

Instruction Manual

17-24 Bit Grey- & Binary Code Absolut Encoder Counter Module

ECM-901

All technical data subject to change without notice.

Description

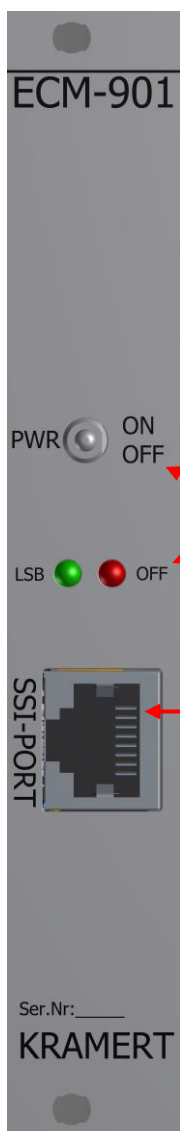
The initial idea and purpose of this card is to have a replacement for defective, obsolete Non-SSI-17-Bit Baumer encoders (SLS-Girder-Movers) together with their interface cards IPM-900.

The ECM-901 module reads continuously data from a SSI absolute encoder like COS58S/ TR-Electronic, CRE 65-4096 R24 C E01/TWK-Elektronik GmbH or many other SSI absolute encoders/sensors.

1. The controller reads a Dip-switch-selectable number of data bits from 17 to 24 bits.
2. The SSI data format can be either Binary- or Gray code and is also selectable via Dip-switch.
3. The ECM-901 module supplies encoders with 5V and 24V up to 200mA.
4. The readout clock frequency is 250 kHz. One loop takes approx. 150 μ s (24 databits).
5. Frontpanel Power-Switch to power-off the SSI-Port for safely connect and disconnect encoders
6. Permanent ESD-protection on SSI-Port

The ECM-901 module is based on the IPM-900 Interpolation Module and fits into IPM-900 and RHC-900 Slots of the COB-14 Control-Box.

Encoder-IO :



Power Switch Switches ECM901 Module **ON- OFF**

OFF LED Signals Power-**OFF** condition

LSB LED: Shows the least significant bit of the encoder

Permanent ESD-protection on all RJ-45 pins

Connector Cable:		
Color	RJ45 8-pol.	function
brown	1	SSI, Data +
brown/white	2	SSI, Data -
blue	3	SSI, Clock +
blue/white	4	SSI, Clock -
orange	5	nc
orange/white	6	+5V/200mA
green	7	+24V/200mA
green/white	8	GND

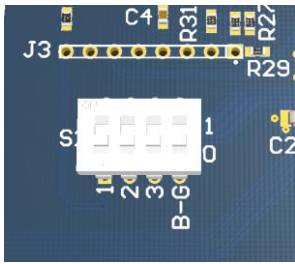
Data-Input RS422 , 100 Ohm terminated

Clock-Output RS422 , into 100 Ohm

Encoder supply 5V and 24V / 200 mA max, use either pin 6 or pin 7.
All pins are switched off by the Power Switch

Note: Read carefully your Encoder Power requirements
Connecting 5V-encoders to 24V supply will damage the encoder and module

Option Switch S1:



S1-4: Pos-1 Gray-Code

S1-4: Pos-0 Binary-Code

If your encoder provides the SSI-Data in Grey-code please switch S1-4 to 1 position

Default: All switches in zero position; 17 Bit, Binary SSI-Data

S1-1,2,3 selects the number of encoder-bits to read. The encoder datasheet specifies this feature.

S1-1	S1-2	S1-3	Bits	24-Bit VME Memory																							
				R3	R2	R1	R0	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	17	0	0	0	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	0	0	0		
1	0	0	18	0	0	0	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	0	0	0		
0	1	0	19	0	0	0	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	0	0	0		
1	1	0	20	0	0	0	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b		
0	0	1	21	0	0	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b		
1	0	1	22	0	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b		
0	1	1	23	0	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b		
1	1	1	24	msb	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b		

Table 1

The encoder datas are presented in the 24 bit VME Data space as shown in Table 1.

The MSB of encoders with less than 21 bits are fixed to VME-memory Bit-19 position. This enables the use of mixed encoder resolutions in the range of 17-20 bits without additional programming effort.

This is in accordance to the Technical Specification : “Girder Mover Encoder Readout”, February 2000, Autor: R. Kramert

Fuses:

F1: 1A slow; protects +12V supply

F2: 1A slow; protects +5V supply

Power Requirements:

max. 1 A at +5V

max. 1 A at +12V

Physical:

Single width 3HE Module

Datasheet Revision History:

July 2015	Published

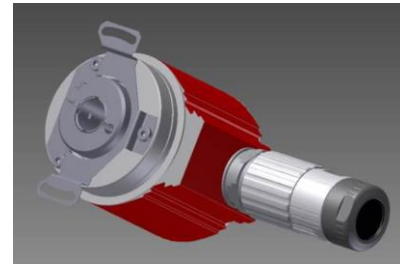
FPGA Revision History:

REV 0, 24.June 2015, Checksum C955	
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Encoder connector cable examples:

Extension cable for Encoder type: COS58S

Connector:			
Color	RJ45 8-pol.	12-pol Contact	Function
brown	1	3	SSI, Data +
brown/white	2	4	SSI, Data -
blue	3	2	SSI, clock +
blue/white	4	1	SSI, clock -
orange	5		do not connect
orange/white	6		do not connect
green	7	11	+24V/200mA
green/white	8	12	GND



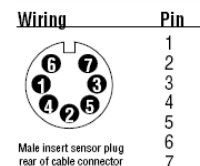
Extension cable for Encoder type: CRE 65-4096 R24 C E01

Connector:			
Color	RJ45 8-pol.	Binder 423 EMC	Function
brown	1	2	SSI, Data +
brown/white	2	3	SSI, Data -
blue	3	4	SSI, clock +
blue/white	4	5	SSI, clock -
orange	5		do not connect
orange/white	6		do not connect
green	7	7	+24V/200mA
green/white	8	1	GND



Extension cable for Encoder type: Tomposonics R series SSI

Connector:			
Color	RJ45 8-pol.	Amphenol C 091	Function
brown	1	2	SSI, Data +
brown/white	2	1	SSI, Data -
blue	3	3	SSI, clock +
blue/white	4	4	SSI, clock -
orange	5		do not connect
orange/white	6		do not connect
green	7	5	+24V/200mA
green/white	8	6	GND



Cable connection for Encoder type: Heidenhain ROQ 425 SSI

Connector:			
RJ45 8-pol.	Encoder ROQ 425/SSI	Encoder Color	Function
1	14	gray	SSI, Data +
2	17	pink	SSI, Data -
3	8	violet	SSI, clock +
4	9	yellow	SSI, clock -
5			do not connect
6			do not connect
7	7	brown/green	+24V/200mA
8	10	white/green	GND



Extension cable for Encoder type: TR-ELECTRONIC LTxxx-S

Connector:			
Color	RJ45 8-pol.	12-Pin Con	Function
brown	1	3	SSI, Data +
brown/white	2	4	SSI, Data -
blue	3	2	SSI, clock +
blue/white	4	1	SSI, clock -
orange	5		do not connect
orange/white	6		do not connect
green	7	11	+24V/200mA
green/white	8	12	GND



Cable connection for Encoder type: Baumer BMMH 30D1 X 24C SSI

Connector:			
RJ45 8-pol.	Encoder BMMH/SSI M9	Encoder Color (-4 -5)	Function
1	5	gray	SSI, Data +
2	6	pink	SSI, Data -
3	3	green	SSI, clock +
4	4	yellow	SSI, clock -
5			do not connect
6			do not connect
7	2	brown	+24V/50mA
8	1	white	GND



Cable connection for Encoder type: Renishaw RL32BAS001C05A, BISS

Connector:			
Color	RJ45 8-pol.	D-SUB 9-pol female	Function
brown	1	6	BISS, SLO +
brown/white	2	7	BISS, SLO -
blue	3	2	BISS, MA +
blue/white	4	3	BISS, MA -
orange	5	-	
orange/white	6	4,5	+5V
green	7		do not connect
green/white	8	1,8,9	GND



Note: This encoder is optional and on request

Please recheck all encoder connections, pins and colors with your latest encoder datasheet