imc CANSAS-DI16

16-channel digital input module

Version 1.6

imc CANSAS-DI16 provides the possibility to capture up to 16 digital inputs at a maximum sampling rate of 10 kHz. The data capture can take the form of either single-bit or as a binary word over all the inputs; the module's input voltage can be set by software to either 5 V or 24 V.

General characteristics of imc CANSAS modules

Operating conditions:
- extended temperature range, including humidity / condensation
- mechanically robust

CAN interface:
- configurable baud rate up to 1 MBit/s
- galvanically isolated

Synchronization:
- simultaneous sampling of all module's channels
- synchronizing of multiple imc CANSAS modules and with global CAN logger both via dedicated SYNC signal or based on CAN messages

Power supply:
- galvanically isolated
- wide input voltage range
- supply via CAN cable possible
- automatic self start upon power-up

Onboard signal processing:
- "virtual channels"
- integrated signal processor (DSP) for online processing: data reduction, filtering, scaling, statistics etc.
- programmable multi function status LED (front panel)

Housing and Connectors:
- variety of different housings and connections

Software

Configuration:
- with imc CANSAS Software (included)
- Supports the CANopen® protocol according "*CiA® DS 301 V4.0.2*" and "*CiA® DS 404V1.2*"; 4 TPDO (Transmit Process Data Objects) in INT16, INT32, and FLOAT. The supported capabilities, more standards and the settings which can be edited via CANopen® are described in the "CANSAS CANopen®" documentation.
- Capable of automatic start upon power up with preloaded configuration; also available pre-configured ex-factory.
- The module's current configuration can be extracted and exported by the software; this makes it possible to transfer configurations made by others by means of just the module.
- The "-L" and "-K" models, when installed and operated in the 19" subrack backplane, can automatically identify their slot position within the rack and pass this information on to automation software.
- The module can send a CAN-Bus message at intervals ("heartbeat"). This periodic message can serve the purpose of monitoring whether the correct module is being used with the correct

configuration.

Measurement operation:

- simple measurement operation with imc CANSAS*pro*
  using CAN interface such as imc CAN-USB or any other 3rd party PC CAN interface
- Data logger operation
  Software: imc STUDIO or imc DEVICES
  Hardware: imc measurement systems with CAN interface such as imc BUSDAQ, imc CRONOS series (CRC, CRFX, CRSL, CRPL), imc C-SERIES, imc SPARTAN
- any 3.rd party CAN data logger systems

Overview of available variants

Order Code	article number	housing	signal-plug	option
CAN/DI16	1050010	aluminum housing	DSUB	
CAN/L-DI16	1050058	aluminum housing	DSUB	
CAN/L-DI16-V	1050145	aluminum housing	ITT Veam	
CAN/L-DI16-Ph	1050227	aluminum housing	Phoenix	
CAN/K-DI16	1050076	cassette	Phoenix	
CAN/K-DI16-DSUB	1050253	cassette	DSUB	
CAN/SL-DI16-D		waterproof SL-housing	DSUB	

Housing types

	CANSAS	CANSAS-L	CANSAS-K	CANSAS-SL
General				
Housing type	Alu profile	Alu profile	cassette	sealed
Size (W x H x D, mm)	W x 111 x 90	W x 111 x 145	W x 128 x 145	W x 113 x 152
Weight (typical: UNI8)	800g	800g	450 g	900 g
Stackable	●	●		●
Subrack mounting		●	●	
Subrack slot recognition		●	●	
DIN-rail mounting kit	●	●		
Versatile mounting kit	●	●		●
Operating conditions				
Extended temp. range, incl. condensation	●	●	●	●
Shock and vibration rating	50g pk (5 ms)	50g pk (5 ms)	50g pk (5 ms)	MIL STD810F
IP rating	IP40	IP40	IP20	IP65
Connectivity				
CAN connector (in / out)	2 x DSUB-9	2 x DSUB-9	2 x DSUB-9	2 x DSUB-9 or 2 x LEMO
Power input connector	PHOENIX	PHOENIX	PHOENIX	LEMO.1B
Control LED (front)	●	●	●	●

Operating conditions for Alu profile and cassette

- Operating temperature: -40°C to 85°C condensation allowed
- Shock resistance 50 g pk over 5 ms

Operating conditions for sealed IP65 (SL) profile

- Operating temperature: -40°C to 85°C condensation allowed
- Shock resistance: MIL STD810F
- Ingress Protection rating: IP65

Included accessories

- Calibration certificate as per DIN EN ISO 9001
- Instruction manual (Getting started)
- Suitable power input plug:
  PHOENIX plugable terminal block (aluminum profile housing)
  LEMO.1B plug (SL housing)

Optional accessories

DSUB-15 plugs

• ACC/DSUBM-DI2-8	DSUB-15 plug for digital inputs	1350172

ITT Veam Connectors

• CAN/UNIST-7-3	ITT Veam plug for 1 channel, all measurement modes; cable diameter 3 mm	1050059
• CAN/UNIST-7-6	ITT Veam plug for 1 channel, all measurement modes; cable diameter 6 mm	1050060

Mounting brackets for fixed installations of CANSAS modules with Alu profile housing

• CAN/BRACKET-90	mounting bracket 90°	(1050319)
• CAN/BRACKET-DIN-S	mounting bracket for DIN-Rail	(1050324)
• CAN/BRACKET-DIN-M	mounting bracket for DIN-Rail	(1050325)

Mounting brackets for fixed installations of CANSAS-SL modules

• CAN/SL-BRACKET-CON	interconnect bracket	(1150048)
• CAN/SL-BRACKET-90	mounting bracket 90°	(1150047)
• CAN/SL-BRACKET-180	mounting bracket 180°	(1150049)

Technical Specs - DI16

Data Sheet Version 1.6 (16 digital inputs)

Parameter	Value	Remarks
Inputs	16	Common reference ground for each 2-channel-group. Each 2-channel-group isolated to other groups as well as to power supply and CAN-bus.
Terminal connection Rear side	2x DSUB-15 Phoenix terminal block 16x ITT Veam 2x DSUB-9 PHOENIX (MC 1.5/4STF-3.81)	inputs CAN/DI16, -L- DI16 -K- DI16-DSUB -K-DI16-Ph, -L-DI16-Ph CAN/L-DI16-V CAN (in / out), supply (alternatively) supply
Terminal connection (SL)	2x DSUB-15 / 8 channels 2x 10-pin LEMO (HGA.1B.310) 1x 6-pin LEMO (HGA.1B.306)	inputs CAN (in / out), supply (alternatively) supply
Input voltage range	TTL or 24 V	software-configurable
Sampling rate	10 kHz	
Input configuration	differential	isolated to power supply and channel-to-channel
Input current	max. 500 µA	limited by current supply (min. current 100 µA)
Switching threshold 5 V operation (TTL) 24 V operation	 V_{Lmax} = 0.8 V; V_{Hmin} = 2.0 V V_{Lmax} = 5.0 V; V_{Hmin} = 8.0 V	 typ. 1.7 V ±200 mV 6.7 V ±300 mV
CAN-Bus	defined as per ISO 11898	
CANopen® mode	"CiA® DS 301 V4.0.2" and "CiA® DS 404V1.2" supports 4 PDOs in INT16, INT32, and FLOAT	
Isolation: CAN-Bus power supply input digital inputs	 ±60 V ±60 V ±60 V	to case (CHASSIS) nominal; testing: 300 V (10 s) nominal; testing: 300 V (10 s) nominal; testing: 300 V (10 s)
Overvoltage protection	±60 V	differential input voltage
Supply voltage	10 V to 50 V DC	
Power consumption	4 W (typ.)	12 V power supply, 23°C
Operating temperature	-40°C to 85°C	
Dimensions (W x H x D)	35 x 111 x 90 mm 35 x 111 x 145 mm 41 x 128 x 145 mm 41 x 128 x 145 mm 75 x 111 x 145 mm 152 x 111 x 145 mm 38 x 112.5 x 152 mm	CANSAS-DI16 CANSAS-L-DI16 CANSAS-K-DI16 CANSAS-K-DI16-DSUB CANSAS-L-DI16-Ph CANSAS-L-DI16-V CANSAS-SL-DI16-D
Weight	300 g	