TECHNICAL DOCUMENTATION - MASTERPLAT PLUS

Date	Revisions	Revision reasons	Issue	Cheched by	Approved by
23/08/2017	00	First Issue	Baldinini F.	Baldinini F.	Baldinini F.
06/07/2018	01	Index realization	Baldinini F.	Baldinini F.	Baldinini F.
10/09/2018	02	LP model and parameters update	Baldinini F.	Baldinini F.	Baldinini F.
17/12/2018	03	Detailed inverter cards alarms codes	Baldinini F.	Baldinini F.	Baldinini F.
07/08/2019	04	Parameters lock-unlock password reset	Baldinini F.	Baldinini F.	Baldinini F.
01/09/2019	05	Updating configuration parameters	Baldinini F.	Baldinini F.	Baldinini F.
01/10/2019	06	Alarm E74	Baldinini F.	Baldinini F.	Baldinini F.
05/12/2019	07	Appendix 1 : Security Module for TP photocells	Baldinini F.	Baldinini F.	Baldinini F.
05/03/2020	08	R-connect page update	Baldinini F.	Baldinini F.	Baldinini F.
25/06/2020	09	Alarm E84	Baldinini F.	Baldinini F.	Baldinini F.
14/07/2020	10	Parameter P8	Baldinini F.	Baldinini F.	Baldinini F.
07/09/2020	11	Seneca module diagnostic (r-connect)	Baldinini F.	Baldinini F.	Baldinini F.
15/03/2021	12	Change of the P10 parameter for the table motor	Baldinini F.	Baldinini F.	Baldinini F.

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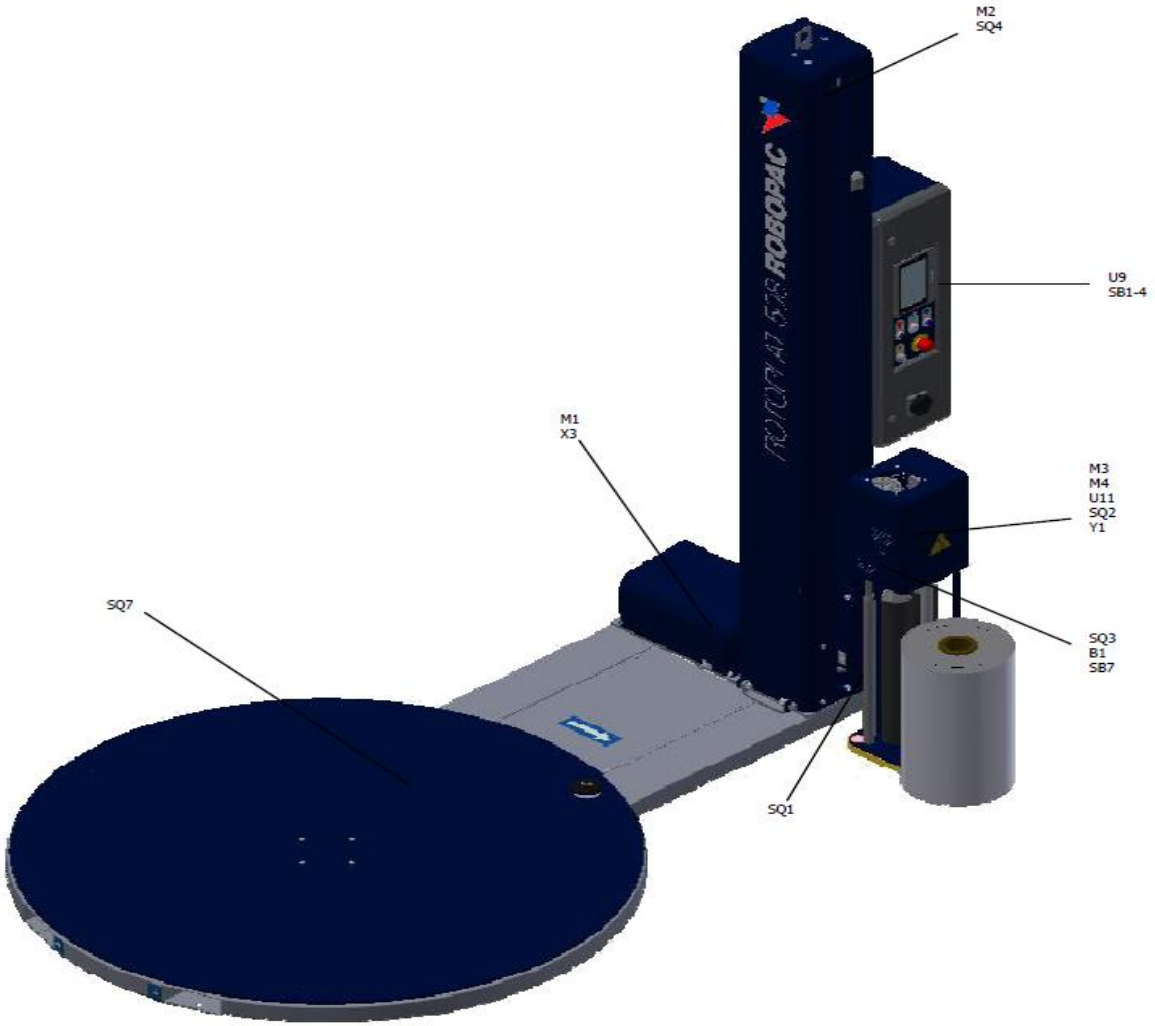
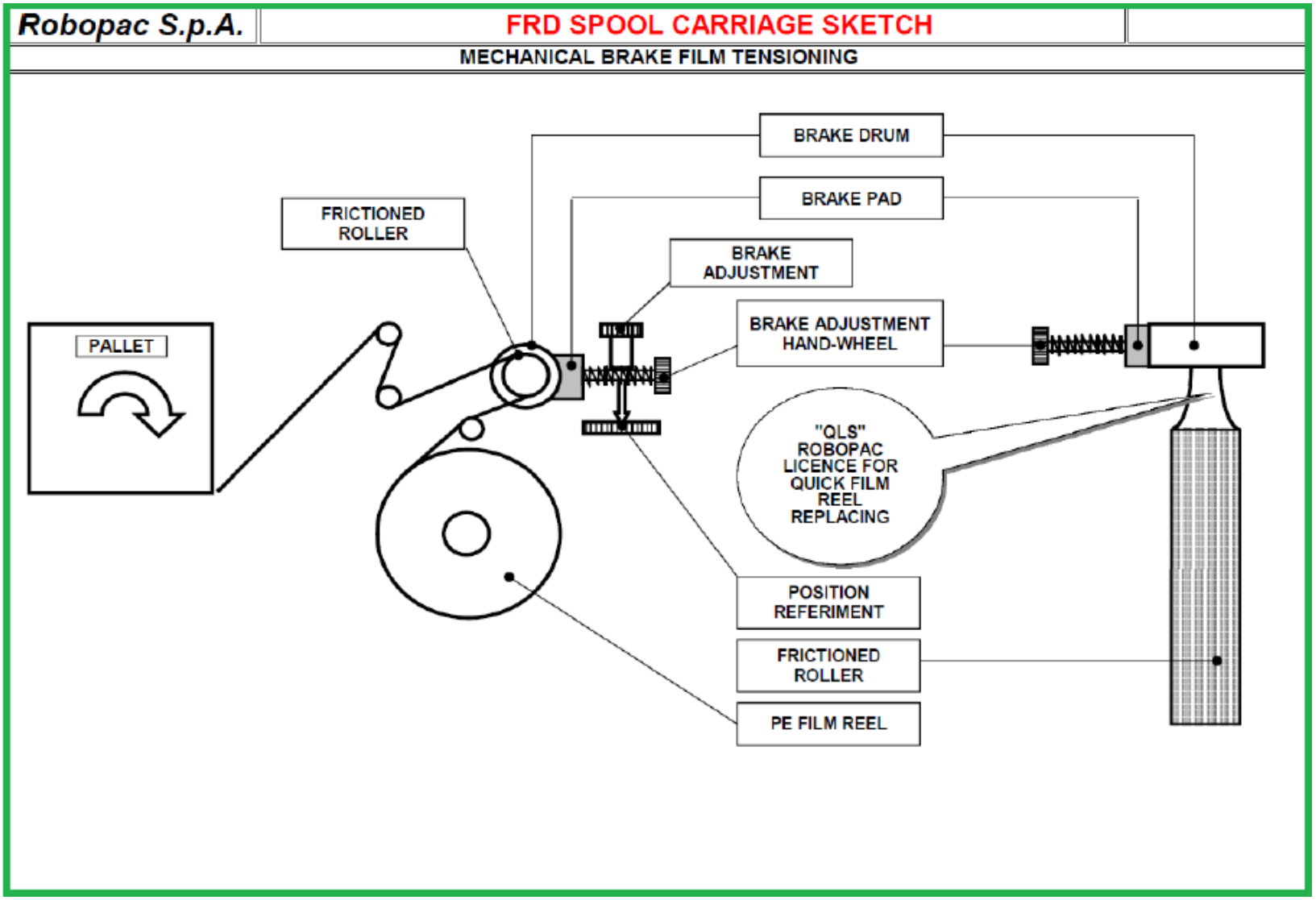
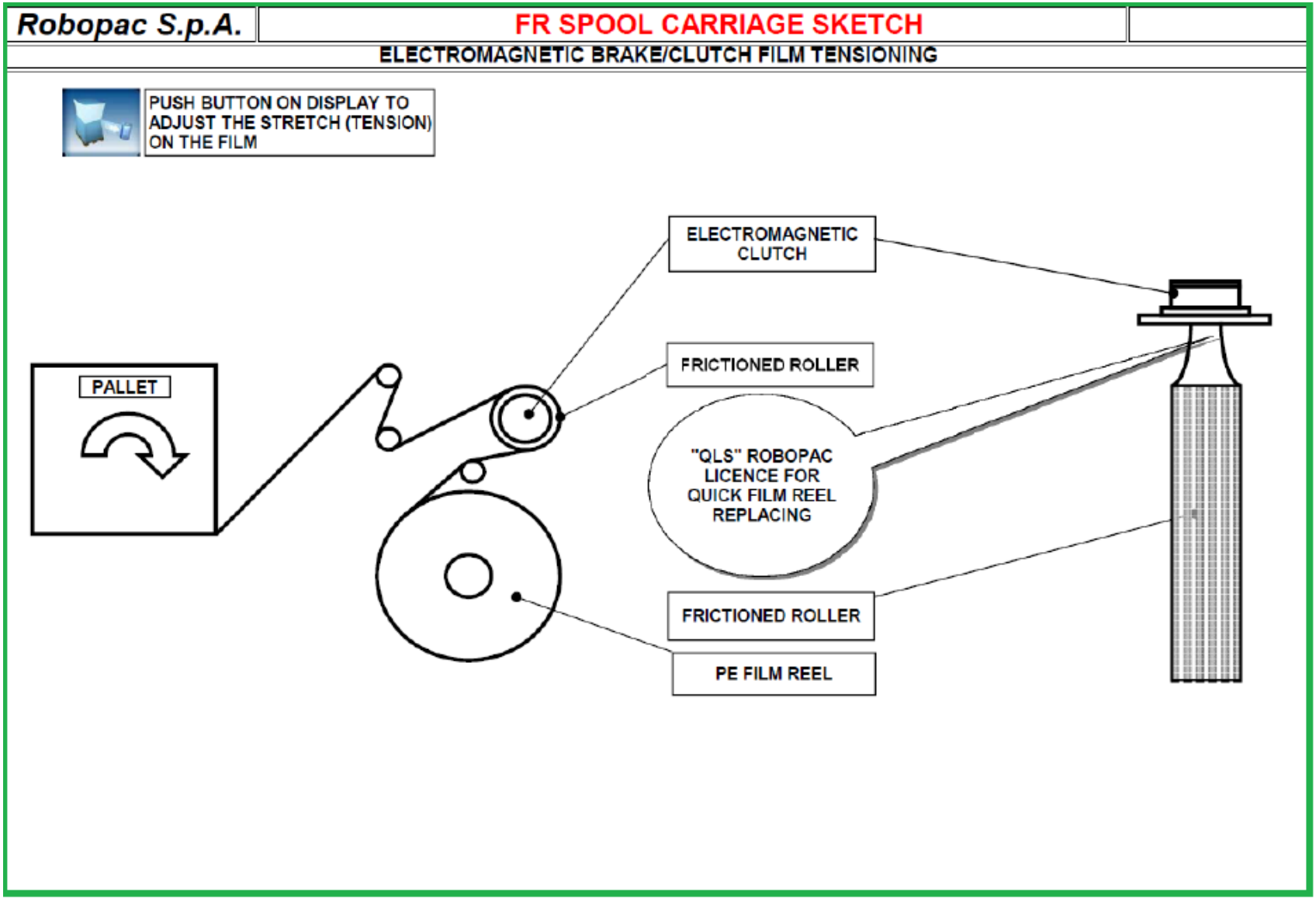
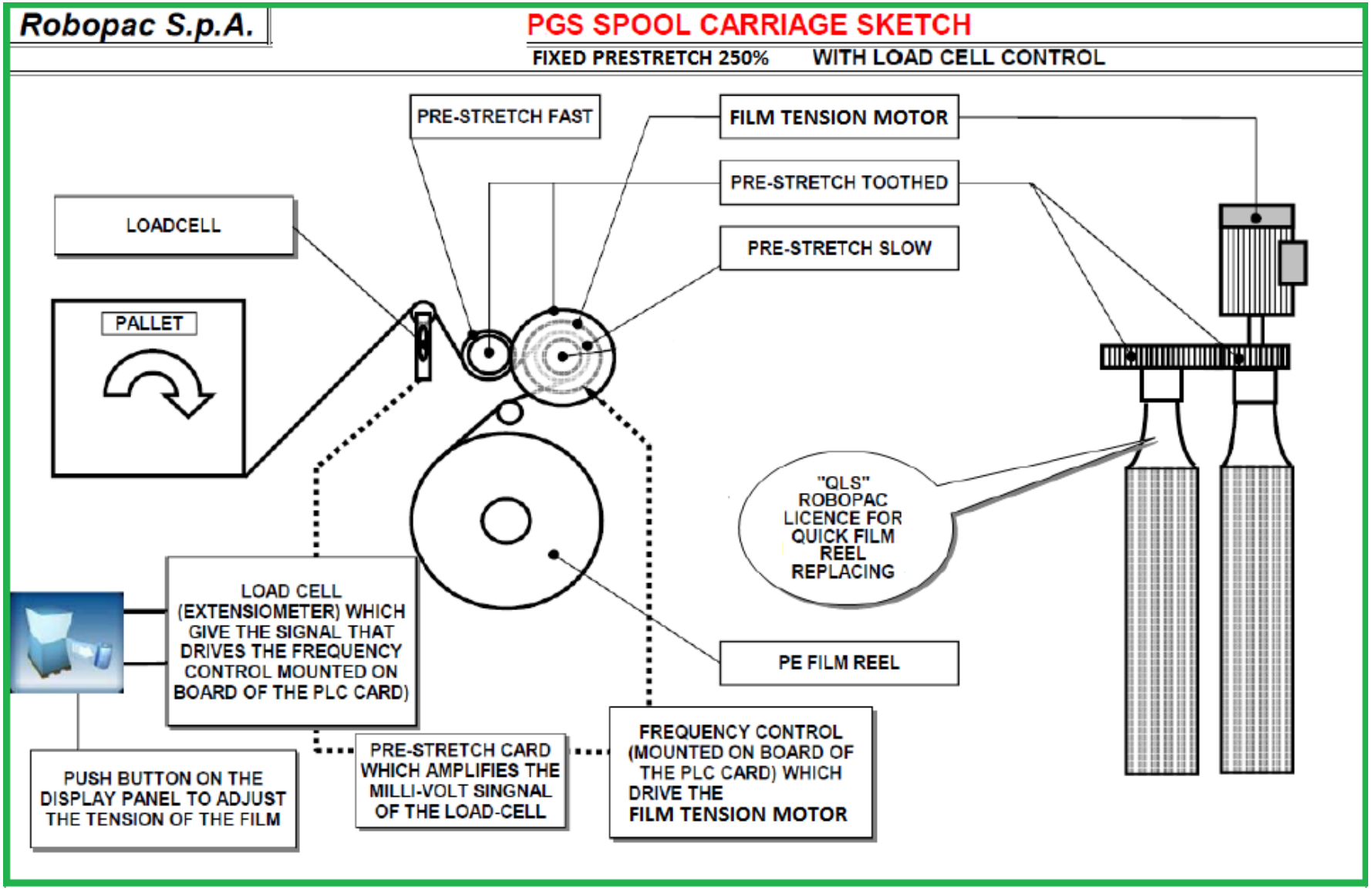
MACHINE LAY-OUT



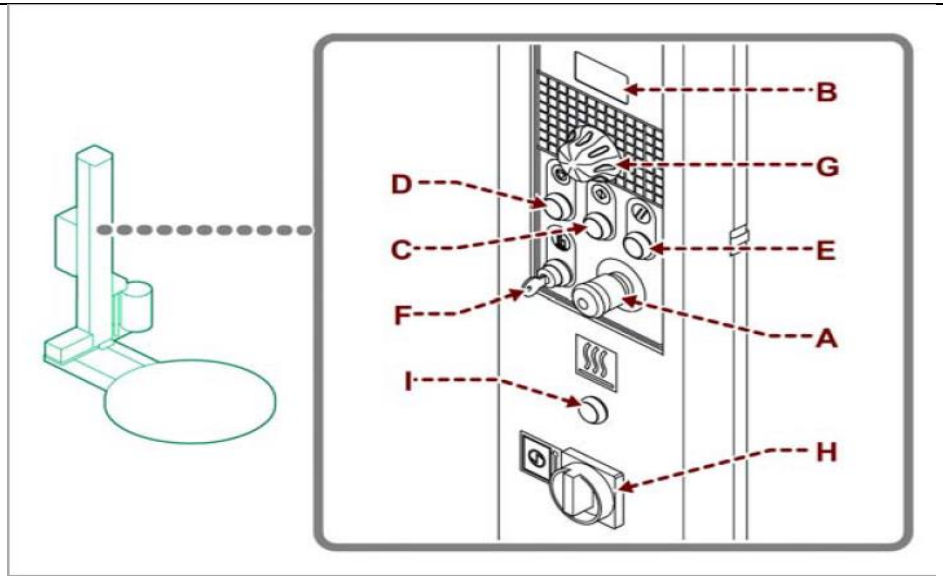
MASTERPLAT CARRIAGE DESCRIPTION



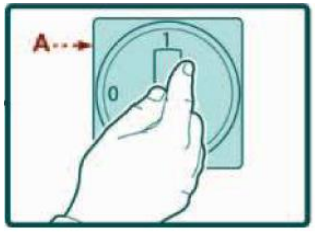

Robopac S.p.A.
FR SPOOL CARRIAGE SKETCH
ELECTROMAGNETIC BRAKE/CLUTCH FILM TENSIONING
PUSH BUTTON ON DISPLAY TO ADJUST THE STRETCH (TENSION) ON THE FILM
ELECTROMAGNETIC CLUTCH
FRICTIONED ROLLER
PALLET
"QLS" ROBOPAC LICENCE FOR QUICK FILM REEL REPLACING
FRICTIONED ROLLER
PE FILM REEL


Robopac S.p.A.
PGS SPOOL CARRIAGE SKETCH
FIXED PRESTRETCH 250% WITH LOAD CELL CONTROL
PRE-STRETCH FAST
FILM TENSION MOTOR
PRE-STRETCH TOOTHED
PRE-STRETCH SLOW
LOADCELL
PALLET
"QLS" ROBOPAC LICENCE FOR QUICK FILM REEL REPLACING
LOAD CELL (EXTENSIOMETER) WHICH GIVE THE SIGNAL THAT DRIVES THE FREQUENCY CONTROL MOUNTED ON BOARD OF THE PLC CARD)
PE FILM REEL
PUSH BUTTON ON THE DISPLAY PANEL TO ADJUST THE TENSION OF THE FILM
PRE-STRETCH CARD WHICH AMPLIFIES THE MILLI-VOLT SINGNAL OF THE LOAD-CELL
FREQUENCY CONTROL (MOUNTED ON BOARD OF THE PLC CARD) WHICH DRIVE THE FILM TENSION MOTOR

OPERATOR PANEL DESCRIPTION



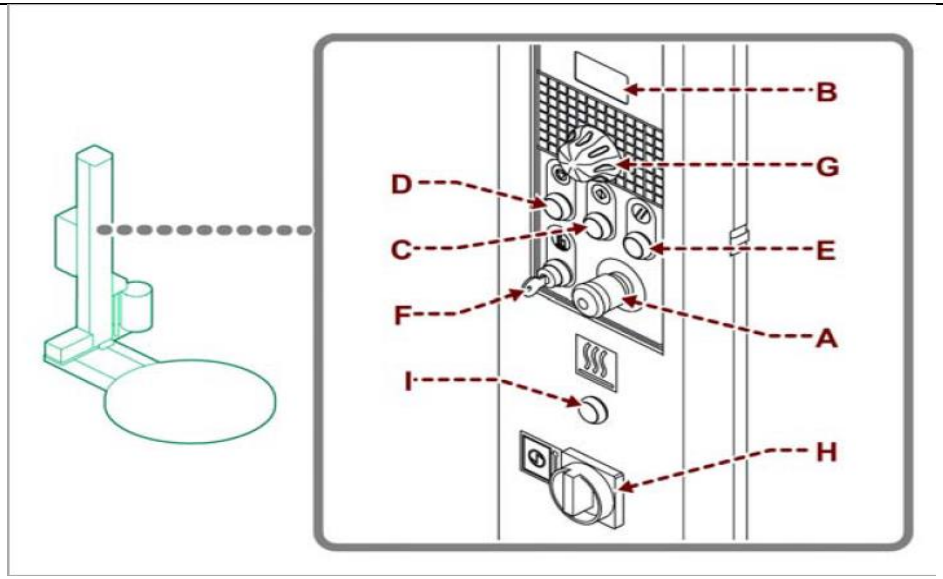
Pic.1



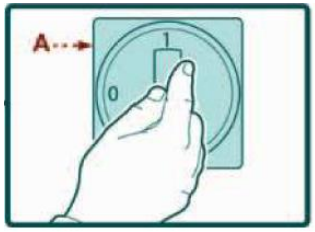
Pic.1a

	**“Stop cycle” button** It is used to stop the automatic wrapping Cycle
	**“Start cycle” push-button** It is used to start the automatic wrapping cycle
	**“Reset” push-button** It is used to reset the machine before restarting after an emergency stop or to restart it after stopping with power supply cut-off.
	**Key selector for emergency interruption** It is used to momentarily interrupt the emergency of the carriage. Turn the key to the position I (JOG), the user interface shows the page on “Safety interrupted” which allows, by pressing the pushbutton **(G)**, to lift the trolley only
	**Emergency stop push-button** It is used to stop with a voluntary action, in case of imminent risk, the organs of the machine that may pose a rick. For further details consult the paragraph “Description of safety devices”
	**Main switch for machine’s ON / OFF** Turn main switch **(A)) (Pic. 1a)** on **I** (ON) to turn on electric power supply.

OPERATOR PANEL DESCRIPTION (Freezer Version)



Pic.1

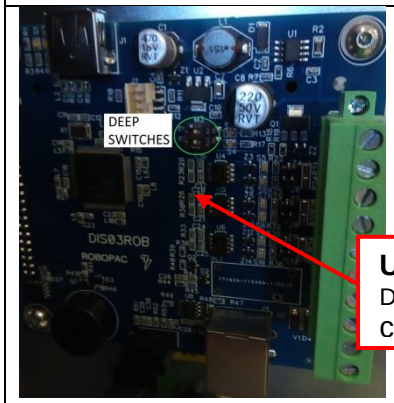


Pic.1a

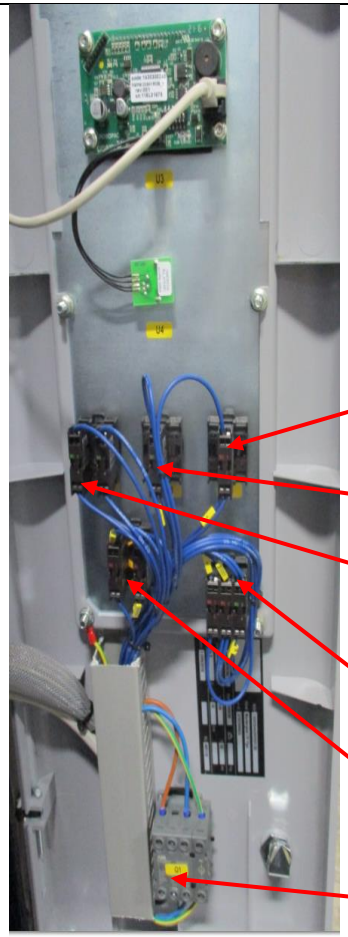
Heating Electrical Panel
If the indicator is lit, this means the electric panel is in the heating phase.
During this phase all actions on the controls will be ineffective.
At the end of the electric panel heating phase, the display prompts the user to press the **(E)** “Reset” button.
The heating automatically comes on and goes off at temperatures (minimum and maximum) set by the manufacturer

Buzzer

DETAILED CONTROL PANEL AND CONNECTIONS



U3 - display card
DIS03ROB_1
codice 1430300285



S4 - STOP (n.c.)

S3 START (n.o.)

S2 RESET (n.o)

S5 - Unlock Security Carriage (n.c.)

S1 - Emergency – (n.c.)

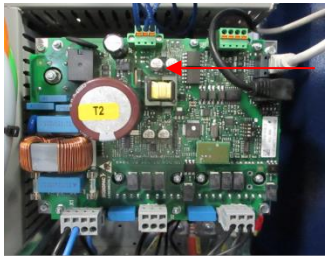
Q1 - Switch-disconnector ON / OFF

H1 - Buzzer

DESCRIPTION AND MAIN ELECTRICAL PANEL LAYOUT

The part numbers are for information only.
Always check and verify the codes on the wiring diagram supplied with the machine.

U1 - PLC Card PLC02ROB
code 1430300228



T1 - -Inverter Card INV01ROB_2
code 1430300271

T2 – Inverter Card INV01ROB_2
code 1430300271

K1 - Inverters Enable - code 00L0116056

V1 - Main filter-

code 00L0202680

code 00L0287639 (new BM 1440 - 1444)

DESCRIPTION AND MAIN ELECTRICAL PANEL LAYOUT (TP Version)

The part numbers are for information only. Always check and verify the codes on the wiring diagram supplied with the machine.

U12 –Safety Module – Sensors control SG-BWS-T4
code 0001318830

U13 – Safety Module CS-AT-10V024-TF0.3
code 1400300007

DESCRIPTION AND MAIN ELECTRICAL PANEL LAYOUT (Freezer Version)

The part numbers are for information only. Always check and verify the codes on the wiring diagram supplied with the machine.

U11 – Expansion Card PRES03ROB
code 1430300220

V1 – Main filter

code 00L0202680

code 00L0287639 (new BM 1440 - 1444)

F1 – Heater Fuse **-** Cylindrical Fuse 10,3x38 AM 16A 500VAC
code 1190310071

F2 – Heater Fuse **-** Cylindrical Fuse 10,3x38 GG 1A 500VAC
code 0001304230

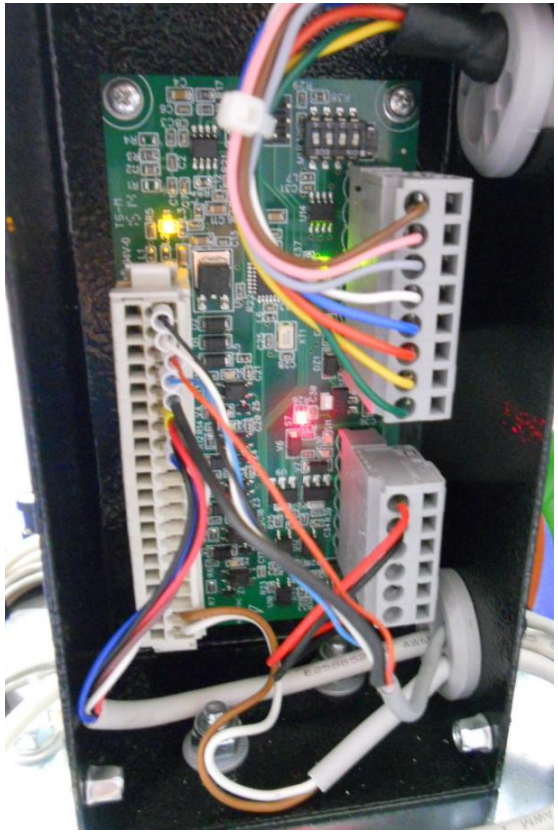
S9 - Enclosure Thermostat SK.3110000
code 0001345043

K2 – Supply Card Enable
code 00L0177517

U5 - Heater with fan 400W CSL 028
code 0380300006

S8 - Panel thermostat 7T.81.0.000.2401 Finder
code 00L0197090

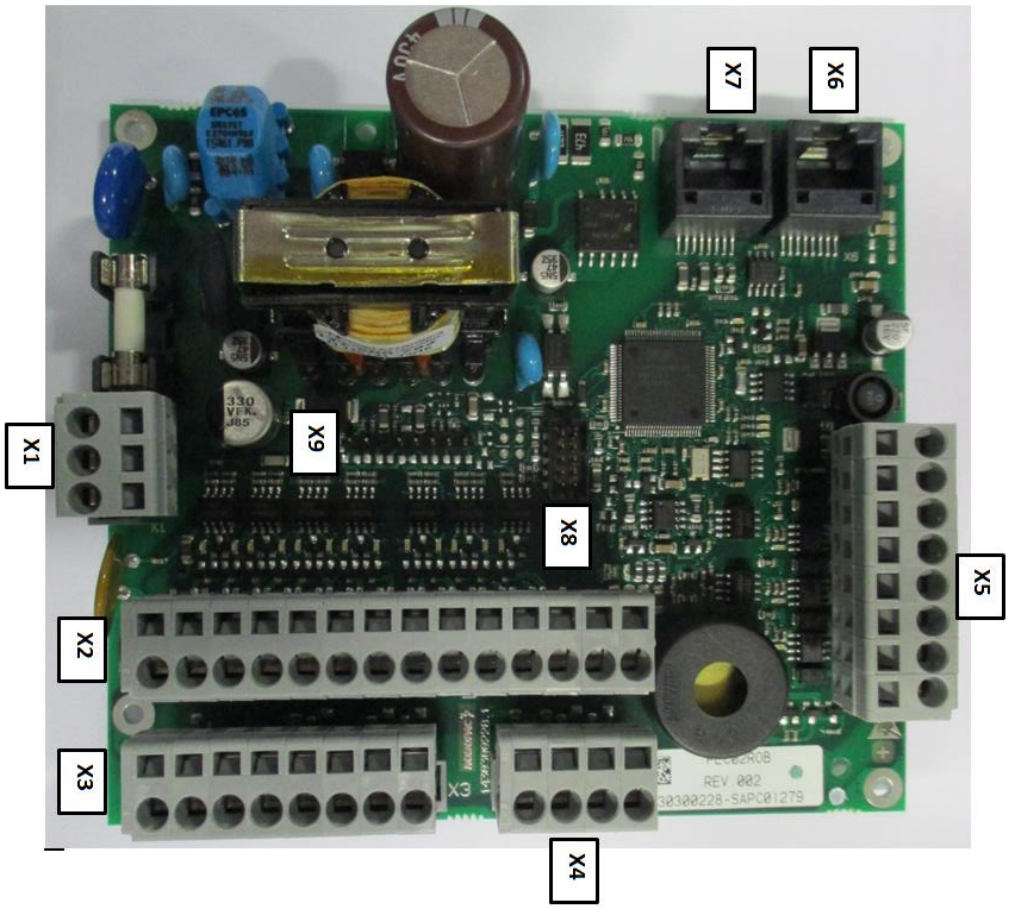
ELECTRICAL PANEL ON CARRIAGE DESCRIPTION



U11 - Expansion Card PRES03ROB
code 1430300220

ELECTRONIC CARDS DESCRIPTION

PLC Main Board – PLC02ROB (U1) - – CODE 1430300228



X1	230 Vac Supply
X2	Digital Input Terminal (1..8) + Analogic Input (1..2)
X3	Digital Input Terminal (9..11)
X4	Digital Input Terminal (12..13)
X5	Digital Output Terminal (1..4)
X6	Modbus Comunication (RJ45_1)
X7	Modbus Comunication (RJ45_2)
X8	Debug
X9	Connector for SD interface (SW update)
H25	Led 24 V
H13..16	Led output – Output Led
H17	Led stato SUP – State Sup Led
H18	Microcontroller Led
H19	Error Led/bootloader
H20	Led 3,3 V
H21	Led Modbus – Modbus Led
H1..12..24	Led Input Digitali Digital Input Led

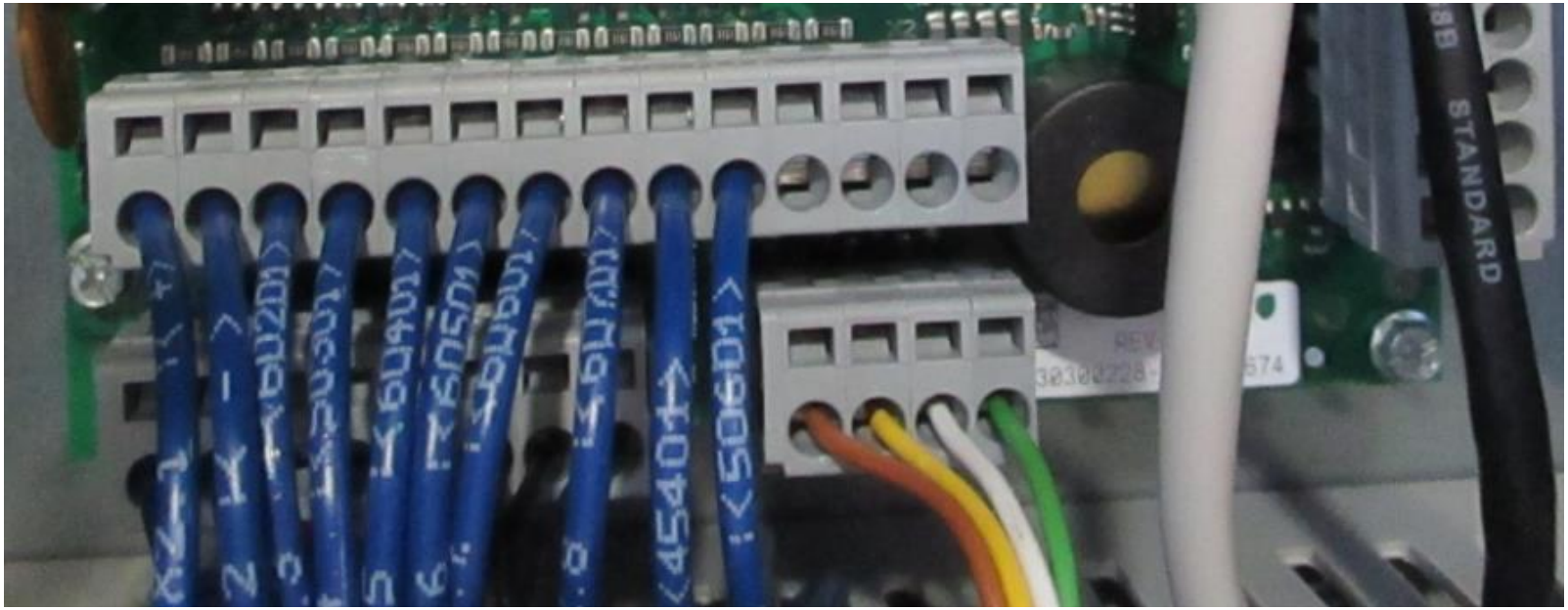
I/O (INPUT/OUTPUT) DESCRIPTION (PLC02ROB (U1))

PLC Card Inputs –status (U1)

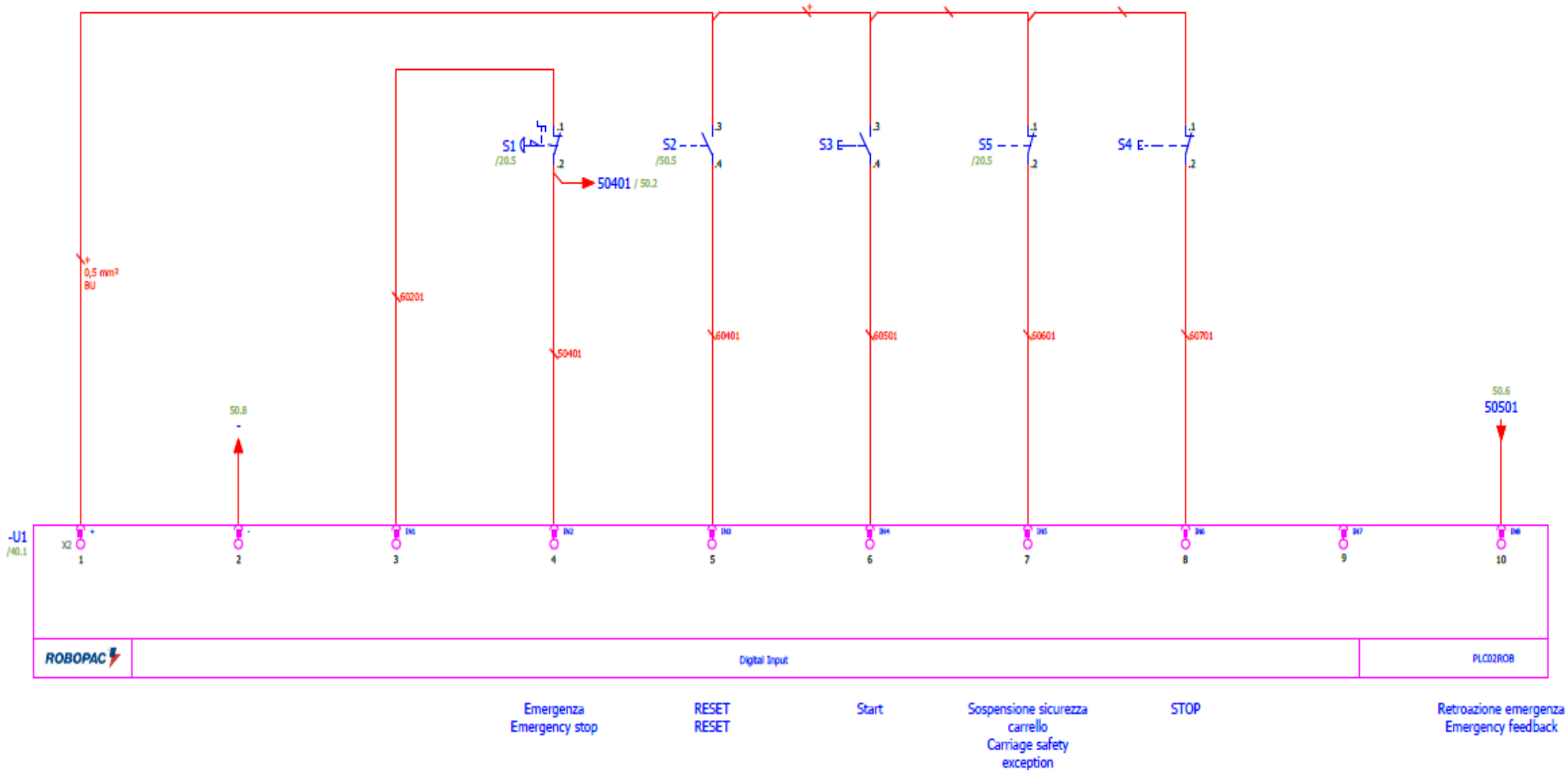
Connector	Input	Led	Input description	Status	Led Status
X4	IN12	H12	Table in home position Sensor	N.O.	Table home position = led ON
X3	IN11	H11	Carriage Low Endstroke	N.C.	Low position Carriage = led OFF
X3	IN10	H10	Carriage High Endstroke	N.C.	High position Carriage = led OFF
X3	IN9	H9	Product height sensor (Only FRD)	N.O.	Product detected = led ON
X2	IN8	H8	Emergency feedback	N.O.	Led ON
X2	IN7	H7	Safety TP Emergency	N.O.	Emergency activated = led OFF (led ON after RESET)
X2	IN6	H6	Stop Push Button	N.C.	Push button pressed = led OFF
X2	IN5	H5	Carriage safety exception	N.C.	Unlock Selector = led OFF
X2	IN4	H4	Start Push Button	N.O.	Push button pressed = led ON
X2	IN3	H3	Reset Push Button	N.O.	Push button pressed = led ON
X2	IN2	H2	EMERGENCY Push Button	N.C.	Push button pressed = led OFF
X3	IN1	H1	Safety Carriage Endstroke	N.C.	EndStroke pressed = led OFF

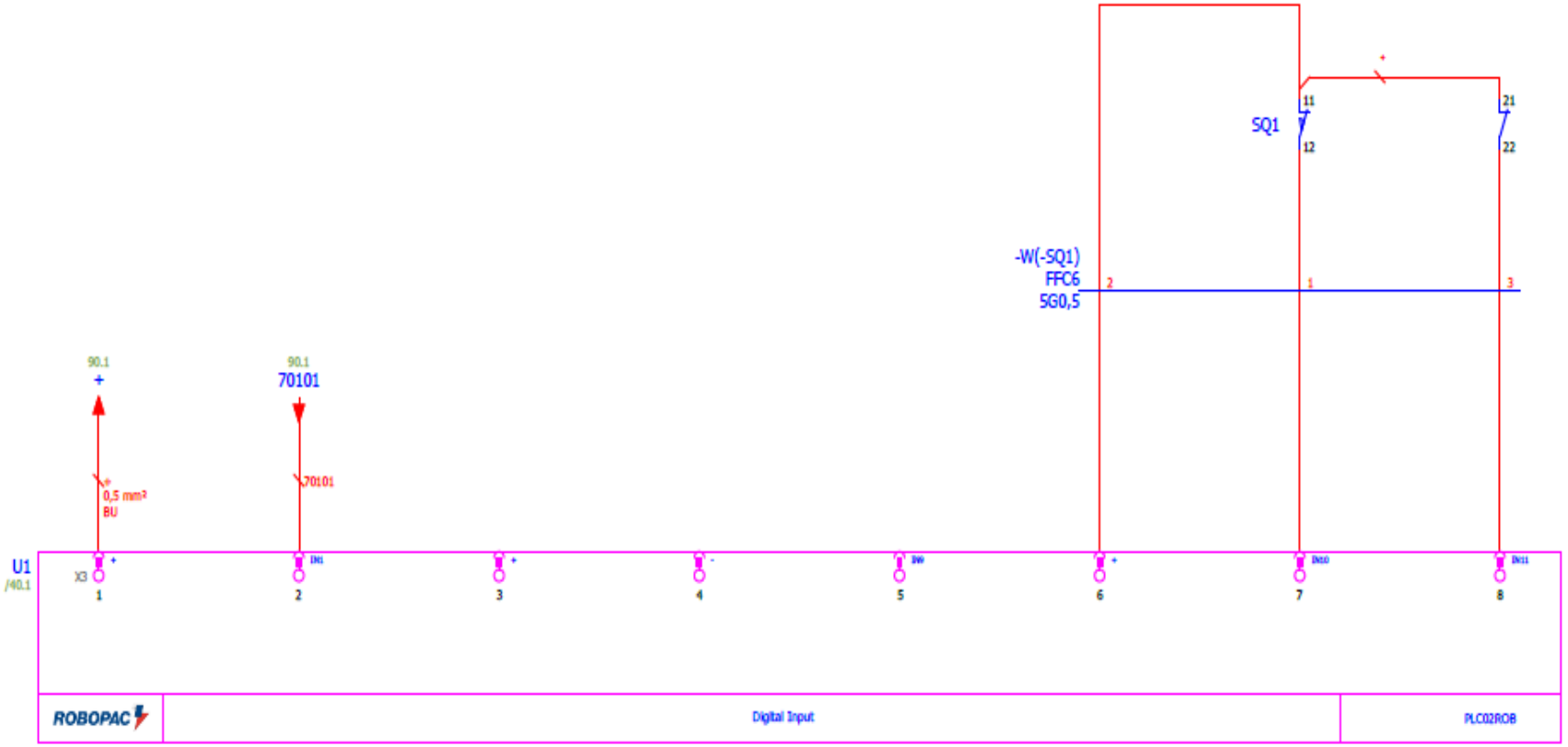
PLC Card Outputs - status (U1)

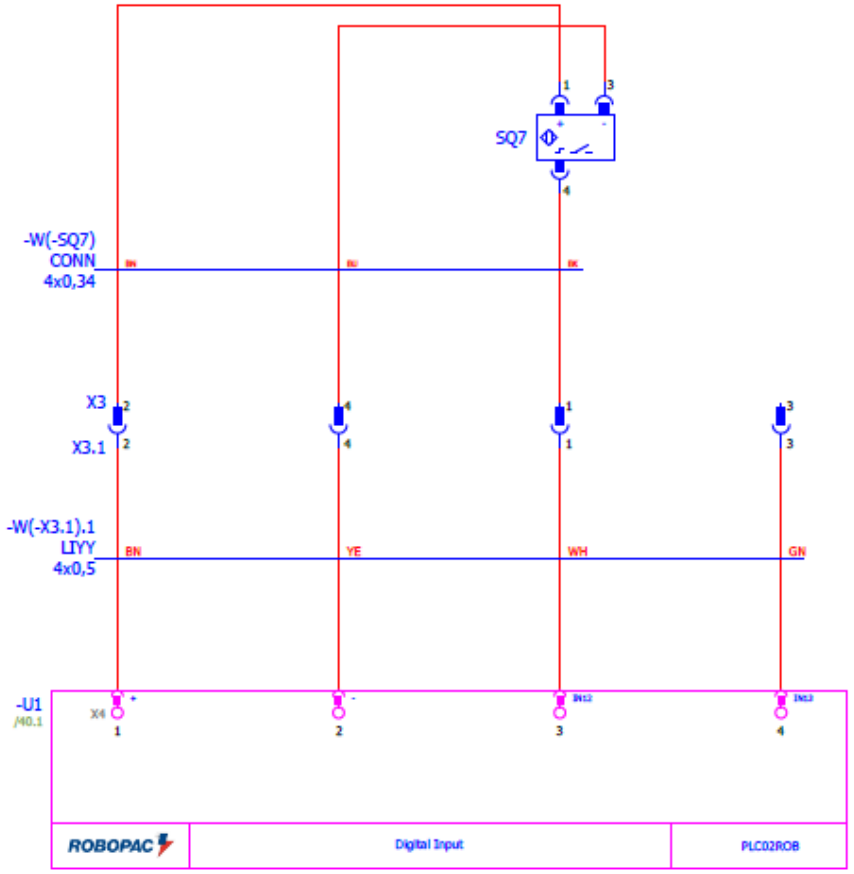
Connector	Output	Led	Output description
X5	OUT1	H13	Down Pressure Platen
X5	OUT2	H14	Up Pressure Platen


STANDARD

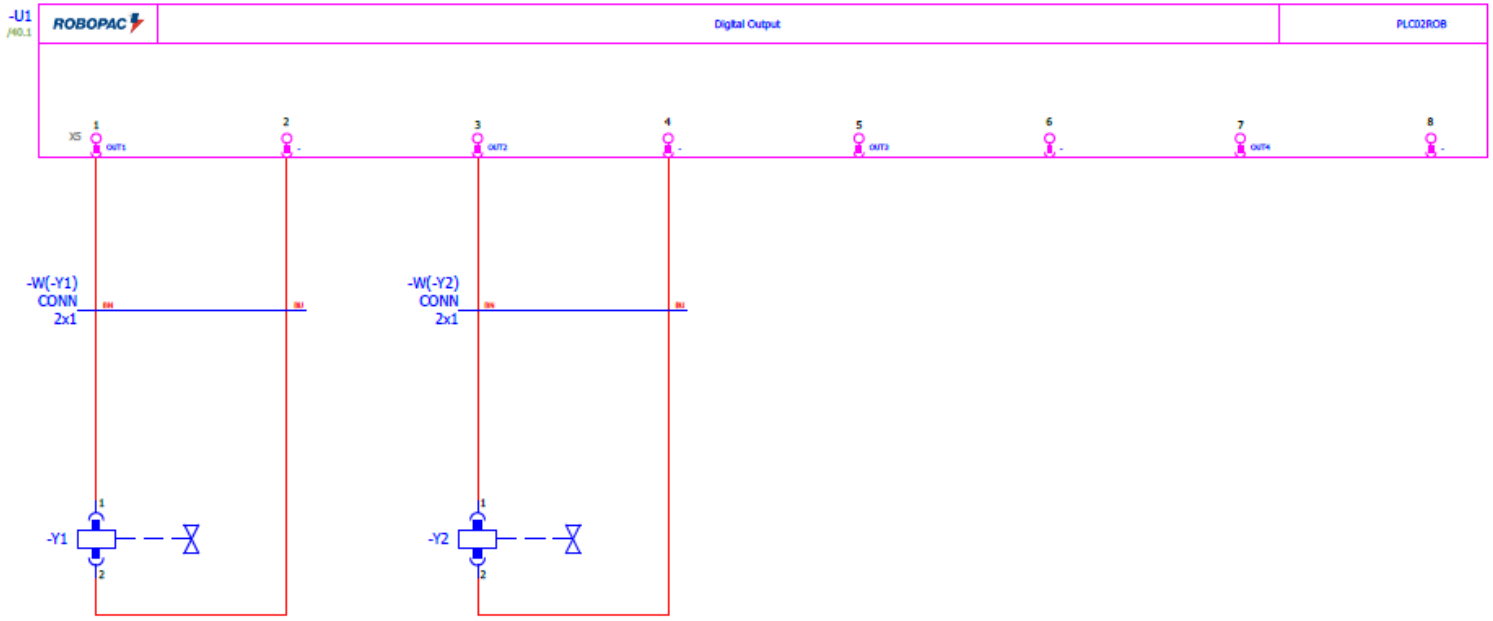
STD Version


S1
/20.5
S2
/50.5
S3 E
S5
/20.5
S4 E
50401 / 50.2
0,5 mm²
BU
60201
50401
60401
60501
60601
60701
50.8
50.6
50501
-U1
/40.1
X2
1
2
3
4
5
6
7
8
9
10
ROBOPAC
Digital Input
PLC02ROB
Emergenza
Emergency stop
RESET
RESET
Start
Sospensione sicurezza carrello
Carriage safety exception
STOP
Retroazione emergenza
Emergency feedback


SQ1
11
12
21
22
-W(-SQ1)
FFC6
5G0,5
2
1
3
90.1
+
90.1
70101
0,5 mm²
BU
70101
U1
/40.1
X3
1
2
3
4
5
6
7
8
ROBOPAC
Digital Input
PLC02ROB
Finecorsa emergenza
carrello
Carriage emergency Endstroke
Finecorsa Alto
High Endstroke
Finecorsa Basso
Low Endstroke



Fase Tavola
Table Phase



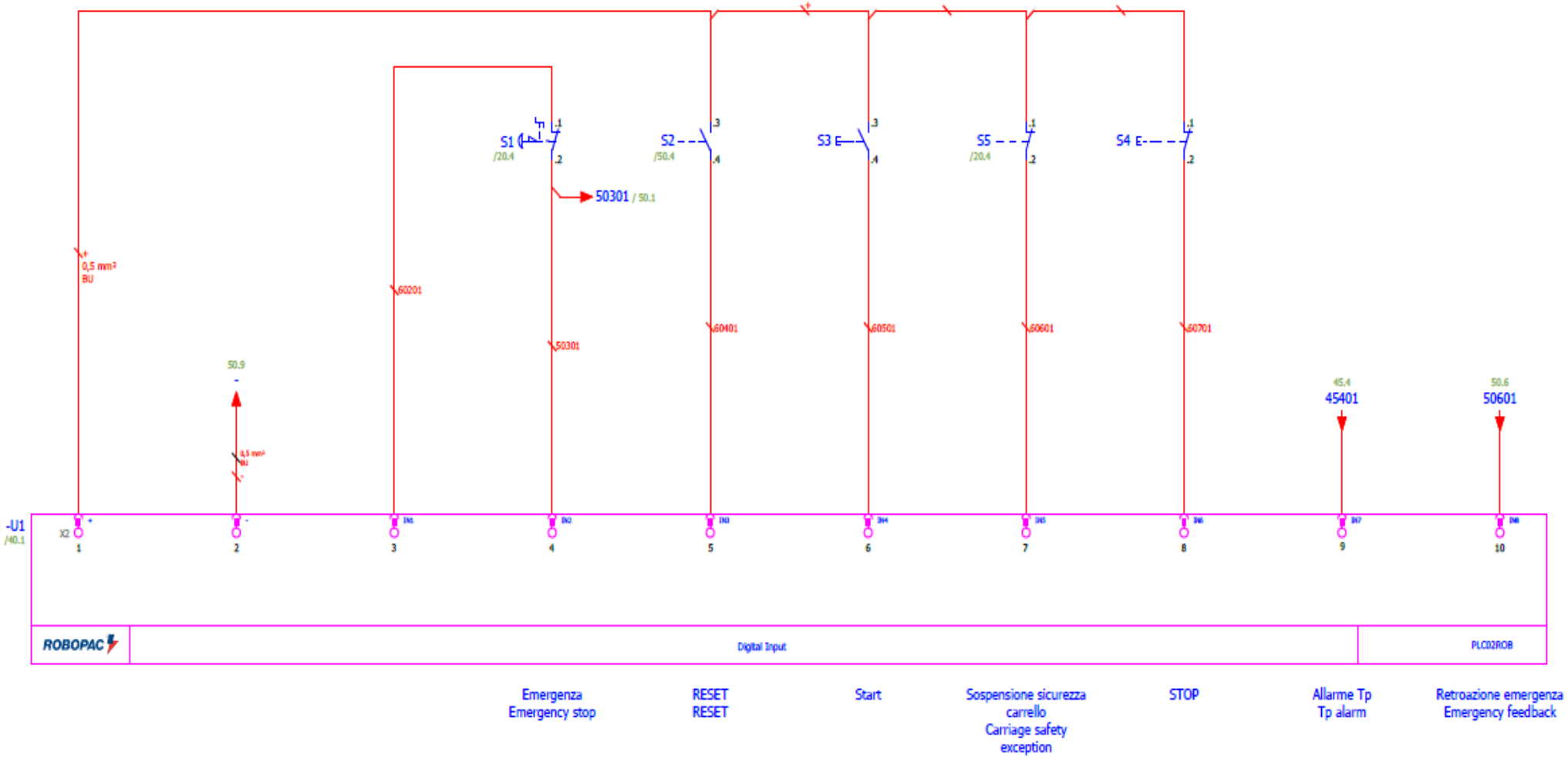
Discesa pressore
Pressure downward

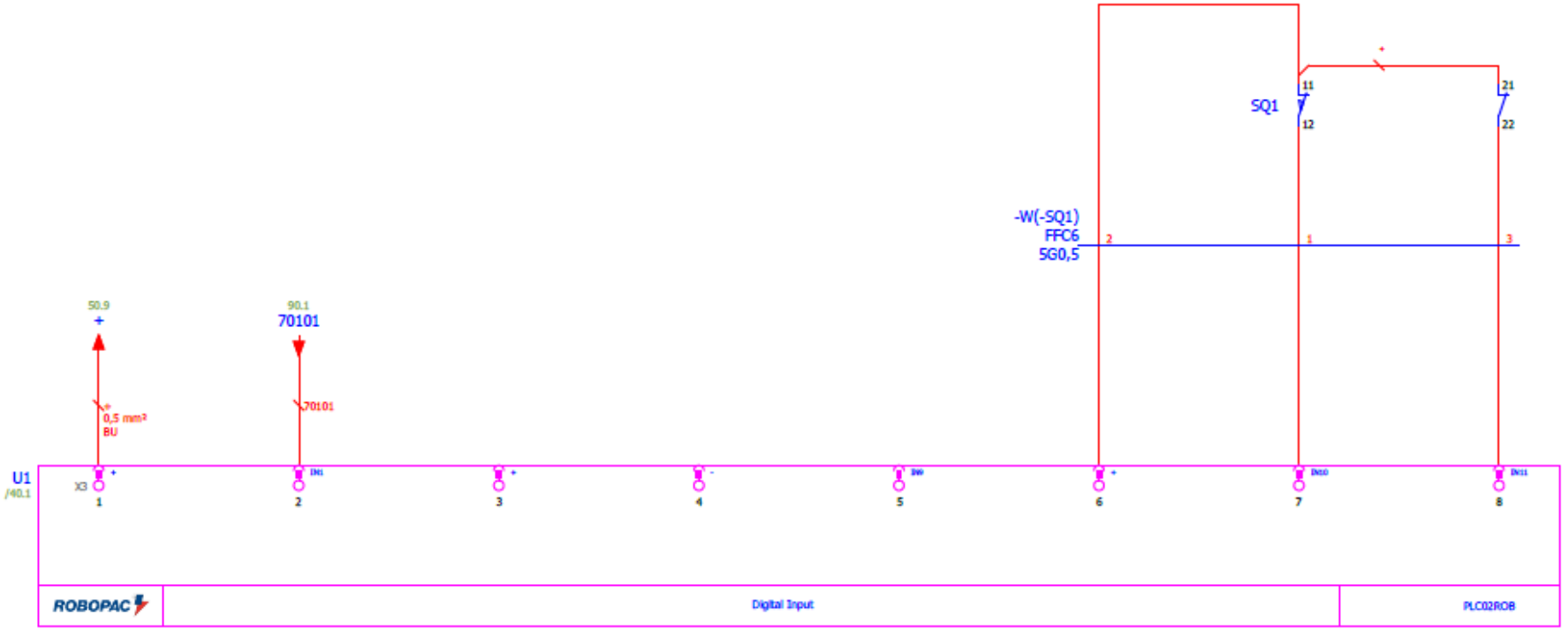
(Optional)

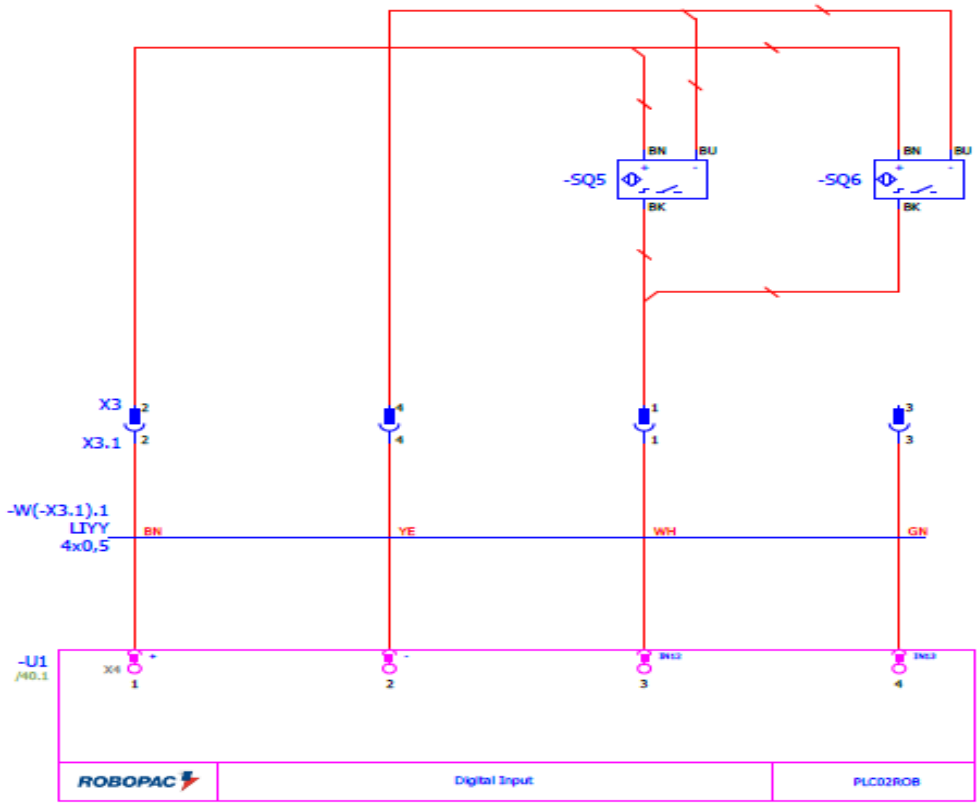
Salita pressore
Pressure upward

(Optional)

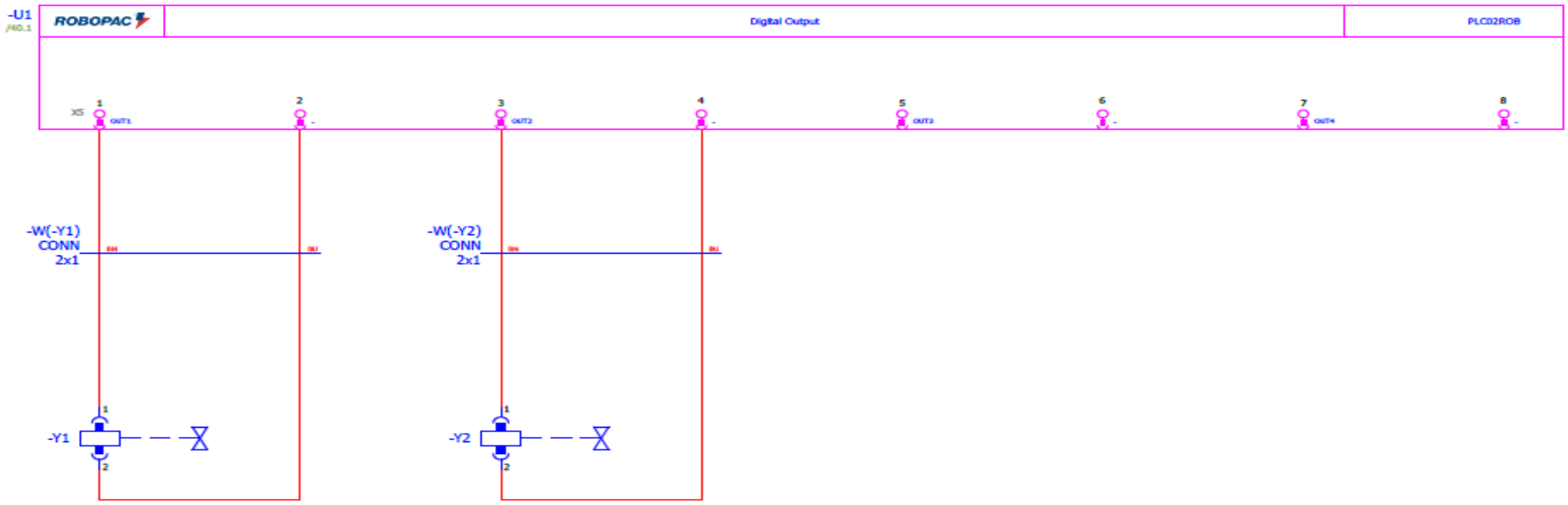
TP Version


S1
/20.4
S2
/50.4
S3
S5
/20.4
S4
50301 / 50.1
0,5 mm²
BU
60201
50301
60401
60501
60601
60701
50.9
45.4
45401
50.6
50601
-U1
/40.1
X2
1
2
3
4
5
6
7
8
9
10
ROBOPAC
Digital Input
PLC02ROB
Emergenza
Emergency stop
RESET
RESET
Start
Sospensione sicurezza carrello
Carriage safety exception
STOP
Allarme Tp
Tp alarm
Retroazione emergenza
Emergency feedback


SQ1
11
12
21
22
-W(-SQ1)
FFC6
5G0,5
2
1
3
50.9
+
0,5 mm²
BU
90.1
70101
70101
U1
/40.1
X3
1
2
3
4
5
6
7
8
ROBOPAC
Digital Input
PLC02ROB
Finecorsa emergenza
carrello
Carriage emergency Endstroke
Finecorsa Alto
High Endstroke
Finecorsa Basso
Low Endstroke



Fase Tavola
Table Phase



Discesa pressore
Pressure downward

(Optional)

Salita pressore
Pressure upward

(Optional)

Inverter Card INV01ROB_2 (T1) – CODE 1430300271

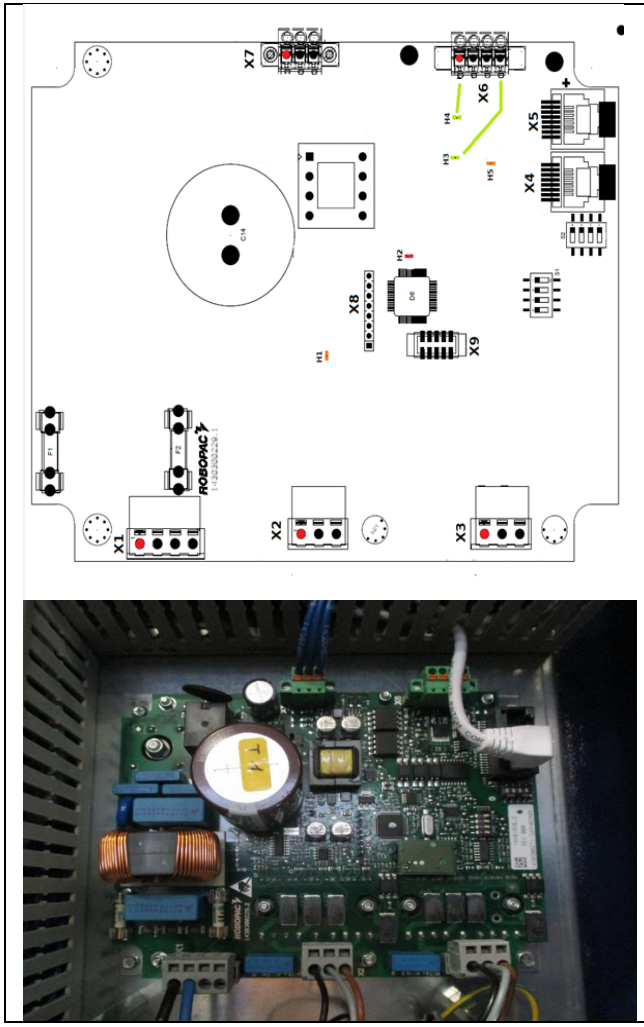


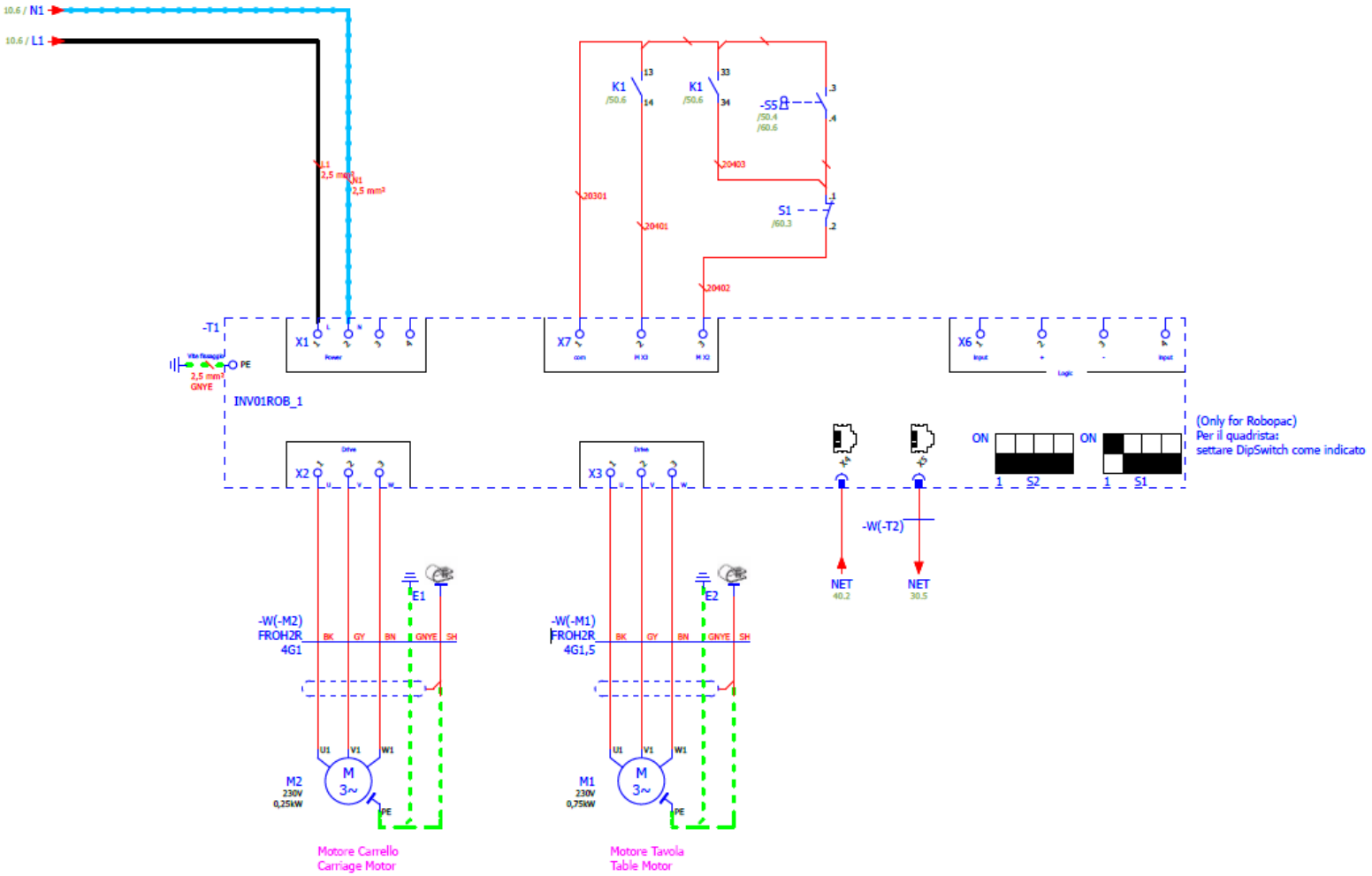
Table description: status input (T1) Table Rotation Motor and Carriage Lift Motor.

LED Number	Input description	Led Status	Contact Type
H1	230 VAC Power	ON	
H2	Error Led	1 regular blink	
H3	Input 1 on X6 –	N/A	
H4	Input 2 on X6	N/A	
H5	24V Modbus Power	ON	

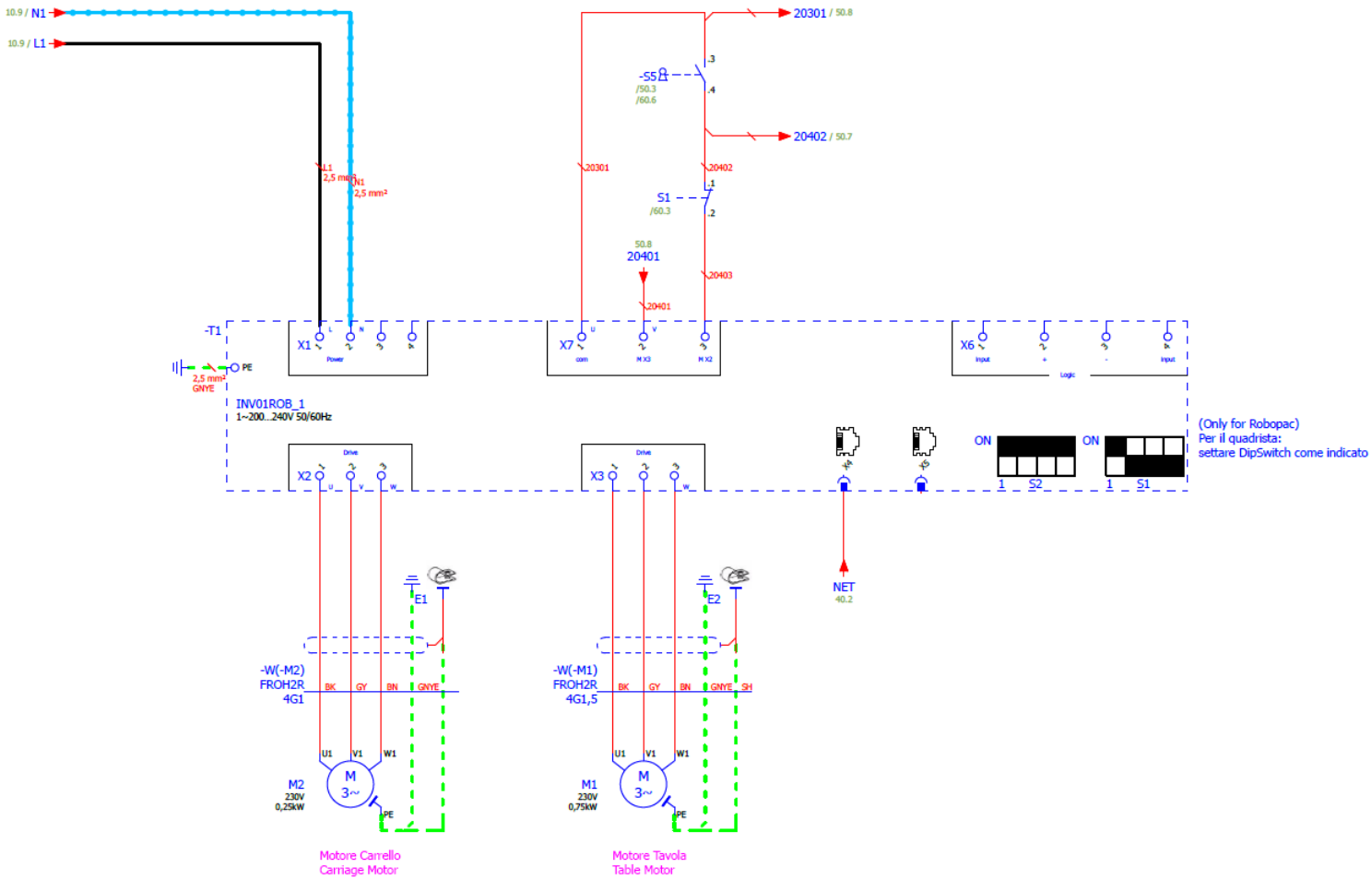
Table description (T1): X1 – X2 – X3 – X4 – X5 – X6 – X7 – X8 – X9 Connectors

Connector Number	Description
X1	230 VAC – Card Power Supply
X2	Motor 2 – Carriage Lift
X3	Motor 1 – Table Rotation
X4	Communication Out
X5	Communication In
X6	Digital Inputs
X7	Driver Enable
X8	SD for SW update
X9	Debug

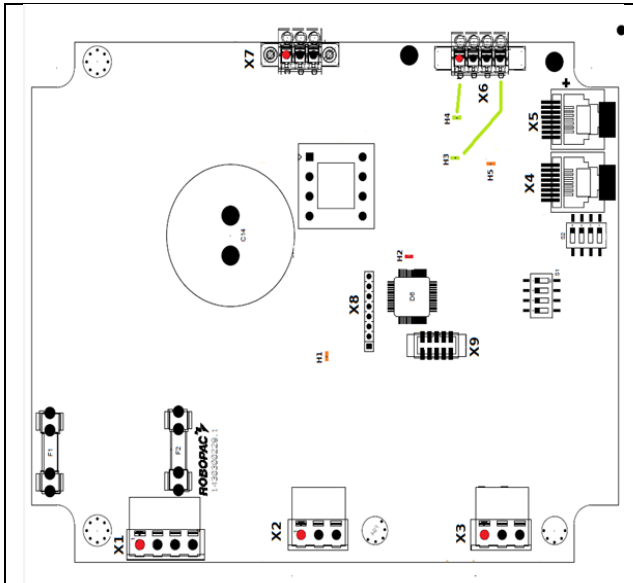
STD Version


10.6 / N1
10.6 / L1
K1
/50.6
13
14
K1
/50.6
33
34
-S5
/50.4
/60.6
20403
20301
20401
S1
/60.3
20402
-T1
X1
Power
X7
com
M X3
M X2
X6
Input
Logic
PE
2,5 mm²
GNYE
INV01ROB_1
X2
Drive
X3
Drive
ON
1
S2
ON
1
S1
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
-W(-T2)
NET
40.2
NET
30.5
E1
-W(-M2)
FROH2R
4G1
BK
GY
BN
GNYE
SH
U1
V1
W1
M
3~
M2
230V
0,25kW
PE
Motore Carrello
Carriage Motor
E2
-W(-M1)
FROH2R
4G1,5
BK
GY
BN
GNYE
SH
U1
V1
W1
M
3~
M1
230V
0,75kW
PE
Motore Tavola
Table Motor

TP Version


10.9 / N1
10.9 / L1
20301 / 50.8
20402 / 50.7
-S5
/50.3
/60.6
S1
/60.3
20401
-T1
X1
X7
X6
X2
X3
PE
INV01ROB_1
1~200...240V 50/60Hz
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
ON
S2
S1
NET
E1
E2
-W(-M2)
FROH2R
4G1
-W(-M1)
FROH2R
4G1,5
M2
230V
0,25kW
M1
230V
0,75kW
Motore Carrello
Carriage Motor
Motore Tavola
Table Motor

Inverter card INV01ROB_2 (T2) – CODE 1430300271



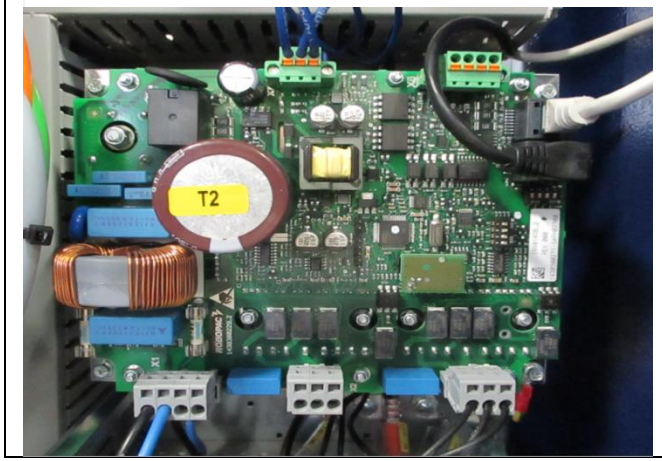


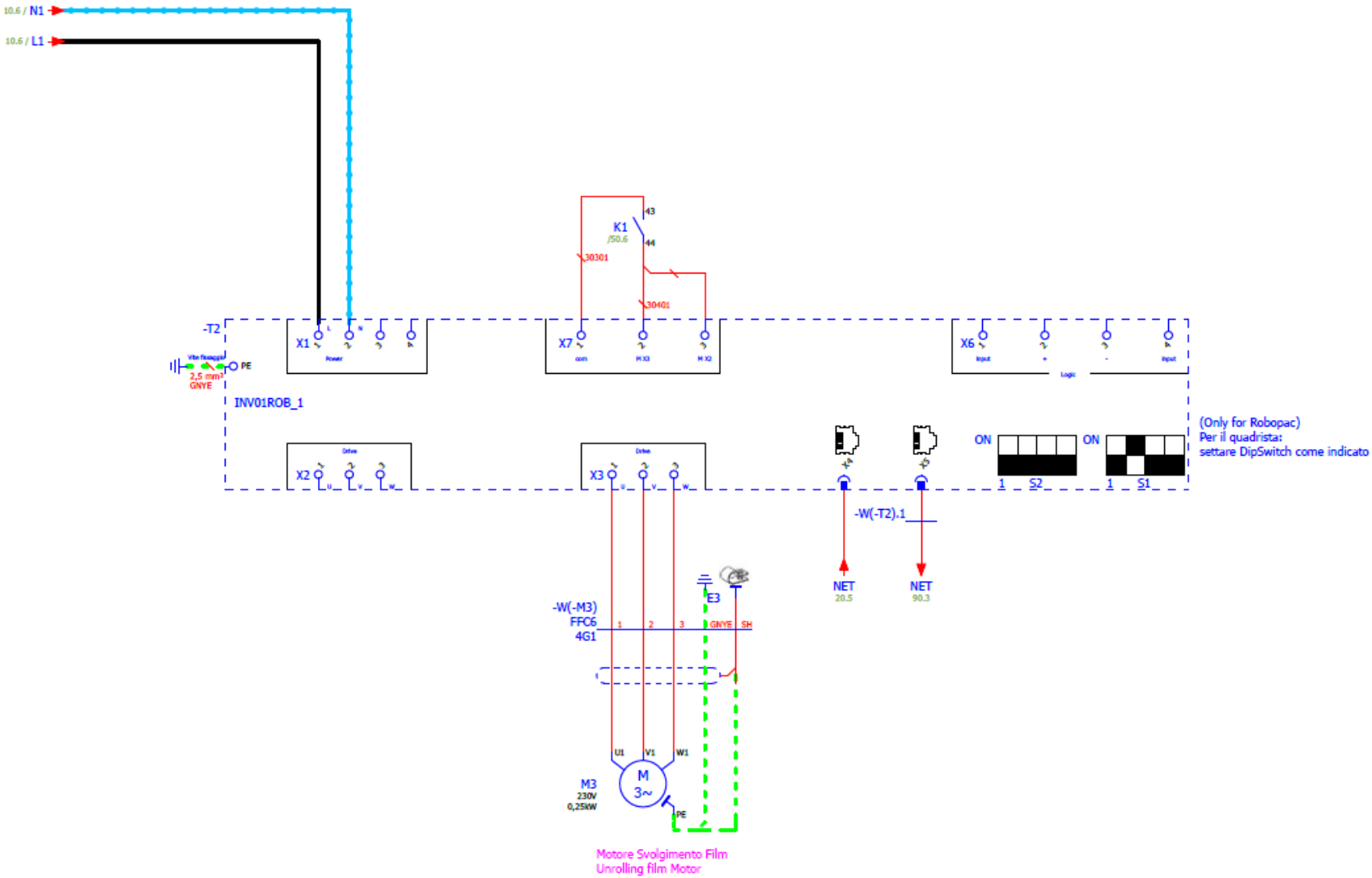
Table description status input (T2) Unrolling Film Motor

LED Number	Input description	Led Status	Contact Type
H1	230 VAC Power	ON	
H2	Error Led	1 regular blink	
H3	Input 1 on X6	N/A	
H4	Input 2 on X6	N/A	
H5	24V Modbus Power	ON	

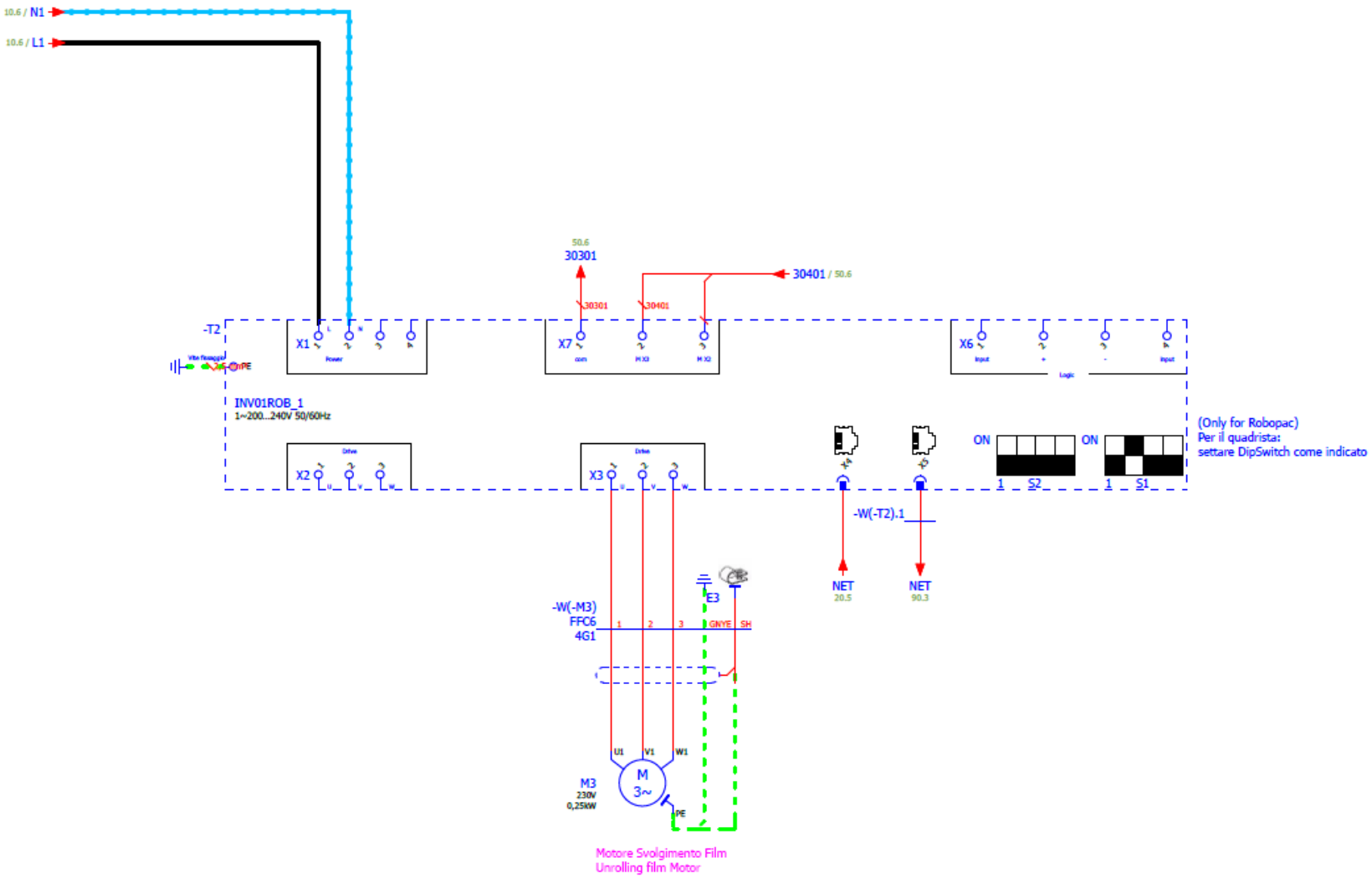
Table description (T2): X1 – X2 – X3 – X4 – X5 – X6 – X7 – X8 – X9 Connectors

Connector Number	Description
X1	230 VAC – Card Power Supply
X2	Motor 4 - Free
X3	Motor 3 – Unrolling Film Motor
X4	Communication Out
X5	Communication In
X6	Digital Inputs
X7	Driver Enable
X8	SD for SW update
X9	Debug

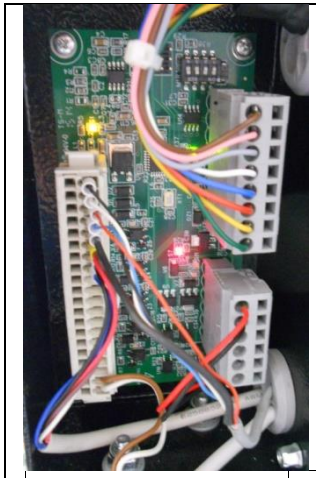
STD Version

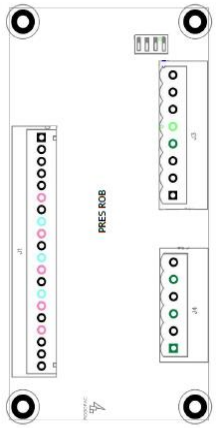

10.6 / N1
10.6 / L1
-T2
X1
X7
X6
X2
X3
PE
2,5 mm²
GNYE
INV01ROB_1
K1
/50.6
43
44
30301
30401
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
ON
ON
1
S2
1
S1
-W(-T2).1
NET
20.5
NET
90.3
-W(-M3)
FFC6
4G1
1
2
3
GNYE
SH
E3
U1
V1
W1
M3
230V
0,25KW
M
3~
PE
Motore Svolgimento Film
Unrolling film Motor

TP Version


10.6 / N1
10.6 / L1
50.6
30301
30401 / 50.6
-T2
X1
X7
X6
INV01ROB_1
1~200...240V 50/60Hz
X2
X3
ON
ON
1
S2
1
S1
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
-W(-T2).1
NET
20.5
NET
90.3
E3
-W(-M3)
FFC6
4G1
GNYE
SH
U1
V1
W1
M
3~
M3
230V
0,25kW
PE
Motore Svolgimento Film
Unrolling film Motor

Expansion Card PRES03ROB (U11) - – CODE 1430300220





J1 Connector (Pin)	Signal Description
0V (1)	0V Load Cell Power (Black)
In+ (2)	Signal LoadCell (+ mv) (White)
In- (3)	Signal LoadCell (- mv) (Red)
12V (4)	12V Load Cell Power (Bleu)
SCH (5)	Cable shield

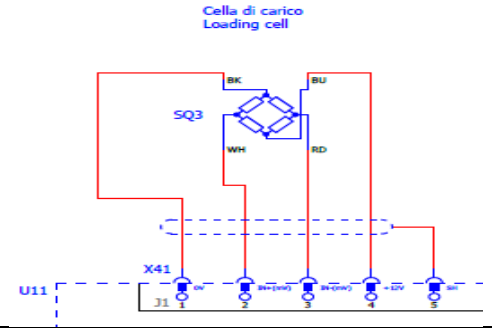
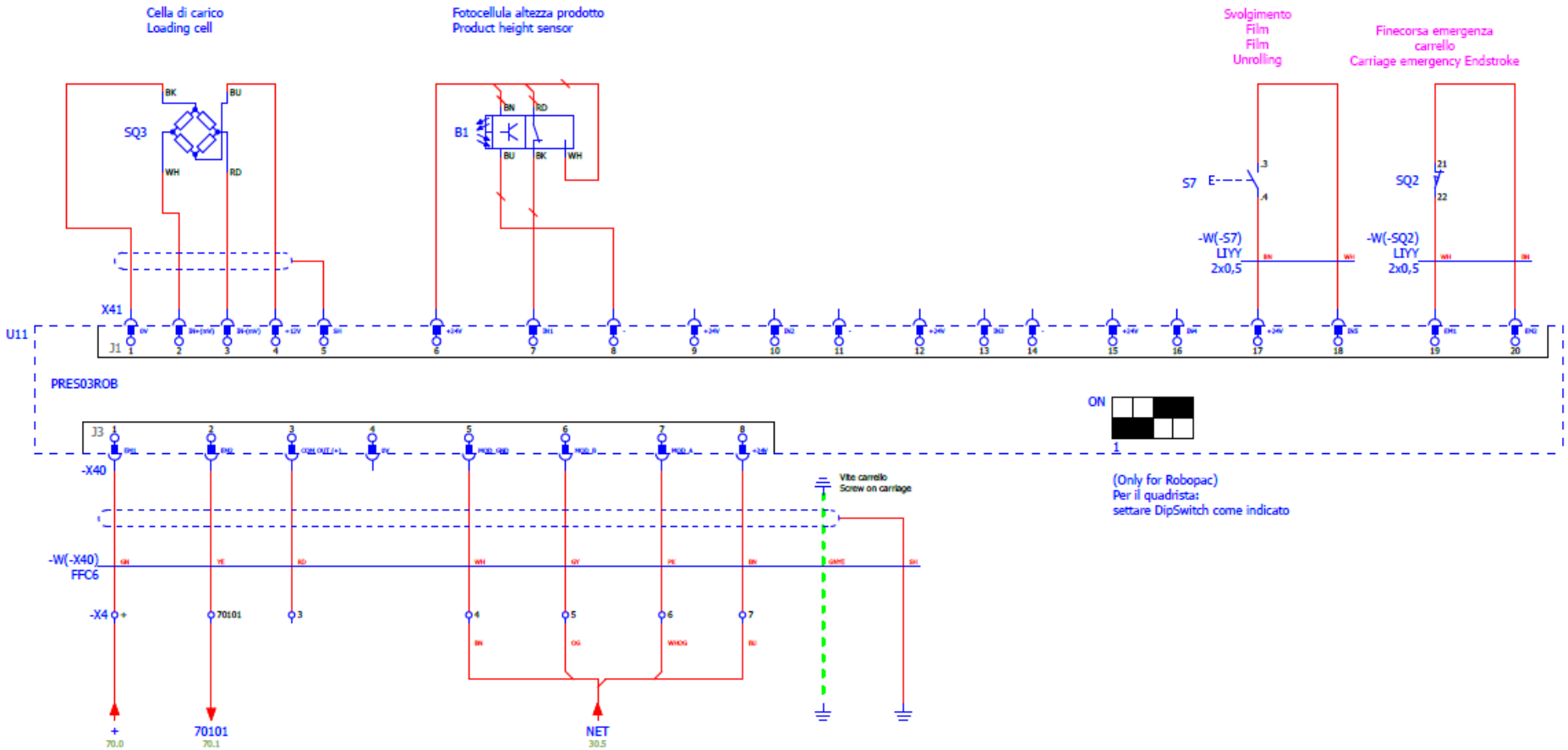


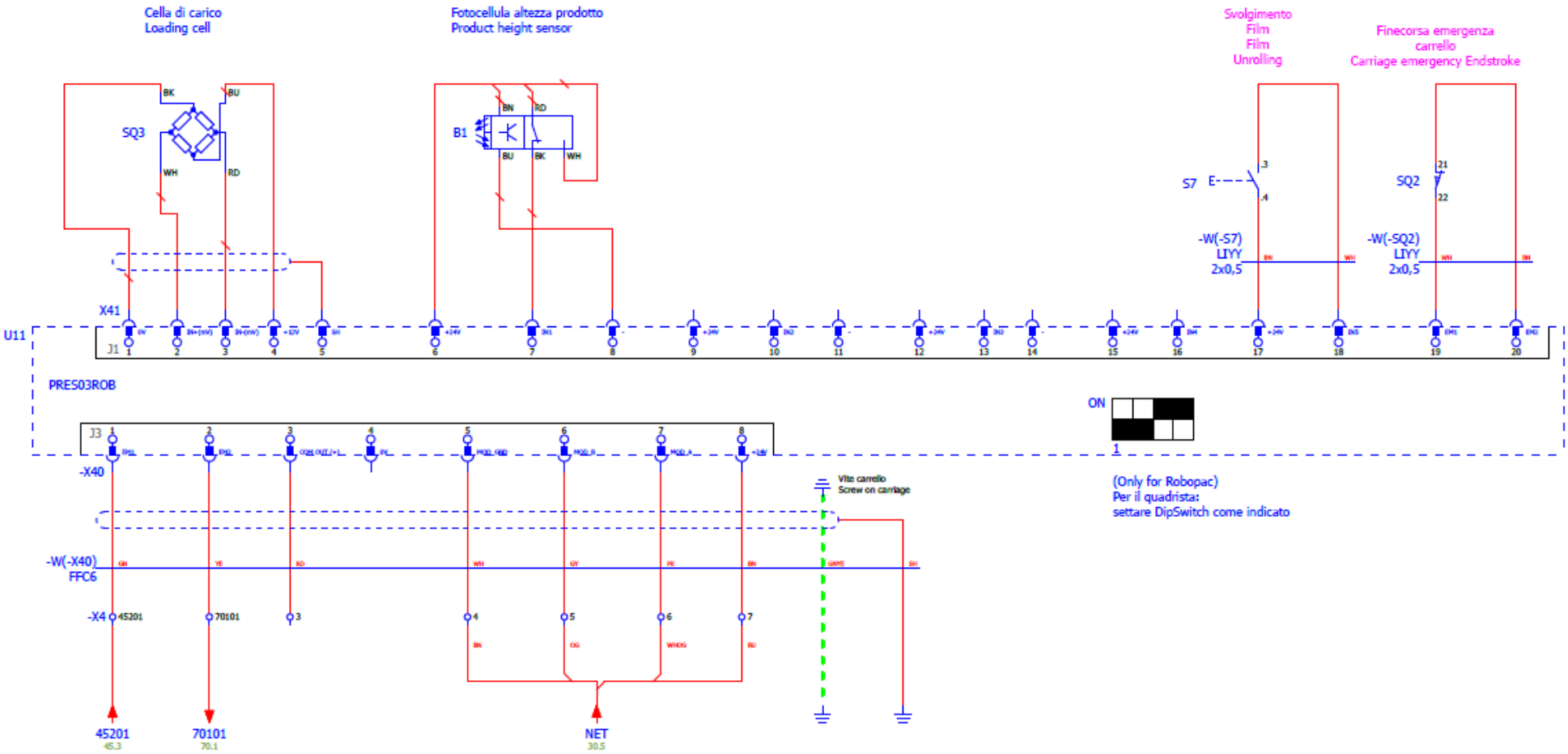
Table description status input/output (U11)

J1 Connector (Pin)	Input Description	Led Status	Contact Type
+ (6)	+24 VDC		
In1 (7)	Product Height Photocell (PGS Only)	ON	N.O.
- (8)	0 VDC		
+ (17)	+24 VDC		
In5 (18)	Unrolling Film Push-Button (PGS Only)	ON	N.O.
+ (19)	+24 VDC		
(20)	Carriage Emergency	OFF	N.C.

STD Version


Cella di carico
Loading cell
Fotocellula altezza prodotto
Product height sensor
Svolgimento
Film
Film
Unrolling
Finecorsa emergenza
carrello
Carriage emergency Endstroke
SQ3
B1
S7
SQ2
-W(-S7)
LIYY
2x0,5
-W(-SQ2)
LIYY
2x0,5
X41
U11
J1
PRES03ROB
ON
J3
-X40
-W(-X40)
FFC6
-X4
Vite carrello
Screw on carriage
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
+
70101
NET

TP Version


Cella di carico
Loading cell
Fotocellula altezza prodotto
Product height sensor
Svolgimento
Film
Film
Unrolling
Finecorsa emergenza
carrello
Carriage emergency Endstroke
SQ3
B1
S7
SQ2
-W(-S7)
LIYY
2x0,5
-W(-SQ2)
LIYY
2x0,5
X41
U11
J1
PRES03ROB
ON
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
J3
-X40
Vite carrello
Screw on carriage
-W(-X40)
FFC6
-X4
45201
70101
NET

Check function of load cell (on PRES03ROB card on carriage)

To verify the correct operation of the load cell must be checked on the card on carriage, which between the Blue and Black wires of the same there are the 12 VDC representing the power.
Among White and Red wires must detect the output signal of the cell that will vary from 0 mV to 24 mV DC DC (being the ratio of 2 mV x Volt DC power supply)
applying by hand a variable traction roller anchored to the cell to simulate the film's shooting.

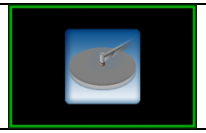
SAFETY DEVICES DESCRIPTION STATUS (U12 – U13)

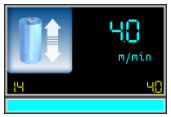
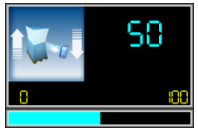
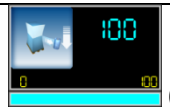
The Machine is ON

After push button Reset pressed (not Emergency –Safety Transpallet Pallet not actived)

Safety photocell Transpallet actived

LIST OF RECIPES DATA

Parameter		Min. – Max.		Step	Unit of measure / Notes
Packaging cycle type		Up and Down cycle			
		Up only cycle or Down only cycle			
		Top sheet cycle			
		Packaging cycle with Pressure platen		Option activation	 
Bottom wraps		 0 – 10		1	Wraps
Top wraps		 0 – 10		1	Wraps
Photocell delay		 0 – 100		1	cm
Offset from the ground		0 -- 260		1	cm
Reinforcement height and reinforcement wraps		Height	0 -- 260	1	cm
		Wraps	0 – 20	1	Wraps
Table Rotation speed		5 – 12		1	RPM

Carriage up/down speed			1.5 – 4.0	0.1	m/minute
			1.5 – 4.0		
Altimeter			50 – 310	1	cm
FRD CARRIAGE					
Force to Load (Manual Force to Load adjustment)		Mechanical			
PGS CARRIAGE					
Force to Load			0 – 100	1	Dimensionless
			0 – 100		
			0 – 100		
			0 – 100		
Pre-stretch film	Fixed Selectable from Gears	150 % 200 % 250 %			%

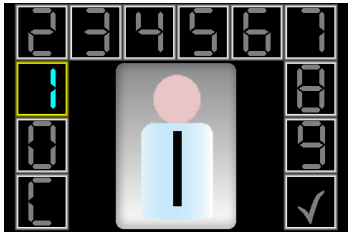
OPERATOR PANEL PASSWORD USE

<table>
<tr>
<td rowspan="2">From Setting menu, turn till the icon ‘Login’ identified by a shape: if the shape is empty no login has been done.

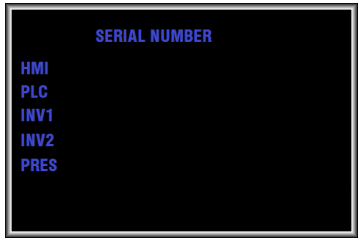
Machine responsibile:
Insert password 1111

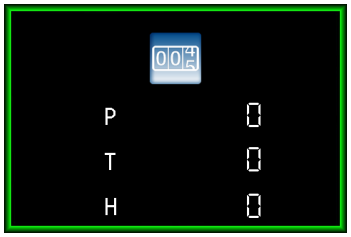
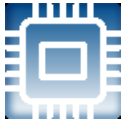
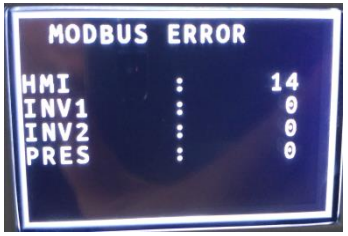
Service: user ‘SERVICE’
Insert password 6161

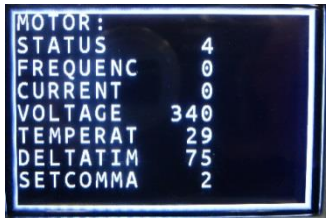
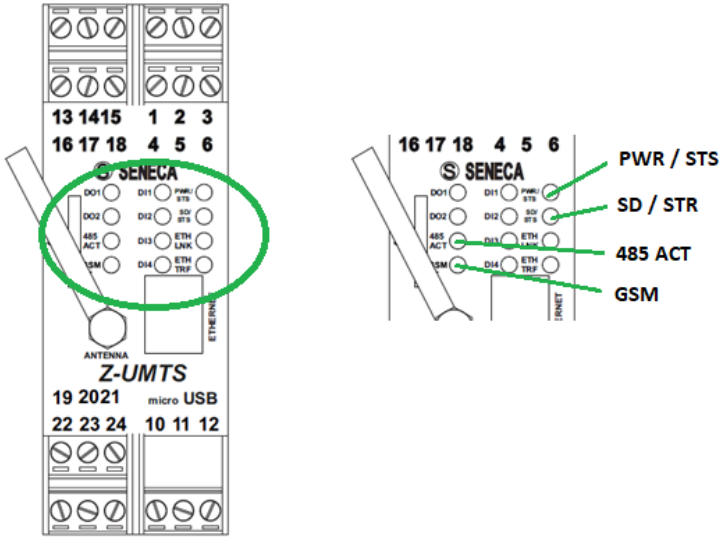
Robopac: user ‘ROBOPAC’
Robopac password needed</td>
<td>  </td>
</tr>
<tr>
<td> 
Responsible Service Robopac</td>
</tr>
<tr>
<td>To inserirt the password turn the JOG to select the number, press to enter it.
With C the number is deleted, with the V the number is saved.

If the password is correct one of the icon above described will be showed (responsible or service)</td>
<td>  </td>
</tr>
</table>

VARIOUS OPERATOR PANEL FUNCTIONS

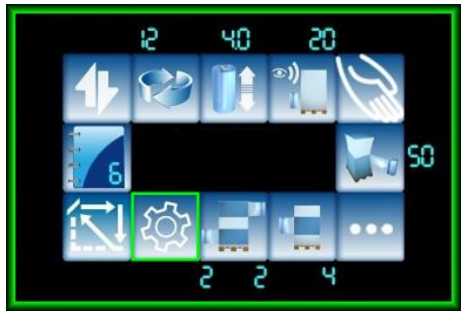
SW / HW INFORMATION From the 'Settings' menu, rotate the jog up to the 'Info' icon, then press JOG 	
The first page indicates the software versions of the various cards installed on the machine (in case of FRD, only HMI, PLC and INV1) Wait some seconds and all will be displayed on the screen	
Rotate the jog to the left to display the second page, which contains the serial number of the various cards installed on the machine (in case of FRD, only HMI, PLC and INV1) Wait some seconds and all will be displayed on the screen	
RESETTING THE CYCLE COUNTER From the 'Settings' menu, rotate the jog up to the 'Counters' icon and press the JOG.  On the first row the partial wrapped pallets number is displayed (P), on the second row the total number (T) and on the third the machine working hours	

number (H). To reset the values (as “Service” user it’s only possible to reset P, as “Robopac” user it’s possible to reset T and H) press and keep pressed the JOG. To exit from the page, press the JOG.	
ELECTRONIC CARDS STATUS From the ‘Settings’ menu, rotate the jog up to the CHIP icon and press the JOG. 	
The first pages indicated the status of digital inputs and of the digital outputs of the following electronic cards: HMI PLC PRES	
Press the jog to enter into the page with modbus comunication errors counters HMI Inverter 1 Inverter 2 PRES03ROB	
Press the jog to enter into following page showing the state of the 3 motors (turn the jog to select the motor 1 = Table, 2= Carriage, 3=Film Tension) with : Status register Current speed [dHz] Instantaneous current [A]	

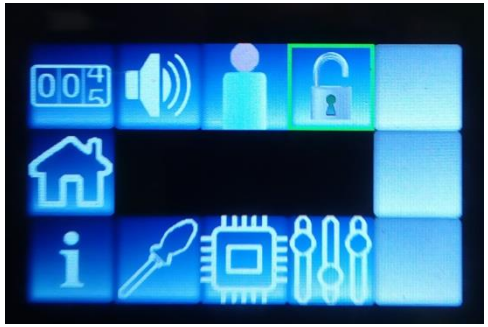
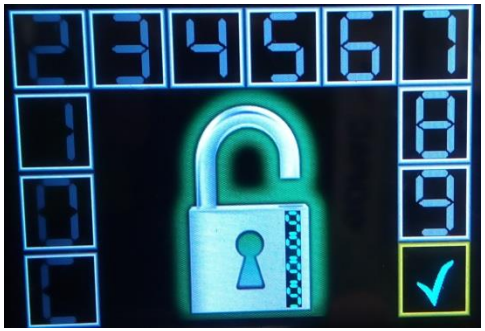
DC bus voltage [V] Driver temperature [°C] Communication time [ms] Running command	
SENECA Module (R-CONNECT optional), meaning of the leds: SD • ON fixed OK • ON 0.8s OFF 0.8s activity in progress on SD • ON 0.2s OFF 0.2s error on SD PWR • ON data logger not active (Seneca module does not record data) • ON 2.8s OFF 0.4s data logger is working • ON 0.1s OFF 0.1s ON 0.1s OFF 0.6s Error 485/ACT • ON 2.8s OFF 0.4s MODBUS working • OFF Modbus not used • ON 0.2s OFF 0.2s timeout on Modbus GSM: flashing according to the type of network • ON fixed (mode HDSPA / HSUPA/ HSPA+/ DC-HSPA) • ON 1.9s OFF 0.1s (WDCMA) • ON 1.7s OFF 0.1s ON 0.1s OFF 0.1s (GSM/GPRS/EDGE) • ON 0.1s OFF 0.1s (no signal or SIM not inserted)	
R-CONNECT (optional) Page with display of the status of the R-Connect device. SW : software version of the Seneca device FW : firmware version of the Seneca device dB : GSM signal intensity (-100dB low -80dB very good) n TX: number of trasmissions made n REQ: number of on hold trasmissions requests (polling increased) n PAR: number of received requests for parameters change UTC : Seneca device clock, it shows day – hour UTC TX: Seneca device clock, it shows day – hour of the last transmission	

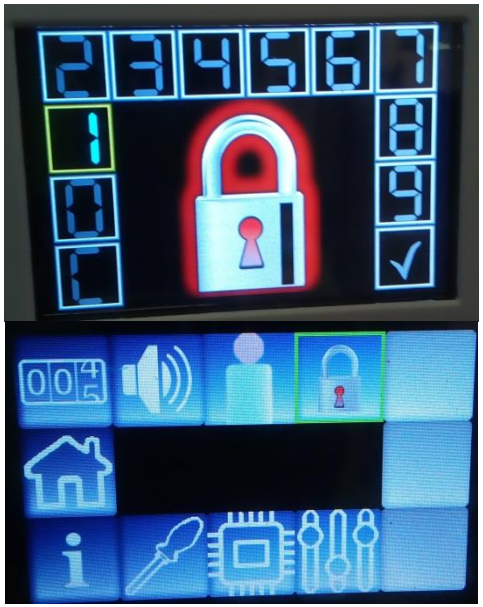
Check the fields Sw and dB to be different from zero. With user SERVICE or ROBOPAC is possible to make the connection test of the device with the web portal. Turn the jog to display TEST, at this point press the jog, now WAIT will be showed. 4 traffic lights will be displayed, these will become from red to green (max 1 minute) showing the executed steps: taking charge of the test - sending request - received request - test closure With 4 green traffic lights the comunication of the device with the web portal is OK To exit keep pressed the jog	
CARRIAGE EMERGENCY In case the carriage emergency is pressed, keep turned the key selector, the following page is displayed. Keeping pressed the START button the carriage rises. Release the button and the selector when the emergency plate is free	

ACCESS TO SERVICE PAGES

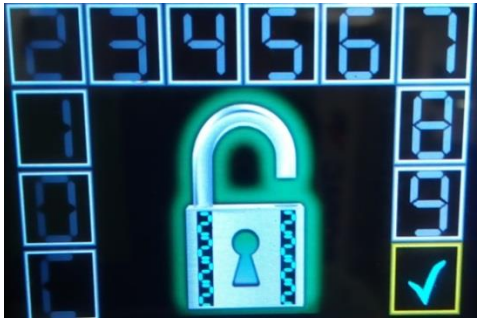
Turn the JOG till the Setting icon and press the JOG. 	

KEYBOARD LOCK FUNCTION

Turn on the machine	
Press the RESET button	
Turn the JOG till the Settings icon and press the JOG. 	
Turn the JOG till the LOCK icon and press the JOG. NO PASSWORD NEEDED at the moment 	
Insert the LOCK password to LOCK parameters Default LOCK password is 9999 It's possible to change THIS PASSWORD (see below)	

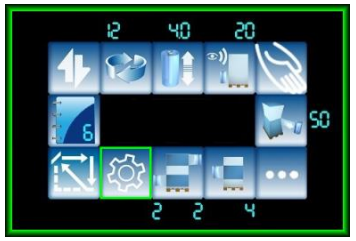
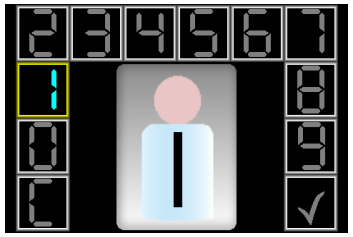
Now working parameters are LOCKED	
To UNLOCK working parameters repeat the procedure above	

PARAMETERS LOCK PASSWORD CHANGE

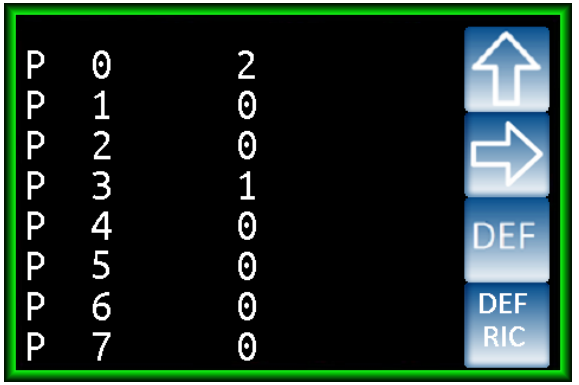
Turn on the machine	
Press the RESET button	
Turn the JOG till the Settings icon and press the JOG. 	
Enter with the customer responsible password 1111. 	
Turn the JOG till the TWO KEYS icon and press the JOG. 	
Insert the new LOCK password for TWICE and confirm with the V mark --- often we set this lock/unlock password to 1111 ---	

RESET OF THE PARAMETERS LOCK – UNLOCK PASSWORD TO 9999

From JULY 2019 (software H.M.I.=62.121 PLC=62.121) is possible to reset to 9999 the parameters lock-unlock password

In the case the parameters are locked and the parameters lock-unlock password is LOST	
Turn the JOG till the Setting icon and press the JOG. 	
Select the password access icon 	
Insert the SPECIAL reset PASSWORD **6778** and confirm with the symbol **V**. Now the parameters lock–unlock password has been reset to the value 9999.	

MACHINE CONFIGURATION ACCESS PROCEDURE AND INTERNAL PARAMETER LIST

Turn on the machine	
Press the RESET button	
The HOME page is displayed, Turn the JOG till the Settings icon and press the JOG. 	
enter with service password 6161 	
Turn the JOG till the Parameters icon and press the JOG. 	
To set the default parameters, select the voice ‘DEF’ of the menu and press the JOG twice. Modify any parameters based on machine configuration. Turn the jog till the parameter to modify, press to select. The pane changes from yellow to flashing red, rotate to change the value. Press to return to the selection. Select the up arrow and press the jog to come back to the Settings menu. The parameters on the display are WITHOUT point/comma.	

MACHINE CONFIGURATION AND INTERNAL PARAMETER LIST

To edit the parameters in the list below, we suggest you contact a Robopac technician

PARAMETER	DESCRIPTION	VALUE	FRD (DEF)	PGS
1	Carriage Type	0 = FRD, 2 = PGS	0	2
2	Film Brake Alarm On	0 = No alarm 1 = Alarm with load cell 2 = Alarm with R-connect roll 3 = Alarm with both	0	1
3	Enable U.S.A. display *	0-1	0	0
4	Table Diameter	0=1500, 1=1650, 2=1800, 3 = LP	1	1
5	Transpallet Enable	0-1	0	0
6	Pressure Platen Enable (Pneumatic)	0-1	0	0
7	Freezer-Inox	0 = Standard 1 = Freezer / Inox	0	0
8	Homepage (0 def, 1 Recipe selection)	0-1 **--- from September 2020 ---**	0	0
9	Mod Film	0-1	1	1
10	KP	1-200	65	65
11	KI	1-200	41	41
12	Max Tension	0-70	36	36
13	Cell Delta	0-70	30	30
14	Pallet Start	0-1	0	0
15	Roll Container	0-1	0	0
16	Cutting Device	0-1	0	0
17	Film tail lenght during the cutting	0-200	100	100
25	Restart Time (sec)	0 = Disable, xx = seconds of wait (max 90)	0	0
26	Simulation Enable	0-1	0	0
27	Graphic Enable	0-1	0	0

(*) A recipe default is needed if P3 is modified
The parameters from P25 to P32 are changeble only with user Robopac

MOTOR PARAMETERS

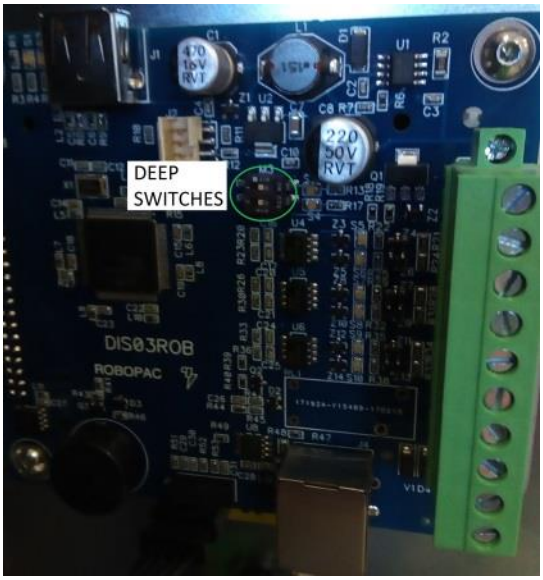
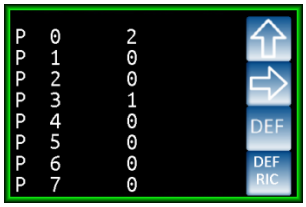
To edit the parameters in the list below, we suggest you contact a Robopac technician

PARAMETER	DESCRIPTION	VALUE	DEFAULT		
			1 (TABLE)	2 (CARRIAGE)	3 (FILM DRIVE)
1	FW version				
2	Bootloader version				
3	Minimum frequency	0-20 (Hz)	0	0	0
4	Maximum frequency	0-100 (Hz)	100	100	100
5	Acceleration	0-999 (Hz/sec)	12	200	200
6	Deceleration	0-999 (Hz/sec)	12	200	200
7	Maximum current	0-10 (A)	7	5	5
8	Average current	0-100 (dA)	50	25	25
9	Rated frequency	0-100 (Hz)	50	72	72
10	Boost voltage	0-100 (%)	15***	5	5
11	Point 1 frequency	0-100 (Hz)	10	10	10
12	Point 1 voltage	0-100 (%)	20***	16	16
13	Motor type	0-5	0	0	0
14	Positioning on	0-1	0	0	0
15	I Max Low Frequency	0-100	50	25	25
16	Feedback Value	0-6	0	0	0
17	Early low speed	0-999	100	0	0
18	Low speed value	0-999 (dHz)	50	50	50
19	Fast deceleration (Hz/sec)	0-999 (Hz/sec)	100	65	65
20	Communication Timeout	0-100 (ms)	30	30	30

***** For TABLE DIAMETERS 1500 and LP the following motor parameters will be diferent: P10 = 20, P12 = 25**

PROCEDURE TO MODIFY NON-CORRECT INTERNAL PARAMETERS

In the case of setting=internal parameters not correct and/or of blocking alarm
(ex. with comunication with film stretch card) it's possible to modify the parameters with an emergency procedure

1	Set the DIP SWITCH 2 on ON of th panel card	
2	Turn on the machine	
2	Press the RESET button	
3	The HOME page is diaplayed, the display is locked (purple border on the home page), the comunication with the PLC is absent to allow the parameters to be changed	
4	Turn the JOG till the Setting icon and press the JOG.	
5	enter with the service password 6161	
6	Turn the JOG till the Parameters icon and press the JOG.	
7	Modify the parameters following the machine configuration.	
8	Turn off the machine and set the dip-switch 2 on OFF	

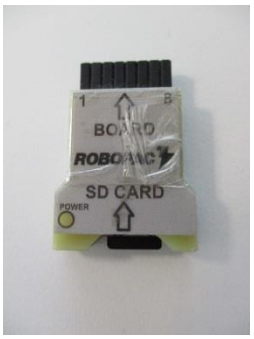
PROCEDURE FOR REPLACING, LOADING SOFTWARE AND CALIBRATION OF ELECTRONIC CARDS

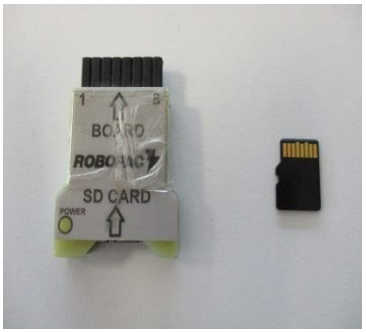
If you were to perform a software update

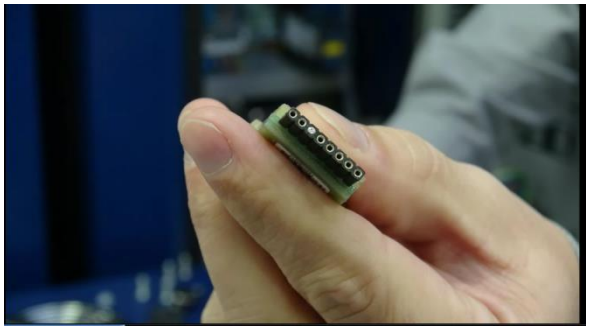
for Display Panel (U3) you need a USB key and related software

for PLC card (U1) you need following Key Programming + SD Card and related software.

Copy the software files of the PLC card on the SD Card on a basic level (no directory).

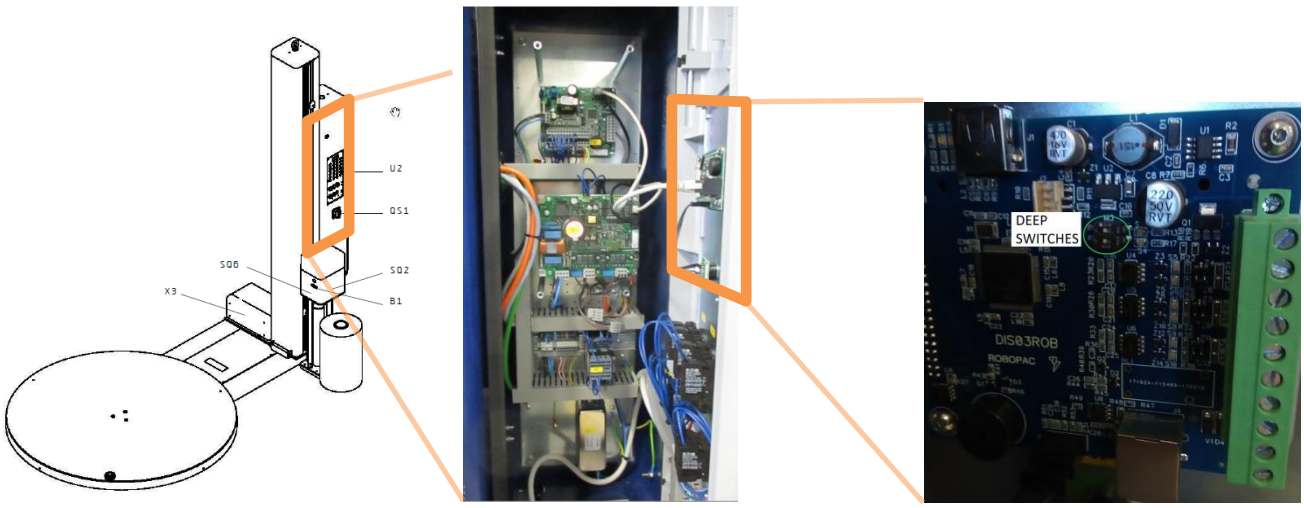






DISPLAY PANEL (U3)

In case you need to perform a software update on both touch screen panel (HMI) and the PLC card, you must always start from the download of the panel software.

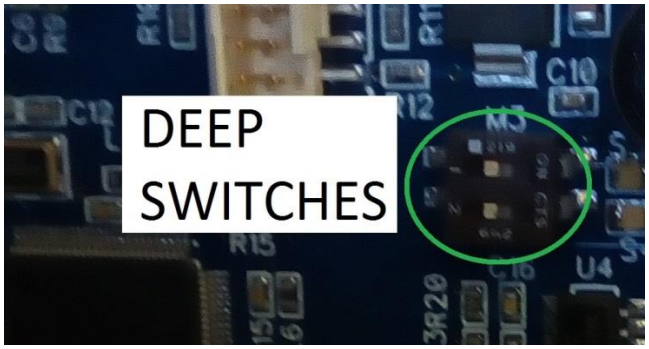


New installation

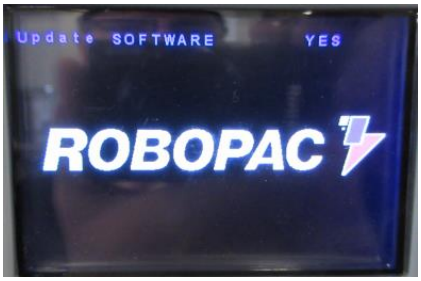
The new display panel DIS03ROB is supplied as a spare part WITHOUT software

- Mount mechanically the new display panel in place of the faulty part
- Wire electrically the new display panel
- Be sure to have the 2 DIP-SWITCHES on OFF

  DIP 1 = OFF
  DIP 2 = OFF



New Installation or Software update

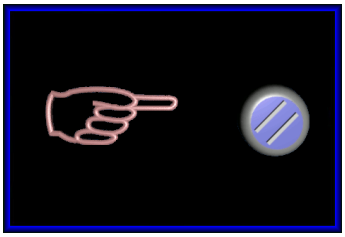
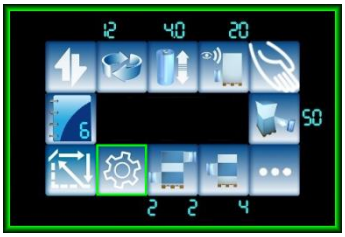
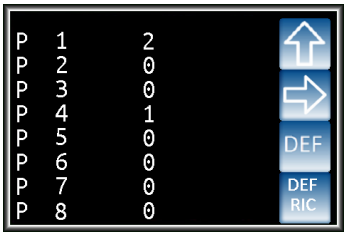
Insert the USB key on the display jack and turn on the machine. After some moments the following page is displayed: SOFTWARE UPDATE turn to select “YES” and press the “JOG”. Wait for the phase to complete (Completion of the upload bar and message popup “SW UPGRADE DONE”).	 
IMAGE UPDATE At the row IMAGE UPDATE turn to select “YES” and press the JOG to start the procedure. The procedure is composed of two phases: The red bar shows the percentage of reset of the image memory (about 10 seconds) The next green bar shows the percentage of uploading images (about 1 minute)	 
DATA SKIP is displayed Turning the jog is possible to select : DATA toHMI to write the data on the panel Select this function and press the jog	

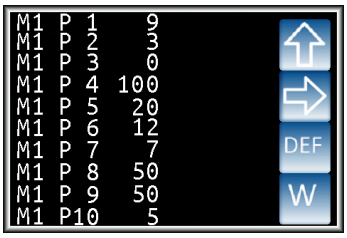
- When finished remove the programming key with its SD card from its connector SD.

The software installation procedure is now complete.

We need to run the machine initialization procedure (see procedure) to fully restore the machine operation.

MACHINE INITIALIZATION

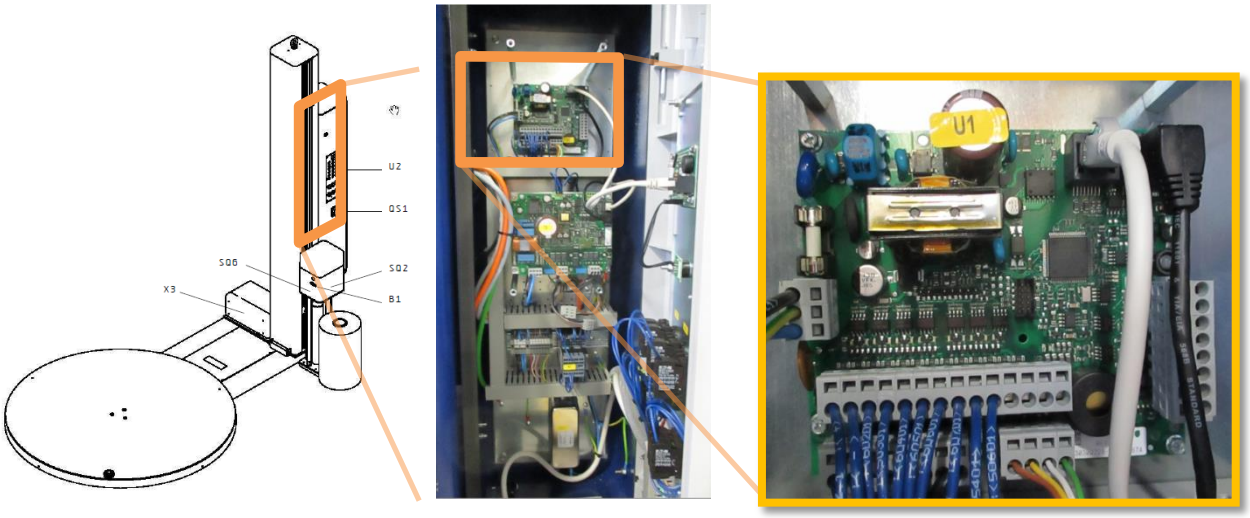
1	Turn on the machine	
2	Press the RESET button	
3	The HOME page is displayed, turn the JOG till the Settings icon and press the JOG. 	
4	enter with service pasword 6161 	
5	Turn the JOG till the Parameters icon and press the JOG. 	
6	To set the default parameters, select the voice ‘DEF’ of the menu and press the JOG twice. Modify any parameters based on machine configuration. Turn the jog till the parameter to modify, press to select. The pane changes from yellow to flashing red, rotate to change the value. Press to return to the selection.	

7	**RECIPES DEFAULT** From the machine parameters page, select the voice “DEF RIC” and press jog twice. “DEF Recipe OK” is displayed. Select the up arrow and press the jog to come back to the Settings menu.	
8	Turn the JOG till the Motors icon and press the JOG. 	
9	To set the default parameters, select the voice ‘DEF’ of the menu and press the JOG. Each motor has 20 parameters. MOT 1 → Table MOT 2 → Carriage MOT 3 → Film Tension At the end of the modifications (or DEF) select the write button ‘W’ for the parameters writing and press the JOG. Wait OK is displayd next to the button W. At the end select the exit arrow (up arrow) to come back to ‘Settings’ menu .	

PLC CARD(U1)

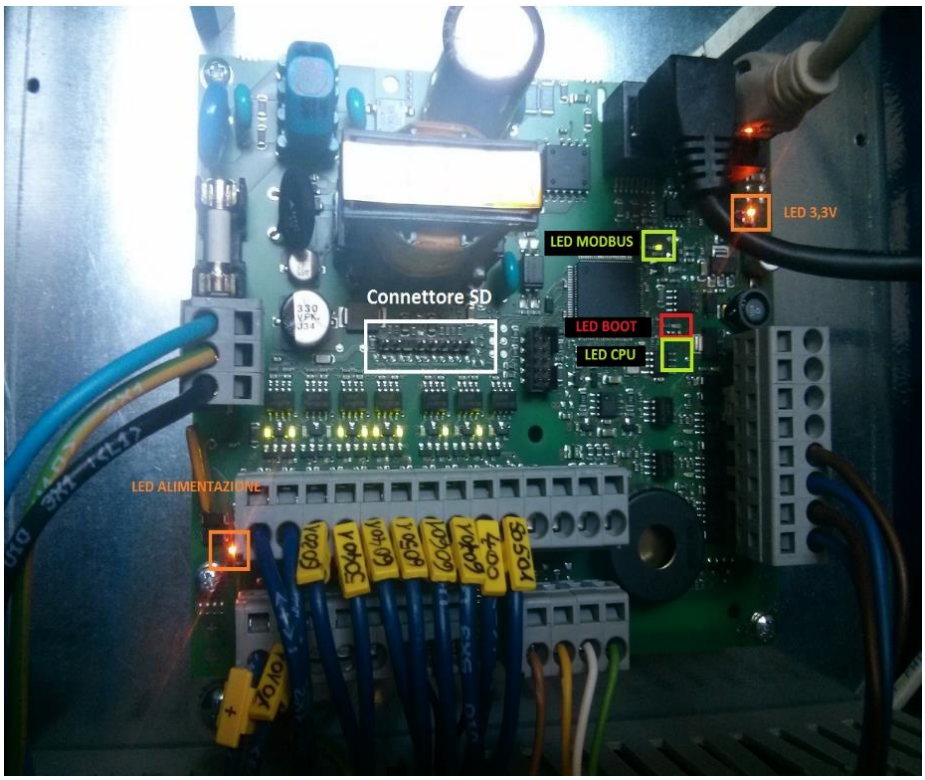
New Installation or Software Update

This electronic card is supplied as spare part WITHOUT software

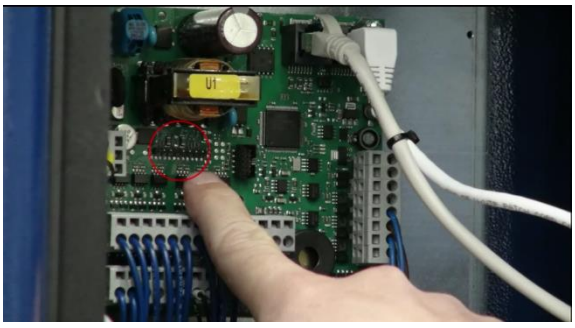


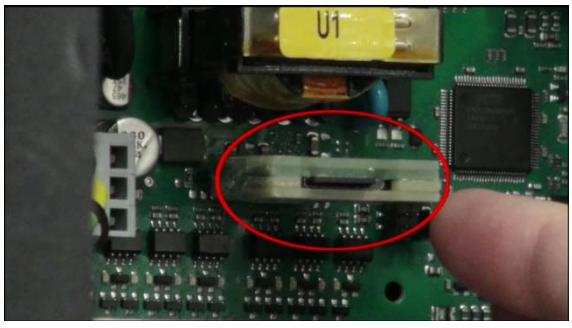
Recover the original software version of the machine and install it on the Micro SD card.

Follow the PLC card software loading procedure as described below:

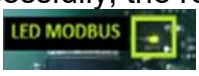


- Switch off the machine
- Mount mechanically the new card in place of the faulty card.
- Wire electrically the new card.
- Insert the programming key with the corresponding SD with previously installed software into the SD connector.





- Switch on the machine.
- The red LED (LED boot) 

lights for a second
- The next flashing (about 2 seconds) indicates the software download
- • When the download is finished successfully, the red LED turns off permanently and starts flashing the green LED (led Modbus) 

and (non-alarm) the two LEDs (LED CPU) 

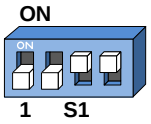
- Switch off the machine
- Remove the programming key with its SD card from its connector SD.

EXPANSION CARD (U11)

New Installation on the carriage of the PGS version machines.

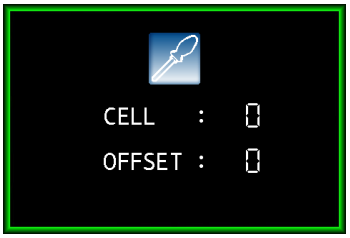
This electronic card is provided as spare part COMPLETE with software.

- Switch off the machine.
- Mount mechanically the new card in place of the faulty card.
- Wire electrically the new card.
- Place the S1 switches of the card as follows:



- Switch on the machine.
- Remove the film from the last carriage reel (the one connected to the load cell)
- Calibrate the load cell by following the procedure below:

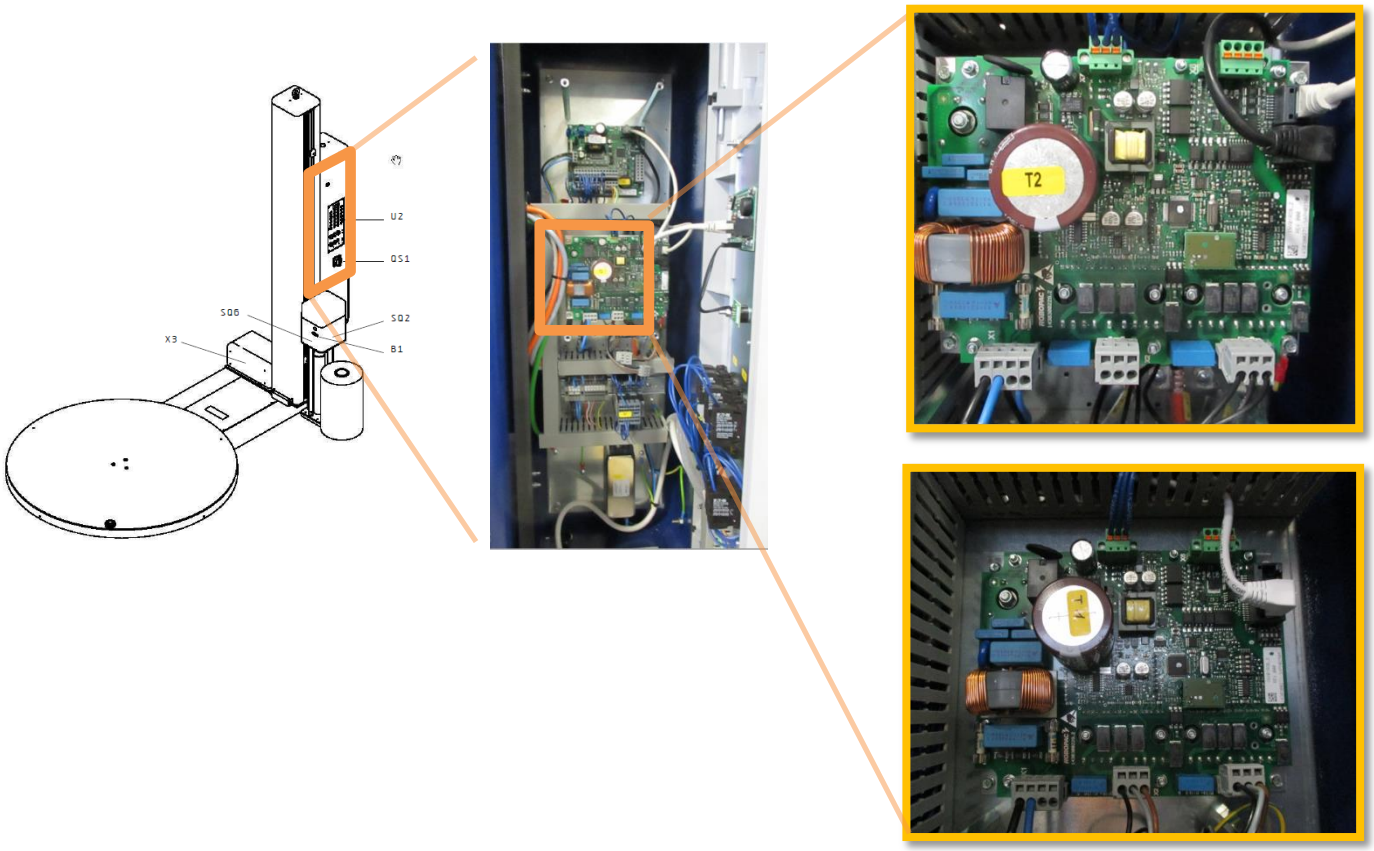
LOAD CELL CALIBRATION (Only PGS)

Enter with password Responsable or Service From the Setting menu, turn the JOG till the icon “Load cell” and press the JOG. 	
Release the film output roll where the load cell is present. Kepp pressed the JOG till the beep, when released the OFFSET value is updated. The new OFFSET value is about 10 units highter than the current CELL value. **N.B.** Values of CELL between OFFSET – 35 and OFFSET + 15 are acceptable.	

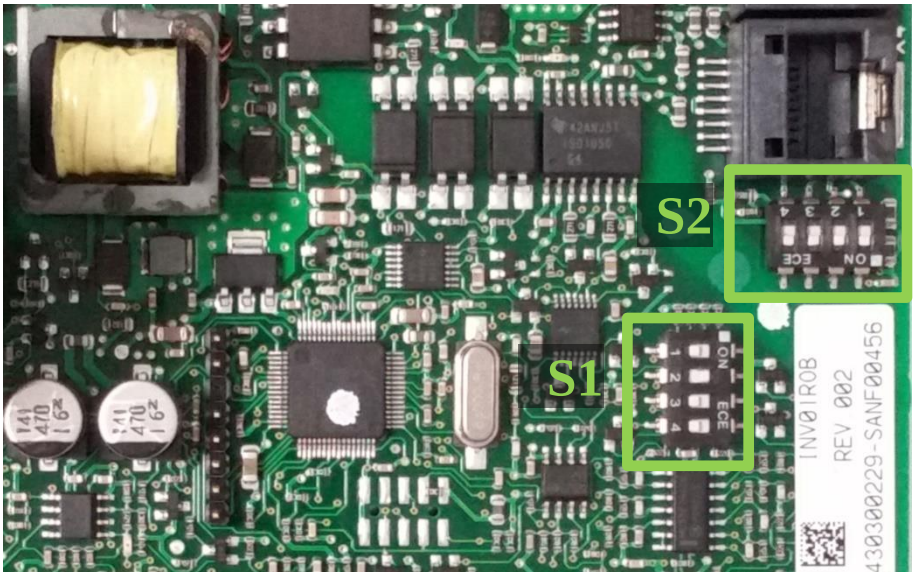
INVERTER CARD (T1 – T2)

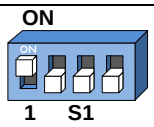
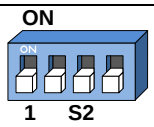
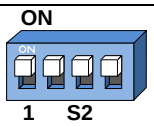
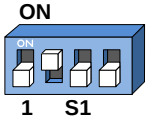
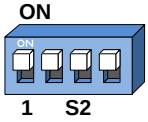
New Installation

This electronic card is provided as spare part COMPLETE with software.

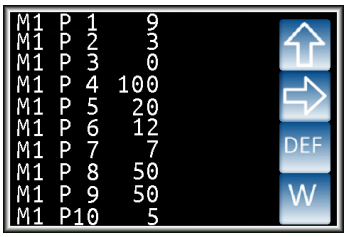


- Switch off the machine.
- Mount mechanically the new card in place of the faulty card.
- Wire electrically the new card.
- Place the S1 and S2 switches of the card as follows:



Inverter Card T1=U1 - Table Rotation Motor - Up/Down Carriage Motor		 **if U2 PRESENT**	 **if U2 NOT PRESENT**
Inverter Card T2 = U2 (Film Drive Motor) - Film Drive Motor (PGS Only)			

- Switch on the machine
- Insert the SERVICE password 6161
- Set the card configuration using the following procedure:

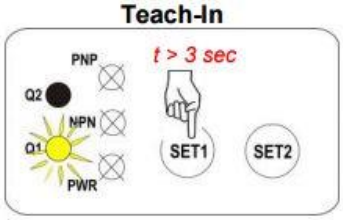
Turn the JOG till the Motor icon and press the JOG. 	
To set default parameters, select ‘DEF’ from menu and press the JOG. Each motor has 20 parameters. MOT 1 → Table MOT 2 → Carriage MOT 3 → Film tension At the end of the modifications (or DEF) select the write ‘W’ button to write the parameters and press the JOG. Wait that OK is displayed near the button W. At the end select the exit arrow (up arrow) to go back to ‘Setting’ menu.	

PRODUCT HEIGHT DETECTION PHOTOCELL CALIBRATION

Standard photocell (for clear products)

Adjust the photocell sensitivity trimmer to load centre

Photocell for black products S65

	Place the target at the center of the pallet
	Keep pressed the Set1 button for more than 3 seconds, till led Q1 flashing
	Release the button, target detected

REMOTE CONTROL INSTALLATION & SETTING

To install the remote control it is necessary to perform the procedure of RX & TX codes in self-learning of the receiver.

New code setting

1.1. Set the dip switch 1 & 2 to OFF.
1.2. For the channel 1, press the button P1 till the related led will become ON (LED1).
1.3. Press the (START) push button of the remote and keep it pressed until the second led will become ON too (the second led makes a blink).
1.4. Release the (START) push button of the remote
1.5. The receiver will confirm the successful setting by a double blinks (2) of the two leds
1.6. In case of failed setting, the receiver will turn OFF the related led of the channel and will not make any double blink of setting confirmation. If the memory of the codes is full, the receiver will advise this event by seven (7) blinks of the two leds.
1.7. For the channel 2, press the push button P2; the other operations works the same as above (setting the STOP push button of the remote).

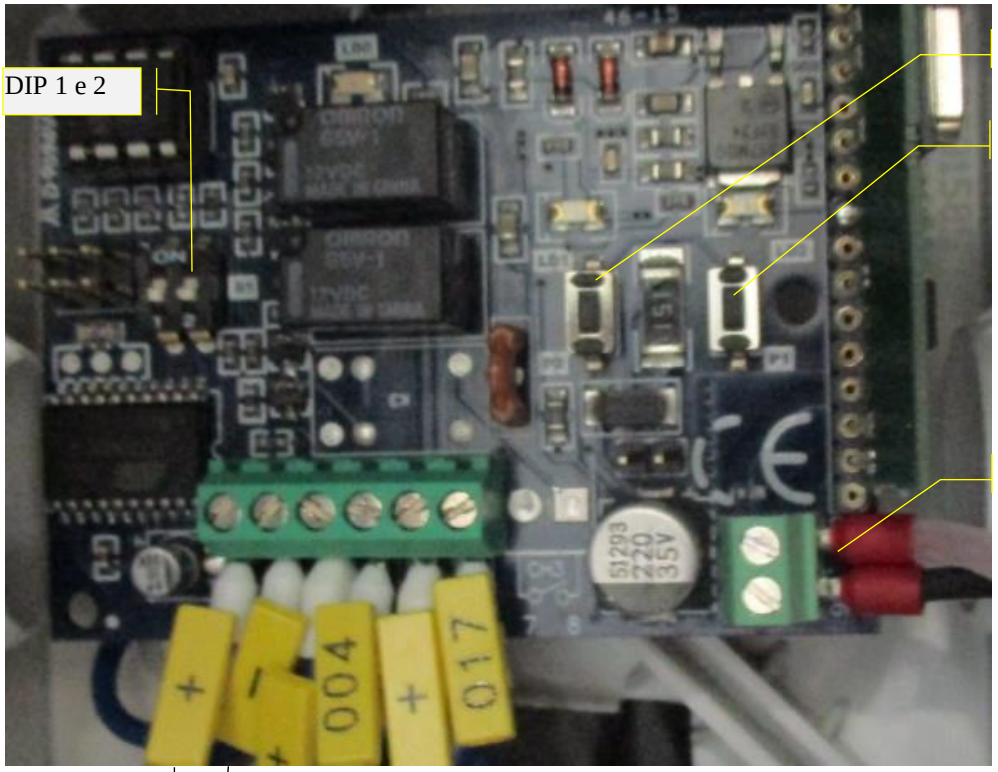
Set code deleting

2.1. Press the push button P1 (or P2) until the related led will become ON LED1 (or LED2).
2.2. Press the push button Ch.1 (or Ch.2) of the remote.
2.3. The receiver will confirm the successful deleting by five (5) blinks of the two leds
2.4. In case of failure on the receiver the related led of the selected channel and will not make the five blinks of confirmation.

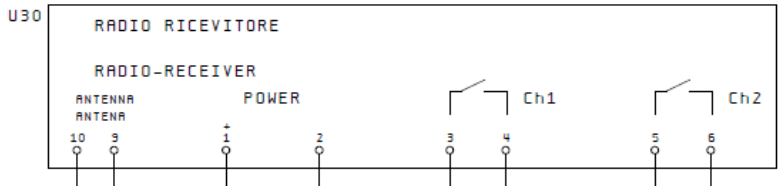
All set code deleting

3.1. Press the push button P1 until the LED1 will become ON and keep it pressed until it will become OFF again..
3.2. On the receiver will become ON the LED1, and after 7 seconds will become OFF again giving confirmation of the deleted codes.

RECEIVER RADIO CARD (code 1430300157)



RECEIVER RADIO CARD DESCRIPTION



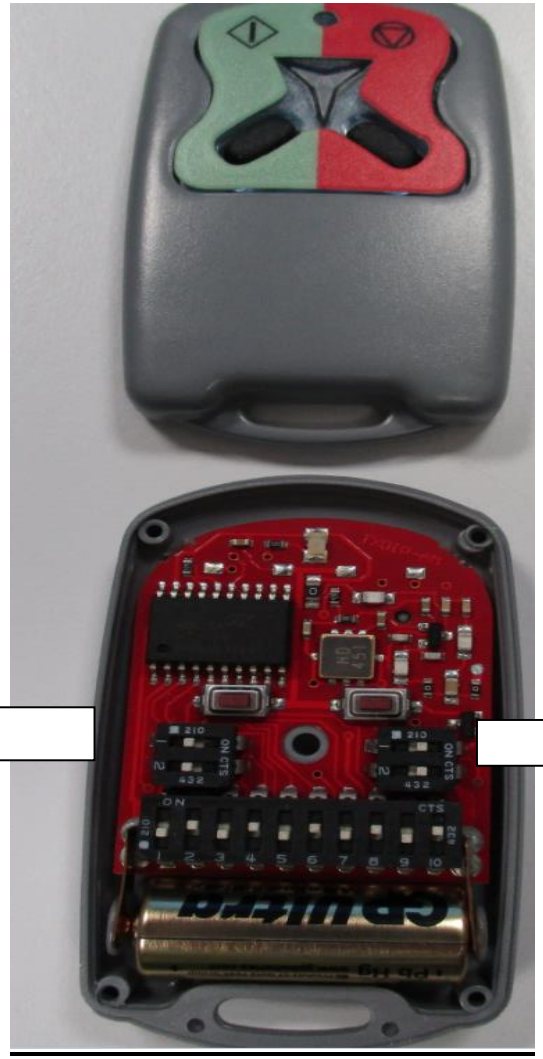
ELECTRICAL CONNECTION

9,10	Central “Antenna” – Sock “Antenna”
3,4	N.O. contact channel 1 (START)
5,6	N.O. contact channel 2 (STOP)
1	0 V ac,dc
2	+12V,+24V ac,dc

TECHNICAL CHARACTERISTICS

Power supply	+12V,+24V ac,dc
Consumption	50 mA
Receiver Frequency	433.92 MHz e 30.875 MHz
Min / Max. temperature of workng	-25°C +70°C
Dimensions	+12V,+24V ac,dc

REMOTE CONTROL EMITTER CARD CONFIGURATION (code 0590300000)

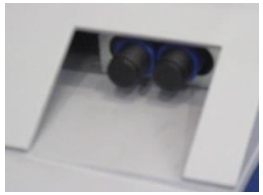


Set these two dip-switch to OFF position (on left side))

Set these two dip-switch to ON position (on right side)

ALARM LIST AND TROUBLESHOOTING

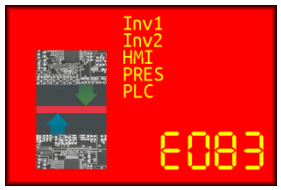
Alarm code	Alarm description	Troubleshooting	Cause of the fault	Solution
	**Emergency push button pressed**			Turn and lift the mushroom head button and press RESET
		Check the SB1 emergency press button contact. Check input IN 2 (Led H2) on the PLC board.	Contact broken	Replace the SB1 emergency limit stop contact
	**Carriage descent Safety Alarm** 	Carriage descent emergency	Obstacle between floor and carriage	If the obstacle cannot be manually removed, turn the key button and manually lift the carriage.
		Check the conditions of the limit stop connected to the emergency plate. Check input IN 1 (Led H1) on the PLC board	The safety limit stop connected to the metallic plate is broken	Replace the mechanical limit stop

	**Forklift photocell alarm**   	Check emergency photocell alignment with the reflector.	Incorrect photocell alignment with reflector	Newly align the photocells
		Check correct emergency photocell operations Check input IN 7 (Led H7) on the PLC board	Photocells damages or wiring disconnected	Replace the emergency photocell or fix wiring
			The machine PLC main board is defective	Replace the PLC main board.
	Roller lock forklift photocell alarm	Check photocell alignment with the reflector	Improper alignment photocell with reflector	Newly align the photocell.
		Check correct emergency photocell operations Check input IN 7 (Led H7) on the PLC board	Photocells damages or wiring disconnected	Replace the emergency photocell or fix wiring.
			The machine PLC main board is defective	Replace the PLC main board.

   **Motor Index:** 31= Table rotation 32 = Carriage 33 = Film tension See on chapter below **DETAILED INVERTER CARDS ALARMS CODES**	**Motor Fault** **V LOGIC** Wrong motor enabling voltage **Driver E(Enable)** No motor enabling **Over V / Under V** Wrong motor supply voltage **HW Max I** Instantaneous overcurrent (cannot be parametrised) **Max I / Int I** Overcurrent (brief / integral) on motor (in relation to motor parameters) **OverHeat** High temperature **Phase** Motor incorrectly connected **P Wrong** Positioning command not consistent with motor parameters **Comm** Communication error (see Error 83)	Disconnect the motor indicated in the error message from the inverter card and start a cycle.	If the error message no longer appears, it could be a motor fault	Replace the motor.
			If the message persists, it could be a inverter card fault	Replace the inverter card.
		Possible gear motor fault.	Possible gear motor fault..	Replace the gear motor

	**Film break alarm** (Only PGS)	Film not connected to the product		Replace the film reel on the carriage or re-attach the edge of the film to the product and press START.
		Check correct load cell operations (extensometer)	The load cell does not send the signal to the signal amplifier board.	Replace the load cell (extensometer).
			The load cell correctly operates	Replace the cell signal amplifier/pre-stretch motor inverter board.
	**Table rotation alarm**  	Check revolution counter sensor position (the alarm appears with there is no PLC input signal for at least 2 table revolutions)	Incorrect sensor position.	Correctly reposition the sensor
		Check correct sensor operations	Possible sensor and relevant wiring fault	Replace the sensor
		Check input IN 12 (Led H12) on the PLC board.	Possible PLC board fault	Replace the PLC board.

	**Carriage speed alarm**	The carriage is not lifted at the set speed. Check correct motor connection	Possible motor failure or failure associated wiring.	Replace the motor and restore the connection.
		Check connection of the up-down motor carriage and access to the T1 card.	Possible T1 board fault (lower level).	Replace the T1 board (lower level).
	**Economic cycle steps alarm**	Passed the maximum number of steps in ECO cycle recording		Remake an ECO cycle
	**Pallet presence Alarm**	At the start of the cycle, the product presence photocell is not occupied and / or the load cell is not busy	If the pallet is present, check the pallet height photocell	Check / reset the connections to the photocell
				Replace the photocell
			If the pallet is present, check the load cell	Calibrate the load cell
				Check / restore the connections to the load cell
				Replace the load cell

<table>
<tr>
<td> 

Inv U1 (Table + Carriage)
Inv U2 (Stretch + Pre-stretch)
PRES (Load cell reading card)
HMI (operator panel)
PLC (PLC main board)</td>
<td>Communication alarm.

The screen displays the cards that show the communication alarm simultaneously.</td>
<td>Check the connections to the various devices.</td>
<td>Possible communication wire fault</td>
<td>Replace connection wire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If necessary, try again by connecting one device at a time.</td>
<td>Possible electronic board fault</td>
<td>Replace the electronic board.

Check configuration parameters</td>
</tr>
<tr>
<td> 
</td>
<td>Incorrect configuration parameters alarm.</td>
<td>Check the configuration parameters that may be incorrect or deleted</td>
<td colspan="2">Enter with password 6161 if possible or perform the procedure described in the paragraph
PROCEDURE TO MODIFY NON-CORRECT INTERNAL PARAMETERS</td>
</tr>
</table>

Masterplat FRD - PGS	The carriage remains still (does not lift or lower)	Check the mechanical high and low limit stops	One or both mechanical limit stops are defective.	Replace defective mechanical limit stops.
		Make sure the high and low position limit stops correctly send the signal to the power board.	Possible high and low mechanical limit stop electrical fault or wires disconnected	Replace the mechanical limit stop or restore wiring
		Check PLC board operating conditions	Possible PLC board fault	Replace the PLC board.
Masterplat FRD - PGS	Film breaks during product wrapping or not appropriately applied to the load (too tight or too loose)	Make sure film is correctly applied on the carriage and, especially, that it "embraces" the last roller where the film sensitivity sensor is installed.	Incorrect film threading on the reel carriage	Correctly load film on the machine and make sure it is threaded through the path indicated in the machine manual.
		Visually inspect roller conditions	Rollers are dirty and mark film	Clean with pressurised air (do not use thinners)
		Make sure the film sensitivity sensor (extensometer) is not mechanically damaged or incorrectly installed (the dancer roller must be free to move a few millimetres in the upper and lower housings)	The film sensitivity sensor is too tight or mechanically damaged.	Loosen the screws that secure the film sensitivity sensor to the carriage frame and make sure it is correctly installed. If the tool is mechanically damaged, replace it.
		Make sure the film sensitivity sensor (extensometer) is not electrically damaged	Film sensitivity sensor electrical fault	Calibrate the tool (extensometer)
		Make sure the load cell/pre-stretch motor inverter (extensometer) signal amplifier board is not electrically defective	Film sensitivity sensor electrical fault	Calibrate the tool (extensometer)

DETAILED INVERTER CARDS ALARMS CODES

In the case of inverter E31, E32, E33 alarm, usually a **label** is displayed next to the alarm number as on the below example

following the table below:

Decimal Value	Label	Alarm description.
1	Driver L	Inverter logic control voltage low
2	Driver H	Inverter logic control voltage too high
4	Over V	Internal DC BUS Overvoltage
8	Max V	Internal DC BUS Over maximum rating
16	Under V	Internal DC BUS Undervoltage
32	HW Max I	Istantaneous Overcurrent > 8A (it may appears even in case of Harware Fault on motor driver)
64	OverHeat	Inverter overtemperature.
128	Phase	Phase Fail. (Current is widely different on one of the three phases)
256	Max I	Overcurrent. (Output current higher than value set into parameter for almost 1 second.)
512	Int I	I2t Overcurrent
1024	P Wrong	Encoder parameter not set. It occur when a motor with encoder is expected but the corresponding parameter is not set.
2048	Comm	Communication Fail between Inverter and PLC
4096	Driver A	Signal Driver Enable missing on Inverter motor 1
8192	Driver B	Signal Driver Enable missing on Inverter motor 2

APPENDIX 1 : Security module SG BWS T4 for TP photocells

Below is an extract from the technical manual of the SG BWS T4 safety module for TP photocells

for a more in-depth analysis of the component, please read the technical manual of the component (ask Robopac service)