

SAFETY SPEED MONITORING MODULES MOSAIC MV0/MV1/MV2

The Mosaic MV0/MV1/MV2 expansion modules allow the monitoring (PLe) of:

- * Zero speed
- * Max speed
- * Speed range
- * Motion direction; rotation / translation.

The modules allow to configure up to 4 speed thresholds for each logic output (axis).

Each module integrates two logic outputs configurable via the MSD and is therefore capable to control up to two independent axes.

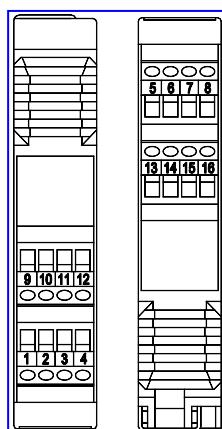
- * RJ45 for encoder connections (1 of MV1, MV2 of 2) and terminal blocks for connection of proximity (up to 2 proximity switches per module).
- * Inputs frequency: Encoder up to 500 KHz (300 KHz for HTL);
Proximity up to 5 KHz.



MV2 safety module

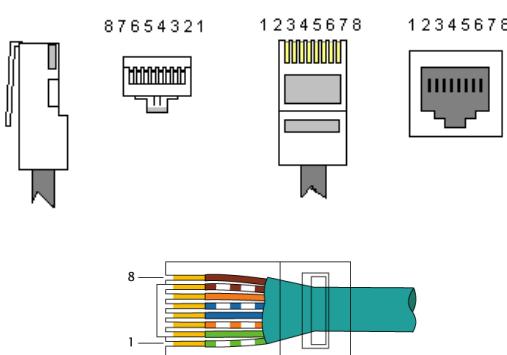
Electrical connections

PROXIMITY
CONNECTIONS ON
TERMINAL BLOCKS



PIN	SIGNAL	IN/OUT	FUNCTION
1	24V	IN	24VDC Power Supply
2	NODE_SEL0	IN	Node Selection
3	NODE_SEL1	IN	
4	GND	IN	0VDC Power Supply
5	PROXI1_24V	OUT	
6	PROXI1_REF	OUT	
7	PROXI1 IN1 (3 WIRES)	IN	PROXIMITY 1 connections
8	PROXI1 IN2 (4 WIRES)	IN	
9	PROXI2_24V	OUT	
10	PROXI2_REF	OUT	
11	PROXI2 IN1 (3 WIRES)	IN	PROXIMITY 2 connections
12	PROXI2 IN2 (4 WIRES)	IN	
13	N.C.		
14	N.C.		
15	N.C.		
16	N.C.		Not connected

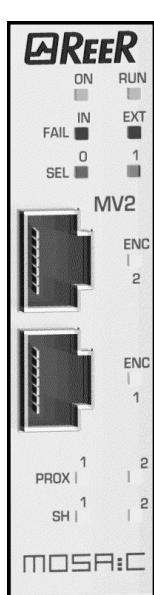
ENCODER CONNECTIONS WITH RJ45 CONNECTOR (MV1, MV2)



PIN	MVT	MVTB	MVH	MVS
1	INPUT	5VDC	N.C.	N.C.
2		EXT_0V	EXT_0V	EXT_0V
3		N.C.	N.C.	N.C.
4		A	A	A
5		Ā	Ā	Ā
6		N.C.	N.C.	N.C.
7		B	B	B
8		Ā	Ā	Ā



Light Signals



ON	RUN	IN FAIL	EXT FAIL	SEL	ENC	PROX	SH
GREEN	GREEN	RED	RED	ORANGE	YELLOW	YELLOW	YELLOW
ON Module turned on	OFF the module waits for the first M1 Communication	OFF operation OK	OFF operation OK	Brings back the table of signals NODE SEL0/1	ON Encoder connected and operative	ON Proximity connected and operative	OFF axis in normal speed range
	BLINKING configuration does not require INPUT or OUTPUT from Module					BLINK. 0,5s Proximity not connected but requested from the configuration	BLINKING axis in overspeed
	ON configuration requires INPUT or OUTPUT from Module					BLINK. 2s Proximity malfunction	ON axis in stand still

Technical data concerning safety

	MV0	MV1	MV1TB	MV2	MV2TB
Device lifetime	20 years				
Safety level	SIL 3 - PL e - Category 4				
PFHd	7,48E-09	8,58E-09 (TTL)	9,32E-09 (TTL)	9,68E-09 (TTL)	1,12E-08 (TTL)
		9,43E-09 (SIN/COS)	-	1,14E-08 (SIN/COS)	-
		8,20E-09 (HTL)	-	8,92E-09 (HTL)	-
MTTFd	411,20	294,44 (TTL)	247,40 (TTL)	229,33 (TTL)	176,93 (TTL)
		241,51 (SIN/COS)	-	170,96 (SIN/COS)	-
		326,32 (HTL)	-	270,49 (HTL)	-
DCavg	99,0%				

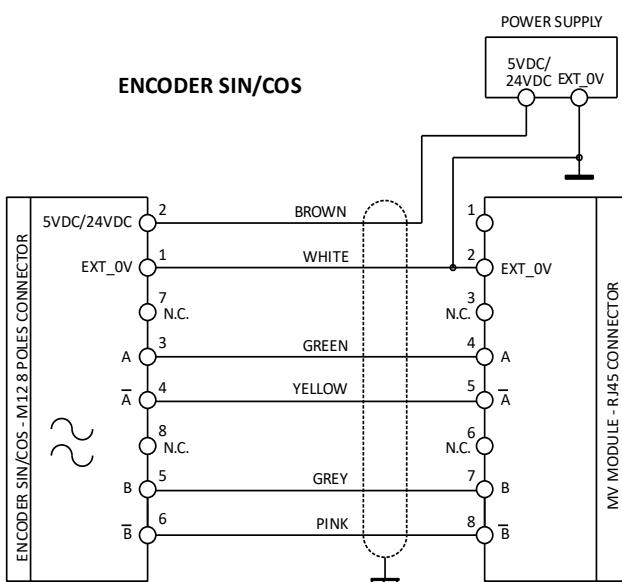
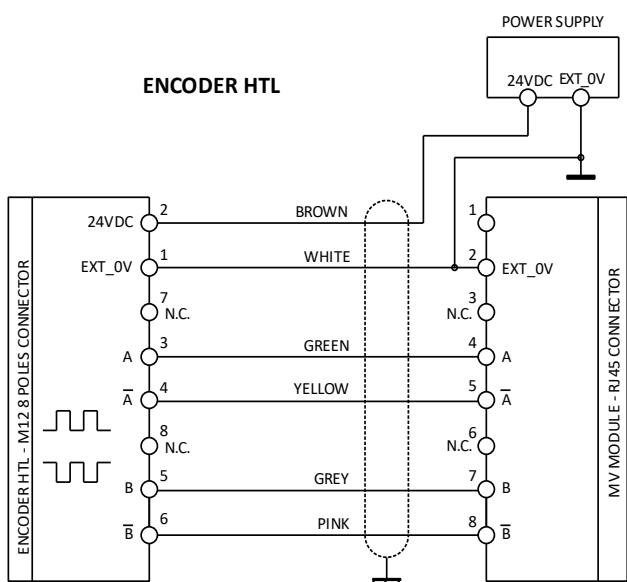
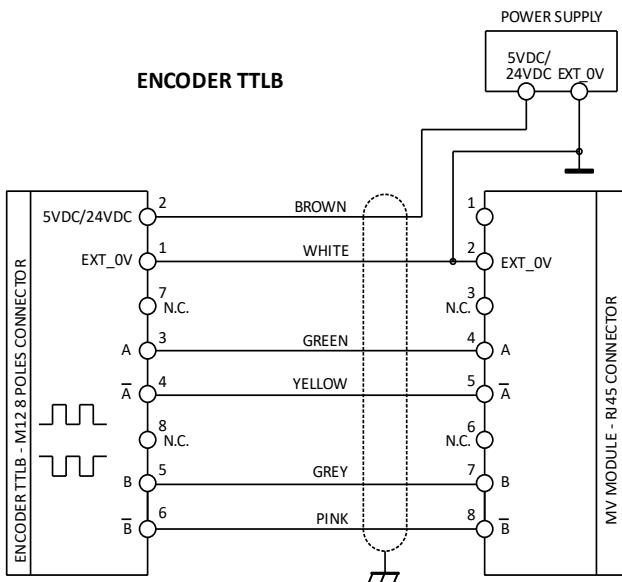
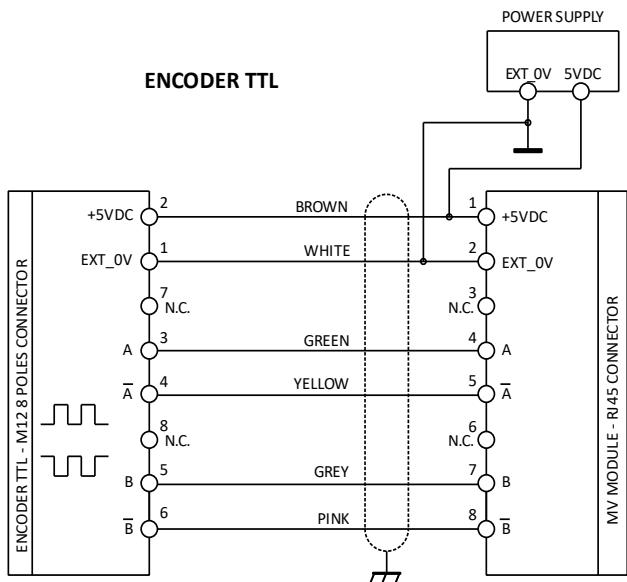


Technical data

	MV0	MV1	MV2
Rated Voltage		24VDC ± 20%	
Power Dissipation max		3W	
Encoder Interface	-	TTL (MV1T - MV2T - MV1TB - MV2TB models) HTL (MV1H - MV2H models) sin/cos (MV1S - MV2S models)	
Input signal data (TTL)	-	Standard RS-422 input Duty-cycle (input A, B) = 50% (± 15%) Phase displacement (input A, B) = 90° (± 40°) Power supply = 5Vdc (± 0,1Vdc)	
Input signal data (TTLB)	-	Standard RS-422 input Duty-cycle (input A, B) = 50% (± 15%) Phase displacement (input A, B) = 90° (± 40°)	
Input signal data (HTL)	-	Standard IEC61131-2 type 2 input Duty-cycle (input A, B) = 50% (± 15%) Phase displacement (input A, B) = 90° (± 40°)	
Input signal data (sin/cos)	-	Input = 1Vac (± 20%) Phase displacement (input A, B) = 90° (± 30°)	
Encoder connections	-	RJ45 connector	
Encoder input signals electrically insulated in accordance with EN 61800-5	-	Rated insulation voltage 250V Overvoltage category II Rated impulse withstand voltage 4.00 kV	
Max number of encoders	-	1	2
Max encoder frequency	-	500KHz (HTL: 300KHz)	
Encoder adjustable threshold range	-	1Hz ÷ 450KHz	
Proximity type		PNP/NPN - 3/4 wires	
Proximity connections		Terminal blocks	
Proximity adjustable threshold range		1Hz ÷ 4KHz	
Max number of proximity		2	
Max proximity frequency		5KHz	
Max number of axes		2	
Stand-still/overspeed frequency gap		> 10Hz	
Min gap between thresholds (with thresholds >1)		> 5%	
Module connection with Master		Via MSC bus	
Operating Temperature		-10 ÷ 55°C	
Storage temperature		-20 ÷ 85°C	
Relative Humidity	max	95%	
Dimensions	(h x l x p)	108 x 22,5 x 114,5 mm	



Encoder <-> MVT/MVTB/MVH/MVS modules connection



Installation - Particular Cautions

- ✓ An inadequate mechanical installation of proximity sensors can cause dangerous operation. Pay particular attention to the size of the phonic wheel and to the mechanical fixing of the sensors.
- ✓ In any condition of expected speed, the MVxxx module must be able to detect the speed. During the installation (and then periodically) perform a complete system test. By using the MSD software or by checking that the LEDs relating to the sensors are lit, make sure that the module does not detect any anomalies in any case.
- ✓ The sizing of the exciter and the positioning of the sensors must be done following the technical data of the latter and the manufacturer's guidelines.
- ✓ Pay particular attention to Common Cause Failures (CCF) that may involve both sensors (short circuit of cables, objects falling from above, idle rotation of the phonic wheel, etc.)

