4.3 Expansion Module MAC00-FD4

Expansion module MAC00-FD4 front plate

BUS1
Primary DeviceNet connector.
M12 - 5pin male connector including: DeviceNet interface

BUS2
Second DeviceNet connector
M12 - 5pin female connector including: DeviceNet interface

PWR
Power
M12 - 5pin male connector including: *P+, P- and secondary supply (optional).*

I/O
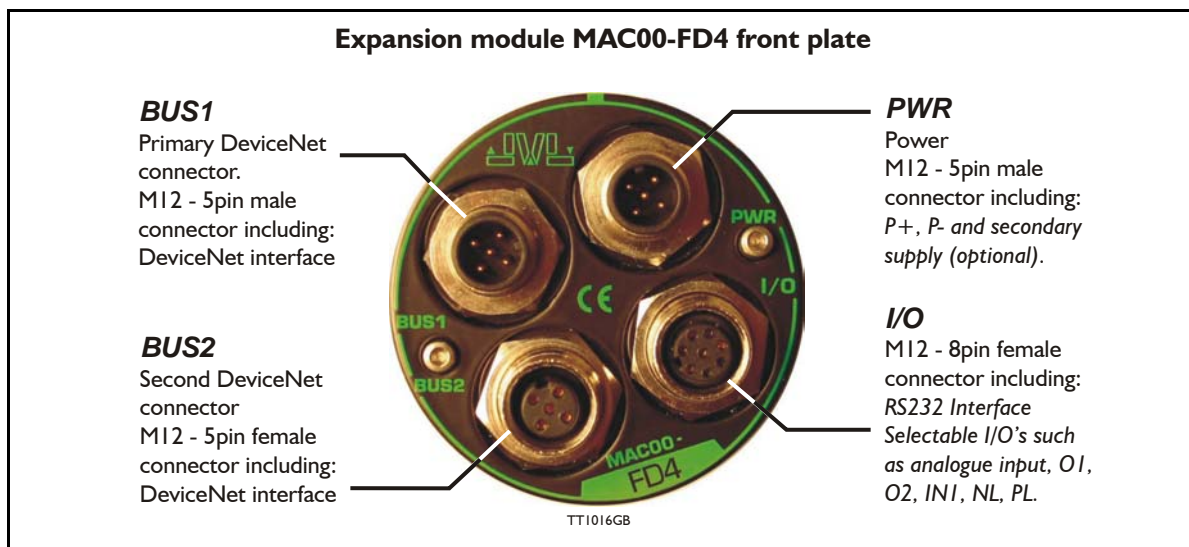M12 - 8pin female connector including: *RS232 Interface Selectable I/O's such as analogue input, O1, O2, IN1, NL, PL.*

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4.3.10 Expansion MAC00-FD4 hardware description

The MAC00-FD4 offers a IP67 protection and M12 connectors which makes it ideal for automation applications where no additional protection is desired. The M12 connectors offers a solid mechanical protection and are easy operate. The available I/O signals are restricted since only 4 I/O terminals are available. The I/O's connected to these 4 terminals must be selected by a small dipswitch.

The connector layout:

"PWR" - Power input. M12 - 5pin male connector				
Signal name	**Description**	**Pin no.**	**JVL Cable WI1000M12 F5A05N**	**Isolation group**
P+	Main supply +12-48VDC. Connect with pin 2 *	1	Brown	1
P+	Main supply +12-48VDC. Connect with pin 1 *	2	White	1
P-	Main supply ground. Connect with pin 5 *	3	Blue	1
CV	Control voltage +12-48VDC.	4	Black	1
P-	Main supply ground. Connect with pin 3 *	5	Grey	1
* Note: P+ and P- is each available at 2 terminals. Make sure that both terminals are connected in order to split the supply current in 2 terminals and thereby avoid an overload of the connector.				

"BUS1" - DeviceNet interface. M12 - 5pin male connector				
Signal name	**Description**	**Pin no.**	**Cable: user supplied**	**Isolation group**
Drain	Shield for the DeviceNet interface - internally connected to the motor housing	1	-	2
V+	DeviceNet supply. Notice that the MAC00-FP4 does only sense at this terminal. The MAC00-FP4 contains its own power supply	2	-	2
V-	DeviceNet ground	3	-	2
CAN_H	DeviceNet interface. Positive signal line	4	-	2
CAN_L	DeviceNet interface. Negative signal line	5	-	2

4.3 Expansion Module MAC00-FD4

"BUS2" - DeviceNet interface. M12 - 5pin female connector				
Signal name	**Description**	**Pin no.**	**Cable: user supplied**	**Isolation group**
Drain	Shield for the DeviceNet interface - internally connected to the motor housing.	1	-	2
V+	DeviceNet supply. Notice that the MAC00-FP4 does only sense at this terminal. The MAC00-FP4 contains its own power supply.	2	-	2
V-	DeviceNet ground.	3	-	2
CAN_H	DeviceNet interface. Positive signal line.	4	-	2
CAN_L	DeviceNet interface. Negative signal line.	5	-	2

"IO" - I/O's and RS232 interface. M12 - 8pin female connector.					
Signal name	**Description**	**Function**	**Pin no.**	**JVL Cable WI1000-M12 M8A05N**	**Isolation group**
IOC	I/O terminal C.	DIP 5 = OFF : *PL* input DIP 5 = ON : *O1* output	1	White	3
Tx	RS232 interface - transmit output Important !: DIP1 must be turned ON. If addressing is used it must be turned ON at minimum one of the connected motors.		2	Brown	1
Rx	RS232 interface - receive input		3	Green	1
GND	RS232 Ground - also used with analogue input		4	Yellow	1
IOA	I/O terminal A.	DIP 2 = ON and DIP3 = OFF : *AIN* (Analogue input) DIP2 = OFF and DIP 3 = ON : *O2* (output 2) (*AIN* is the analogue input. Remember to use the GND terminal with AIN !).	5	Grey	3 (1 when used as AIN)
IOB	I/O terminal B.	DIP 4 = OFF : *IN1 (input 1)* DIP 4 = ON : *O1* (output 1)	6	Pink	3
IO-	I/O ground to be used with IN1, NL, PL, O1, O2		7	Blue	3
IOD	I/O terminal D.	DIP 6 = OFF : *NL* (negative limit input) DIP 6 = ON : *O+* (output supply)	8	Red	3

Cable Screen
Some standard cables with M12 connector offers a screen around the cable. This screen is at some cables fitted to the outer metal at the M12 connector. When fitted to the MAC00-FD4 module this means that the screen will get in contact with the complete motor housing and thereby also the power ground (main ground).

Isolation groups
The MAC00-FD4 offers optically isolation at the digital inputs and outputs (IN1, NL, PL and O1-2). In the table is shown a number for each pin. This number refers to which isolation group it is connected to.
Isolation group 1 means that the terminal refers to the main ground (P-, GND and the motor housing).
Isolation group 2 means that the terminal refers to the DeviceNet interface ground (V-).
Isolation group 3 means that the terminal refers to the I/O ground (IO-)

Defaults: Dip1-6 : ON, ON, OFF, OFF, ON, ON = TXPD:ON / IOA:AIN / IOB:IN1 / O1 / O+

4.3.11 Cables for the MAC00-FD4

Following cables equipped with M12 connector can be supplied from JVL.

JVL Type no.	Description	Length (m)
WI1000-M12F5A05N	Cable with M12 **female** 5 pin 90 degree connector. Flying leads	5
WI1000-M12M5A05N	Cable with M12 **male** 5 pin 90 degree connector. Flying leads	5
WI1000-M12F8A05N	Cable with M12 **female** 8pin 90 degree connector. Flying leads	5
WI1000-M12M8A05N	Cable with M12 **male** 8pin 90 degree connector. Flying leads	5
WI1000-M12FCAP1	IP67 protection cap for M12 female connector.	-
WI1000-M12MCAP1	IP67 protection cap for M12 male connector.	-