NORDMANN
TOOL MONITORING

ADDM Sensor Adjustment Module

Technical Data:

WLM-3 Power Supply:	± 15 V / 40 mA
Temperature Range:	+5 °C to +70 °C
Adapter Cables (to Tool Monitor):	4 x 0.25 mm² + shield (e.g. LiYCY) (Not included, length: max. 100 m)
ADDM Housing:	Standard housing DIN VDE 0100 T750 and VDE 0160 T100
Material:	Makrolon 8020 UL94V-1
Weight:	180 g
Protection Type:	IP40 (IP20 BGV A3 Terminals)
Dimensions (Width x Height x Depth):	55 x 75 x 110 mm
Mounting:	Optionally mounted in the electric cabinet by 2 M4 screws per DIN 46121 / DIN 43660 or on TS35 standard rails per DIN 46277 or DIN EN 60715

- **Standard housing for rail mounting**
- **Linear and logarithmic output measurement**
- **Differential measurement between two sensors**
- **Automatic zero point alignment over an external 24 V control signal**
- **Measured value rectifying (optional)**
- **Measured value smoothing (adjustable)**

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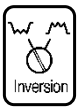
Settings:

Measurement Amplification Setting
max. 25 rotations

The measurement amplification can be adjusted in a range from 1 to 200 by means of an adjustment screw.



Determine Measurement Direction

If the measured curve is “upside down”, it can be upturned by the switch „Inversion“.

The ADDM can also be set to "rectifying" over the internal jumper, so that a positive, meaning a measurement curve directed above, is to be seen on the TOOL MONITOR connected to the ADDM.

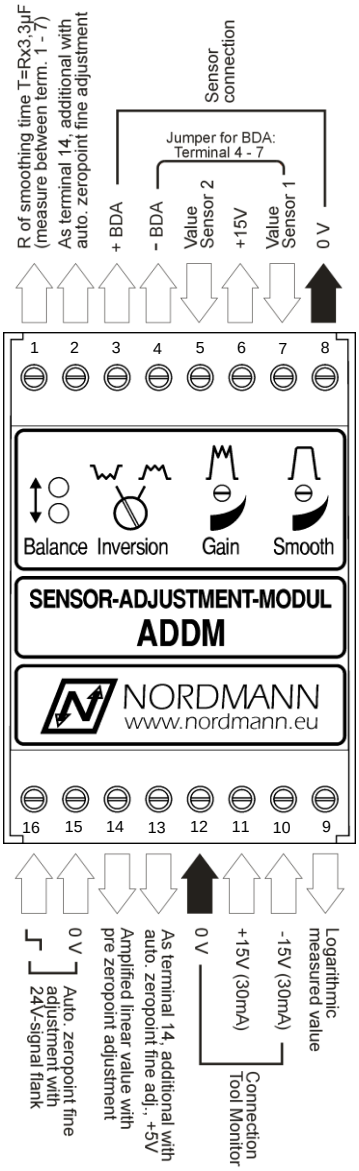
Smoothing Adjustment
max. 25 rotations

If the measured value should oscillate, it can be smoothed by turning the smoothing adjustment screw (= 26 ms per rotation) to the right from 3.3 to 660 ms smoothing time. Thereby, the zero alignment will also be improved. The smoothing time is set to 30 ms from the factory.

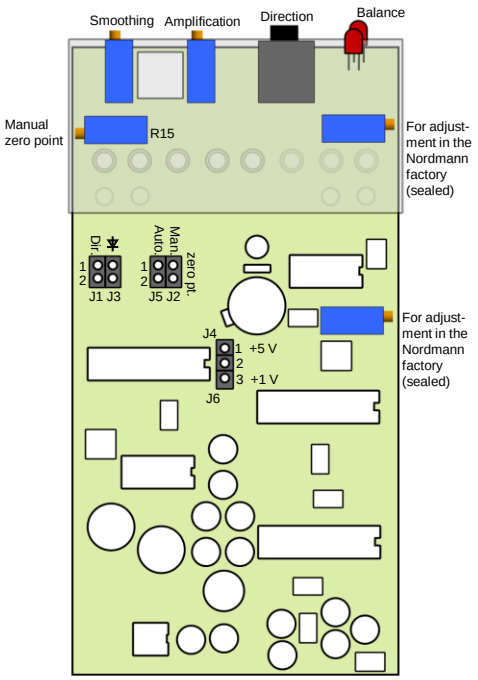
Balance

The display of the balance serves for the mechanical adjustment of the sensors of BDA type. The basic distance of the BDA eddy current displacement transducer lies between 0.1 and 1.7 mm according type (-Q(-Mini) or -L(-Mini)). It must be set so that the both red LEDs light as similarly brightly as possible. The measured value pending at Terminal 7 then amounts to 5V.

Connection Layout:



Printed circuit board layout:



Jumper Layout:

Designation	Function	Factory Setting
J5	Automated zero point fine alignment	Jumpered (= enable)
J2	Manual zero point alignment (over R15)	Open (= disable)
J1	Measurement Direction (switchable over direction switch)	Jumpered (= enable)
J3	Logarithmic measured value rectified (always positive measurement curve)	Open (= disable)
J4	Offset to Terminal 14: +5V	Jumpered (= on)
J6	Offset to Terminal 14: +1V	Open (= off)

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Automated Zero Point Alignment:

The measured value pending before the mechanical loading of the machine components (meaning shortly before the actual process) is saved with an external control signal to Terminals 15 (ground or "-") and 16 (24 V DC or AC) with the pending edge of this signal and subtracted from the following process measured values. The ADDM is prepared for this over internal jumpers from the factory. If this offset is not possible, the internal Jumper J5 (Aut.) must be plugged on Position J2 (Man.).

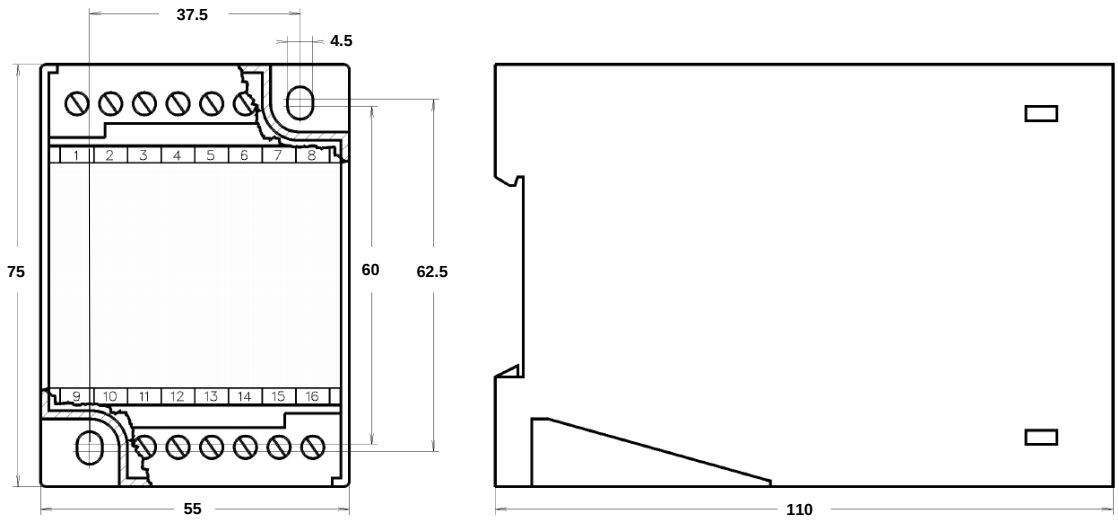
This zero point alignment is absolutely required before each measurement, since otherwise the measured values are permanently subtracted from each other and only very quick changes in the measured value to be seen as short peaks.
This enables a sensitive measurement of the actual work load of the machine components, since mechanical and temperature-limited zero point drifts hereby are respectively eliminated from a measurement. The Cut Active signal can be used as the control signal that also starts monitoring. The Cut Active signal may not come later than 180 ms before tool/work piece contact. Otherwise, the start of the cut is offset on the force by work piece with the consequence that the measurement curve after that is displayed too deep.

For a reproducible measured value recording, the time point of the automatic zero point alignment is of special meaning. It must lie in a range of the measurement curve, in which the measured value is not subject to random fluctuations, since otherwise very uneven measured values are stored and subtracted.

Additional Information:

Since the modifications to the measured value would not be able to be depicted as a good measurement curve by a factor of 100 and more in linear standard, logarithmic standard is measured and displayed (logarithmic output measurement of the ADDM at Terminal 9). Particularly small measured values are thus better resolved and appear as clearly visible curves on the TOOL MONITOR display. Outside of this, over-controlling by very high values is avoided hereby. By the logarithmic representation, a modification of the measured values around +6 dB (e.g. from 30 dB to 36 dB) corresponds to a doubling of the measured value. An increase around +20 dB corresponds to around factor 10 higher measured value (40 dB = Factor 100, etc.).

Dimensions:



Order Designation:

8.6	ADDM