Data Sheet

CYBELEC
INFRANOR GROUP COMPANY

ModEva RA

ModEva RA is an evolution of Cybelec's ModEva range. Its programming console has both a large touchscreen and a traditional keypad and operates with full 3D simulation software.
ModEva RA is composed of 2 main elements:

- The programming console: located within the operator's reach, generally fixed to a pendant arm.
- The CNC rack: placed inside the electric cabinet.

ModEva RA can control up to 18 axes, of which 2 are synchronized hydraulic axes especially intended for press-brakes. ModEva RA system software gives manufacturers the ability to configure axes, inputs/outputs and auxiliary functions according to their needs.

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

- Same wiring.
- Same signals.
- Same electronic interface.
- Same commissioning procedures.

To work with programs prepared on older machines, the classic ModEva interface is still accessible (ModEva 15S mode).

ModEva RA is available in two software versions
- ModEva RA
- ModEva RA Premium

For the preparation of work in the office, Cybelec offers PC-RA and PC-RA Premium off-line software with the same features as ModEva RA and ModEva RA Premium, respectively.

Both ModEva RA and ModEva RA Premium are sold bundled with 1 license for PC-RA.

CNC Hardware

The CNC is available in 3 rack sizes depending on the configuration:

CNC/C	CNC rack version "C" (Compact): controls 2, 4 or 6 axes, and up to 10 axes with NCX CANopen axis controller board (Y1, Y2 and 8 electrical axes).
CNC/M	CNC rack version "M" (Medium):controls 4, 6, 8, 10, 12 or 14 axes, and up to 18 axes with NCX CANopen axis controller board (Y1, Y2 and 8 electrical axes).
CNC/L	CNC rack version "L" (Large): a special large rack version available upon request.

CNC Axes Configuration

Rack version	**CNC / C (Compact)**		**CNC / M (Medium)**					
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

Definitions

Hydraulic axes: Analog axes especially intended for controlling the beams (Y1-Y2)**,** controlled by the NPU board.

Analog axes: An NMX/NSX board provides a speed command to the axis drive as a +-10VDC voltage as well as a small number of digital signals. Axis position is provided to the NMX/NSX board by an incremental encoder as a quadrature signal.

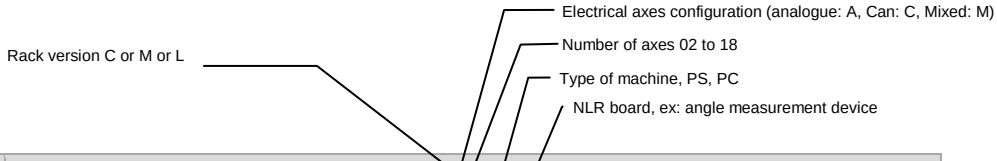
CANopen axes: An NCX board provides motion commands and receives position information from the axis drives via a CAN bus abiding to CANOpen conventions. One NCX board can control up to 8 axes depending on the options. A ModEva CNC can be equipped with a maximum of 2 NCX boards. Please contact Cybelec before ordering if you consider CAN for your axes.

NMX: A master board for 2 analog axes. In addition, an NMX can control up to 3 NSX slave boards.

NSX: A slave board for 2 additional analog axes. An NSX in all cases requires an NMX board.

NCX: CANopen board for up to 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. ModEva RA accepts up to 2 NCX boards

CNC Configuration



Reference	**S-CNC-xxxxPxxxRA(P)**
3D Software	ModEva RA or ModEva RA Premium
System	Windows XP Pro Compact.
CPU	AMD Fusion T40R, 1GHz
RAM	2 GB.
Disk	16 GB flash.
Network	Yes, Ethernet RJ45.
USB 2.0	2, with RJ45 extensions (10 m)
Printer port	Yes.
Keyboard input	Yes, PS/2 or USB
Mouse input	Yes, PS/2 or USB
Screen output	Yes, STD VGA.

Y1, Y2	NPU board.
RS 232 port	Yes, 2 of which 1 configurable to RS 422 (e.g. for Lazer Safe's protection devices).
Serial port for PLC	Yes, on NPU board. 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 , Zl load ≥ 10 kΩ.
CAN axes	NCX boards, depending on configuration and rack version.
Incremental encoders	5V DC line driver, complementary signals are mandatory.
Digital inputs	NIN boards, 32 inputs 24 VDC opto-coupled.
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 , Zl 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. Relative humidity (10 to 85% non-condensing). *If the ambient temperature approaches or exceeds 40° C, it would be advisable to install special ventilation, or even air-conditioning.*
Weight	Rack version C: approx. 5 kg. Rack version M: approx. 6 kg. Depending on equipment. Rack version L: approx. 7 kg. Depending on equipment.

Console Hardware

Console	**S-MOD-RA**
TFT screen	15"
Keypad	41 keys
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. > 5 m with CYBELEC repeater.
Handle	Inclusive
Auxiliary panel for machine buttons	Option
Support for external USB keyboard	Option *(the keyboard is not provided)*
Temperature, pollution level, relative humidity, during work.	Min. 5° Celsius, max. 40° Celsius. Relative humidity (10 to 85% non-condensing). *If the ambient temperature approaches or exceeds 40° Celsius, it is advisable to install special ventilation, or even air-conditioning.*
Weight	Approximately 5 kg.

ModEva RA and ModEva RA Premium Overall Features

The table below compares features in ModEva RA and ModEva RA Premium.

+	The feature is present
-	The feature is not possible
Option	The feature is available as an option

Hardware platform	RA Premium	RA
Rack	Same	Same
Terminal with handle	Same	Same
Auxiliary panel	Option	Option
Keyboard support	Option	Option

Part data management	RA Premium	RA
Direct programming	+	+
Extruded 2D profile	+	+
Import 3D MetaCAM format	+	+
Import 3D IGES	+	-
Import DXF flat pattern	+	Option RA01
Export DXF flat pattern	+	-
Import/Export jobs in ModEva RA format	+	+
Execute 3D, 2D and directly programmed jobs.	+	+
Organize job list in sub-directories	+	+
Job list with thumbnail images	+	+

Tool lists, catalogs, materials, etc.	RA Premium	RA
Parametric tools and tool holders	+	+
Transfer tools defined on other ModEva RA machines or off-line	+	+
Display and use any free-profile tool in the inventory	+	+
Tool catalogs	+	-
More than one catalog active	+	-
Multiple tool grip types (valencies)	+	+
Explicit treatment of punch-holders and die-holders	+	+

Automatic solution: bending sequence, gauging and tooling	RA Premium	RA
Find adequate tool profiles	+	Option RA02
User can suggest or enforce which tools to use	+	+
Find solutions for extruded 2D profiles	+	+
Find solutions for (transferred) generic 3D parts	+	+
Check if tool segments fit, compute segmentation	+	Option RA02
Bend deduction: K-based, empirical table or user's entry	+	+
Find solutions for step bending	+	+
Find solutions for hemming (punch- or die-hemming)	+	+
Find solutions with slanted or out-of-axis gauging	+	+
Find solutions for jobs requiring multiple tool setups	+	+

3D scenes display	RA Premium	RA
3D machine and part models	+	+
Selectable display of machine components	+	+
Selectable points of view	+	+
Rotate , Pan and Zoom with touch-screen or buttons	+	+

Edit environment	RA Premium	RA
Video-like 3D bend simulation	+	-
Still-image-only 3D bend simulation	+	+
User can change bending sequence, gauging and tooling	+	+
User can insert directly programmed operations	+	+
Step bend: change number of steps	+	+

Run environment: setup sheet	RA Premium	RA
Jogs, manual moves	+	+
Drawing of part before/after	+	+
Tool station position and width	+	+
Tool station segmentation	+	Option RA02
Count produced parts	+	+

Run environment: running, correcting	RA Premium	RA
Auto/Semi-Auto selector	+	+
Correction of BDC and crowning after measuring 1, 2 or 3 angles	+	+
(*) Connection to digital angle protractor (RS232 or USB+IRF)	+	+
Direct corrections of any axis	+	+
Modifying cycle properties (TDC, PP, speed, force, etc.)	+	+
Thickness variation measure: thick sheet, manual or die-displacer	+	+

Machine, options	RA Premium	RA
Synchronized Y1-Y2 press-brake	+	+
P/PC conventional press-brake: Y/Y-Y0	+	+
Up-stroking P/PC press-brake.	+	+
Independent column for each BG finger: (X-R-Z), (X2-R2-Z2)	+	+
Back gauge beam moved by one X axis: X, (X-R), (X-Z1-Z2), (X-R-Z1-Z2), (X-R-Z1-Z2-X1), (X-R-Z1-Z2-X1-X2rel)	+	+
Back gauge beam moved by two X axes at the extremities	Option 91	Option 91
Additional back gauge axes (X5, X6, R5, R6, Z5, Z6) as directly programmable axes (no 3D treatment, no collision checking).	+	+
Crowning: mechanical, hydraulic static and hydraulic adaptive	+	+
OEM-configured digital and analog auxiliary functions	+	+
Lazer Safe's PCSS interface	+	+
Free axes, as directly programmable axes (no 3D treatment)	+	+
Slave axes	Option 91	Option 91
CANOpen axis drives	Option 74, 75, 76, 78	Option 74, 75, 76, 78
(*) Rear sheet supports (H, H2)	Option 38	Option 38
(*) Front sheet supports (H3, H4, H7, H8, H11)	Option 52	Option 52
(*) Front and rear bending aids, sheet followers (AP1, AP2, AP3, AP4)	Option 42	Option 42
(*) Combined bending aids and sheet supports (H+AP, etc…)	Option 90	Option 90
(*) Die displacer (M1, M2)	Option 51	Option 51
Die displacer (auxiliary digital function)	+	+
(*) Front gauges	Option 33, 34	Option 33, 34
(*) In-process angle measurement (NLR board)	Option 30, 60, 66, 65	Option 30, 60, 66, 65
Thickness variation compensation: strain gauge	Option 86	Option 86

Languages	RA Premium	RA
Chinese (simplified and traditional), Croatian, Czech, Danish, English (reference language), French, German, Hungarian, Italian, Polish, Russian, Slovenian, Spanish, Turkish.	+	+
Language translation modifiable by manufacturer or end-user	+	+

Documentation	RA Premium	RA
User's Guide as a Microsoft Help file, in English	+	+

(*) Available soon

Other Software Options

Message interpreter Option 8 allows remote control of 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).
Only for communication in ModEva 15S mode.

Hardware Options

Ordering number	Designation	Description
S-OPT-BTAUX-S/E	**Auxiliary panel**	Auxiliary panel for Lazer Safe commands, virgin or customized auxiliary panels
S-OPT-KBSUP15	**Keyboard support**	Support for external USB keyboard *(the keyboard is not provided).*
S-OPT-EARTHKITC for size C rack S-OPT-EARTHKITM for size M rack	**Earthing kit**	Rail and bridles for earthing the sheathing for the ModEva CNC rack. See illustrations below.
S-CAH-CybVA6	**CybVA 6**	Interface board for proportional Hoerbiger valves and pressure + crowning valves.
S-MVP-100/A	**MVP 100**	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.
S-MSV-402/A	**MSV 402**	Voltage / current conversion module (0-10V ➔ 0-50 mA, 0-300 mA) for servo-valves.

Order codes and packages

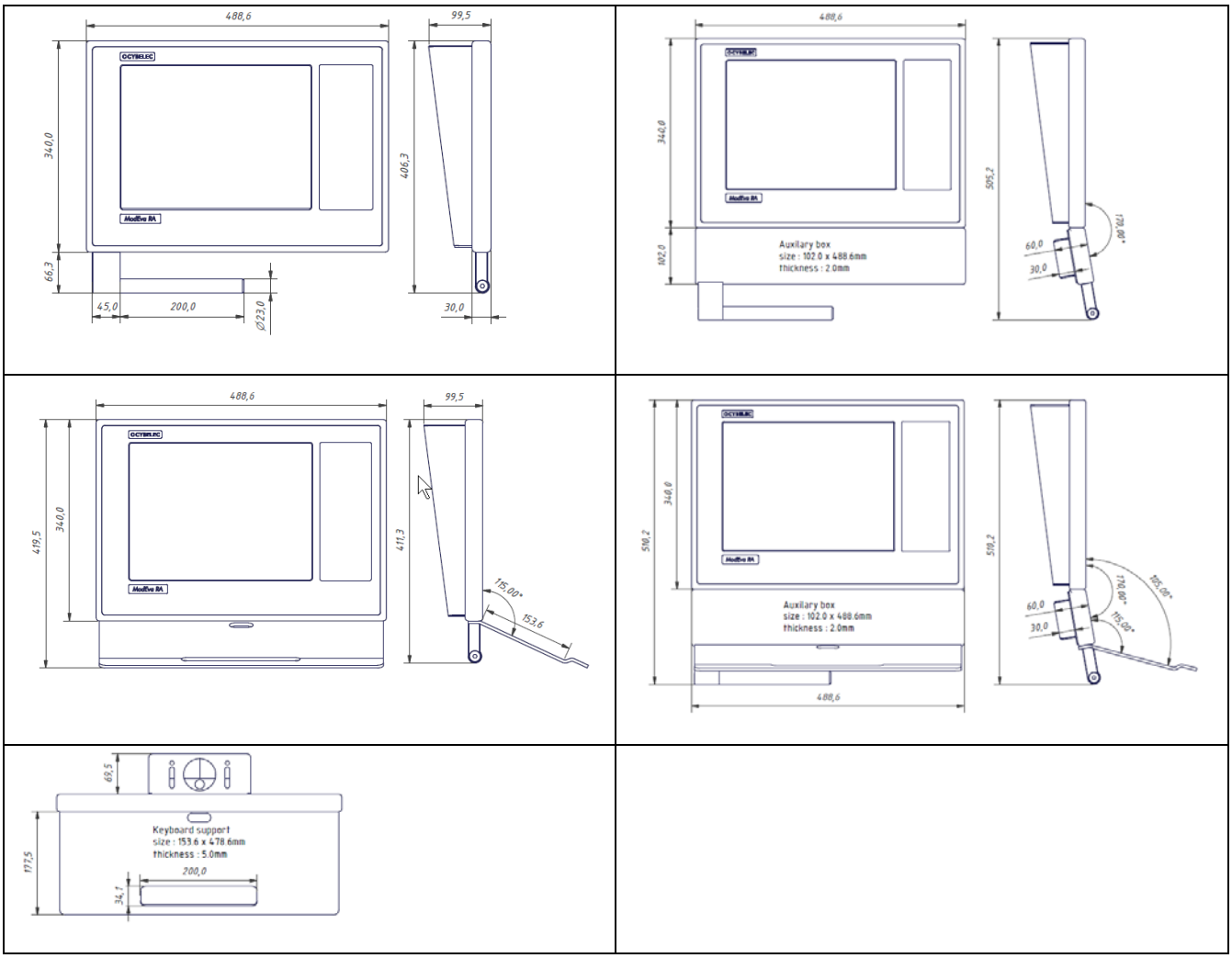
A few examples follow. Contact our sales department for a full list.

Ordering number	Description
S_CNC_CA06PSRA	ModEva RA, CNC rack C, 6 axes (Y1, Y2, 4 analog axes), 5 or 10 m cables to console, bundled with 1 USB dongle for off-line software PC-RA.
S_CNC_MA08PSRA	ModEva RA, CNC rack M, 6 axes (Y1, Y2, 8 analog axes), 5 or 10 m cables to console, bundled with 1 USB dongle for off-line software PC-RA.
S_CNC_CC08PSRA	ModEva RA, CNC rack C, 8 axes (Y1, Y2, 6 CAN axes), 5 or 10 m cables to console, bundled with 1 USB dongle for off-line software PC-RA.
S_CNC_CA06PSRAP	ModEva RA Premium, CNC rack C, 6 axes (Y1, Y2, 4 analog axes), 5 or 10 m cables to console, bundled with 1 USB dongle for off-line software PC-RA.
S_CNC_MA08PSRAP	ModEva RA Premium, CNC rack M, 6 axes (Y1, Y2, 8 analog axes), 5 or 10 m cables to console, bundled with 1 USB dongle for off-line software PC-RA.
S_CNC_CC08PSRAP	ModEva RA Premium, CNC rack C, 8 axes (Y1, Y2, 6 CAN axes), 5 or 10 m cables to console, bundled with 1 USB dongle for off-line software PC-RA.
S-MOD-RA	Console for ModEva RA or ModEva RA Premium, with handgrip.
S-OFT-RA	Additional off-line software PC-RA, protected by USB dongle.
S-OFT-RAP	Additional off-line software PC-RA Premium, protected by USB dongle.

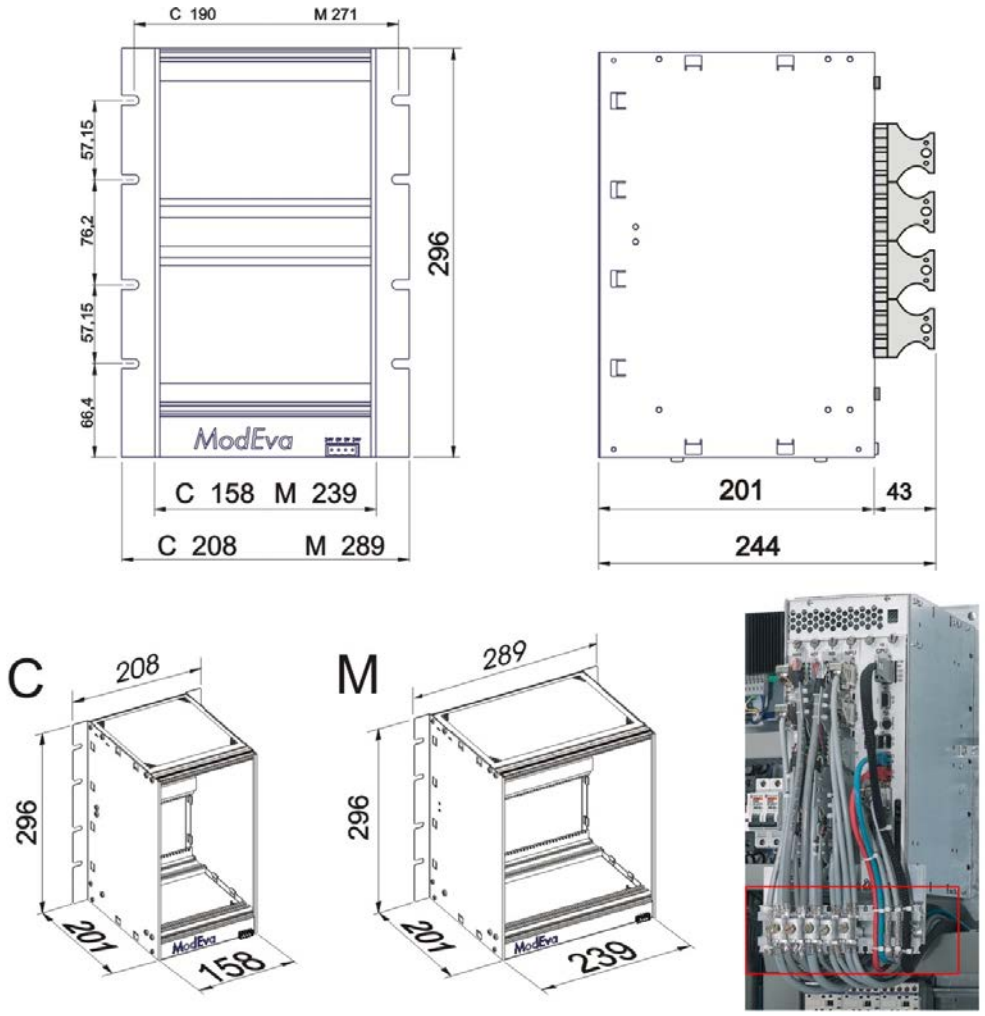
EC Directives

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

Console Dimensions



CNC Dimensions – Rack C - M



CNC Dimensions – Rack L