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P1R11FE30 - 001 : Setup and Connections

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Informations

Release

This document is fully valid, except for errors or omissions.

Release	Description	Date
1.0	New manual.	06/11/13

Specifications

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Description

The **P1R11FE30 - 001 application**, installed on the *Qmove J1-R11-FE30*, hardware is designed to control a cookies dispensing machine with 4 axes. The salient features of the **P1R11FE30 - 001** are described below.

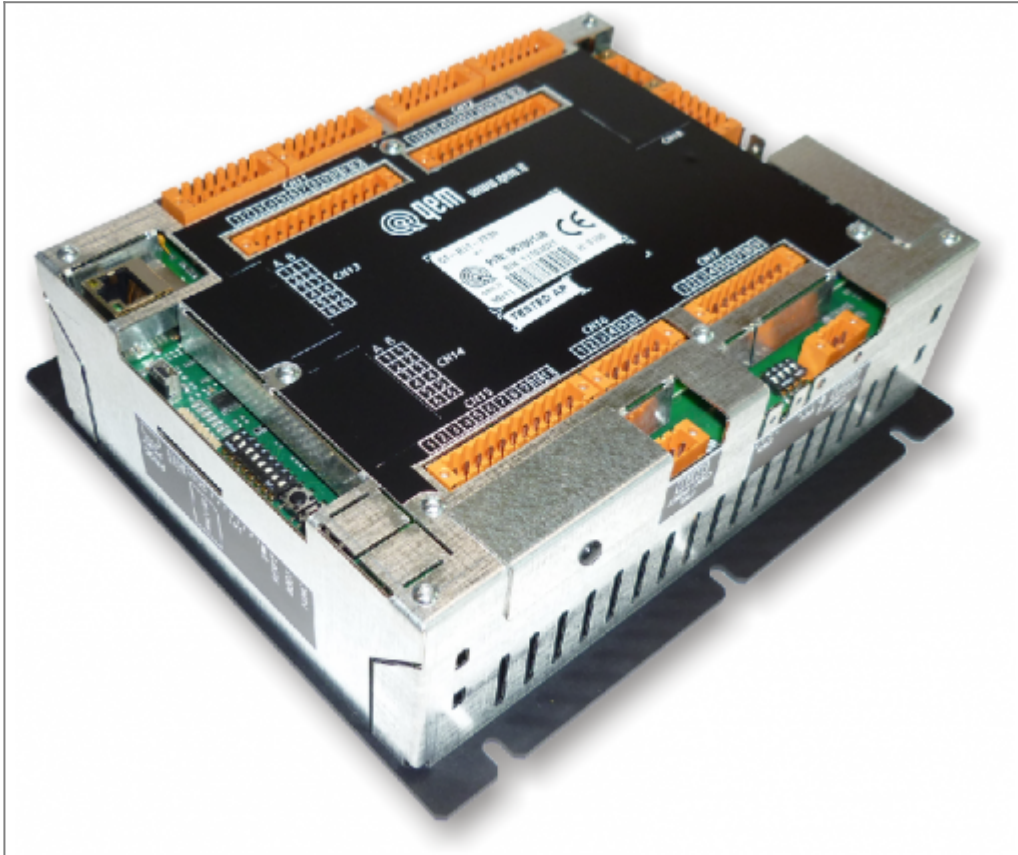
The manual will distinguish between **standard** characteristics and **optional**. characteristics.

Overview of the Characteristics

- Axes MMB, MMC, MCB controlled by PID on space (brushless motors with servo drives or asynchronous motors with vector inverters).
- Axis MT for the conveyor. Only encoder simulation signal is provided.
- Homing functions for axes MMB, MMC, MCB.
- Select the language
- Modbus communication with ESA hmi panel.
- Diagnostics of the inputs and the outputs.
- Messages for active faults, to assist troubleshooting.
- Help Messages.
- Backup and restore of the data on non volative memory (FLASH EPROM).

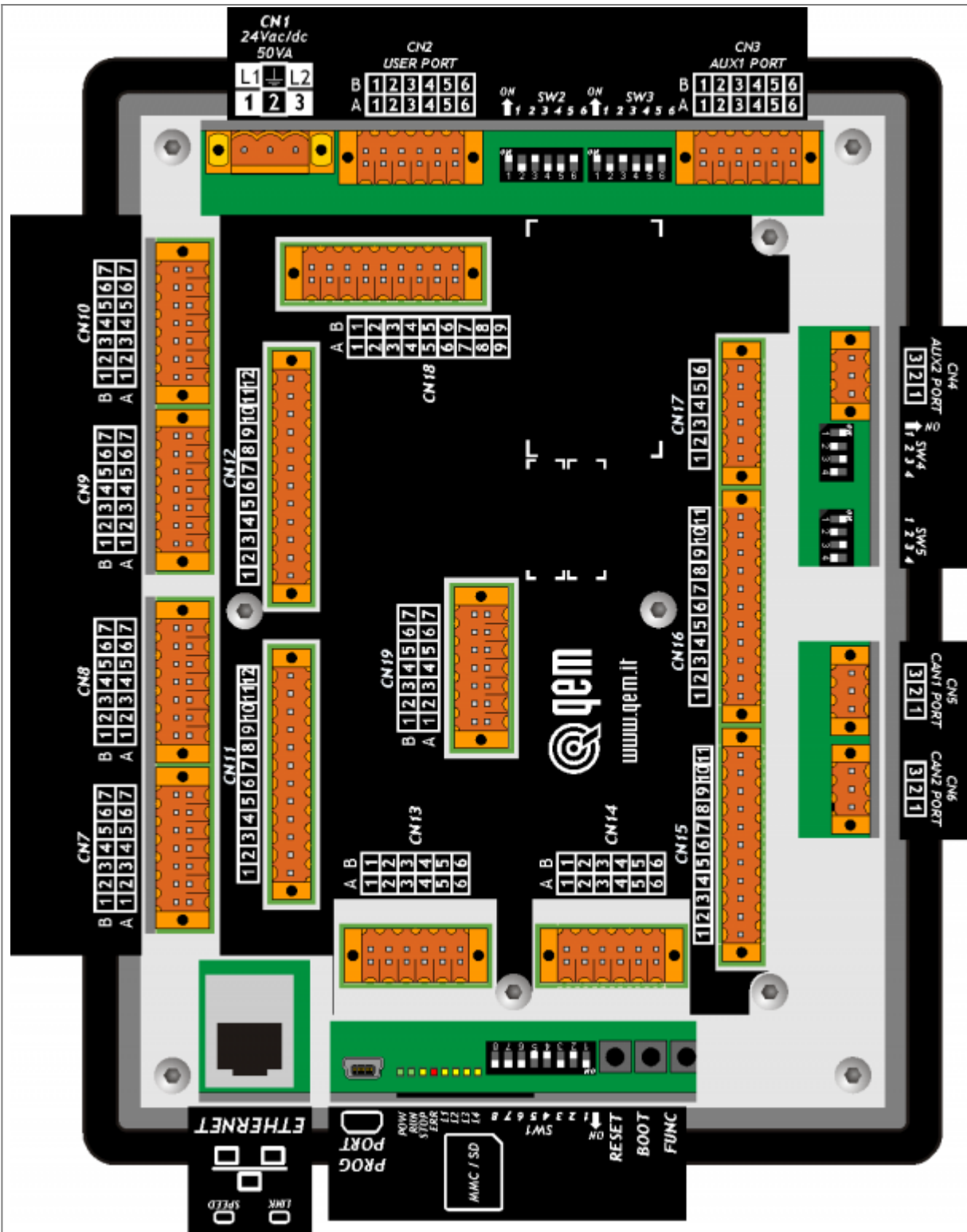
Hardware and wirings

C1-R11-FE30



General view of C1-R11FE30





Rear view of SLOT3 of C1-R11FE30 - 1MG5F card

A1-HMI-QC050



General view of A1-HMI-QC050

1MG5F card

Slot supply

Use an isolated power unit with 24Vdc +/-5% output conform to EN60950-1. There will be no internal fuse.

External connections

- PROG PORT → Serial port for programming with TTL standard logic.
- USER PORT → Multistandard serial for hmi connection (RS232, RS422, RS485)
- AUX RS485 PORT → Serial port with RS485 standard.
- ETHERNET PORT → RJ45 connection. For programming.
- CAN PORT → “field bus” Canbus type.

Nr. 1 MMC/SD slot for data saving/loading.

I/O List

This section shows all I/O divided in each connector. For more detailed description, see next sections about single connector pins.

Digital inputs (n. 16)

ID	DESCRIPTION	CONNECTOR	HARDWARE
I1	Fault MMB driver	CN11	C1R11-FE30
I2	Fault MMC driver		
I3	Fault MCB driver		
I4	Start (1)/Stop (0) synchronism		
I5	Emergency		
I6	Enabling Switch Zero MMB axis		
I7	Enabling Switch Zero MMC axis		
I8	Enabling Switch Zero MCB axis		
I9	Manual (0) / Automatic (1) selector	CN12	C1R11-FE30
I10	Start Homing		
I11	Jog forward selected axis		
I12	Jog backward selected axis		
I13	MMB axis selection for jog movements		
I14	MMC axis selection for jog movements		
I15	MCB axis selection for jog movements		
I16	Free		

Digital outputs (n. 16)

ID	DESCRIPTION	CONNECTOR	HARDWARE
O1	Reset MMB driver	CN15	C1R11-FE30
O2	Reset MMC driver		
O3	Reset MCB driver		
O4	Cycle on signal		
O5	Enable MMB driver		
O6	Enable MMC driver		
O7	Enable MCB driver		
O8	Emergency Normally closed		
O9	Emergency state lamp	CN16	C1R11-FE30
O10	Manual state lamp		
O11	Homing done - machine ready		
O12	<i>Free</i>		
O13	<i>Free</i>		
O14	<i>Free</i>		
O15	<i>Free</i>		
O16	<i>Free</i>		

Bidirectional counters (n° 4)

ID	DESCRIPTION	CONNECTOR	HARDWARE
PHA1 PHB1	MMB axis	CN7	C1R11-FE30
PHA2 PHB2	MMC axis	CN8	
PHA3 PHB3	MCB axis	CN9	
PHA4 PHB4	MT axis	CN10	

Analog inputs (n. 2)

ID	DESCRIPTION	CONNECTOR	HARDWARE
AI1	<i>Free</i>	CN18	C1R11-FE30
AI2	<i>Free</i>		

Analog outputs (n. 4)

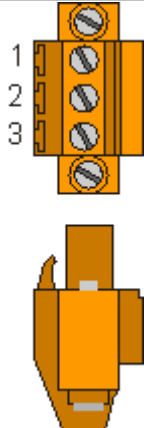
ID	DESCRIPTION	CONNECTOR	HARDWARE
AO1	MMB axis speed control $\pm 10V_{dc}$	CN17	C1R11-FE30
AO2	MMC axis speed control $\pm 10V_{dc}$		
AO3	MCB axis speed control $\pm 10V_{dc}$		
AO4	<i>Free</i>		

Electric connections

C1-R11-FE30

CN1- Power supply (Slot supply)

Power supplies available	24 Vdc	24 Vac
Voltage range	22 ÷ 27 Vdc	+/-15%
Max. absorption	30W	35VA
Frequency		50/60Hz

	1	AC power phase/ DC power positive
	2	Gnd-PE (signals)
	3	AC power phase/ DC power 0V

CN2 - PORTA USER. Multistandard serial RS232-RS422-RS485 (isolated)

Serial port used to connect hmi with MODBUS RTU (RS485). NB. This port can be used also to connect wit A1-HMI-QC050 in RS422.

1A	1B	1A	Terminal A - RS485
2A	2B	2A	Terminal B - RS485
3A	3B	3A	USER PORT common
4A	4B	4A	USER PORT common
5A	5B	5A	Terminal TX - RS232
6A	6B	6A	PE - Ground.
		1B	Terminal RX - RS422
		2B	Terminal RX N - RS422
		3B	Terminal RX - RS422
		4B	Terminal TX N - RS422
		5B	Terminal RX - RS232
		6B	PE - Ground.

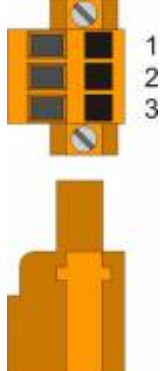
Setup of USER PORT electric standard

SW2	Num. Dip	Name DIP	Setting of DIP			Function
1	1	JP2	ON	X ¹⁾	X ²⁾	Termination RS485
2	2	JP3	ON	X ³⁾	X ⁴⁾	Polarisation RS485
3	3	JP1	ON	X ⁵⁾	X ⁶⁾	
4	4		OFF	ON	OFF	Selection of USER PORT electric standard
5	5		ON	OFF	OFF	
6	6		OFF	OFF	ON	
ON ↔ OFF			RS485	RS422	RS232 ⁷⁾	

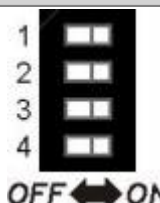
^{1), 2), 3), 4), 5), 6)} X = setting not significant

⁷⁾ the USER PORT can be used as PROG PORT with RS232 electric standard, setting ON in DIP-8 of [SW1](#) and OFF in DIP-6 of [SW2](#)

CN4 - AUX2 RS485 PORT

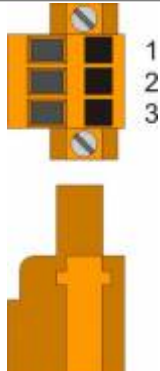
	1	0 Volt - RS485 serial common
	2	Terminal RS485 B
	3	Terminal RS485 A

Setup of AUX2 PORT polarisation and termination resistances

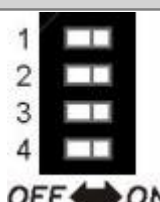
SW4	Num. Dip	Name Dip	Setting of DIP	Function
	1	JP3	ON	Polarisation RS485
	2	JP2	ON	Termination RS485
	3	JP1	ON	Polarisation RS485
	4		X ¹⁾	None

¹⁾ X = setting not significant

CN5 - CAN PORT

	1	0 Volt - CAN common
	2	Terminal CAN L
	3	Terminal CAN H

Setup of CAN1 PORT Termination resistances

SW5	Num. Dip	Name Dip	Setting of DIP	Function
	1	JP1	ON	Termination CAN1
	2	JP2	ON	
	3	-	-	Not used
	4	-	-	

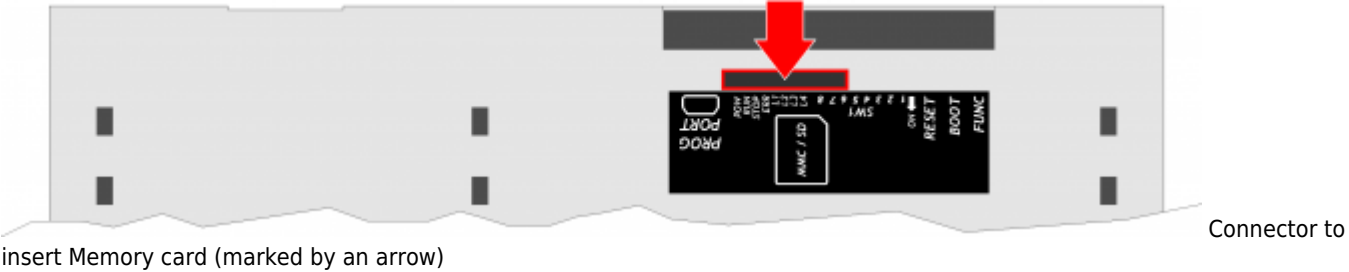


- If the termination of CAN1 port is activated, both relative DIP JP1 and JP2 must be activated.

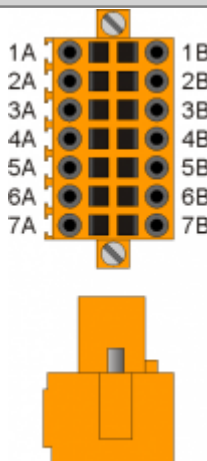
ETHERNET PORT

ETHERNET PORT	Description
	Connector RJ45. LED: * LINK: green led = cable connected (led on indicates that the cable is connected to both ends) * DATA: yellow led = data transmission (flashing led indicates data transmission between the devices connected)

MMC/SD



CN7 - 1 counter (PP, LD) - MMB axis

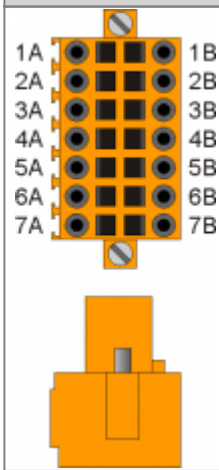
Connector	Pin	ID	Description		Address		
	1A		Internal bridge - 1A to 1B				
	2A	PHA1	A phase counter 1	PNP Push-Pull ¹⁾	3.INP17	3.CNT01	
	3A	PHB1	B phase counter 1		3.INP18		
	4A	Z1	Z phase counter 1		1.INT01		
	5A	0V	Common for count inputs				
	6A	0V					
	7A	0V					
	1B		Internal bridge - 1A to 1B				
	2B	PHA1+	+ PHA counter 1	Line Driver	3.INP17	3.CNT01	
	3B	PHB1+	+ PHB counter 1		3.INP18		
	4B	Z1+	+ Z counter 1		1.INT01		
	5B	PHAN1	- PHA counter 1				
	6B	PHBN1	- PHB counter 1				
	7B	ZN1	- Z counter 1				

¹⁾ :

PNP/Push-Pull type count configuration:

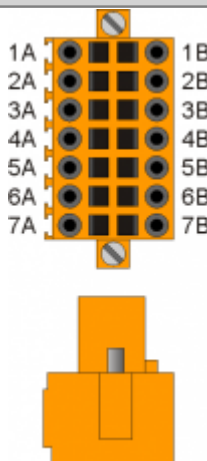
- Terminal 5B: connect to terminal 5A
- Terminal 6B: connect to terminal 6A
- Terminal 7B: connect to terminal 7A

CN8 - 1 counter (PP, LD) - MMC axis

Connettore	Pin	ID	Description	Address			
	1A		Internal bridge - 1A to 1B				
	2A	PHA2	A phase counter 2	PNP Push-Pull ¹⁾	3.INP19	3.CNT02	
	3A	PHB2	B phase counter 2		3.INP20		
	4A	Z2	Z phase counter 2		1.INT02		
	5A	0V	Common for count inputs				
	6A	0V					
	7A	0V					
	1B		Internal bridge - 1A to 1B				
	2B	PHA2+	+ PHA counter 2	Line Driver	3.INP19	3.CNT02	
	3B	PHB2+	+ PHB counter 2		3.INP20		
	4B	Z2+	+ Z counter 2		1.INT02		
	5B	PHAN2	- PHA counter 2				
	6B	PHBN2	- PHB counter 2				
	7B	ZN2	- Z counter 2				

¹⁾ :
PNP/Push-Pull type count configuration:
- Terminal 5B: connect to terminal 5A
- Terminal 6B: connect to terminal 6A
- Terminal 7B: connect to terminal 7A

CN9 - 1 counter (PP, LD) - MCB axis

Connettore	Pin	ID	Description		Address	
	1A		Internal bridge - 1A to 1B			
	2A	PHA3	A phase counter 3	PNP Push-Pull ¹⁾	3.INP21	3.CNT03
	3A	PHB3	B phase counter 3		3.INP22	
	4A	Z3	Z phase counter 3		1.INT03	
	5A	0V	Common for count inputs			
	6A	0V				
	7A	0V				
	1B		Internal bridge - 1A to 1B			
	2B	PHA3+	+ PHA counter 3	Line Driver	3.INP21	3.CNT03
	3B	PHB3+	+ PHB counter 3		3.INP22	
	4B	Z3+	+ Z counter 3		1.INT03	
	5B	PHAN3	- PHA counter 3			
	6B	PHBN3	- PHB counter 3			
	7B	ZN3	- Z counter 3			

¹⁾ :

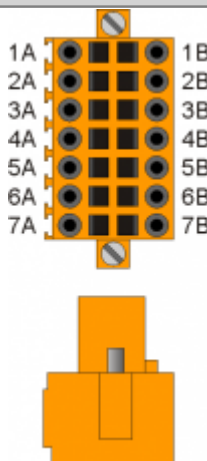
PNP/Push-Pull type count configuration:

- Terminal 5B: connect to terminal 5A

- Terminal 6B: connect to terminal 6A

- Terminal 7B: connect to terminal 7A

CN10 - 1 counter (PP, LD) - MT axis

Connector	Pin	ID	Description	Address		
	1A		Internal bridge - 1A to 1B			
	2A	PHA4	A phase counter 4	PNP Push-Pull ¹⁾	3.INP23	3.CNT04
	3A	PHB4	B phase counter 4		3.INP24	
	4A	Z4	Z phase counter 4		1.INT04	
	5A	0V	Common for count inputs			
	6A	0V				
	7A	0V				
	1B		Internal bridge - 1A to 1B			
	2B	PHA4+	+ PHA counter 4	Line Driver	3.INP23	3.CNT04
	3B	PHB4+	+ PHB counter 4		3.INP24	
	4B	Z4+	+ Z counter 4		1.INT04	
	5B	PHAN4	- PHA counter 4			
	6B	PHBN4	- PHB counter 4			
	7B	ZN4	- Z counter 4			

¹⁾ :

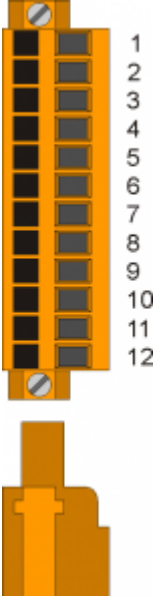
PNP/Push-Pull type count configuration:

- Terminal 5B: connect to terminal 5A

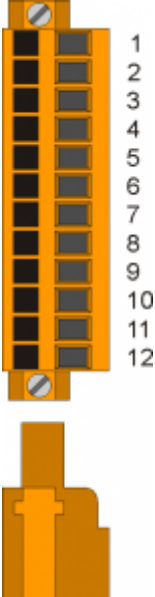
- Terminal 6B: connect to terminal 6A

- Terminal 7B: connect to terminal 7A

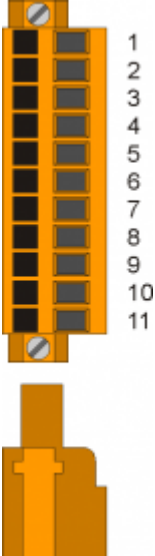
CN11 - 8 standard digital inputs + 1 rapid input (PNP)

Connector	Pin	ID	Description	Address
	1	-	Free	
	2	-	Free	
	3	0V	Vout (0 V) - Common for digital inputs I1÷I8	
	4	I1	Fault MMB driver	3.INP01
	5	I2	Fault MMC driver	3.INP02
	6	I3	Fault MCB driver	3.INP03
	7	I4	Start (1)/Stop (0) synchronism	3.INP04
	8	I5	Emergency	3.INP05
	9	I6	Enabling Switch Zero MMB axis	3.INP06
	10	I7	Enabling Switch Zero MMC axis	3.INP07
	11	I8	Enabling Switch Zero MCB axis	3.INP08
	12	0V	Vout (0 V) - Common for digital inputs I1÷I8	

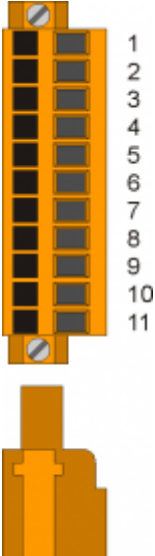
CN12 - 8 standard digital inputs + 1 rapid input (PNP)

Connector	Pin	ID	Description	Address
	1	-	Free	
	2	-	Free	
	3	0V	Vout (0 V) - Common for digital inputs I9÷I16	
	4	I9	Manual (0) / Automatic (1) selector	3.INP09
	5	I10	Start Homing	3.INP10
	6	I11	Jog forward selected axis	3.INP11
	7	I12	Jog backward selected axis	3.INP12
	8	I13	MMB1 axis selection for jog movements	3.INP13
	9	I14	MMB2 axis selection for jog movements	3.INP14
	10	I15	MCB axis selection for jog movements	3.INP15
	11	I16	Free	3.INP16
	12	0V	Vout (0 V) - Common for digital inputs I9÷I16	

CN15 - 8 protected digital outputs (24V - 0,5 A)

Connector	Pin	ID	Description	Address
	1	V+	Outputs power in (12-28Vdc)	
	2	O1	Reset MMB driver	3.OUT01
	3	O2	Reset MMC driver	3.OUT02
	4	-	n.c.	
	5	O3	Reset MCB driver	3.OUT03
	6	O4	Cycle on signal	3.OUT04
	7	0V	Outputs power in (12-28Vdc)	
	8	O5	Enable MMB driver	3.OUT05
	9	O6	Enable MMC driver	3.OUT06
	10	O7	Enable MCB driver	3.OUT07
	11	O8	Emergency Normally closed	3.OUT08

CN16 - 8 protected digital outputs (24V - 0,5 A)

Connector	Pin	ID	Description	Address
	1	V+	Outputs power in (12-28Vdc)	
	2	O9	Emergency state lamp	3.OUT09
	3	O10	Manual state lamp	3.OUT10
	4	-	n.c.	
	5	O11	Homing done - machine ready	3.OUT11
	6	O12	Free	3.OUT12
	7	0V	Outputs power in (12-28Vdc)	
	8	O13	Free	3.OUT13
	9	O14	Freer	3.OUT14
	10	O15	Free	3.OUT15
	11	O16	Free	3.OUT16

CN17 - 4 analog outputs

Connector	Pin	ID	Description	Address
	1	GA01	Common for analog outputs A01÷A02	
	2	A01	MMB axis speed control $\pm 10\text{Vdc}$	3.AN01
	3	A02	MMC axis speed control $\pm 10\text{Vdc}$	3.AN02
	4	GA02	Common for analog outputs A03÷A04	
	5	A03	MCB axis speed control $\pm 10\text{Vdc}$	3.AN03
	6	A04	<i>Free</i>	3.AN04

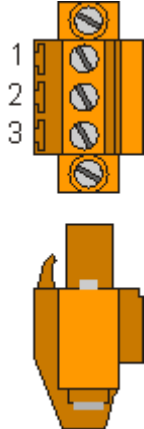
CN18 - 2 analog inputs, 12bit potentiometric, voltmetric and amperometric

All inputs are ***Free***

A1-HMI-QC050

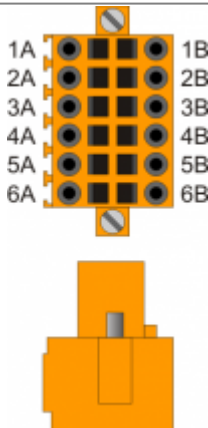
CN1- Power supply (Slot supply)

Power supplies available	24 Vdc	24 Vac
Voltage range	22 ÷ 27 Vdc	+/-15%
Max. absorption	30W	35VA
Frequency		50/60Hz

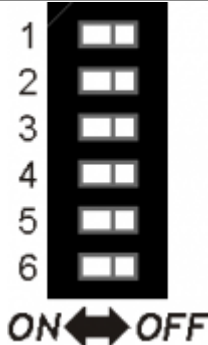
	1	AC power phase/ DC power positive
	2	Gnd-PE (signals)
	3	AC power phase/ DC power 0V

CN2 - PORTA USER. Multistandard serial RS232-RS422-RS485 (isolated)

Serial port used to connect hmi with C1-R11-FE30 (RS422).

	1A	Terminal A - RS485
	2A	Terminal B - RS485
	3A	USER PORT common
	4A	USER PORT common
	5A	Terminal TX - RS232
	6A	PE - Ground.
	1B	Terminal RX - RS422
	2B	Terminal RX N - RS422
	3B	Terminal RX - RS422
	4B	Terminal TX N - RS422
	5B	Terminal RX - RS232
	6B	PE - Ground.

Setup of USER PORT electric standard

SW2	Num. Dip	Name DIP	Setting of DIP			Function
	1	JP2	ON	X ¹⁾	X ²⁾	Termination RS485
	2	JP3	ON	X ³⁾	X ⁴⁾	Polarisation RS485
	3	JP1	ON	X ⁵⁾	X ⁶⁾	
	4		OFF	ON	OFF	Selection of USER PORT electric standard
	5		ON	OFF	OFF	
	6		OFF	OFF	ON	
			RS485	RS422	RS232⁷⁾	

^{1), 2), 3), 4), 5), 6)} X = setting not significant

⁷⁾ the USER PORT can be used as PROG PORT with RS232 electric standard, setting ON in DIP-8 of [SW1](#) and OFF in DIP-6 of [SW2](#)

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