

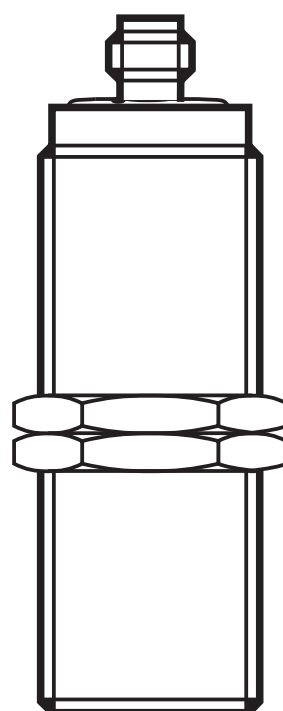


Installation instructions  
Compact speed monitor M30  
DC version with connector

UK

**DI502x**  
**DI52xA**

80270368 / 00 10 / 2017



# Contents

- 1 Preliminary note.....3
  - 1.1 Symbols and warnings used.....3
- 2 Safety instructions .....4
  - 2.1 ATEX units (DI52xA).....4
- 3 Functions and features .....4
  - 3.1 Switching function normally open .....4
  - 3.2 Switching function normally closed.....4
  - 3.3 Damping .....5
  - 3.4 Function diagram.....5
  - 3.5 IO-Link.....6
- 4 Mounting .....6
- 5 Electrical connection.....7
  - 5.1 Wiring .....7
- 6 Setting.....7
  - 6.1 Setting for switching function normally open .....8
  - 6.2 Setting for switching function normally closed.....8
- 7 Operation .....8
- 8 Technical data.....9

# 1 Preliminary note

This document applies to devices of the type "compact speed monitor" with connector (art. no.: DI502x and DI52xA).

This document is intended for specialists. These specialists are people who are qualified by their training and their experience to see risks and to avoid possible hazards that may be caused during operation, installation or maintenance of the device.





Read this document before use to familiarise yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

UK

## WARNING

Adhere to the warning notes and safety instructions (→ 2 Safety instructions).

### 1.1 Symbols and warnings used

- Instructions
- Cross-reference
-  Information
-  Supplementary note
-  Important note
-  Non-compliance may result in malfunction or interference.

## WARNING

Warning of serious personal injury.  
Death or serious irreversible injuries may result

## 2 Safety instructions

A qualified electrician must connect the unit. Observe the national and international regulations for the installation of electrical equipment.

### 2.1 ATEX units (DI52xA)

Remarks for safe use in hazardous areas: operating instructions (Ex protection related part) for speed monitors according to EU directive 2014/34/EU annex VIII (ATEX) group II, equipment category 3D.

If no operating instructions (Ex protection related part) or EC declaration of conformity are supplied with this product in the language of the EU user country, these can be requested from your dealer (see delivery note) or manufacturer (see cover sheet / back).

The ATEX protection is ensured even without mechanical protection.

## 3 Functions and features

The compact, non-contact inductive speed monitor detects when a speed drops below a pre-set value and signals this with a switched output.

### 3.1 Switching function normally open

Transistor output	LED green	
switched (conducting)	on	rotational speed > SP + Hy and during the start-up delay
not switched (non conducting)	off	rotational speed < SP

SP = switch point

Hy = hysteresis

### 3.2 Switching function normally closed

Transistor output	LED green	
not switched (non conducting)	off	rotational speed > SP + Hy and during the start-up delay
switched (conducting)	on	rotational speed < SP

SP = switch point

Hy = hysteresis

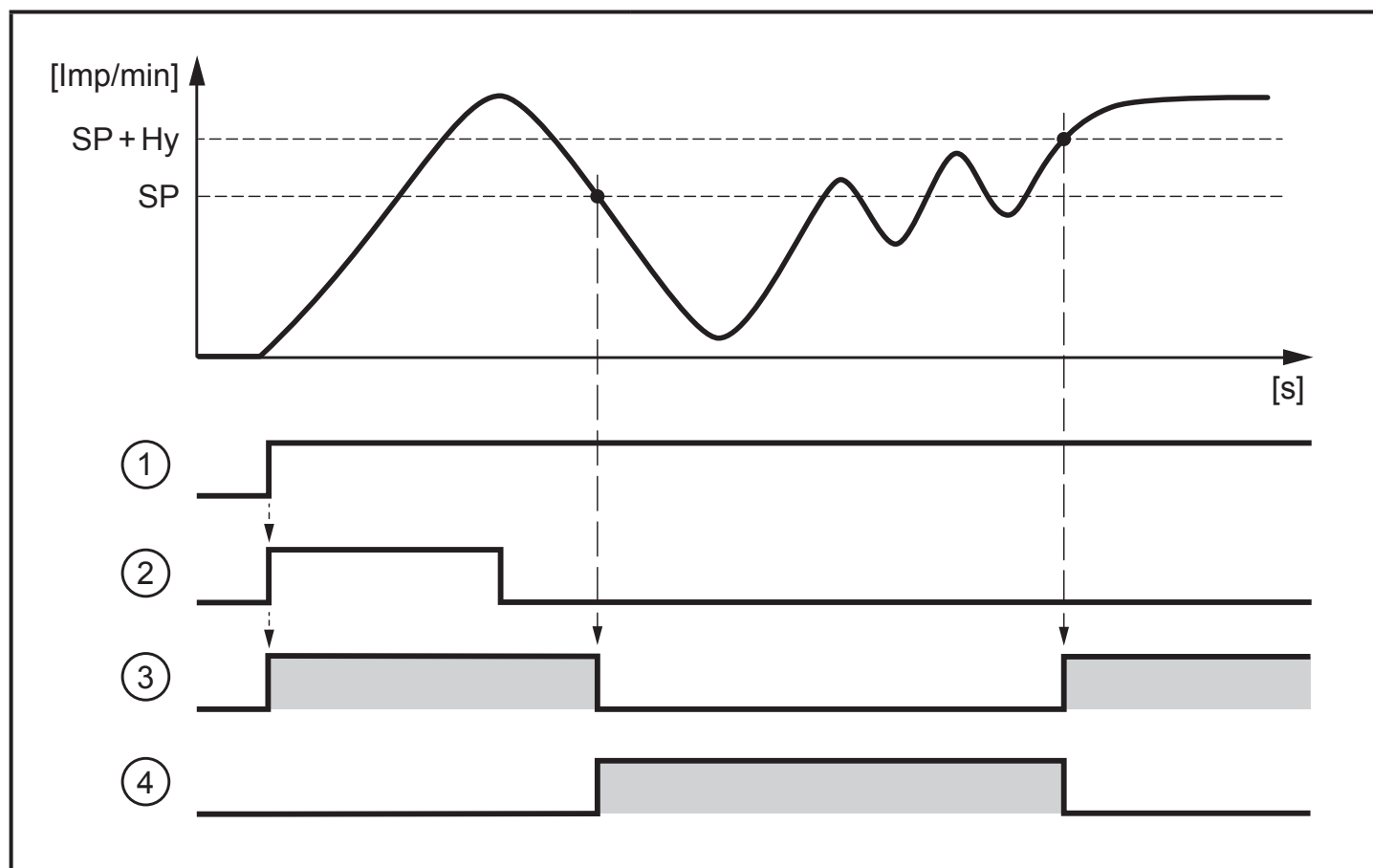
Switching functions of the units (→ 8 Technical data)

### 3.3 Damping

The yellow LED indicates the damping status of the sensor irrespective of either the switching function or the switching status of the transistor output.

Sensor	LED yellow
undamped	off
damped	on

### 3.4 Function diagram



1: Voltage supply

2: Start-up delay

3: Switching function normally open

4: Switching function normally closed

SP = switch point

Hy = hysteresis

■ = transistor output switched (conducting)



The start-up delay suppresses an error signal as long as the machine is in the process of starting and has not yet reached its minimum speed. After application of the operating voltage the start-up delay is active only once.

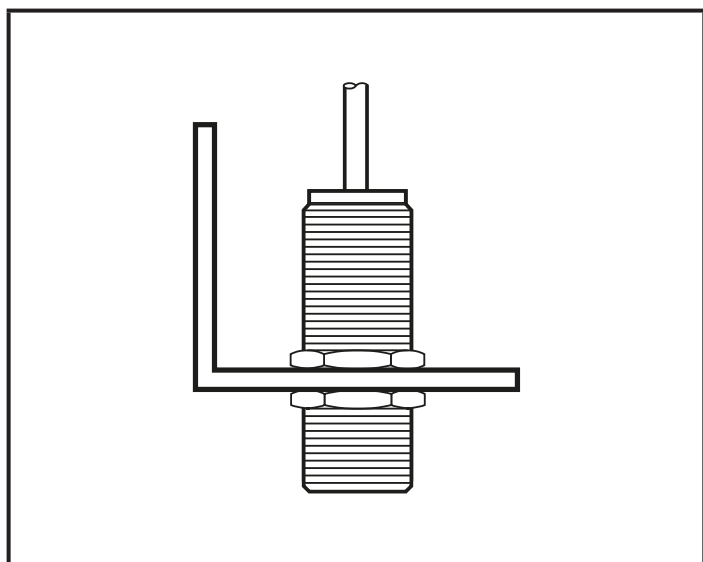
If the plant is started and stopped frequently, linking the drive and speed monitor power supplies ensures that the start-up delay is effective each time the machine is switched on.

### 3.5 IO-Link

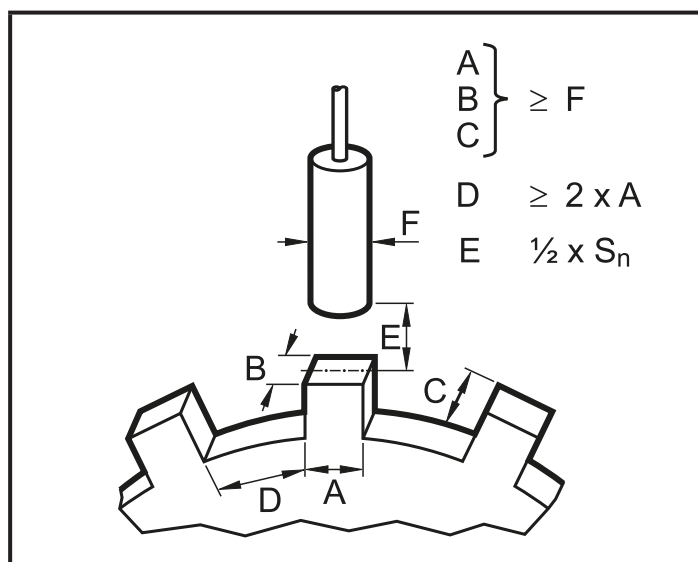
IO-Link allows the configuration of internal parameters such as start-up delay and switching behaviour (normally closed/normally open) as well as reading the current measured values. Furthermore IO-Link protects against signal faults and measured value losses as well as tampering with the sensor.

You will find the IODDs necessary for the configuration of an IO-Link device and detailed information about parameter setting tools, process data structure, diagnostic information and parameter addresses at [www.ifm.com/gb/io-link](http://www.ifm.com/gb/io-link).

## 4 Mounting



Mounting principle



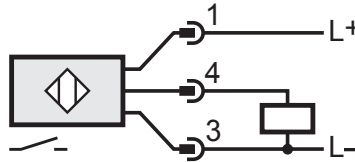
Mounting specifications

- Fix the unit using a bracket and secure it by means of the nuts provided so that it cannot work loose.  
Flush installation.
- Adhere to the above mounting specifications to ensure a correct function.  
Nominal sensing range  $S_n$  (→ 8 Technical data)

## 5 Electrical connection

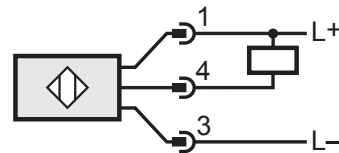
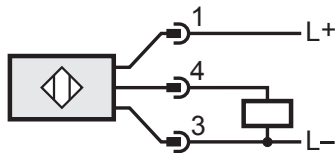
- ▶ Disconnect power.
- ▶ Connect the device according to the wiring diagram.

### 5.1 Wiring



DI5023, DI521A, DI522A

4 = switching output PNP

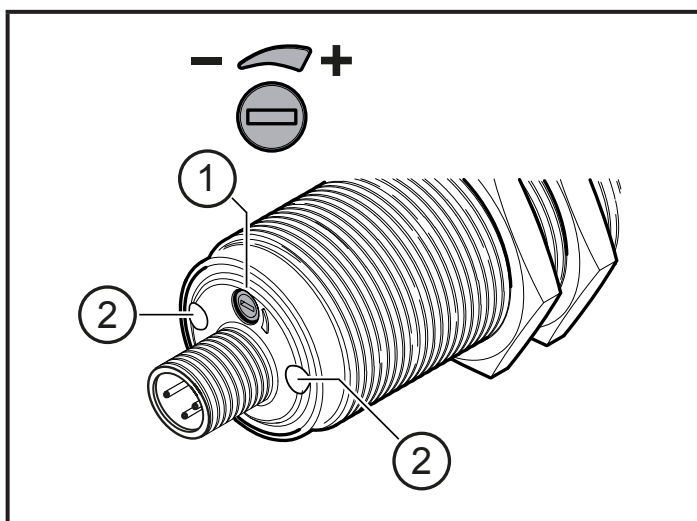


DI5024, DI524A

4 = switching output PNP / NPN programmable / IO-Link communication

Factory setting = PNP / normally open

## 6 Setting



Operating and display elements

- 1: Multi-turn potentiometer for switch point setting (without end stop)
- 2: LEDs:  
Green LED for switching status indication  
(→ 3.1 Switching function normally open)  
Yellow LED for damping indication (input signal)  
(→ 3.3 Damping)

UK

- ▶ Keep the minimum speed to be monitored in the plant on a constant level.
- ▶ Connect the device to supply voltage.
- ▶ Wait until the start-up delay is over (→ 8 Technical data).
- ▶ Set the switch point depending on the status of the green LED.

## **6.1 Setting for switching function normally open**

When the green LED does not light:

- Turn the pot slowly anticlockwise (-) until the green LED lights.  
Setting is finished.

When the green LED lights:

- Turn the pot clockwise (+) until the green LED goes out.
- Turn the pot slowly anticlockwise (-) until the green LED lights.  
Setting is finished.

## **6.2 Setting for switching function normally closed**

When the green LED lights:

- Turn the pot slowly anticlockwise (-) until the green LED goes out.  
Setting is finished.

When the green LED does not light:

- Turn the pot clockwise (+) until the green LED lights.
- Turn the pot slowly anticlockwise (-) until the green LED goes out.  
Setting is finished.

## **7 Operation**

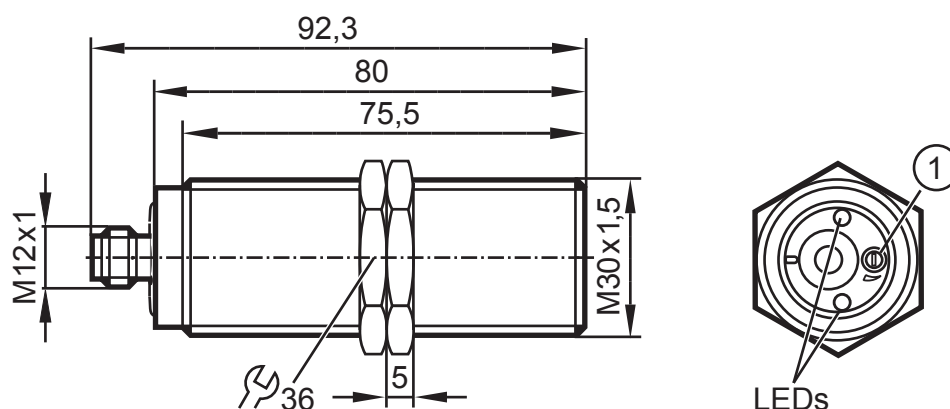
The operation is maintenance-free.

Ensure the following for a correct function:

- ▶ Keep the sensing face and the clear space free of metal deposits and foreign bodies.
- ▶ Do not operate units with high field intensity (e.g. mobile phones) at close range to the speed monitor.



## 8 Technical data



1: Potentiometer  
Dimensions [mm]

		DI5023	DI521A	DI522A	DI524A	DI5024
Nominal voltage	[V]	10...36 DC				
Current consumption	[mA]	< 20			< 22	
Current rating	[mA]	250				
Voltage drop	[V]	< 2.5				
Reverse polarity protection		yes				
Short-circuit protection		yes				
Overload protection		yes				
Nominal sensing range (Sn)	[mm]	10				
Operating distance	[mm]	0...8.1				
Setting range	[pulses/min]	5...3600				
Via potentiometer		●	●	●	○	○
Via IO-Link		-	-	-	○	○
Hysteresis	[% of SP]	10				
Damping frequency	[pulses/min]	≤ 18000				
Switching function NO		●	●	●	○	○

		DI5023	DI521A	DI522A	DI524A	DI5024
Switching function NC		-	-	-	○	○
Start-up delay	[s]	15		5	0...30	
Ambient temperature	[°C]	-25...80	-25...60			-25...80
Protection		IP 65 / IP 67 / III				
ATEX equipment category		-	3D			-
IO-Link		-	-	-	●	●
Connection		M12 connector				

- = applicable
- = programmable
- = not applicable

Data sheets and EC declarations of conformity can be found at:  
[www.ifm.com](http://www.ifm.com)