

## ModEva RA

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ModEva RA is Cybelec's latest evolution of the ModEva range. Its programming console has both a touchscreen and a traditional keypad, and operates with the new full 3D simulation software.

The ModEva RA numerical control can control up to 18 axes, of which 2 are synchronized hydraulic axes especially intended for press-brakes.

ModEva RA is composed of 2 main elements:

- The programming console: located within the operator's reach, generally fixed to a swiveling arm.
- The CNC (Computerized Numerical Control): placed inside the electric cabinet.

The CNC is available in 2 rack formats.

- Rack version **C** (Compact): This is a small, very compact rack, adapted to many situations.
- Rack version **M** (Medium): This is a bigger rack, allowing a variety of configurations.

ModEva RA's software gives manufacturers the ability to configure the axes, the inputs/outputs and the auxiliary functions according to their needs.

ModEva RA is the continuation of the ModEva range. As such, it benefits from the exact same compatibilities as the previous ModEva numerical controls in terms of hardware:

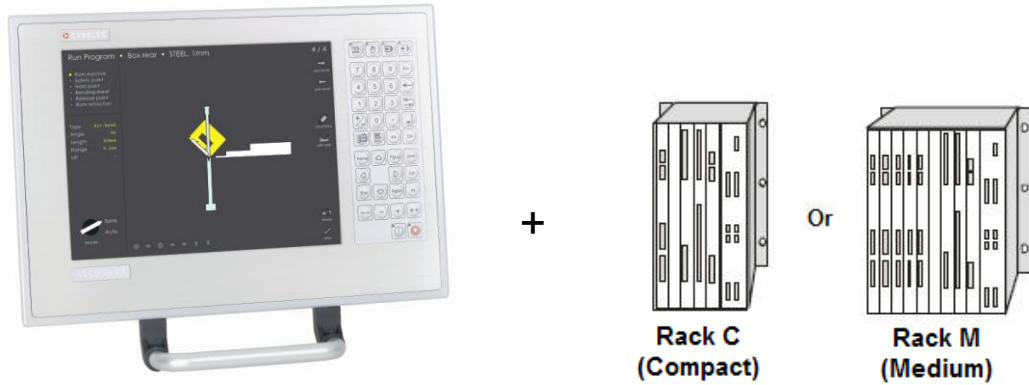
- Same ModEva wiring.
- Same ModEva signals.
- Same ModEva electronic interface.
- Same ModEva programs can be reused.

### Versions

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<b>PS</b>	Version for synchronized press-brakes.
<b>PC - PL</b>	Like the PS but for press-brakes with mechanical (PC) or hydraulic (PL) stops, and beam control with a linear encoder.
<b>ModEva RA CNC/C</b>	CNC rack version "C" (Compact): can control 2, 4 or 6 axes, and up to 10 axes with CANopen axes*.
<b>ModEva RA CNC/M</b>	CNC rack version "M" (Medium): can control 4, 6, 8, 10, 12 or 14 axes, and up to 18 axes with CANopen axes*.

\* see definitions of the axes and configurations further on in the document.



**Definitions**

- Hydraulic axes:** An analog axis especially intended for controlling the beams (Y1-Y2). These two axes are located on the NPU board.
- Analog axes:** Axes for which the position is given by an incremental encoder and movement instructions are provided by the CNC via a +-10VDC voltage as well as a small number of digital signals. One also corresponds to an analog interface axis. These axes are controlled by boards called NMX / NSX. Each of these boards controls 2 axes.
- CANopen axes:** Axes for which positioning information is handled through a CANopen bus.  
 These axes require an NCX board on the CNC and a CANopen interface on the servo-amplifier.  
 An NCX board can control up to 8 axes depending on the options.  
 The ModEva CNC can be equipped with a maximum of 2 NCX boards.
- NMX:** A master board for 2 analog axes. A master board controls up to 3 NSX slave boards.
- NSX:** A slave board for 2 analog axes. A slave board in all cases requires an NMX board.
- NCX:** CANopen board for a maximum of 8 CANopen axes. This board can handle various protocols according to the type of servo-amplifier used. It is possible to combine NCX and NMX/NSX boards (in order to combine CANopen and analog axes).

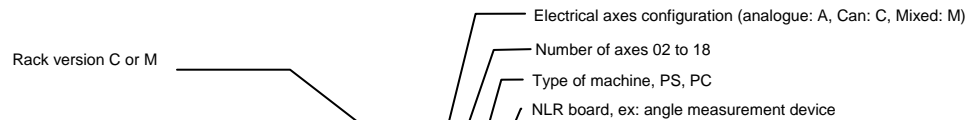
**Configuration of CNC Axes**

Rack version	CNC / C (Compact)		CNC / M (Maxi)					
No. of axis boards	2		5					
Axis position (slot N°)	0	1	0	1	2	3	4	5
Most common configurations	NMX	-	NMX	NSX	NSX			
	NMX	NSX	NMX	NSX	NSX	NSX		
	NMX	NLR	NMX	NSX	NSX	NLR		
	NCX	-	NMX	NSX	NSX	NLR	NMX	
	NCX	NLR	NCX	NLR			NMX	NSX

## Configuration of the Console

Console	S-MOD-RA
TFT screen	15"
Keypad	42 keys, lateral.
Resolution	1024x768
Touch screen	Yes
USB port	1
Power	Through the panel link.
Seal	IP 54.
P-Link	2 cables RJ 45 twisted pair category 6. Cables 5 m or 10 m. Dist. > 10 m with CYBELEC repeater.
Temperature, pollution level, relative humidity, during work.	Min. 5° Celsius, max. 40° Celsius.* Pollution level 2. Relative humidity (10 to 85% non-condensing). * If the ambient temperature approaches or exceeds 40° Celsius, it would be advisable to install special ventilation, or even air-conditioning.
Weight	Approximately 5 kg.

## Configuration of the CNCs



Reference	S-CNC-xxxxPxxxRA
3D Software	ModEva RA.
System	Windows XP Pro Compact.
CPU	1 GHz.
RAM	2 GB.
Disk	8 GB flash.
Network	Yes, Ethernet RJ45.
USB 1.1	2, with RJ45 extensions (10 m).
Printer port	Yes.
Keyboard input	Yes, PS/2.
Mouse input	Yes, PS/2.
Screen output	Yes, STD VGA.
Y1, Y2	NPU board.
RS 232 port	Yes, 2 of which 1 configurable to RS 422 (LazerSafe).
Serial port for PLC	Yes, RS232 configurable to RS 422 (Pilz).
Analog axes	NMX, NSX boards, 2 axes per board, according to configuration and rack version. Zout output impedance < 100 Ω , ZI load ≥ 10 kΩ.
CAN axes	NCX boards, depending on configuration and rack version.
Incremental encoders	5V DC line driver, obligatory complementary signals.
Digital inputs	NIN boards, 32 24 VDC opto-coupled inputs.
Digital outputs	NOT boards, 32 outputs, 24 VDC "sources", max 2.5 A / output (NOT 204). Max 6 A / board.
Analog inputs	NIN boards, 6 analog inputs. Depending on configuration 0-10, 0-24 VDC A/D 8 bits.
Analog outputs FA	NOT boards, 4 outputs, 0-10 VDC (8 bits) for the auxiliary functions, Zout output impedance < 100 Ω , ZI load ≥ 10 kΩ.
Power supply	24 VDC / max 4A ± 15%.
Seal	Must be installed in an approved electric cabinet.
Temperature, pollution level, relative humidity during work.	Min. 5° Celsius, max. 40° Celsius.* Pollution level 2. Relative humidity (10 to 85% non-condensing). <i>If the ambient temperature approaches or exceeds 40° C, it would be advisable to install special ventilation, or even air-conditioning.</i>
Weight	Rack version C: approx. 5 kg. Rack version M: approx. 6 kg. Depending on equipment.

## ***Axes and Auxiliary Functions of the Standard Software***

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The elements listed below are available and can be configured in all numerical controls supplied with standard software (within the number of available axes).

<i>Y1 - Y2</i>	Synchronized axes for the beam (servo-valves, proportional valves).
<i>X, X1, X2, X5, X6</i>	Main rear backgauge axes (X5, X6 generally for gauges external to the frame).
<i>X1 ABS, X2 REL</i>	Secondary gauge axes in absolute or relative mode.
<i>R, R2, R5, R6</i>	Backgauge height-adjustment axes (R5, R6 generally for gauges external to the frame).
<i>Z, Z2, Z5, Z6</i>	Axes for left/right movement of the backgauge.
<i>M1, M2</i>	Axes for the adjustment / movement of the die.
<i>Slanted gauging</i>	Comfortable programming for conical folds (requires X, X2 and adapted stop fingers).
<i>Free 1, 2, 3, 4</i>	Independent axes to be attributed to particular functions.
<i>Pressure</i>	Voltage output for pressure valve control. Current output available with MVP 100 valve current amplifier.
<i>Crowning</i>	Mechanical crowning (Wila type): Two 24 VDC outputs (SP, SN) and position potentiometre for adjusting the mechanical crowning. OR Hydraulic crowning: DNC analog output with MVP 100 valve current amplifier.
<i>Languages</i>	English, German, Italian, Spanish, Portuguese, Turkish; <b>Additional:</b> Swedish, Danish, Finnish, Norwegian, Dutch, Hungarian, Polish, Czech, Slovenian, Russian, Simplified Chinese, Traditional Chinese, Japanese, and Korean.
<i>Angle measurement</i>	Angle correction after bend: Measurement of the bend using the angle protractor, the value is transmitted via wireless or serial link to the NC, and automatically generates the correction.  Angle correction during bending process: Interfacing of a Data_M external measuring system, or any other proprietary solutions.
<i>Languages</i>	English, German, Italian, Spanish, Portuguese, Turkish; Additional: Swedish, Danish, Finnish, Norwegian, Dutch, Hungarian, Polish, Czech, Slovenian, Russian, Simplified Chinese, Traditional Chinese, Japanese, and Korean.

## ***Optional Auxiliary Axes and Functions and Other Options (at extra cost)***

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<i>M1 M2 mounting</i>	Axes for the adjustment / movement of the die according to the choice of tool mounting.
<i>AP1-AP4</i>	Calculated front / rear folding assistance axes.
<i>CAN axes</i>	The number of CAN axes is controlled by an option.
<i>Angle measurement</i>	Option allowing the adaptation of an angle-measuring system during the folding.
<i>Thickness measurement</i>	Option allowing the automatic correction of the depth calculation by using external strain gauge sensors.
<i>Message interpreter</i>	Option to completely remote control the CNC via network or RS 232. Reading/writing of variables, corrections, part loading, mode changing, etc. Ideal for automation and/or applications with robot(s).
<i>Other</i>	Various options exist and are specific to each press-brake manufacturer. Other options can be developed according to specific needs.

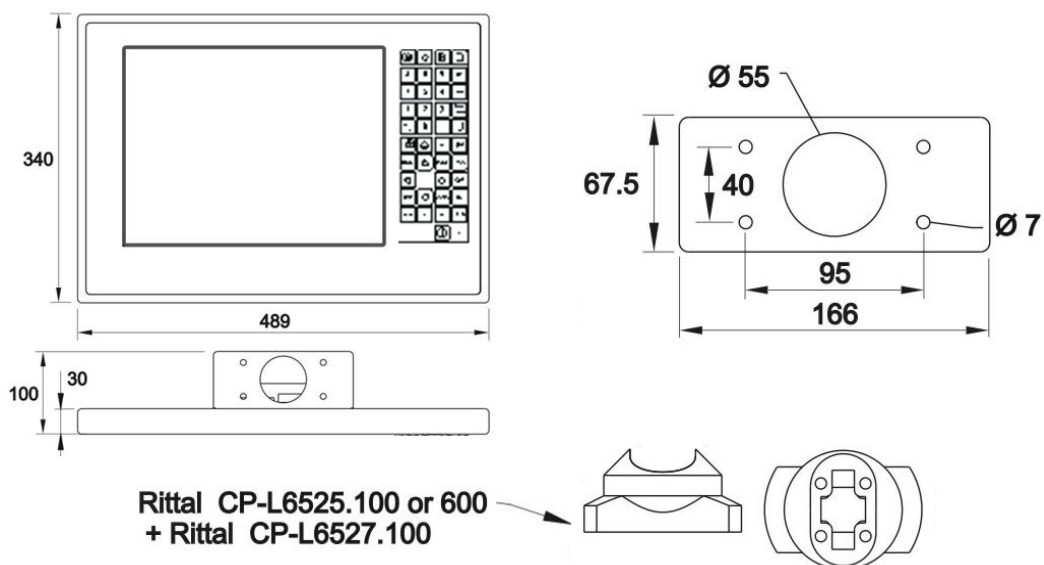
## Hardware Options

<i>Auxiliary panels</i>	Auxiliary panels for machine functions.
<i>Handle</i>	Handle on the console.
<i>Fixing adapter S-series</i>	Same mounting flange as for the ModEva 10S and 12S, allowing the installation of a ModEva RA on a pendant arm previously used for ModEva 10S or 12S.
<i>Earthing kit</i>	Rail and bridles for earthing the sheathing for the ModEva CNC rack. See photo below.
<i>CybVA 6</i>	Interface board for proportional Hoerbiger (or similar) valves.
<i>MVP 100</i>	Voltage / current conversion module (0-10V → 0,25-0,5 / 0-2 A) for pressure and crowning valves, to be fitted in the electric cabinet. Not required with CybVA 6.
<i>MSV</i>	Voltage / current conversion module (0-10V → 0-50 mA, 0-300 mA) for servo-valves.

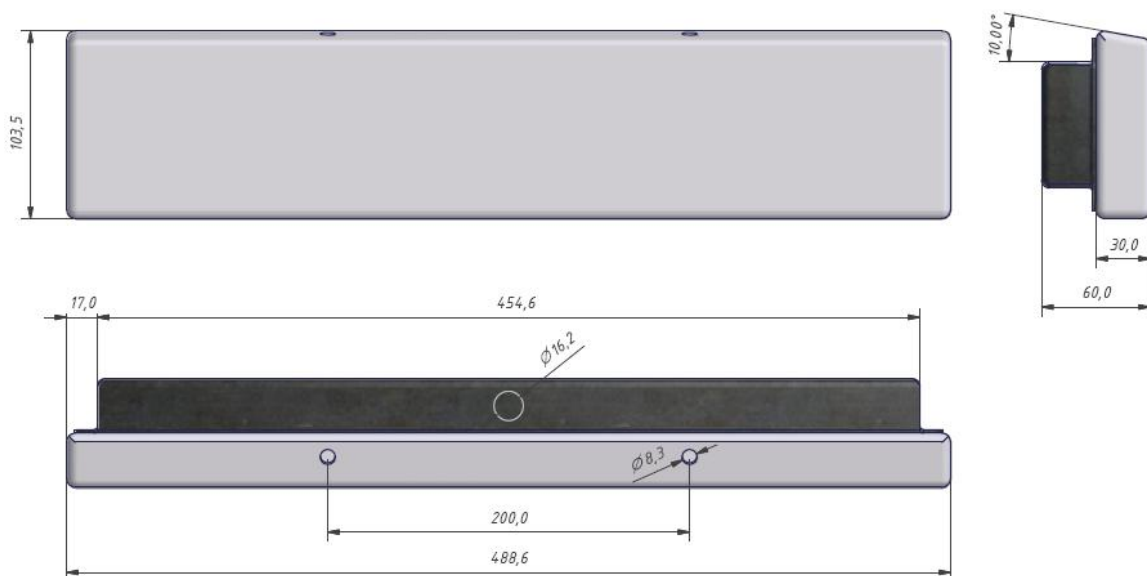
## EC Directives

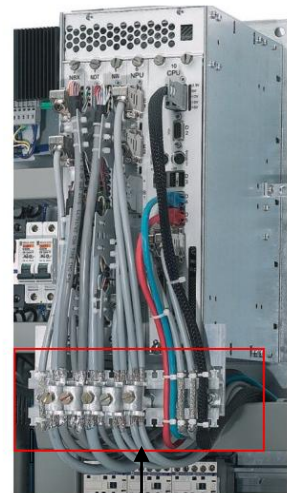
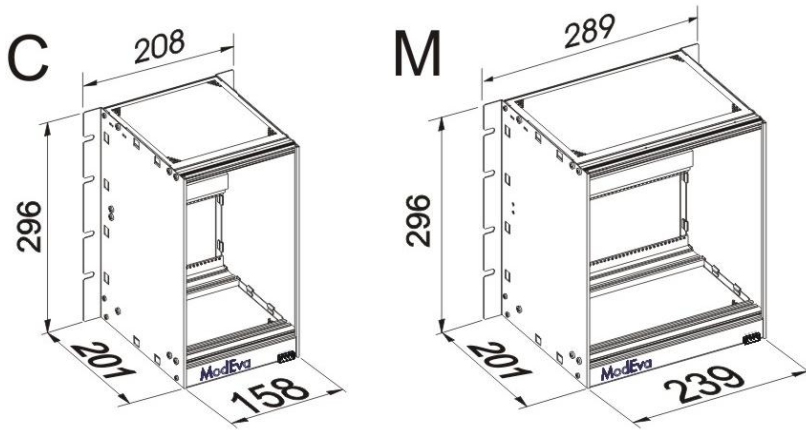
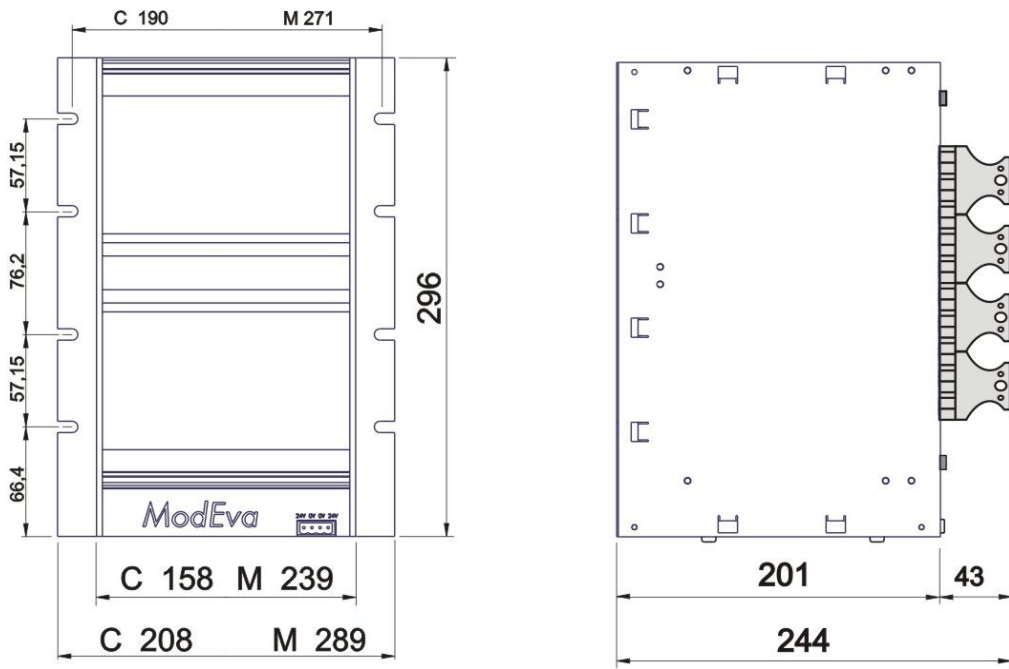
*Directives* Our numerical control units comply with directives EC61131-2 type 1-3.

## Console Dimensions



## Console Auxiliary Panel Dimensions





Earthing kit