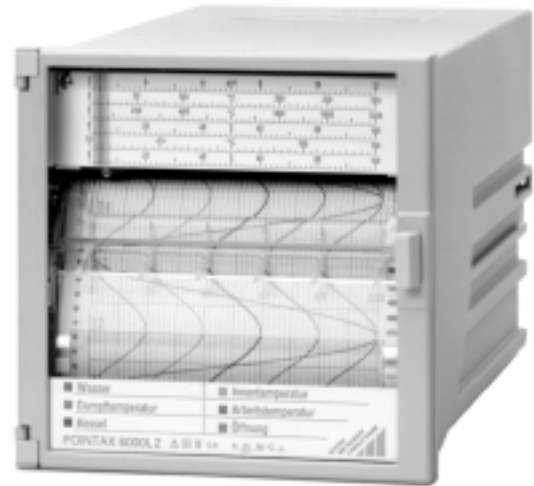


POINTAX 6000L2

Point Recorder



Special Features

- 6 measuring channels
- Last printed point visible from front
- Electrically isolated, earth-free measuring channels
- Process signals ranging from 0/4 ... 20 mA, 0 ... 1 V
- Front panel dimensions: 144 mm x 144 mm, installation depth: 250 mm
- Combination plotter for paper rolls (32 m) or continuous fan-fold paper (16 m)
- RS 485 interface

Description

The POINTAX 6000L2 is a microprocessor controlled point recorder.

The recorder measures process signals ranging from 0/4 ... 20 mA and 0 ... 1 V. Additional current and voltage signals can be measured by means of plug-on shunts or voltage dividers.

Configuration of the recorder for specific measurement tasks is performed by means of software with the integrated keypad, or with a PC in combination with the parameters configuring program PARATOOL P6000L2 via the RS 485 interface.

Limit contact outputs, remote advance selection and a stand-by function can be selected as options.

POINTAX 6000L2

Point Recorder

Applicable Regulations and Standards

A) International Standards

IEC 68-2-6	Mechanical stress, vibration
IEC 68-2-27	Mechanical stress, shock
IEC 225-4	1 MHz pulse to mains cable
IEC 529	IP protection
IEC 721-3-3	Climatic stress
IEC 742	Safety isolating transformers
IEC 880	Software development
IEC 1000-4	Electromagnetic immunity (measuring process)
IEC 1010-1	Safety for measuring and control equipment
IEC 1143-1	Accuracy class rating
EN 50081-1	Electromagnetic interference, residential
EN 50081-2	Electromagnetic interference, industrial
EN 50082-1	Electromagnetic immunity, residential
EN 50082-2	Electromagnetic immunity, industrial
EN 55011	Radio interference, industrial, scientific and medical devices
EN 60873	Process recorders
EN 132400	Fixed capacitors (Y capacitors)

B) German Standards

DIN 16234	Recorder chart paper
DIN 24420	Replacement parts lists for attachments
DIN 43802	Scales
DIN 43834	Device mounting
DIN VDE 0100 Part 410	Protection against dangerous shock currents
DIN VDE 0106 Part 101	Basic requirements for reliable isolation

Technical Data

Analog Inputs, Nominal Ranges

Direct Current	0...20 mA; Ri = 50 Ω 4...20 mA; Ri = 50 Ω with plug-on shunt: 0 ... 0.5 mA to 0 ... 500 mA (voltage drop: 1 V)
Direct Voltage	0 ... 1 V with plug-on voltage divider: > 0 ... 1 V to ≤ 0 ... 50 V

Analog Inputs, Measuring Ranges

Measuring Range Lower Limit	adjustable from 0 ... 80% of the respective nominal range
Overall Measuring Range	adjustable from 20 ... 100% of the respective nominal range
Dead Zone	0.25% of overall measuring range
Meas. Value Attenuation	with low-pass: 1 st order
Time Constant	0 ... 60 s per channel, programmable
Meas. Point Start-Time	2.5 ... 20 s, selectable

Accuracy

Measurement error per IEC 1143-1	Class 0.5 relative to nominal range
Additional error for shifted start of scale and/or end of scale	$\pm \left(0.1\% \times \frac{\text{nominal range}}{\text{overall range}} - 0.1 \right)$

Influence Error

Temperature	$\pm \left(0.2 + \left(0.05 \times \frac{\text{nominal range}}{\text{overall range}} - 0.05 \right) \right) \% / 10 \text{ K}$
Reference Temperature	25 °C ± 1 K
Atmospheric Humidity	observe influence on recorder chart paper per DIN 16234.
Supply Voltage	0.1% at 24 V DC/AC ± 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%
Interference Voltage	0.5% of measuring span
External Magnetic Field, 1 mT	0.5% of measuring span
Mechanical Stress per DIN IEC 68-2-6/27	during and after exposure to ± 0.5% of measuring span
Transport shock: 30 G/18 ms	
vibration: 2 G/5 ... 150 Hz	
In Operation vibration: 0.5 G/± 0.04 mm/5...150 Hz/3 × 2 cycles	

Options (code G01)

Binary Inputs

Quantity	2 (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

Remote Advance Selection

Advance 1 or 2 can be chosen by means of a freely selectable binary input, or advance can be deactivated.

Stand-By Function

The stand-by function is activated with a freely selectable binary input. Internal deactivation via limit value monitoring is possible.

Limit Value Monitoring

2 limit values per channel for monitoring of absolute values.
2 internal relays can be assigned to the limit values.
Connected to common potential.
Output: normally open contact
Contact rating: 30 V / 100 mA
14 additional relays available via external I/O converter.

POINTAX 6000L2

Point Recorder

Recorder Component / Measurement Value Display

Scale

1 to 6 graduations

Character size per number of graduations:

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

Channel Display

Via measuring point number on the color printing head

Scale to Channel Assignments

With colored adhesive labels on the scale

Control Panel

(behind the plotting surface)

Display (only for setting parameters)

5 digit 7-segment display

Character size: 4 × 7 mm

Operation

With 3 keys

Recording

Colors

violet, red, black, green, blue, brown

Color sequence per DIN 43838

Channel 1 violet

Channel 2 red

Channel 3 black

Channel 4 green

Channel 5 blue

Channel 6 brown

or can be assigned to channels as desired.

Last printed point visible from front

Ink reservoir sufficient for $\geq 5 \times 10^5$ points per color

Trends Recording

Measurement values are recorded as dotted lines with equidistant spacing between points (for measuring point start-times < 2.5 s).

Measuring Point Start-Time

2.5, 5, 10 and 20 s

Paper Advance

Advance can be configured in mm/hr. as follows:	0/2.5/5/10/20/30/40/60/120/240/300/600 remote selection and deactivation (optional "limit value monitoring and binary inputs" required)
Papertapes	32 m papertape rolls or 16 m fan-fold paper
Visible Chart Length	60 mm
Printing Width	100 mm (papertape width of 120 mm, DIN 16230)
Papertape Feed (for rolls)	papertape end fed automatically to reel (charts can be cut off daily or entire 32 m can be rolled up)

Power Supply

UC-Adapter

24 V AC/DC $\pm 20\%$

Power consumption with all auxiliary components approx.

15 W / 21 VA

AC-Adapter

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

Frequency range: 47.5 ... 63 Hz

Power consumption with all auxiliary components approx.

15 W / 21 VA

RS 485 Interface

For setting parameters

POINTAX 6000L2

Point Recorder

Resistance to Climatic Conditions

Ambient Temperature	0 ... 25 ... 50 °C
Transport and Storage Temperature	-40 ... +70 °C
Relative Humidity (with device in operation)	≤ 75% (average annual), max. ≤ 85%, avoid condensation
Climatic Category	3K3 per IEC 721-3-3

Electrical Safety

Testing per DIN EN 61010-1 or IEC 1010-1

Protection Class I

Overvoltage Category

III at mains input

II at inputs and outputs

Fouling Factor

2 in device and at terminal connectors

Test Voltage

3.75 kV, measuring channels to power supply

2.20 kV, protective conductor to power supply

Functional extra-low voltage with reliable isolation (PELV) between mains input – measuring channels, control cables, interface cables

per VDE 0100 Part 410 and VDE 0106 Part 101

Electromagnetic Compatibility

Objectives set forth in EMC guideline 89/336/EEG regarding interference suppression in accordance with EN 55011 and regarding interference immunity in accordance with EN 50082-2 have been fulfilled.

Interference Suppression per EN 55011

Interference voltages at mains cables: 0.15 ... 30 MHz Class B

Interference field strength: 30 MHz ... 1 GHz Class B

Interference Immunity: Testing per EN 60801

Test Type	Test Level	Influence	Severity
ESD (1/30 ns)	6 kV	≤ 1%	3
HF Field emitted 80 MHz ... 1 GHz	10 V/m	≤ 1%	3
mains-borne 0.15 ... 80 MHz	10 V	≤ 1%	3
Burst (5/50 ns) to mains cable	2 kV	≤ 1%	3
measurement cable	2 kV	≤ 1%	3
Surge (1.2/50 μs) to mains cable	common 2 kV	≤ 1%	3
	differential 1 kV	≤ 1%	2
1 MHz pulse to mains cable	common 2 kV	≤ 1%	3
	differential 1 kV	≤ 1%	3

The NAMUR industry standard for EMC has been fulfilled (shielded interface cables).

Allowable Interference Voltages

Allowable Interference Voltages	
Series-mode interference voltage, peak to peak	≤ 0.3 × measuring span, maximum 3 V
Normal-mode rejection	75 dB
Common-mode interference voltage	60 V DC / 250 V AC
Common-mode rejection	83 dB for DC 96 dB for AC

Factory Default Settings

Scale with graduation of 0 ... 100

is supplied if no scale graduation is specified when the recorder is ordered.

Default Parameters

If no specific parameter settings are requested when the recorder is ordered, the POINTAX 6000L2 is supplied with the following default parameters:

All measuring channels with a measuring range of 0 ... 20 mA

Advance 1: 20 mm/hr.

Advance 2: 120 mm/hr.

Measurement value attenuation and zoom function are deactivated.

No password required.

This parameter setting can be activated at any time in the service mode.

Standard Equipment

1 operating instructions

2 device mounts

1 roll of papertape or package of fan-fold paper, installed

1 color printing head

Optional equipment:

Locating bracket for grid system installation, reference reading rule(s)

POINTAX 6000L2 Point Recorder

Terminal Connections, Housing and Mounting

Electrical Connections

- IP 20 protection
- Plug and screw terminals for measurement and control inputs
- Max. wire cross section: $2 \times 1 \text{ mm}^2$
- Screw terminals for mains connection
- Max. wire cross section $1 \times 4 \text{ mm}^2$ or $2 \times 1.5 \text{ mm}^2$
- RS 485 interface via 9-pole SUB-D plug

Housing

Molded housing for mounting to control panel or grid system installation

(see drawing for dimensions)

Housing Protection per IEC 529

- Front panel (including door) IP 54
- Rear panel IP 20

Housing Color

Pebble gray per RAL 7032

Housing Door

- Molded
- Option: metal door frame with mineral glass

Housing Mounts

2 mounting elements (for either control panel or grid system mounting) for a maximum grid width of 40 mm. Locating brackets required for grid system installation (order no. A416A)

Position of Normal Use

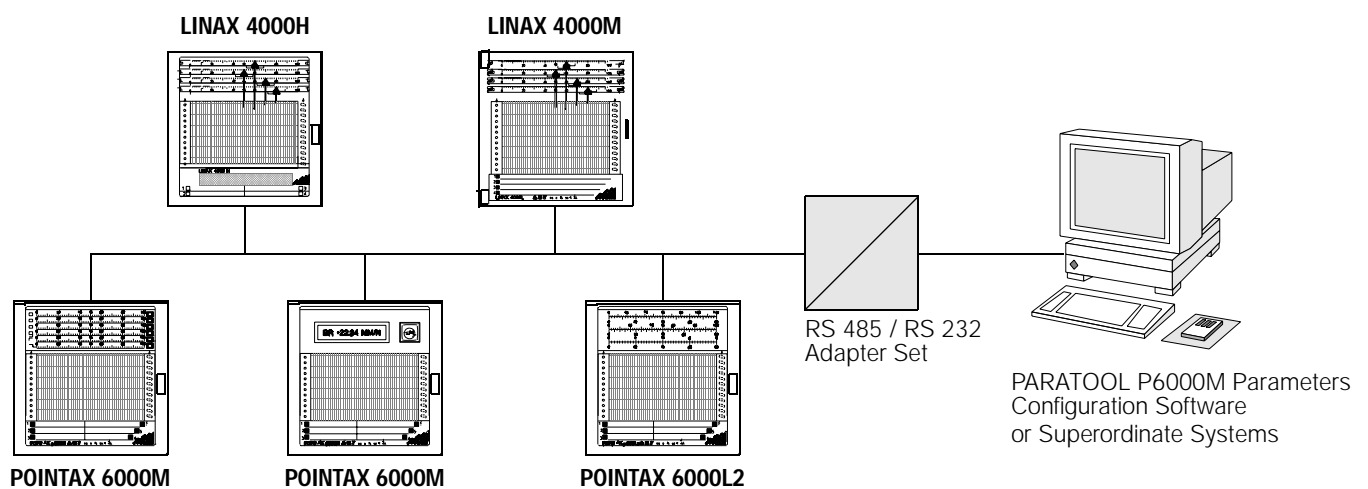
side to side: $-30^\circ \dots 0 \dots +30^\circ$, backward slope: 20° , forward slope: 20°

Mounting Clearances

Horizontal or vertical: 0 mm, housing door must open out to 100°

Weight: approx. 3.5 kg

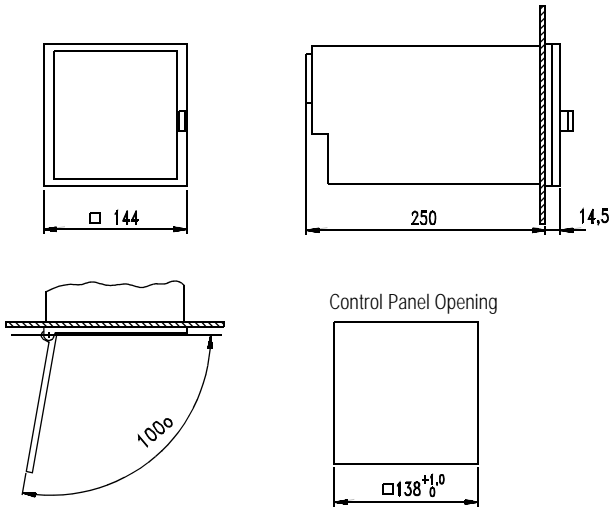
Network Diagram



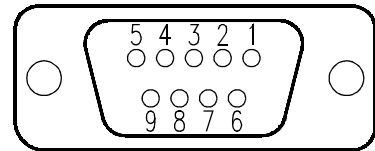
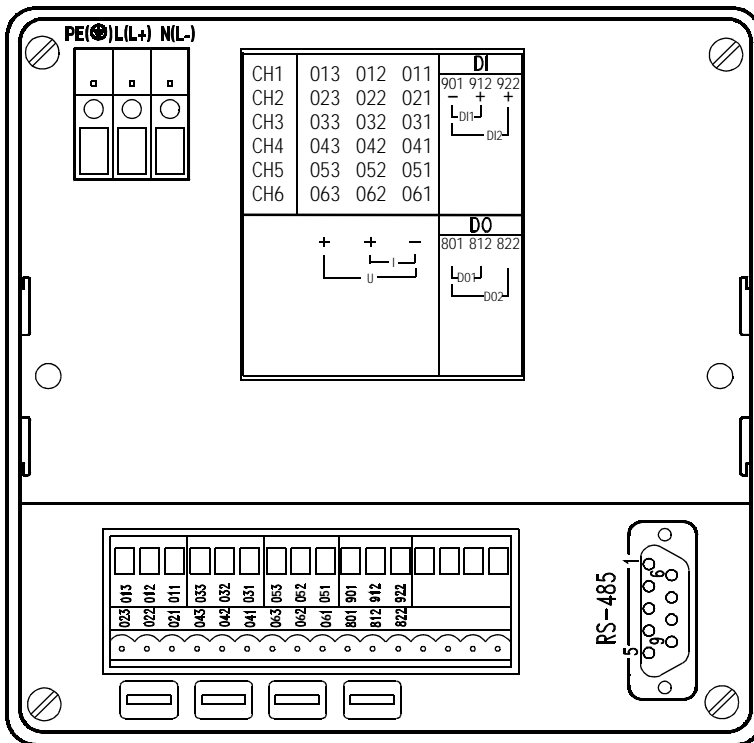
POINTAX 6000L2

Point Recorder

Dimensional Drawing (dimensions in mm)



Wiring Diagram



RS 485 Interface

- Pin 1: shield
- 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:

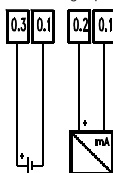
+5 V is required at pin 6, when the POINTAX 6000L2 is installed as a bus user.

The shield is connected to a knife contact at the recorder housing.

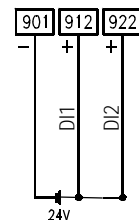
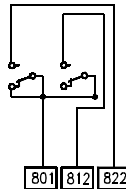
Binary Inputs

for advance selection and activation of the stand-by function

Measuring Inputs



Limit Contacts



POINTAX 6000L2 Point Recorder

Order Information

Description		ID Number
POINTAX 6000L2 point recorder with identical DC measuring ranges for all 6 channels Front panel dimensions: 144 x 144 mm		A4390
Measuring ranges for all channels		
	DC 0 ... 20 mA, 0 ... 10 V or external adjustment Use accessory resistors for external adjustment.	D001
	4 ... 20 mA	D002
Parameter Settings		
	standard	DP000
	as specified	DP900
Scale		
Channel 1	same as measuring range	EA001
	without graduation	EA002
	0 ... 100	EA003
	as specified	EA900
Channel 2	same as measuring range	EB001
	without graduation	EB002
	0 ... 100	EB003
	as specified	EB900
Channel 3	same as measuring range	EC001
	without graduation	EC002
	0 ... 100	EC003
	as specified	EC900
Channel 4	same as measuring range	ED001
	without graduation	ED002
	0 ... 100	ED003
	as specified	ED900
Channel 5	same as measuring range	EE001
	without graduation	EE002
	0 ... 100	EE003
	as specified	EE900
Channel 6	same as measuring range	EF001
	without graduation	EF002
	0 ... 100	EF003
	as specified	EF900

Continued on next page.

POINTAX 6000L2

Point Recorder

Order Information (continued)

Description		ID Number
Reference Reading Rule		
Channel 1	without reference reading rule	FA000
	same as scale	FA001
Channel 2	without reference reading rule	FB000
	same as scale	FB001
Channel 3	without reference reading rule	FC000
	same as scale	FC001
Channel 4	without reference reading rule	FD000
	same as scale	FD001
Channel 5	without reference reading rule	FE000
	same as scale	FE001
Channel 6	without reference reading rule	FF000
	same as scale	FF001
Limit Value Monitoring and Binary Inputs		
	without limit value monitoring and without binary inputs	G000
	with limit value monitoring and binary inputs	G001
Auxiliary Voltage		
	24 V DC/AC	H004
	24 V AC	H001
	115 V AC	H002
	230 V AC	H003
Recording		
	with papertape rolls, 32 m	K001
	with continuous fan-fold paper, 16 m	K002
Housing Door		
	plastic	M001
	metal	M002
Measuring Point Identification Label		
	no entries and with GMC logo	N000
	no entries and without logo	N001
	with customer specified entries, max. 31 characters per line / measuring point	N900
Test Report		
	none	P000
	with factory certificate per DIN 50049	P001
Operating Instructions		
	German	W000
	none	W001
	English	W002
	French	W003

POINTAX 6000L2

Point Recorder

Order Example

POINTAX 6000L2 point recorder with identical DC measuring ranges for all 6 channels Front panel dimensions: 144 x 144 mm		A4390
Measuring Ranges	DC 0 ... 20 mA, 0 ... 10 V or external adjustment	D001
Parameter Settings	standard	DP000
Scale, Channel 1	0 ... 100	EA003
Scale, Channel 2	0 ... 50 l/s	EB900
Scale, Channel 3	0 ... 100%	EC900
Scale, Channel 4	0 ... 50	ED900
Scale, Channel 5	0 ... 100	EE003
Scale, Channel 6	same as measuring range	EF001
Reference Reading Rule, Channel 1	same as scale	FA001
Reference Reading Rule, Channel 2	same as scale	FB001
Reference Reading Rule, Channels 3 ... 6	without reference reading rule	FC000 ... FF000
Limit Value Monitoring and Binary Inputs	with limit value monitoring and binary inputs	G001
Auxiliary Voltage	230 V AC	H003
Recording	with papertape rolls, 32 m	K001
Housing Door	metal	M002
Measuring Point Identification Labels	no entries and with GMC logo	N000
Test Report	none	P000
Operating Instructions	German	W000

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Accessories (continued)

ID numbers which end with a letter are complete and do not require any additional information.

The following characteristics should be entered for ID numbers which end with a number.

Description	ID Number
Screw terminals with 3 connectors	A404A
Screw terminals with 4 connectors	A419A
Locating bracket, 4 ea. (for grid system installation)	A416A
Bus matching resistors Package of 2 ea. 390 Ω and 1 ea. 150 Ω	A409A

Consumable Materials

ID numbers which end with a letter are complete and do not require any additional information.

The following characteristics should be entered for ID numbers which end with a number.

Description	ID Number
Recording paper, paper width: 120 mm, recording width: 100 mm	
Papertape roll, 32 m, graduation: 0 ... 100, minimum order: 25 rolls	
time graduation / advance	none
	10 mm/hr.
	20 mm/hr.
	60 mm/hr.
	120 mm/hr.
	A401A
	A401B
	A401C
	A401D
	A401E
Papertape roll, 32 m, graduation: 0 ... 100, minimum order: 25 rolls	A4070
time graduation / advance	as specified
	CA900
Papertape roll, 32 m, with calibration graduation, minimum order: 25 roll	A4071
calibration graduation	as specified
entries	as specified
time graduation / advance	as specified
	AA900
	BA900
	CA900
Continuous fan-fold paper, 16 m, graduation: 0 ... 100, minimum order: 25 packages	
time graduation / advance	none
	10 mm/hr.
	20 mm/hr.
	60 mm/hr.
	120 mm/hr.
	A401L
	A401M
	A401N
	A401P
	A401Q
Continuous fan-fold paper, 16 m, graduation: 0 ... 100, minimum order: 25 packages	A4075
time graduation / advance	as specified
	CA900
Continuous fan-fold paper, 16 m, with calibration graduation, minimum order: 25 packages	A4074
calibration graduation	as specified
entries	as specified
time graduation / advance	as specified
	AA900
	BA900
	CA900
Printing head	A405A

POINTAX 6000L2

Point Recorder

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