

SUPPLEMENTARY INFORMATION

EN

Translation of the original instructions

DEVICENET

DigiLine Gauge



Validity

- **DeviceNet**

This supplementary information describes important variations to the standard product and is only valid together with its prevailing operating instructions.

Applicable documents

DigiLine-DeviceNet	Operating instructions
Operating instructions DigiLine gauges in standard version:	
CPT 200	PG 0021*
HPT 200	PG 0024*
MPT 200	PG 0025*
PPT 200	PG 0022*
RPT 200	PG 0023*
Declaration of Conformity	A component of this manual

*also available at www.pfeiffer-vacuum.com

Abbreviations

DN:	DeviceNet version
BA sensor:	Bayard-Alpert sensor
CC sensor:	Cold cathode sensor
HV:	High vacuum sensor

Product description

Function

The DeviceNet connector (M12, A-coded) is used to connect to a DeviceNet system. The connector is also used to apply the supply voltage (in the model with relay contacts exclusively via this connector).

Variants

- DeviceNet standard version (1a+3):
 - Power supply possible via 1a or 3.
- Version RS-485/8pol. with relay contacts (1b+3):
 - Power supply exclusively possible via 3.

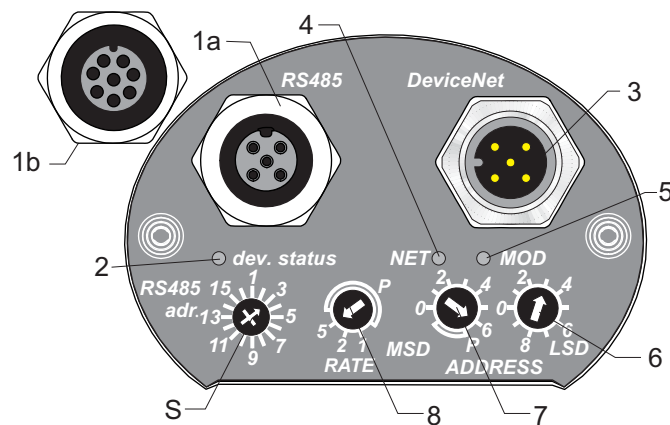


Fig. 1: Connections

1a	RS-485 Interface, 5-pole	4	DeviceNet status LED	7	DN address selector switch (MSD)
1b	RS-485 Interface and relay contacts, 8-pole	5	Module status LED	8	Switch DN baudrate
2	Gauge status LED	6	DN address selector switch (LSD)	S	RS-485 address selector switch
3	DeviceNet interface				

Installation

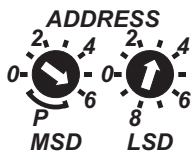
Configuring the connection

To start DeviceNet communication, the unit can be configured using the appropriate EDS files.

- Select desired device address
- Select desired baud rate
- Fit rubber plugs at the address selector switches evenly and as deep as possible to achieve the stated protection class.

Device address

The DeviceNet device address is set manually using the "**ADDRESS**" selector switches or via DeviceNet.



Position	Meaning
00 to 63	Device address (decimal) – MSD = multiples of 10 (0x-6x) – LSD = units (x0-x9)
P	Address via DeviceNet

Setting the address manually

- Set the selector switches to the desired value.
 - Once the setting has been made, the device accesses the bus using the new address.

Setting the address via DeviceNet

- Switch off the unit or disconnect it from the mains supply.
- Set the selector switches to "P".
 - When switched on, the system uses the last valid address ("63" upon delivery).
 - The address is programmable via DeviceNet object 3.1.1. (see p. 9, chap.).

Baud rate

The DeviceNet baud rate is set manually using the "RATE" selector switches or via DeviceNet.



Position	Meaning
1	125 kBit/s
2	250 kBit/s
5	500 kBit/s
P	Baud rate via DeviceNet

Setting the baud rate manually

- Set the selector switches to the desired value.
 - The change takes effect the next time the system is switched on.

Setting the baud rate via DeviceNet

- Switch off the unit or disconnect it from the mains supply.
- Set the selector switches to "P".
 - When switched on, the system uses the last valid baud rate (500 kBit/s upon delivery).
 - The baud rate is programmable via DeviceNet object 3.1.2. (see p. 12, chap.).

Connection "DeviceNet"

Power is supplied to the gauge via the RS-485 connector (see operating instruction of the standard version) or via DeviceNet connector. For the version with relay contacts exclusively via DeviceNet.



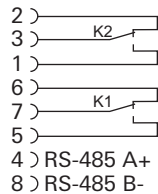
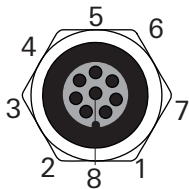
NOTICE	
Damage to the product	
Only connect cables when de-energized.	
→ Never establish a connection using a live cable.	

Standard version



Pin	Assignment
1	Drain
2	V+, 24 V DC referred to V-
3	V-
4	CAN_H
5	CAN_L

8-pole version/relay contacts



→ Perform DeviceNet wiring in accordance with the applicable specifications.

Adjusting address and baud rate

Manual address set up

→ Set up the DeviceNet address (00-63) through the switches marked *ADDRESS*. The switch position marked *MSD* designates the tens decimals, *LSD* denotes the ones decimals.

Address set up through DeviceNet

→ In the switched off state, set the switch *ADDRESS MSD* to *P*.
 – After switching the instrument on, it will resume operation with the last valid address which was entered (factory default 63), which may be set up through the object DeviceNet / instance 1 / MAC ID (3.1.1)

Manual baud rate set up

→ The DeviceNet baud rate is set up in the switched off state through the switch marked *RATE*.

Baud rate set up through DeviceNet

→ In the switched off state, set the switch *RATE* to *P*.
 – After switching the instrument on, it will operate using the last valid baud rate (factory default 500 k), which may be set up through the object DeviceNet / instance 1 / baud rate (3.1.2). Changes will only come into effect after having reset the instrument (supply voltage OFF/ON).

Operation

- Before placing the unit into operation, set the unique and valid DeviceNet address and baud rate using the selection switches.

General

- In order to establish a connection apply the service "allocate master/slave connection set" to the instance of the DeviceNet object,
 - for this state the desired connection (Explicit / Poll I/O) and set the attribute "expected packet rate" for the respective connection.

Status LED

Status gauge LED

See operating instructions of the standard version of the respective gauge.

LED operation

NET

LED Status	Meaning	Action
Off	Device not on bus	⇒ Supply operating voltage ⇒ Wait for address test (approx. 2 s)
Green flashing	On bus, no master allocated	⇒ Create connection with master
Green on	On bus, master allocated	
Red flashing	Connection to master expired	⇒ Test connection to master
Red on	Bus error or duplicate device address allocated	⇒ Check bus ⇒ Check device address ⇒ Check baud rate

MOD

LED Status	Meaning	Action
Off	No voltage supply	⇒ Supply operating voltage
Green on	Device ready for operation	
Red flashing	Device error	⇒ Resolve error

Configuration

For the configuration of the DeviceNet EDS files provided on www.pfeiffer-vacuum.de can be used. Depending on the configuration tool it might be reasonable to use an individual EDS file for the respective data type of the pressure value (please see data type).

Data type of pressure value

INT data type: 2 Byte integer, value between 0 and 65535 (default), use EDS file "default (INT pressure value)*.eds".

REAL data type: 4 Byte floating point, use EDS file "default (INT pressure value)*.eds" or if applicable EDS file "REAL pressure value*REAL.eds".

- Set data type to INT (default): C3h or REAL: CAh via explicite connection to "S-Analog Sensor"/instance 1/data type (49.1.3) or with configuration tool.
- The choice of the data type affects the I/O data (please see "Reading the actual pressure value").

Physical unit of pressure value

Set data type to one of the following units via explicite connection to "S-Analog Sensor"/instance 1/data units (49.1.4) or with configuration tool.

- Counts (=mbar, default): 1001h
- Psi: 1300h
- Torr: 1301h
- mTorr: 1302h
- mbar: 1308h
- Pa: 1309h



Data type and physical unit can be only adjusted, as long as no poll I/O-connection is active.

Trip point and hysteresis

- Set the trip point via explicite connection:
 - "Trip point"/instance 1 or instance 2/attribute 5
 - Default value after start up: 0
- Set the hysteresis via explicite connection:
 - "Trip point"/instance 1 or instance 2/attribute 10
 - Default value after start up: 0
- Use data type and data unit for trip point and hysteresis value:
 - "S-Analog Sensor"/instance 1/data type (49.1.3)
 - "S-Analog Sensor"/ instance 1/data unit (49.1.4)

DeviceNet objects

The functions of the transmitter can be accessed through the TIC through the following DeviceNet objects based on the profile "Vacuum/Pressure Gauge Device":

class	inst.	comment
1: Identity	1	Unit attribute
2: Message router	1	-
3: DeviceNet	1	Communication setup
4: Assembly	2	input 1 Status byte + actual pressure value INT (2 Byte integer 0 ... 65535)
	5	input 1 Status byte + actual pressure value REAL (4 Byte floating point)
5: Connection	1	Explicit (single access to functions)
	2	Poll I/O (typically exchange of an assembly object)
48: S-Device Supervisor	1	Device and status information
49: S analog sensor	1	Actual pressure value
	2	Actual pressure value (only RPT 200, HPT 200 und MPT 200)
53: Trip point	1	Trip point 1
	2	Trip point 2

Table 1: For the individual functions see "DeviceNet Statement of Conformance"; the more important functions are described here in greater detail.

Reading actual pressure value

- Set up data type and physical unit.
- Read unit attribute "s-analog sensor"/instance 1/value (49.1.6) via the "explicit connection" *and/or*
- read input data via the poll I/O connection. Input data contains 3 Byte (1 status byte + INT actual pressure value) or 5 Byte (1 status Byte + REAL actual pressure value).

Pressure adjustment

- Follow procedure according to the gauge currently used.
- Zero: apply the service "Zero_Adjust" to the corresponding instance of the "s-analog sensor" object using the explicit connection.
- Atmosphere: apply the service "Gain_Adjust" to the corresponding instance of the "s-analog sensor" object using the explicit connection.

DeGas (only for HPT 200)

- Follow procedure according to the gauge currently used.
- Apply the service "Set_DeGas_State" via the explicit connection to the instance 2 of the "S-Analog Sensor" object with data 0 (off) or 1 (on).

Correction factors (not valid for CPT 200)

- Use valid values for the sensor of the currently used gauge and follow the appropriate procedure.
- Set the gain attribute of the corresponding instance of the "s-analog Sensor" objects via the explicit connection.

DeviceNet Statement of Conformance

General Device Data	
Conform to DeviceNet Specification	Volume I, Release 2.0, Volume II, Release 2.0
Vendor Name	Pfeiffer Vacuum
Device Profile Name	Vacuum/Pressure Gauge Device
Product Catalog Number	-
Product Revision	1.1
DeviceNet Physical Conformance Data	
Network Power Consumption (Max)	0.1 A + power consumption of connected gauge @ 11 V DC (worst case)
Connector Style	Sealed-Micro
Isolated Physical Layer	No
LEDs supported	Module, Network
MAC ID Setting	BCD-Switch, Network Selectable
Default MAC ID	63
Communication Rate Setting	BCD-Switch, Network Selectable
Communication Rates Supported	125 k, 250 k, 500 k
DeviceNet Communication Data	
Predefined Master/Slave Connection Set	Group 2 Only Server
Fragmented Explicit Messaging Implemented	Yes
Transmission Time Out	1000 ms
Typical Target Address Class, Instance, Attribute	1, 1, 7

DeviceNet objects

Identity

Pfad	Name	Datentyp	Service	Kommentar
1.0.1	Revision	UINT	get	
1.0.2	Max Instance	UINT	get	
1.0.3	Number of Instances	UINT	get	
Instanz 1				
1.1.1	Vendor ID	UINT	get	527 (Pfeiffer Vacuum)
1.1.2	Device Type	UINT	get	28 (Pressure Gauge Device)
1.1.3	Product Code	UINT	get	- 6401 CPT 200 DN - 6145 PPT 200 DN - 6657 RPT 200 DN - 6913 HPT 200 DN - 7169 MPT 200 DN
1.1.4	Revision	STRUCT of	get	
	Major Revision	USINT		
	Minor Revision	USINT		
1.1.5	Status	WORD	get	
1.1.6	Serial Number	UDINT	get	
1.1.7	Product Name	SHORT_STRING	get	xPT 200 DN
1.1.10	Heartbeat interval	USINT	get,set	

Instance Services

ID	name	comment
5	Reset	
14	Get_Attribute_Single	
16	Set_Attribute_Single	

Message Router

This object provides no attributes and services.

DeviceNet

Path	Name	Data type	Service	Comment
3.0.1	Revision	UINT	get	
Instanz 1				
3.1.1	MAC ID	USINT	get, (set)	set only for switch pos. "P"
3.1.2	Baud Rate	USINT	get, (set)	set only for switch pos. "P"
3.1.5	Allocation Information	STRUCT of	get	
	Allocation Choice Byte	BYTE		
	Master's MAC ID	USINT		

Instance Services

ID	name	comment
14	Get_Attribute_Single	
16	Set_Attribute_Single	
75	allocate master/slave connection set	
76	release master/slave connection set	

Assembly

Path	Name	Data type	Service	Comment
4.0.1	Revision	UINT	get	
4.0.2	max. instance	UINT	get	
4.0.3	Number of Instances	UINT	get	

Instanz 2 (default input):INT pressure value

4.2.3	Data	ARRAY of	get	
	Exception Status	BYTE		s-device supervisor
	Sensor value	INT		s-analog sensor value (2 Byte)

Instanz 5 (input): REAL pressure value

4.5.3	Data	ARRAY of	get	
	Exception Status	BYTE		s-device supervisor
	Sensor value	REAL		s-analog sensor value (4 Byte)

Instance Services

ID	name	comment
14	Get_Attribute_Single	

Connection

Path	Name	Data type	Service	Comment
5.0.1	Revision	UINT	get	

Instanz 1: Explicit connection

5.1.1	State	USINT	get	
5.1.2	Instance Type	USINT	get	
5.1.3	Transport Class Trigger	BYTE	get	
5.1.4	DeviceNet Produced Connection ID	UINT	get	
5.1.5	DeviceNet Consumed Connection ID	UINT	get	
5.1.6	DeviceNet Initial Comm Characteristics	BYTE	get	
5.1.7	Produce Connection Size	UINT	get	
5.1.8	Consumed Connection Size	UINT	get	
5.1.9	Expected Package Rate	UINT	get, set	
5.1.12	Watchdog Timeout Action	UINT	get, set	
5.1.13	Produced Connection Path Length	USINT	get	

Instanz 1: Explicit connection

5.1.14	Produced Connection Path	UINT	get	
5.1.15	Consumed Connection Path Length	Packed EPATH	get	
5.1.16	Consumed Connection Path	UINT	get	
5.1.17	Production Inhibit Time	Packed EPATH	get	

Instanz 2: Poll I/O connection

5.2.1	State	USINT	get	
5.2.2	Instance Type	USINT	get	
5.2.3	Transport Class Trigger	BYTE	get	
5.2.4	DeviceNet Produced Connection ID	UINT	get	
5.2.5	DeviceNet Consumed Connection ID	UINT	get	
5.2.6	DeviceNet Initial Comm Characteristics	BYTE	get	
5.2.7	Produce Connection Size	UINT	get	
5.2.8	Consumed Connection Size	UINT	get	
5.2.9	Expected Package Rate	UINT	get, set	
5.2.12	Watchdog Timeout Action	UINT	get	
5.2.13	Produced Connection Path Length	USINT	get	
5.2.14	Produced Connection Path	UINT	get	default: 4.2.3 change the assembly instance to select matching data type in "s-analog sensor object"
5.2.15	Consumed Connection Path Length	Packed EPATH	get	
5.2.16	Consumed Connection Path	UINT	get	
5.2.17	Production Inhibit Time	Packed EPATH	get, set	

S-Device Supervisor

Path	Name	Data type	Service	Comment
48.0.1	Revision	UINT	get	
48.0.2	Max Instance	UINT	get	
48.0.3	Number of Instances	UINT	get	
Instanz 1:				
48.1.3	Device Type	SHORT_STRING	get	
48.1.4	SEMI Standard Revision Level	SHORT_STRING	get	
48.1.5	Manufacturer's Name	SHORT_STRING	get	
48.1.6	Manufacturer's Model Number	SHORT_STRING	get	
48.1.7	Software Revision Level	SHORT_STRING	get	
48.1.8	Hardware Revision Level	SHORT_STRING	get	
48.1.11	Device Status	USINT	get	– 1: Self Testing – 2: Idle – 3: Self-Test Exception – 4: Executing – 5: Abort – 6: Critical Fault
48.1.12	Exception Status	BYTE	get	
48.1.13	Exception Detail Alarm	STRUCT of	get	
	Common Exception Detail Size	USINT		2
	Common Exception Detail 0	BYTE		s.u.
	Common Exception Detail 1	BYTE		s.u.
	Device Exception Detail	USINT		2
	Device Exception 0	BYTE		s.u.
	Device Exception 1	BYTE		s.u.
	Manufacturer Exception Detail Size	USINT		2
	Manufacturer Exception Detail 0	BYTE		s.u.
	Manufacturer Exception Detail 1	BYTE		s.u.
48.1.14	Exception Detail Warning	STRUCT of	get	
	Common Exception Detail Size	USINT		2
	Common Exception Detail 0	BYTE		s.u.
	Common Exception Detail 1	BYTE		s.u.
	Device Exception Detail	USINT		2
	Device Exception 0	BYTE		s.u.
	Device Exception 1	BYTE		s.u.
	Manufacturer Exception Detail Size	USINT		2
	Manufacturer Exception Detail 0	BYTE		s.u.
	Manufacturer Exception Detail 1	BYTE		s.u.
48.1.15	Alarm Enable	BOOL	get, set	
48.1.16	Warning Enable	BOOL	get, set	

Instance Services

ID	name	comment
5	Reset	
6	Start	device status --> "executing"
7	Stop	device status --> "idle"

ID	name	comment
14	Get_Attribute_Single	
16	Set_Attribute_Single	
75	Abort	device status --> "abort"
76	Recover	device status --> "idle"
78	Perform diagnostics	0 = standard

S-Analog Sensor

Path	Name	Data type	Service	Comment
49.0.1	Revision	UINT	get	
49.0.2	Max Instance	UINT	get	
49.0.3	Number of Instances	UINT	get	

Instance 1: Sensor 1 (CPT 200, RPT 200, PPT 200 (Piezo), HPT 200, MPT 200 (Pirani))

49.1.3	Data type	USINT	get, (set)	- INT (0xC3) or REAL (0xCA) - selects also matching assembly instance for poll I/O connection - not settable, if poll I/O connection established - changes also affect instance 2 (if present) - will be changed to matching data type when assembly object in poll I/O connection is set
49.1.4	Data units	ENGUNITS	get, (set)	- Counts (=mbar, 0x1001), Psi: (0x1300), Torr (0x1301), mTorr (0x1302), mbar (0x1308), Pa (0x1309) - not settable, if poll I/O connection established - changes also affect instance 2 (if present)
49.1.5	Reading Valid	BOOL	get	0: ungültig, 1: gültig
49.1.6	Value	INT	get	pressure value
49.1.7	Status	BYTE	get	s.u.
49.1.14	gain	REAL	get, set	not CPT 200
49.1.94	sensor warning	STRUCT	get	
49.1.95	sensor alarm	STRUCT	get	
49.1.96	status extension	BYTE	get	
49.1.99	subclass	UINT	get	

Instance 1 Services

ID	name	comment
14	Get_Attribute_Single	
16	Set_Attribute_Single	
75	Zero_Adjust	
76	Gain_Adjust	

Instance 2: Sensor 2 (HPT 200 (Bayard-Alpert-Sensor), MPT 200 (Cold Cathode Sensor))

49.2.3	Data type	USINT	get, (set)	- INT (0xC3) or REAL (0xCA) - selects also matching assembly instance for poll I/O connection - not settable, if poll I/O connection established - changes also affect instance 2 (if present) - will be changed to matching data type when assembly object in poll I/O connection is set
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Instance 2: Sensor 2 (HPT 200 (Bayard-Alpert-Sensor), MPT 200 (Cold Cathode Sensor))

49.2.4	Data units	ENGUNITS	get, (set)	- Counts (=mbar, 0x1001), Psi: (0x1300), Torr (0x1301), mTorr (0x1302), mbar (0x1308), Pa (0x1309) - not settable, if poll I/O connection established - changes also affect instance 2 (if present)
49.2.5	Reading Valid	BOOL	get	0: ungültig, 1: gültig
49.2.6	Value	INT	get	pressure value
49.2.7	Status	BYTE	get	s.u.
49.2.14	gain	REAL	get, set	
49.2.88	degas status	BOOL	get	
49.2.93	emission status	BOOL	get	
49.2.94	sensor warning	STRUCT	get	
49.2.95	sensor alarm	STRUCT	get	
49.2.96	status extension	BYTE	get	
49.2.99	subclass	UINT	get	

Instance 2 Services

ID	name	comment
14	Get_Attribute_Single	
16	Set_Attribute_Single	
75	Zero_Adjust	
76	Gain_Adjust	data: current pressure in selected data format
97	Set_DeGas_State	data (BOOL): 0 - off, 1 - on
98	Set_Emission_State	will be automatically controlled by gauge
99	Clear_Emission_Off_Alarm	no related action supported

Trip point

ID	Name	get	set	data type	Comment
53.0.1	revision	•		UINT	
53.0.2	max instance	•		UINT	
53.0.3	number of instances	•		UINT	

Table 2: Class Attribute

ID	Name	Comment
53.0.14	Get_Attribute_Single	

Table 3: Class Service

Instance 1 (Relay K1)

ID	Name	get	set	data type	Comment
53.1.5	Trip point	•	•	INT (default) or data type attribute	default=0
53.1.6	Trip point enable	•	•	BOOL	default=enable
53.1.7	Status	•		BOOL	- 0=trip point not asserted - 1=trip point asserted
53.1.10	Hysteresis	•	•	same as trip point data type	default=0
53.1.12	Destination	•	(•) ¹	EPATH	Path of destination attribute whose value will be set by output (default=000) ¹ setting destination has no effect be- cause output=status
53.1.13	Output	•		BOOL	output=status
53.1.14	Source	•	(•) ²	EPATH	Path of source attribute whose value re- trieved to input ² setting source has no effect because it is intern. connected to 5.2.14 pro- duced connection path

ID	Name	get	set	data type	Comment
53.1.15	Input	•	(•)	INT (default) or data type attribute	– get will retrieve current pressure value – set has no effect

Instance 2 (Relay K2)

ID	Name	get	set	data type	Comment
53.2.5	trip point	•	•	INT (default) or data type attribute	default=0
53.2.6	trip point enable	•	•	BOOL	default=enable
53.2.7	Status	•		BOOL	– 0=trip point not asserted – 1=trip point asserted
53.2.10	Hysteresis	•	•	same as low trip point data type	default=0
53.2.12	Destination	•	(•) ¹	EPATH	Path of destination attribute whose value will be set by output (default=000) ¹ setting destination has no effect because output=status
53.2.13	Output	•		BOOL	output=status
53.2.14	Source	•	(•) ²	EPATH	Path of source attribute whose value retrieved to input ² setting source has no effect because it is intern. Connected to 5, 2, 14 produced connection path
53.2.15	Input	•	(•)	INT (default) or data type attribute	– get will retrieve pressure current value – set has no effect

Instance Service

ID	Name	Comment
14	Get_Attribute_Single	
16	Get_Attribute_Single	

Data types

Data type	Byte	Description	Example
BOOL	1	Binary value (0/1)	00h: 0, 01h:1
BYTE	1	8 single bits	00h, FFh
DINT	4	signed integer	12345678h: 89h, 56h, 34h, 12h
INT	2	signed integer	1234h: 34h, 12h
Packed EPATH	6		1.2.3: 20h, 01h, 24h, 02h, 30h, 03h
SHORT_STRING		character string with antecedent length byte	"Bilbo": 05h, 42h, 69h, 6Ch, 62h, 6Fh
SINT	1	signed integer	-42: D6h
UINT	2	unsigned integer	2468h: 68h, 24h
UDINT	4	unsigned integer	10203040h: 40h, 30h, 20h, 10h
USINT	1	unsigned integer	101: 65h
WORD	2	16 single bits	55AAh: AAh, 55h

Technical data

Parameter	CPT 200 DN	
Interface: Connection	Digital RS-485, M12 f, 5-pole, DeviceNet, M12 m, 5-pole	
Supply: power consumption	2 W	
Parameter	RPT 200 DN	
Interface: Connection	Digital RS-485, M12 f, 5-pole, DeviceNet, M12 f, 5-pole	
Supply: power consumption	2.9 W	
Parameter	PPT 200 DN	
Interface: Connection	Digital RS-485, M12 f, 5-pole, DeviceNet, M12 m, 5-pole	
Supply: power consumption	2.9 W	
Parameter	HPT 200 DN	
Interface: Connection	Digital RS-485, M12 f, 5-pole, DeviceNet, M12 m, 5-pole	
Supply: power consumption	8.4 W	
Parameter	MPT 200 DN	MPT 200 DN
Interface: Connection	Digital RS-485, M12 f, 5-pole, DeviceNet, M12 m, 5-pole	M12 f, 8-polig, Relaiskontakte, DeviceNet, M12 m, 5-polig
Supply: power consumption	3.4 W	4,2 W
Relay contacts, set points to be set by DeviceNet		2 relays
max. switching current		1 A at 30 V DC



Declaration of conformity

We hereby declare that the product cited below satisfies all relevant provisions according to the following **EC directives**:

- **Electromagnetic Compatibility 2014/30/EU**
- **Restriction of the use of certain Hazardous Substances 2011/65/EU**

DigiLine-DeviceNet

Harmonised standards and national standards and specifications which have been applied:

EN 61326-1: 2013 Group 1 / Class B
EN 50581: 2012

Signature:

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(Dr. Ulrich von Hülsen)
Managing Director

2016-04-29

VACUUM SOLUTIONS FROM A SINGLE SOURCE

Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide, technological perfection, competent advice and reliable service.

COMPLETE RANGE OF PRODUCTS

From a single component to complex systems:

We are the only supplier of vacuum technology that provides a complete product portfolio.

COMPETENCE IN THEORY AND PRACTICE

Benefit from our know-how and our portfolio of training opportunities!

We support you with your plant layout and provide first-class on-site service worldwide.

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