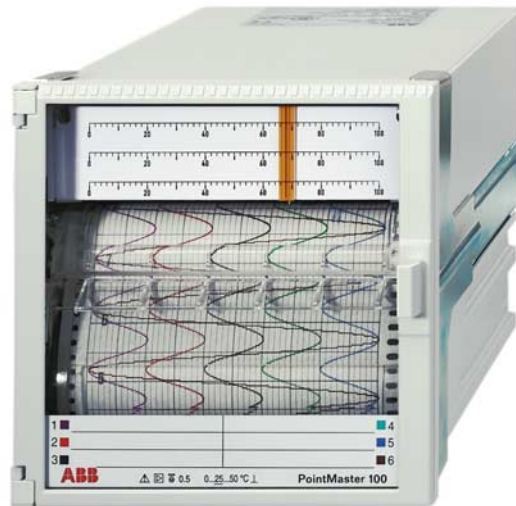


10/41-1.10 EN



- **6 Measuring channels**
- **Last dot visible from the front**
- **Measuring channels electrically isolated and ungrounded**
- **Connection of process signals 0/ 4...20 mA, 0...1 V**
- **Format 144 mm x 144 mm; installed depth 250 mm**
- **Combined chart unit for rolled chart (32 m) or folded chart paper (16 m)**
- **Interface RS 485 for configuration and measuring data readout**

The PointMaster 100 is a micro-controlled multipoint recorder.

The recorder measures process signals 0/4...20 mA and 0...1 V. More current and voltage signals can be measured via plug-in shunts or voltage dividers.

The recorder is matched to the measuring task with software, using the internal keyboard. Or with PC and the tuning program PARAPPOINT 100 by way of the RS 485 interface.

2 alarm contact outputs, an external speed changeover and a standby function can be optionally selected.

Technical data

Measurement section

Deviation

Class 0.5 to IEC 1143-1 in reference with nominal range

In case of shift of start of measurement and/or end of measurement additionally

$$\pm (0.1\% \times \frac{\text{nominal range}}{\text{scale span}} - 0.1)$$

Dead zone

0.25 % of scale span

Measuring point connection time

2.5...20 s adjustable

Measured value dampening

with first class low-pass; time constant 0...60 s per channel, tunable

Measured variable / nominal ranges

Direct current

0...20 mA, 4...20 mA; R_i approx. 50 Ω
via plug-on shunt 0...0.5 mA to 0...500 mA (voltage drop 1 V)

Direct voltage

0...1 V;
via plug-on voltage divider > 0...1 V to ≤ 0...50 V

Measuring ranges

Start of range

from 0...80 % of respective nominal range tunable

End of range

from 20...100 % of respective nominal range tunable

Effects

Temperature

$$\pm (0.2 + (0.05 \times \frac{\text{nominal range}}{\text{scale span}} - 0.05)) \% / 10 \text{ K}$$

Reference temperature

25 °C

Supply voltage

0.1 % for 24 V, -25 % ... 85 V, +10 % UC
0.1 % for 95 V, -10 % ...240 V, +10 % UC

Interference voltage

0.5 % of span

External magnetic field 1 mT

0.5 % of span

Mechanical capability

during and after effect ± 0.5 % of span

Recording section / measured value display

Scale

1 to 6 divisions

Character size according to number of graduations:

Graduations	1	2	3	4	5	6
Char. size (mm)	6	5	2	2	2	2

Channel display

through tag number on ink head

Assignment of scales to channels

through colour labels on the scale

Operating board

(behind the chart unit)

Display (for tuning only)

5-digit 7-segment display
Character size 4 x 7 mm

Operating

with three keys

Recording

Colours

violet, red, black, green, blue, brown

Colour sequence to DIN 43 838

Channel 1 violet

Channel 2 red

Channel 3 black

Channel 4 green

Channel 5 blue

Channel 6 brown

Last dot visible from the front

Ink reservoir ≥ 5 x 10⁵ pixels per colour

Trend recording

The measured value recording is in the form of a dotted line

at equidistantly spaced dots

(at a tag connection time > 2.5 s)

Tag connection time

2.5; 5; 10; 20 s

Chart speed

Definable speeds:

0/2.5/5/10/20/30/40/60/120/240/300/600 mm/h

Optional: external speed changeover and switch-off

Option "alarm monitoring and binary inputs" required

Chart

32 m rolled chart or 16 m folded chart paper

Visible diagram length

60 mm

Recording width

100 mm (chart width 120 mm, DIN 16 230)

Technical data

Chart feed-in (for rolled paper)

automatic capture of paper start by the take-up reel
(daily chart tear-up or rewinding of the 32 m possible)

Power supply

Power supply unit

95 V, -10 % ...240 V, +10 % UC

24 V, -25 % ... 85 V, +10 % UC

Frequency range: 47.5...63 Hz

Power consumption:

at maximum complement approx. 20W/ 25 VA

Interface RS 485

for parameter definition (tuning) and data transfer

Optional “Alarm monitoring and binary inputs“

External speed changeover

Control voltage: 24 V DC / 6 mA external

Standby control voltage: 24 V DC / 6 mA external

Alarm monitoring

2 alarm values per channel for absolute value monitoring

2 internal relays can be assigned to the alarm values

Output: NO contact

(the roots of the contacts are connected to each other)

Contact load: 30 V/100 mA

14 additional relays available via external

I/O converter

General and safety-related data

Environmental capabilities

Climatic category 3K3 to DIN IEC 721-3-3

Ambient temperature

0...25...50 °C

Transport and storage temperature

-40...+70 °C

Relative humidity (unit in function)

≤ 75 % annual average, max. 85 %

Avoid condensation. Pay attention to air humidity

on recording paper (to DIN 16 234)

Mechanical capabilities

Tested according to DIN IEC 68-2-27 and DIN IEC 68-2-6

During transportation

Shoc 30 g/18 ms

Vibrations 2 g/5...150 Hz

In operation

Vibrations 0.5 g/± 0.04 mm/5...150 Hz/ 3 × 2 cycles

Electromagnetic compatibility

The protection objectives of the EMC regulation 89/336/EWG on radio interference to EN 55011 and on interference immunity to EN 50082-2 are met.

Radio interference suppression to EN 55 011

Interference voltages on mains lines: 0.15...30 MHz class B

Stray field intensity: 30 MHz...1 GHz class B

Interference immunity

Tested to EN 61000-4

Type of test	Test intensity	Effect	Grade
Burst (5/50 ns) on mains line control line	2 kV	≤ 1 %	3
	2 kV	≤ 1 %	3
Surge (1.2/50 µs) on common mains line differential line	2 kV	≤ 1 %	3
	1 kV	≤ 1 %	2
HF field radiated 80 MHz...1 GHz line fed 0.15...80 MHz	10 V/m	≤ 1 %	3
	10 V	≤ 1 %	3
1 MHz pulse on common mains line differential line	2 kV	≤ 1 %	3
	1 kV	≤ 1 %	3
ESD (1/30 ns)	6 kV	≤ 1 %	3

The NAMUR industrial standard RMC is met.

(Interface lines shielded)

Permissible parasitic voltages

	Permissible parasitic voltage
Serial parasitic voltage Peak to peak	< 0.3 x span max. 3 V
Normal mode rejection	75 dB
Common-mode parasitic voltage	60 V DC/ 250 V AC
Common-mode suppression	83 dB for DC 96 dB for AC

Electrical safety

Tested to DIN EN 61010-1 or IEC 1010-1

Protection class

I

Overvoltage category

III at mains input

II for inputs and outputs

Technical data

Degree of pollution
 2 within the unit and at the connection terminals

Test voltage
 3.75 kV measuring channels to power supply
 2.20 kV protection cable to power supply

Functional extra low-voltage with safe isolation (PELV)
 between mains input – control and interface lines
 to VDE 0100 part 410 and VDE 0106 part 101

Tested acc. to UL 3111-1 and CAN/CSA-C.22.2 No.1010.1

Connection, housing and mounting

Electrical connections
 Type of protection IP 20
 Screw terminals for measurement inputs and control inputs
 Max. wire cross-section 2 x 1 mm²
 Screw terminals for mains connection
 Max. wire cross-section 1 x 4 mm² or 2 x 1.5 mm²
 RS 485 bus interface via 9-pin SUB D connector

Housing
 Moulding material for: surface mounting or mosaic panel field
 mounting (see dimensional drawing for size)

Type of protection for housing to IEC 529
 Front panel (including door): IP 54
 Rear: IP 20

Case colour
 Pebble grey to RAL 7032 (H&B design)
 or grey-white to RAL 9002 (ABB design)

Case door
 Moulding material
 Option: metal frame door with glass (H&B design)
 or metal frame door with plastic window (ABB design)

Case mounting
 with 2 fasteners (optionally for surface or mosaic panel field
 mounting) for max. grid rod width of 40 mm, centering bracket
 required for mounting into mosaic panel field,
 see Code-No. 605

Mounting orientation
 lateral (-30°...0...+30°), inclination towards the back 20°,
 towards the front 20°

Mounting distance
 horizontal or vertical 0 mm, case door must open at 100°

Weight approx. 3.5 kg

Factory settings

Scale with one graduation 0...100
 will be supplied if no scale graduation is defined
 when ordering the recorder

Basic parameter definition (tuning)
 If no particular parameter definition is given when ordering
 the recorder, the PointMaster 100 will be supplied with the
 following parameter setting:
 All channels with measuring range 0...20 mA
 Speed 1: 20 mm/h
 Speed 2: 120 mm/h
 Measured value dampening, loop function are switched off
 No password defined
 This parameter presetting can be reset in the service mode
 of the recorder at any time

Basic standards

A) International standards

IEC 68-2-6	Mechanical capabilities on vibrations
IEC 68-2-27	Mechanical capabilities on shock
IEC 225-4	1 MHz pulse on mains line
IEC 529	IP types of protection
IEC 721-3-3	Environmental capabilities
IEC 742	Safety transformers
IEC 880	Software development
IEC 1000-4	Electromagnetic immunity (measuring method)
IEC 1010-1	Safety for process instruments
IEC 1143-1	Class accuracy
EN 50 081-1	Electromagnetic interference radiation Living quarters
EN 50 081-2	Electromagnetic interference radiation Industrial area
EN 50 082-1	Electromagnetic interference radiation Living quarters
EN 50 082-2	Electromagnetic interference radiation Industrial area
EN 55 011	Radio interference suppression for ISM devices
EN 60 873	Process recorders
EN 132400	Solid capacitors (Y capacitors)

B) US standards

UL 3111-1	Process Control Equipment
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C) Canadian standards

CAN/CSA C22.2 No.1010.1	Safety Requirements for Electrical Equipment
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D) German norms

DIN 16 230	Recording chart paper
DIN 24 420	Layout of spare part list
DIN 43 802	Scales
DIN 43 834	Device fastening elements
DIN VDE 0100 part 410	Protection against dangerous material currents
DIN VDE 0106 part 101	Basic requirements for intrinsic isolation

Initial equipment (part of delivery scope)

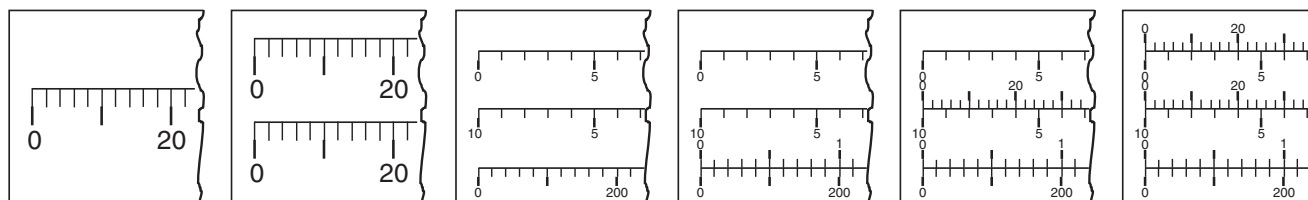
- 1 Operating Manual
- 2 Fasteners
- 1 Rolled or folded chart paper in the device
- 1 Ink head
- Options, depending on order:
- Centering bracket for mosaic panel mounting ruler(s)

Ordering information										
					Catalog No			Code		
Multipoint Recorder PointMaster 100 Standard colour RAL 7032 (pebble grey)					V41412A-	1				
Version 6-channel multipoint recorder						1				
Measuring range 0...20 mA; 0...1 V or external matching 4...20 mA						1				
Power supply 95 V...240 V AC/DC 24 V...85 V AC/DC						5				
Recording on roll chart paper (32 m) on folded chart paper (16 m)						2				
Case¹⁾ RAL 7032 with moulded door, H&B design RAL 7032 with metal frame door (glass window), H&B design RAL 9002 with metal frame door (plastic window), ABB design Large case format²⁾ (W x H) 192 mm x 288 mm Front bezel in RAL 9005 (black)							1			
Parameter definition Standard as specified								1		
Alarm monitoring and binary inputs without with									0	1
Create the required Code No. for each channel										
Scale Character height for 1 and 2 graduations: 5 mm Character height for 3, 4, 5 and 6 graduations: 2,5 mm 1st graduation (above) 2nd graduation 3rd graduation 4th graduation 5th graduation 6th graduation (below) without 0...100 as specified (Clear text)								3	1	
								3	2	
								3	3	
								3	4	
								3	5	
								3	6	
									0	
									1	
									3	
Ruler Graduation as scale deviation										8

*) The three-digit Code Numbers should be appended to the Catalog Number - separated by a slash

1) H&B design with CE-Approval, ABB design with additional UL-Approval

2) Large case format only with roll paper. No design modifications possible.



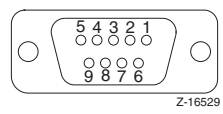
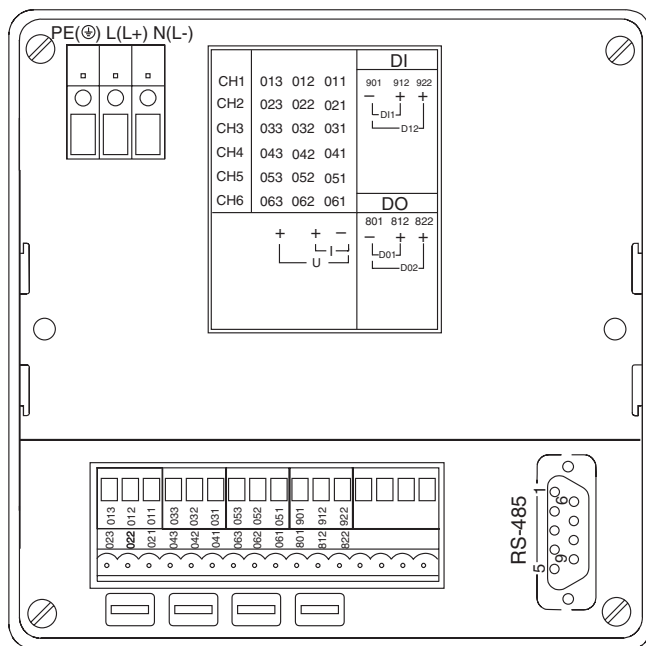
Additional Ordering information				
		Code		
Labelling of the tag name plate				
Character height 3 mm (max. 31 characters per tag)				
for channel 1 (clear text)		5	7 2	
for channel 2 (clear text)		5	7 5	
for channel 3 (clear text)		5	7 8	
for channel 4 (clear text)		5	8 1	
for channel 5 (clear text)		5	8 4	
for channel 6 (clear text)		5	8 7	
Pluggable auxiliary resistor for current measuring ranges				
0...0.5 mA (pieces)		4	0 0	
0...2.5 mA (pieces)		4	0 1	
0...5 mA (pieces)		4	0 2	
0...100 mA (pieces)		4	0 3	
0...500 mA (pieces)		4	0 4	
Pluggable voltage divider for measuring ranges				
0...5 V (pieces)		4	1 0	
0...25 V (pieces)		4	1 1	
0...50 V (pieces)		4	1 2	
Case colour				
RAL 7037 (pebble grey)		6	1 1	
RAL 9005 (black)		6	1 2	
Design				
with compact connector for main and measuring lines		6	2 0	
Accessories				
4 centering brackets (for rack mounting)		6	0 5	
Surface mounting console for wall mounting		6	0 1	
Case version				
Portable version				
Degree of protection IP 54		6	2 4	
Degree of protection IP 20 (with 2 m connection cable for power supply)		6	2 5	
neutral version		6	9 5	
Operating Manual¹⁾				
German (pieces)		Z	2 D	
English (pieces)		Z	2 E	
French (pieces)		Z	2 F	
Certificates				
Constructor's test certificate M acc. to DIN 55350-18-4.2.2 and inspection certificate B acc. to EN 10204-3.1B		6	9 9	

¹⁾ The three-digit Code Numbers should be appended to the Catalog Number - separated by a slash

¹⁾ 1 copy on german included in scope of delivery; No. specific order required; a charge will be made for additional copies of the Operating Manual (please specify number required)

Consumables			
	Bestellnummer		
Print insert	41181-0318333		
Roll chart (only supplied in packs of 10) with hourly time imprint for 20 mm/h	40920-3000505		
Fanfold chart (only supplied in packs of 10) without time imprint, with baselines	40926-3000502		

Connection diagrams



RS 485 Interface

- Pin 1: Shielding
- Pin 3: RXD (+)
- Pin 4: I/O converter (+)
- Pin 5: Gnd (reference potential)
- Pin 6: + 5 V
- Pin 8: RXD (-)
- Pin 9: I/O converter (-)

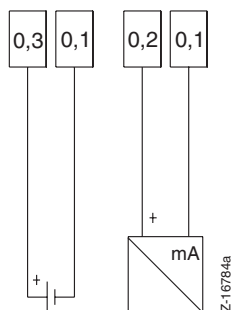
For bus operation:

The voltage + 5 V on Pin 6 is required when the PointMaster 100 is used as bus terminal unit.

The shielding is connected through a blade-type terminal located on the recorder case.

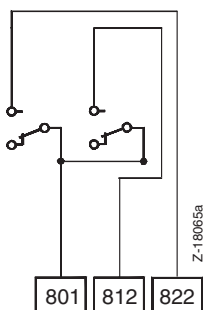
Z-18064a

Signal inputs



Z-16784a

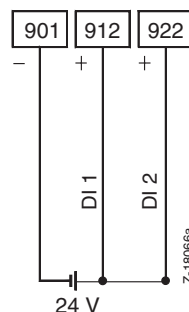
Alarm contacts



Z-18065a

Binary inputs

for speed changeover and standby initialization



Z-18066a



ABB Automation Products GmbH

Höseler Platz 2
D-42579 Heiligenhaus
Phone +49(0)20 56 - 12 51 81
Fax +49(0)20 56 - 12 50 81
<http://www.abb.com/automation>

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