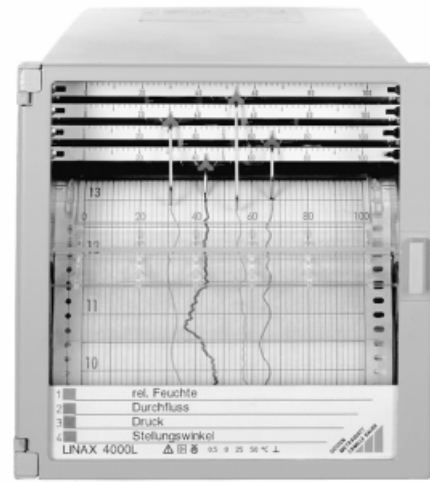


LINAX 4000L

Continuous-line recorder

3-348-852-03
4/2.99

- 1 to 4 line channels
- Format 144 mm x 144 mm, mounting depth 250 mm
- Combined recording table for roll chart (32 m) or fanfold chart (16 m)
- Measuring channels electrically isolated
- Rugged design



Applications

The configurable continuous-line recorder LINAX 4000L serves to record slowly changing measured quantities. DC current and DC voltage can be connected directly. The recorder is meant for installation in panels.

Description

The LINAX 4000L is a microprocessor-controlled, continuous-line recorder. It is supplied with 1 to 4 line channels.

The recorder is connected to transducers and is served to measure process-related signals.

The recorder is supplied with signal inputs DC 0 ... 20 mA / 0 ... 10 V or DC 4 ... 20 mA.

High electromagnetic compatibility (EMC) as well as high common mode and series mode rejection of interference voltages ensure non-problem use of the LINAX 4000L even in rough environments.

Applied rules and standards

A) International standards

IEC 484	Potentiometric recorders
IEC 1010-1	Safety requirements for electrical equipment for measurement control and laboratory use
IEC 664	Overvoltage category, degree of pollution
IEC 68-2-6	Mechanical stress (vibrations)
IEC 68-2-27	Mechanical stress (shock)
IEC 529	Degrees of protection provided by enclosures
IEC 801, EN 60801	Immunity to interference of electromagnetic influences
EN 55011	Radio interference suppression
IEC 721-3-3	Climatic environmental conditions
IEC 742	Isolating transformers and safety isolating transformers – requirements

B) German standards

DIN 43802	Scales
DIN 16234	Recording paper
DIN 43831	Cases

Symbols and their meaning

Symbol	Meaning
X1n	Lower range limit nom. range
X2n	Upper range limit nom. range
X2n – X1n	Range span nom. range

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Technical data

Analog inputs and measuring ranges

DC current	0 ... 20 mA; Ri = 40 Ω 4 ... 20 mA; Ri = 50 Ω
DC voltage	0 ... 10 mA; Ri = 500 kΩ

Deadband 0.25 % of range span

Setting time 2 s, 5 s, 20 s, 60 s

Reference conditions

Ambient temperature	25 °C ± 1 K
Relative humidity	45 ... 75 %
Auxiliary voltage	Hn ± 2 %, nominal frequency ± 2 %
Mounting position	Front upright ± 2°
Warm-up time	30 min

Accuracy

Deviation according to IEC 484	Class 0.5 referred to range span
--------------------------------	----------------------------------

Variations

Temperature	0.2 %/10 K, additionally
Humidity	Note influence on recording paper according to DIN 16234
Auxiliary voltage Hn	0.1 % at 24 V AC/DC ± 20 % 0.1 % at 24 V AC +10 % / -15 % 0.1 % at 115 V AC +10 % / -15 % 0.1 % at 230 V AC +10 % / -15 %
AC interference voltages (see perm. interference voltages)	0.5 % of range span
Magnetic field of external origin 0.5 mT	0.5 % of range span
Mechanical stress according to DIN IEC 68-2-6/27	During and after the effect ± 0.5 % of range span
Transport	Impact: 30 g/18 ms Vibration: 2 g/
5 ... 150 Hz in function	Vibration: 0.5 g/± 0.04 mm/ 5...150 Hz/3 × 2 cicli

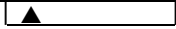


Display

Scale

One graduation per measuring system
Scale face 5 mm wide
Character size 2 mm

Recording

Arrangement of measuring systems and color correlation

	1	2	3	4	No. of line channels
			×	×	3rd channel
		×	×	×	2nd channel
	×	×	×	×	1st channel
				×	4nd channel

Line recording

Fiber recording pen with inkwell of approximately 1.4 ml, line length approximately 1300 m, distance between the tips of the fiber recording pens 2 mm.

Recording

Chart speed	Speed selectable on control panel: 1/5/10/20/60/120/300/600 mm/h
Recording chart	32 m roll chart or 16 m fanfold chart
Visible chart length	60 mm
Recording width	100 mm (chart width 120 mm, DIN 16230)
Chart intake (with roll chart)	Via automatic paper take-up device (daily tear-off or take-up of the 32 m possible)

Auxiliary voltage

24 V AC/DC ± 20 %

Power consumption with max. fitting approx. 15 W/20 VA

24/110/230 V AC +10 %/-15 %

Frequency range 47.5 ... 63 Hz

Power consumption with max. fitting approx. 20 W/25 VA

Climatic suitability

Ambient temperature	0 ... 25 ... 50 °C
Transport and storage temperature	-40 ... +70 °C
Relative humidity	≤ 75 % annual average; max. RH ≤ 85 % in function
Climatic class	3K3 acc. to IEC 721-3-3

LINAX 4000L

Continuous-line recorder

Electrical safety

Test according to DIN EN 61010-1 (classification VDE 0411) and/or IEC 1010-1

Protection class I

Overvoltage category
III at the power input
II at inputs

Degree of pollution
2 in the device and at the connection terminals according to VDE 0110, parts 1 and 2

Test voltage
3.75 kV measuring channels to energy supply
2.20 kV protective conductor to energy supply

Functional extra low voltage with protective separation (PELV)

Between power input – measuring channels, control leads, interface cables acc. to VDE 0100 part 410 and VDE 0106 part 101.

Electromagnetic compatibility

The protection goals of the EMC directive 89/336/EWG as to radio interference suppression according to EN 55011 and as to immunity to interference according to EN 50082-2 are complied with.

Radio interference suppression
Limit class B according to EN 55011 or
Post decree 243/92.

Immunity to interference: test according to IEC 801

Type of test	Test severity	Variation	Severity level
ESD (1/30 ns)	6 kV	≤ 1 %	3
HF field			
radiated 80 MHz ... 1 GHz	10 V/m	≤ 1 %	3
line-guided 0.15 ... 80 MHz	10 V/m	≤ 1 %	3
Burst (5/50 ns) on			
Power line	2 kV	≤ 1 %	3
Test lead	1 kV	≤ 1 %	3
Surge (1,2/50 μs) on			
Power line common	2 kV	≤ 1 %	3
differential	1 kV	≤ 1 %	2
1 MHz pulse on			
Power line common	2 kV	≤ 1 %	3
differential	1 kV	≤ 1 %	3

The NAMUR industry standard EMC is met (Interface cables shielded).

Permissible interference voltages

Test Type	Permissible interference
Series mode interf. voltage	≤ 0.3 × meas. span
Peak-peak	max. 3 V
Push-pull rejection	35 dB
Common mode interference voltage	60 V DC / 250 V AC
Common mode rejection	83 dB for DC / 96 dB for AC

Scope of delivery

1 copy of operating instructions
2 fasteners
1 chart roll or fanfold pack, inserted in the unit
1 fiber recording pen per measuring channel

Additionally, depending upon the order:
Centering angle bracket for installation in mechanical grids;
reading ruler(s)

LINAX 4000L

Continuous-line recorder

Connection, case and installation

Electrical connections

- Protection type IP 20
- Screw and plug terminals for signal inputs
- Max. wire cross section $2 \times 1 \text{ mm}^2$
- Screw terminals for line connection
- Max. wire cross section 4 mm^2

Case

- Molded material for installation in panels or mechanical grids (see dimensional drawing for dimensions)

Protection type of case according to IEC 529

- Front panel IP 54
- Rear panel IP 20

Color of case

- Silica-gray according to RAL 7032

Door of case

- Molded material or door with metal frame RAL 7032 and glass pane, anti-glare

Fastening of case

- With 2 fasteners (optionally for installation in panel or mechanical grid), centering angle brackets are required for installation in mechanical grids

Position of use

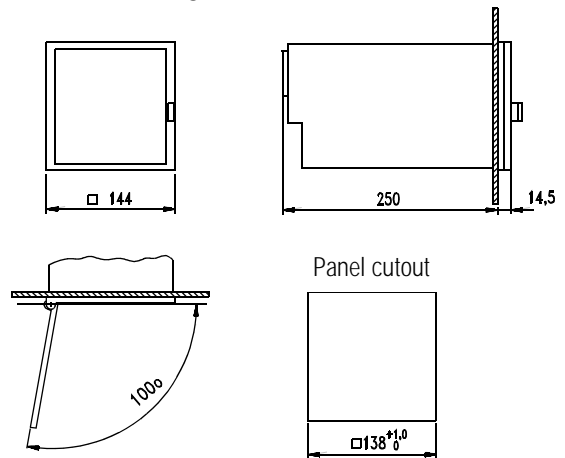
- Lateral $[-30^\circ \dots 0 \dots +30^\circ]$, inclined to the rear 20° , to the front 20°

Mounting distance

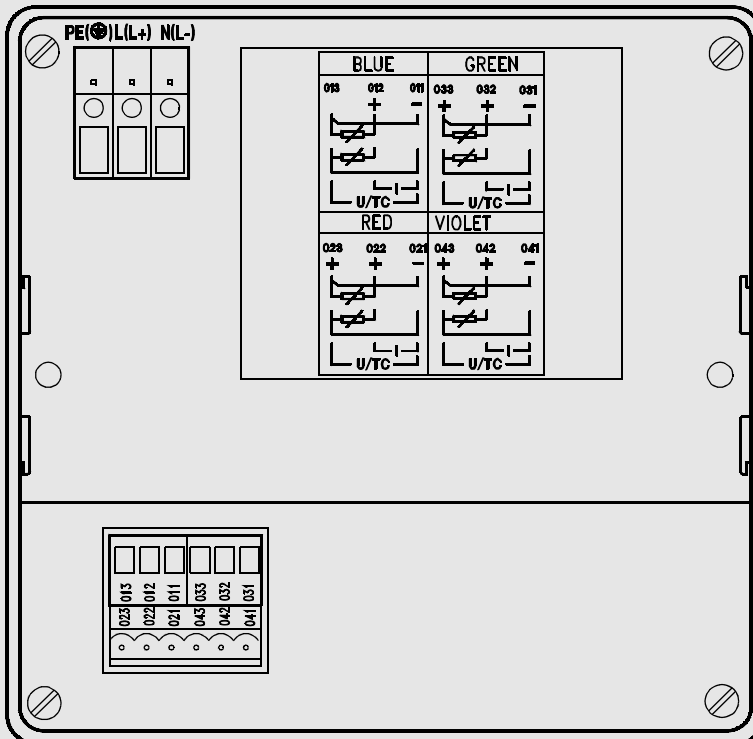
- Horizontal or vertical 0 mm, it must be possible to open the door of the case through 100°

Weight 3 kg, approx.

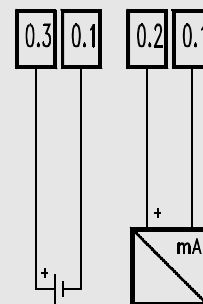
Dimensional drawing (dimensions in mm)



Wirung diagrams



Signal inputs



LINAX 4000L

Continuous-line recorder

Order code

Descrizione				Ident number	
Continuous-line recorder LINAX 4000L with identical DC measuring ranges for all channels				A4150	
Front dimensions 144 × 144mm					
		1 line channel		AA001	
		2 line channels		AA002	
		3 line channels		AA003	
		4 line channels		AA004	
		Lower range limit X1		Upper range limit X2	
Meas. ranges DC 0 ... 20 mA, selectable DC 0 ... 10 V		X1 = 0 mA		X2 = 20 mA	
Meas. ranges DC 4 ... 20 mA		X1 = 4 mA		X2 = 20 mA	
Scale 1st channel:		same as measuring range		BB001	
		without graduation		BB002	
		0 ... 100		BB003	
		as per request		BB900	
Reading ruler 1st channel:		without reading ruler		BC000	
		same as scale		BC001	
		0 ... 100		BC002	
		as per request		BC900	
Scale 2nd channel, only for 2-channel or multi-channel versions:					
same as scale 1st channel, but markings CB...				CBxxx	
Reading ruler 2nd channel, only for 2-channel or multi-channel versions:					
same as 1st channel, but markings CC...				CCxxx	
Scale 3rd channel, only for 3-channel or 4-channel version:					
same as scale 1st channel, but markings DB...				DBxxx	
Reading ruler 3rd channel, only for 3-channel or 4-channel version:					
same as 1st channel, but markings DC...				DCxxx	
Scale 4th channel, only for 4-channel version:					
same as scale 1st channel, but markings EB...				EBxxx	
Reading ruler 4th channel, only for 4-channel version:					
same as 1st channel 1, but markings EC...				ECxxx	
Recording type					
		for roll (32 m)		KA001	
		for fanfold pack (16 m)		KA002	
Auxiliary voltage:					
		AC: 21 V ... <u>24 V</u> ... 26 V		LA001	
		AC: 98 V ... <u>115 V</u> ... 126 V		LA002	
		AC: 196 V ... <u>230 V</u> ... 253 V		LA003	
		DC/AC: 20 V ... <u>24 V</u> ... 28 V		LA004	

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Continuous-line recorder

Order code (cont.)

Descrizione		Ident number
		A4150
Front door	Plastic	MA001
	Metal	MA002
Label	Blank with GOSSEN-METRA-WATT logo	NA000
	Blank without logo	NA001
	With inscription as per request, 1 line/meas. point with max. 31 characters	NA900
Test protocol	None	PA000
	With factory certificate according to DIN 50049	PA001
Operating instructions	German	RA000
	None	RA001
	English	RA002
	French	RA003
	Italian	RA004

Ordering examples

Clear text		Ordering code
Continuous-line recorder LINAX 4000L with identical DC meas. range for all channels		A4150
	3 continuous-line recorders	AA003
Meas. range	DC 0 ... 20 mA	BA001
Scale 1st channel:	0 ... 100	BB003
Scale 2nd channel:	0 ... 5 MW	CB900
Scale 3rd channel:	0 ... 300 °C	DB900
Recording type	for fanfold pack (16 m)	KA002
Auxiliary voltage	AC: 230 V	LA003
Front door	Plastic	MA001

Ordering code: A4150 / AA003 / BA001 / BB003 / CB900 0 ... 5 MW / DB900 0 ... 300 °C / KA002 / LA003 / MA001

LINAX 4000L

Continuous-line recorder

Accessories

Ident numbers ending with a letter are complete and need not to be commented.
Ident numbers ending with a **numeral** must be commented with the **following** markings.

Description	Ident number	
Scale without graduation, beginning and end marked	A410A	
Scale, graduation as per request	A4130	
Graduation:	AA900	
Reading ruler, graduation as per request	A4120	
Graduation:	AA900	
Label for measuring point	A4110	
with GOSSEN-METRAWATT logo	AA000	
without GOSSEN-METRAWATT logo	AA001	
Channel green without inscription	BA001	
Channel green with inscription	BA900	
Channel red without inscription	BB001	
Channel red with inscription	BB900	
Channel blue without inscription	BC001	
Channel blue with inscription	BC900	
Channel violet without inscription	BD001	
Channel violet with inscription	BD900	
Screw terminal with 5 connectors	A404A	
Screw terminal with 3 connectors	A404B	
4 each centering angle (with installation in grid)	A416A	

Consumable items (cont'd)

Ident numbers ending with a letter are complete and need not to be commented.
Ident numbers ending with a **numeral** must be commented with the **following** markings.

Description	Ident number	
Recording chart, chart width 120 mm, recording width 100 mm		
Chart roll 32 m, graduation 0 ... 100, minimum ordering quantity 25 rolls		
Time graduation/ speed	None	A401A
	10 mm/h	A401B
	20 mm/h	A401C
	60 mm/h	A401D
	120 mm/h	A401E
Chart roll 32 m, graduation 0 ... 100, minimum ordering quantity 25 rolls		A4070
Time graduation/ speed	as per request	CA900

(cont'd)

LINAX 4000L

Continuous-line recorder

Consumable items (cont'd)

Ident numbers ending with a letter are complete and need not to be commented.

Ident numbers ending with a **numeral** must be commented with the **following** markings.

Description			Ident number			
Chart roll 32 m, with calibrated graduation, minimum ordering quantity 25 rolls			A4071			
	Calibrated graduation	as per request	AA900			
	Inscription	as per request	BA900			
	Time graduation/ speed	as per request	CA900			
Fanfold pack 16 m, graduation 0 ... 100, minimum ordering quantity 25 packs						
	Time graduation/ speed	None	A401L			
		10 mm/h	A401M			
		20 mm/h	A401N			
		60 mm/h	A401P			
		120 mm/h	A401Q			
Fanfold pack 16 m, graduation 0 ... 100, minimum ordering quantity 25 packs				A4075		
	Time graduation/ speed	as per request	AA900			
Fanfold pack 16 m, with calibrated graduation, minimum ordering quantity 25 packs				A4074		
	Calibrated graduation	as per request	AA900			
	Inscription	as per request	BA900			
	Time graduation/ speed	as per request	CA900			
Recording styli						
	Stylus green				A406B	
	Stylus red				A406A	
	Stylus blue				A406C	
	Stylus violet				A406D	

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