

digiCLIP

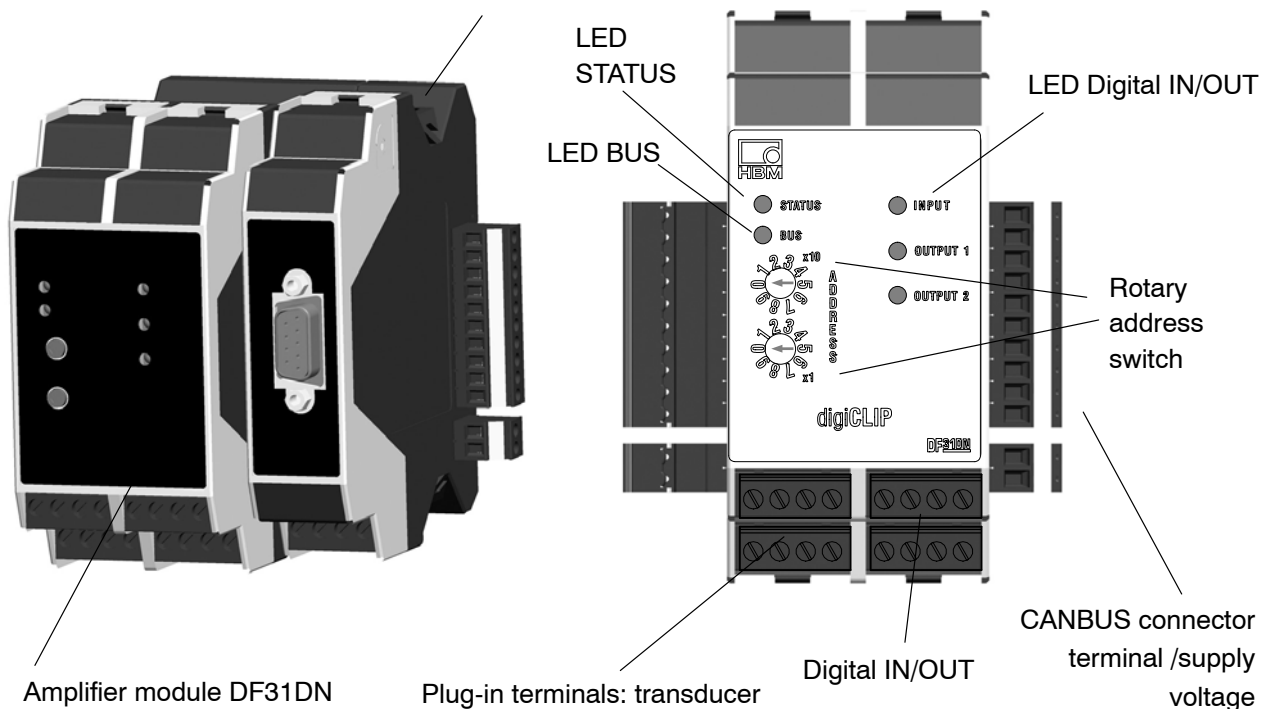
DF31DN



Special features

- Digital amplifier for industrial automation tasks and production process monitoring
- 600 Hz CF measurement technology with TEDS sensor detection for SG full bridges
- Fast peak and limit value monitoring and digital inputs/outputs
- Accuracy class, typically 0.05%
- Modular mounting on a DIN EN 60715 type DIN rail (IEC 60715)
- Standardized CANopen CiA fieldbus coupling for parameterization and backup

Accessories: CAN connection module DF002



Technical data

| | | | |
|---|---|--|----------|
| digiCLIP | | | |
| Accuracy class (at $U_B = 2.5\text{ V}$ and $U_B = 1\text{ V}$); after autocalibration | | 0.05 type. 0.1 in an industrial environment as per EN 61326 0.2 in the 10 mV/V measuring range | |
| Power supply | | | |
| Supply voltage, Overvoltage and reverse polarity protection | V_{DC} | 24 | |
| Isolation voltage, without transients Potential separation between the supply bus and transducer connection, functional separation, must not be considered for safety aspects | V_{DC} | < 60 | |
| Permissible supply voltage range | V | 18 ... 30 | |
| Influence of supply voltage when there are changes in the specified range | %/V | < 0.001 | |
| Power consumption, max.; incl. transducer | W | 2.0 | |
| Amplifier | | | |
| Carrier frequency, rectangle | Hz | 600 (591.9 Hz \pm 100 ppm) | |
| Synchronization | | when several interconnected modules are used, the carrier frequency is synchronized automatically | |
| Bridge excitation voltage U_B, Peak-to-peak ($\pm 10\%$) | V | 2.5 | 1.0 |
| Measuring range | mV/V | ± 4 | ± 10 |
| Connectable transducers SG full bridge | ohms | 80 ... 5000 | |
| Connection technique | | 4 and 6-wire circuitry with single-wire open-circuit monitoring | |
| Permissible cable length between transducer and amplifier, max. | m | 100 | |
| Input resistance | MOhm | > 5 | |
| Measurement frequency range, adjustable (-3dB) (see filter table) | Hz | 0.05 ... 225 | |
| Filter characteristics | | Bessel, 4th order | |
| Noise voltage relative to input, for $U_B = 2.5\text{ V}$, typical | $\mu\text{V/V}$ | 1.0 (at filter frequency 100 Hz) 0.05 (at filter frequency 1 Hz) | |
| Influence of ambient temperature for change of 10 K on the zero point (TK0) on sensitivity (TKC) | $\mu\text{V/V}$ % | 0.1 0,05 f.s. | |
| Linearity deviation | % f.s. | 0.005 | |
| Long-term drift, without AutoCal | % | <0.001 (within 48 h) | |
| Communication interface | | | |
| Number of devices on the bus, max. Address settings Protocol Hardware bus link Bit Rate Line length, max. Bit rate selection PDO transfer Cycle time for time-driven triggering, Possibly restricted by chosen data types and filter frequency ¹⁾ CAN connection | kBit/s m ms | 64 1 to 63 via rotary switch on front DeviceNet standard: "The DeviceNet Specification", available at www.odva.org Two-wire, as per ISO 11898 500 250 125 100 250 500 Automatic detection after change of address Triggered by sampling rate, timing control or SYNC message 0.85 ... 25000 Side connector terminal; electrically isolated from supply and measurement ground Option: DF002: 9-pin Sub-D (CAN-CiADR303-1) | |
| Signal conditioning | | | |
| A/D converter | | Delta-Sigma, 24-bit | |
| Scaling accuracy | bits | 32 | |
| Sampling rate | 1/s | 1184 | |

¹⁾ Floating point: 2 measured values at 0.85 ms; integers: 4 measured values at 0.85 ms; filters: see table overleaf

| | | |
|---|---|--|
| Input of characteristic curve | | TEDS, calibration, editing |
| Zero balance | | over the entire measuring range |
| Tare balance | | over the entire measuring range |
| Duration of balance | ms | < 2 |
| AutoCal | ms | < 300 |
| Parameter memory | | 1 set as per CiA DS404, protected in the EEPROM |
| Limit value switches Definition Number Functions Signal source (user-selectable) Hysteresis Update | | as per CiA DS404, ALARM block 4 Switching threshold, hysteresis (2-point control), greater than, less than gross, net, max, min, peak-to-peak adjustable over the entire measuring range at each measured value |
| Peak-value memory Number Function Update Clearing peak-value memory Retaining the current measured value/peak value Current-value memory | ms ms | 3 min., max., peak-to-peak at each measured value < 2 < 2 Run /Hold |
| Digital input | | |
| Number Switching actions , any combination selectable Response time Active input level can also be selected inverted Input voltage range Switching voltages Logic High level Logic Low level one-way fitting Electrical isolation to supply, transducer and bus potentials Isolation voltage, functional, typ. Input current at 24V, typ. Latency times of electronic digital input when changing from 0V to 24V, typ. when changing from 24V to 0V, typ. Permissible cable length to digital input, max. | V V V V V V m | 1 Flank controlled: Zeroing, taring, peak-value memory (min/max) one-off clear Level controlled: Peak-value memory (min/max) stop, continuous clear Control action occurs at the latest with the next but one measurement value 0 or 24 (State of input level displayed by LED) 0...30 V >10 <5 -30 ... 0 500 12 200 400 0...30 |
| Digital output | | |
| Number Switching actions , any combination can be selected separately for each output Response times Active input level can also be selected inverted separately for each output Output voltage (like supply voltage), nom. Voltage drop with load, max. Output current at operating temperature | V V V A | 2 Limit value switch 1 to 4, positive/negative range overrun, overload, measured value invalid Switching action occurs with next measurement value, see "Sampling rate"; exception: "Measurement value invalid" after 300... 700 ms, typ. 0 or 24 (State of output switch displayed by LED) 24 2 0.5. guaranteed per output |

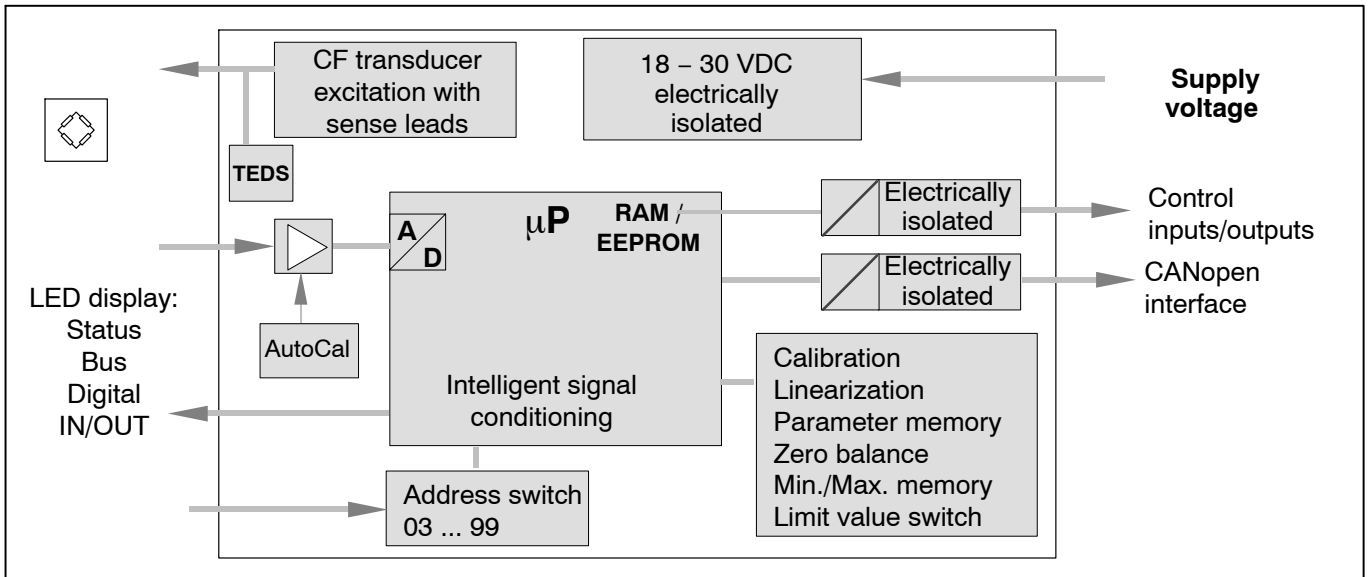
| | | |
|--|--------------------------------|---------------------------------------|
| Short-circuit current, typ. | A | 1.1 |
| Short-circuit period | | unlimited |
| Electrical isolation to transducer and bus potentials Isolation voltage, functional, typ. Reference potential like supply voltage | V | 500 |
| Latency times of electronic digital outputs when changing from 0V to 24V, typ. when changing from 24V to 0V, typ. | μs μs | 240 400 |
| Permissible cable length to digital input, max. | m | 30 |
| Environmental conditions | | |
| Nominal temperature range | $^{\circ}\text{C}$ | 0 ... +50 |
| Operating temperature range | $^{\circ}\text{C}$ | -10 ... +60 |
| Storage temperature range | $^{\circ}\text{C}$ | -20 ... +70 |
| Permissible rel. humidity, non-condensing | % | 10 ... 90 |
| Enclosure | | |
| Material | | Polyamide PA 6.6 |
| Dimensions (WxHxD) without connections | mm | 23 x 100 x 114 |
| Weight, approx. | g | 150 |
| Mechanical stress (test similar to DIN IEC 60068, Part 2-6) Vibration (30 min each direction) | m/s^2 | 50 (5...65 Hz) |
| Impact (3 times each direction, impact duration 11ms) (test similar to DIN IEC 60068, Part 2-27) | m/s^2 | 350 |
| Assembly | | Support rail, DIN EN60715 (IEC 60715) |
| Connection | | Plug-in terminals |
| Degree of protection | | IP20 |
| Reliability | | |
| MTTF (MIL-HDBK-217F, Feb. 1995) | hours | 92000 |
| EMC conformance | | |
| as per EN 61326*) | | in an industrial environment |

* For measurement as per EN 61326, May 2004 edition, Annex F, burst to shielding of the transducer or bus line, there must be compliance with the class accuracy of 0.1 when using filter frequencies up to and including 2 Hz. When a filter frequency of 100 Hz is used, the measurement variation can be as much as 1.3%.

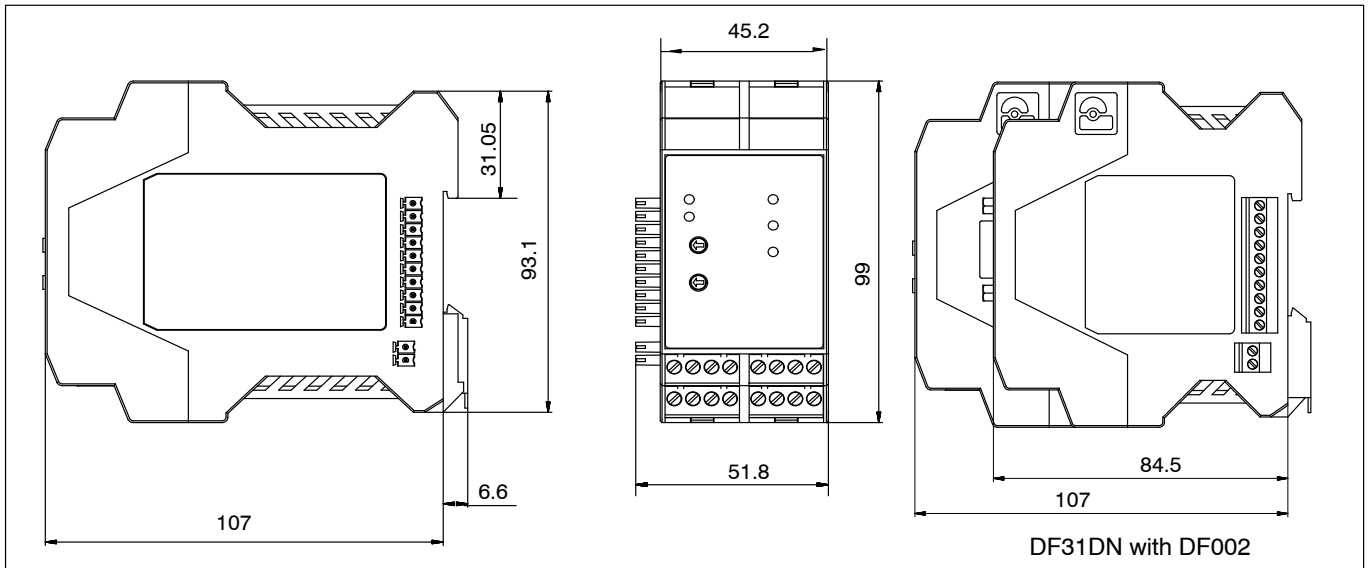
Filter data and sampling rate

| Desired frequency | -1 dB (Hz) | -3 dB (Hz) | -20 dB (Hz) | Phase delay (ms) | Sampling rate (s^{-1}) | min. cycle time (ms) |
|-------------------|------------|------------|-------------|------------------|-----------------------------------|----------------------|
| 100 Hz | 130 | 225 | 560 | 2.3 | 1184 | 0.85 |
| 50 Hz | 48 | 82 | 220 | 4.6 | 1184 | 0.85 |
| 20 Hz | 20 | 34 | 100 | 9.5 | 1184 | 0.85 |
| 10 Hz | 10.5 | 18.6 | 56 | 16.6 | 1184 | 0.85 |
| 5 Hz | 5.2 | 9.3 | 28 | 31 | 592 | 1.7 |
| 2 Hz | 2.1 | 3.7 | 11.2 | 70 | 237 | 4.2 |
| 1 Hz | 1.05 | 1.8 | 5.6 | 140 | 118 | 8.4 |
| 0.5 Hz | 0.52 | 0.9 | 2.8 | 280 | 59 | 16.9 |
| 0.2 Hz | 0.21 | 0.36 | 1.1 | 700 | 24 | 42.2 |
| 0.1 Hz | 0.105 | 0.18 | 0.56 | 1400 | 12 | 84.5 |
| 0.05 Hz | 0.052 | 0.09 | 0.28 | 2800 | 6 | 168.9 |

Block diagram



Dimensions in mm



Scope of supply:

Module digiCLIP DF31DN

Coded plug connector for sensor connection (2 pieces)

Coded plug connector for digital IN/OUT (2 pieces)

Plug-in terminal for CANBUS and supply voltage

CD-ROM with free setup software (digiCLIP Assistant);

(the latest Assistant can be downloaded free of charge under <http://www.hbm.com/support>)

Order No.: 1-DF31DN

Order No.: 3-3312.0404

24 V / 0 V Order No.: 3-3312.0418

IN / OUT Order No.: 3-3312.0444

Combicon Order No.: CR-MSTB

Accessories (not included among the items supplied):

Setup-Toolkit for digiCLIP (interface converter USB/CAN, connection cable, free setup software (digiCLIP Assistant))

Connector set for digiCLIP module

(needed for two-tier installation in the control cabinet)

Connection module for frontal assignment of the rear terminal strip (bus and power supply)

Order No.: 1-DIGICLIP-SETUP

Order No.: -1-digiCLIP-ST

Order No.: 1-DF002

© Hottinger Baldwin Messtechnik GmbH.
Subject to modifications. All product descriptions are for
general information only. They are not to be understood as a
guarantee of quality or durability.

Hottinger Baldwin Messtechnik GmbH

Im Tiefen See 45 · 64293 Darmstadt · Germany
Tel. +49 6151 803-0 · Fax: +49 6151 803-9100
Email: info@hbm.com · www.hbm.com

measure and predict with confidence

