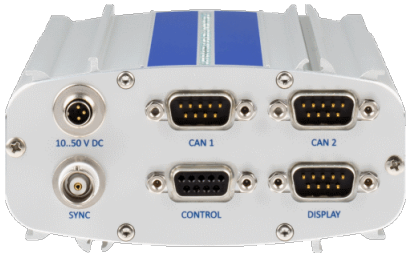
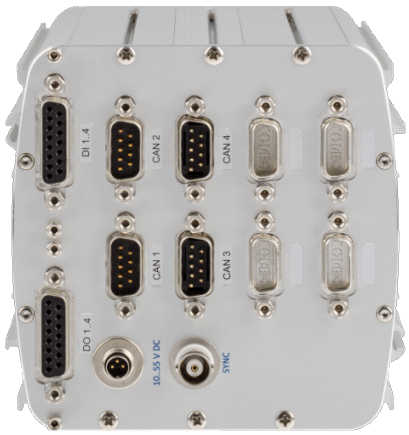
imc BUSDAQ-2 / imc BUSDAQ-X / imc BUSLOG

CAN-Datalogger

imc BUSLOG



imc BUSDAQ-2



imc BUSDAQ-X

Data Sheet Version 1.9

imc BUSDAQ is a multi-bus data logger for and CAN, LIN, ARINC, FlexRay, XCPoE, PROFIBUS. Along with the CAN- and LIN-bus data streams, various other protocols such as CCP, KWP2000 etc. are supported. imc BUSDAQ works independently at very low power consumption and is secured against power failure by an uninterruptible power supply (UPS). A signal-controlled Sleep Mode makes imc BUSDAQ particularly well suited to vehicle fleet experiments, especially since it requires only 200 ms to start up.

Any kind of CAN bus clients such as sensors, measurement amplifier modules (e.g. imc CANSAS) or electronic control units can be connected to imc BUSDAQ. Measurement data, status information etc. can be extracted by imc BUSDAQ.

imc BUSDAQ, like all imc measurement devices, is operated using the imc operating software imc DEVICES / imc STUDIO. The imc operating software enables complete manual and automatic setting of the measurement parameters, real-time functions, trigger machines and data saving modes. Display of measurement plots in the curve window and, as well as experiment documentation in the Report Generator, are integral elements of imc operating software.

All devices of the imc BUSDAQ Family are only available in the extended temperature range (-ET).

Device variant	article number	dimensions
imc BUSLOG-ET	1041012	185 mm x 30 mm x 110 mm (L x W x H)
imc BUSDAQ-2-ET	1041009	185 mm x 51 mm x 110 mm (L x W x H)
imc BUSDAQ-X-ET	1041011	185 mm x 110 mm x 110 mm (L x W x H)

Terminal connections

- PC-connection via 10/100 MBit Ethernet TCP/IP
- CAN-bus connection via 9-pin DSUB-connector at device (1 connector per node) (equipped in accordance with CiA® Draft Standard 102 Version 2.0, CAN Physical Layer for Industrial Applications)
- Modem connection via 9-pin DSUB-connector (not with imc BUSLOG devices)
- Display connection via 9-pin DSUB-connector (not with imc BUSLOG devices)
- GPS connection via 9-pin DSUB-connector (not with imc BUSLOG devices)
- Connection for synchronization of multiple devices (see table below 4) Several number of imc devices can be run in parallel an fully synchronized in an Ethernet TCP/IP network.
- Control plug, for remote activation/deactivation and switching off the Suspend/Resume function

Power supply

- 10 – 50 V DC supply with battery buffering (UPS) or
  110 V / 230 V via included power adapter or
  optional via CAN-connector (node 1 or 2)
- UPS buffer time: see table below
- Automatic measurement operation with auto-startup after power outage
- Automatic charging control
- Automatic data saving upon power outage
- Power consumption: see table below 4

Operating conditions

- Operating temperature: -40°C .. 85°C
- Storage temperature: -40°C .. 85°C
- Relative humidity up to 95 %, condensation allowed
- Operating altitude (standard) up to 2000 m

Shock and vibration testing

1. accordance with DIN EN 50115 / EN 61373 category 1B
   - broad-band random vibration 5...150 Hz at 7.9m/s² (life circle); 1m/s² (operating)
   - shock: pulse shape 30ms half sinus at 50m/s²
2. accordance with MIL-STD-810F
   - 5...350Hz at 0.48g (Rail Cargo Vibration Exposure)
   - 5...500Hz at 2.33g (Highway Truck Vibration Exposure)
   - shock: pulse shape 11ms half sinus at 20g
3. Vibration and impact testing in accordance with EN 50155
   - Test load: sweep sine, 10 to 55 Hz with s= 0.15 mm, from 35 Hz on with s= 0.8 g
   - Frequency sweep speed 1 oct/min.
   - Test load duration: 30 min.

Transient overvoltages

- Category II

Included accessories

- 230/110 V power adapter (optionally with country-specific network cable)
- Supply plug for power supply at ESTO supply terminal RD03 712-Series 3-pin.
- Printed document: Getting Started with imc BUSDAQ
- Remote plug LEMO.0B included in delivery imc BUSLOG and imc BUSDAQ-2-ET
- Test certificate
- 1x Ethernet patch cable with latch protection (uncrossed, 2 m)

Measurement properties

- The data collected from the CAN-bus can be recorded in either of two ways:
  - Each sample has a time stamp
    Upon reception of a message, the measured values it contains receive a time stamp reflecting the message's arrival time (resolution: 100 µs).
  - Sampled at constant rate
    Since the messages can arrive at irregular intervals, imc BUSDAQ generates an equidistantly sampled channel from such messages by emitting the value most recently arrived via the CAN-Bus at regular intervals.
- Comprehensive, smart trigger functions
- Limit monitoring, min, max, mean value saving, and much more

- Sleep Mode: The imc BUSDAQ is able to start a measurement out of a sleep mode within an extremely short time. It is optimized for very low power consumption. Therefore it is especially suitable for recording CAN data of vehicles, as soon as they have been started. The device can wake up on:
  - CAN messages or
  - the control connector at the device
- Switching from High-Speed- to Low-Speed-CAN via software
- Switching 120 Ω termination for each CAN-Bus node (individual) via software
- Switching 1 kΩ resistor for each LIN-Bus node (master / slave mode) (individual) via software
- Parameterization of imc CANSAS measurement modules via imc BUSDAQ's CAN-Bus interface; no PC CAN connection necessary. Therefore the configuration software CONsoft is required.

Measurement channels

- Up to 512 fieldbus-channels can be acquired

Data storage

- Choice of removable drive (optional) and/ or on PC
- Any desired memory depth achievable, limited only by hard drive capacity, by means of pre- and post triggers
- Circular buffer memory
- Synchronized, repeatedly triggered data capture with different sampling rates for each channel
- Optional Compact Flash removable drive internal
- Option only for BUSDAQ-X: internal SSD hard drive
  only in the temperature range 0 °C to 70 °C

Optional expansions for imc BUSDAQ-2-ET and imc BUSDAQ-X-ET:

- Personal Analyzer with internal signal processor; not with imc BUSLOG
  (imc Online FAMOS) providing comprehensive real-time computation and control functions
  - Online class-counting package including histogram and rainflow analysis
  - Online order tracking analysis for analyzing rotating machinery
  - imc Online FAMOS Professional for higher online processing performance
- Field bus option
  - Vector Data Import
    Linkage of the Vector database (included with imc BUSLOG)
    Import of .DBC files from Vector databases
  - J1587 interface with two nodes
  - LIN-Bus interface with two nodes
  - ECU-protocols (KWP 2000, CCP other on request)
- External power supply for imc CANSAS modules via CAN nodes 1 and 2.
- WLAN card: 802.11b / 11 MBit with integrated antenna. Installable in the Compact Flash data carrier slot, only in the temperature range 0 °C to 50 °C
- Internal Wireless-LAN device expansion ET with external antenna (no condensation)
- Internal modem
  - Analog-, ISDN- or GSM modem for remote data transfer and remote control
- External displays

imc BUSDAQ-2 / imc BUSDAQ-X / imc BUSLOG

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Parameter	imc BUSLOG	imc BUSDAQ-2	imc BUSDAQ-X	Remarks
PC connector: Ethernet TCP/IP	10/100 MBit, approvable cable length for 100 MBit Ethernet max. 100 m according IEEE 802.3			
Fieldbus-nodes	2	2	2 to 8	isolated
Baud rate	max 1 Mbit/s	max 1 Mbit/s	max 1 Mbit/s	
Channels	<512	<512	<512	per device
Digital inputs Digital outputs	- -	- -	4 (DSUB-15) 4 (DSUB-15)	opto coupler TTL / 24 V isolated
LAN-interface	TCP/IP	TCP/IP	TCP/IP	10/100 Mbit/s, RJ45
Modem external Modem internal	- -	DSUB-9 optional	DSUB-9 optional	 analog, ISDN, GSM radio modem
WLAN-Adapter internal	-	-	optional	
Display	-	extern	extern	DSUB-9
GPS	-	extern	extern	
Sync. plug	SMB	BNC	BNC	DCF
CTRL plug	LEMO type 0B	DSUB-9	DSUB-9	
Vector database	yes	optional	optional	
Storage compact flash hard disk (HDD or SSD)	 optional -	 optional -	 optional optional	the storage medium's temperature range applies
Online-processing	-	optional	optional	imc Online FAMOS
Overload protection	60 V	60 V	60 V	
Supply	10 V to 50 V_{DC}	10 V to 50 V_{DC}	10 V to 50 V_{DC}	Default up to 55 V_{DC} some early modules only up to 32V_{DC}; follow identification plate.
Supply connector	Binder: ESTO RD03 series 712 3-poles			
max. load for CAN supply per node	<1 A	<1 A	<1 A	option for node 1 and 2
Power consumption	200 mW <3 W	200 mW <8 W	200 mW / slot <8 W	sleep-,ode @25°C and charged battery meas.-mode
UPS	10 s	10 s	15 s	
Start time	0.2 s 30 s	0.2 s 30 s	0.2 s 30 s	after sleep-mode after power on
Transfer into/ out of sleep-mode	external signal or switch to jumper + switch or Wake up on CAN-Bus			5 V to 55 V
Temperature range	-40..+85°C	-40..+85°C	-40..+85°C	operating temperature
Dimensions in mm	185 x 30 x 110	185 x 51 x 110	185 x 110 x 110	L x W x H (in mm)
Weight	650 g	850 g	2 kg (8 nodes)	