

CANSAS-BRIDGE2

2-channel bridge amplifier for capture of **measurement bridge and strain gauge signals**



CANSAS-BRIDGE2 is a high-performance module for acquisition of measurement bridge and strain gauge data. Each channel is amplified, filtered and digitized separately. CANSAS-BRIDGE2 offers not only measurement of full bridges but also of half and quarter bridges (120 Ω , 350 Ω , software-selected). Bridge balancing can be performed at the push of a button on the module, via a CAN-Bus message, or automatically upon power-up.

Order code:	Article #
CANSAS-BRIDGE2	1050006
CANSAS-K-BRIDGE2	1050088

2 different models available:

CANSAS-BRIDGE2

Unventilated aluminum strand cast housing (short model, 2 x DSUB signal connectors)
35 x 111 x 90 (W x H x D in mm)
weight: typ. 300 g

CANSAS-K-BRIDGE2

Unventilated cassette, 3U/8HP (cassette model, 2 x DSUB signal connectors)
for installation in the imc 19"-subrack
CAN-Bus and power supply are connected with the module via the 19"-subrack
weight: typ. 900 g

Refer also to the document "*CANSAS Installation and Assembly*" for information on the models and module racks.

Connections

- CAN-Bus connected via two DSUB-9 terminals, CAN IN (male), CAN OUT (female) ¹
CAN-Bus Interface for up to 1 Mbit/s,
(configured as per CiA[®] Draft Standard 102 Version 2.0, CAN Physical Layer for Industrial Applications)
- Signal connection to module: 2 x 15-pin DSUB clamp terminal (1 channel per connector)
- Voltage supply via Phoenix (MC1, 5/4STF-3,81) socket (CAN/Power-Plug) ¹
- The module has a button whose function is software programmable (shunt calibration, bridge balance, inactive).

¹ not in cassette model

Power supply

- Supply voltages 9..32 V DC via (4-pin) Phoenix-connector or via CAN-Bus connector ¹
- Automatic boot-up upon application of supply voltage
- Power consumption: 4,0 W (typ.)

Ambient conditions

- Operating temperature: -30°C...85°C; condensation allowed
- Shock resistance: 50 g pk over 5 ms (without connector)

Accessories included

- Calibration certificate as per DIN EN ISO 9001
- Instruction manual
- With aluminum strand-cast housing: power supply plug for connection via Phoenix socket

Measurement characteristics

- Sampling rates can be set to up to 5kHz per channel in steps of 1, 2, 5
- 1 kHz bandwidth (-3 dB)
- 16-bit resolution (with internal 24-bit processing)
- Integrated DSP for online signal processing:
Data reduction, filtering, scaling, statistics etc.

Measurement channels

- 2 differential, analog inputs for bridge measurement:
configurable for full-, half-, and quarter bridges ².
Bridge balancing activated by button, or automatically upon power-up, or in response to CAN-Bus message
- Synchronized sampling of all measurement channels

Special characteristics

- 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.

Optional accessories

Signal connector:

- **ACC/DSUB-B1**, connector for bridge channel measurement

Additional options and accessories

- Depending on the model, the modules can be either attached together to form stacks or installed in racks; see the document "*CANSAS Installation and Assembly*" for more on these options.
- The connectors necessary for the signals are described in "*Signal Connection Terminals*".
- The modules can be configured for CAN-network applications either by order at factory, or by the customer using appropriate configuration software. The necessary software as well as cables and additional accessories are presented in the documentation "*Integrating CANSAS in CAN-Networks*".

² Quarter bridge completion inside the module adjustable to 120 Ω or 350 Ω by configuration software.

BRIDGE2

Technical Specs (2-channel bridge amplifier)

Parameter	Value (typ. / max)	Remarks
Inputs	2	1 channel each on DSUB-15 socket
Measurement mode	DC-bridge measurement	no voltage measurement
Sampling rate /channel	5 kHz (max.)	
Resolution	16 bit	
Input ranges	± 10 mV/V, ± 5 mV/V, ± 2 mV/V, ± 1 mV/V, $\pm 0,5$ mV/V, $\pm 0,2$ mV/V	
Bridge voltage	3,5 V _{DC}	3-wire circuit for compensation of cable resistance (+VB, +SENSE, -VB)
Bridge balancing range	± 3 mV/V (min.)	in all input ranges
Bridge impedance	120 Ω (min.)	
Input configuration (configurable)	full bridge half bridge quarter bridge 120 Ω quarter bridge 350 Ω	default with wire bridge in the connector plug internal quarter bridge completion software selectable
Calibration resistor	100 k Ω	releasable via CAN-bus ; "Rcal" corresponds to: 0,30 mV/V / @ 120 Ω bridge or 0,87 mV/V / @ 350 Ω bridge
Cable length (max.)	28 m or max. 3 % of bridge impedance	for 120 Ω bridge with Cu-cable 0,14 mm ² , 130 m Ω /m: max. 3,6 Ω
Isolation: input/CAN-Bus input/power supply input / Analog	± 60 V ± 60 V no isolation	output to case (CHASSIS) nominal; testing voltage 300 V (10 s) nominal; testing voltage 300 V (10 s) analog reference ground: CHASSIS
Overvoltage protection	± 20 V	short-term, to frame (CHASSIS)
Bandwidth	1 kHz (-3 dB)	
Noise	0,3 μ V/V rms 2,0 μ V/V pk_pk 0,2 μ V/V pk_pk	bandwidth 10 Hz to 1 kHz bandwidth 10 Hz to 1 kHz low-frequency 0,1 Hz to 10 Hz
Input impedance	10 M Ω	
Gain uncertainty	< 0,05 %	23°C
Gain drift	85 ppm /K < 125 ppm /K	
Offset	< 0,5 μ V/V	after bridge balancing
Offset drift without ext. bridge	0,03 μ V/V /K 0,3 μ V/V /K	full bridge, bridge offset = zero
Offset drift with ext. bridge	1,0 μ V/V /K 3,2 μ V/V /K	half bridge, ext. bridge offset = 3 mV/V
Bridge balancing release	1) via button on module 2) via CAN-Bus 3) during power-up	alternatively (configurable)
CAN-Bus	defined as per ISO 11898	
Supply voltage	9..32 V DC	
Power consumption	4 W (typ.)	with 2 x 120 Ω full bridge, 12 V supply
Operating temperature	-30°C...85°C	
Dimensions (W x H x D)	35 x 111 x 90 mm 41 x 128 x 145 mm	CANSAS-BRIDGE2 CANSAS-K-BRIDGE2
Weight	300 g / 900 g for K	
Terminal connections	2 x DSUB-15 2 x DSUB-9 PHOENIX (MC 1.5/4STF-3.81)	inputs CAN (in / out) supply

