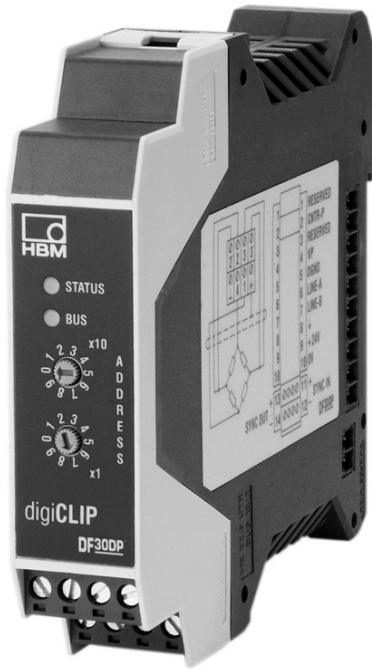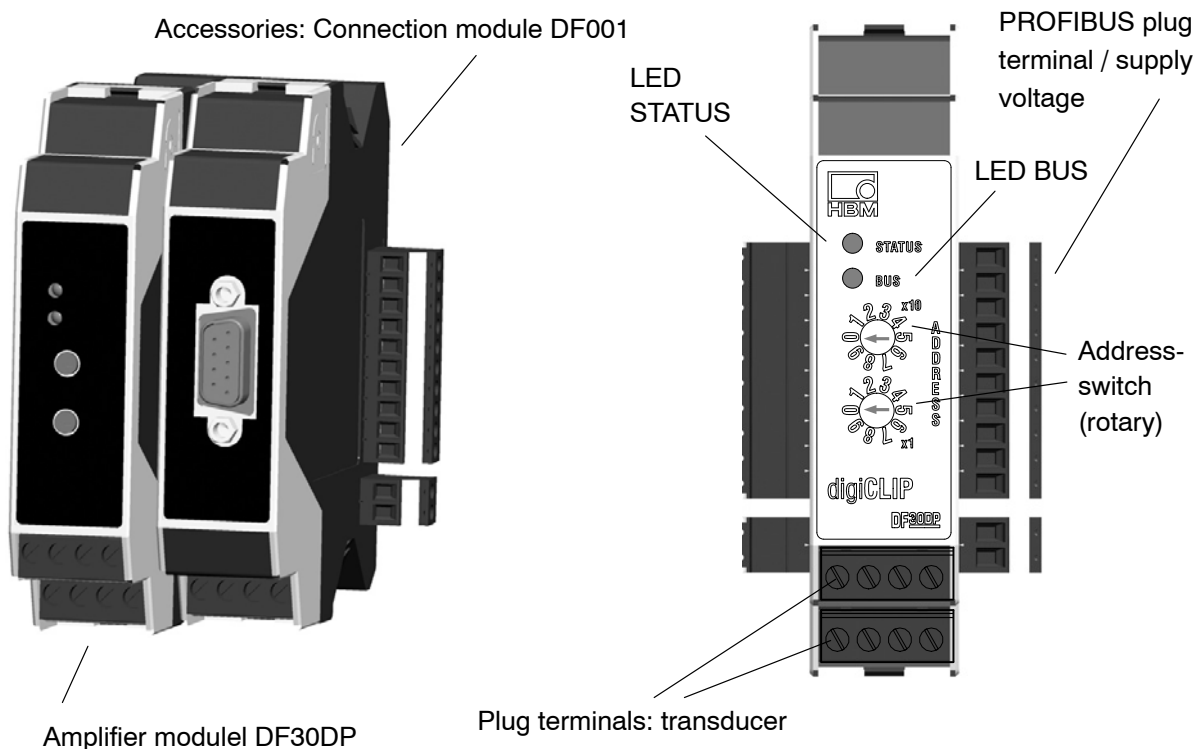# digiCLIP

DF30DP

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**
- **Accuracy class, typically 0.05%**
- **Modular mounting on a DIN EN 60715 type DIN rail (IEC 60715)**
- **Fast peak and limit value monitoring**
- **Standardized Profibus DP interface with DPV1 functionality for parameterization and backup**

Accessories: Connection module DF001

LED STATUS

LED BUS

PROFIBUS plug terminal / supply voltage

Address-switch (rotary)

Amplifier modulel DF30DP

Plug terminals: transducer

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Specifications

digiCLIP		
Accuracy class (at U_B = 2.5 V and U_B = 1 V); after autocalibration		0.05, typically 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 used for safety considerations	V_{DC}	< 60
Permissible supply voltage range	V	18 ... 30
Influence of supply voltage on accuracy	%/V	< 0.001
Power consumption, max.; incl. transducer	W	2.5
Amplifier		
Carrier frequency, square	Hz	600 (591.9 Hz $\pm$ 100 ppm)
Synchronization		when several interconnected modules are used, the carrier frequency is synchronized automatically

Bridge excitation voltage UB, Peak–to–peak (”10%)	V	2.5	1.0
Measuring range	mV/V	$\pm$ 4	$\pm$ 10

Connectable transducers SG full bridge	ohms	80 ... 5000
Connection technique		4 or 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 UB = 2.5 V, typical	μV/V	1.0 (at 100 Hz filter frequency) 0.05 (at 1 Hz filter frequency)
Influence of ambient temperature for change of 10 K on the zero point (TK0) on sensitivity (TKC)	 μV/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 Bit rate, max. Line length, max. Profibus ID number Parameterization (asynchronous) Profibus connection	 MBit/s	max. 97, in groups of max. 4, coupled via repeater 3 – 99 (adjustable via frontal rotary switch) Profibus DP slave, to DIN 19245–2, DPV1 Class 1 and Class 2; available at www.profibus.org 1,5 0,5 0,187 0,093 100 200 400 1000 1200 096D (hex) to Profibus DPV1 standard Plug terminal on the side: potential separation from power supply and measurement ground Option: DF001: 9–pin sub-D (DIN 19245)
Signal conditioning		
A/D converter		Delta-Sigma, 24–bit
Scaling accuracy	bits	32
Sampling rate	1/s	1184

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 (plus factory setting); saved in the EEPROM

Limit value switches
 	
   Number
   Functions
 	
   Signal source (user−selectable)
   Hysteresis
   Update
		
		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

Ambient conditions		
Nominal temperature range	ºC	0 ... +50
Operating temperature range	ºC	−10 ... +60
Storage temperature range	ºC	−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
Mounting		Support rail, DIN EN60715 (IEC 60715)
Connection		Plug−in terminals
Degree of protection		IP20
Reliability		
MTTF (MIL−HDBK−217F, Feb. 1995)	hours	127800
EMC conformance		
as per EN 61326[*]		in an industrial environment

* With measurement per EN 61326, May 2004 edition, Annex F, burst to shielding of the transducer or bus line, the class accuracy of 0.1 is complied with when using filter frequencies up to 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})
100 Hz	130	225	560	2.3	1184
50 Hz	48	82	220	4.6	1184
20 Hz	20	34	100	9.5	1184
10 Hz	10.5	18.6	56	16.6	1184
5 Hz	5.2	9.3	28	31	592
2 Hz	2.1	3.7	11.2	70	237
1 Hz	1.05	1.8	5.6	140	118
0.5 Hz	0.52	0.9	2.8	280	59
0.2 Hz	0.21	0.36	1.1	700	24
0.1 Hz	0.105	0.18	0.56	1400	12
0.05 Hz	0.052	0.09	0.28	2800	6

Block diagram

Dimensions in mm

DF30DP with DF001
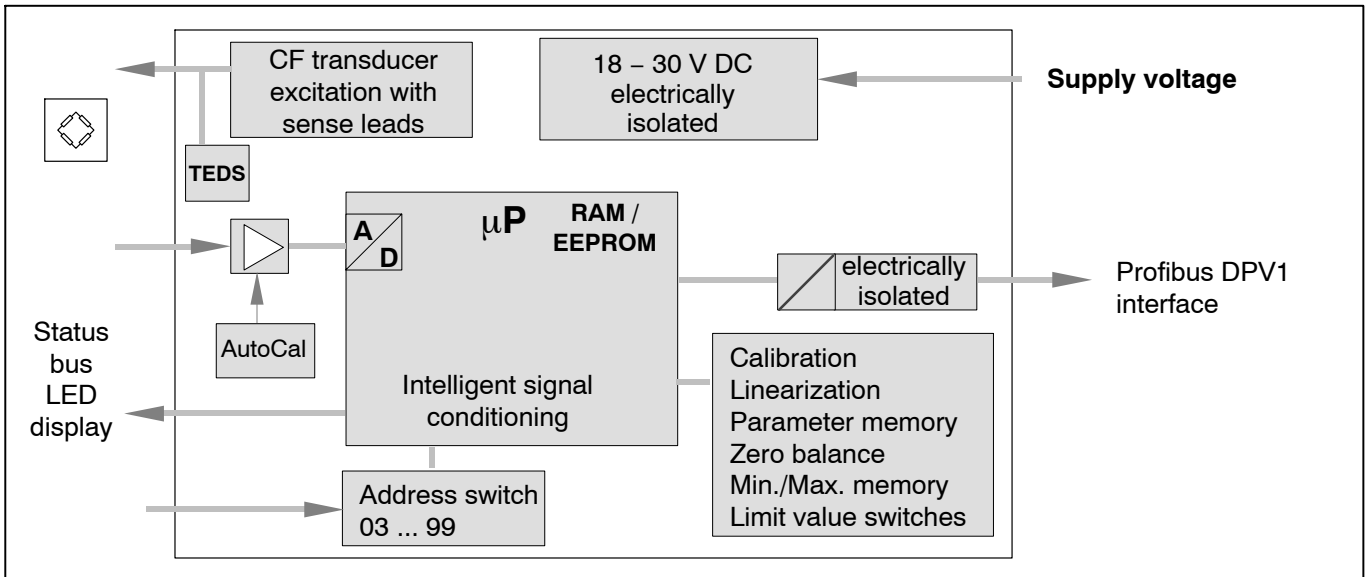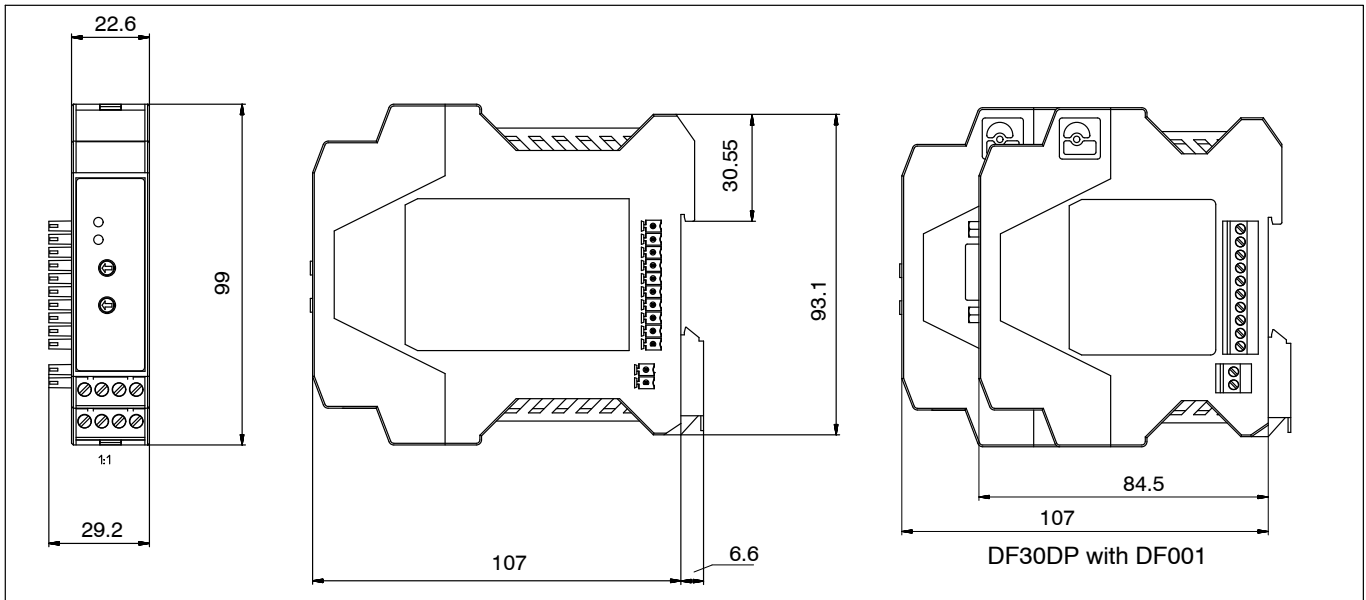
Scope of supply :

DF30DP digiCLIP module	Order no.: 1−DF30DP
Coded connectors for sensor connection (2 pieces)	Order no.: 3−3312.0404
Plug terminal for PROFIBUS and supply voltage	Combicon order no.: CR−MSTB

CD−ROM including free setup software (digiCLIP Assistant), (a free updated version of the Assistant can be downloaded from http://www.hbm.com/support).

Accessories (not included in the scope of supply):

Connector set for digiCLIP modules
  (needed for two−tier installation in the control cabinet) Order no.: 1−digiCLIP−ST

Connection module for frontal assignment of the rear terminal strip (bus and voltage supply)
  Order no.: 1−DF001

measure and predict with confidence

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B1906−4.0 en