DI16-DO8-ENC4 for imc CRONOScompact (CRC)

16 Digital Inputs, 8 Digital Outputs and 4 Counter Inputs

CRC/DI16-DO8-ENC4

The combi-card comes with 16 digital inputs, 8 digital outputs and 4 inputs for capture of incremental encoder signals, RPM measurements, angle, frequencies etc., available as plug-in module for the imc CRONOS*compact* or as configuration module for imc CRONOS-SL.

Each 8-bit group of digital inputs can be configured by means of a wire jumper in the connector for the acquisition of either TTL-signals or 24 V signals. The 4 inputs for the capture of counter signals can be paired up to capture dual-track encoder signals.

Overview of the available variants

Standard version		ET Version *	
Order Code	article no.	article no.	Remarks
CRC/DI16-DO8-ENC4	11700020	11710019	for imc CRONOS*compact*
CRC/DI16-DO8-ENC4-R	11700110	117100xx	for imc CRONOS*compact* RACK

Included accessories

DSUB-15 plugs		
ACC/DSUBM-DI4-8	15-pin DSUB plug for each 8 bits	13500174
ACC/DSUBM-DO8	15-pin DSUB plug for digital outputs	13500173
ACC/DSUBM-ENC4	15-pin DSUB plug for 4 counter inputs	13500171

Documents
Getting started with imc CRONOS*compact* (one copy per delivery / system)
Device certificate

* ET: Version in extended temperature range

ENC-4 (DI16-DO8-ENC4) Incremental Counter Channals

Parameter	Value (typ. / min. max.)		Remarks
Channels	4 + 1 (5 tracks)		4 single tracks or joining of two tracks to make a two-track channel 1 index-channel (4 incremental counter inputs)
Measurement mode:	displacement, angle, events time, frequency; velocity, RPMs		
Connection terminals	DSUB-15		ACC/DSUBM-ENC4(-IP65)
Sampling rate	50 kHz / channel		
Time resolution of the measurement	31.25 ns		Counter frequency: 32 MHz
Resolution of data	16 bits		
Input configuration	differential		
Input impedance	100 kΩ		
Input voltage range (differential)	±10 V		
Common mode input voltage	max. +25 V, min. -11 V		
Switching threshold	-10 V to +10 V		individual for each channel
Hysteresis	min. 100 mV		individual for each channel
Analog bandwidth	500 kHz		-3 dB (full power)
Analog filter	bypass (without filter), 20 kHz, 2 kHz, 200 Hz		adjustable (per channel) Butterworth, 2nd order
Switching delay	500 ns		Modulation: 100 mV square wave
CMRR	70 dB 60 dB	50 dB 50 dB	DC, 50 Hz 10 kHz
Gain uncertainty	<1 %		of voltage range (25°C)
Zero point uncertainty	<1 %		of voltage range (25°C)
Overvoltage protection	±50 V		long-term
Sensor supply	+5 V (max. 300 mA)		not isolated (reference: GND, CHASSIS)

DI-16 (DI16-DO8-ENC4) Digital inputs

Parameter	Value (typ. / min.max.)	Remarks
Channels	16	Common grounding point for each 4-channel group, electrically isolated from the other input group (16 digital inputs)
Configuration options	TTL or 24 V input voltage range (configurable globally for each 8-channel groups)	Configurable at DSUB connector Bridge from LCOM to LEVEL activates TTL mode LEVEL open activates 24 V-mode
Connection terminals	DSUB-15	ACC/DSUBM-DI4-8 (-IP65)
Input configuration	differential	isolated mutually and from supply
Isolation strength	±150 V	to system ground (tested 200 V)
Sampling rate	10 kHz	per channel
Input current	max. 500 µA	
Switching threshold	1.5 V (±200 mV) 7 V (±300 mV)	5 V mode 24 V mode
Switching time	<20 µs	
Sensor supply	5 V max. 100 mA	Reference at Level otherwise electrically isolated from system

DO-8 (DI16-DO8-ENC4) Digital outputs

Parameter	Value (typ. / min. max.)		Remarks
Channels	8		8-bit group, isolated, common reference potential ("LCOM") for a group (8 digital outputs)
Connection plug	DSUB-15 / 8 bits		ACC/DSUB-DO8(-IP65)
Isolations strength	±50 V		to system ground (protection ground)
Output configuration	totem pole *or* open-drain		configurable with wire jumper ("ODRN" - "LCOM") in the connector pod
Output level	TTL *or* max. U_{ext} -0.8 V		internal isolated supply voltage by means of connecting an external supply voltage U_{ext} with "HCOM", U_{ext} = 5 V to 30 V
Max. output current (typ.) TTL 24 V-logic open-drain open-drain with intern. 5 V supply	*HIGH* 15 mA 22 mA ---	*LOW* 0.7 A 0.7 A 0.7 A 200 mA	external inverse diode needed with inductive load
Output voltage TTL 24 V-logic (U_{ext} = 24 V)	*HIGH* >3.5 V >23 V	*LOW* ≤0.4 V ≤0.4 V	with load current: I_{high} = 15 mA, I_{low} ≤0.7 A I_{high} = 22 mA, I_{low} ≤0.7 A
Internal supply voltage available at contacts	5 V, 200 mA isolated		
Switching time	<100 µs		