imc CANSASflex-DI16

CAN module for 16-bit digital inputs

The CAN-Bus module imc CANSAS*flex*-DI16 allows the capture of up to 16 digital input signals at a maximum sampling rate of 10 kHz. The data can be captured either bitwise or as data words for all of the inputs; the module's input voltage can be selected in the software as either 5 V or 24 V.

The threshold values for evaluating the inputs' logic level can accordingly be software-selected for either 5 V or 24 V signals.

imc CANSAS*flex*-DI16
(Fig. similar)

Features:

- Selectable signal level: TTL or 24 V logic
- Galvanically isolated groups of 2 bits each
- Optocoupler with max. 500 µA input current
- Data captured either as an entire port or individual bits
- Logic operations and signal analysis by means of "virtual channels" already performed directly in the module
- DSUB-15 interconnections with convenient imc DSUB screw terminals ("ACC/DSUBxx")

General imc CANSAS*flex* functions and specifications

As a CAN-bus-based measurement engineering tool, the imc CANSAS*flex* series offers a wide selection of measurement modules which process and digitize sensor signals and output these as CAN-messages.

The modules of the imc CANSAS*flex* series (CANFX) can be joined together mechanically and electrically by means of a latching (“click”) mechanism, without the use of any tools nor the need for any extra cables, and also allows the CAN-logger imc BUSDAQ*flex* (BUSFX) to dock on directly. Depending on the module type, they are available in either long (L-), short, or both housing versions.

Besides fixed installations or operation on a laboratory bench, the modules are also designed to fit in a special 19” subrack to provide a convenient solution in test station settings.

Fields of application

- For test rigs, vehicle testing, road trials and all-purpose measurement applications
- Deployable both in decentralized, distributed and in centralized measurement setups
- Operable with CAN-interfaces and CAN-data loggers from either imc or 3rd-party manufacturers

Properties and capabilities

Operating conditions:

- Operating temperature: -40°C to +85°C, condensation allowed
- Shock resistance: 50 g (pk over 5 ms)
- Ingress Protection rating: IP40 (only with optional protective cover on top of the locking slider, otherwise IP20)

CAN-Bus:

- Configurable Baud rate (max. 1 Mbit/s)
- Default configuration ex-factory: Baud rate=125 kbit/s and IDs: Master=2, Slave=3
- Galvanically isolated
- Built-in terminator resistance, manually switchable

Sampling rates and synchronization:

- Configurable CAN data rate
- Simultaneous sampling of all module's channels, as well as across multiple modules
- Synchronization of multiple modules as well as to a global CAN-logger: based on CAN messages (no Sync-signal required)

Power supply:

- Galvanically isolated power supply input
- DC 10 V to 50 V
- LEMO.0B connector (2-pin); alternative power supply via CAN connector (DSUB-9)

On-board signal processing:

- "Virtual channels": integrated signal processor (DSP) for online processing. Data reduction, filtering, scaling, calculations, threshold monitoring, etc.
- Programmable multi-functional status-LED, supporting linkage to virtual channels

Heartbeat-message:

- Configurable with cyclical "life-sign", e.g. for integrity check purposes in test rigs
- Contains checksum for configuration and serial number, e.g. for consistency monitoring (checking of whether the correct module is still being used, for instance in installations undergoing maintenance)

FindMe:

- Identification of a module by means of selective LED flashing (via configuration software; does not occupy any additional CAN messages)

***flex*-Series: flexible granulation, topology and block assemblies**

Click-mechanism:

- Modules joinable to module-blocks: mechanically and electrically connected (CAN and power supply)
- No tools or additional cabling required
- With guide grooves, magnetic catches and locking slider
- Both short and long housing versions joinable:
  with electrical connection: align on rear side; mechanically only: align on front side
- Direct connection of compatible CAN-logger: imc BUSDAQ*flex*

19" rack solution (subrack):

- Modules designed for insertion into special 19" frames ("boom-box") for installation in test stations
- Rack backplane accommodates the power supply, CAN and slot information (automatically read out configuration information for use in automation software)

Mounting:

- Mountable by means of recessed threaded holes (M3), either individually or jointly as a block
- Rubber bumper rails providing secure placement in laboratory settings
- Various brackets and handles, and DIN top-hat rail mounting kit available as accessories

imc CANSAS*flex* modules connected (Click-mechanism)
in a block with imc BUSDAQ*flex* Logger (left)

rear view of this block:
CAN, Power supply, Terminator, Locking slider

Software

Configuration:

- Using imc CANSAS software (free of charge), including dbc-export
- Autostart with saved configuration; also pre-configurable at factory
- The module's current configuration can be read out and exported by the software; For transfer of configuration via physical transport of the module; for back tracing and recovery.
- Supports the CANopen® protocol according "CiA® DS 301 V4.0.2" and "CiA® DS 404V1.2";
  4 TPDOs (Transmit Process Data Objects) in INT16, INT32 and FLOAT.
  See "CANSAS CANopen®" for a detailed description of the supported features and settings.

Measurement operation:

- Data logger operation:
  Software: imc STUDIO
  Hardware: imc measurement system with CAN-Interface, e.g.
  imc BUSDAQ, imc C-SERIE, imc SPARTAN
  imc CRONOS device family (CRFX, CRC, CRSL, CRPL)
- Basic measurement operation with imc CANSAS*pro*
- With any desired CAN-interfaces and CAN-loggers from 3rd-party manufacturers

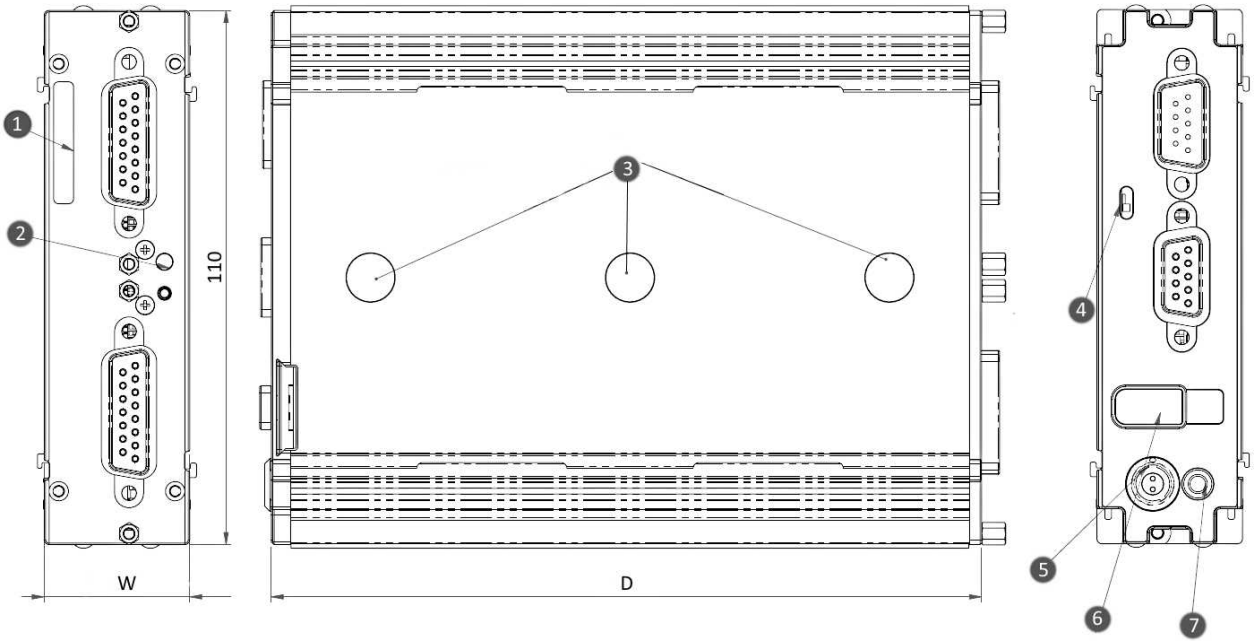
Models and Options

Overview of available variants for imc CANSASflex-DI16

Order Code	signal connection	option/extra	housing	article number
CANFX/L-DI16	DSUB-15		L0	1250017

Mechanical drawings with dimensions

front side view rear view



Shown in standard operating orientation: housing type L0; width (W) = 30 mm.

Housing type	S0	S1	S2	L0	L1	L2
W: Width	30 mm	50.3 mm	70.6 mm	30 mm	50.3 mm	70.6 mm
D: Depth	93 mm, with two magnets			146.5 mm, with three magnets		

Legend:

1: Serial number label
2: Status LED (blue / red)
3: magnet (depending on model)
4: adjustable CAN terminator
5: supply socket (LEMO)
6: locking slider CAN/supply
7: ground connection M4

Accessories and Connectors

Included accessories

- Calibration certificate with test equipment verification as per ISO 9001 (manufacturer's calibration certificate)
- Instruction manual, getting started with imc CANSAS (one copy per delivery)

Optional accessories

AC/DC power adaptor 110-230V AC (with appropriate LEMO plug)		
ACC/AC-ADAP-24-60-0B	24 V DC, 60 W, LEMO.0B.302	1350246

Power connector		
ACC/POWER-PLUG3	Power connector for DC supply LEMO FGG.0B.302, solder contact, max. 0.34 mm^2	1350033
ACC/CABLE-LEMO-BAN-2M5	Power supply cable LEMO/banana 2.5 m	13500xx

DSUB-9 connector (CAN)		
CAN/RESET	Reset-plug	1050025
CAN/KABEL-TYP2	CAN-Bus connection cable 2x DSUB-9 1:1, 2 m length	1050027

DSUB-15 connector (measurement inputs)		
ACC/DSUBM-DI2-8	Stecker für digitale Eingänge	1350172

Handle		
CANFX/HANDLE-L	CANFX handle kit (left and right) - long (L)	1250028

Mounting brackets for fixed installations		
CANFX/BRACKET-CON-L	CANFX connection bracket long	1250020

Mounting brackets for DIN Rail		
CANFX/BRACKET-DIN-L0	CANFX DIN Rail mounting bracket - Type L0	1250024

Miscellaneous		
CANFX/RUBBER-1M	silicone strip blue 1 m	1250029

Technical Specs - DI16

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.
Input voltage range	TTL or 24 V	software-configurable
Sampling rate	max. 10 kHz	
Input configuration	differential	isolated to power supply and channel-to-channel
Input current	max. 500 µA	current source drive (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 typ. 6.7 V ±300 mV

Power supply		
Parameter	**Value**	**Remarks**
Input supply voltage	10 V to 50 V DC	
Power consumption	4 W (typ.)	
Module power supply options	power socket (LEMO) CAN socket (DSUB-9) adjacent module	direct connection imc CANSAS*flex* or imc BUSDAQ*flex*

General		
Parameter	**Value**	**Remarks**
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
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	

Operating conditions		
Parameter	**Value**	**Remarks**
Ingress protection class	IP40	only with optional protective cover on top of the locking slider, otherwise IP20
Operating temperature	-40°C to 85°C	internal condensation temporarily allowed

Terminal connections		
Parameter	**Value**	**Remarks**
CAN Bus	2x DSUB-9	CAN and supply IN / OUT (male / female)
Supply input	type: LEMO.0B (2-pin)	compatible with LEMO.EGE.0B.302 multicoded 2 notches for optional individually power supply compatible with connectors FGG.0B.302 (Standard) or FGE.0B.302 (E-coded, 48 V)
Module connector	via locking slider	for power supply and networking (CAN) of directly connected modules (Click-mechanism) without further cables

Pass through power limits for directly connected modules (Click-mechanism)		
Parameter	**Value**	**Remarks**
Max. Current	8 A	current rating of the module connector
Max. Power		equivalent pass through power
	96 W at 12 V DC	typ. DC vehicle voltage
	192 W at 24 V DC	AC/DC power adaptor
	384 W at 48 V DC	optional AC/DC adaptor