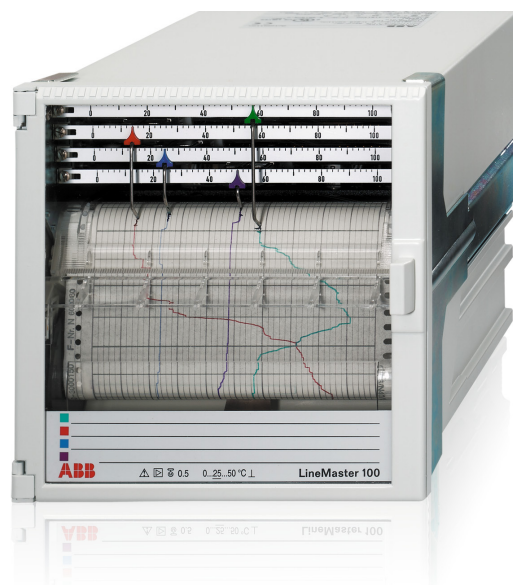


# LineMaster 100

## Continuous-line Recorder



1 ... 4 measuring channels

Format 144 mm x 144 mm,  
installed depth 250 mm

Combined chart unit

— For roll chart (32 m) or folded chart paper (16 m)

Measuring channels electrically isolated  
and ungrounded

The LineMaster 100 is a microcontroller-based continuous-line recorder. It is supplied in versions with 1 ... 4 measuring channels.

The recorder is connected to transmitters and used to measure process signals.

High electromagnetic compatibility (EMV) and high common-mode and normal-mode rejection features guarantee trouble-free use of the LineMaster 100, even under rough ambient conditions.

**Technical data****Measuring section**

Deviation: Class 0.5 to IEC 484

Dead zone: 0.25 % of scale span

Response time (selectable per channel)  
2, 5, 20, 60 s

**Measured variable / measuring ranges**

Direct current

0...20 mA;  $R_i = 40 \Omega$

4...20 mA;  $R_i = 50 \Omega$

Direct voltage

0...10 V,  $R_i = 500 k\Omega$

**Effects**

Temperature

0.2 % / 10 K

Supply voltage

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

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

Parasitic voltage

0.5 % of measuring span

External magnetic field 1 mT

0.5 % of measuring span

Mechanical capability

during and after effect  $\pm 0.5$  % of measuring span

**Recording**

Scale

one graduation depending on measuring system

Scale plate width: 5 mm

Character size: 2 mm

Recording

Fibre-tip pen with ink reservoir

Content approx. 1.4 ml, trace length approx. 1300 m

Space between fibre pen tips 2 mm

Arrangement of measuring elements and colour assignment:

	Number of measuring channels			
	1	2	3	4
green			x	x
red		x	x	x
blue	x	x	x	x
violet				x

Chart speed

Speeds 1/5/10/20/60/120/300 and 600 mm/h  
selectable on display panel

Charts

32 m roll chart or 16 m fouled paper

Visible diagram length

60 mm

Recording width

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

Chart feed-in (for roll chart)

automatic paper intake by the take-up reel (daily diagram  
outline or unwinding of 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 max. complement approx. 20 W / 25 VA

**General and safety data****Environmental capabilities**

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

Ambient temperature

0...25...50 °C

Transport and storage temperature

-40...+70 °C

Relative humidity (device in operation)

$\leq 75$  % annual average, max. 85 %

Avoid condensation. Pay attention to air humidity

on recording paper acc. to DIN 16 234

**Mechanical capabilities**

Tested acc. 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 /  $\pm 0.04$  mm / 5...150 Hz / 3 x 2 cycles

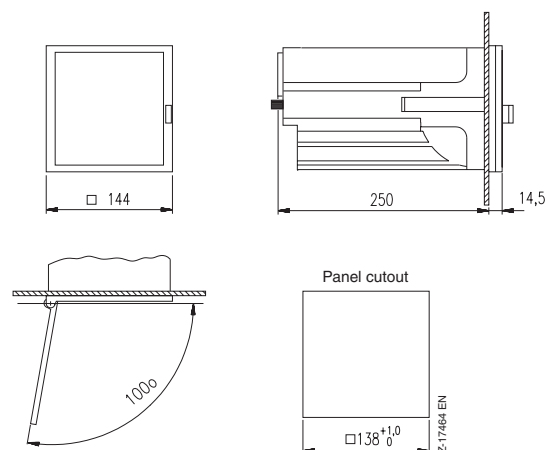
**Electromagnetic compatibility**

The protection objectives of the EMC regulation 89/336/EWG  
on interference suppression acc. to EN 55 011 and regarding  
interference immunity acc. to EN 50 082-2 are met.

Radio interference suppression acc. to EN 55 011

Alarm value class B

Postal Office Directive 243/92

**Dimensional diagram (dimensions in mm)**

**Technical data**

Interference immunity  
Tested acc. to IEC 801

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

The NAMUR industrial standard RMC are met.  
(Interface lines shielded)

Permissible parasitic voltages

	Permissible parasitic voltage
Serial parasitic voltage Peak to peak	< 0.3 x measuring 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 acc. to DIN EN 61 010-1 (classification VDE 0411)  
or IEC 1010-1

Protection class I

Overvoltage category

III at mains input  
II at inputs and outputs

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 (PELV)

between mains input – measuring channels, control lines,  
interface lines  
to VDE 0100 part 410 and VDE 0106 part 101

**Connection, housing and mounting**

Electrical connections

Degree of protection IP 20  
Screw-on connector terminals for measuring inputs

Max. wire cross-section 2 x 1 mm<sup>2</sup>

Screw-on terminals for mains connection

Max. wire cross-section 1 x 4 mm<sup>2</sup>

Housing

Moulding material for panel and mosaic panel mounting  
(dimensions see dimensional diagram)

Type of case protection acc. to IEC 529

Front panel 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 panel or mosaic panel  
mounting) for max. mosaic grid width of 40 mm,  
centering bracket required for mosaic panel mounting,  
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 kg

**Basic standards****A) International standards**

IEC 484	DIN 43 782	Compensation recorders
IEC 1010-1	DIN EN 61 010-1	Electrical safety (Test voltages)
IEC 664	VDE 0110	Insulation class
IEC 68-2-6	DIN IEC 68-2-6	Mechanical capabilities (Vibrations)
IEC 68-2-27	DIN IEC 68-2-27	Mechanical capabilities (Shoc)
IEC 529		Degree of protection
IEC 801	DIN VDE 0843	Immunity to electro- magnetic interference
EN 60 801		Environmental capabilities
IEC 721-3-3	DIN IEC 721-3-3	VDE 0551 classification
IEC 742	DIN EN 60 742	Safety transformer

**D) German standards**

DIN 16 230	Recording chart paper
DIN 43 802	Scales
DIN 43 831	Cases

**Initial equipment** (part of delivery scope)

1 Operating Manual; 2 Fasteners  
1 Rolled or folded chart paper, laid in the unit  
1 Fibre-tip recording pen per measuring channel  
Additionally, according to order:  
Centering brackets for mosaic panel field mounting,  
reading rule(s)

Ordering information																						
										Catalog No.				Code								
<b>Continuous-line Recorder LineMaster 100</b> Standard colour RAL 7032 (pebble grey)										<b>V43012A-</b>									<b>0</b>	<b>0</b>		
<b>Version</b>																						
LineMaster 101 1 measuring channel										1												
LineMaster 102 2 measuring channels										2												
LineMaster 103 3 measuring channels										3												
LineMaster 104 4 measuring channels										4												
<b>Measuring range</b> (same for all channels)																						
0...20 mA / 0...1 V (adjustable to 4...20 mA)										1												
4...20 mA (adjustable to 0...20 mA / 0...10 V)										2												
<b>Power supply</b>																						
95 V...240 V AC/DC										5												
24 V...85 V AC/DC										6												
<b>Recording</b>																						
on rolled chart paper (32 m)										1												
on folded chart paper (16 m)										2												
<b>Case<sup>2)</sup></b>																						
RAL 7032 with moulded door, H&B design										1												
RAL 7032 with metal frame door (glass window), H&B design										3												
RAL 9002 with metal frame door (plastic window), ABB design										4												
<b>Large case format<sup>3)</sup></b> (W x H) 192 mm x 288 mm																						
Front bezel in RAL 9005 (black)										9												
Create the required Code No. for each channel																						
<b>Line channel</b>																						
blue										3												
red										4												
green										5												
violet										6												
<b>Scale</b> (without ruler) numeral height 2 mm; scale height 5 mm																						
without															4	0						
0...100															4	1						
as specified (clear text)															4	2						
<b>Ruler</b>																						
Graduation as scale deviation															4	9						

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

<sup>1)</sup> Not listed version, please use separate NL-application

<sup>2)</sup> H&B design with CE-Approval

<sup>3)</sup> Large case format only with roll paper. No design modifications possible.

Additional Ordering information					
			Code		
<b>Labelling of the tag name plate</b>					
Character height 3 mm (max.64 characters per tag)					
for channel blue (clear text)			5	7	2
for channel red (clear text)			5	7	5
for channel green (clear text)			5	7	8
for channel violet (clear text)			5	8	1
<b>Case colour</b> (for H&B design only)					
RAL 7037 (pebble grey)			6	1	1
RAL 9005 (black)			6	1	2
<b>Design</b>					
prepared for upgrade to 4 measuring systems			6	1	8
with compact connector for main and measuring lines			6	2	0
<b>Accessories</b>					
4 centering brackets (for rack mounting)			6	0	5
Surface mounting console for wall mounting			6	0	1
<b>Case version</b>					
Portable version:					
type of protection IP 54			6	2	4
type of protection IP 20 (with 2 m connection cable for power supply)			6	2	5
<b>Operating Manual<sup>1)</sup></b>					
German (pieces)			Z	2	D
English (pieces)			Z	2	E
French (pieces)			Z	2	F
<b>Certificates</b>					
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

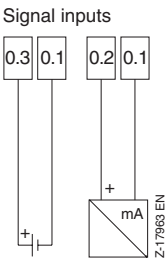
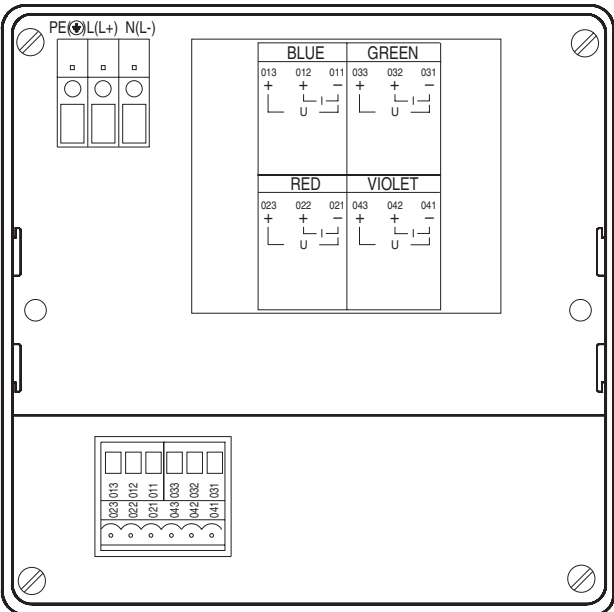
The three-digit Code Numbers should be appended to the Catalog Number - separated by a slash

<sup>1)</sup> 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			
	Catalog No.		
<b>Fibre tip insert</b>			
for measuring channel violet	43482-0319134		
for measuring channel blue	43482-0319133		
for measuring channel red	43482-0319132		
for measuring channel green	43482-0319131		
<b>Roll chart</b> (only supplied in packs of 10)			
with hourly time imprint for 20 mm/h	40920-3000505		
<b>Fanfold chart</b> (only supplied in packs of 10)			
without time imprint, with baselines	40926-3000502		

Other chart paper see Data Sheet 49-9.10 EN

Connection diagrams





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