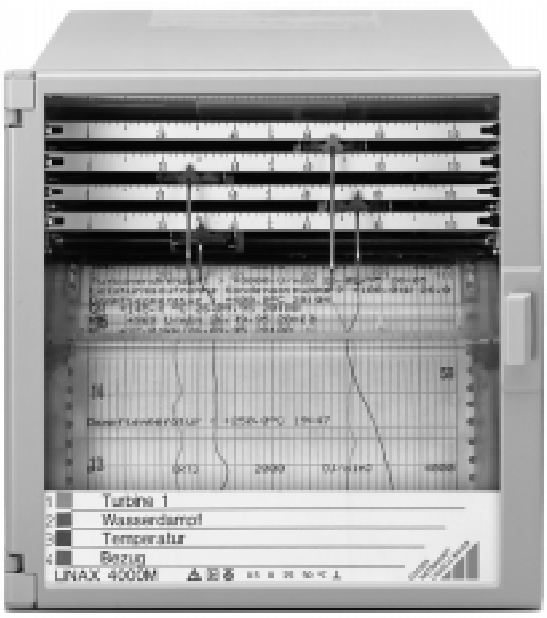
LINAX 4000M
Continuous-line recorder

Applications

The configurable continuous-line recorder LINAX 4000M serves to record slowly changing measured quantities. DC current, DC voltage, thermocouples as well as resistance thermometers (Pt 100) can be connected directly.
Alphanumeric texts can be printed out on the recording chart.
The recorder is meant for installation in panels.



Essential features

- 1 to 4 line channels
- 1 to 3 line channels and one printer channel for data recording and text printout
- Format 144 mm x 144 mm, mounting depth 250 mm
- Combined recording table for roll chart (32 m) or fanfold chart (16 m)
- RS-485 interface
- Measuring channels electrically isolated
- 2 limits per measuring channel

Description

The LINAX 4000M is a microprocessor-controlled, continuous-line recorder. It is supplied in two different versions:
– 1 to 4 line channels
– 1 to 3 line channels and one printer channel

The recorder is connected to transducers and/or directly to sensors such as thermocouples or resistance thermometers.

Matching of the recorder to the task is made via the internal keyboard or via the serial interface.

Additional functions such as text printout and event markers increase the information content of the process quantities for which a protocol can be established. Alarm message and remote control make the LINAX 4000M a unit for versatile use.

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Applied rules and standards

A) International standards

IEC 484	Potentiometric recorders
IEC 1010-1	Safety requirements for electrical equipment for measurementontrol 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
EN 61010	Safety requirements of measurement and control equipment
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
DIN 43834	Device fasteners
DIN VDE 0551-1	Transformers and safety transformers
DIN VDE 0100-410	Protection against shock currents
DIN VDE 0106-101	Basis requirements for protective separation

Symbols and their meaning

Symbol	Meaning
X1n / X1	Lower range limit nom. range / lower range limit
X2n / X2	Upper range limit nom. range / upper range limit
X2n – X1n / X2 – X1	Range span nom. range / range span

Technical data

Analog inputs

Standard version

DC current	0...20 mA; Ri = 50 Ω 4...20 mA; Ri = 50 Ω ± 20 mA; Ri = 50 Ω
DC voltage	± 10 V; Ri = 1 MΩ

Universal version

DC current	0...20 mA; Ri = 50 Ω 4...20 mA; Ri = 50 Ω ± 20 mA; Ri = 50 Ω
DC voltage	± 20 V; Ri = 1 MΩ ± 75 mV; Ri ≥ 2 MΩ
Thermocouples, Ri ≥ 2 MΩ	Type T 0 ... +400 °C Type J 0 ... +1200 °C
Thermocouples, Ri ≥ 2 MΩ	Type L 0 ... +900 °C Type K 0 ... +1372 °C Type E 0 ... +1000 °C Type S 0 ... +1769 °C Type R 0 ... +1769 °C Type B 100 ... +1820 °C Cold junction compensation internally or externally parameterizeable
Resistance thermometer Pt 100 With 2-wire connection With 3-wire connection	–50 ... +500 °C; –50 ... 150 °C Lead resistance 10 Ω max. Lead resistance 40 Ω max.

Lower range limit can be parameterized from X1n ... X1n + 0,8(X2n – X1n) and range span can be parameterized from 0,2(X2n – X1n) ... (X2n – X1n).

Deadband	0.25 % of range span
Setting time	2 s
Attenuation of the meas. value	with low-pass filter of 1st order;
Time constant	0 ... 60 s/meas. chann., can be parameterized
Root-extra. function	can be parameterized with DC current and DC voltage measuring ranges

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 for line channels acc. to IEC 483	Class 0.5 referred to range span
With displacement of lower range limit and/or upper range limit additionally	$\pm (0.1\ \% \times \frac{X2n - X1n}{X2 - X1} - 0.1)$
Data recording with printer system according to IEC 484	Class 1 referred to range span
With internal cold junction compensation	± 4 K, additionally

Variations

Temperature	0.2 %/10 K, additionally 0.1 %/10 K with connect. to thermocouple
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 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 cycles	During and after the effect ± 0.5 % of range span

Real-time clock

Function maintained in the case of power failure: 5 days (cond.)

Options (code GA001)

Binary inputs

Number	4 (speed 2, speed off, DI 1, DI 2)
Auxiliary voltage	DC 20 ... 24 ...30 V
Input current	6 mA
H signal	20 ... 30 V
L signal	0 ... 1.3 V

Relay outputs

Four potential-free relay contacts (connected with each other on one side), contact load 30 V / 100 mA.

External speed change

It can be switched between speed 1 and 2 (terminals 901-922); the chart speed can be switched off (terminals 901-912).

Event markers

Only for version with printer channel
Two markers possible
Recording at approx. 2 % and 5 % of the recording width

Standby function

The standby function is activated via a freely selectable binary input.

Paper end signal

With speeds of ≥120 mm/h, 2 hours before the paper ends. With speeds smaller than < 120 mm/h, at least 8 hours before the paper ends.
Signalling is effected via a freely correlatable relay contact.
Output: potential-free contact. When changing the recording paper the length of the chart roll must be entered into the recorder.

Limit monitoring

Two limits per channel for absolute monitoring.
The four internal relays can freely be correlated with the limits.
Hysteresis 2 % of range span.

Display

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

Control and display table (only for parameterizing)
- Display
- 5-digit 7-segment display
- Size of characters 4 x 7 mm
- Operation via 3 keys

Recording

Arrangement of measuring systems and color correlation

Version without printer channel

	1	2	3	4	No. of line channels
▲ green			×	×	
▲ red		×	×	×	
▲ blue	×	×	×	×	
▲ violet				×	

Version with printer channel

	2			No. of channels
▲ green				
▲ red				
▲ blue	×			1st channel
Printer channel violet	×			2nd channel

		3		No. of channels
▲ green				
▲ red		×		2nd channel
▲ blue		×		1st channel
Printer channel violet		×		3rd channel

			4	No. of channels
▲ green			×	3rd channel
▲ red			×	2nd channel
▲ blue			×	1st channel
Printer channel violet			×	4th channel

1. 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.

2. Printing
   A printer system for printing of texts can be installed in place of the lower measuring system. Distance between blue fiber pen and print head 6 mm.

   In addition to the text printout, a measured value can be recorded with the printer system.
   Recording of the measured value is made in the form of a dotted line with equidistant dot spacing.
   Color supply of the print head approx. 1.5×10^6 dots.

Text printout for:

1. Eight text lines of 16 characters each.
   Each text line is supplemented with time printout. Resolution cyclic, in parameterizable intervals or event-depending by internal limits or external stimulation (binary inputs).

2. Printout of chart speed, date and time.
   Initiation with recorder ON and with a change in chart speed.

3. Printout of time and date.
   Cyclic initiation, in parameterizable time intervals or event-depending by external stimulation.

4. Printout of actual measured values
   Cyclic initiation, in parameterizable time intervals or event-depending by internal/external stimulation.

5. Printout of double lines correlated with the individual measuring points.
   First line: Scaling line with channel designation and printout of the unit.
   Second line: Text specific to the measuring point, max. 32 characters.

6. Listing of all active parameters
   Manual initiation in parameterizing mode.

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Text printout/recording

Maximum possible chart speed with print channel instead of fibre-tip pen	240 mm/h
Size of characters	approx. 1.5 × 2 mm
Chart speed	2 chart speeds can be parameterized in mm/h: 0/2,5/5/10/20/60/120/240/300/600/1200 can be changed-over and disconnected externally (24 V DC/6 mA)
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 % or
24/115/230 V AC +10 %/–15 %
Frequency range 47.5 ... 63 Hz
Power consumption with max. fitting approx. 20 W/27 VA

RS-485 interface (optionally RS-232 with adapter)

a) For parameterizing

b) Linking to host systems for bidirectional data transmission. Data protocol with reference to the PROFIBUS standard.

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

Electrical safety

Test according to DIN EN 61010-1 (classification VDE 0411) or IEC 1010-1
Overvoltage category III at the power input and degree of pollution 2 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 25 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

Permissible interference	Standard version	Universal version voltage
Series mode interf. voltage Peak-peak	≤ 0.3 × meas. span max. 3 V	≤ 3 × meas. span max. 3 V
Push-pull rejection	35 dB	35 dB
Common mode interference voltage	60 V DC/42 V AC	60 V DC/42 V AC
Common mode rejection	70 dB	70 dB

Default parameter setting

If individual parameter setting is not specified when ordering a recorder, the LINAX 4000M is delivered with the following default parameter setting:

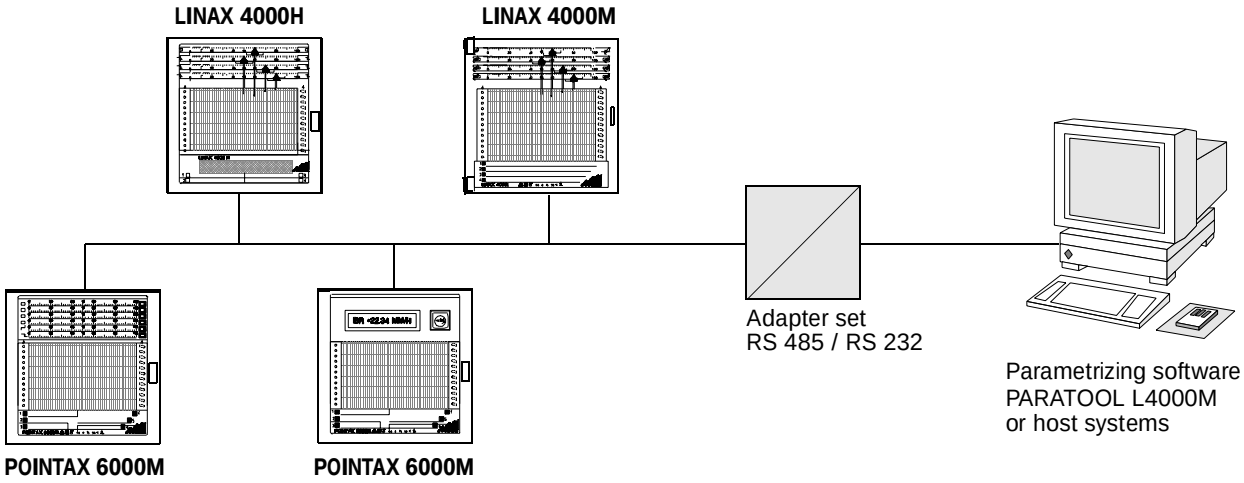
All measuring channels with 0...20 mA measuring range
Chart speed 1: 20 mm/h
Chart speed 2: 120 mm/h
Chart speed 3: Off
Limits are set to end positions (0 and 20 mA).
Attenuation of measured value, zoom, printer and limit functions are inactive. No password entered.
This default parameter setting can be re-initialized independent of the actually set parameters

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
1 print inset (for recorder version with printer channel)

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

Example of interlinking



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Connection, case and installation

Electrical connections
- Protection type IP 20
- Screw and plug terminals for signal inputs, control inputs and limit relay outputs.
- Max. wire cross section 2 x 1 mm^2
- Screw terminals for line connection
- Max. wire cross section 4 mm^2
- RS-485 interface via 9-pin SUB-D plug

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

Protection type of case (including front)
- IP 54 according to DIN 40050

Color of case
- Silica-gray according to RAL 7032

Front door
- Molded material (RAL 7032) with mineral glas or plastics

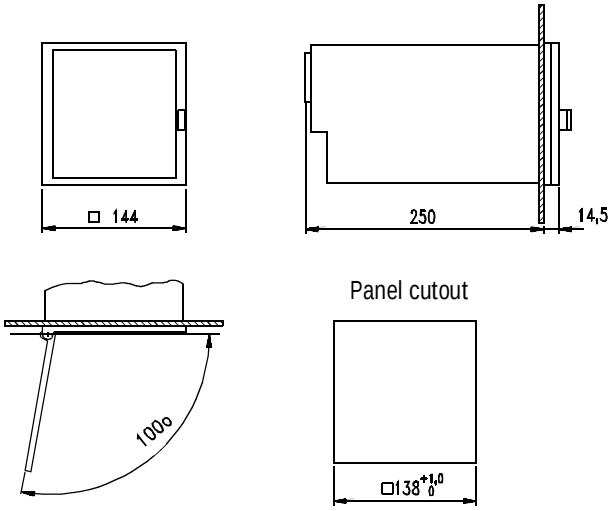
Fastening of case
- With 2 fasteners (optionally for installation in panel or mechanical grid), centering angle brackets are required for installation in mechanical grids, see BA No. 605

Position of use
- Lateral [–30° ... 0 ... +30°], inclined to the rear 20°, to the front 20°

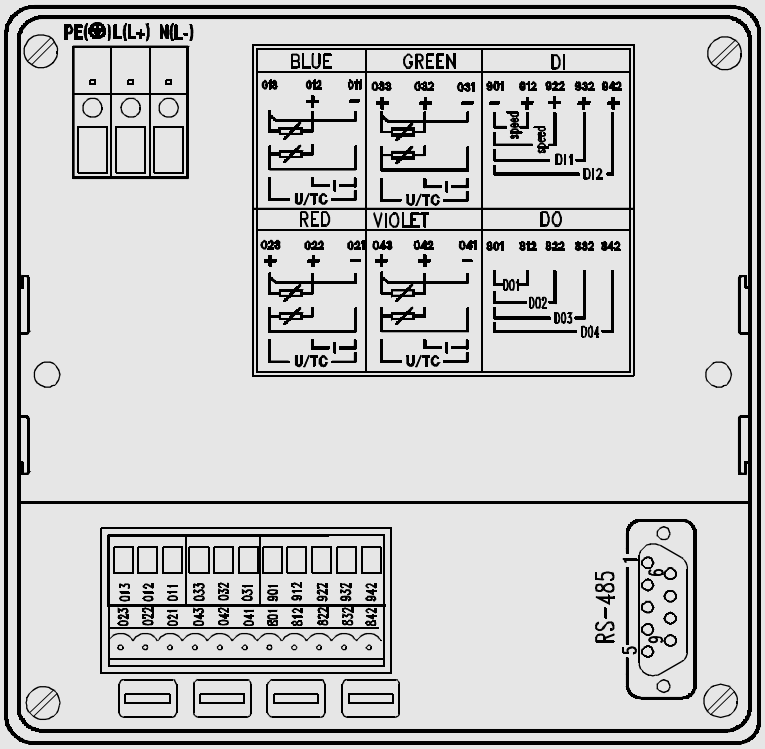
Mounting distance
- Horizontal or vertical 0 mm, it must be possible to open the door of the case through 100°

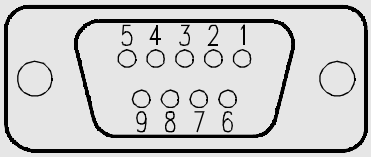
Weight 3.2 kg, approx.

Dimensional drawing (dimensions in mm)



Wiring diagrams



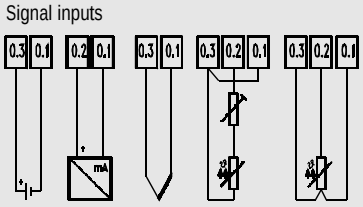


RS 485 interface
Pin 1: Shield
Pin 3: RXD (+)
Pin 5: Gnd (reference potential)
Pin 6: +5 V
Pin 8: RXD (-)

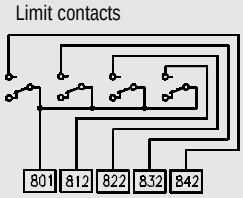
For bus operation:
The + 5 V voltage on pin 6 is required when the LINAX 4000M is used as bus termination device.

The shield is attached to a plug connector on the recorder case.

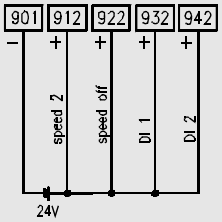
Signal inputs



Limit contacts



Speed circuitry (terminals 901, 912, 922)
Binary inputs =
depending upon parameter setting
for event markers - initiation of text printout
(terminals 901, 932, 942)



Order code

Description			Ident number			
Continuous-line recorder LINAX 4000M in standard version with identical DC measuring ranges for all channels			A4001			
Front dimensions 144 × 144mm						
Continuous-line recorder LINAX 4000M with universal card and basic parameter setting according to data sheet, measuring range 0 ... 20 mA				A4002		
Front dimensions 144 × 144mm						
Continuous-line recorder LINAX 4000M with universal card and parameter setting as per request					A4003	
Front dimensions 144 × 144mm						
	1 line channel		AA001			
	2 line channels		AA002			
	3 line channels		AA003			
	4 line channels		AA004			
	1 line channel plus print channel		AA005			
	2 line channels plus print channel		AA006			
	3 line channels plus print channel		AA007			
	1 line channel			AA001	AA001	
	2 line channels			AA002	AA002	
	3 line channels			AA003	AA003	
	4 line channels			AA004	AA004	
	1 line channel plus print channel			AA005	AA005	
	2 line channels plus print channel			AA006	AA006	
	3 line channels plus print channel			AA007	AA007	
Parameter setting						
Parameter presetting (for ident no. A4001)	see page 5		BA000			
Deviating parameter setting according to data sheet (for ident no. A4001) Meas. range (all channels identical) Binary inputs and limits Text lines, time and date, scaling line, ...		 only with GA001 only with AA005,AA006,AA007	BA900			

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Order code (cont'd)

Description					Ident number			
Lower range limit	nom. range X1n							
Upper range limit	nom. range X2n							
Meas. ranges for ident no. A4003			Lower range limit X1	Upper range limit X2				
Meas. range 1st channel:								
DC current	X1n	X2n						
	0 mA	20 mA	0.0 mA ≤ X1 ≤ 16.0 mA	X1 + 4.0 mA ≤ X2 ≤ 20 mA			BA001	
	4 mA	20 mA	4.0 mA ≤ X1 ≤ 16.8 mA	X1 + 3.2 mA ≤ X2 ≤ 20 mA			BA002	
	–20 mA	20 mA	–20.0 mA ≤ X1 ≤ 12.0 mA	X1 + 8.0 mA ≤ X2 ≤ 20 mA			BA003	
DC voltage	X1n	X2n						
			X1 = –20 V	X2 = 20 V			BA004	
	–20 V	+20 V	–20 V ≤ X1 ≤ 12 V	X1 + 8 V ≤ X2 ≤ 20 V			BA914	
			X1 = –75 mV	X2 = 75 mV			BA005	
Resist. thermometer	X1n	X2n						
2-wire	–50 °C	+500 °C	–50 °C ≤ X1 ≤ 390 °C	X1+ 110 °C ≤ X2 ≤ 500 °C			BA901	
2-wire	–50 °C	+150 °C	–50 °C ≤ X1 ≤ 110 °C	X1+ 40 °C ≤ X2 ≤ 150 °C			BA902	
3-wire	–50 °C	+500 °C	–50 °C ≤ X1 ≤ 390 °C	X1+ 110 °C ≤ X2 ≤ 500 °C			BA903	
3-wire	–50 °C	+150 °C	–50 °C ≤ X1 ≤ 110 °C	X1+ 40 °C ≤ X2 ≤ 150 °C			BA904	
Thermocouple	X1n	X2n						
Type T	0 °C	400 °C	0 °C ≤ X1 ≤ 320 °C	X1 + 80 °C ≤ X2 ≤ 400 °C			BA905	
Type J	0 °C	1200 °C	0 °C ≤ X1 ≤ 960 °C	X1 + 240 °C ≤ X2 ≤ 1200 °C			BA906	
Type L	0 °C	900 °C	0 °C ≤ X1 ≤ 720 °C	X1 + 180 °C ≤ X2 ≤ 900 °C			BA907	
Type K	0 °C	1372 °C	0 °C ≤ X1 ≤ 1097 °C	X1 + 275 °C ≤ X2 ≤ 1372 °C			BA908	
Type E	0 °C	1000 °C	0 °C ≤ X1 ≤ 800 °C	X1 + 200 °C ≤ X2 ≤ 1000 °C			BA909	
Type S	0 °C	1769 °C	0 °C ≤ X1 ≤ 1415 °C	X1 + 354 °C ≤ X2 ≤ 1769 °C			BA910	
Type R	0 °C	1769 °C	0 °C ≤ X1 ≤ 1415 °C	X1 + 354 °C ≤ X2 ≤ 1769 °C			BA911	
Type B	100 °C	1820 °C	100 °C ≤ X1 ≤ 1476 °C	X1 + 344 °C ≤ X2 ≤ 1820 °C			BA912	
Scale 1st channel:			Same as measuring range				BB001	
			Without graduation		BB002	BB002	BB002	
			0 ... 100		BB003	BB003	BB003	
			as per request		BB900	BB900	BB900	
Reading ruler 1st channel:			Without reading ruler		BC000	BC000	BC000	
			Same as scale		BC001	BC001	BC001	
			0 ... 100		BC002	BC002	BC002	
			as per request		BC900	BC900	BC900	

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Order code (cont'd)

Description			Ident number			
Measuring range 2nd channel, only for 2-channel or multi-channel versions:						
Same as measuring range 1st channel, but markings CA...					CAxxx	
Scale 2nd channel, only for 2-channel or multi-channel versions:						
Same as scale 1st channel, but markings CB...			CBxxx	CBxxx	CBxxx	
Reading ruler 2nd channel, only for 2-channel or multi-channel versions:						
Same as 1st channel, but markings CC...			CCxxx	CCxxx	CCxxx	
Measuring range 3rd channel, only for 3-channel or four-channel version:						
Same as measuring range 1st channel, but markings DA...					DAxxx	
Scale 3rd channel, only for 3-channel or four-channel version:						
Same as scale 1st channel, but markings DB...			DBxxx	DBxxx	DBxxx	
Reading ruler 3rd channel, only for 3-channel or four-channel version:						
Same as 1st channel, but markings DC...			DCxxx	DCxxx	DCxxx	
Measuring range 4th channel, only for four-channel version:						
Same as measuring range 1st channel, but markings EA...					EAxxx	
Scale 4th channel, only for four-channel version:						
Same as scale 1st channel, but markings EB...			EBxxx	EBxxx	EBxxx	
Reading ruler 4th channel, only for four-channel version:						
Same as 1st channel, but markings EC...			ECxxx	ECxxx	ECxxxx	
Options (binary input, limits)	see page 3	No	GA000	GA000	GA000	
		Yes	GA001	GA001	GA001	
Further parameters same as **parameter presettings**	see page 5				HA000	
Further **parameters deviating** from the parameter presetting					HA900	
Recording type	for roll (32 m)		KA001	KA001	KA001	
	for fanfold pack (16 m)		KA002	KA002	KA002	
Auxiliary voltage:	AC: 21 V ... 24 V ... 26 V		LA001	LA001	LA001	
	AC: 98 V ... 115 V ... 126 V		LA002	LA002	LA002	
	AC: 196 V ... 230 V ... 253 V		LA003	LA003	LA003	
	AC/DC: 20 V ... 24 V ... 28 V		LA004	LA004	LA004	
Front door:	Plastic		MA001	MA001	MA001	
	Metal		MA002	MA002	MA002	
Label:	Blank, with GOSSEN- METRAWATT logo		NA000	NA000	NA000	
	Blank, without logo		NA001	NA001	NA001	
	With inscr. as per request, 1 line/meas. point with max. 31 charact.		NA900	NA900	NA900	
Test protocol	No		PA000	PA000	PA000	
	With factory certificate according to DIN 50049		PA001	PA001	PA001	

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Order code (cont'd)

Description			Ident number			
Operating instructions	German		RA000	RA000	RA000	
	No		RA001	RA001	RA001	
	English		RA002	RA002	RA002	
	French		RA003	RA003	RA003	
	Italian		RA004	RA004	RA004	

Accessories

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

Description			Ident-Nummer										
PARATOOL L4000M			A402C										
Parameterizing software for LINAX 4000M													
RS 485 / RS 232 adapter set				A403A									
incl. power supply and connection cable, 3 m, with plugs on both ends													
and 9-pin / 25-pin adpater plug													
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 inscrption							BD001					
	Channel violet with inscrption							BD900					
Screw terminal with five connectors									A404A				
Screw terminal with three connectors										A404B			
4 each centering angle (wit installation in grid)											A416A		
Bus termination resistors												A409A	
Package of 2 × 390 Ohm and 1 × 150 Ohm													

Consumable items

Ident numbers ending with a letter are complete and need not 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									
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	ohne							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 / printer styli													
Stylus green												A406B	
Stylus red												A406A	
Stylus blue												A406C	
Stylus violet												A406D	
Printer stylus violet												A406E	

LINAX 4000M
Continuous-line recorder

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