

Load pin

Up to 10,000 kN

Model F5802

WIKA data sheet FO 51.55



For further approvals
see page 2

Applications

- Crane systems and hoists
- Industrial weighing technology
- Machine building and plant construction
- Manufacturing automation

Special features

- Measuring ranges 20 ... 10,000 kN [204 tf ... 101,972 tf]
- Corrosion-resistant stainless steel version
- Existing non-measuring bolts are simply replaced by the measuring axes
- For overload protection in cranes and hoists
- Good reproducibility, easy installation



Load pin, model F5802

Description

Load pins of the model F5802 are suitable for static and dynamic measuring tasks as a replacement for non-measuring bolts. They serve for determining tension and/or compression forces under harsh operating conditions.

The load pins are very often used in hoists and crane systems, e.g. used in construction cranes or in port and offshore cranes, as well as in the field of industrial weighing technology and special machine construction. There they are installed in particular in deflection pulleys, cable winches, fork or roller bearings.

Load pins of this model serve as reliable overload protection in mechanical and plant engineering.

The corresponding technical and regional approvals of these force transducers are, of course, available as options.

The load pins are made of high-strength, corrosion resistant 1.4542 stainless steel, the properties of which are ideal for the application areas.

As output signals, the common active current and voltage outputs are available (4 ... 20 mA, 0 ... 10 V). Redundant output signals and CANopen[®] protocols are also possible.

Technical data in accordance with VDI/VDE/DKD 2638

Model	F5802
Rated force F_{nom} kN [tf]	20 ... 10,000 [204 ... 101,972]
Relative linearity error d_{lin} $d_{lin}^{1)}$	0.5 % ... 1 % F_{nom}
Relative Umkehrspanne v	0.5 % ... 1 % F_{nom}
Relative repeatability error in unchanged mounting position b_{rg}	0.5 % ... 1 % F_{nom}
Temperature effect on	
characteristic value TK_C	0.2 % F_{nom} /10 K
zero signal TK_0	0.2 % F_{nom} /10 K
Force limit F_L	150 % F_{nom}
Breaking force F_B	300 % F_{nom}
Material of measuring device	Corrosion-resistant stainless steel
Rated temperature $B_{T, nom}$	-10 ... +40 °C [14 ... +104 °F]
Operating temperature $B_{T, G}$	-20 ... +80 °C [-4 ... +176 °F]
Electrical connection	M12 x 1, 4-pin or 5-pin
Output signal (rated output) C_{nom}	<ul style="list-style-type: none"> ■ 4 ... 20 mA, 2-wire ■ 4 ... 20 mA, 3-wire ■ 2 x 4 ... 20 mA, redundant ■ DC 0 ... 10 V, 3-wire ■ 2 x DC 0 ... 10 V redundant ■ 1 ... 2 mV/V ■ CANopen® <p>Protocol in accordance with CiA®301, device profile CiA®404, communication services LSS (CiA®305), configuration of the instrument address and baud rate Sync/Async, Node/Lifeguarding, heartbeat; zero and span ± 10 % adjustable via entries in the object directory ²⁾</p>
Input resistance R_e	750 \pm 30 Ω
Output resistance R_a	700 \pm 5 Ω
Isulation resistance R_{IS}	\geq 5,000 M Ω
Supply voltage UB	<ul style="list-style-type: none"> ■ DC 9 ... 36 V for current output ■ DC 13 ... 36 V for voltage output ■ DC 5 ... 10 V for mV/V ■ DC 9 ... 36 V for CANopen®
Ingress protection (acc. to IEC/EN 60529)	IP67

1) Relative linearity error accordance with VDI/VDE/DKD 2638 chapter 3.2.6.

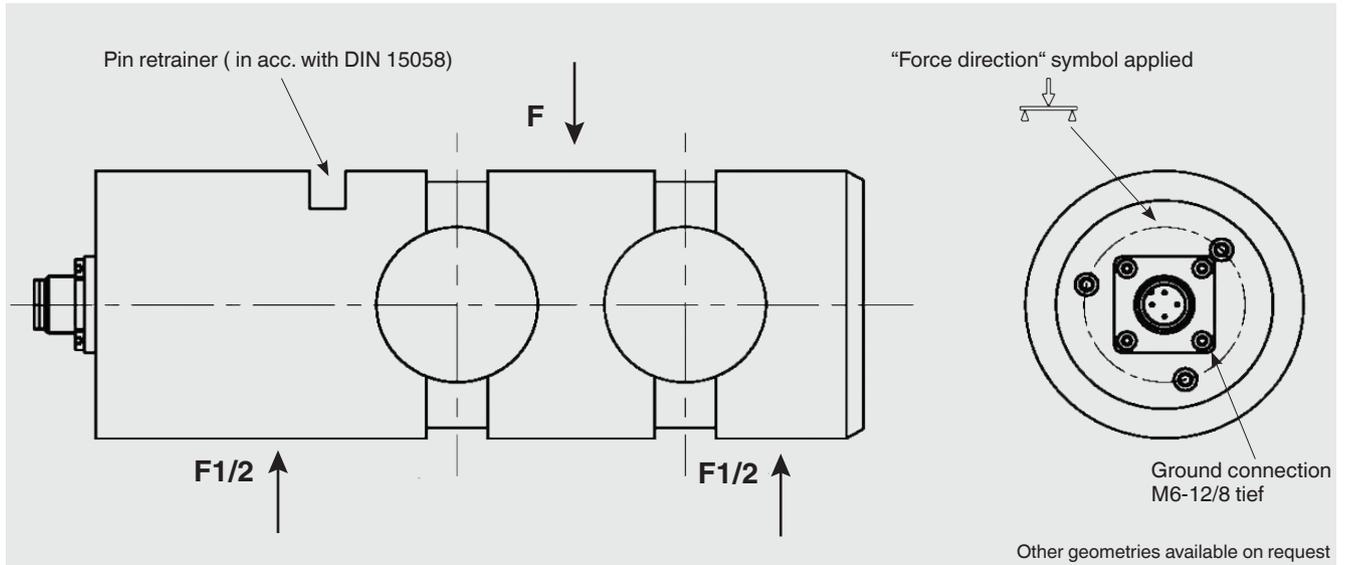
2) Protocol in accordance with CiA®301, device profile CiA®404, communication service LSS (CiA®305)
CANopen® and CiA® are registered community trademarks of CAN® in Automation e. V.

Approval

Logo	Description	Region
	EU declaration of conformity <ul style="list-style-type: none"> ■ EMC directive ■ RoHS directive 	European Union
	EAC EMC directive	Eurasian Economic Community

→ Approvals and certificates, see website.

Dimensions/mounting situation of the load pin

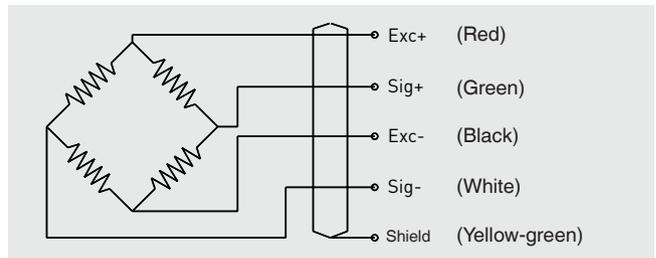


Exemplary illustration.

Dimensioning: The customer-specific load pin drawing of the respective order number has priority.

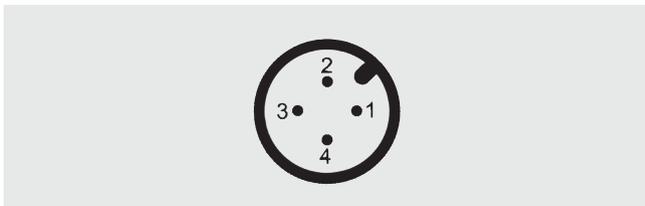
Pin assignment cable

Electrical connection		
Supply voltage +	Exc+	Red
Supply voltage -	Exc-	Black
Signal +	Sig+	Green
Signal -	Sig-	White
Shield ⊕	Shield	Yellow-green



Output signal 1 ... 2 mV/V

Connector M12 x 1, 4-pin or 5-pin



Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

Pin assignment of analogue output

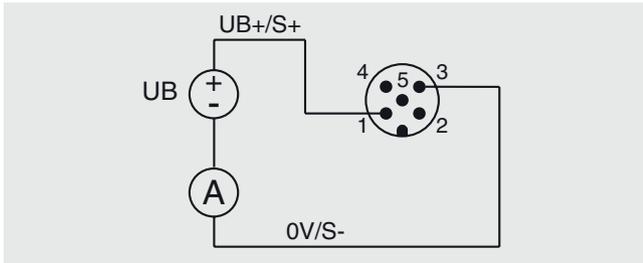
Abbreviations, definitions

Signal	Description
UB	Voltage source for sensor
UB+	Sensor-supply voltage (+)
UB-	Sensor-supply voltage (-)
S+	Output signal (+)
S-	Output signal (-)
0V	0V-Potential

Signal	Description
A	Ammeter
V	Voltmeter
+	Voltage source
-	Switch
⊕	Shield (grounding)

Output 4 ... 20 mA, 2-wire

Connector M12 x 1, 5-pin

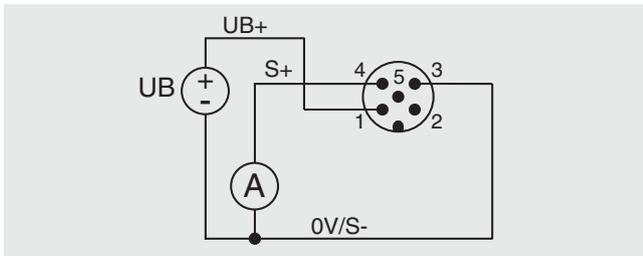


Signal	4 ... 20 mA, 2-wire	Cable colour
UB+/S+	1	Brown
0V/S-	3	Black
Shield ⊕	Case / connector	-

Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

Output 4 ... 20 mA, 3-wire

Connector M12 x 1, 5-pin

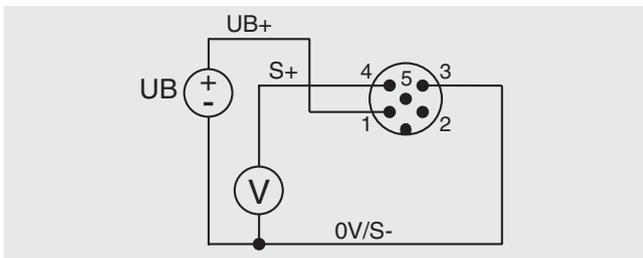


Signal	4 ... 20 mA, 3-wire	Cable colour
UB+	1	Brown
S+	4	Black
0V/S-	3	Blue
Shield ⊕	Case / connector	-

Cable colours only apply when using the WIKA standard cable, e.g. order number: 14259454

Output 0...10 V, 3-wire

Connector M12 x 1, 5-pin



Signal	0 ... 10 V, 3-wire	Cable colour
UB+	1	Brown
S+	4	Black
0V/S-	3	Blue
Shield ⊕	Case / connector	-

Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

Pin assignment with signal jump

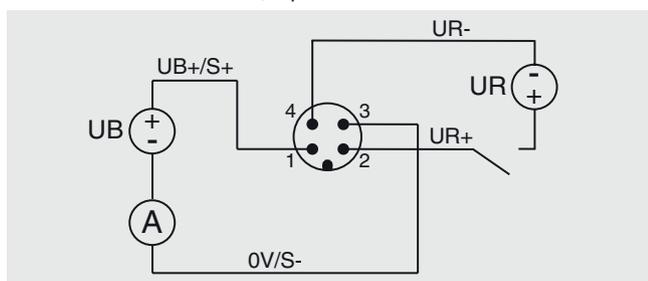
Abbreviations, definitions

Signal	Description
UB	Voltage source for sensor
UB+	Sensor-supply voltage (+)
UB-	Sensor-supply voltage (-)
UR	Voltage source for den signal jump
UR+	Signal jump-supply voltage (+)
UR-	Signal jump-supply voltage (-)
S+	Output signal (+)
S-	Output signal (-)
0V	0V-Potential

Signal	Description
(A)	Ammeter
(V)	Voltmeter
(+/-)	Voltage source
⌵	Switch
(⊕)	Shield (grounding)

Output 4 ... 20 mA, 2-wire

Circular connector M12 x 1, 4-pin

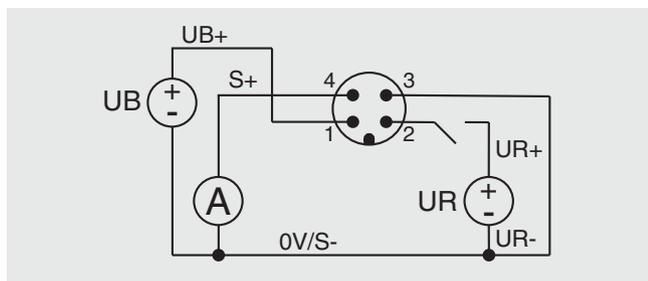


Signal	4 ... 20 mA, 2-wire	Cable colour
UB+/S+	1	Brown
0V/S-	3	Blue
UR+	2	White
UR-	4	Black
Shield (⊕)	Case / connector	-

Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

Output 4 ... 20 mA, 3-wire

Circular connector M12 x 1, 4-pin

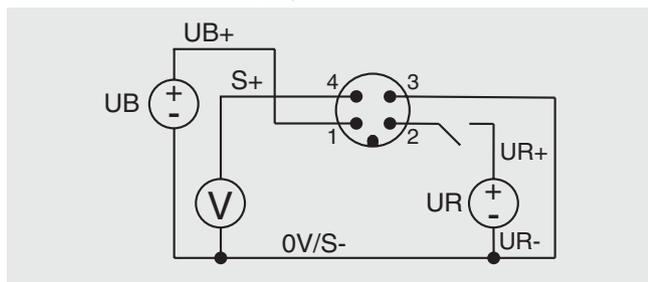


Signal	4 ... 20 mA, 3-wire	Cable colour
UB+	1	Brown
0V/S-	3	Blue
UR+	2	White
UR-	3	Blue
S+	4	Black
Shield (⊕)	Case / Connector	-

Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

Output 0...10 V, 3-wire

Circular connector M12 x 1, 4-pin



Signal	0 ... 10 V, 3-wire	Cable colour
UB+	1	Brown
0V/S-	3	Blue
UR+	2	White
UR-	3	Blue
S+	4	Black
Shield (⊕)	Case / Connector	-

Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

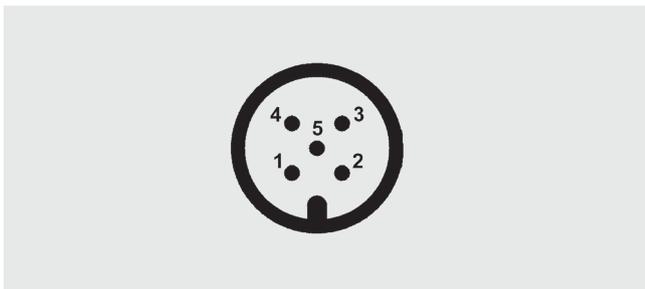
Pin assignment for CANopen®

Abbreviations, definitions

Signal	Description
CAN-SHLD, Shield ⊕	Shield
CAN-V+	External positive voltage supply for the supply of the sensor
CAN-GND	External 0V Potential for the supply of the sensor
CAN-High	CAN_H Bus line (dominant high)
CAN-Low	CAN_L Bus line (dominant low)

Output CANopen® in according to CiA®303-1

Circular connector M12 x 1, 5-pin

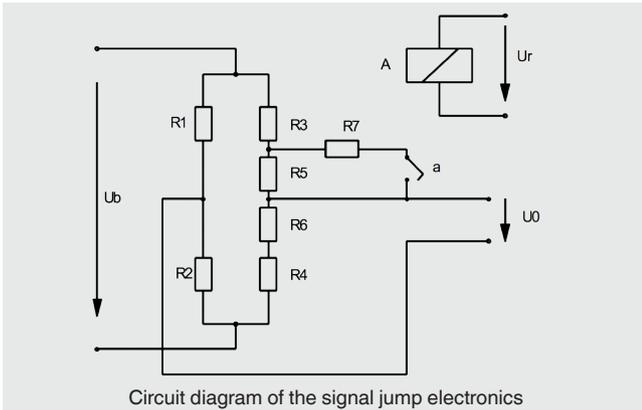


Signal	Pin	Cable colour
CAN-SHLD, Shield ⊕	1 / Case / connector	Brown
CAN-V+	2	Blue
CAN-GND	3	White
CAN-High	4	Blue
CAN-Low	5	Black

Cable colours only apply when using the WIKA standard cable, e.g. order number 14259454

Short description of the signal jump electronics

Amplifier 4 ... 20 mA or 0 ... 10 V for signal jump applications with 2-channel computer control.



With these force transducers, four variable resistors (R1 ... R4) are connected together to form a Wheatstone bridge. When the measuring body deforms, the opposing resistors are stretched or compressed in the same way. This leads to a detuning of the bridge and a diagonal voltage U_0 .

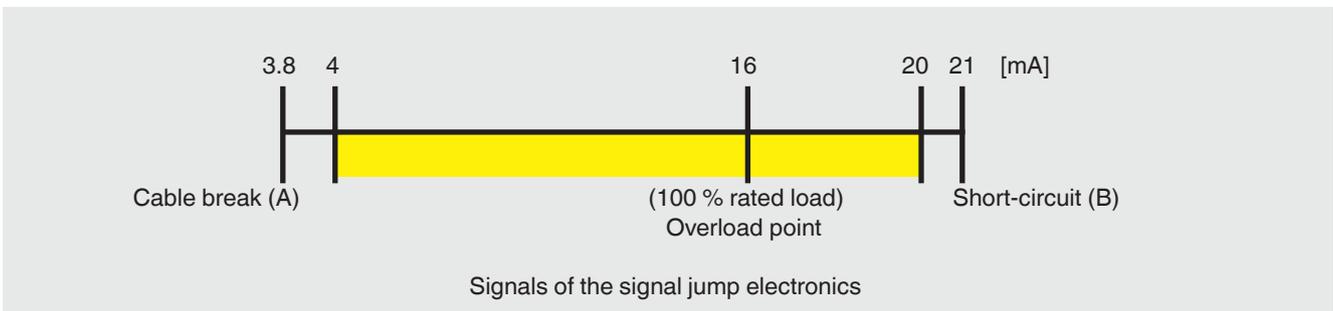
The test resistor R7 is now important in connection with checking the subsequent amplifier circuit and the subsequent signal paths. This is switched parallel to the resistor R5 via the relay contact (a) as soon as the excitation voltage U_r of the relay A is present. The connection of the resistor R7 causes a defined, always constant, detuning of the zero point (diagonal voltage) of the Wheatstone bridge.

An external safety control system independent of the force transducer must monitor the safe functioning of the force transducer. The functional test with a signal jump of 4 mA / 2 V is executed at an interval of 24 hours. The safety control system activates the relay A, thus changing the output signal of the force transducer in a defined manner.

If the expected change in the output signal occurs, it can be assumed that the entire signal path from the Wheatstone bridge via the amplifier through to the output is functioning correctly. If this does not occur, then it can be concluded that there is an error in the signal path.

Furthermore, the measuring signal should be checked by the safety controller for min. (A) and max. (B) signal values in order to detect any cable breaks or short circuits that may occur.

The default setting of the force transducers with a current output of 4 ... 20 mA for overload detection is, for example:



With a fixed signal jump of, for example, 4 mA, the test cycle can then be triggered, in any operating state, by activating the test relay. The upper measuring range limit of 20 mA will never be reached and thus the checking of the signal jump is enabled.

Accessories

Connector M12 x 1, model EZE53 with moulded cable					
Model	Description	Temperature range	Cable diameter	Cable colour	Order number
	Straight version, cut to length, 4-pin, PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... +176 °F]	Ø 4.75 mm ... 5.7 mm [Ø 0.18 in ... 0.22 in]	2 m [6.6 ft]	14259451
				5 m [16.4 ft]	14259453
				10 m [32.8 ft]	14259454
	Straight version, cut to length, 5-pin, PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... +176 °F]	Ø 4.75 mm ... 5.7 mm [Ø 0.18 in ... 0.22 in]	2 m [6.6 ft]	14259458
				5 m [16.4 ft]	79100672
				10 m [32.8 ft]	14259472
	Angled version, cut to length, 4-pin, PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... +176 °F]	Ø 5.05 mm ... 6 mm [Ø 0.2 in ... 0.24 in]	2 m [6.6 ft]	14259452
				5 m [16.4 ft]	14293481
				10 m [32.8 ft]	14259455
	Angled version, cut to length, 5-pin, PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... +176 °F]	Ø 5.05 mm ... 6 mm [Ø 0.2 in ... 0.24 in]	2 m [6.6 ft]	79101493
				5 m [16.4 ft]	79100686
				10 m [32.8 ft]	On request

Other cable lengths and cable types are available on request.

WIKA accessories can be found online at www.wika.com.

Ordering information

Model / Rated force / Relative linearity error / Temperature range / Output signal / Electrical connection / Approvals, certificates / Pin assignment / Accessories

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