imc CANSASflex-DAC8

8-channel CAN module providing control and actuating outputs

The CAN-Bus module imc CANSAS*flex*-DAC8 provides the user's choice of current or voltage signals on 8 analog outputs. The desired output signals can either be extracted directly from a CAN message or derived from received CAN-messages or specified functions (e.g. squarewave, sawtooth etc.) by means of the module's computational capacities.

imc CANSAS*flex*-DAC8-BNC

Highlights

- Channel individually configurable in voltage and current-mode
- ±10 V output voltage level respectively 0..20 mA
- Ensured startup level 0 V without undefined transient states

Typical applications

- Process control with standard level signals
- Implementation of open and closed loop control systems, particularly in conjunction with imc data loggers such as imc BUSDAQ and live data processing with imc Online FAMOS
- Precise signal transmission with simple 2-wire cables, even across long distances, by means of the current-mode
- Output of setpoint values
- Interface between CAN and analog data loggers (CAN-Analog Gateway)

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:

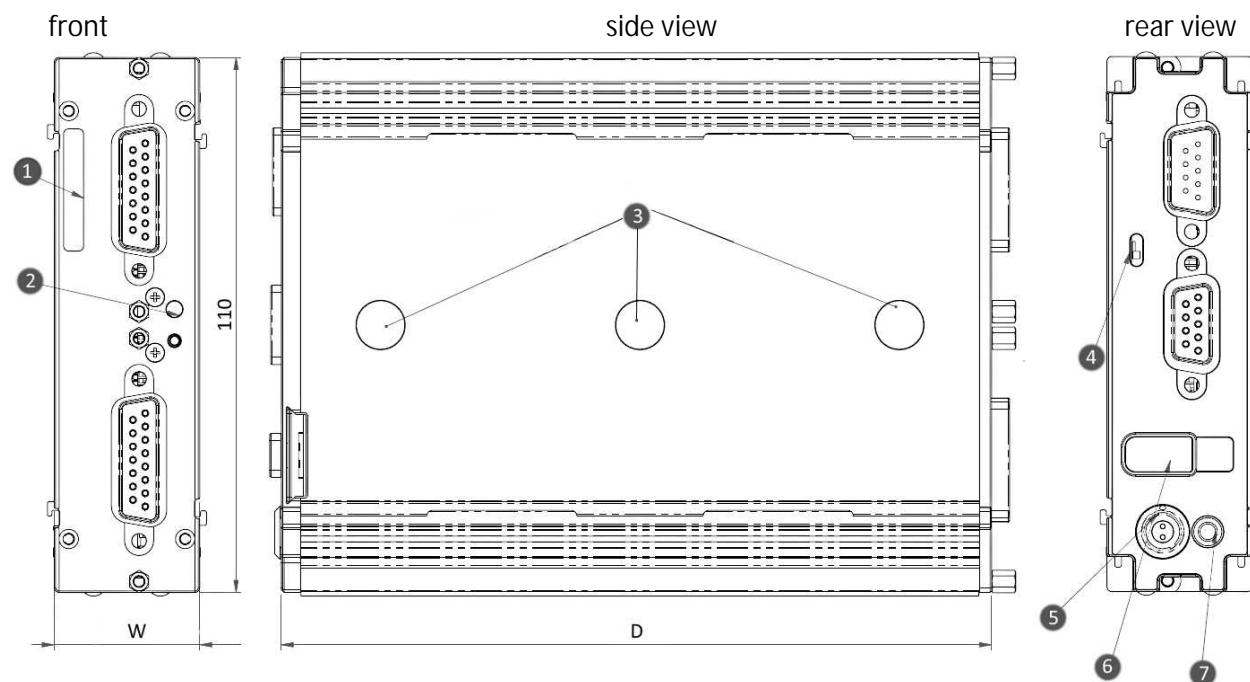- Data logger operation:
  Software: imc STUDIO
  Hardware: imc measurement system with CAN-Interface, e.g.
                      imc BUSDAQ, imc C-SERIE, imc SPARTAN
                      imc CRONOS device family (CRFX, CRC, CRSL, CRPL)
- Basic measurement operation with imc CANSAS*pro*
- With any desired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

Models and Options

Overview of the available variants for imc CANSASflex-DAC8

Order Code	signal connection	option/extra	housing	article number
CANFX/DAC8	DSUB-15		S0	1250030
CANFX/L-DAC8	DSUB-15		L0	1250016
CANFX/L-DAC8-BNC	BNC		L1	1250011

Mechanical drawings with dimensions

Shown: 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)

Optional accessories

AC/DC power adapter 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-DAC4	DSUB-15 plug with screw terminals for each 4 analog outputs	1350177

Handle		
CANFX/HANDLE-S	CANFX handle kit (left and right) - short (S)	1250027
CANFX/HANDLE-L	CANFX handle kit (left and right) - long (L)	1250028

Mounting brackets for fixed installations		
CANFX/BRACKET-CON-S	CANFX connection bracket short	1250019
CANFX/BRACKET-CON-L	CANFX connection bracket long	1250020

Mounting brackets for DIN Rail		
CANFX/BRACKET-DIN-S0	CANFX DIN Rail mounting bracket - Type S0	1250021
CANFX/BRACKET-DIN-L0	CANFX DIN Rail mounting bracket - Type L0	1250024
CANFX/BRACKET-DIN-L1	CANFX DIN Rail mounting bracket - Type L1	1250025

Miscellaneous		
Calibration report set for each device	Report set with manufacturer's calibration certificate and individual readings, as well as list of test equipment used. Meets requirements of DIN EN ISO 17025	
Instruction manual	Getting started with imc CANSAS	
CANFX/RUBBER-1M	silicone strip blue 1 m	1250029

Technical Specs - DAC8

Parameter	Value	Remarks
Channels	8	each channel configurable separately
Operation mode	voltage source current source	suitable plug for both modes: ACC/DSUBM-DAC4
Output range	-10 V to +10 V 0 mA to 20 mA	min. load: 1 k for voltage mode max. load: 250 for current mode
Sampling rate	5 kHz (max.)	per channel
Analog bandwidth	5 kHz	-3 dB
Resolution	16 bit 15 bit	as voltage source as current source
Accuracy deviation	<0.1%	of the output range
Output value upon power-up	0 V	

Isolation
  CAN-Bus
  power supply
  analog outputs
	
	±60 V
	±60 V
	no isolation
		to CHASSIS
		nominal; testing voltage: 300 V (10 s)
		nominal; testing voltage: 300 V (10 s)
		analog reference ground: CHASSIS

CANopen® mode	"CiA® DS 301 V4.0.2" and "CiA® DS 404V1.2" supports 4 RPDOs in INT16, INT32, and FLOAT	

Power supply of the module

Parameter	Value typ.	min. / max.	Remarks
Supply voltage	10 V to 50 V DC		
Power consumption	<6 W		
Module power supply options	power socket (LEMO) CAN socket (DSUB-9) adjacent module		direct connection imc CANSAS*flex* or imc BUSDAQ *flex*

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	96 W at 12 V DC 192 W at 24 V DC 384 W at 48 V DC	equivalent pass through power typ. DC vehicle voltage AC/DC power adapter optional AC/DC adapter