDs</li> </ul>
<b>Analog Output</b>	<ul style="list-style-type: none"> <li>▪ <b>2 AO:</b> Channel Analog Outputs</li> <li>▪ <b>±10VDC Voltage Range</b> (approx. 5mV resolution)</li> <li>▪ 12-bit Resolution</li> <li>▪ Impedance &lt; 100 Ω</li> <li>▪ Short Circuit Protected</li> <li>▪ Load &gt;- 2 k Ω (max. 15mA)</li> <li>▪ Common Activation Signal for Analog Outputs</li> </ul>
<b>LEDs</b>	<ul style="list-style-type: none"> <li>▪ 2 Status LEDs</li> </ul>

## I/O BOARD

<b>Power</b>	<ul style="list-style-type: none"> <li>▪ Stabilized and isolated <b>+24VDC</b> Power supply, ±20% for Digital Inputs and Outputs</li> <li>▪ Reverse polarity protection for Power Supply</li> <li>▪ Power Supply Connection OK and Error LED</li> </ul>
<b>Digital Outputs</b>	<ul style="list-style-type: none"> <li>▪ <b>16 DO:</b> Isolated Digital Outputs</li> <li>▪ <b>+24VDC</b> source mode with LEDs at each output</li> <li>▪ Optocoupler Isolation</li> <li>▪ Short Circuit Protection</li> <li>▪ All outputs are reverse polarity protection</li> </ul>
<b>Digital Inputs</b>	<ul style="list-style-type: none"> <li>▪ <b>16 DI:</b> Isolated Digital inputs</li> <li>▪ <b>+24VDC</b> Digital Input</li> <li>▪ Optocoupler Isolation</li> <li>▪ All inputs have LEDs</li> </ul>

## DIMENSIONS

### Compact (Up to 4 axes (Y1, Y2 and 2 electrical axes)):



### Multi (from 6 axes (Y1, Y2 and 4 electrical axes)):

