EvoPac
The Way to Wrap

Rotating table with automatic cycle
Rotating arm with automatic cycle

PARAMETER LIST

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

In the framework of continuous improvement of this machine's functions, some of its components and/or characteristics could be modified without notice. If differences are found between the contents of this manual and the actual machine operation, please communicate them to the builder.

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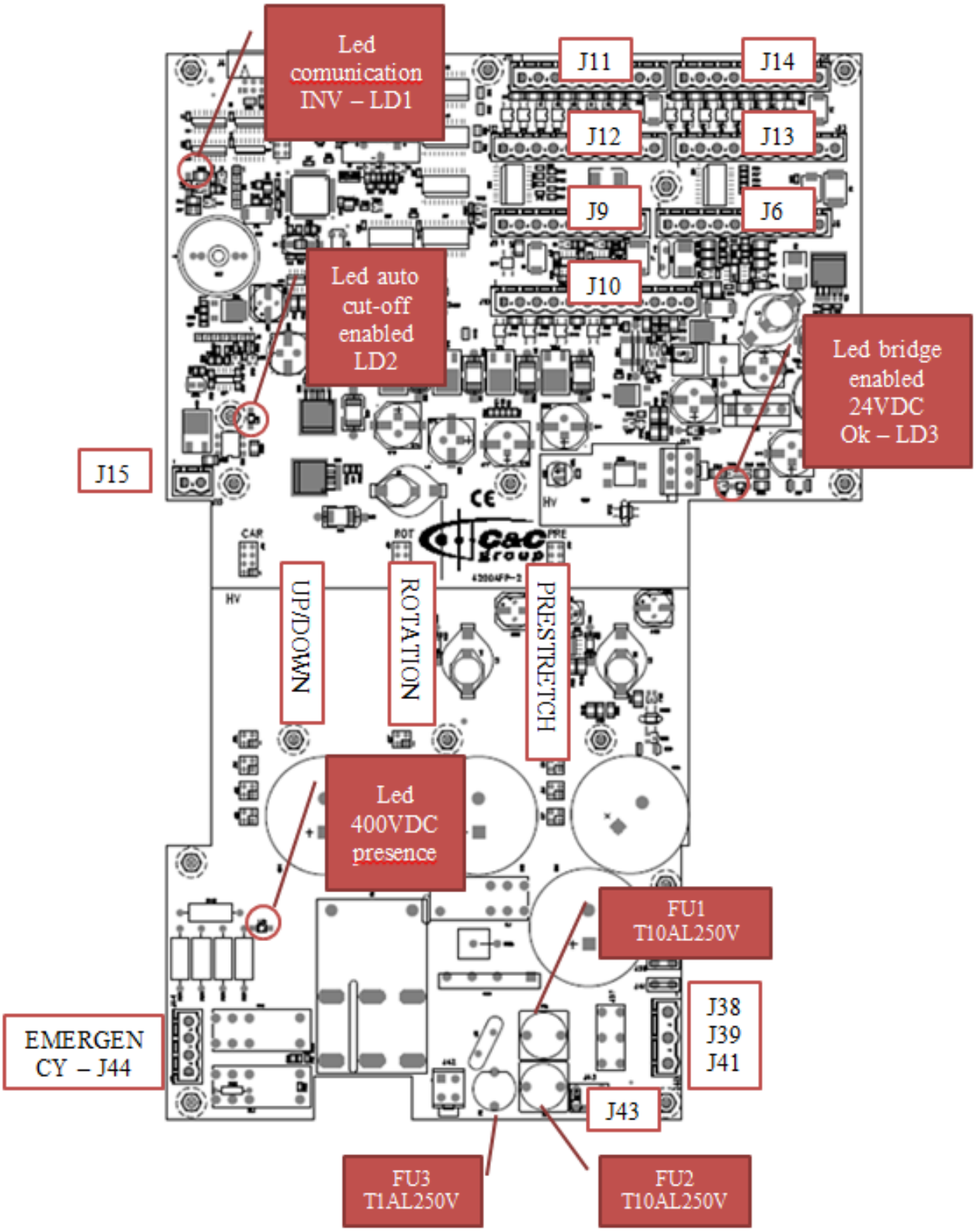
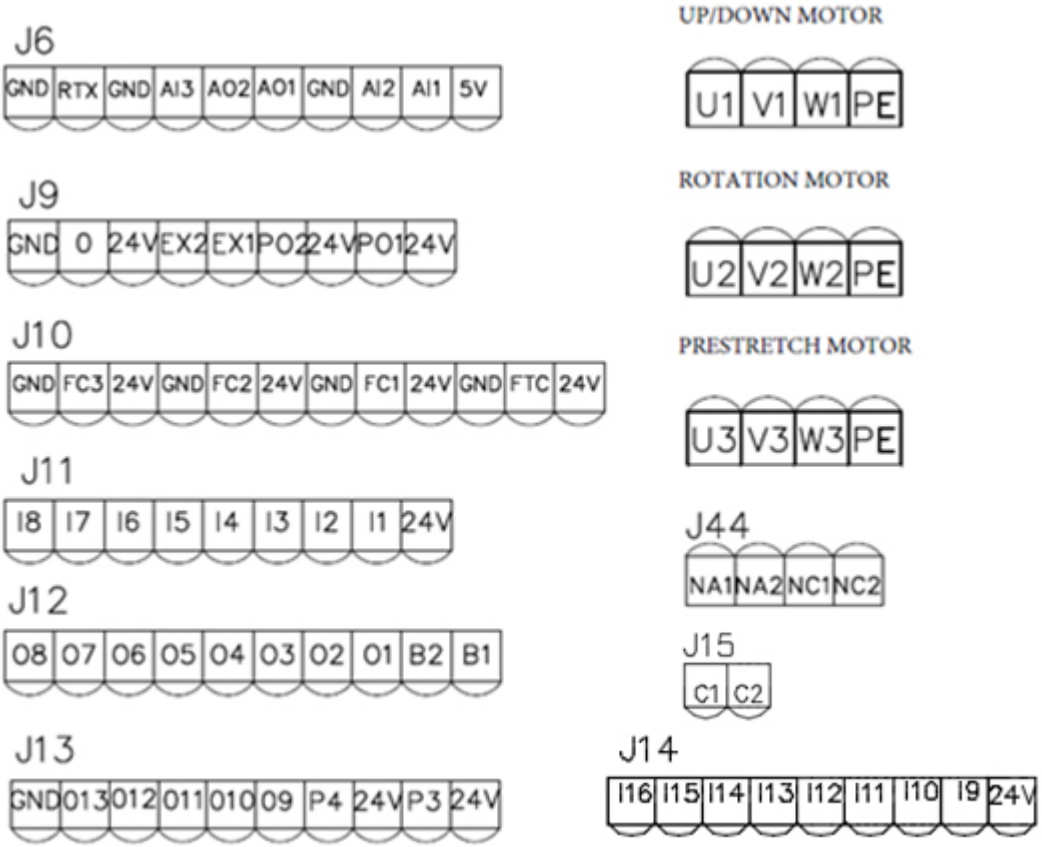
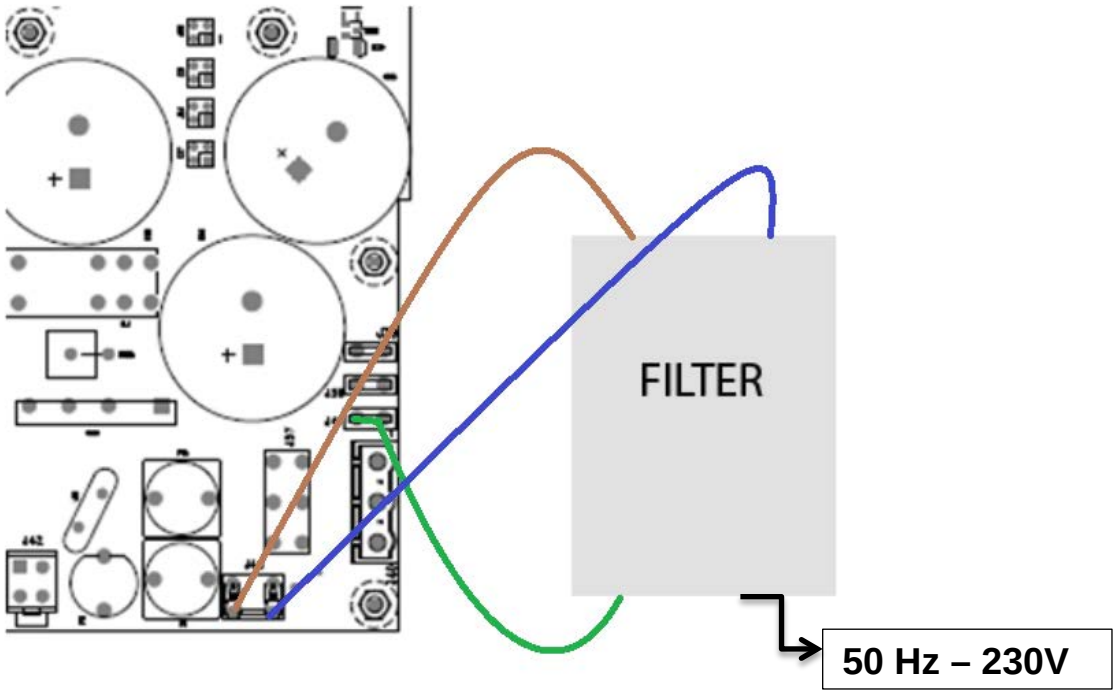
IMPORTANT NOTE: the default values reported in the tables can be different to the effective values set on the board. That is because some parameters are different from one machine to another and they are adjusted during the testing process by the operators.
Some def. values are not displayed in the tables because they change depending on the model of the wrapper, in this case refer to the table in the final paragraph of this manual.

1 – BOARD CONNECTIONS




J6
GND RTX GND AI3 AO2 AO1 GND AI2 AI1 5V
J9
GND 0 24V EX2 EX1 PO2 24V PO1 24V
J10
GND FC3 24V GND FC2 24V GND FC1 24V GND FTC 24V
J11
I8 I7 I6 I5 I4 I3 I2 I1 24V
J12
O8 O7 O6 O5 O4 O3 O2 O1 B2 B1
J13
GND O13 O12 O11 O10 O9 P4 24V P3 24V
UP/DOWN MOTOR
U1 V1 W1 PE
ROTATION MOTOR
U2 V2 W2 PE
PRESTRETCH MOTOR
U3 V3 W3 PE
J44
NA1 NA2 NC1 NC2
J15
C1 C2
J14
I16 I15 I14 I13 I12 I11 I10 I9 24V


FILTER
50 Hz – 230V

Clamp Connections				
Clamp		**Category**	**Description**	**Use**
J6	5V	5V ANA	Analog Sensors power Supply Max 400mA	Analog Inputs 0-5V o 0-10V
	AI1	Ana-1	Cell Loading Sensor	
	AI2	Ana-2	Potentiometer input brake Reel Manual	
	GND	GND ANA	Analog Sensors Reference	
	AO1	Anout 1	Analogic Output 1	Analog outputs 0-10V, 0-20mA
	AO2	Anout 2	Analogic Output 2	
	AI3	Ana-3	Pot. input Table Speed /Input Temp. Clamp ARM / START FILM(1)	Analog Inputs 0-5V o 0-10V
	GND	GND ANA	Analog sensor reference	
	RTX	RTX	Communication with RxAnaCap	Communication with RxAnaCap
	GND	GND RTX	RxAnaCap Reference	
J9	24V	24V DC	Common Power Output +24V	Output 1 Ampere (Open-Drain)
	PO1	Power-Out 1	Digit.Output relay Brake “Table”	
	24V	24V DC	Common Power Output	
	PO2	Power-Out 2	Digit.Output relay Motor “Cart-Presser”	
	EX1	FungoExt1	Emergency button input	Emergency button
	EX2	FungoExt2	Emergency button input	
	24V	24V DC	Common inputs	Digital Inputs 24V
	0	Zero	The Table’s Zero input	
	GND	GND	Power supply sensor	
J10	24V	24V DC	Common inputs +24V	
	FTC	Photocell	Photocell Input	
	GND	GND	Photocell Power Supply	
	24V	24V DC	Common inputs +24V	
	FC1	Limit switch	Lower cart limit switch	
	GND	GND	GND Reference	
	24V	24V DC	Common inputs +24V	
	FC2	Limit switch	Upper cart limit switch	
	GND	GND	GND Reference	
	24V	24V DC	Common inputs +24V	
	FC3	Limit switch	Cart safety limit switch	
	GND	GND	GND Reference	
J12	B1	Reel brake	Positive Reel Brake (Max 400mA)	Reel brake
	B2	Reel brake	Reel Brake Reference	
	O1	Out1	Output Alarm Presence, active high (+24V)	Digital Outputs Max 100mA (Push-Pull)
	O2	Out2	Output Lamp	
	O3	Out3	Automatic Output-Off, active high (+24V)	
	O4	Out4	Free for future use	
	O5	Out5	Downstream roller conveyer on	
	O6	Out6	Upstream roller conveyer on	
	O7	Out7	Ascending tapering device	
	O8	Out8	Descending tapering device	
J11	24V	24V DC	Common digital inputs +24V	Digital Inputs 24V
	I1	Din-1	“START” Active on ascending front	
	I2	Din-2	“STOP” Active on ascending front	
	I3	Din-3	“RESET” Active on ascending front	
	I4	Din-4	Micro stop switch 90°	
	I5	Din-5	Downstream Roller Conveyer Consensus (outbound)	
	I6	Din-6	Wrapping Exclusion (roller conveyer)	
	I7	Din-7	Presser Sensor	
	I8	Din-8	Pedal START/STOP presser	

J13	24V	24V DC	Common Digital Inputs +24V	Digital Outputs Expansion Max 2000 mA (Fused)
	P3	Power-Out 3	NPN– Digital Output	
	24V	24V DC	Common Digital Inputs +24V	
	P4	Power-Out 4	NPN– Digital Output	
	09	Out9	PNP– Digital Output	
	010	Out10	PNP– Digital Output	
	011	Out11	PNP– Digital Output	
	012	Out12	PNP– Digital Output	
	013	Out13	Pneumatic Piston Solenoid Valve	
	GND	GND	GND	
J14	24V	24V DC	Common Digital Inputs +24V	Digital Inputs Expansion 24 VDC Max 500 mA (Fused)
	I9	Din-9	External Program Selection – PRG #01	
	I10	Din-10	External Program Selection – PRG #02	
	I11	Din-11	External Program Selection – PRG #03	
	I12	Din-12	External Program Selection – PRG #04	
	I13	Din-13	Pneumatic Piston Forward	
	I14	Din-14	Digital Input: available for future uses	
	I15	Din-15	90° Unload Sensor	
	I16	Din-16	Top–Press–Plate is fully high Limit–Switch	
J15	C1	Power NO1	Normally Open Power Switch for the Auto–Cut–Off	Auto–Cut–Off Solid–State–Switch (Normally Open)
	C2	Power NO2	Normally Open Power Switch for the Auto–Cut–Off	
J44	NA1	NO1	Main Contactor Normally Open Auxiliary Switch	Main Contactor Auxiliary Contacts
	NA2	NO2	Main Contactor Normally Open Auxiliary Switch	
	NC1	NC1	Main Contactor Normally Closed Auxiliary Switch	
	NC2	NC2	Main Contactor Normally Closed Auxiliary Switch	

2 - CONTROL PANEL

The controls of the machine are on a control panel placed in the column.

POWER: a red led that indicates that the power supply is on.

STATUS: a red led that shows the machine status.

START: a button that starts the wrapping cycle if pressed.

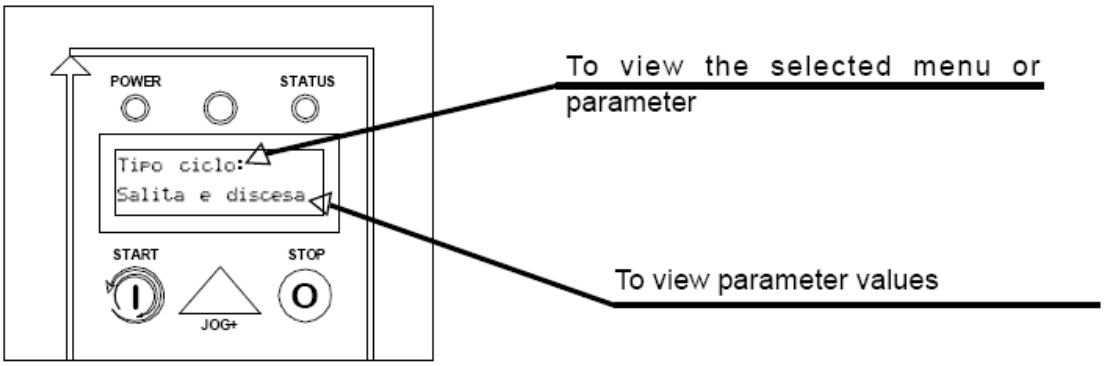
STOP: a button that stops the wrapping cycle if pressed, even though the cycle has not been completed.

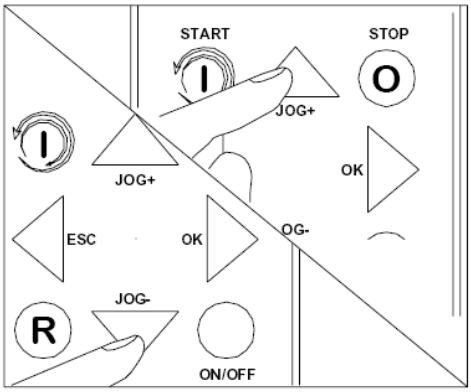
RESET: a button that initializes the machine on its start or after an emergency.

ON/OFF: a button that switches the control panel on or off.

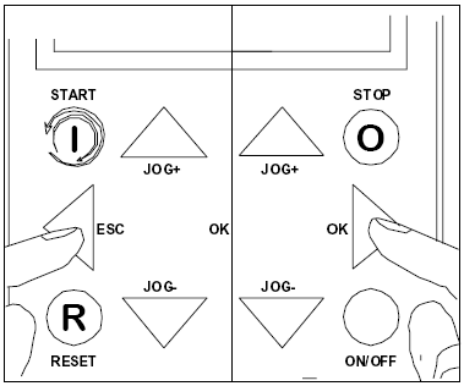
The ON/OFF button does not partition the power supply!
In order to avoid any danger, pull out the power plug before servicing.

The display on the machine control panel allows operators to view alarms and parameter settings.





With the JOG+ and JOG- buttons you can scroll menus and set parameter values.

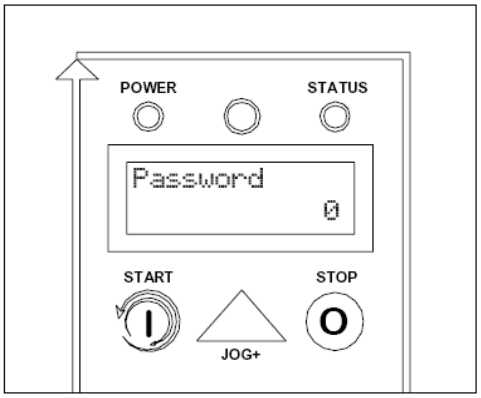


Press the OK button to select the menu option and enter the following view or setting level, or to confirm the values you have entered.

Press the ESC button to exit a menu or a parameter, to go back to the previous level, or to cancel the value you have entered.

3 – PASSWORD

Some key parameters that affect the overall machine operation can only be modified after entering a numeric password (max. length: 4 digits). These parameters are marked as “priority 1”. The builder-set password can be modified by the users.



To access the restricted parameters, enter the password in the “Password” menu.

If you wish to change your password, enter the new one in the “Change Password” menu.

The user cannot change the key parameters marked with security value 2. Only the builder can access them, because modification of these parameters would irreparably jeopardize the correct machine operation.

- **PASSWORDS LIST**

Password	***Lev.***	***Permission***	***Description***
919	3	FIX	Same as 105
105	2	EDITABLE	It allows the display (and eventually the modification)of an additional group of parameters (please see SECURITY column on the tables for more details, where VIS indicates that the parameter is displayed but not editable and MOD allows the modification of the parameter) *For examples some parameters can be displayed at level 2 but edited only from a level 3 access.*
156	1	FIX	Disable the complete block
155	0	FIX	Enable the complete block except for the selection of the user program

4 – MENU

The control panel menus are always active. If a parameter is modified, the changes are immediately applied, even if a wrapping cycle is under way.

The control panel is equipped with several menus to manage the wrapping cycles. Every menu gives access to a series of parameters that the user can set according to his/her needs. Below you will find all menus and relevant parameters.

MENU	DESCRIPTION	SECURITY	
		VIS	MOD
Function Keys	Enable or disable P1-P6 buttons	0	-
Save User Program	Save the value of the actual parameters	1	1
Load User Program	Load a program whit the saving values	0	0
Machine status (7)	Parameter that describes the state of the machine (Auto – Man)	1	1
Cycle Type	Selects the cycle to be carried out	1	1
Cycle Parameters	Parameters relative to the wrapping cycle	1	1
Brake Parameters (2)	Parameters of the electromagnetic carriage brake	1	1
Manual controls(1)	To control the manual operation	0	0
Coil Change Proc.(3)	Initializes the machine after replacing the roll	0	0
Rotation Motor	Parameters of the table rotation drive system	2	2
Carriage Motor	Parameters of the ascent/descent carriage drive system	2	2
General Parameters	Parameters governing the machine	1	-
Current Values	Shows the current parameter values	2	2
Password	To enter the password and access restricted parameters	0	0
Password Change	Allows to change the password.	2	2

Pre-stretch [4]	Prestretch parameters	2	2
Pre-stret Motor [4]	Parameters of the prestretch drive system	2	2
Sealing Unit[5]	Pliers parameters	1	1
Top Press Plate [6]	Presser parameters	1	1
Date and Time	Allows the User to set the current Date and Time of Day for the System	1	1
Service and Maint.	Opens the machine service and maintenance settings	3	3
Commissioning	Allows to choose the machine type and to set the reference serial number	3	3
USB features	Opens the USB settings menu	1	1

[1] Only visualized in manual controls.
[2] Only visualized if the pre-stretch is in OFF or REG position.
[3] Only visualized if the pre-stretch is not present.
[4] Only visualized if the pre-stretch is present.
[5] Only visualized if the pliers are present.
[6] Only visualized if the presser is present.
[7] Only present if the wrapper is an automatic one.

5 - CYCLE PARAMETERS

REG	CYCLE PARAMETERS	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
C1	Bottom Wraps	Number of revolutions executed at the bottom of the pallet, with the carriage stopped in its bottom position	1	0 / 20	1	1
C2	Top Wraps	Number of revolutions executed at the top of the pallet, with carriage the stopped in its top position	1	0 / 20	1	1
C3	Top Wraps TSD	Number of reinforcement revolutions executed with the carriage stopped during “TOP SHEET CYCLE”.	2	0 / 20	1	1
C4	Film Braking (1) (4) [%]	Percentage of braking after the initial delay. This parameter works only if it’s different from 0. If this parameter is 0, C5, C6, C7 and C8 set the film tension during the automatic cycle.	0	0 / 100	1	1
C5	Bottom Wr. Ten.(3) [%]	Tension of the film to the initial low turns. This parameter is used only if parameter C4 is set to 0.	30	0 / 100	1	1
C6	Ascent tension(3) [%]	Film tension when the carriage ascent. This parameter is used only if parameter C4 is set to 0.	30	0 / 100	1	1
C7	Top Wraps Tens.(3) [%]	Tension of the film to the high turns. This parameter is used only if parameter C4 is set to 0.	30	0 / 100	1	1
C8	Descent Tension(3) [%]	Film tension when the carriage descent. This parameter is used only if parameter C4 is set to 0.	30	0 / 100	1	1
C9	Descent Time [s]	Time (in seconds) needed to lower the carriage in order to fit a top sheet during “TOP SHEET CYCLE”.	3	0 / 30	1	1
C10	Rotation Speed Rpm [rpm]	The rotation speed, expressed in revolutions per minute, during the wrapping cycle.	11	1 / 12	1	1
C11	Ascent Speed [Hz]	The speed of the carriage, expressed in Hz, during the wrapping up phase of the automatic cycle.	(8)	0.0 / 100	1	1
C12	Descent Speed [Hz]	The speed of the carriage, expressed in Hz, during the wrapping down phase of the automatic cycle.	(8)	0 / 100	1	1
C13	Reset Speed [rpm]	The rotation speed, expressed in revolutions per minute, during the reset procedure.	(8)	1 / 16	2	3
C14	Positioning Speed [rpm]	The rotation speed, expressed in revolutions per minute, during the positioning on the zero position.	(8)	1 / 12	2	3

C15	Delay Breaking Time [2] [s]	Delay period (in no. of revolutions) during which the brake is governed by the "% Brake Start" parameter. After this period, the brake is controlled by the "% Brake" parameter.	0.5	0.1 1	2	2
C16	Flanging time [s]	Standby time from the moment when the photocell does not detect the pallet anymore to the moment when the carriage stops.	2	1 20	2	2
C17	Layer: Coil Height [cm]	The height of the film coil expressed in cm. This parameter is used only during the Layers cycle.	50	0 100	1	1
C18	Hz to 1 Turn Conv.	Supply voltage cycles that the turntable motor needs to complete a revolution.	(8)	0 5000	3	3
C19	Slowing Down Turn 1 [%]	Cycle part in which the table starts slowing down and reaches a frequency which is the double of the "Positioning frequency" parameter value.	(8)	1 100	2	3
C20	Slowing Down Turn 2 [%]	Cycle part in which the table further slows down and reaches the "Positioning frequency" parameter value.	(8)	1 100	2	3
C21	DC Brake Time [min]	Time (in minutes) during which the turntable break is active after the last motion.	0	0 20	2	3
C22	Hz to 1 cm Conv.	Supply voltage cycles that the carriage motor needs to cover a 1 cm distance.	(8)	10 2000	3	3
C23	Pallet Height [cm]	Maximum height (in cm) reached by the carriage when the load height photocell is not active.	30	0 200	1	2
C24	Enable Photocell	Activates/deactivates the photocell.	1	0 1	1	2
C25	Wrapped Pallets	Counter of the pallet wrapping cycle	0	/ /	1	1
C26	Max. Rotation [rpm]	Maximum value that can be set in "Rotation RPM"	12	1 20	3	3
C27	Max Carriage Freq. [Hz]	Maximum value that can be set in "Ascent speed" and "Descent speed"	80	1 100	3	3
C28	Top Press Plate	State of the presser	0	0 1	1	1

C29	Coil Change Height [cm]	Height to reach the carriage if you press “ESC”	75	0 200	1	1
C30	Init. Carr. Height [cm]	Minimun height to initiate wrapping	0	0 200	1	1
C31	Final Turn No.	Number of Final Bottom Wraps made before ending the wrapping process.	(8)	0 20	1	1
C32	Reinforcement Height [cm]	Height of the carriage, expressed in cm, for making the number of reinforcement wraps set into the parameter C33	0	0 500	1	1
C33	Reinforcement Turns	Number of reinforcement wraps to be done at fixed height. The height for the reinforcement wraps is set into the parameter C32.	0	0 20	1	1
C34	Roping Wraps	Numbers of roped wraps made when either the Sealing–Unit (G10) or Roper System (G16) are installed.	1	1 20	1	1
C35	PPlate Speed Up [Hz]	PressPlate speed going upward.	65	0 100	1	1
C36	PPlate Speed Dn [Hz]	PressPlate speed going downward.	65	0 100	1	1
C37	BiPallet Height [cm]	Height of the first pallet in Bipallet cycle(5)	100	20 200	1	1
C38	Delta BiPallet [cm]	Defines how much the carriage have to go upward to wrap the second pallet in Bipallet cyle(5). Usually this parameter, that is expressed in cm, is the sum of the height if the pallet and the height of the film coil.	50	1 100	1	1
C39	Cut position [°]	Angular position in which the auto cut-off has to snap the film(6)	270	0 300	1	1
C40	Cut time [s]	Snap duration (6)	0,2	0 1	1	1
C41	Pull time [s]	Time between film snap and prestretch block (6)	2,5	0 59	1	1
C42	Final tension revs. [%]	Film tension during final bottom wrap	30	0 100	1	1
C43	Man table speed [rpm]	Table speed, expressed in revolutions per minute, during the manual functioning	10	1 12	1	1

C44	Man. Carriage speed [Hz]	Carriage speed, expressed in Hz, during the manual functioning	(8)	2 80	1	1
C45	Man Tension [%]	Film tension in manual fuctioning	0	0 30	1	1
C46	Recipe Name	User program name	PRG n	- -	1	1
C47 (7)	Roped Low Rev time [s]	This parameter sets the time the roper has to be driven downwards, in order to make the specified number of initial bottom roped wraps (**C52**). The time refers to the roper starting its movement from its fully upwards position.	0	0 3	1	1
C48 (7)	Roped Time Wrap up [s]	This parameter sets the time the roper has to be driven downwards while the carriage is moving from its lowest position to the top of the pallet being wrapped. In this way – while the carriage is moving upwards – the effective width of the film can be reduced from the standard 500 [mm], and resulting in a harder wrapping of the goods placed onto the pallet. Once the roper has reached its position it stops there, until next wrapping phase is reached. The time refers to the roper starting its movement from its fully upwards position.	0	0 3	1	1
C49 (7)	Roper High Rev Time [s]	This parameter sets the time the roper has to be driven downwards, in order to make the specified number of top roped wraps (**C53**). The time refers to the roper starting its movement from its fully upwards position.	0	0 3	1	1
C50 (7)	Roped time Wrap Dn [s]	This parameter sets the time the roper has to be driven downwards while the carriage is moving from the top of the pallet being wrapped and its lowest position. In this way – while the carriage is moving downwards – the effective width of the film can be reduced from the standard 500 [mm], and resulting in a harder wrapping of the goods placed onto the pallet itself. Once the roper has reached its position it stops there, until next wrapping phase is reached. The time refers to the roper starting its movement from its fully upwards position.	0	0 3	1	1
C51 (7)	Roped Final Time [s]	This parameter sets the time the roper has to be driven downwards, in order to make the specified number of final bottom roped wraps (**C54**). The time refers to the roper starting its movement from its fully upwards position.	(8)	0 3	1	1

C52 (7)	Roped Initial Revs	Number of initial bottom roped wraps, made just after initial bottom wraps (C1) but before carriage start going upwards. These wraps are made by positioning the roper downwards using the time specified in parameter C47, and made by applying film tension specified in parameter C55.	0	0 10	1	1
C53 (7)	Roped High Revs	Number of top roped wraps, made just after top wraps (C2) but before carriage start coming downwards. These wraps are made by positioning the roper downwards using the time specified in parameter C49, and made by applying film tension specified in parameter C55.	0	0 10	1	1
C54 (7)	End Cycle Height [cm]	The height of the carriage, expressed in cm, at the end of the automatic wrapping cycle. The carriage stop at this height during the wrapping down phase of the cycle. This parameter is used only if the parameter G20 is enabled.	50	10 200	1	1
C55 (7)	Rop. Turns Film Ten. [%]	Film tension applied while roped wraps are made. This can be either while sealing phase occurring or while extra roping wraps are made.	10	0 100	1	1
C56	Type of Wrapping		0	0 5	4	4
C57	Prestretch Value	The prestretch percentage when the carriage with the variable prestretch (double motor) is installed into the wrapper	240	0 600	1	1

(1) Only visualized if the pre-stretch is in OFF or REG mode.
(2) Only visualized if the pre-stretch is not present.
(3) Only visualized if ARM mode.
(4) Be careful! If the set value is different from 0, the parameters C5,C6,C7,C8 are influential.
(5) Only in Bipallet cycle
(6) Only with auto cut-off
(7) Only affecting the wrapping process if either the Sealing–Unit (G10) or the Roper System are installed (G16).
(8) Refers to “Default Values” table.

The following table describes correlation within some of the C–parameters with respect of the wrapping phases of an automatic cycle.

	Number of Wraps made	Pre–Stretched Film Tension
Initial Bottom Wraps	C1	C5
Carriage going Upwards	—	C6
Top Wraps	C2	C7
Carriage coming Downwards	—	C8
Final Bottom Wraps	C31	C42
Roped Wraps	C34	C55

If the option parameter G16 is enabled, then the Extra Roped Wraps feature can be more easily explained as follows:

	Number of Wraps made	Pre–Stretched Film Tension	Roper driven Downwards Time
Initial Bottom Wraps	C1	C5	—
Initial Roped Bottom Wraps	C52	C55	C47
Carriage going Upwards	—	C6	C48
Top Wraps	C2	C7	—
Top Roped Wraps	C53	C55	C49
Carriage coming Downwards	—	C8	C50
Final Bottom Wraps	C31	C42	—
Final Roped Bottom Wraps	C54	C55	C51
Roped Wraps	C34	C55	E6

Please note that on table above, the order stated reflects the actual one on real wrapping cycle, so for instance, the initial roped bottom wraps are made after the standard initial bottom wraps but before start going upwards with the carriage, and so on.

6 – STATISTICS PARAMETERS

REG	STATISTICS PARAMETERS	DESCRIPTION	DEF.	SICUR.	
				VIS	MOD
S1	Tot Pallet	Grand total number of pallets being wrapped (not resettable counter).	-	1	1
S2	Tot Film Ent [m]	Grand total meters of in–feeding unrolled pre–stretched film (1).	-	1	1
S3	To Film Exit [m]	Grand total meters of out–feeding unrolled pre–stretched film (1).	-	1	1
S4	Parz Film Ent [m]	Partial counter of in–feeding unrolled pre–stretched film meters (1).	-	1	1
S5	Parz Film Exit [m]	Partial counter of out–feeding unrolled pre–stretched film meters (1).	-	1	1
S6	Med. Film Pall. En. [m]	Average value of in–feeding unrolled pre–stretched film per pallet. (1) It's expressed in meters, and evaluated among the all pallets being wrapped up to now.	-	1	1
S7	Med. Film Pall. Ex. [m]	Average value of out–feeding unrolled pre–stretched film per pallet. (1) It's expressed in meters, and evaluated among the all pallets being wrapped up to now.	-	1	1
S8	Med.Pallet height [cm]	Average height of all the pallets being wrapped up to now.	-	1	1
S9	Tot cycle time [min]	Total time taken by the machine to wrap the latest pallet. It's expressed in seconds.	-	1	1
S10	Med. Cycle time [s]	Average wrapping time, that is average time taken to wrap a pallet among the all wrapped pallets up to now.	-	1	1
S11	Tot turning on	Grand total times the stretch–wrapping machine has been switched on.	-	1	1
S12	Coil changes	Grand total times the Coil Change Procedure has been triggered. This CCP is automatically triggered each and every time a Broken Film Alarm event occurs, but it can also be called manually by the User by means of its menu. Please note that BFA detection must be active in order to catch film breaking while wrapping.	-	1	1
S13	Tot T On [h]	Grand total time the stretch–wrapping machine has been powered on. It's expressed in hours.	-	1	1
S14	Tot T Run [h]	Grand total time the stretch–wrapping machine has performed wrapping cycles. It's expressed in hours.	-	1	1

S15	Film Breakings	Grand total times the Broken Film Alarm has been triggered while wrapping. Please note that BFA detection must be active in order to catch film breaking. Please also note that after any BFA event, the Coil Change Procedure is automatically started (see parameter S12 for related counter). (1)	-	1	1
S16	Last cycle turns	Total number of wraps performed within the latest automatic wrapping cycle.	-	1	1
S17	Tot. turns	Grand Total number of wraps performed by the stretch–wrapping machine up to now, among all pallets being wrapped.	-	1	1

(1) Only with electronic variable pre–stretch and/or out–fed film measurement sensors.

7 – BRAKE PARAMETERS

REG	BRAKE PARAMETERS	DESCRIPTION	DEF.	MIN MAX	SECUR. VIS	 MOD
F1	Film Braking [%]	This parameter should be used by the User to set the desired film tension while wrapping when EM–brake is installed. Please note that this parameter is deprecated. Linked to no functionalities; only present for backwards compatibility with the old hardware.	50	0 100	1	1
F2	Braking at Start [%]	This parameter specifies the film tension value at the very begging of a wrapping cycle. This parameter takes effect either with the EM–brake or the pre–stretch. When an automatic wrapping cycle is started, for the time – in seconds – specified by parameter F5, this F2 film tension is taken for the wrapping of the pallet; when F5 delay is elapsed, the wrapper switches the film tension from F2 to C1. It's expressed in percentage, of the maximum film tension applicable, which is related to the calibration made for the EM–brake with parameter F2, or of the load–cell – made by means of parameter P5.	25	0 100	2	2
F3	Brake Calibr. [%]	This parameter has to be used to calibrate the functioning of the EM–brake. Linearly, it sets the force applied to the brake in order to have more or less film tension, when no other film tension parameters are varied. The value of this parameter is related to the type of film coil being used, since there exists a lot of different type of pre–stretchable	50	0	3	3

		plastic films. A way to determine the right value for this parameter is to set a very high film tension, by means of parameter C4 for instance, and then try to wrap a pallet. If we set C4 = 98%, then F3 should be risen up until film breaking.		100		
F4	Braking Last Lap [%]	This parameter specifies the film tension value to be used during the last quarter of the last wrap of an automatic wrapping cycle. Basically this parameter overwrite the film tension specified by C42 while – when on last wrapping turn – the rotation swaps the angular sector (270° ÷ 360°). This parameter takes effect with either the EM–brake or the pre–stretch.	20	0 100	1	1
F5	Brake Off Delay [s]	This parameter specifies the width of the windows time during which – at the very beginning of a wrapping cycle – the film tension specified by F2 has to be used instead of the one defined by C1. After this F5 time would be elapsed, the wrapper will switch the film tension applied during the automatic wrapping cycle from F2 to C1. This parameter takes effect with either the EM–brake or the pre–stretch.	0	0 2	2	2
F6	Coil Diameter	This parameter should be used by the User to set the initial Film Coil Diameter when old electromagnetic brake system is present onto the wrapper. This parameter works in pair with parameter F7, that is the value combined of these two parameters affects the out–feeding of the pre–stretched film. Please note that this parameter is deprecated. Linked to no functionalities; only present for backwards compatibility with the old hardware.	ON	0 1	5	5
F7	Min. Film Ten. [%]	This parameter allows the User to set the minimum film tension percentage, when the electromagnetic system is installed. This parameter works in pair with parameter F6, that is the value combined of these two parameters affects the out–feeding of the pre–stretched film. Please note that is parameter is deprecated. Linked to no functionalities; only present for backwards compatibility with the old hardware.	43	0 100	5	5

8 – GENERAL PARAMETERS

REG	GENERAL PARAMETERS	DESCRIPTION	DEF	MIN / MAX	SECUR. VIS	SECUR. MOD
G1	Language	This parameter allows the User to select the current language in use within one of the following list: • Italian (default); • English; • French; • Deutch; • Spanish; • Dutch; • Suomi; • Danske; • Polski.	IT	-	2	2
G2	Contrast [%]	This parameter allows to select the level of light contrast for display being used. This parameter is deprecated for new electronic board types.	90	-	2	2
G3	Enable Remote IR	This parameter allows to enable or disable the built–in Infra–Red receiver, to be used in bundle with its IR remote controller. This parameter is deprecated for new electronic board types.	OFF	-	2	2
G4	Enable Remote RF	This parameter allows to enable or disable the built–in Radio–Frequency receiver, to be used in bundle with its RF remote controller. This parameter is deprecated for new electronic board types.	OFF	-	2	2
G5	Remote Code	This parameter is used to pair remote controller in bundle, with its remote receiver (which is built–in the electronics). This parameter is deprecated for new electronic board types.	0	-	2	2
G6	RxAna Calibr.	This parameter allows the User to calibrate the functioning of the Rx–Ana, that has to be paired with its remote partner built–in the main electronics. This parameter is deprecated for new electronic board types.	OFF	-	2	2
G7	Potentiometer	Activation regulation brake potentiometer	OFF	-	2	2

G8	Top Press Plate	This parameter allows the User to activate – inside all other menus – all parameters related to the functioning of the Top–Press–Plate.	OFF	-	2	2
G9	Pedal	This parameter allows the User to activate – inside all other menus – all parameters related to the functioning of the external Pedal.	OFF	-	2	2
G10	Sealing Unit	This parameter allows the User to activate the functioning of all the sealing–unit features, that is related menus and parameters.	(5)	-	2	2
G11	Conveyor(2)	This parameter allows the User to activate the functioning of the turntable conveyor, that is visualization of all the related menus and parameters.	OFF	-	2	2
G12	Arm(3)	This parameter allows the User to multiplex carriage sensors and commands inside the Tx–Ana / Rx–Ana telegrams. When this parameter is activated, also wiring of J10 and J6 must be changed consequently (as described in chapter X: Wiring and Connection).	(5)	-	2	2
G13	Load cell	This option has to be used to tell the Electronic Board of the stretch–wrapping machine that Load–Cell sensor in installed. Basically, if the motorized pre–stretch is present, then this parameter option has to be set ON; on the other hand, if the EM–brake is installed, then this parameter has to be set OFF. When set to be ON, this parameter enables displaying of the Pre–Stretch Menu and actual parameter A12.	(5)	-	2	2
G14	Acoustic warnings	This option allows the User to suppress all sounds such as: • Start of Wrapping; • End of Wrapping; • Menu browsing; • Alarms.	ON	-	2	2
G15	Output Lamp.	This parameter – if activated – will pull up digital output O2 on connector J12 each and every time an automatic wrapping cycle is being performed . This parameter is deprecated for new electronic board types.	ON in cycle	-	2	2
G16	Extra Roping(4)	This option parameter allows the usage of the roper system to enhance the wrapping process with special extra roped wraps within the standard wrapping process. If enabled, this parameter activates functionalities of parameters' cycle from C47 to C55 (see paragraph XX to usage of these roping feature).	OFF	-	2	2

G17	Seeking zero	If enabled, this option parameter modifies only the behavior of the wrapper when in manual mode. In detail, if the rotation manual command is hold for at the least 3 seconds, then this command is auto–retained : when to stop for this manual command, the wrapper would not stop it immediately but will keep on rotate until the Zero Position Sensor for the Rotation would be reached. The purpose of this option is to auto repositioning the rotation in its starting position after a manual command has been driven; in this way, an automatic wrapping cycle can be launched directly without running a Reset Procedure first.	OFF	-	2	2
G18	Auto cut-off	This parameter allows the User to activate the functioning of the Auto–Cut–Off feature. This means that connector J15 and its LED LD2 are enabled, as well as parameters C39, C40 and C41 will be displayed inside Parameter Cycle menu.	OFF	-	2	2
G19	Ratio cm/Pulse	If either the in–feeding or the out–feeding pre–stretched film measurement sensors are installed, then this parameter defines the relation between each caught sensor pulse and the related amount of unrolled film, expressed in cm. Since a complete turn of either the inlet or the outlet roller generates 4 pulses by one sensor, and the roller diameter is 76 mm, it yields the ratio factor of: 76 [mm] * 3.1415 / 4 = 59.6885 [mm] ≈ 6 [cm/pulse].	6	0 10	2	2
G20	Carr. Final Pos.	This parameter enables or disables the possibility for the User to specify the final carriage position at the end of the automatic wrapping cycle. This carriage final position can be then specified by means of parameter cycle C54.	OFF	-	2	2
G21	Start Pos. not ok	This option allows the User to start a new wrapping cycle even if the initial turntable position is not ok, that means not on its zero position sensor (limit–switch).	(5)	-	2	2
G22	Remote Command	This option is used to tell the Electronic Board about the source of the External User Programs Selection Push–Buttons and also about the Top–Press–Plate being in its wrapping position limit–switch. If not set to ON, then all these information are multiplexed onto the third Analogical Input AI3, otherwise – that is if set to ON – they are split each on one digital input of J14 (see related chapter on how to make wiring of these external PBs and senor).	OFF	-	2	2

G23	Sing. Visual.	This option allows the User to switch between new type of Parameters Visualization, and the old type. The old type refers to only 1 parameter displayed at a time on the 4 rows of the Display; the new one, on the other hand, will display 1 parameter in 2 rows (instead of the available 4), in order to have a more compact visualization.	(5)	-	2	2
G24	Wrapper Type	This option allows the User to set right machine type within one of the following list: • C1–Cresco; • C1–Base; • C1–Biforis; • C1–Plana; • SuperPlus; • C1–Evolvo; • C1–Vertex; • Evolvo SP; • Vertex SP; • C1-Extrema • Blank Type.	/	-	2	2
G25	Hide Time	This option allows the User to not display – in the main screen – the date&time printed in the bottom right corner of the 4 rows display.	OFF	-	2	2
G26	Select & Start	This option allows the User to choose if only choose the program or choose the program and run the automatic cycle with the external push buttons.	OFF	-	2	2
G27	Rot.Conv.Factor	Conversion factor to calculate the real rotation of the table (or the arm).	(5)	0 500	3	3
G28	Unload at 90°	The value of this parameter specifies the state of the 90° unload sensor (the state of the sensor is visualized in parameter A16): 0. Ignored 1. Unload at 90° through 90° sensor 2. Unload at 90° through phonic wheel The sensor is wired on I15 of J14 terminal of the electronic board.	0	-	1	1
G29	Pulses for 90°	If the G28 is set on “2” , this parameter specifies the number of pulses (of the phonic wheel) for the unload at 90°.	90	0 200	1	1
G30	Locking Piston	This parameter allows the User to activate the functioning of the Pneumatic Locking Piston feature.	OFF	-	1	1
G31	YoYo	YoYo enabling	(5)	-	2	2
G32	YoYo Heigth [cm]	Carriage security height if YoYo is enabled	13	0	2	2
G33	Zero Sensor	The value of this parameter defines the tipe of sensor used for the zero position: OFF – Standard proximity sensor ON – Phonic Wheel	(5)	-	3	3
G34	Number of teeth	If the zero position is defined through the phonic wheel (G33=ON), this parameter indicates the number of teeth of the wheel equivalent to a complete rotation of the table.	(5)	-	3	3

G35	Carriage safety	This option allows the User to select the functioning logic of the carriage safety limit switch. The user can choose between “safety under carriage normally closed” and “safety bumper normally open”.	-	-	-	-
G36	Car. teeth counter	This option allows the User to enable the measure of the carriage height by phonic wheel, starting from the lower limit switch of the column.	OFF	-	-	-
G37	Conv. cm / Imp [cm]	This parameter shows the conversion ratio between the impulses of the phonic wheel and the centimeters traveled by the carriage.	1.6	-	-	-

(2) Only visualized if ARM is disabled.
(3) Only visualized if the conveyor is disabled.
(4) Only visualized if plier is enabled.
(5) Refers to “Defaut Values” table.

9 – FREQUENCY CONVERTERS PARAMETERS

9.1 – ROTATION MOTOR

REG	ROTATION MOTOR PARAMETERS	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
X2	Chopper Freq. [KHz]	PWM frequency current signal that generates the sinusoidal voltage wave, then applied to the connected motor. This parameter is allowed to set within the following range: 1÷20.	4	1 / 20	3	3
X3	I MAX [A]	Maximum current the driver for the motor is allowed to give to the motor itself. This parameter is expressed in Ampere, and should not be set more than the 30% of the plate motor current. Above this maximum absorbed current, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	4	1 / 10	3	3
X4	T Max [°C]	Maximum temperature at which the driver for the motor is allowed to work. Above this maximum temperature the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	80	30 / 85	2	2

X5	V Min [V]	Minimum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	150	50 360	2	2
X6	V Max DC [V]	Maximum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	400	160 500	2	2
X7	Boost Freq. [Hz]	This parameter set the frequency below which the voltage generated by the driver and then applied to the motor, is linearly decreased from 100% the actual DC–Link voltage to exactly 1 [Hz]. The final voltage value is then specified by means of parameter X8.	50	10 70	2	2
X8	Boost at 0 Hz [%]	This parameter specified the voltage value of the signal applied to the motor by the driver, when the generated frequency is of 1 [Hz]. This parameter is expressed in percentage of the DC–Link voltage, whose nominal value should be around 325 [V]. The generated voltage applied to the motor, will be then linearly increased up to its maximum (that is 100% of the DC–Link voltage) when the frequency set–point specified at parameter X7 is reached.	(1)	0 100	2	2
X9	Acceleration [s/50Hz]	This parameter specifies the time taken by the motor to accelerate from standstill up to 50 [Hz], when no rounding is used. It's expressed in seconds.	(1)	0.1 10	2	2
X10	Deceleration [s/50Hz]	This parameter specifies the time taken by the motor to decelerate from 50 [Hz] down to standstill, when no rounding is used. It's expressed in seconds.	(1)	0.1 10	2	-
X11	Braking time [s]	Time during which motor is filled –in with DC current by its driver, in order to brake it the fastest way. This is done by the electronics only if an E–STOP or any E–STOP—like event occurs, to improve safety of the wrapper machine. It's expressed in seconds, and it's related to parameter X12, which define the magnitude of the DC current filled–in.	1	0.1 10	2	-
X12	Braking [%]	This parameter sets the DC voltage applied by the driver to the attached motor, for the time specified by means of X11 parameter. This DC voltage would generate a DC current, which is used to feed the motor and by so, to make it down–ramping faster than	30	1	2	-

		normal conditions. This compound brake is used only if any E–STOP or E–STOP—like event occurs, otherwise the motor will never been stopped this way. This parameter is expressed as a percentage of DC–Link voltage.		100		
X13	Inversion	This parameter allows the User to reverse the motion of the attached motor, without physically exchange two motor–cable phases with each other. Value “1” stands for “reverse”.	0	0 1	2	-
X14	I2T [A]	Maximum current the driver for the motor is allowed to give to the motor itself for the fixed window time of 1 second. This parameter is expressed in Ampere, and should be set to be twice the X3 parameter. Above this maximum absorbed current during the 1 second window time, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	2.5	0.5 10	2	-
X15	DC braking % [%]	This parameter – expressed as a percentage of the DC–Link voltage – set the DC voltage applied to the motor when standstill, in order to hold it stopped. This is a stationary electrical brake, and only applied to the motor if the two following conditions are met both at the same time, that are: • a stop command has been driven by the driver to the motor; • related frequency set–point is set to be 0.0 [Hz]. This parameter only takes effect for the time specified by means of parameter C21. So for instance, after an automatic wrapping cycle has ended, the turntable (or the rotating arm) will be hold in their position by means of this electrical brake for the minutes specified by parameter C21. After C21 is elapsed, then DC–brake will be stopped. If C21 is set to be 0, then this DC–brake will last until next automatic wrapping cycle, or reset procedure, or manual command will be given to the machine.	(1)	0 100	2	-

(1) Refers to “Default Values” table.

9.2 – UP AND DOWN MOTOR

REG	UP AND DOWN MOTOR PARAMETERS	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
Y2	Chopper Freq. [Khz]	PWM frequency current signal that generates the sinusoidal voltage wave, then applied to the connected motor. This parameter is allowed to set within the following range: 1÷20 [kHz].	4	1 / 20	3	3
Y3	I MAX [A]	Maximum current the driver for the motor is allowed to give to the motor itself. This parameter is expressed in Ampere, and should not be set more than the 30% of the plate motor current. Above this maximum absorbed current, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	4	1 / 10	3	3
Y4	T Max [°C]	Maximum temperature at which the driver for the motor is allowed to work. Above this maximum temperature the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	80	30 / 85	2	2
Y5	V Min [V]	Minimum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	150	50 / 360	2	2
Y6	V Max DC [V]	Maximum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	400	160 / 500	2	2
Y7	Boost Freq. [Hz]	This parameter set the frequency below which the voltage generated by the driver and then applied to the motor, is linearly decreased from 100% the actual DC–Link voltage to exactly 1 [Hz]. The final voltage value is then specified by means of parameter Y8.	50	10 / 70	2	2

Y8	Boost at 0 Hz [%]	This parameter specified the voltage value of the signal applied to the motor by the driver, when the generated frequency is of 1 [Hz]. This parameter is expressed in percentage of the DC–Link voltage, whose nominal value should be around 325 [V]. The generated voltage applied to the motor, will be then linearly increased up to its maximum (that is 100% of the DC–Link voltage) when the frequency set–point specified at parameter Y7 is reached.	15	0 100	2	2
Y9	Acceleration [s/50Hz]	This parameter specifies the time taken by the motor to accelerate from standstill up to 50 [Hz], when no rounding is used. It's expressed in seconds.	(2)	1 100	2	2
Y10	Deceleration [s/50Hz]	This parameter specifies the time taken by the motor to decelerate from 50 [Hz] down to standstill, when no rounding is used. It's expressed in seconds.	0.1	0.1 10	2	-
Y11	Braking time [s]	Time during which motor is filled –in with DC current by its driver, in order to brake it the fastest way. This is done by the electronics only if an E–STOP or any E–STOP—like event occurs, to improve safety of the wrapper machine. It's expressed in seconds, and it's related to parameter Y12, which define the magnitude of the DC current filled–in.	1	0.1 10	2	-
Y12	Braking [%]	This parameter sets the DC voltage applied by the driver to the attached motor, for the time specified by means of Y11 parameter. This DC voltage would generate a DC current, which is used to feed the motor and by so, to make it down–ramping faster than normal conditions. This compound brake is used only if any E–STOP or E–STOP—like event occurs, otherwise the motor will never been stopped this way. This parameter is expressed as a percentage of DC–Link voltage.	30	1 100	2	-
Y13	Inversion	This parameter allows the User to reverse the motion of the attached motor, without physically exchange two motor–cable phases with each other. Value "1" stands for "reverse".	0	0 1	2	-

Y14	I2T [A]	Maximum current the driver for the motor is allowed to give to the motor itself for the fixed window time of 1 second. This parameter is expressed in Ampere, and should be set to be twice the Y3 parameter. Above this maximum absorbed current during the 1 second window time, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	2.5	0.5 10	2	-
Y15	DC braking [%]	This parameter – expressed as a percentage of the DC–Link voltage – set the DC voltage applied to the motor when standstill, in order to hold it stopped. This is a stationary electrical brake, and only applied to the rotation motor if the two following conditions are met both at the same time, that are: • a stop command has been driven by the driver to the motor; • related frequency set–point is set to be 0.0 [Hz]. This parameter only takes effect for the time specified by means of parameter C21. So for instance, after an automatic wrapping cycle has ended, the turntable (or the rotating arm) will be hold in their position by means of this electrical brake for the minutes specified by parameter C21. After C21 is elapsed, then DC–brake will be stopped. If C21 is set to be 0, then this DC–brake will last until next automatic wrapping cycle, or reset procedure, or manual command will be given to the machine.	0	0 100	2	-

(1) Only visualized if the limit switch is not present (insert jumpers in limit up switch and limit down switch inputs).

(2) Refers to “Default Values” table.

9.3 – PRESTRETCH MOTOR

REG	PRESTRETCH MOTOR PARAMETERS (1)	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
H2	Chopper Freq. [KHz]	PWM frequency current signal that generates the sinusoidal voltage wave, then applied to the connected motor. This parameter is allowed to set within the following range: 1÷20 [kHz].	4	1 / 20	3	3
H3	I MAX [A]	Maximum current the driver for the motor is allowed to give to the motor itself. This parameter is expressed in Ampere, and should not be set more than the 30% of the plate motor current. Above this maximum absorbed current, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	4	1 / 10	3	3
H4	T Max [°C]	Maximum temperature at which the driver for the motor is allowed to work. Above this maximum temperature the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	80	30 / 85	2	2
H5	V Min [V]	Minimum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	150	50 / 360	2	2
H6	V Max DC [V]	Maximum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	400	160 / 500	2	2
H7	Boost Freq. [Hz]	This parameter set the frequency below which the voltage generated by the driver and then applied to the motor, is linearly decreased from 100% the actual DC–Link voltage to exactly 1 [Hz]. The final voltage value is then specified by means of parameter H8.	50	10 / 70	2	2

H8	Boost at 0 Hz [%]	This parameter specified the voltage value of the signal applied to the motor by the driver, when the generated frequency is of 1 [Hz]. This parameter is expressed in percentage of the DC–Link voltage, whose nominal value should be around 325 [V]. The generated voltage applied to the motor, will be then linearly increased up to its maximum (that is 100% of the DC–Link voltage) when the frequency set–point specified at parameter H7 is reached.	15	0 100	2	2
H9	Acceleration [s/50Hz]	This parameter specifies the time taken by the motor to accelerate from standstill up to 50 [Hz], when no rounding is used. It's expressed in seconds.	(2)	1 100	2	2
H10	Deceleration [s/50Hz]	This parameter specifies the time taken by the motor to decelerate from 50 [Hz] down to standstill, when no rounding is used. It's expressed in seconds.	(2)	1 100	2	-
H11	Braking time [s]	Time during which motor is filled –in with DC current by its driver, in order to brake it the fastest way. This is done by the electronics only if an E–STOP or any E–STOP—like event occurs, to improve safety of the wrapper machine. It's expressed in seconds, and it's related to parameter H12, which define the magnitude of the DC current filled–in.	1	0.1 10	2	-
H12	Braking [%]	This parameter sets the DC voltage applied by the driver to the attached motor, for the time specified by means of H11 parameter. This DC voltage would generate a DC current, which is used to feed the motor and by so, to make it down–ramping faster than normal conditions. This compound brake is used only if any E–STOP or E–STOP—like event occurs, otherwise the motor will never been stopped this way. This parameter is expressed as a percentage of DC–Link voltage.	30	1 100	2	-
H13	Inversion	This parameter allows the User to reverse the motion of the attached motor, without physically exchange two motor–cable phases with each other. Value "1" stands for "reverse".	0	0 1	2	-

H14	I2T [A]	Maximum current the driver for the motor is allowed to give to the motor itself for the fixed window time of 1 second. This parameter is expressed in Ampere, and should be set to be twice the H3 parameter. Above this maximum absorbed current during the 1 second window time, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	2.5	0.5 10	2	-
H15	DC braking [%]	This parameter – expressed as a percentage of the DC–Link voltage – set the DC voltage applied to the motor when standstill, in order to hold it stopped. This is a stationary electrical brake, and only applied to the motor if the two following conditions are met both at the same time, that are: • a stop command has been driven by the driver to the motor; • related frequency set–point is set to be 0.0 [Hz]. This parameter only takes effect for the time specified by means of parameter C21. So for instance, after an automatic wrapping cycle has ended, the turntable (or the rotating arm) will be hold in their position by means of this electrical brake for the minutes specified by parameter C21. After C21 is elapsed, then DC–brake will be stopped. If C21 is set to be 0, then this DC–brake will last until next automatic wrapping cycle, or reset procedure, or manual command will be given to the machine.	0	0 100	2	-

(1) Only visualized if the pre-stretch is present.
(2) Refers to “Default Values” table.

9.4 – PRESSOR MOTOR

REG	PRESSOR MOTOR PARAMETERS (1)	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
R2	Chopper Freq. [KHz]	PWM frequency current signal that generates the sinusoidal voltage wave, then applied to the connected motor. This parameter is allowed to set within the following range: 1÷20 [kHz].	4	1 / 20	3	3
R3	I MAX [A]	Maximum current the driver for the motor is allowed to give to the motor itself. This parameter is expressed in Ampere, and should not be set more than the 30% of the plate motor current. Above this maximum absorbed current, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	4	1 / 10	3	3
R4	T Max [°C]	Maximum temperature at which the driver for the motor is allowed to work. Above this maximum temperature the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	80	30 / 85	2	2
R5	V Min [V]	Minimum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	150	50 / 360	2	2
R6	V Max DC [V]	Maximum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	400	160 / 500	2	2
R7	Boost Freq. [Hz]	This parameter set the frequency below which the voltage generated by the driver and then applied to the motor, is linearly decreased from 100% the actual DC–Link voltage to exactly 1 [Hz]. The final voltage value is then specified by means of parameter R8.	50	10 / 70	2	2

R8	Boost at 0 Hz [%]	This parameter specified the voltage value of the signal applied to the motor by the driver, when the generated frequency is of 1 [Hz]. This parameter is expressed in percentage of the DC–Link voltage, whose nominal value should be around 325 [V]. The generated voltage applied to the motor, will be then linearly increased up to its maximum (that is 100% of the DC–Link voltage) when the frequency set–point specified at parameter R7 is reached.	23	0 100	2	2
R9	Acceleration [s/50Hz]	This parameter specifies the time taken by the motor to accelerate from standstill up to 50 [Hz], when no rounding is used. It's expressed in seconds.	0.5	0.1 10	2	2
R10	Deceleration [s/50Hz]	This parameter specifies the time taken by the motor to decelerate from 50 [Hz] down to standstill, when no rounding is used. It's expressed in seconds.	0.5	0.1 10	2	-
R11	Braking time [s]	Time during which motor is filled –in with DC current by its driver, in order to brake it the fastest way. This is done by the electronics only if an E–STOP or any E–STOP—like event occurs, to improve safety of the wrapper machine. It's expressed in seconds, and it's related to parameter R12, which define the magnitude of the DC current filled–in.	1	0.1 10	2	-
R12	Braking [%]	This parameter sets the DC voltage applied by the driver to the attached motor, for the time specified by means of R11 parameter. This DC voltage would generate a DC current, which is used to feed the motor and by so, to make it down–ramping faster than normal conditions. This compound brake is used only if any E–STOP or E–STOP—like event occurs, otherwise the motor will never been stopped this way. This parameter is expressed as a percentage of DC–Link voltage.	30	1 100	2	-
R13	Inversion	This parameter allows the User to reverse the motion of the attached motor, without physically exchange two motor–cable phases with each other. Value "1" stands for "reverse".	0	0 1	2	-

R14	I2T [A]	Maximum current the driver for the motor is allowed to give to the motor itself for the fixed window time of 1 second. This parameter is expressed in Ampere, and should be set to be twice the R3 parameter. Above this maximum absorbed current during the 1 second window time, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	2.5	0.5 10	2	-
R15	DC braking [%]	This parameter – expressed as a percentage of the DC–Link voltage – set the DC voltage applied to the motor when standstill, in order to hold it stopped. This is a stationary electrical brake, and only applied to the motor if the two following conditions are met both at the same time, that are: • a stop command has been driven by the driver to the motor; • related frequency set–point is set to be 0.0 [Hz]. This parameter only takes effect for the time specified by means of parameter C21. So for instance, after an automatic wrapping cycle has ended, the turntable (or the rotating arm) will be hold in their position by means of this electrical brake for the minutes specified by parameter C21. After C21 is elapsed, then DC–brake will be stopped. If C21 is set to be 0, then this DC–brake will last until next automatic wrapping cycle, or reset procedure, or manual command will be given to the machine.	0	0 100	2	-

(1) Only visualized if the presser is present.
(2) Refers to “Default Values” table.

9.5 – ARM MOTOR

REG	ARM MOTOR PARAMETERS (1)	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
B2	Chopper Freq. [KHz]	PWM frequency current signal that generates the sinusoidal voltage wave, then applied to the connected motor. This parameter is allowed to set within the following range: 1÷20 [kHz].	8	1 / 20	3	3
B3	I MAX [A]	Maximum current the driver for the motor is allowed to give to the motor itself. This parameter is expressed in Ampere, and should not be set more than the 30% of the plate motor current. Above this maximum absorbed current, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	7	1 / 10	3	3
B4	T Max [°C]	Maximum temperature at which the driver for the motor is allowed to work. Above this maximum temperature the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	50	30 / 70	2	2
B5	V Min [V]	Minimum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	250	50 / 360	2	2
B6	V Max DC [V]	Maximum value allowed to the internal DC–Link of the driver. This VDC voltage is generating by rectifying the network voltage (whose nominal value is then fixed to 230 [V] · √2, that is approximately 325 [V]).	350	160 / 500	2	2
B7	Boost Freq. [Hz]	This parameter set the frequency below which the voltage generated by the driver and then applied to the motor, is linearly decreased from 100% the actual DC–Link voltage to exactly 1 [Hz]. The final voltage value is then specified by means of parameter B8.	35	10 / 70	2	2

B8	Boost at 0 Hz [%]	This parameter specified the voltage value of the signal applied to the motor by the driver, when the generated frequency is of 1 [Hz]. This parameter is expressed in percentage of the DC–Link voltage, whose nominal value should be around 325 [V]. The generated voltage applied to the motor, will be then linearly increased up to its maximum (that is 100% of the DC–Link voltage) when the frequency set–point specified at parameter B7 is reached.	21	0 100	2	2
B9	Acceleration [s/50Hz]	This parameter specifies the time taken by the motor to accelerate from standstill up to 50 [Hz], when no rounding is used. It's expressed in seconds.	1.2	0.1 10	2	2
B10	Deceleration [s/50Hz]	This parameter specifies the time taken by the motor to decelerate from 50 [Hz] down to standstill, when no rounding is used. It's expressed in seconds.	1.2	0.1 10	2	-
B11	Braking time [s]	Time during which motor is filled –in with DC current by its driver, in order to brake it the fastest way. This is done by the electronics only if an E–STOP or any E–STOP—like event occurs, to improve safety of the wrapper machine. It's expressed in seconds, and it's related to parameter B12, which define the magnitude of the DC current filled–in.	1	0.1 10	2	-
B12	Braking [%]	This parameter sets the DC voltage applied by the driver to the attached motor, for the time specified by means of B11 parameter. This DC voltage would generate a DC current, which is used to feed the motor and by so, to make it down–ramping faster than normal conditions. This compound brake is used only if any E–STOP or E–STOP—like event occurs, otherwise the motor will never been stopped this way. This parameter is expressed as a percentage of DC–Link voltage.	30	1 100	2	-
B13	Inversion	This parameter allows the User to reverse the motion of the attached motor, without physically exchange two motor–cable phases with each other. Value "1" stands for "reverse".	0	0 1	2	-

B14	I2T [A]	Maximum current the driver for the motor is allowed to give to the motor itself for the fixed window time of 1 second. This parameter is expressed in Ampere, and should be set to be twice the B3 parameter. Above this maximum absorbed current during the 1 second window time, the machine will go in alarm by opening the emergency circuit and by triggering Thermic Alarm.	2.5	0.5 10	2	3
B15	DC braking [%]	This parameter – expressed as a percentage of the DC–Link voltage – set the DC voltage applied to the motor when standstill, in order to hold it stopped. This is a stationary electrical brake, and only applied to the motor if the two following conditions are met both at the same time, that are: • a stop command has been driven by the driver to the motor; • related frequency set–point is set to be 0.0 [Hz]. This parameter only takes effect for the time specified by means of parameter C21. So for instance, after an automatic wrapping cycle has ended, the turntable (or the rotating arm) will be hold in their position by means of this electrical brake for the minutes specified by parameter C21. After C21 is elapsed, then DC–brake will be stopped. If C21 is set to be 0, then this DC–brake will last until next automatic wrapping cycle, or reset procedure, or manual command will be given to the machine.	10	0 100	2	2

(1) Only visualized if the arm is present.

10 – ACTUAL VALUES DISPLAY

REG	CURRENT PARAMETERS VALUES	DESCRIPTION	DEF.	SECUR.	
				VIS	MOD
A1	Machine Status	It shows the actual status of the machine	-	1	-
A2	Temp. Rotation [°C]	Actual temperature of the Arm / Turntable frequency converter. It's expressed in Celsius degrees.	-	1	-
A3	Temp. Carriage [°C]	Actual temperature of the Carriage frequency converter. It's expressed in Celsius degrees.	-	1	-
A4	Temp. PreStretch [°C]	Actual temperature of the pre–stretch frequency converter. It's expressed in Celsius degrees.	-	1	-
A5	Rotation Freq. [Hz]	Current frequency applied to the Rotation Motor by its driver. It's expressed in Hz (of the voltage and current applied to the motor itself).	-	1	-
A6	Carriage Freq. [Hz]	Current frequency applied to the Carriage motor by its driver. It's expressed in Hz (of the voltage and current applied to the motor itself).	-	1	-
A7	Last Cycle Rev.	Total number of Arm / Turntable revolutions made within the last wrapping cycle.	-	1	-
A8	GrandTotal Rev.	Overall number of Arm / Turntable revolutions made (9999 Max).	-	1	-
A9	Voltage Brake [%]	Voltage applied to the EM–brake when the pre–stretch is not motorized. It's expressed as a percentage of the maximum voltage that can be applied (+24 [V]).	-	1	-
A10	Carr. Height [cm]	Current height of the Carriage. It's expressed in cm, referred to its minimum reachable height (that is not the floor) .	-	1	-
A11	Prestretch Freq. [Hz]	Current frequency applied to the Pre–Stretch Motor by its driver. It's expressed in Hz (of the voltage and current applied to the motor itself).	-	1	-
A12	Prestretch Sens. [ADC]	Current value read by the Electronic Board for the Load–Cell sensor. At rest position – that is nothing pulling for the load–cell – the values displayed should be within the following range: [10÷60]. It's expressed in number of points for the internal ADC, and the maximum is 1024 points, that is – electrically – 10.0 [V].	-	1	-
A13	RxAna In. Status	Current status of the inputs / outputs of the built–in Rx–Ana.	-	1	-
A14	Pallet Height PH	Current status of the pallet height photocell. It's ON when the related photocell detects for a pallet, and OFF when no pallet is seen.	-	1	-

A15	Safety Carr. LS	Current status of the emergency limit–switch placed under carriage. It's ON when no obstacle is detected, and OFF when an emergency situation occurs.	-	1	-
A16	Rotation 90° LS	Current status of the turntable 90° position limit–switch. It's ON when the 90° position is reached by the turntable, and OFF otherwise.	-	1	-
A17	Rotation 0° LS	Current status of the turntable 0° position limit–switch. It's ON when the 0° position is reached by the turntable, and OFF otherwise.	-	1	-
A18	Carriage High LS	Current status of the limit–switch detecting the highest position of the Carriage. It's OFF when the highest position is reached by the carriage.	-	1	-
A19	Carriage Low LS	Current status of the limit–switch detecting the lowest position of the Carriage. It's OFF when the lowest position is reached by the carriage.	-	1	-
A20	Amp. Carriage [A]	Actual current absorbed by the Carriage Motor. It's expressed in Ampere.	-	1	-
A21	Amp. Rotation [A]	Actual current absorbed by the Rotation Motor. It's expressed in Ampere.	-	1	-
A22	Amp. Prestretch [A]	Actual current absorbed by the Pre–Stretch Motor. It's expressed in Ampere.	-	1	-
A23	Measured Temp. [°C]	Actual welding temperature	-	1	-
A24	Table Angle [°]	Actual angle of the table	-	1	-
A25	Top-Press Up	Upper limit-switch status	-	1	-
A26	Top-Press Down	Lower limit-switch status	-	1	-
A27	Table Lock. Piston	Current status of the table locking piston sensor	-	1	-
A28	YoYo	YoYo current status (ON/OFF)	-	1	-
A29	Tav YoYo	Shows if YoYo is switched ON	-	1	-

11 – PRESTRETCH PARAMETERS

Please note that this menu is only present if the motorized Pre–Stretch is installed onto the wrapper, that is parameter G13 is set to be ON.

REG	PRE-STRETCH PARAMETERS (*)	DESCRIPTION	DEF.	MIN / MAX	SECUR. VIS	SECUR. MOD
P1	En. PreStretch	This parameter has to be set ON if the pre–stretch driver is installed. If this parameter is not set to be ON, then all the following parameters can be discarded for the understanding of the wrapper functioning.	(3)	0 1	3	3
P2	Film Broken Al.	This parameter acts like an option: if enabled the Film Broken Alarm is not triggered anymore. Please note that is enabled, is automatically bypassed by password 900; at power off anyway, is automatically restored to its previous value (with password 900).	(3)	0 1	2	2
P3	Film Broken delay [s]	This parameter defines the delay that the machine identify film broken.	4	0 10	3	3
P4	Ref. Min. Sensor [ADC]	This parameter defines the offset for values being read by the ADC for the Load–Cell. Load–Cell offset is a tare for it: at rest current value read for the Load–Cell are not close to 0, and so a small adjustment is required. The rule of thumb that can be used to determine its value, can be the following: • P4 = A12 + 10. It's expressed in points of the ADC, to which the Analogical Input that reads the Load–Cell signal is linked to.	(3)	0 500	3	3

P5	Calibr. PreStr. [ADC]	This parameter has to be used to calibrate the functioning of the Load–Cell. Linearly, it sets the frequency applied to the pre–stretch motor in order to have more or less film tension, when no other film tension parameters are varied. The value of this parameter is related to the type of film coil being used, since there exists a lot of different type of pre–stretchable plastic films. A way to determine the right value for this parameter is to set a very low film tension, 0% by means of parameter C4 for instance, and then try to wrap a pallet. In this situation P5 should be risen up until film is not as light as requested by the pallet being wrapped. The higher this parameter is, the lighter the wrapping would be.	(3)	0 5000	3	3
P6	K Proportional	This parameter sets the weight for the proportional term of the PID, used inside the algorithm that handles the out–feeding of the pre–stretched film when the dancing roller is installed. This parameter is deprecated for new electronic board types, and has no effect upon out–feeding pre–stretched film algorithm.	1000	1 2000	3	3
P7	K Derivative	This parameter sets the weight for the derivative term of the PID, used inside the algorithm that handles the out–feeding of the pre–stretched film when the dancing roller is installed. This parameter is deprecated for new electronic board types, and has no effect upon out–feeding pre–stretched film algorithm.	0	0 0	3	3
P8	K Integral	This parameter sets the weight for the integral term of the PID, used inside the algorithm that handles the out–feeding of the pre–stretched film when the dancing roller is installed. This parameter is deprecated for new electronic board types, and has no effect upon out–feeding pre–stretched film algorithm.	0	0 0	3	3

P9	Loosening Time [s]	This parameter allows to set the ime during which the pre–stretch motor works at minimum speed in order to allow the dancing roller bar to come back to its zero position at the end of a wrapping cycle. It's expressed in seconds.	0.04	0.01 0.1	3	3
P10	Max. Frequency [Hz]	This parameter allows the User to set an upper bound for the evaluated frequency by the out–feeding pre–stretched film algorithm. This means that no matter what, the frequency by which the pre–stretch motor will be driven will never be higher than this value, that is: A11 < P10.	60	50 80	3	3
P11	Tens. Final Turn	This parameter specifies the film tension value to be used during the last quarter of the last wrap of an automatic wrapping cycle. Basically this parameter overwrite the film tension specified by C42 while – when on last wrapping turn – the rotation swaps the angular sector (270° ÷ 360°). This parameter is deprecated for new electronic board types, and parameter F4 must be used instead.	12	0 100	3	3
P12	Max Freq. In Man [Hz]	This parameter allows the User to specifies the unrolling film speed when the machine is in manual mode and Load–Cell is pulled for unrolling it. Please note that wrapper will start releasing for film only if the extra threshold P14 is exceeded.	20	10 30	3	3
P13	Fixed Freq. [Hz]	This parameter sets the fixed frequency term to be used inside the out–feeding pre–stretched film algorithm. Even if a right balance within this term and the calibration factor P5 has to be found, it can be said that the higher P13 is, the lighter the film would be at low film tensions.	(3)	0 30	3	3

P14	Film Man. Thr. [ADC]	This parameter specifies the threshold – expressed in points of the ADC that reads the Load–Cell values – above which the wrapper will start releasing film when not in automatic mode. In more detail, wrapper will start releasing film only if the following condition is met: • A12 >= P4 + P14. Please note that for safety reasons, when pulling for the film in manual mode, the film itself will be released at a fixed speed regardless of the pulling force applied; this fixed speed can be however adjusted by means of parameter P12.	50	0 500	3	3
P15	Twin Engine	This parameter has to be set ON if the double-motor pre–stretch is installed.	(3)	0 1	3	3

(*) Only visualized if the pre-stretch is present.
(1) Only visualized in ARM mode or Weight cell ON.
(2) Only if ARM mode is disable.
(3) Refers to “Default Values” table.

12 – PLIERS PARAMETERS

REG	PLIERS PARAMETERS (1)	DESCRIPTION	DEF	MIN / MAX	SECUR. VIS	SECUR. MOD
E1	Measured Temperature [°C]	Current temperature for the cut&welding plate of the sealing–unit. This is a read–only parameter, and must not be over the fixed threshold of 210 [°C], otherwise the power circuitry will be automatically opened and alarm #33 triggered.	-	/ /	1	-
E2	Welding Time [s]	This parameter set the welding time, that is the time during which the banded film is welded at the end of the wrapping cycle. It's expressed in seconds.	3	1 20	1	1
E3	Blowing Time [s]	This parameter set the time during which the compressed air is blown out of its pipe, in order to release and catch the film tail. It's expressed in seconds, and it should be set in order to blow out CA for at least one and a half turn of the rotation (to be sure to catch the film tail at least once).	6	1 20	1	1
E4	Release Film T. [s]	This parameter set the time during which the pre–stretch driver will start release some film just before the welding phase, in order to loose tension on the banded film. If it happens that at the end of the wrapping process, that the film lain on the sealing–unit back–plate is too tight, then almost certainly *spring effect* on the film will occur, and welding would not take place. This happens because last roped wrapped film has not to be tight in tension.	2	1 20	1	1
E5	Roper Up Time [s]	This parameter specifies the time during which the roper system has to be driven upwards, at the end of the sealing phase of a wrapping process. This parameter is supposed to be all the time bigger of the related parameter E6. In cases film brakes because of bad quality or damages on the coil itself, setting a lower value for E5 than E6, will create the effect that an extra rope on the upper edge of the 500 [mm] film coil will appear. This rope makes the film more hard to brake, and so it can improve the wrapping process.	(2)	1 20	1	1

E6	Roper Down Time [s]	This parameter specifies the time during which the roper system has to be driven downwards at time of banding the film, while preparing the sealing phase. The roped film should be a band of no more than 7/8 cm, since it will be lain upon the sealing back–plate. If this parameter is too small, then the film will not be cut for its entire width.	(2)	1 20	1	1
E7	Welding Position [°]	This parameter sets the angular position of the rotation, at which the either the turntable or the rotating arm will be stopped, in order to cut the film. Standard position at which cutting the film, is close to 45 angular degrees for the sealing–unit with respect of the stretch wrapping machine must.	(2)	10 180	1	1
E8	Count. Bar. Del. [s]	Contrast bar delay (1)	2	0.5 20	1	1
E9	Film Tail Rel.P. [°]	This parameter allows the User to set the angular position at which the film tail has to be set free (while machine is wrapping), in order to be caught and fixed to the pallet.	180	10 350	1	1
E10	Welding Height [cm]	This parameter allows the User to set the height of the carriage for the welding of the film. The banded film should be placed in the centre of the sealing back–plate, and in order to reach this goal E10 has to be tuned.	3	0 200	1	1
E11	BP Gripper Up [°]	This parameter allows the User to set the angular position at which – during the last wrapping turn of a wrapping cycle – rising up the back–plate gripper (yellow bar). This parameter is helpful when zero position sensor does not locate actual physical zero of the rotation, or when loading and unloading position are not the same (and in this case an extra 90 angular degrees sensor would be installed on the machine).	250	180 350	1	1
E12	Delay Rot. BW [s]	This parameter allows the User to set the time after which start rotating backwards after the beginning of the welding phase. Setting this parameter equal to the welding time – that is E2 – will produce the rotation start turning backwards towards its zero position, immediately after welding is completely ended.	3	0 20	1	1

(1) Only if pliers system is enabled.
(2) Refers to “Default Values” table.

13 - ALARMS AND WARNINGS

Alarm no.	ALARM DESCRIPTION	DESCRIPTION
#1	**Rotation Driver** is Over–Temperature	Rotation Driver has reached its maximum allowed internal temperature (expressed in Celsius degrees). This means that the following condition is currently verified: A2>X4.
#2	Rotation Driver is in Thermic Alarm	Rotation Driver has reached its maximum allowed thermic current, specified by means of parameter X14. This means that the following condition is currently verified: A20>X14 for at least Δt = 1 [s].
#3	Rotation Driver Output Stage is in Short–Circuit	Rotation Driver detects for short–circuit at its output stage. Check for motor connection and wiring; pairs U–V, U–W, or V–W can be responsible for this fault.
#4	Rotation Driver is Over–Voltage	Rotation Driver DC–Link voltage has exceeded its maximum threshold value (X6). The type of fault is displayed along with the current DC–Link voltage value.
#5	Rotation Driver is Under–Voltage	Rotation Driver DC–Link voltage has exceeded its minimum threshold value (X5). The type of fault is displayed along with the current DC–Link voltage value.
#6	Rotation Driver is Over–Current	Rotation Driver has exceeded the maximum allowed value (X3) for the current – in ampere – used to feed the related motor. This means that the following condition is currently verified: A20>X14.
#7	Carriage Driver is Over–Temperature	Carriage Driver has reached its maximum allowed internal temperature (expressed in Celsius degrees). This means that the following condition is currently verified: A3>Y4.
#8	Carriage Driver is in Thermic Alarm	Carriage Driver has reached its maximum allowed thermic current, specified by means of parameter Y14. This means that the following condition is currently verified: A21>Y14 for at least Δt = 1 [s].
#9	Carriage Driver Output Stage is in Short–Circuit	Carriage Driver detects for short–circuit at its output stage. Check for motor connection and wiring; pairs U–V, U–W, or V–W can be responsible for this fault.
#10	Carriage Driver is Over–Voltage	Carriage Driver DC–Link voltage has exceeded its maximum threshold value (Y6). The type of fault is displayed along with the current DC–Link voltage value.
#11	Carriage Driver is Under–Voltage	Carriage Driver DC–Link voltage has exceeded its minimum threshold value (Y5). The type of fault is displayed along with the current DC–Link voltage value.
#12	Carriage Driver is Over–Current	Carriage Driver has exceeded the maximum allowed value (Y3) for the current – in ampere – used to feed the related motor. This means that the following condition is currently verified: A21>Y14.
#13	**Pre–Stretch** Driver is Over–Temperature	Pre–Stretch Driver has reached its maximum allowed internal temperature (expressed in Celsius degrees). This means that the following condition is currently verified: A4>H4.
#14	Pre–Stretch Driver is in Thermic Alarm	Pre–Stretch Driver has reached its maximum allowed thermic current, specified by means of parameter R14. This means that the following condition is currently verified: A22>H14

		for at least Δt = 1 [s].
#15	Pre–Stretch Driver Output Stage is in Short–Circuit	Pre–Stretch Driver detects for short–circuit at its output stage. Check for motor connection and wiring; pairs U–V, U–W, or V–W can be responsible for this fault.
#16	Pre–Stretch Driver is Over–Voltage	Pre–Stretch Driver DC–Link voltage has exceeded its maximum threshold value (H6). The type of fault is displayed along with the current DC–Link voltage value.
#17	Pre–Stretch Driver is Under–Voltage	Pre–Stretch Driver DC–Link voltage has exceeded its minimum threshold value (H5). The type of fault is displayed along with the current DC–Link voltage value.
#18	Pre–Stretch Driver is Over–Current	Pre–Stretch Driver has exceeded the maximum allowed value (H3) for the current – in ampere – used to feed the related motor. This means that the following condition is currently verified: A22>H14.
#19	Top–Press–Plate Driver is Over–Temperature	Top–Press–Plate Driver has reached its maximum allowed internal temperature (expressed in Celsius degrees). This means that the following condition is currently verified: A3>R4.
#20	Top–Press–Plate Driver is in Thermic Alarm	Top–Press–Plate Driver has reached its maximum allowed thermic current, specified by means of parameter R14. This means that the following condition is currently verified: A21>R14 for at least Δt = 1 [s].
#21	Top–Press–Plate Driver Output Stage is in Short–Circuit	Top–Press–Plate Driver detects for short–circuit at its output stage. Check for motor connection and wiring; pairs U–V, U–W, or V–W can be responsible for this fault.
#22	Top–Press–Plate Driver is Over–Voltage	Top–Press–Plate Driver DC–Link voltage has exceeded its maximum threshold value (R6). The type of fault is displayed along with the current DC–Link voltage value.
#23	Top–Press–Plate Driver is Under–Voltage	Top–Press–Plate Driver DC–Link voltage has exceeded its minimum threshold value (R5). The type of fault is displayed along with the current DC–Link voltage value.
#24	Top–Press–Plate Driver is Over–Current	Top–Press–Plate Driver has exceeded the maximum allowed value (R3) for the current – in ampere – used to feed the related motor. This means that the following condition is currently verified: A21>R14.
#25	Conveyor Driver is Over–Temperature	Conveyor Driver has reached its maximum allowed internal temperature (expressed in Celsius degrees). This means that the following condition is currently verified: A2>B4.
#26	Top–Press–Plate Driver is in Thermic Alarm	Conveyor Driver has reached its maximum allowed thermic current, specified by means of parameter R14. This means that the following condition is currently verified: A20>B14 for at least Δt = 1 [s].
#27	Top–Press–Plate Driver Output Stage is in Short–Circuit	Conveyor Driver detects for short–circuit at its output stage. Check for motor connection and wiring; pairs U–V, U–W, or V–W can be responsible for this fault.
#28	Conveyor Driver is Over–Voltage	Conveyor Driver DC–Link voltage has exceeded its maximum threshold value (B6). The type of fault is displayed along with the current DC–Link voltage value.

#29	Conveyor Driver is Under–Voltage	Conveyor Driver DC–Link voltage has exceeded its minimum threshold value (B5). The type of fault is displayed along with the current DC–Link voltage value.
#30	Conveyor Driver is Over–Current	Conveyor Driver has exceeded the maximum allowed value (B3) for the current – in ampere – used to feed the related motor. This means that the following condition is currently verified: A20>B14.
#31	Communication Error with Drivers	The main Electronic Board MCU does not communicate with one or more remote Driver(s). LED LD1 placed on top left corner of the main EB shows status of the communication link.
#32	Emergency Push–Button	Emergency–Stop Push–Button has been pressed by the User, or E–STOP—like situation occurred.
#33	Sealing–Unit is Over–Temperature	The cut&welding plate of the sealing–unit has reached its (fixed) maximum allowed temperature of 210 Celsius degrees. This event causes the main power contactor to open for safety reasons.
#34	Safety Carriage Limit–Switch	The Safety Carriage Limit–Switch placed below the carriage has been triggered by an obstacle or by a person accidentally. This event causes the main power contactor to open for safety reasons.
#35	Reset Reqeust	Start Push–Button has been pressed without having performed the Reset procedure first.
#36	Film Broken Alarm	This alarm occurs each and every time the wrapper senses for no signal on the load–cell while wrapping (that is during the automatic cycle only, not during the reset procedure). The alarm can be disabled by means of parameter P2, and can be caused because a real breaking of the film while wrapping, or either because of a pre–stretched film–coil being ended.
#37	Zero Position not Ok	This alarm is triggered each and every time the User wants to start a brand new automatic wrapping cycle but the machine is not sensing for the Zero Position limit–switch for the rotation. Status of this sensor is displayed by parameter A17; to avoid this check at start up, just set G21 to ON and the wrapper will start regardless the actual rotation position.

14 - TROUBLESHOOTING

Not available yet.

15 – USB FUNCTIONS

USE ONLY USB 2.0 FLASH DRIVES (3.0 STANDARD IS NOT SUPPORTED)
THE USB MEMORY STICK MUST BE FORMATTED AS FAT32 STANDARD
AND NOT MORE THAN 8 GB DRIVES ARE ALLOWED

USB features can be used by the operator to update software and / or parameters of the electronic board, in order to fix bugs or restore the board as well as to add software functionalities or language packages.
Moreover the USB functionalities allows the user to create backups of the entire parameters set and/or of just single saved User Programs.

To get access to the USB menu, from the main page press “Jog –“ button until you reach for the “USB Features“ entry, then press “OK“ to open the USB menu.
Don’t start the wrapping cycle while USB feature is inserted.
The USB Features menu contains the following functions:

1) **Load User Program:** it allows the user to load, from the flash drive memory, a program previously saved by means of the “Save User Program“ function (see next entry).
   If the selected program is not present in the USB memory the board will display an error message.
   The relationship between stored bin files inside the USB stick and the actual uploaded User Program is 1:1, that is if PRG16.bin is present inside the USB drive, then Electronic Board User Program 16 will be overwritten by data contained inside PRG16.bin.

2) **Save User Program:** it allows the user to save on the flash drive one of the 32 programs previously set. The file will be saved as “PRGxx.bin“ where the “xx“ indicates the program number (for example program number 3 will be saved as “PRG03.bin“).
   The files saved from the board can be renamed (using a PC) with a different program number: in this way user can create copies of the same user program but all with the same values for the parameter set (values can’t be edited).

   - **NOTE:** The “Save User Program“ command creates a backup of only one of the 32 Cycle Parameters set (P-parameters only); to create a backup of the entire set of parameters, see the “Save Par“ function below.

3) **Data Log:** this function is not enabled yet, but it is predisposed to save advanced statistics of the machine.

4) **Save Par:** this function creates on the flash drive a complete copy of all the parameters set on the board, which can be loaded afterwards to restore the board or to copy all the settings on other machines (for instance a space board). The file will be saved on the USB memory as “CC_ALL.bin“.

5) **Read Par:** this command loads a copy of another machines previously saved on the flash memory.

- **NOTE:** when the file “CC_ALL.bin“ is loaded on a different board it is very important to verify that the SW version matches the one saved on the original board, or, in case the SW version doesn’t match, to ensure that the set of parameters does not change from one version to another (for example, in case of addition of new parameters).
  If the set of parameters is different between the two target boards, then the only way to copy the settings is to manually change them by operating on the machine (also see “Save all as .txt“ function)

6) **Save All as .txt:** with this command the board will save on the flash memory both a binary copy of the EB and a text file with the complete list of all the settings (parameters values, SW version, Serial Number, etc.). The binary file is the same of the one created with the “Save Par“ command except for the name, which, in this case, will be generated from the serial number of the machine: for example, if the serial of the machine is C1500001M the files will be 1500001M.bin and 1500001M.txt)

15.1 – SW AND LANGUAGE UPDATE

To update the SW and the language pack on the EB follow the procedure illustrated below:

1) Copy the 2 files for the language - CeC_lng.bin, CEC_Par.bin – and the SW file - CEC_SW.bin – on the USB stick

2) Turn on the board and insert the USB with the correct files for the machine

3) Wait until the installation is completed. The board will ask the 3 files but the operator can just keep the USB inserted on the board and the installation process will go on automatically

4) When the installation is completed the EB will be in Italian (that is the default language), to put it in the requested language press Jog- to enter the menu and push it again until the “Parametri Generali” menu is reached.
   Press OK to enter and press OK again on the first voice “Lingua” to access the list of the languages. Then press Jog- until you reach the language needed and press OK.

- **NOTE**: if there is no need for a SW update, the operator can update only the language by putting on the USB stick only the CeC_lng.bin and CEC_Par.bin files.
  Otherwise, every time that the SW is updated it could be necessary to reinstall also the language files.

16 – REVISION HISTORY

16.1 – HARDWARE REVISIONS

Not available yet.

DEFAULT VALUES

Parameters	Darwin-T PS	Darwin-T	Darwin-T 2PS	Darwin	Kepler	Kepler SP
C11	50	50	50	50	65	65
C12	45	45	45	45	65	65
C13	10	10	10	10	6	6
C14	3,5	3,5	3,5	5	2	2
C18	2334	2334	2334	1945	3263	3263
C19	60	60	60	60	40	40
C20	80	80	80	80	70	70
C22	424	424	424	424	1441	1335
C31	0	0	0	0	0	0
C44	50	50	50	50	65	65
C51	0	0	0	0	0	0
X8	15	15	15	15	15	15
X9	3	3	3	3	3	3
X10	1,5	1,5	1,5	2	2	2
X15	10	10	10	10	0	0
Y9	0,6	0,6	0,6	0,6	0,2	0,2
H9	0,2	0,2	1,2	0,2	0,2	0,2
H10	0,5	0,5	1,2	0,5	0,5	0,5
G10	OFF	OFF	OFF	OFF	OFF	ON
G12	OFF	OFF	OFF	OFF	OFF	ON
G13	ON	OFF	ON	ON	ON	ON
G21	OFF	OFF	OFF	ON	OFF	OFF
G23	ON	ON	ON	ON	ON	ON
G27	241	241	241	241	174	174
G31	OFF	OFF	OFF	OFF	OFF	OFF
G33	OFF	OFF	OFF	OFF	OFF	OFF
G34	388	388	388	388	388	388
P1	ON	OFF	ON	ON	ON	ON
P2	ON	OFF	ON	ON	ON	ON
P4	20	20	20	20	30	100
P5	800	800	800	800	1200	1200
P13	15	15	15	15	25	25
P15	OFF	OFF	ON	OFF	OFF	OFF
E5	2	2	2	2	2	2
E6	1,2	1,2	1,2	1,2	1,2	2,5
E7	4,5	4,5	4,5	4,5	4,5	4,5

Parameters	Volta	Volta EM	Volta 2PS	Volta-T EM	Volta-T PS	Volta-T 2PS
C11	65	65	65	65	65	65
C12	65	65	65	65	65	65
C13	10	10	10	10	10	10
C14	3	3	3	3	3	3
C18	1893	1893	1893	2334	2334	2334
C19	50	50	50	50	50	50
C20	90	90	90	90	90	90
C22	812	812	812	812	812	812
C31	0	0	0	0	0	0
C44	65	65	65	65	65	65
C51	0	0	0	0	0	0
X8	15	15	15	15	15	15
X9	3	3	3	3	3	3
X10	2	2	2	1,5	1,5	1,5
X15	10	10	10	10	10	10
Y9	0,2	0,2	0,2	0,2	0,2	0,2
H9	0,2	0,2	1,2	0,2	0,2	1,2
H10	0,5	0,5	1,2	0,5	0,5	1,2
G10	OFF	OFF	OFF	OFF	OFF	OFF
G12	OFF	OFF	OFF	OFF	OFF	OFF
G13	ON	OFF	ON	OFF	ON	ON
G21	ON	ON	ON	OFF	OFF	OFF
G23	ON	ON	ON	ON	ON	ON
G27	308	308	308	241	241	241
G31	OFF	OFF	OFF	OFF	OFF	OFF
G33	OFF	OFF	OFF	OFF	OFF	OFF
G34	212	212	212	388	388	388
P1	ON	OFF	ON	OFF	ON	ON
P2	ON	OFF	ON	OFF	ON	ON
P4	40	40	40	40	40	40
P5	400	400	400	400	400	400
P13	5	5	5	5	5	5
P15	OFF	OFF	ON	OFF	OFF	ON
E5	2,5	2,5	2,5	2,5	2,5	2,5
E6	2,5	2,5	2,5	2,5	2,5	2,5
E7	45	45	45	45	45	45

NOTES

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