


Electronic Rotational Speed Monitoring Device Type EDO

KIEPE ELEKTRIK

Device Identification No.: 93.045 508.001 / .005 / .007 / .012



OPERATING INSTRUCTIONS

CE-Sign an Conformity

The device meets the requirements of the valid European and national regulations.

Conformity has been proved and the corresponding declarations and documents are deposited at the manufacturer.

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1 For your own Safety

1.1 Intended Application

The electronic rotational speed monitoring device EDO is applied together with a pulse indicator for monitoring the rotational speed of drives.

The device is intended for use in stationary installations and in vehicles.

Applications other than specified and unauthorised modifications to the device or its components may lead to injury to persons and damage to the device for which the manufacturer is **not liable**.

Make sure that the intended use is not impaired in any way, even after unexpected outside influence on the device.

"Intended Application“ particularly means that any work performed with the device or on the device must be carried out in accordance with the present **operating instructions**. Only **qualified personnel** that are familiar with the **regulations for the prevention of accidents** as well as the standard safety rules are allowed to work on the device.

Observing the intended application protects yourself and prevents damage to the device!

1.2 Symbols

Please pay particular attention to the text passages that are marked by the following symbols:



Danger!

Information that must be observed under all circumstances in order to prevent the operator from being injured.



Attention!

Information that must be observed in order to prevent damage to the device.



Helpful additional information.



2 Transport, Packing, Storage, and Disposal

2.1 Transport and Packing

Choose a suitable packing in order to prevent damage to the device during transport or when sending devices or components to Vossloh Kiepe GmbH for repair. Take great care that the device is protected against shocks and humidity. Thus, damage due to transport is prevented, for which the manufacturer is not liable.

2.2 Storage

Avoid significant variations in temperature that may cause the formation of condensation water, as this might damage the device.

The permissible storage temperature is between -25°C to +70°C.



Attention!
Keep the device clean and dry.

2.3 Disposal

If possible, reuse the **packing material** or dispose of it in an environmentally friendly way.

Send **defective devices and components** to Vossloh Kiepe GmbH for correct recycling or disposal *(company address see back cover)*.

3 Design and Function

The electronic rotational speed monitoring device EDO is applied together with a pulse indicator for measuring, monitoring, and controlling drives. The pulses of the indicator are analysed by the speed monitoring device, which signals the low speeding or overspeeding of a defined reference speed.

3.1 Design

The rotational speed monitoring device EDO is delivered in a solid plastic housing (**8**) for hat-rail mounting. The indicating and operating elements are assigned to the front side of the device.

LED green (1), switching status output relay (16)

LED status, green	
On:	output relay (**16**) attracted
Off:	output relay (**16**) dropped

LED orange (2), input supervision

The light-emitting diode flashes with the cycle of the indicator pulses.

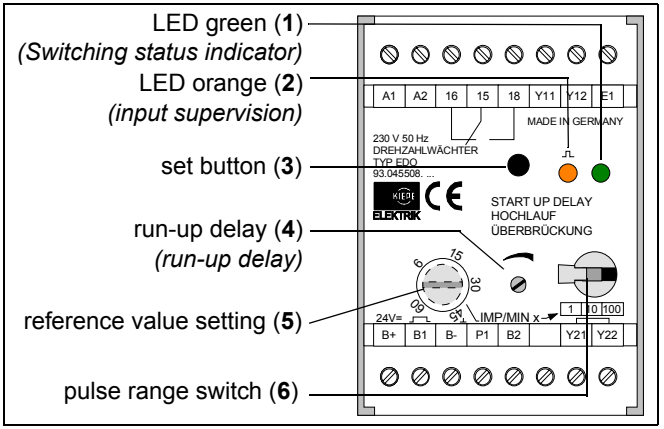


Fig. 3-1: Operating elements of the speed monitoring device

When there are more than 1,500 pulses a minute the diode lights up permanently.

LED status, orange	
Flashing:	Pulses of the rotational speed indicator are applied.
Permanently:	Number of pulses > 1,500 pulses/min. **LED green (1) lights up:** standard operating status. **LED green (1) out:** Standstill of plant, no pulse release, or defective pulse indicator or connections.
Off:	Standstill of plant, when the pulse releasing device stops directly before the pulse indicator, or when the speed monitoring device has no voltage.

Set button (3)

By operating the set button (**3**) the output relay (**16**) can be triggered directly in order to prevent it from dropping during the setting.

Potentiometer run-up delay (4)

Setting the duration of the run-up delay between 0 and 40 seconds.

Reference value setting (5)

This potentiometer serves to adjust the speed monitoring device to the operating speed of the drive.

Pulse range switch (6)

By means of this toggle switch the required range of pulses can be set. The switch-off delays listed in below table are fixed values depending on the switching.

Position of the switch	Pulse range	Switch-off delay
	pulses/minute	seconds
1 | 10 | 100	switching range	with relay dropping time
	6 to 60	10 … 1
	60 to 600	1 … 0.1
	600 to 6.000	0.1 … 0.01

Switch-off delay

In order to avoid malfunctions caused by jolting drives, the switch-off of the output relay can be delayed. For this, the terminals Y21 and Y22 must be bridged. By means of the jumper (**27**) on the circuit board (**26**) three minimum delays can be set: 10, 2.5, and 0.5 seconds *(s. section 6.1.4)*.

3.2 Function Principle of the EDO

3.2.1 General

Together with a rotational speed indicator, the rotational speed monitoring device EDO serves to monitor the low speeding, standstill, or overspeeding of a drive. The pulses of the indicator are analysed by the monitoring device, which signals the low speeding or overspeeding of a defined reference speed.

The indicator input (**17**) (terminals B+, B1, B2, B-) of the speed monitoring device is designed for all common rotational speed indicators complying with the NAMUR regulations *(s. fig. 3-2)*. It is also possible to connect 3-wire pulse indicators (negative switching NPN or positive switching PNP). The indicator input (**17**) can be supervised by means of the light-emitting diode LED orange (**2**). Any number of rotational speed monitoring devices can be connected to one pulse indicator *(s. section 5.3.2)*.

The output relay (**16**) is a change-over contact. The current switching status of the relay is indicated by the light-emitting diode LED green (**1**).

In addition, the rotational speed monitoring device is provided with a pulse output to connect common digital rotational speed counters *(see 5.3.1 Connection Assignment)*.

3.2.2 Run-up Delay

In order to start up the plant, the rotational speed monitoring device EDO is provided with the feature run-up delay.

By means of the potentiometer run-up delay (**4**) the duration of the run-up delay can be set between 0 and approx. 40 seconds *(s. fig. 3-2)*. During this time, the output relay (**16**) remains attracted, and the plant can be started.

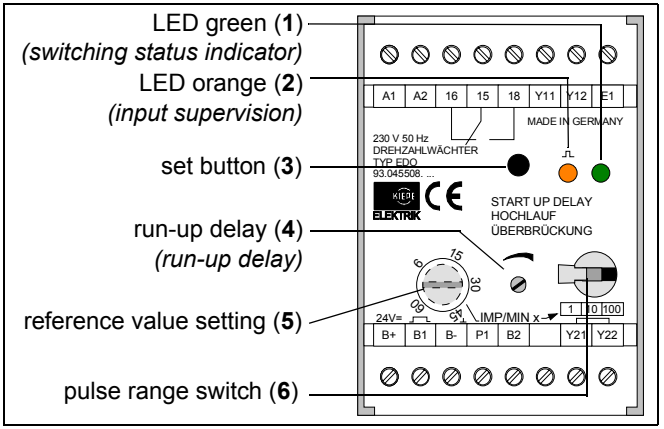


Fig. 3-2: Operating elements of the speed monitoring device

3.2.3 Low speed monitoring/switching function (with run-up delay)

The speed monitoring device can either be applied to the supply voltage together with the drive to be monitored, or the speed monitoring device is applied to the supply voltage permanently. In this event, the monitoring function is released via the start input E1 *(s. also fig. 5-4)*. The output relay (**16**) is attracted during the set run-up delay time.

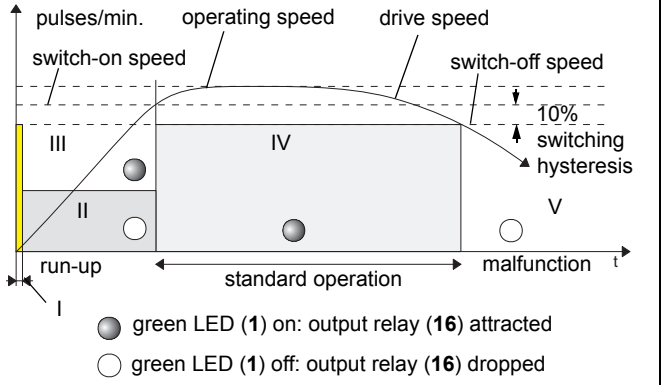
Speed monitoring device	the following relay contacts are closed
EDO	15 and 18

When the delay time is reached and the drive maintains a constant operating speed, the output relay (**16**) remains attracted and the green LED (**1**) lights up. The orange-coloured LED (**2**) flashes with the cycle of the incoming pulses.

Low speeding the reference speed

If the set speed is not reached, the output relay (**16**) drops and the green LED (**1**) extinguishes *(s. fig. 3-3)*.

Speed monitoring device	the following relay contacts are closed
EDO	15 and 16



Item	Description	Contact closed	green LED
I	Relay triggering time = 200ms to be observed, when EDO and drive are commonly switched on/ off.	15/16	○
II	without run-up delay	15/16	○
III	with run-up delay	15/18	●
IV	pulse rate above reference value	15/18	●
V	pulse rate below reference value	15/18	○

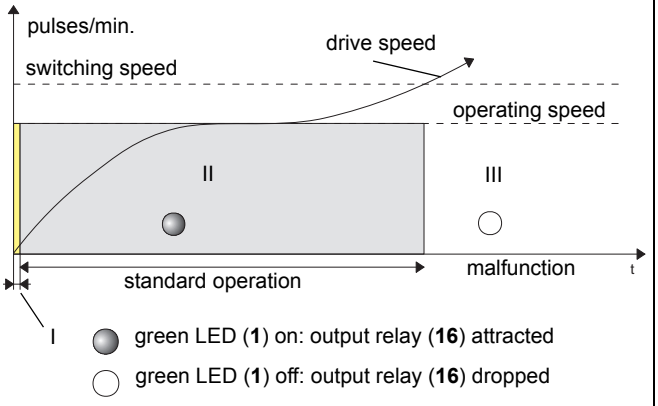
*Fig. 3-3: Time chart for **low** speed monitoring device*

3.2.4 Overspeed monitoring (without run-up delay)

When overspeeding the set switching speed, the output relay drops and the green LED (**1**) extinguishes.

The operating mode overspeed monitoring is set by means of a jumper (**27**) *(s. section 6.1.2)*.

Speed monitoring device	the following relay contacts are closed
EDO	15/16



Item	Description	Contact closed	green LED
I	relay triggering time = 200ms to be observed, when EDO and drive are commonly switched on/ off.	15/16	○
II	pulse rate below reference value	15/18	●
III	pulse rate above reference value	15/16	○

*Fig. 3-4: Time chart for **over**speed monitoring device*



4 Technical Data

4.1 Safety Regulations

VDE 0100	Regulation for mounting power plants with nominal voltages up to 1000 V
VDE 0113 part 1 (DIN EN 60204)	Machines' safety; electrical equipment of machines
VDE 0113 part 101 (DIN EN 60204)	Machines' safety; display, indication, operation
VDE 0160 (DIN EN 50178)	Equipment for power plants with electronic materials
Regulations for the prevention of accidents	particularly VBG 4

EN regulations, national standards, directions of the operating authority

4.2 Supply Voltage

Terminals A1, A2	Power consumption	EDO type	Start input E1 (reference A2)
AC 230 V ± 10 %, 50 – 60 Hz	< 3 VA	93.045 508.001	AC 230 V
AC 115 V ± 10 %, 50 – 60 Hz	< 3 VA	93.045 508.007	AC 115 V
DC 24 V ± 15 %	< 3 VA	93.045 508.005	DC 24 V
DC 48 V to 60 V ± 15 %	< 3 VA	93.045 508.012	DC 48 V to 60 V

4.3 Reference Data

Switching point deviation	< 1 %
Run-up delay	0 to ~ 40 s (adjustable)
Switching hysteresis	~ 10 % of operating speed (3% and 30 % adjustable via internal potentiometer)

4.4 Input Data

Indicator input/pulse input	Terminals B+, B1, B2, B-
Indicator type	all 2-wire pulse indicators according to NAMUR (EN 50227),e. g. Kiepe type DG or DK NPN-/PNP 3-wire pulse indicator, e. g. Kiepe type EOG or DGP
Min. pulse duration of the indicator	≥ 2 ms

Pulse ranges (adjustable)	Pulses/minute	Switch-off delay in s (excl. relay dropping time)
1	6 … 60	10 … 1
10	60 … 600	1 … 0.1
100	600 … 6.000	0.1 … 0.01
Start input	**Terminals E1 (reference A2)**	
Input voltage	93.045 508.001: AC 230 V	93.045 508.012: DC 48 V – 60 V
	93.045 508.007: AC 115 V	93.045 508.005: DC 24 V

4.5 Output Data

Relay output	Terminals 15/16/18
Type of contact	1 change-over contact
max. switching voltage (AC/DC)	≤ 250 V (AC) / ≤ 30 V (DC)
max. switching current (AC/DC)	≤ 8 A
max. switching capacity (AC/DC)	≤ 2000 VA (AC) / 30 W (DC)
Triggering time of the relay	200 ms (Please observe the triggering time of the relay in case that the speed monitoring device and a drive are commonly switched on/off.)

4.6 Switch-off Delay (adjustable)

Min. delay time	**Jumper field on the circuit board (26),** *(s. section 6.1.4)*
Fixed values to be set:	approx. 0.5 s/ 2.5 s/ 10 s (requires an additional bridge between terminals Y21 - Y22)

4.7 Environment

Permissible operating temperature	- 25 °C to + 70 °C
Permissible storage temperature	- 25 °C to + 70 °C

4.8 Design

Protection class	Housing: IP 30, according to DIN VDE 0470, part 1 (EN 60529) Terminals: IP 20, according to DIN VDE 0470, part 1 (EN 60529)
Protection class incl. ISO housing	IP 65, according to DIN VDE 0470, part 1 (EN 60529)
Line cross section	max. 2.5 mm^2
Dimensions (w x h x d)	55 mm x 75 mm x 110 mm (+ approx. 10 mm for the setting buttons)
Fastening	Mounting on 35 mm hat-rails according to EN 50 022 Mounting by fastening screws onto switch boards or in ISO housing
Built-in position	any
Weight	approx. 330 g (AC) approx. 250 g (DC)

4.9 EDO Dimensions

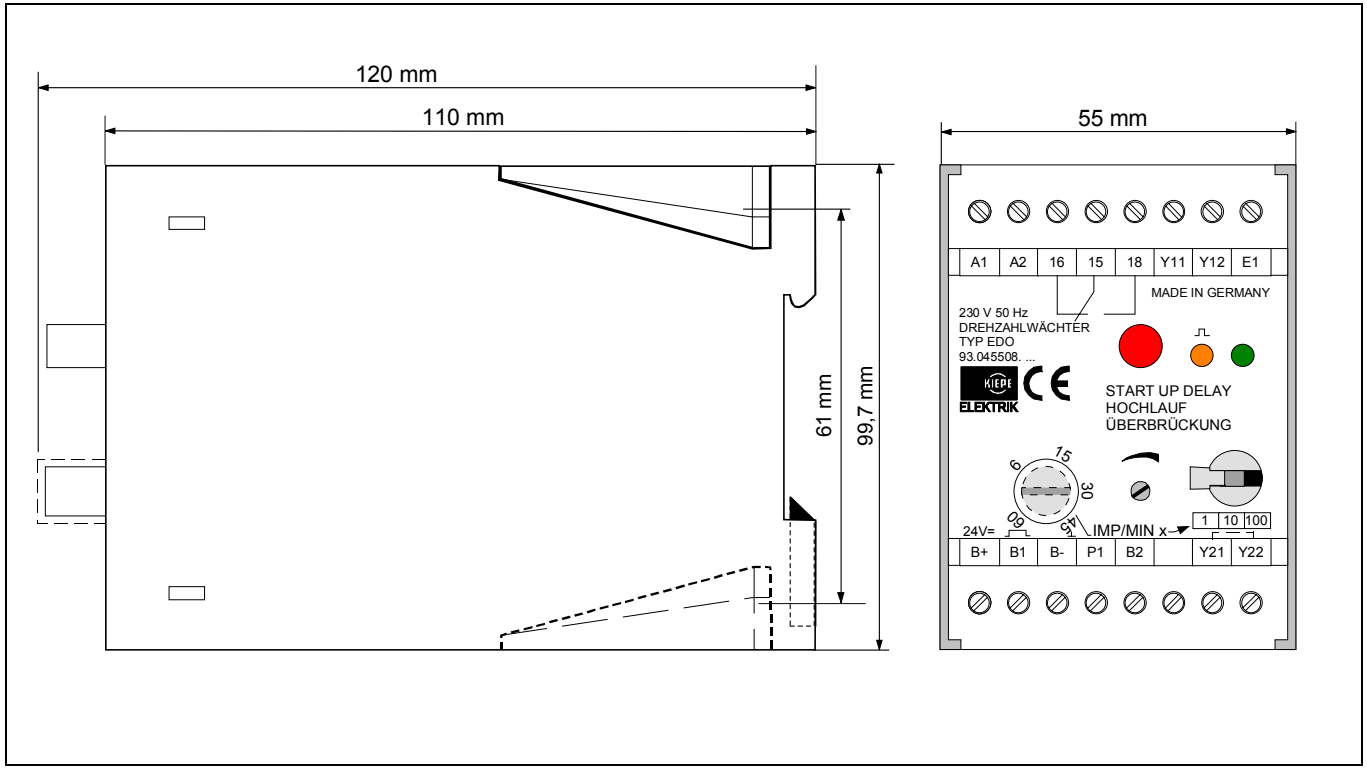


Fig. 4-1: EDO, dimensions

4.10 EDO Built-in dimensions ISO housing

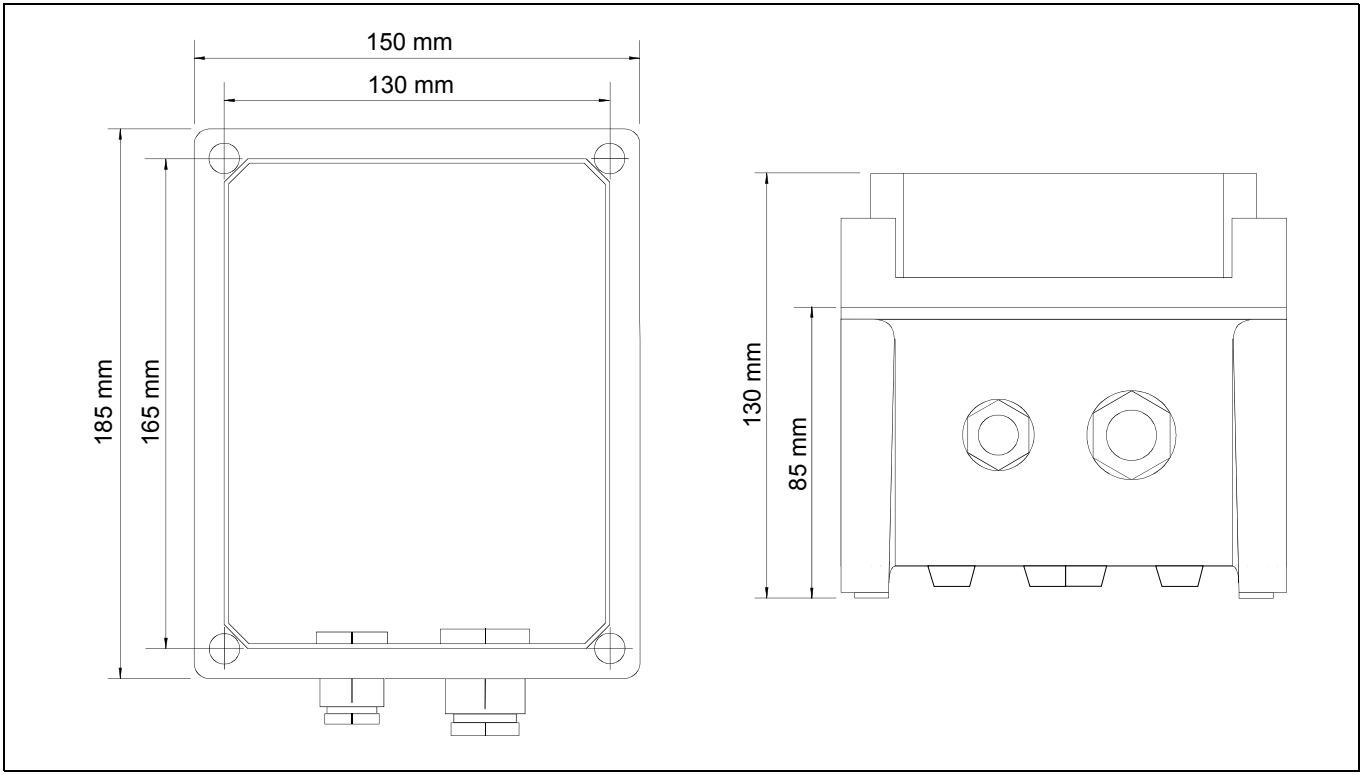


Fig. 4-2: Built-in dimensions ISO housing



5 Mounting and Dismounting

5.1 Scope of Delivery

The rotational speed monitoring device EDO is delivered ready for operation. Fastening screws etc. are not included in the scope of delivery. If required, the rotational speed monitoring device can be delivered completely wired in a ISO housing (incl. transparent hood).

5.2 Mounting



Danger of electric shocks!

The mounting and the electrical connection may only be carried out by qualified electricians.

Before mounting, disconnect the plant from the power supply and prevent it from being switched on again. Cover live parts in the vicinity to prevent any contact.



Attention!

Choose the mounting location and the built-in position in such a way that the device can be securely operated.

The rotational speed monitoring device can be mounted in two ways:

1. Mounting on a hat-rail, according to EN 50022
2. Wall mounting with two fastening screws

Choose any built-in position, however, observe that the speed monitoring device can be securely operated.



If you want to modify the operating mode of the speed monitoring device, prior to the mounting you must set the jumper (**27**) on circuit board (**26**) correspondingly. For this, the circuit board (**26**) of the speed monitoring device must be pulled out of the plastic housing (**8**) *(s. section 6.1.1)*.

5.2.1 Hat-rail mounting

1. Before mounting, disconnect the plant from the power supply and prevent if from being switched on again.
2. First, set the device's mounting edge onto the hat-rail (**10**) (EN 50 022), and press it onto the hat-rail (**10**), until the snap lock (**11**) engages *(s. fig. 5-1).*

5.2.2 Mounting by means of 2 M4 screws

1. Before mounting, disconnect the plant from the power supply and prevent if from being switched on again.

The rotational speed monitoring device EDO is provided with two mounting bores (**11**) for fastening screws.

2. Fasten the device with two suitable M4 screws *(s. fig. 5-2)*.

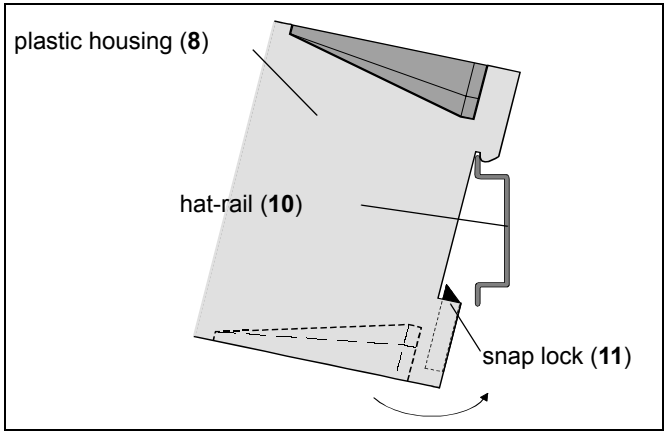


Fig. 5-1: Hat-rail mounting

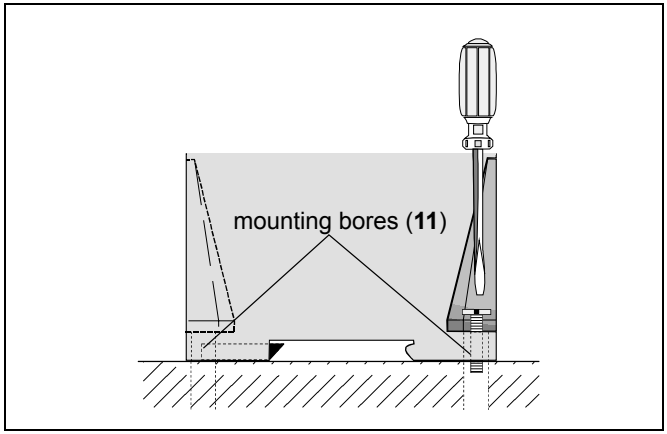


Fig. 5-2: Mounting with two M4 screws

5.3 Electrical Connection



Danger of electric shocks!

The mounting and the electrical connection may only be carried out by qualified electricians.

Before connecting, disconnect the plant from the power supply and prevent it from being switched on again. Cover live parts in the vicinity to prevent any contact.

Install all connection cables in such a way that they are not damaged or torn off the device.



Attention!

The operation with incorrect supply voltage may damage the device.

Prior to the electrical connection, check whether the data indicated on the label comply with the supply voltage of your plant.

When connecting the pulse indicators observe the correct polarity.



Only use screened cables for the control lines in order to prevent interferences.

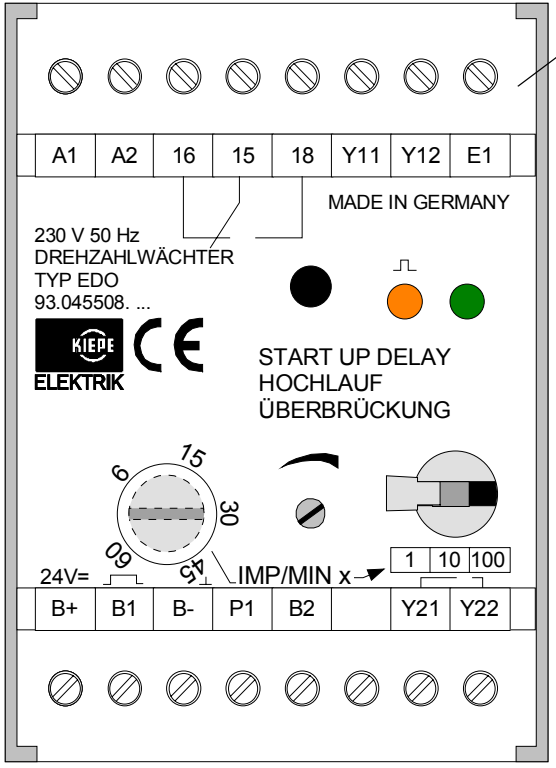
1. Before connecting, disconnect the plant from the power supply and prevent it from being switched on again.
2. Make sure that the plant is voltage-free.
3. Install the connecting cables.



We recommend you to install the control lines and the power supply lines separately.

4. Carry out the electrical connection according to the below shown connection diagrams.

5.3.1 Connection Assignment



rotational speed monitoring device (**9**)

Terminal	EDO	
A1: L (AC), + (DC) A2: N (AC), - (DC)	Supply voltage: 230 V (AC) / 115 V (AC) or 48 V (DC) or 24 V (DC)	
16	Relay contact, normally closed contact	
15	Relay contact	
18	Relay contact, normally opened contact	
Y11	Setting bridging to Y12	
Y12	Setting bridging to Y11	
E1	Start input, reference A2	
B+	Indicator supply	NPN / PNP
B1	Indicator input	NAMUR / NPN
B-	Indicator supply	minus, NPN, PNP
P1	Pulse output	
B2	Indicator input	PNP
Y21	Switch-off delay	Bridge Y22
Y22	Switch-off delay	Bridge Y21

Fig. 5-3: Connection Assignment

5.3.2 Connection Samples

5.3.2.1 Low speed monitoring device with run-up delay

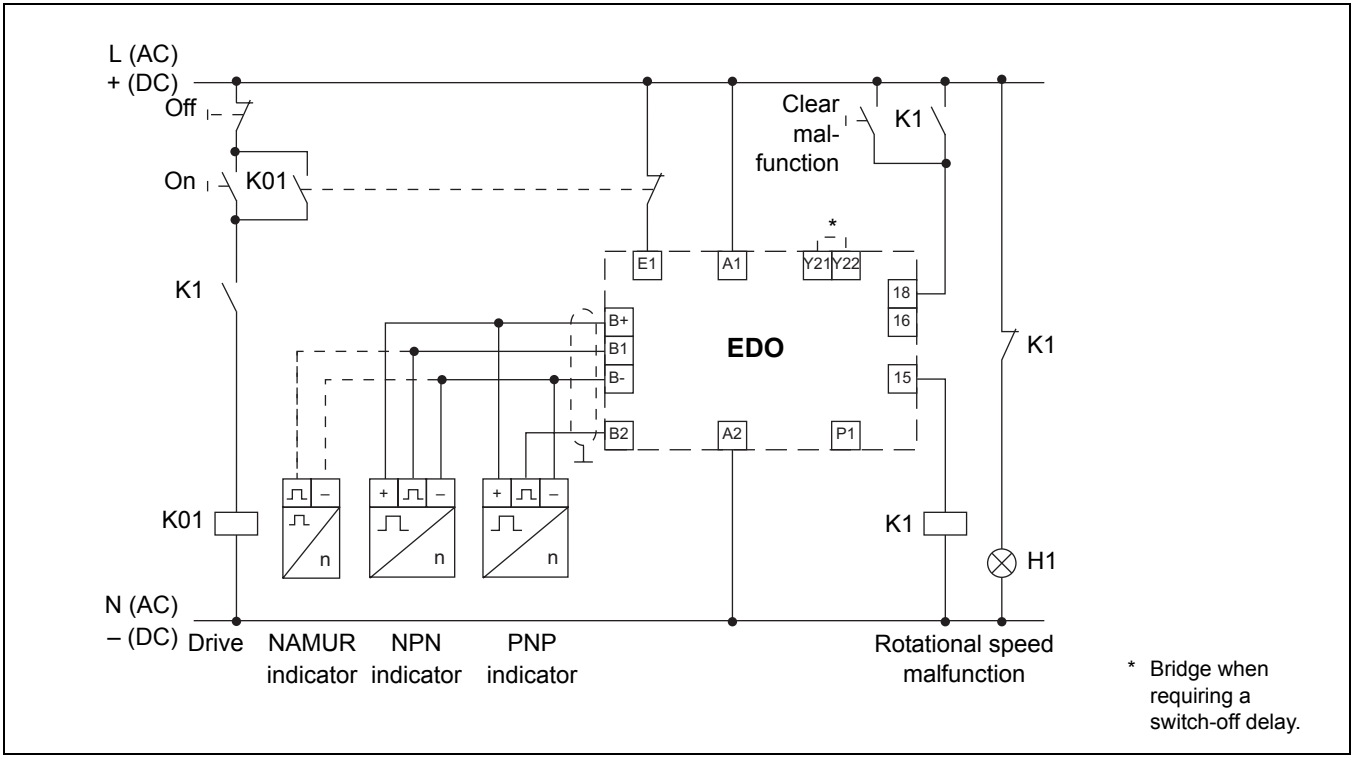


Fig. 5-4: Connection sample, low speed monitoring device with run-up delay

5.3.2.2 Overspeed monitoring device without run-up delay

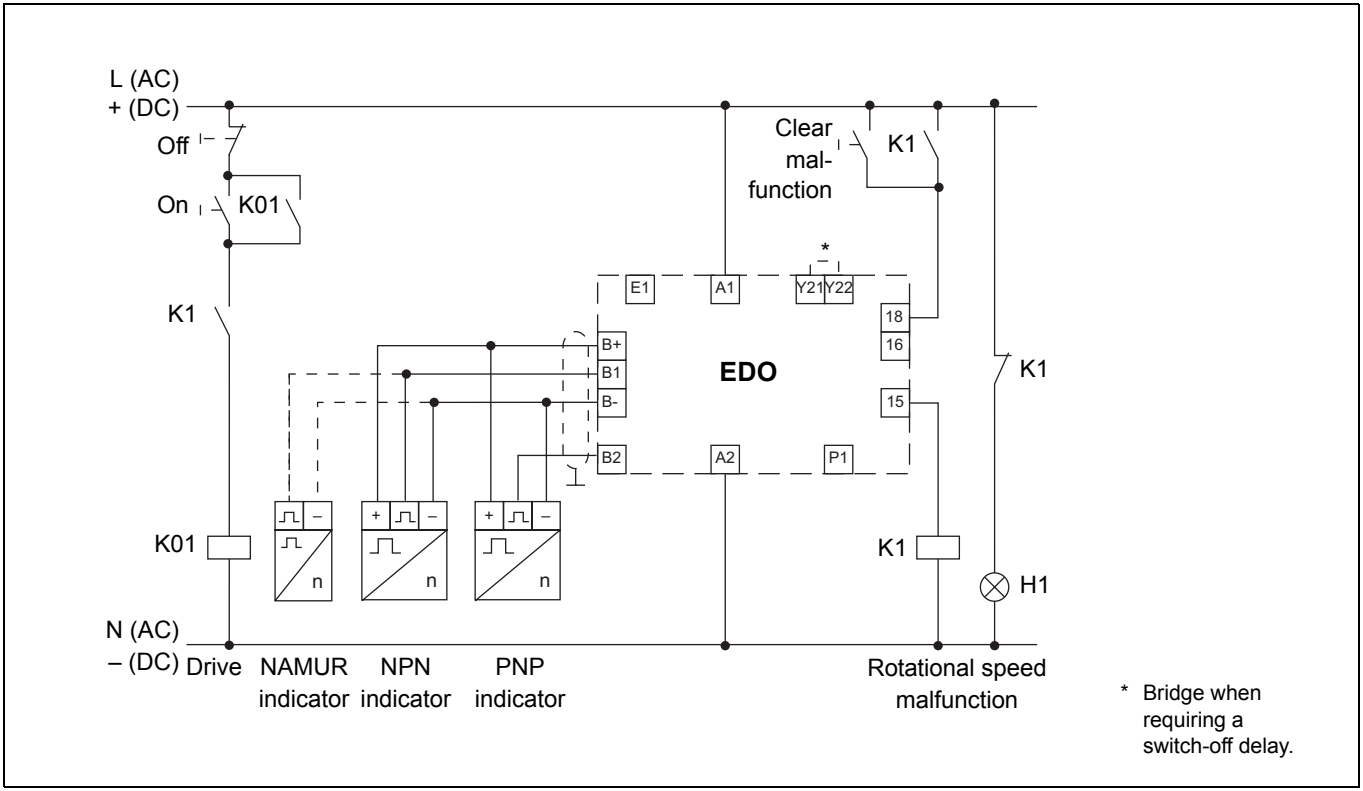


Fig. 5-5: Connection sample, overspeed monitoring device without run-up delay

5.3.2.3 Several speed monitoring devices connected to one pulse indicator

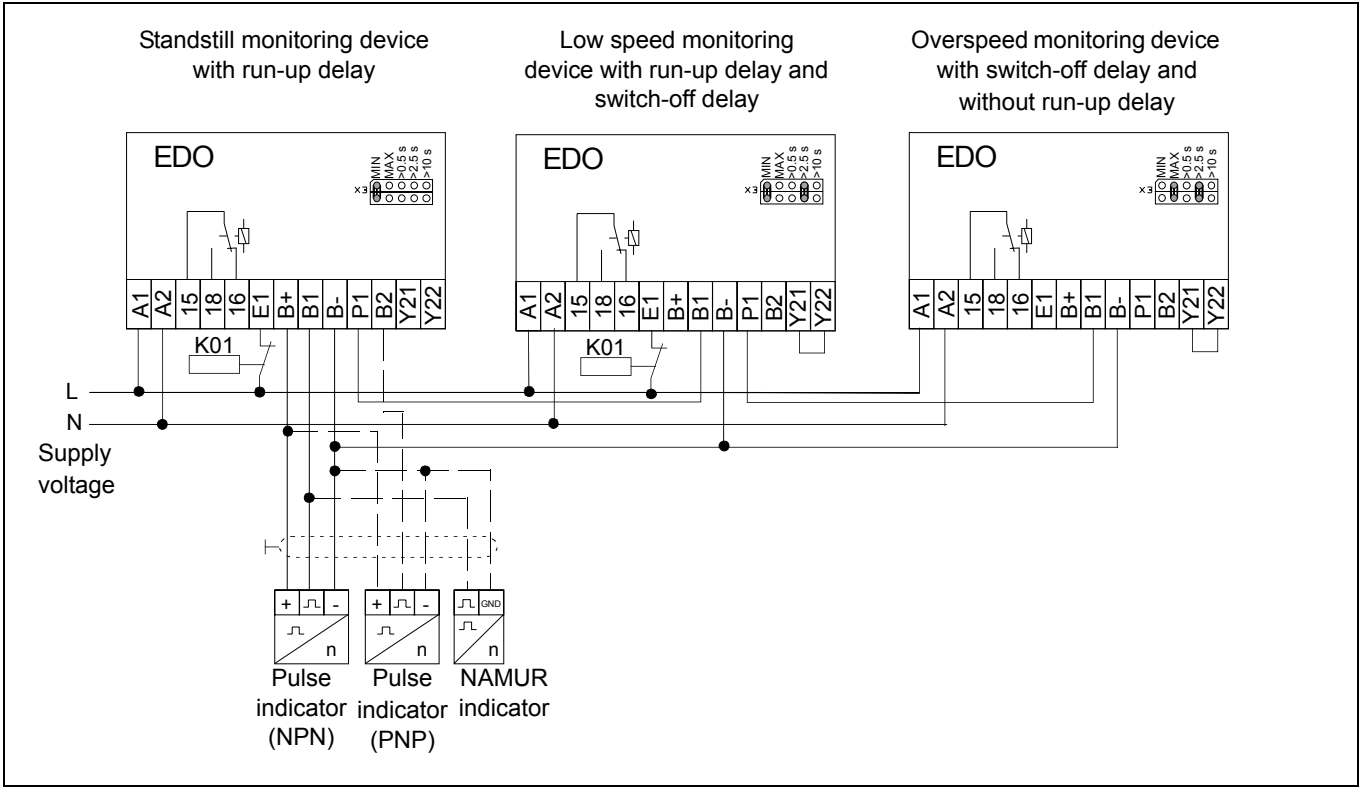


Fig. 5-6: Connection sample, several EDO speed monitoring devices connected to one pulse indicator

5.4 Dismounting the Rotational Speed Monitoring Device

Danger of electric shocks!

The mounting and the electrical connection may only be carried out by qualified electricians.

Before dismounting the device, disconnect the plant from the power supply and prevent if from being switched on again. Cover live parts in the vicinity to prevent any contact.

5.4.1 Dismounting from a hat-rail

1. Before dismounting, disconnect the plant from the power supply and prevent it from being switched on again.
2. Make sure that the plant is voltage-free.
3. Loosen the electrical connections.
4. Insert a screw drive into the eye of the snap lock (**11**) and press it against the plastic housing (**8**) *(s. fig. 5-7)*. The device is free and can be removed from the hat-rail (**10**).

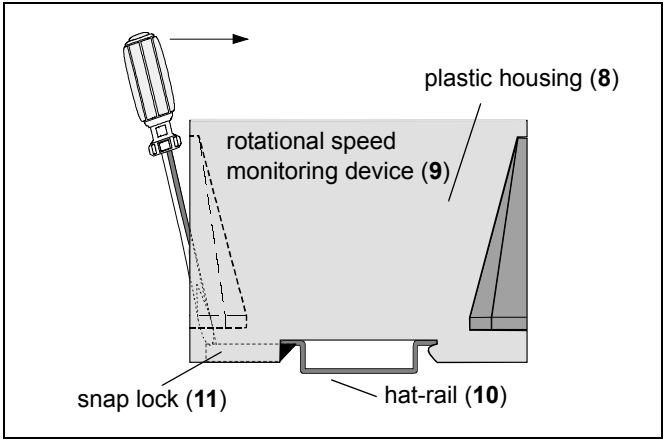


Fig. 5-7: Dismounting from a hat-rail

5.4.2 Dismounting by means of 2 M4 screws

1. Before dismounting, disconnected the plant from the power supply and prevent it from being switched on again.
2. Make sure that the plant is voltage-free.
3. Loosen the electrical connections.
4. Loosen the two fastening screws by means of a screw driver and remove the device.

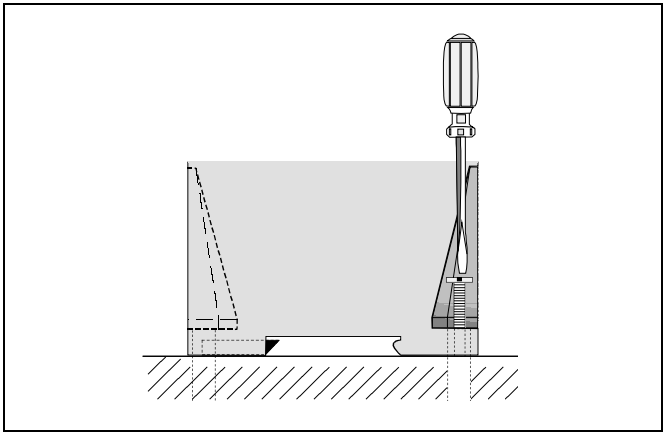


Fig. 5-8: Dismounting by means of 2 M4 screws

6 Setting the Rotational Speed Monitoring Device EDO

6.1 Modifying the settings on the circuit board

The following settings can only be carried out on the circuit board (**26**) of the rotational speed monitoring device (**9**) *(s. fig. 6-1 and 6-2)*.

6.1.1 Opening the plastic housing

Danger of electric shocks!
Disconnect the plant from the power supply and prevent it from being switched on again.

Make sure that the plant is voltage-free.

1. Disconnect the plant from the power supply and prevent it from being switched on again.
2. Dismount the rotational speed monitoring device (**9**) *(s. section 5.4)*.

Attention!
The circuit board (26) consists of two parts, so pull it carefully out of the plastic housing (8).

3. Slightly expand the walls of the plastic housing (**8**) and carefully pull out the circuit board (**26**) *(s. fig. 6-1 and 6-2)*.

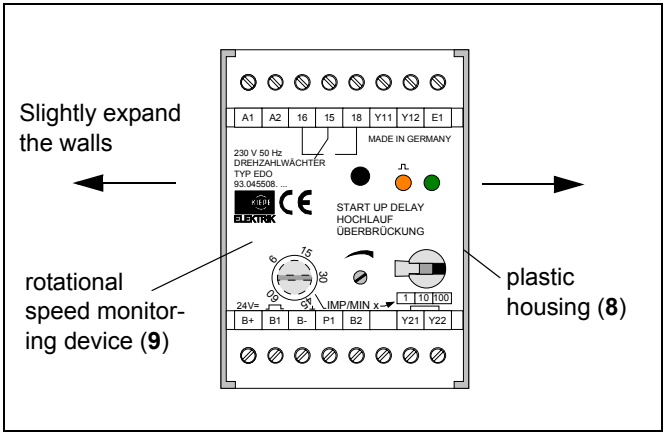


Fig. 6-1: Opening the plastic housing

6.1.2 Setting the speed monitoring device EDO for overspeed monitoring

The EDO rotational speed monitoring devices is delivered for low speed monitoring. Set the required operating mode by changing the jumper (**27**) on the circuit board (**26**) *(s. fig. 6-2)*.

1. Open the plastic housing (**8**) and carefully pull out the circuit board (**26**) *(s. section 6.1.1)*.
2. Change the jumper (**27**) from MIN to MAX.

Low speed monitoring (delivery status)	**Overspeed monitoring**



3. Insert the circuit board (**26**) into the device and reassemble the speed monitoring device.
4. Remount the rotational speed monitoring device *(s. section 5.2)*.
5. Reconnect the rotational speed monitoring device *(s. section 5.3)*.

6.1.3 Low speed monitoring, enlarging the distance of the switching point

The **switching hysteresis (distance of the switching point)** of the rotational speed monitoring device is **10 %** of the set switching point. By means of the potentiometer (**29**) on the circuit board (**26**) the switching hysteresis can be modified from to 3% up to 30% *(s. fig. 6-2)*.

Only modify the default switching hysteresis, if another distance between switch-on and switch-off speed is required due to particular operating conditions.

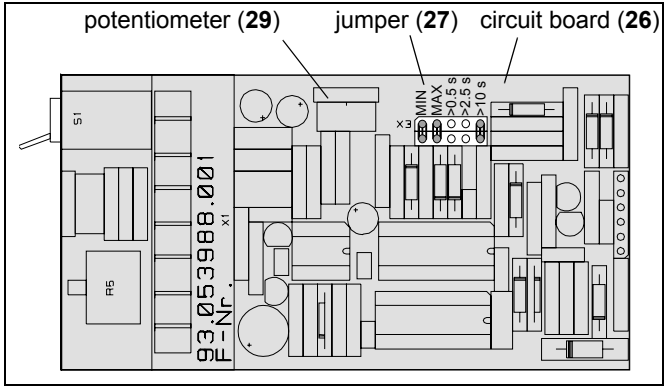


*Fig. 6-2: Position of the plug-in bridges (jumper (**27**))*

To modify the switching point hysteresis proceed as follows:

1. Open the plastic housing (**8**) and carefully pull out the circuit board (**26**) *(s. section 6.1.1)*
2. Set the required switching point hysteresis by means of a small screw driver.

   Left-hand stroke of the potentiometer (**29**) ≈ 3 %

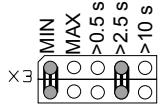
   Right-hand stroke of the potentiometer (**29**) ≈ 30 %
3. Insert the circuit board (**26**) into the device, and re-assemble the rotational speed monitoring device.
4. Remount the rotational speed monitoring device *(s. section 5.2)*.
5. Reconnect the rotational speed monitoring device *(s. section 5.3)*.

6.1.4 Speed monitoring for drives with short-term drop of the reference speed – setting the switch-off delay

In order to avoid malfunctions, the switch-off of the output relay can delayed by means of the jumper (**27**) on the circuit board (**26**) *(s. fig. 6-2)*.

Set the additional switch-off delay as follows:

1. Open the plastic housing (**8**) and carefully pull out the circuit board (**26**) *(s. section 6.1.1)*
2. Bridge the terminals Y21 – Y22.
3. Plug the jumper (**27**) into the required position. Select one of the three defined times:

Jumper position	Switch-off delay in seconds
	> 10 s > 2.5 s > 0.5 s

4. Mount the rotational speed monitoring device *(s. section 5.2)*.
5. Reconnect the rotational speed monitoring device *(s. section 5.3)*.

Attention!

Select only one time. Plugging several jumpers results in times that are not defined, and causes malfunctions of the rotational speed monitoring device.

6.2 Setting the EDO for low speed or standstill monitoring with run-up delay

We recommend you to switch on the speed monitoring device together with the drive, so that the plant can start before the run-up delay has expired.

In addition, we recommend you to carry out settings at operating temperature, in order to get the highest accuracy for the switching point setting.

6.2.1 Basic Settings

Item	Description	Indication/Action
1		Turn the potentiometer reference value setting (**5**) clockwise up to the stroke.
2		Set the pulse range switch (**6**) into position: 100 = (600 … 6,000 pulses/minute).

6.2.2 Setting the duration of the run-up delay

We recommend you to use a stop-watch for the setting.

Item	Description		Indication/Action
1		Set the potentiometer run-up delay (**4**) to the required run-up time between 0 and 40 seconds.	
2	 Start	Switch on the power supply.	The output relay (**16**) is attracted. The green LED (**1**) lights up.
		Now switch on the drive and measure the time by means of a stop-watch.	The terminal E1 becomes voltage-free and the orange-coloured LED (**2**) flashes with the cycle of the incoming pulses.
		After expiration of the set run-up time, the speed monitoring device detects "low speed", because the switching threshold has been set to the minimum value *(s. section 6.2.1)*.	The green LED (**1**) extinguishes and the output relay (**16**) drops, which stops the drive. Mains voltage is applied to terminal E1, the output relay (**16**) is attracted and the green LED (**1**) lights up.
3	 Stop	Measure the time and switch off the voltage supply.	The LEDs are off. The drive can be switched on again only after confirming the malfunction *(see also fig. 5-4)*.
4		Compare the measured time with the required **run-up delay**.	
5		If there are deviations, repeat the settings item 1 to 4.	

6.2.3 Setting the switching point for low speed monitoring

Please observe that the rotational speed monitoring device processes pulses per minute and not rotations per minute. According to the type of pulse indicator, you have to multiply the rotational speed of the drive by the indicated number of pulses per rotation.

Item	Description		Indication/Action
1		Set the pulse range switch (**6**) to the required range of pulses.	
2		Press the set button (**3**) and keep it pressed during all following settings.	Thus, the output relay (**16**) remains attracted during the setting of the switching point.
3		Switch on the rotational speed monitoring device and the drive.	The output relay (**16**) is attracted and the plant starts up. The green LED (**1**) lights up. The orange-coloured LED (**2**) flashes when the indicator sends pulses.
4		After expiration of the set run-up delay…	… the green LED (**1**) extinguishes.
5		Setting the reference value of the switch-off point Very slowly turn the potentiometer reference value setting (**5**) counter-clockwise, until …	… the green LED (**1**) lights up. The switch-on point is now set to the current operating speed.

Item	Description		Indication/Action
6		Switch-off point at 10 % low speed Caused by the **switching hysteresis of approx. 10%**, the switch-off point is lower than the switch-on point,	i. e. when the operating speed is below 10%, the output relay (**16**) drops.
		Observe the pulse pauses During the pulse pauses, a setting of the switching points is not possible, so that you must wait for the next on/off of the orange-coloured LED (**2**) ab. When the green LED (**1**) lights up, proceed with item 7. If the green LED (**1**) does not light up, slightly turn the potentiometer reference value setting (**5**) counter-clockwise and wait for the next on/off. Turn the potentiometer reference value setting (**5**), until the green LED (**1**) lights up.	If the pulse range switch (**6**) was set to position 1 (6 … 60 pulses/min.), with low speed long pulse pauses can occur, i. e. 10 s at 6 pulses/min. up to 1 s at 60 pulses/min.
7		Should you require a longer switching distance to the operating speed, you must turn the potentiometer reference value setting (**5**) counter-clockwise.	It is possible, the switch-on point has not been fixed by the potentiometer reference value setting (**5**).
8		Switch off the supply voltage and release the set button (**3**).	
9		Carry out a final check of the set switching points.	

6.3 Setting the overspeed monitoring (without run-up delay)

For this mode you first have to set the operating mode overspeed monitoring by means of the jumper (**27**) *(s. section 6.1.2)*.

Item	Description		Indication/Action
1		Set the potentiometer run-up delay (**4**) to zero (left-hand stroke)	
2		Turn the potentiometer reference value setting (**5**) counter-clockwise up to the stroke.	
3		Press the set button (**3**) and keep it pressed.	
4		Switch on the supply voltage and the drive, and wait until the operating speed has been reached.	The orange-coloured LED (**2**) flashes with the cycle of the incoming pulses.

Item	Description		Indication/Action
5		Slowly turn the potentiometer reference value setting (**5**) clockwise, until …	… the green LED (**1**) lights up. The switch-on point is now adjusted to the current operating speed. Caused by the default switching hysteresis, the switch-off speed is approx. 10% higher than the operating speed.
		**Observe the pulse pauses** During the pulse pauses, a setting of the switching points is not possible, so that you must wait for the next on/off of the orange-coloured LED (**2**). When the green LED (**1**) lights up, proceed with item 7. If the green LED (**1**) does not light up, slightly turn the potentiometer reference value setting (**5**) counter-clockwise and wait for the next on/off. Readjust the potentiometer reference value setting (**5**), until the green LED (**1**) lights up.	
6		By turning the potentiometers reference value setting (**5**) a higher switch-off point can be set, if required.	
6		Release the set button (**3**).	
7		Check your settings.	



7 Maintenance and Repair

The rotational speed monitoring devices EDO are maintenance-free.

Defective devices can be sent for repair directly to Vossloh Kiepe GmbH *(company address see back cover)*.



8 Ordering Devices

With each purchase order please quote the type of the rotational speed monitoring device and the device identification number *(company address see back cover)*:

Device identification number	Supply voltage
93.045 508.001	AC 230 V
93.045 508.007	AC 115 V
93.045 508.005	DC 24 V
93.045 508.012	DC 48 V to 60 V

Modification Index: E
Edition: 04.09.2006
Doc.-Ident-No.: 94.055 961.191

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