

Process Control Modules for JVL MAC Motors. MAC00-P5 and MAC00-P4

The MAC00-P4 and MAC00-P5 are expansion modules for the integrated servo motors MAC400 and MAC800. The modules are intended to be used for control application requiring an analogue 4-20mA, 16bit interface to a master controller.

The interface consists of a 4-20mA input to control the motor position and a 4-20mA output to indicate the actual position. Both offers full galvanic isolation from other electrical circuitries inside the motor and also in between.

An output is also available to indicate if any error has occurred that prevent the motor from doing the intended operation. This output is also galvanically isolated.

If a second motor need to function as a slave, the MAC00-P4/P5 modules also offer this possibility.

A high speed communication interface makes it possible to handle a secondary motor configured as "slave" which means that the communication protocol always makes sure that the slave follows the master motor. In case of an error in either the slave or master any further motion is stopped in both motors.

The modules contain no intelligence (microprocessor) meaning that all functionality is controlled via the basic motor where the module is inserted. The MAC00-P4/P5 expansion modules offer an industrial interface and a number of feature enhancements, including:

- Standard M12 and Harting connectors.

(MAC00-P5) for optimum reliability.

- Standard M12 connectors. (MAC00-P4)
- 4-20mA analogue input. Resolution 16 bit (65535 steps). Galvanically isolated.
- 4-20mA analogue output. Resolution 16 bit (65535 steps). Galvanically isolated.
- Error output. Galvanically isolated.
- Modbus interface
- Communication interface to slave motor (includes +24V power to the

slave motor)

- Optically isolated communication covering RS232, RS485.
- Full RS232 protocol support for use with standard serial cable.
- RS232 Communication interface to a PC for setup and monitoring use.
- Supply input for the control section in the motor. Is also used to the slave motor if present.



MAC800 with Module MAC00-P5 on linear guide for fuel injection control



MAC800 with Module MAC00-P5 for control of industrial valve

Pin Connections

"CNT"- Control I/O M12 8pin female connector Only MAC00-P4

Signal name	Description	Pin no.
AIN+	4-20mA input. Positive terminal	1
AIN-	4-20mA input. Negative terminal	2
AOUT+	4-20mA output	3
AOUT-	4-20mA output	4
MIN2	Input reserved	5
OUT2	Output reserved	6
OUT1	Error output	7
O+	Supply output	8

"PWR" M12 5pin male connector. Only MAC00-P4

Signal name	Description	Pin no.
P+	Bus voltage	1
P+	Bus voltage	2
P-	Main ground	3
CVI	Control voltage	4
P-	Main ground	5

"CNT" - Control I/O. Harting 3HAN-8-pin male connector Only MAC00-P5

Signal name	Description	Pin no.
AIN+	4-20mA input. Positive terminal	1
AIN-	4-20mA input. Negative terminal	2
AOUT+	4-20 mA output. Positive terminal. Apply 7 to 24V to this terminal if internal AOUT supply is disabled.	3
AOUT-	4-20mA output. Negative terminal.	4
O+	Supply term. to the error output. Apply 24VDC.	5
OUT1	Error output. PNP output.	6
P+ (CVI1)	Control supply input +12-28VDC. Consumption typically 350mA@24VDC and 700mA@24VDC if a slave motor is connected. At MAC00-P5 the CVI1 is not present but CVI1 is internally hardwired to P+.	7
P-	Main ground to be used with CVI1 and CVI2.	8

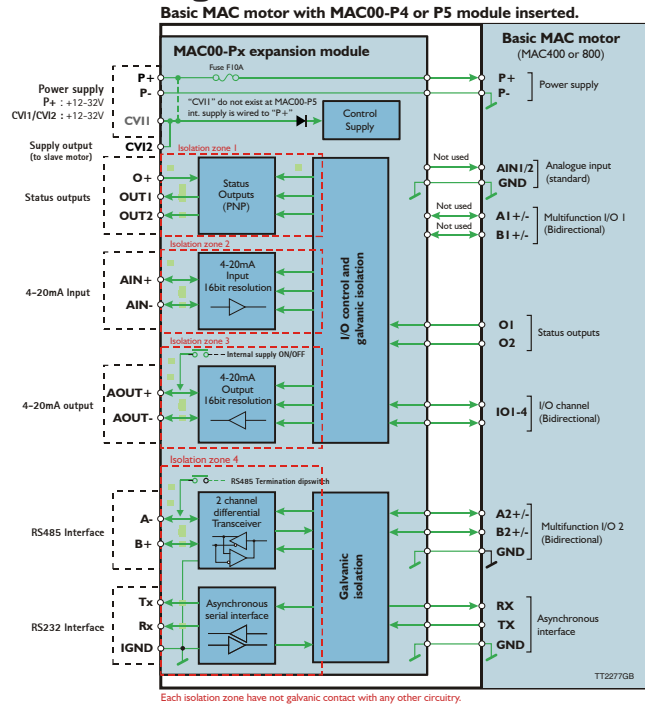
"COM" Communication connector-M12-5pin male connector MAC00-P5 and MAC00-P4

RS232:TX	RS232 interface. Transmit terminal. Leave open if unused.	1
RS232:RX	RS232 interface. Receive terminal. Leave open if unused.	2
IGND	Ground intended to be used together with the other signals in the connector.	3
RS485: A-	RS485 interface. Leave open if unused.	4
RS485: B+	RS485 interface. Leave open if unused.	5

"SLV"-Slave connector-M12-5pin male connector MAC00-P5 and MAC00-P4

RS485: A-	RS485 Modbus. Positive terminal.	1
RS485: B+	RS485 Modbus. Negative terminal.	4
CVI2	Supply output (optionally input) +12-28VDC. Hardwired internally to the main power P+.	2
GND	Ground to be used with CVI2. This ground is hardwired internally to the main power ground P-.	3
IGND	Multifunction I/O2 terminal B2+.	5

Block Diagram



Specifications

Analogue In/Output	16bit/65535 steps
P+	+12-32VDC
CVI	+12-32VDC
IO+	5-32VDC
RS232	9.6kbit -230.4kbit
RS485 (Modbus)	9.6kbit - 1 Mbit

Accessories

RS232-M12-1-5-5	RS232 Interface Cable. Length 5m.
WI1005-M12F5TF5T03P	Master to slave communication cable for synchronization. Length 3m.
WI1000-M12F5T05N	M12 Cable for power supply. Female 5 pin. Length 5m.



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