

imc C-SERIES: CS-7008-N, CL-7016-N

All-Purpose and powerful measurement devices



device type: CS, 8 analog channels



device type: CL, 16 analog channels

Data Sheet Version 1.1

The devices of the imc C-SERIES CS-7008-N and CL-7016-N are suitable for direct connection of: voltage and current signals, current-fed sensors, such as ICP™ (optional), thermocouples, PT100, strain gauge measurement bridges, counters for measurement of RPMs, velocity or displacement, or for direct counting of impulses, CAN participants such as control devices, sensors etc.

imc C-SERIE - complete, compact and portable measurement devices

The devices of the imc C-SERIES are equipped with a defined standard configuration and available in two different housing types: "CS" in a Alu-Profile housing and "CL" in a dark flat plastic housing with carrying leafs.

Highlights

- Stand-alone startup and power-failure control logic
- Real-time signal processing and test control with imc Online FAMOS (as standard equipment)
- intelligent power supply with UPS function and saving of data when power-failure
- integrated CAN-Interface
- Counter inputs (measurement of angle, events, velocity etc.)
- digital inputs and outputs
- analog outputs (DAC)
- Onboard flash storage (CF card) or network-harddrive (NAS etc.)
- complex triggering system PC independent
- possible equipment with internal WiFi (WLAN) adaptor
- supports platform independent remote access via standard internet browser (optionally integrated imc REMOTE Webserver)
- adapted to synchronization with other imc measurement devices via:
 - isolated Sync-Signal (DCF-77, IRIG-B)
 - network based via NTP
 - GPS
- Measurement channel extension via direct connection of measurement modules belonging to imc's CANSAS series
- In conjunction with the operating software imc STUDIO and im c DEVICES the devices are immediately ready to take measurements, and all of their functions are operable.

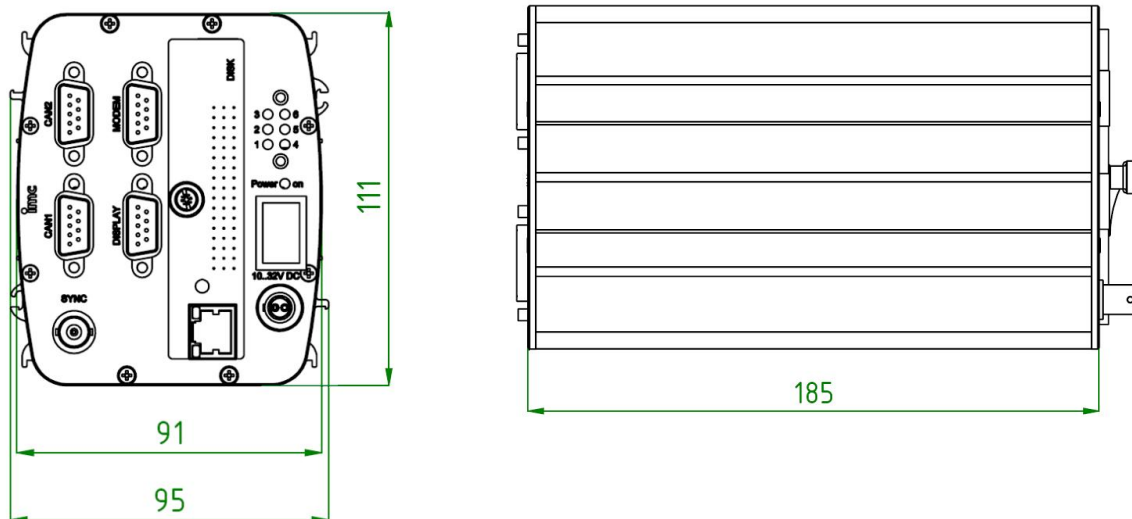
Overview of the available devices

Order Code	Article number	Housing	analog channels	Extra
CS-7008-N	1400069	CS alu profile	8	-

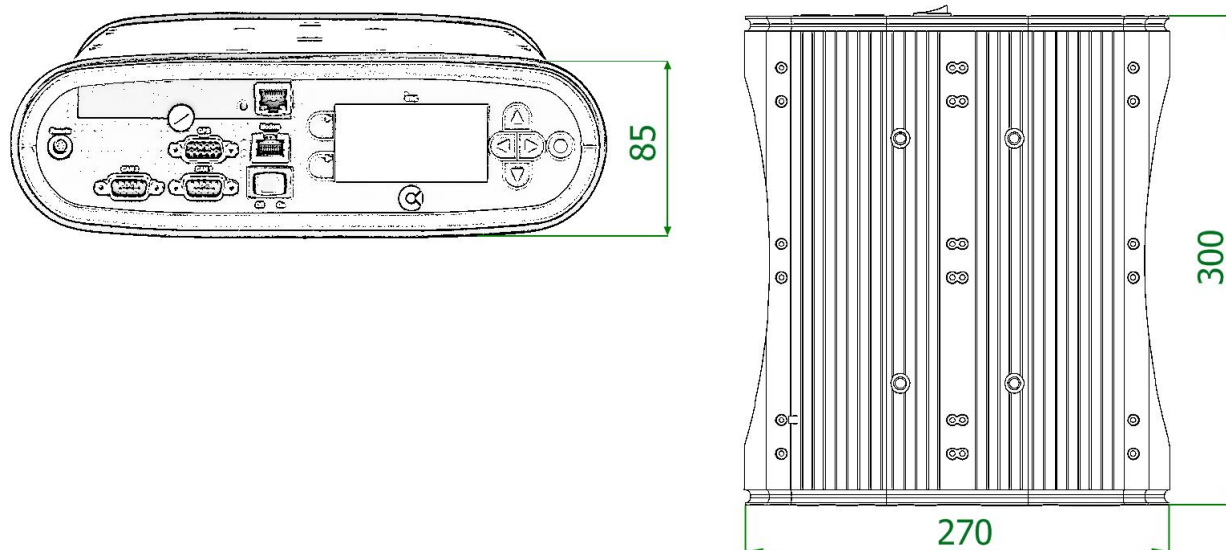
CS-7008-N-ET	1410034			extended temp.- range
CL-7016-N	1400070	CL portable housing	16	-
CL-7016-N-ET	1410035			extended temp.- range

Mechanical drawings with dimensions

Housing type: CS (95x111x185 mm)



Housing type: CL (270x85x300 mm)



Required software version

- Supported by imc STUDIO 4.0R1 and imc DEVICES 2.8R3, or higher, included with all functions
- imc Plug & Measure (TEDS)
This device supports TEDS and can be used together with imc SENSORS.

Included accessories

- 230/110 V power adapter (optionally with country-specific power cable)
- "Getting Started with imc C-SERIES" (printed)
- Manufacturer's Calibration Certificate
- 1x Ethernet network cable crossed and 1x uncrossed

- 1x LEMO.1B plug with CS devices and with CL devices 1x LEMO.0B

Terminal connections

- 4x or 8x ACC/DSUB(M)-UNI2 DSUB-15 plug with screw terminals for 2-channel voltage, current¹, resistance and bridge measurement as well as temperatures with PT100 and thermocouples with integrated cold junction compensation (CJC)

¹ single-end current measurement, for differential measurement an external shunt or the appropriate connector (ACC/DSUB(M)-I2) is necessary

- 1x ACC/DSUB(M)-DI4-8 DSUB-15 plug with screw terminals for 8 digital inputs
- 1x ACC/DSUB(M)-DO8 DSUB-15 plug with screw terminals for 8 digitale Ausgänge
- 1x ACC/DSUB(M)-ENC4 DSUB-15 plug with screw terminals for 4 counter inputs
- 1x ACC/DSUB(M)-DAC4 DSUB-15 plug with screw terminals for 4 analog outputs

Optional accessories**Terminal connections**

- ACC/DSUB(M)-I2 DSUB-15 plug with screw terminals for 2-channel current measurement of up to 50 mA (50 Ω shunt, scaling factor: 0.02A/V)
- ACC/DSUB-ICP2 DSUB-15 plug with screw terminals for conditioning of 2 IEPE/ICP inputs

General technical specs for all devices of imc C-SERIES

Parameter	Value	Remarks
Housing type	Alu profile	CS
	plastic portable housing	CL
Ingress Protection	IP20	
Terminal connection		
Terminal connection (DSUB-15) analog inputs	ACC/DSUB(M)-UNI2 ACC/DSUB(M)-I2 ACC/DSUB-ICP2	
Terminal connection (DSUB-15) DI, DO, INC, DAC	ACC/DSUB(M)-DI4-8 ACC/DSUB(M)-DO8 ACC/DSUB(M)-ENC4 ACC/DSUB(M)-DAC4	8 digital inputs 8 digital outputs 4 counter inputs 4 analog outputs
Further terminal connections	RJ45 CF-Card slot 2x DSUB-9 DSUB-9 DSUB-9 BNC LEMO FGG.1B.302.CLAD62Z LEMO FGG.0B.302.CLAD62Z	Ethernet (10/100 MBit), PC/network removable storage two CAN-nodes external Display (CS) external GPS module synchronization supply (CS) supply (CL)
Weight without table-top power adapter	approx. 2 kg	CS
	approx. 3.5 kg	CL
Dimensions (WxHxD) in mm	95 x 111 x 185	CS
	270 x 85 x 300	CL

Power supply		
Parameter	Value	Remarks
DC input supply voltage	10 V to 32 V DC	
Isolation of supply input	not-isolated	CS
	isolated	CL
Power adapter	110 V / 230 V AC	external adapter, included in delivery
Auto start upon power up	configurable	automatic start of measurement
Automatic shutdown with data saving upon power fail	yes	
UPS	battery: lead-gel	uninterruptable power supply
UPS buffer time constant	1 sec (with CS)	maximum duration of a continuous outage before triggering device shutdown
	30 sec. (with CL)	
Internal battery voltage	4 V	CS
	24 V	CL
Effective buffer capacity	≥3,5 Wh	typ. 23°C, battery fully charged CS
	≥5,1 Wh	CL

Power supply		
Parameter	Value	Remarks
Minimum charging time for 1 min. buffer duration	≤ 19 min ≤ 21 min.	for empty battery, 23°C CS CL
Charging time for empty battery	6 h	device activated
Charging capacity	1.1 W 1.5 W	automatic charge control CS CL

Operating conditions	
Operating environment (standard)	dry, non corrosive environment within specified temperature range
Operating temperature (standard)	-10°C to +55°C no condensation
Operating temperature(extended)	-20°C to +85°C with condensation
Operating altitude	up to 2000 m
Relative humidity	80 % for less than 31°C, for more than 31°C linear declining to 50%, according DIN EN61010-1

Data acquisition and hardware options	
Max. aggregate sampling rate	400 kS/s
Sampling rate channel wise configurable in steps of 1-, 2-, 5	✓
Number of simultaneously applicable sampling rates (in one configuration)	2
Monitor channels (doubled channels with independent sampling and trigger configurations)	✓
Multi-triggered data acquisition: multitrigger and multi-shot	✓
Independent trigger machines (start/stop, arbitrary channel assignments)	48
Extensive intelligent trigger functions	✓
Direct onboard data reduction: arithmetic mean, min, max	✓
Extensive real-time calculation and control functions	✓ included in standard deliveries (via imc Online FAMOS)
Synchronization	DCF 77, IRIG-B (auto detect) NTP GPS
External GPS signal receiver	0
Internal WiFi (WLAN) adaptor	0 IEEE 802.11g (1 Antenna) max. 54 MBit/s

Data storage	
internal removable storage	CF-Card (covered CF slot)
internal hard drive	0 (with CL)
Any memory depth with pre- and post triggering	✓
Circular buffering	✓

Synchronization and time base

Time base per device without external synchronization			
Parameter	Value typ.	min. / max.	Remarks
Accuracy internal time base RTC		±50 ppm	balanced (default), at 25°C
Drift	±20 ppm	±50 ppm	-40°C to +85°C operating temperature
Ageing		±10 ppm	@ 25°C; 10 years

Time base per device with external synchronization signal				
Parameter	GPS	DCF77	IRIG-B	NTP
Supported formats	NMEA / PPS*		B002 B000, B001, B003**	Version 4 (downwards compatible)
Precision	±1 µs			<5 ms after ca. 12 h
Jitter (max.)	±8 µs			
Voltage level	TTL (PPS*) RS232 (NMEA)	5 V TTL level		---
Input resistance	1 kΩ (pull up)	20 kΩ (pull up)		---
Input connector	DSUB-9 "GPS" non-isolated	BNC connector "SYNC" (isolated) Isolation strength: 300 V (1 minute test voltage)		Ethernet
Shield potential input		BNC connector: isolated Signal-GND (marked by a yellow ring around the BNC plug)		---

* PPS (pulse per second): signal with an impulse >5 ms is necessary

** using BCD information only

Synchronization with DCF77 for several devices (Master/Slave)			
Parameter	Value typ.	min. / max.	Remarks
max. cable length		200 m	BNC cable RG58
max. number of devices		20	Slaves, plus 1 Master
Common mode		max. 50 V	SYNC-signal is already internally isolated, for reliable operation even with different ground voltage level (ground loops)
Voltage level	5 V		
DCF input/output	"SYNC" connection		BNC

Cx-70xx analog inputs

Channels, measurement modes, terminal connection		
Parameter	Value	Remarks
Inputs	8	CS
	16	CL
Measurement modes	bridge-sensor bridge: strain gauge voltage thermocouples Pt100 (3- and 4-wire configuration) current current fed sensors (IEPE/ICP) charge	ACC/DSUB(M)-UNI2 (for all modes) ACC/DSUB(M)-I2 shunt-plug or single ended (internal shunt) ACC/DSUB-ICP2, ACC/DSUB-ICP-BNC (ICP™-, Deltatron®, Piezotron®-Sensors) ACC/DSUB-Q2
Terminal connection analog inputs	ACC/DSUB(M)-UNI2 ACC/DSUB(M)-I2 ACC/DSUB-ICP2	

Sampling rate, Bandwidth, Filter, TEDS		
Parameter	Value	Remarks
Sampling rate	≤100 kHz	per channel
Bandwidth	0 Hz to 48 kHz 0 Hz to 30 kHz 0 Hz to 10 Hz	-3 dB -0.1 dB -3 dB for temperature measurement
Filter (digital) cut-off frequency characteristic order	10 Hz to 20 kHz	Butterworth, Bessel low pass or high pass filter: 8th order band pass: LP 4th and HP 4th order Anti-aliasing filter: Cauer 8.order with $f_{\text{cutoff}} = 0.4 f_s$
Resolution	16 Bit	internal processing 24 Bit
TEDS Transducer Electronic Data Sheets	conforming to IEEE 1451.4 Class II MMI	ACC/DSUB(M)-TEDS-xxx

General			
Parameter	Value typ.	min. / max	Remarks
Overvoltage protection		± 80 V ± 50 V	permanent, differential $> \pm 10$ V and device off $\leq \pm 10$ V
Input coupling	DC		
Input configuration	differential		
Input impedance	1 M Ω 20 M Ω	$\pm 1\%$	input range $> \pm 10$ V input range $\leq \pm 10$ V
Auxiliary supply voltage available current internal resistance	+5 V >0.26 A 1.0 Ω	$\pm 5\%$ >0.2 A <1.2 Ω	for IEPE (ICP)-extension plug independent of integrated sensor supply, short circuit proof power per DSUB-plug

Voltage measurement			
Parameter	Value typ.	min. / max.	Remarks
Voltage input range	± 50 V, ± 25 V, ± 10 V, ± 5 V, ± 2.5 V, ± 1 V... ± 5 mV		
Gain uncertainty	0.02%	$\leq 0.05\%$	of the measured value, at 25°C
Gain drift	+10 ppm/K $\cdot\Delta T_a$	+30 ppm/K $\cdot\Delta T_a$	$\Delta T_a = T_a - 25^\circ\text{C} $ ambient temperature T_a
Offset uncertainty	0.02%	$\leq 0.05\%$ $\leq 0.06\%$	of the range, at 25°C range $> \pm 50$ mV range $\leq \pm 50$ mV
Offset drift	± 40 $\mu\text{V}/\text{K}\cdot\Delta T_a$ ± 0.7 $\mu\text{V}/\text{K}\cdot\Delta T_a$ ± 0.1 $\mu\text{V}/\text{K}\cdot\Delta T_a$	± 200 $\mu\text{V}/\text{K}\cdot\Delta T_a$ ± 6 $\mu\text{V}/\text{K}\cdot\Delta T_a$ ± 1.1 $\mu\text{V}/\text{K}\cdot\Delta T_a$	range $> \pm 10$ V ± 10 V to ± 0.25 V $\leq \pm 0.1$ V $\Delta T_a = T_a - 25^\circ\text{C} $ ambient temperature T_a
Nonlinearity	30 ppm	≤ 90 ppm	
CMRR (common mode rejection ratio) / IMR range ± 50 V to ± 25 V ± 10 V to ± 50 mV ± 25 mV to ± 5 mV	80 dB 110 dB 138 dB	>70 dB >90 dB >132 dB	test voltage (DC and $f \leq 60$ Hz) ± 50 V ± 10 V ± 10 V
Noise	3.6 μV_{eff} 0.6 μV_{eff} 0.14 μV_{eff}	5.5 μV_{eff} 1.0 μV_{eff} 0.26 μV_{eff}	range 0.1 Hz to 50 kHz range 0.1 Hz to 1 kHz range 0.1 Hz to 10 Hz

Current measurement with shunt plug			
Parameter	Value typ.	min. / max.	Remarks
Current input range	$\pm 50 \text{ mA}$, $\pm 20 \text{ mA}$, $\pm 10 \text{ mA}$, $\pm 5 \text{ mA}$, $\pm 2 \text{ mA}$, $\pm 1 \text{ mA}$		
Shunt impedance	50 Ω		external plug ACC/DSUB(M)-I2
Over load protection		$\pm 60 \text{ mA}$	long term
Input configuration	differential		isolated
Gain uncertainty	0.02%	$\leq 0.06\%$ $\leq 0.1\%$	of the reading, at 25°C plus uncertainty of 50 Ω in plug
Gain drift	15 ppm/K· ΔT_a	55 ppm/K· ΔT_a	$\Delta T_a = T_a - 25^\circ\text{C} $ ambient temperature T_a
Offset uncertainty	0.02%	$\leq 0.05\%$	of the range, at 25°C
Noise current	40 nA _{eff} 0.7 nA _{eff} 0.17 nA _{eff}	70 nA _{eff} 12 nA _{eff} 0.3 nA _{eff}	Bandwidth: 0.1 Hz to 50 kHz 0.1 Hz to 1 kHz 0.1 Hz to 10 Hz

Current measurement with internal shunt plug			
Parameter	Value typ.	min. / max.	Remarks
Current input range	$\pm 50 \text{ mA}$, $\pm 20 \text{ mA}$, $\pm 10 \text{ mA}$, $\pm 5 \text{ mA}$, $\pm 2 \text{ mA}$, $\pm 1 \text{ mA}$		
Shunt impedance	120 Ω		internal
Over load protection		$\pm 60 \text{ mA}$	long term
Input configuration	single-end		not isolated
Gain uncertainty	0.02%	$\leq 0.06\%$	of the reading, at 25°C
Gain drift	15 ppm/K· ΔT_a	55 ppm/K· ΔT_a	$\Delta T_a = T_a - 25^\circ\text{C} $ ambient temperature T_a
Offset uncertainty	0.02%	$\leq 0.05\%$	of the range, at 25°C
Noise current	40 nA _{eff} 0.7 nA _{eff} 0.17 nA _{eff}	70 nA _{eff} 12 nA _{eff} 0.3 nA _{eff}	Bandwidth: 0.1 Hz to 50 kHz 0.1 Hz to 1 kHz 0.1 Hz to 10 Hz

Bridge measurement			
Parameter	Value typ.	min. / max.	Remarks
Mode	DC		
Bridge measurement modes	full bridge half bridge quarter bridge		≤5 V bridge supply only
Bridge supply	2.5 V to 10 V	±0,5%	standard ranges with 2.5 V: +2.5 V, +5.0 V, +10 V, +12 V and +24 V
Minimum bridge impedance	120 Ω full bridge 60 Ω half bridge		
Maximum bridge impedance	5 kΩ		
Quarter bridge completion	120 Ω, 350 Ω		internal, switched per software
Automatic shunt-calibration (calibration jump)	0.5 mV/V	±0.2%	for 120 Ω and 350 Ω
Bridge input range			
bridge supply: 10 V	±1000 mV/V, ±500 mV/V, ±200 mV/V, ±100 mV/V ... ±0.5 mV/V		
bridge supply: 5 V	±1000 mV/V, ±500 mV/V, ±200 mV/V, ±100 mV/V ... ±1 mV/V		all modes
bridge supply: (2.5 V) (as an option)	±1000 mV/V, ±500 mV/V, ±200 mV/V, ±100 mV/V ... ±2 mV/V		consider remarks of the bridge excitation voltage
Input impedance	20 MΩ	±1%	differential, full bridge
Gain uncertainty	0.02%	≤0.05%	of the reading, at 25°C
Gain drift	20 ppm/K·ΔT _a	50 ppm/K·ΔT _a	ΔT _a = T _a -25°C ambient temperature T _a
Offset uncertainty	0.01%	≤0.02%	of input range after automatic bridge balancing

Temperature measurement - Thermocouples			
Parameter	Value typ.	min./ max.	Remarks
Measurement mode	J, T, K, E, N, S, R, B		according IEC 584
Measurement range	-270°C bis 1370°C -270°C bis 1100°C -270°C bis 500°C		type K
Resolution	0.063 K (1/16 K)		
Measurement uncertainty (gain + offset)		≤0.05% ≤0.05%	type K of measurement range (25°C) of reading
Drift (gain + offset)	+0.02 K/K·ΔT _a	+0.05 K/K·ΔT _a	ΔT _a = T _a -25°C ambient temperature T _a
Uncertainty of cold junction compensation		<±0.15 K	with ACC/DSUB-UNI2 at 25°C
Cold junction drift	±0.001 K/K·ΔT _a		ΔT _a = T _a -25°C ambient temperature T _a

Temperature measurement - PT100				
Parameter	Value typ.		min. / max.	Remarks
Input range	-200°C to 850°C -200°C to 250°C			resolution: approx. 0.1 K approx. 0.1 K
Resolution	0.063 K (1/16 K)			
Measurement uncertainty (gain + offset)			<±0.25 K +0.02% <±0.1 K +0.02%	4-wire measurement: -200°C to 850°C of reading -200°C to 250°C of reading
Drift (gain + offset)			+0.01 K/K·ΔT _a	ΔT _a = T _a -25°C ambient temperature T _a
Sensor feed (PT100)	1.23 mA			

Sensor supply ±VB				
Parameter	Value			Remarks
Configuration options	5 selectable ranges			The sensor supply module always got 5 selectable voltage ranges. Default ranges: +5 V to +24 V
Output voltage	Voltage (+2.5 V) +5.0 V +10 V +12 V +15 V +24 V (±15 V)	Current 580 mA 580 mA 300 mA 250 mA 200 mA 120 mA 190 mA	Power 1.5 W 2.9 W 3.0 W 3.0 W 3.0 W 2.9 W 3.0 W	set jointly for all eight channels optional, special order: +12 V or +15 V can be replaced by +2.5 V default ranges with 2.5 V: +2.5 V, +5.0 V, +10 V, +12 V, +24 V optional, special order: +15 V can be replaced by ±15 V
Isolation	non isolated			output to case (CHASSIS)
Short-circuit protection	unlimited duration			to output voltage reference ground
Accuracy of output voltage	<0.25 % (typ.) / <0.5 % (max.) <0.9 % (max).			at terminals, no load 25°C over entire temperature range
Compensation of cable resistances	3-line control: SENSE line as refeed (-VB: supply ground)			Calculated compensation for bridges (no voltage adjustment) Prerequisites: symmetric feed and return lines
Max. capacitive load	>4000 μF >1000 μF >300 μF			2.5 V .. 10 V 12 V, 15 V 24 V

Technical Specs: Features (for all devices of imc C-SERIES)

Digital Inputs

Parameter	Value	Remarks
Channels	8	common ground reference for each 4-channel group, isolated from the other input group
Configuration options	TTL or 24 V input voltage range	configurable at the DSUB globally for 8 Bits: <ul style="list-style-type: none"> • jumper from LCOM to LEVEL: activates TTL-mode • LEVEL unconnected: activates 24 V-mode
Sampling rate	10 kHz	per channel
Isolation strength	± 150 V	tested ± 200 V isolated to system ground, supply and untereinander
Input configuration	differential	isolated mutually and from supply
Input current	max. 500 μ A	
Switching threshold	1.5 V (± 200 mV) 8 V (± 300 mV)	5 V level 24 V level
Switching time	<20 μ s	
Supply HCOM	5 V max. 100 mA	Reference at level otherwise electrically isolated from system
Terminal connection	DSUB-15	ACC/DSUB(M)-D14-8

Digital outputs

Parameter	Value	Remarks
Channels / bits	8 bit	Group of 8 bits, galvanically isolated common reference potential ("LCOM") for each group
Isolation strength	± 50 V	to system ground (protection ground)
Output configuration	totem pole (push-pull) or open-drain	configurable at the DSUB globally for 8 Bits: <ul style="list-style-type: none"> • jumper from OPDRN to LCOM: totem pole • OPDRN unconnected: open-drain
Output level	TTL or max. $U_{ext} - 0.8$ V	internal, galvanically isolated supply voltage by connecting an external supply voltage U_{ext} with "HCOM", $U_{ext} = 5$ V to 30 V
State following system start	High resistance (high-Z)	Independent of output configuration (OPDRN-pin)!
Activation of the output stage following system start	upon first preparation of measurement	with initial states which can be selected in the experiment (High / Low) in the selected output configuration (OPDRN-pin)
Max. output current (typ.)	HIGH 15 mA 24 V-logic 22 mA open-drain --- open-drain with intern. 5 V supply	LOW 0.7 A 0.7 A 0.7 A 160 mA
		external clamp diode needed for inductive load for all outputs

Parameter	Value		Remarks
Output voltage	HIGH	LOW	for load current: $I_{high} = 15 \text{ mA}$, $I_{low} \leq 0.7 \text{ A}$ $I_{high} = 22 \text{ mA}$, $I_{low} \leq 0.7 \text{ A}$
TTL	>3.5 V	$\leq 0.4 \text{ V}$	
24 V-logic ($U_{ext} = 24 \text{ V}$)	>23 V	$\leq 0.4 \text{ V}$	
Internal supply voltage	5 V, 160 mA (isolated)		available at contacts
Switching time	<100 μs		
Terminal connection	1x DSUB-15 / 8 Bit		ACC/DSUB(M)-DO8

Incremental encoder channels

Parameter	Value		Remarks
Channels	4 + 1 (5 tracks)		Four single-tracks or combining two single- into two-track encoders One index track
Measurement modes	Displacement, Angle, Events, Time, Frequency, Velocity, RPMs		
Sampling rate	50 kHz		per channel
Time resolution of measurement	31.25 ns		Counter frequency: 32 MHz
Data resolution	16 bits		
Input configuration	differential		
Input impedance	100 k Ω		
Input voltage range	$\pm 10 \text{ V}$		(differential)
Common mode input range	min. -11 V	max. +25 V	
Switching threshold	-10 V to +10 V		selectable per channel
Hysteresis	min. 100 mV		selectable per channel
Analog bandwidth	500 kHz		-3 dB (full power)
Analog filter	Bypass (no Filter), 20 kHz, 2 kHz, 200 Hz		selectable (per-channel) 2 nd order Butterworth
Switching delay	500 ns		Modulation: 100 mV squarewave
CMRR	70 dB 60 dB	50 dB 50 dB	DC, 50 Hz 10 kHz
Gain uncertainty	<1 %		of input voltage range @ 25 °C
Offset uncertainty	<1 %		of input voltage range @ 25 °C
Overvoltage strength	$\pm 50 \text{ V}$		to system ground
Sensor supply	+5 V, 300 mA		not isolated (reference: GND, CHASSIS)
Terminal connection	DSUB-15		ACC/DSUB(M)-ENC4

Analog outputs

Parameter	Value typ.	min. / max.	Remarks
Channels	4		
Output level	±10 V		
Load current	max. ±10 mA / channel		
Resolution	16 Bit		
Non-linearity	±2 LSB	±3 LSB	
Max. output frequency	50 kHz		
Analog bandwidth	50 kHz		-3 dB, low pass 2. order
Gain uncertainty	<±5 mV	<±10 mV	-40 °C to 85 °C
Offset uncertainty	<±2 mV	<±4 mV	-40 °C to 85 °C
Terminal connection	DSUB-15		ACC/DSUB(M)-DAC4

CAN-Bus Interface

Parameter	Value	Remarks
Number of CAN-nodes	2	each node is galvanically isolated (for each CAN IN and CAN OUT)
Terminal connection	2x DSUB-9	
Transfer protocol	CAN High Speed (max. 1 MBaud, conforming ISO 11898) CAN Low Speed (max. 125 KBaud, conforming ISO 11519)	default switchable per software for each node
Baudrate	1 MBit/s ... 5 kBit/s	selectable via software, maximum for each selected protocol (High/Low Speed)
Max. cable length at data transfer rate	25 m at 1000 kBit/s 90 m at 500 kBit/s	CAN High Speed cable delay 5.7 ns/m
Termination	124 Ω	switchable by software for each node
Isolation strength	±50 V	to system ground (protection ground)
Direct parameterize of imc CANSAS modules	yes	via CAN node of the devices with imc STUDIO, imc DEVICES alternatively imc CANSAS software