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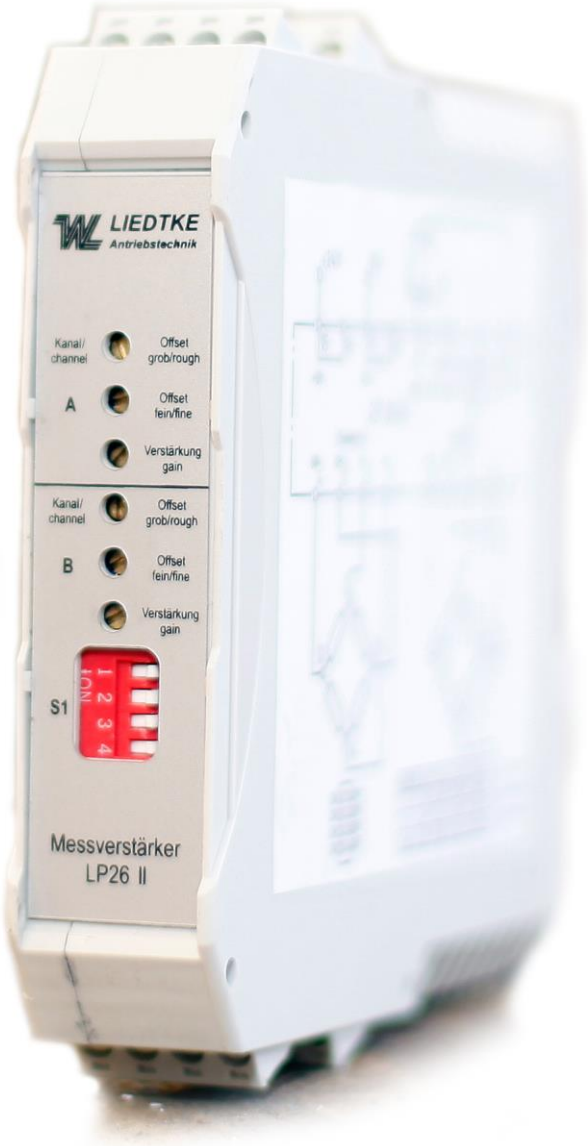
Manual and adjusting instructions

Instrument amplifier LP26II



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Enclosures:
- function digram
- connection diagram

Important Safety Instructions

The mounting and connetcting of the device may only be executed via an electrical specialist with the help of this manual. The national regulations and safety requirements are to be taken into account (see DIN V VDE V 0100-534... resp IEC 60364-5 534:...) .
Before the mountage check the device for outside damages. In case any damage or any other defect is found, the device may not be installed.
The use of the devce is only approved within the framework of the in this manual mentioned and shown circumstances. The device as well as the attached electrical equipment may be destroyed if used under a load above the indicated values. Interventions and changes at the device lead to the end of warranty claim.

The manufacturer does not undertake and responsibility for possible consequences due to the wrongful resp. low- quality installation, changes of existing parameters of the device or the wrongful arrangement of peripheral components.

A device independent shutdown possibility needs to be guranteed. Fuses may only be replaced with the same kind.
The use of the device is only authorized with an attached protective conductor.

For setpoint and actual value signals use shielding cables.
In doing so, please pay attention to the EMC- conform asembly.

The device includes electrostatic sensitive devices. When handling, mounting and maintenancing one must take measures to prevent electrostatic decharging.

Attention:
As a general principle one should ensure that the device is in a non- voltage condicion before any intervention..
By neglecting this precautious measurement there is the possibility of a lifethreatening electrical shock.

1. Product description instrument amplifier LP26II

The two- channel instrument amplifier LP26II serves to amplificate small voltage signals in the range of a few mV.

It is especially build for the attachment of transducers, like force sensors, a tension measuring roll or the torque sensor with integrated resistance measuring bridge (Wheatstone-Measuring bridge). The measuring bridge is fed via a short-circuit proof constant voltage source.

The instrument amplifier consists of two seperated channels, that are compiled via a matrix. This enables a zero balancing as well as a coarse and fine amplifier adjustment in the range of V = 100...10000 of the two seperate measurering channels.

The instrument amlifier LP26II gives three different output signals each:

1. **The immediate amplified measurement bridge signal**
2. **The positive share of this bridge signal**
3. **The magnitude of this signals/ attenuation switch-in**

2. Connecting the two channel instrument amplifiers LP26II

The measurement amplifier LP26II requires a supply voltage of 24 VDC at the terminals 15 and 17. Device protection via an internal microfuse F=200mA.

At the 24 VDC the terminal 15 establishes the plus pole and terminal 17 the minus pole. A productive circuit breaker prevents the destruction of the instrument amplifier in case of an incorrect polarity, the internal device fuse will then need to be replaced.

The transdurcers are connected, as seen in the cnnection diagram, at the terminals 1 (S+), 2 (S-), 3 (UB-) and 4 (UB+) channel A and 5 (S+), 6 (S-), 7(UB-) and 8 (UB+) channel B

The outputsignals (measuring bridge, magnitude signal, positive measuring bridge signal) are avaliable at the terminals 12, 13 und 14. Terminal 11 is the mass.

Periphery	Voltage	Terminal
Mass	0 V	17+18 (internal bridge)
pos. supply	+24VDC	15+16 (internal bridge)

2.1 Instructions for the EMC- conform installation

To comply with the electromagnetic compatability, please take into account the pertinent guidelines and regulations.

Especiall imortant for:
- Assembly
- Earthing
- Filtering
- Shielding

The user is soley responsible for the compliance of the EMC- directives in case of industrial application.
If all components/ equiment comply the CE- requirements regarding the interference immunity one does not have to expect any electromagnetic impairments.

The connection of the measuring bridge to the instrument amplifier is to be executed with a shield onto PE.

3. Instructions for Installation and Adjustments

3.1 Preparation for the start-up

Before turning on the supply voltage, please check if the instrument amplifier is correctly attached.

The supply voltage is turned on.

3.2 Switch S1

Via the switch S1.1 – S1.3 it is determined, which measruing signal is directed towards the outputs for magnitude, bridge signal and positive signal.

channel	S1.1	S1.2	S1.3
A	on	off	off
B	off	on	off
A+B	off	off	on

If any errors occur, please check the supply lines for short-circuits or disconnections. Also check the line fuse F1. The internal divice fuse amounts to F= 200mA.

The switch S1.4 eables a switch-in of an attenuation for the connection of a measuring device at the terminal 13= magnitude of the signal.

attenuation	S1.4
ein	on
aus	off

3.3 Calibration off-load measuring bridges

The instrument amplifier needs to be connected for at least 10 minutes to the line voltage before the calibration process.
The amplification, which is adjusted via P3 and P6, may not be at the maximum (all the way to the right) but in the first third.

The zero point is coarsely calibrated separately for the channels A and B via the corresponding potentiometers at the mechanically off- loaded measuring bridges, so that an attached voltmeter (terminal 11: mass, terminal 12: bridge signal) display approximately 0V. To display the actual value of each measuring bearing one has to note the switch position S1 for each corresponding channel.
The fine adjustment of the zero points for the emasuring channels A and B is achieved with the corresponding potentiometer. The externally attached voltmeter is now calibrated to exactly 0V. The setting of S1 needs to be paid attention to as in section 3.1.

3.4 Calibration on-load measuring bridges

In case the load of the measuring rollers cannot be exactly determined, it is recommended to calibrate the measuring channels via loading the measuing rollers. In order to do that, a belt is lead over the middle of the measuring roller corresponding to the material course and with the help of weights it is then loaded with the maximum web force. When measuring on both sides each force sensor now senses half of the load. The zero point and amplifier adjustment is to be repeated in turns until there are no more errors recorded. For the zero point adjustment the measuring rollers are to be off- loaded. A high accuracy is achieved when the measuring channels are calibrated via loading the measuing rollers with weights.

The maximum output signal of the chosen measuring channel is adjusted to 10V via the potentiometer „amplification“ (channel A) and „amplification“ (channel B) under maximum load (when connecting a transducer).

The switch position of S1 is to be adjusted for each channel that is going to be adjusted. (see section 31). The measuring roll is prepared as described above to generate a relevant measuring signal. When estblishing a sum of both measuring bearings one uses the following formula:

$$\frac{\text{channel A}}{2} + \frac{\text{channel B}}{2} = F_{ges}$$

An establishment of a sum via this scheme has the advantage that in case of a failure of a measuring bearing one can switch to a one sided measurement with the same output (no drop in the stress)
The setting of the zero point and the amplification is to be tested again and if neccessary needs to be adjusted once again with the potentiometer (channel A and channel B), while one has to match the corresponding switch position for channel A and channel B.

3.5 Signal outputs

terminal	signal	channel
12	Measuring bridge	channel A, channel B or sum signal A+B 1 - 2
14	positive measuring bridge signal	channel A, channel B or sum signal A+B 1 - 2
13	Magnitude signal With-/out stabilization for measuring devices	channel A, channel B or sum signal A+B 1 - 2

4. Summary

4.1 Connections

terminal	function	
1	imput for positive bridge signal channel A	(S+)
2	imput for negative bridge signal chanel B	(S-)
3	mass channel A	(UB-)
4	voltage supply channel A	(UB+)
5	imput for positive bridge signal channel B	(S+)
6	imput for negatie bridge signal channel B	(S-)
7	Mass channel B	(UB-)
8	voltage supply channel B	(UB+)
9	not available/ assigned	
10	not available/ assigned	
11	Mass for electronics	
12	output of the bridge signal (-10...0...+10 V)	
13	output of the positive share of the bridge signal (0...+10 V) with-/out stabilization for measuring device connection	
14	output of the magnitude of the bridge signal (0...+10 V)	
15	external supply voltage 24 VDC (+ Us)	
16	internal bridge with terminal 15	
17	external supply voltage 24 VDC (- Us)	
18	internal bridge with terminal 17	

4.2 Technical data:

Measuring bridge resistor	120...800 Ω
Bridge supply voltage	5VDC
Temperature impact onto the bridge supply	< 0,005 % / K
Susceptibility	1mV... 0,1V adjustable
Adjustabe amplification	100....10.000
Imput filter	
Imput resistor	> 1 MΩ
Zero drift (at V=1000)	< 1,8 mV/K
Total drift (at V=1000)	< 2 mV/K
Linearity error	< 0,1 %
Measurement frequency range	0...20Hz
Voltage output 0...10VDC	load resistor R > 1 kΩ
Zero supression	15 mV
Power connection	24 VDC
Power consumption	max. 4,5 VA
Degree of protection	IP20
Model	case HxWxD= 108x22,5x115 (mm)
Connection via socket	4 polarized separatable plug-in terminals

Potentiometer (Frontpanel)

Channel A	Channel B
Offset coarse	Offset coarse
Offset fine	Offset fine
amplification	amplification