DIGITAL PRODUCTS / SENSORS

AIQ Detect

Operating instructions M6250-01en
Version 10/2023

flender.com

FLENDER

Original operating instructions

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1.1 Legal information

Warning system

These instructions contain information you must observe for your own personal safety as well as to avoid damage to property and persons. The information regarding your personal safety is highlighted with a warning triangle. Information exclusively regarding property damage alone is not marked with a warning triangle. Depending on the hazard class, the warnings shall be depicted as follows, in descending order.

⚠ DANGER

means that death or severe physical injury **will** occur if the relevant precautionary measures are not taken.

⚠ WARNING

means that death or severe physical injury **may** occur if the relevant precautionary measures are not taken.

⚠ CAUTION

means that mild physical injury may occur if the relevant precautionary measures are not taken.

NOTE

means that damage to property may occur if the relevant precautionary measures are not taken.

If multiple hazard classes come into play, the warning for the highest level in question shall always be used. If a warning containing the warning triangle warns of harm to individuals, the same warning may also include a warning regarding damage to property.

Information

Information

Information offers additional notes, assistance and tips for handling the product.

Qualified personnel

The product/system associated with this documentation may only be used by **qualified personnel** trained to perform the relevant tasks, taking into account the associated documentation for the relevant tasks, particularly the safety information and warnings included therein. Due to their qualification and experience, qualified personnel are capable of detecting risks and avoiding potential hazards when dealing with these products/systems.

Intended use of Flender products

Please note the following:

⚠ WARNING

Flender products are only suitable for the uses set out in the catalogue and associated technical documentation. If third-party products and components are used, these must be recommended and/or authorised by Flender. Safe and flawless operation of the products requires proper transport, proper storage, setup, assembly, installation, commissioning, operation and maintenance. The permissible environmental conditions must be adhered to. Instructions in the associated documentation must be followed.

Trademarks

All designations marked with the trademark symbol ® are registered trademarks of Flender GmbH. Other designations in this document may be trademarks whose use by third parties for their own purposes may violate the rights of the owner.

Liability disclaimer

We have assessed the contents of these instructions for compliance with the hardware and software described. However, deviations cannot be ruled out, so we are unable to accept liability for full compliance. The details in these instructions are regularly reviewed and necessary corrections are contained in subsequent editions.

1.2 General information

1.2.1 Gender

When genders are mentioned, all known genders are implied and addressed equally.

1.2.2 Copyright

If you have any technical queries, please contact the Customer Services address.

1.2.3 Purpose of these instructions

The AIQ Detect described in these instructions will be referred to below simply as the “device”.

To avoid personal injury or property damage, follow the safety information and notices in these instructions.

Read and observe the instructions for the coupling to which the device is attached.

Read and observe the instructions supplied with the device before connecting and operating the device. The device may only be used on approved Flender gear units. You can find the complete instructions for the device on the Internet at: www.flender.com (www.flender.com)

For fault-free operation, observe the information in the instructions and adhere to the specifications.

1.2.4 Warranty

In the event of damage or consequential damage resulting from the direct or indirect use of the documentation, the product or the software, Flender GmbH shall only be liable in the event of intent or gross negligence.

Failure to observe the instructions will result in the loss of warranty claims or claims for damages.

Flender shall not be liable for failures, costs, downtimes, etc. resulting from incorrect utilisation of the device.

1.2.5 Information for the operator

These instructions form an essential component of the device.

Please ensure that all persons working with or on the device take note of these instructions.

Spare parts must comply with the technical requirements specified by Flender GmbH. This is always guaranteed with original spare parts.

Safety information 2

2.1 Intended use

The device is a component of a wear monitoring system for shaft couplings in the N-EUPEX and RUPEX series to determine speeds and direction of rotation in addition to the wear condition.

The device may only be operated in the specified environments within a temperature range of -40 to +75 °C. Please observe the information provided in the Technical Data (Page 45).

The device is intended for use in a commercial or industrial environment as specified in these instructions.

For safe operation, observe the information and notes in these instructions as well as the information on the rating plate. Otherwise, the device may be permanently damaged.

If the device is not used as intended, Flender accepts no liability.

2.2 Reasonably foreseeable misuse

The following applications are examples of non-intended use or suspected misuse. Applications that are not permitted:

- Any use other than that intended and described by the manufacturer.
- Operating the device without a fully attached housing.
- Setting up the device in unprotected rooms or halls exposed to the elements.
- The device must not be used as a safety component.

2.2.1 Prohibited application

The following applications are prohibited:

- Operating the device in potentially explosive atmospheres as well as in hazardous areas.
- Storing explosive or highly flammable substances in the vicinity of the device.

2.3 Application limits

Use, limits, areas of application

- The device complies with the relevant regulations and European directives.
- Do not use the device for safety-relevant tasks and critical switching operations!
- Only use the device within the limits and areas of application. The limits and areas of application are specified in the technical data and in the instructions.
- Improper or non-intended use can lead to malfunctions of the device or undesirable consequents when using the device.
- Using the device in a way that is prohibited may result in personal injury or death.

- The device may only be installed, configured and serviced by specialists in electrical engineering who have been trained to do so in accordance with the applicable relevant regulations.
- The external 24 V DC supply voltage for this device must be generated and supplied in accordance with the criteria for safe extra-low voltage (SELV/PELV).

2.4 Residual risk

Even if all safety regulations are observed, a residual risk described below remains when operating the device.

- As the company/operator, you are responsible for ensuring all persons working on and with the device are aware of the residual risks.
- Follow the instructions that prevent residual risks from causing accidents or damage.

During the installation and set-up work, it may be necessary to dismantle on-site guards. This gives rise to various residual risks and potential hazards that every operator must be aware of:

2.5 Operating personnel / user groups

Anyone handling the device must meet the following requirements:

Personnel	Activities	Required qualification
Electrician	Electrical installation	Electrical engineering specialist*
Commissioning engineer	Initial commissioning Restarting	Specialist* with an understanding of process engineering systems
Set-up technician	Set-up	Specialist* with an understanding of process engineering systems
Operator / user	Operation	Professional instruction and knowledge of the instructions
Disposal technician	Disposal of the device	Disposal specialist*

* A specialist is a person who, on the basis of their technical training, knowledge and experience as well as knowledge of the relevant regulations, can assess the work assigned to them and recognise potential hazards.

2.6 Safety information for operating personnel

Anyone who is assigned to work on or with the device must have read and understood these instructions in full.

- Only use the device in perfect technical condition and for its intended purpose, in a safety- and hazard-conscious manner and in compliance with these instructions.

No liability will be accepted for damage and accidents caused by failure to observe the instructions.

- Eliminate all faults immediately.
- Always keep the instructions to hand at the device.
- Only reliable, trained and qualified personnel of the legally permissible minimum age according to youth employment protection law may work on the device.
- Personnel to be trained, instructed or undergoing general training may only work under the constant supervision of an experienced person.

If any safety-relevant changes occur on the device:

- Shut down the device and drive train immediately.
- Secure the device and drive train.
- Report the incident to the responsible office or person.

2.7 Safety instructions for maintenance personnel

- Observe the prescribed intervals or those specified in the instructions for recurring tests or inspections.

Preparing for maintenance work

Equipment appropriate for the work is required to carry out maintenance work.

- In particular, remove any dirt or care products from connections and bolt connections before starting maintenance or repair work.

Carrying out maintenance work

- During maintenance and repair work, tighten loosened screw connections with a torque wrench according to specification.
- Ensure safe and environmentally friendly disposal of operating and auxiliary materials as well as replacement parts as described in chapter Disposal (Page 41).

2.8 Notes on special types of hazards

2.8.1 Electrics

The input voltage of the device is 24 V DC. This means that the input voltage is below the limit value of the dangerous contact voltage of 60 V DC. Special protective measures are therefore not required. However, touching live parts may result in the body having uncontrolled reactions.

Malfunctions occur on defective cables. Sparks can cause fires.

- Before working on the electrical equipment, switch off the device by disconnecting the plug.
- Check the electrical cables regularly for damage.

- Replace defective cables immediately.

2.8.2 The five safety rules

In order to protect yourself and prevent any damage to property, always observe the safety relevant information and the following five safety rules (as per EN 50110-1 "Working on isolated equipment") when working on electrical components of the plant.

Prior to starting work on the machine, follow the safety rules listed below:

1. Disconnect
   Also disconnect auxiliary circuits such as the anti-condensation heater
2. Safeguard against restart
3. Ensure that the system is de-energised
4. Earth and short circuit
5. Cover or cordon off adjacent live parts

When all the work is complete, cancel the safety measures in the reverse sequence.

2.8.3 Network and IT security

With the increased networking of machines and industrial systems, the danger of cyberattacks is also increasing. Therefore, the devices that are connected to a network via WLAN or Ethernet are at risk of unwanted or unauthorised access from the network.

- Carefully observe the basic rules for network security.
- Make provision for appropriate protective measures.
- Protect the network that the device is connected to.
- Restrict network access to the device.
- Restrict access to the device.
- Comply with basic IT security requirements (SSL VPN, ...).
- Protect remote access with a secure password.
- Only allow remote access by authorised personnel in a specific operating mode.

A fault or interruption in the line does not result in any danger. A normal shutdown occurs.

- Reboot the device.

2.8.4 Noise

The device does not produce any noise itself.

- As the operator, you must provide operating personnel with appropriate protective equipment if, due to local conditions, a sound pressure level greater than 80 dB (A) is generated at the place of use of the device.

Description

3

3.1 Functional description

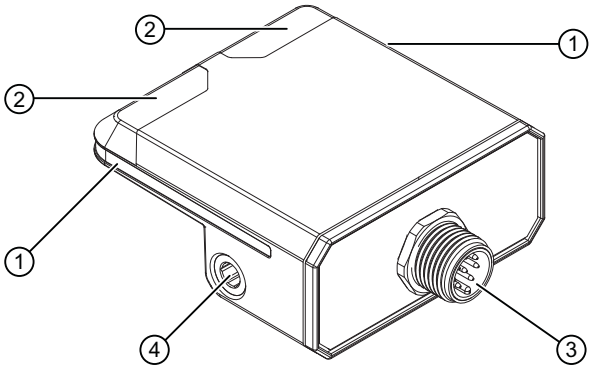


Figure 3-1: AIQ Detect

Item	Designation
1	LED light strip
2	Sensor area
3	M12 connector type A
4	M5 mounting thread

The device uses Hall sensors to determine time intervals when the coupling rotates based on sensor magnets on the coupling halves, whereby speed and angular positions can be identified.

The wear of the coupling can be deduced from the angular positions.

3.2 M12 connector

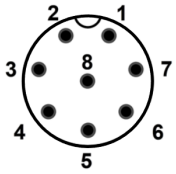
Connector pin assignment	No.	Signal
 Front view of the connector	1	Not assigned
	2	+ 24 V DC
	3	Analogue Out 1 / wear angle*
	4	Not assigned
	5	Digital Out 1 / speed*
	6	Digital Out 2 / status*
	7	GND
	8	Digital input 1

Table 3-1: Connector description

* This function can be configured through the AIQ app.

3.3 LED light strip

The LED light strip consists of the LEDs on the device. The LED light strip uses colours, flashing and a continuous light signal to indicate the state of the device and of the coupling to be monitored.

3.4 Sensor area

The Hall sensors, which are energised by the sensor magnets on the coupling halves, are located in the sensor area.

3.5 Mounting thread

Mounting threads are integrated into the device. A holder can be attached to the mounting threads. The holder is not included in the scope of delivery.

3.6 Electrics

The device is powered by a current-limited voltage source – 1 A.

The connection cable must be selected so that the conducted and radiated interference emissions are within the respective standard limit values.

3.7 AIQ-App

The AIQ-App is intended as an additional tool for data evaluation. The wear condition of the elastomer components and the speed can be read in the AIQ-App.

Application planning

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4.1 Transport

Thanks to its low weight, the device can be safely transported by one person.

Assembly 5

5.1 General notes on assembly

⚠ CAUTION

Electric shock from contact with electrically conductive parts

Contact with electrically conductive parts (24 V DC) can result in undesired reactions.

- Switch off the device by disconnecting the plug for repair, set-up and maintenance work.
- Check that there is no power supply.
- Secure the device and drive train against being switched back on.

NOTE

Property damage to the device or environment due to incorrect assembly

Incorrect assembly can result in property damage to the device (Maschinenname) and its environment.

- Ensure that assembly work is only carried out by trained professionals.
- Pay attention to the tightening torque when tightening the fastening screws.

5.2 Assembly on the coupling

1. Check the delivery scope for completeness.
2. Mount the device on a suitable holder using a mounting thread.
3. Position the unit consisting of the device and holder in the vicinity of the coupling to be monitored.
4. Attach the holder properly to the foundation or machine frame.
5. Align the device tangentially to the outer diameter of the coupling.
6. The underside of the device must form a right angle to the coupling radius.

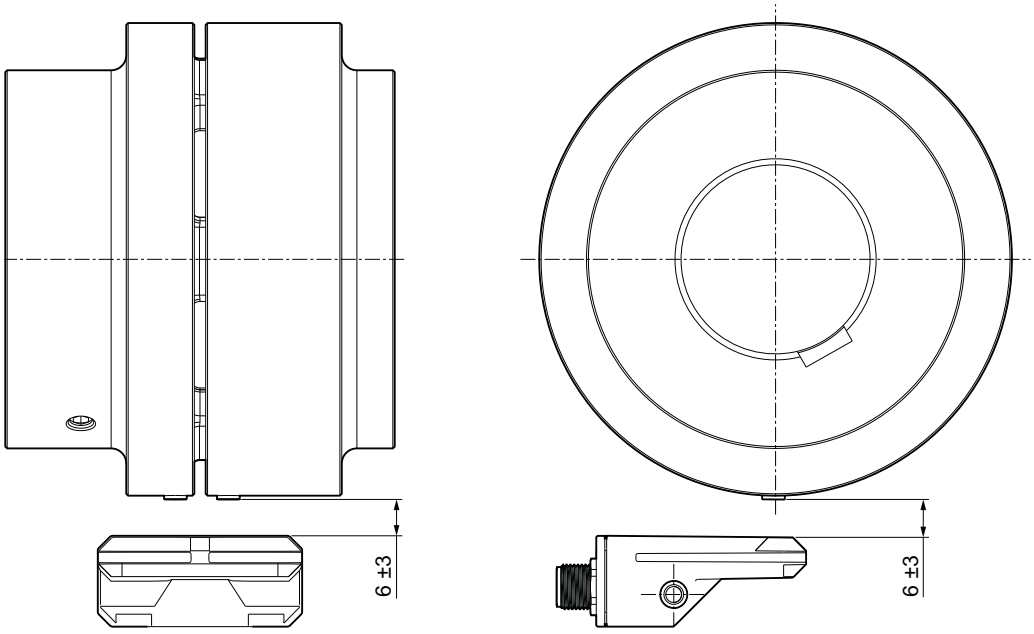


Figure 5-1: Assembly drawing

7. Maintain the required distance of 6±3 mm between the device and the pre-assembled sensor magnets.
8. Make sure that the device does not change its monitoring position after assembly.
9. Ensure that the device is not in contact with the coupling.

5.3 Connecting the device

5.3.1 Note on connecting the device

The device may only be connected by electrically instructed persons. Follow the national and international regulations for installing electrotechnical systems.

Generate and apply the external 24 V DC supply voltage for the device in accordance with the criteria for safe extra-low voltage, SELV and PELV.

5.3.2 Electrical connection

⚠ DANGER

Danger due to life-threatening electrical voltage!

Electrical voltage can cause death or serious injury.

- Work may only be carried out by specialists in electrical engineering.
- Comply with the 5 safety rules of electrical safety.

1. As the operator, it is your responsibility to ensure the power supply.
2. Connect the device via an M12 sensor or actuator cable connection.

3. Connect the device according to the following diagram.

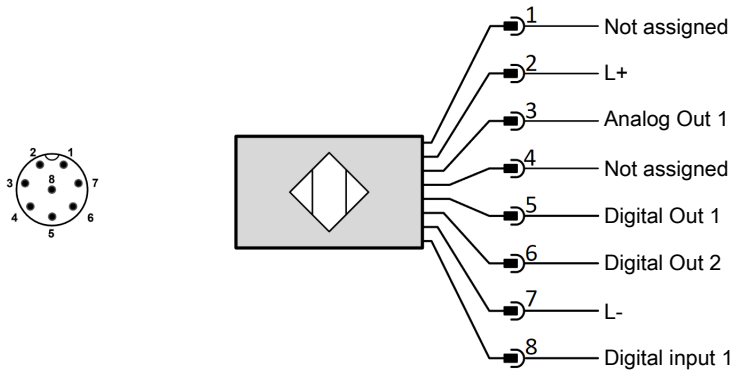


Figure 5-2: Electrical connection, connection pin assignment

Connector, connection pin assignment and colour coding

Pin	Labelling	Functional value	Colour code for the cable socket
1	Not assigned	-	white
2	L+	+ 24 V DC ± 20%	brown
3	Analog Out 1	Wear angle*	green
4	Not assigned	-	yellow
5	Digital Out 1	Speed*	grey
6	Digital Out 2	Status*	pink
7	L-	0 V / GND	blue
8	Digital input	-	red

Table 5-1: Table for connector, connection pin assignment and colour coding

* This function can be configured through the AIQ app

Connection examples

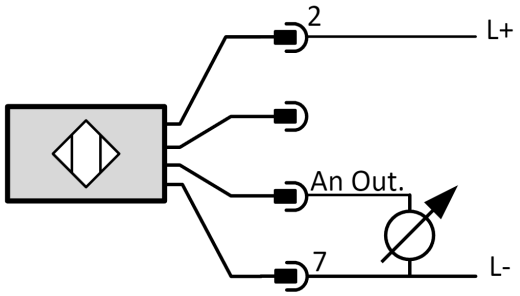


Figure 5-3: Connection example: Analogue output

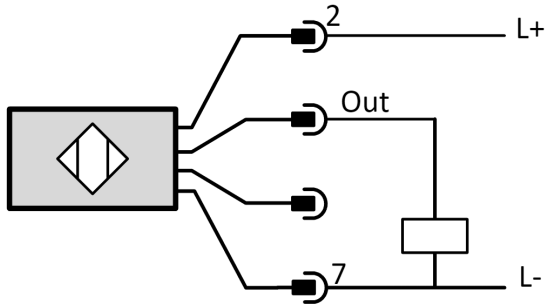


Figure 5-4: Connection example: Digital switching output

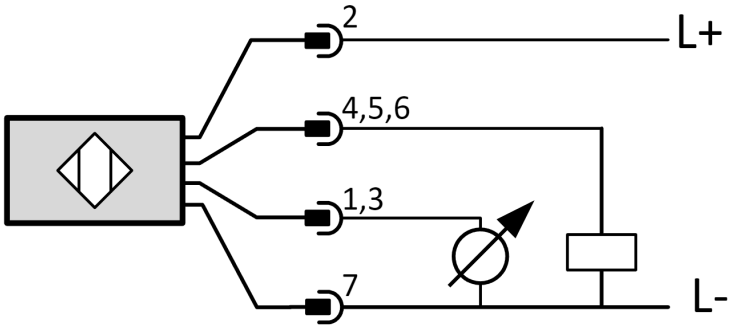


Figure 5-5: Connection example: Analogue and digital output

Commissioning 6

6.1 General notes on commissioning

Commissioning as well as troubleshooting are carried out by electrically instructed persons.

Read these instructions before operating the device.

6.2 Prior to commissioning

1. Ensure that the coupling to be monitored is at a standstill.
2. Secure the coupling against being switched back on.
3. Connect the device to a 24 V DC power supply (refer to chapter Connecting the device (Page 24)).

The start-up process begins. The entire LED light strip flashes white. After the device has finished the start-up process, the LED light strip flashes blue. The Bluetooth learning mode is activated.

4. Connect the device to a smartphone using Bluetooth.

When the smartphone is connected to the device, the LED light strip lights up blue continuously. You can disconnect the smartphone from the device or reconnect it at any time.

5. Check that the device firmware is up to date (see chapter Carrying out a firmware update (Page 27)).
6. Check the correct pole alignment of the sensor magnets installed in the coupling halves (see chapter Pole alignment of the sensor magnets (Page 27)).

⇨ The device is now ready for use.

6.3 Carrying out a firmware update

1. Connect the device to a smartphone using Bluetooth.
2. Click the coupling symbol on the overview page in the AIQ-App.
   ⇨ If there is a new firmware version available, this will be displayed here.
3. Install the new firmware version in accordance with the description in the AIQ-App.

6.4 Pole alignment of the sensor magnets

The sensor magnets attached to the coupling halves must have different polarity.

Visually checking the sensor magnet polarity

The polarity of the sensor magnets can be determined with a visual inspection.

- The north pole of the magnet is labelled with a white “N”.

- The south pole of the magnet is not labelled.
- On one coupling half, the north pole of the magnet must be aligned in the direction of the device.
- On the other coupling half, the south pole of the magnet must be aligned in the direction of the device.

If the sensor magnet poles are aligned in the same direction on both coupling halves, one of the sensor magnets has to be rotated (Page 36).

Checking the sensor magnet polarity automatically

The correct magnet alignment can be checked (if possible depending on the system) in the speed range of 2 rpm to 10 rpm. In this speed range, the device displays the alignment of the sensor magnet polarity on the LED light strip (see Indicators (Page 29)):

- As soon as the north pole of the magnet passes the device, the LEDs on the corresponding side of the device light up white (e.g. F1, L).
- As soon as the south pole of the magnet passes the device, the LEDs on the corresponding side of the device light up magenta (e.g. F2, R).

If both sides of the device light up in the same colour (white or magenta), one of the sensor magnets has to be rotated (Page 36).

6.5 Starting the drive train

1. Secure the work area so that it is not possible to come into contact with the driven machine or rotating parts.
2. Start the drive train.

Operator control

7

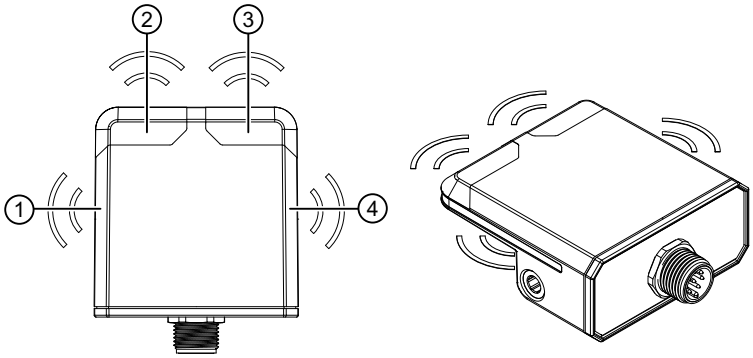
7.1 General notes on operation

Work on the device may only be carried out by trained and/or instructed personnel.

The device may only be operated by authorised, professionally competent persons.

- Only use the device for the purpose intended or customary by the manufacturer.
- Only ever operate the device in technically perfect condition in order to avoid accidents.
- Do not use any foreign parts on the device, otherwise compliance with the required safety is not guaranteed.
- Refrain from any working method that compromises the safety of the device.
- Report any changes that have occurred to the device (which impair its safety) immediately to the superior in charge.
- Shutdown the device immediately in the case of a fault that impairs its safety. Do not put the device back into operation until the fault has been rectified.

7.2 Indicators



Item	Designation	Abbreviation
1	LED sides	L
2	LED front	F1
3	LED front	F2
4	LED sides	R

7.3 Device mode

7.3.1 Start-up process

The start-up process begins automatically when the device is connected to the power supply.

LED display function	Speed range [rpm]	LED lights	LED colour	Status
Start-up process begins	Independent of the speed of the Flender coupling	F1, F2, R, L	White	Flashing, 1 Hz
Start-up process ends	Independent of the speed of the Flender coupling	F1, F2, R, L	Blue	Flashing, 1 Hz

If the power supply to the device is interrupted between the end and re-start of the drive train, the device starts automatically with the start-up process and the Bluetooth learning mode.

Recording of measured values	Speed range [rpm]	LED lights	LED colour	Status
After start-up until the degree of coupling wear is determined	> 10 rpm	F1, F2, R, L	white	Lights up continuously

7.3.2 Bluetooth learning mode

The device switches to Bluetooth learning mode after the start-up process.

LED display function	Speed range [rpm]	LED lights	LED colour	Status
Bluetooth learning mode begins	0 – 2 rpm	F1, F2, R, L	Blue	Flashing, 1 Hz
Bluetooth learning mode ends	0 – 2 rpm	F1, F2, R, L	Blue	Lights up continuously

7.3.3 Optical display of the sensor magnet polarity

In the speed range of 2 rpm to 10 rpm, the poles of the sensor magnets are displayed on the right or left side of the device in white for the north pole of the magnet or magenta for the south pole of the magnet. The sensor area is energised by the passing of the sensor magnets.

Display of the polarity of the sensor magnets

LED display function	Speed range [rpm]	LED lights	LED colour	Status: when the sensor magnet passes the sensor area
The north pole of the magnet energies the left side of the device.	2 – 10 rpm	F1, L	White	Flashing, 1 Hz
The south pole of the magnet energies the right side of the device.	2 – 10 rpm	F2, R	Magenta	Flashing, 1 Hz

If the sensor magnets were mounted in reverse order:

LED display function	Speed range [rpm]	LED lights	LED colour	Status: when the sensor magnet passes the sensor area
The south pole of the magnet energies the left side of the device.	2 – 10 rpm	F1, L	Magenta	Flashing, 1 Hz
The north pole of the magnet energies the right side of the device.	2 – 10 rpm	F2, R	White	Flashing, 1 Hz

7.3.4 Display of wear condition

Display of the degree of coupling wear in operation

The device is in detection mode at a speed of > 10 rpm. The device continuously measures the wear condition of the elastomer components of the coupling. If the speed drops below 10 rpm, the detection mode of the device ends.

The device records the actual wear condition and uses this as a reference value. The device now displays the wear condition across the entire LED light strip.

The colour of the LEDs displays the wear condition of the elastomer components of the coupling.

Condition of the elastomer components	Speed range [rpm]	LED lights	LED colour	Status
OK	> 10 rpm	F1, F2, R, L	Green	Lights up continuously
Advanced state of wear*[1]	> 10 rpm	F1, F2, R, L	Yellow	Lights up continuously

Condition of the elastomer components	Speed range [rpm]	LED lights	LED colour	Status
Not OK *2	> 10 rpm	F1, F2, R, L	Red	Lights up continuously

*1 The state of wear is advanced, Flender recommends replacing the elastomer components.

*2 The state of wear is not OK, the elastomer components must be replaced.

Display of the degree of coupling wear at standstill

In the speed range of < 2 rpm up to standstill, the device displays the last detection wear condition of the elastomer components on the LED light strip.

The colour of the LEDs displays the wear condition of the elastomer components of the coupling.

Condition of the elastomer components	Speed range [rpm]	LED lights	LED colour	Status
OK	0 – 2 rpm	F1, F2, R, L	Green	Lights up continuously
Advanced state of wear*1	0 – 2 rpm	F1, F2, R, L	Yellow	Lights up continuously
Not OK *2	0 – 2 rpm	F1, F2, R, L	Red	Lights up continuously

*1 The state of wear is advanced, Flender recommends replacing the elastomer components.

*2 The state of wear is not OK, the elastomer components must be replaced.

Other display

Recording of measured values	Speed range [rpm]	LED lights	LED colour	Status
After start-up until the degree of coupling wear is determined	> 10 rpm	F1, F2, R, L	white	Lights up continuously

In addition to the optical LED light strip and the interface, the wear condition and speed can be evaluated via the AIQ-App. You can connect to the device at any time using Bluetooth. You can find the wear condition and speed in the AIQ-App. You can disconnect and re-connect as you like.

7.3.5 Fault display

LED display function	Speed range [rpm]	LED lights	LED colour	Status
Fault on the device	Independent of the speed of the Flender coupling	F1, F2, R, L	Red	Flashes twice, pause

7.4 Use in the further coupling cycle

During the operating life of the coupling, the elastomer components become worn. The sensor magnets move apart. The device detects the relative movement and displays the wear condition via the LED light strip according to the colour coding green, yellow or red. You can also evaluate the wear condition via the interface of AIQ-App.

When the wear condition is displayed in yellow, Flender recommends replacing the elastomer components.

Stop the drive train once the wear condition reaches red. Do not continue operating the coupling. Replace the elastomer components.

Once the elastomer components have been replaced, you can re-start the drive train. The device determines the wear condition again and the LED light strip automatically indicates green.

Observe the maximum lifespan of the elastomer components. Replace the elastomer components after 5 years (storage time + usage time) regardless of the wear condition displayed.

7.5 PIN & device RESET

Information

Only qualified personnel may carry out a device RESET on site.

If the security pin has been forgotten, reset the device as follows.

1. Connect a smartphone to the device via the AIQ-App .
2. Supply the digital input (In 1) with 24 V for 15 seconds.
   ⇨ The device now activates a RESET function in the AIQ-App via push notification.

⇨ The RESET function resets the security PIN and the settings made. Please be aware that the current network settings will be lost.

7.6 Connectivity

7.6.1 AIQ-App

The AIQ-App is required to use the full range of functions of the device. Additional setting options are available in the app to carry out monitoring according to your needs.

The AIQ-App also provides detailed instructions on how to use the device.

To use the app, download the AIQ-App from the App Store (iOS) or Play Store (Android) and follow the instructions.

GET IT ON Google Play

Download on the App Store

Maintenance 8

8.1 Maintenance, servicing

No maintenance and servicing measures are required if the device is operated properly. Only the manufacturer or personnel authorised by the manufacturer may repair the device.

8.2 Error detection and troubleshooting

Work on electrical components may only be carried out by specialists in electrical engineering.

Symptom	Possible cause	Detection	Troubleshooting
Digital output does not turn on	Electrical load too high	Unloaded output switches to 24 V	Reduce electrical load at the output
Speed signal drops	Electrical load too high	Unloaded output switches to 24 V	Reduce electrical load at the output
Initialisation failed	Faulty firmware	The LED light strip lights up red.	Re-start, update firmware via AIQ-App. (Page 27)
A sensor magnet on the coupling is not recognised or a sensor magnet is missing on the coupling half	Incorrect assembly	The LED light strip lights up red.	Replace missing sensor magnet. (Page 36)
LED light strip lights up in the speed range from 2 rpm to 10 rpm in the same colour (white or magenta).	Both sensor magnets are aligned to the device with the north pole or south pole.	The LED light strip lights up white.	Rotate a sensor magnet. (Page 36)
		The LED light strip lights up magenta.	
Medium degree of wear of the elastomer components	Natural wear process of the elastomer components	The LED light strip of the device lights up yellow.	Flender recommends replacing the elastomer components (Page 36).
		The wear limits are in the medium range via the interface.	
		The AIQ-App shows yellow.	
Maximum degree of wear of the elastomer components	Natural wear process of the elastomer components	The LED light strip of the device lights up red.	Replace the elastomer components. (Page 36)
		The wear limits are in the outermost range via the interface.	
		The AIQ-App shows red.	

Table 8-1: Troubleshooting table

Further information

For further information, refer to the FAQ on the following website: www.aiq-inside.com (http://www.aiq-inside.com).

8.3 Replacing the sensor magnet

Proceed as follows to replace a missing sensor magnet on a coupling half:

1. Stop the drive train.
2. Secure the drive train against being switched back on.
3. Remove the contact safety device around the work area.
4. Press a sensor magnet into the recess of the coupling half. Pay attention to the correct polarity (Page 27).

The sensor magnet is held in place without additional fastening.

5. Re-attach the removed contact safety device.
6. You can start up the drive train.

8.4 Rotating the sensor magnet

Proceed as follows to rotate the polarity of a sensor magnet:

1. Stop the drive train.
2. Secure the drive train against being switched back on.
3. Remove the contact safety device around the work area.
4. Rotate the sensor magnet of one of the coupling halves.
5. Press a sensor magnet into the recess of the coupling half. Pay attention to the correct polarity (Page 27).

The sensor magnet is held in place without additional fastening.

6. Re-attach the removed contact safety device.
7. You can start up the drive train.

8.5 Replacing the elastomer components

Proceed as follows to replace the elastomer components on a coupling:

1. Stop the drive train.
2. Secure the drive train against being switched back on.
3. Replace the elastomer components as described in the coupling instructions.
4. Re-attach the removed contact safety device.
5. You can start up the drive train.

Further information

You can find further information about replacing the elastomer components in the coupling instructions.

Service & Support 9

9.1 Contact

When ordering replacement parts, requesting a customer service technician or if you have any technical queries, contact our factory or one of our Customer Service addresses:

Flender GmbH

Schlavenhorst 100

46395 Bocholt

Germany

Tel.: +49 (0)2871/92-0

Fax.: +49 (0)2871/92-2596

Flender GmbH (http://www.flender.com/)

More information

Further information about service and support can be found on the Internet:

Service & Support (https://www.flender.com/service)

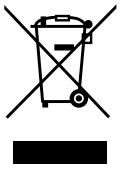
Disposal 10

10.1 Disposal instructions for electronic equipment

After use, dispose of the device including the battery in an environmentally friendly manner in accordance with the applicable national regulations.

Please note the following points:

- Do not dispose of electrical and electronic equipment in household waste when it can no longer be used. Check with your local council about this.
- Free collection points for electrical and electronic equipment are available in your area.
- Flender electrical and electronic equipment complies with the requirements of Directive 2012/19/EU – WEEE Directive.
- The separate collection of electrical and electronic equipment enables the reuse, recycling and other forms of recovery of waste equipment.
- During disposal, negative consequences for the environment and health due to the hazardous substances that may be contained in the devices should be avoided.
- The entire device does not have to be disposed of according to the WEEE Directive, but only the part that is equipped with electrical components.



Declaration of conformity

A

EU Declaration of Conformity

CE Marking

Name and address of the manufacturer:
Flender GmbH
Schlavenhorst 100
46395 Bocholt
Germany

The object of the declaration described above is in conformity with the relevant EU harmonised standards:

- Directive 2014/53/EU, Radio Equipment Directive (RED)
- The health and safety objectives of Directive 2014/35/EU Low-Voltage Directive (LVD) according to Art. 3.1 (a) have been met
- The objectives for an adequate level of electromagnetic compatibility of Directive 2014/30/EU Electromagnetic Compatibility (EMC) according to Art. 3.1 (b) have been met
- Directive 2011/65/EU + Delegated Directive (EU) 2015/863, (RoHS)
(Restricting the use of certain dangerous substances)

Operation is permitted in all countries of the European Union.

Conformity is declared for the following (harmonised) standards and regulations:

EN 300 328 V2.2.2:2019-07 (implemented in DIN EN 300328:2019-10)
Wideband transmission systems – Data transmission equipment operating in the 2.4 GHz ISM band – Harmonised standard for access to radio spectrum

EN 300 440 V2.2.1:2018-07 (implemented in DIN EN 300440:2018-11)
Short-range devices (SRD) – Radio equipment to be used in the 1 GHz to 40 GHz frequency range – Harmonised standard for access to radio spectrum

EN 301 489-1 V2.2.3:2019-11 (implemented in DIN EN 301489-1:2020-06)
Electromagnetic compatibility (EMC) standard for radio equipment and services – Part 1: Common technical requirements – harmonised standard for electromagnetic compatibility

EN 301 489-17 V3.2.4:2020-09 (implemented in DIN EN 301489-17:2021-03)
Electromagnetic compatibility (EMC) standard for radio equipment and services – Part 17: Specific conditions for broadband data transmission systems – Harmonised standard for electromagnetic compatibility

EN 301 489-3 V2.1.1:2019-03 (implemented in DIN EN 301489-3:2019-08)
Electromagnetic compatibility (EMC) standard for radio equipment and services – Part 3: Specific conditions for short-range devices (SRD) operating on frequencies between 9 kHz and 246 GHz – Harmonised standards covering essential requirements of Article 3.1(b) of the EU Directive 2014/53/EU

EN 55032:2016-02
Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32:2015), German version EN 55032:2015

EN IEC 61000-6-2:2019-11
Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2020)

EN IEC 62368-1:2021-05
Audio/video, information and communication technology equipment – Part 1: Safety requirements (IEC 62368-1:2018)

The following person is named authorised representative for the compilation of the technical documentation:

Flender GmbH

Bocholt, 2023-10-31

Dr Dennis Geers, President, Business Unit Couplings

Technical specifications

B

B.1 Rating plate

The rating plate contains the most important data.

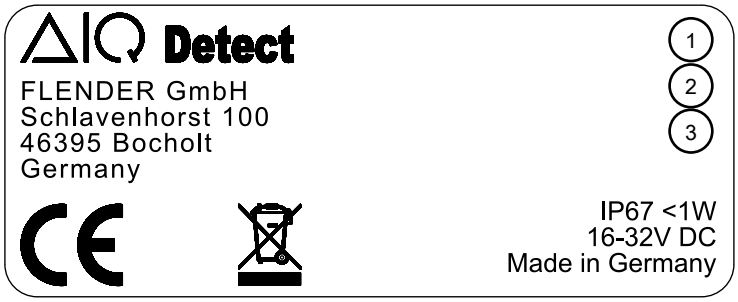


Figure B-1: Rating plate

1 Coupling
2 Coupling size
3 Material number of the coupling

B.2 Electrical specifications

Operating voltage	DC 24 V ± 20%
Power input	500 mA
Power consumption	< 1 W
Power (all outputs ON)	< 12 W
Max. cable length	< 30 m

Table B-1: Electrical specifications

B.3 Communication interfaces

Bluetooth	Bluetooth v4.2 BR/EDR and BLE
	NZIF receiver with – 97 dBm sensitivity
	Class 1, class 2 and class 3 transmitters

Table B-2: Communication interfaces

B.4 Environmental data

Protection class	IP67

Operating temperature	-40 °C... 75 °C
Bearing temperature	-40 °C... 75 °C
Relative humidity	0 ... 98%
Location of use	Industrial environment, assembly on Flender coupling
Connecting cable 8 pol. M12 bushing	< 30 m

Table B-3: Environmental data

B.5 Housing

Size (W x D x H)	54 mm x 66 mm x 24 mm
Weight	60 g

Table B-4: Housing

B.6 Inputs and outputs

Digital outputs (DO1/DO2)

Application	Connection to PLC, relay or contactor
Model	High-side switch
Rated voltage	24 V
Max. output current	200 mA
Max. short-circuit current	700 mA
Short-circuit proof	Yes
Integrated freewheeling diode / max. energy	Yes / 1 Ws (1.0 J)
Max. cable length	< 30 m
Function assignment of digital output 1	Parameterisable, standard: Signal speed
Function assignment of digital output 2	Parameterisable, standard: Status of rotation angle

Table B-5: Digital outputs (DO1/DO2)

Analogue outputs (AO1)

Application	Connection to PLC
Rated voltage	24 V
Max. output current	20.5 mA

Short-circuit proof	Yes
Max. load	800 Ohm
Max. cable length	< 30 m
Function assignment of analogue output 1	Parameterisable, standard: Status of rotation angle
Standard parameterisation	4 ... 20 mA

Table B-6: Analogue outputs (AO1)

Annex

C

C.1 Maximum permitted speeds of the couplings fitted with sensor magnets

The maximum permitted speed for the couplings with in-built sensor magnets depends on the holding force of the sensor magnets certified by Flender and the underlying assembly diameter.

The following figure shows the maximum permitted speeds for the couplings with in-built sensor magnets.

*Maximum coupling speeds with in-built sensor magnets

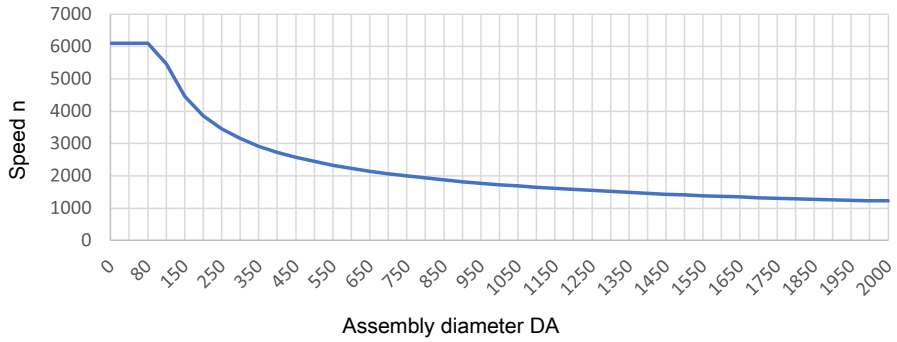


Figure C-1: Maximum permitted speeds

n	Maximum permitted speed [rpm] For a coupling with in-built sensor magnets	DA	Assembly diameter [mm] corresponds to the outer diameter of the coupling

* The maximum permitted speed of the Flender coupling may be below the maximum permitted speed for the couplings with in-built sensor magnets.

Information

Adhere to the maximum permitted speed of the coupling in the coupling instructions.

The holding force of the sensor magnets enables a higher speed in theory; however, due to the coupling, the permitted speed may be lower than the theoretically possible speed of the sensor magnets.

C.2 Wear limits

Flender coupling	Rotation angle limits* [mA]:			
	Wear limit, yellow		Wear limit, red	
N-EUPEX size 80 – 140	18.1	5.9	18.9	5.1

Flender coupling	Rotation angle limits* [mA]:			
	Wear limit, yellow		Wear limit, red	
N-EUPEX size 160 – 280	15.4	8.6	16.2	7.8
N-EUPEX size 315 – 710	14.5	9.5	15.2	8.8
RUPEX size 105 – 1120	14.2	9.9	14.6	9.4
RUPEX size 1250 – 2000	13.3	10.7	13.7	10.3

Table C-1: Wear limits

* Reference value: 12 mA = 0° rotation angle

Index

C

S

DIGITAL PRODUCTS / SENSORS

AIQ Detect
Operating instructions M6250-01en
Version 10/2023

Flender GmbH
Alfred-Flender-Strasse 77
46395 Bocholt
Germany

FLENDER