uprox®3 IO-Link – Types and Data

IO-Link configurable features

Switching distance Sn

Switching distance output 1 (Pin4)	20 %	40 %	…	100 %*
Switching distance output 2 (Pin2)	20 %	40 %	…	100 %*
Hysteresis	Small	Normal		Large

Output configuration

Output function Output 1 (Pin4)	NO contact*	PNP*	NPN
	NC contact	PNP	NPN
	On	PNP	NPN
	Off	–	–
Output function Output 2 (Pin2)	NO contact	PNP	NPN
	NC contact*	PNP*	NPN
	On	PNP	NPN
	Off	–	–

Diagnostics

Identification		32 bytes writable memory	
LED indication	Two-color*	Single color	Off
Temperature		Via IO-Link call	
	Minimum	Technical limits see the respective	Adjustable in 1 °C steps
	Maximum	product data sheets*	within technical limits

Timer functions

On/off delay	On delay (0…60 s)
	Off delay (0…60 s)
Rotational speed monitor	Start delay (0…60 s)
	Switching frequency (max. 100Hz)
Pulse divider	Divider (1…128)
	- Min. output pulse duration 1 ms, 10 ms or 100 ms

*Factory settings

Process data [Bit]

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Out1	Out2	–	Start delay active	–	Too close	Temp. too high	Temp. too low			1. byte of the 32 byte writable memory					

Technical data

Assured switching distance	$\leq (0.81 \times S_n)$ mm
Repetition accuracy	≤ 2 % of full scale
Temperature drift	≤ ± 10 %
Ambient temperature	-25…+70 °C
Operating voltage	10…30 VDC
DC rated operational current	≤ 150 mA
No-load current I_0	≤ 20 mA
Short-circuit protection	Yes/cyclic
Wire breakage / reverse polarity protection	yes/completely
Switching frequency	0.5 kHz
IO-Link specification	IO-Link specified according to version 1.1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Degree of protection	IP68

uprox®3 IO-Link – Cylindrical sensors

	Design	Type designation	Ident no.	Total length	Electrical connection	Maximum switching distance
	M12	BI6U-M12-IOL6X2-H1141	1644873	52 mm	Male connector, M12 x 1	6 mm
	M18	BI10U-M18-IOL6X2-H1141	1644875	52 mm	Male connector, M12 x 1	10 mm

uprox®3 IO-Link – Cylindrical sensors, PTFE-coated

	Design	Type designation	Ident no.	Total length	Electrical connection	Maximum switching distance
	MT12	BI6U-MT12-IOL6X2-H1141	1644874	52 mm	Male connector, M12 x 1	6 mm
	MT18	BI10U-MT18-IOL6X2-H1141	1644876	52 mm	Male connector, M12 x 1	10 mm

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TURCK

uprox®3 IO-Link Inductive Factor 1 Sensors with IO-Link

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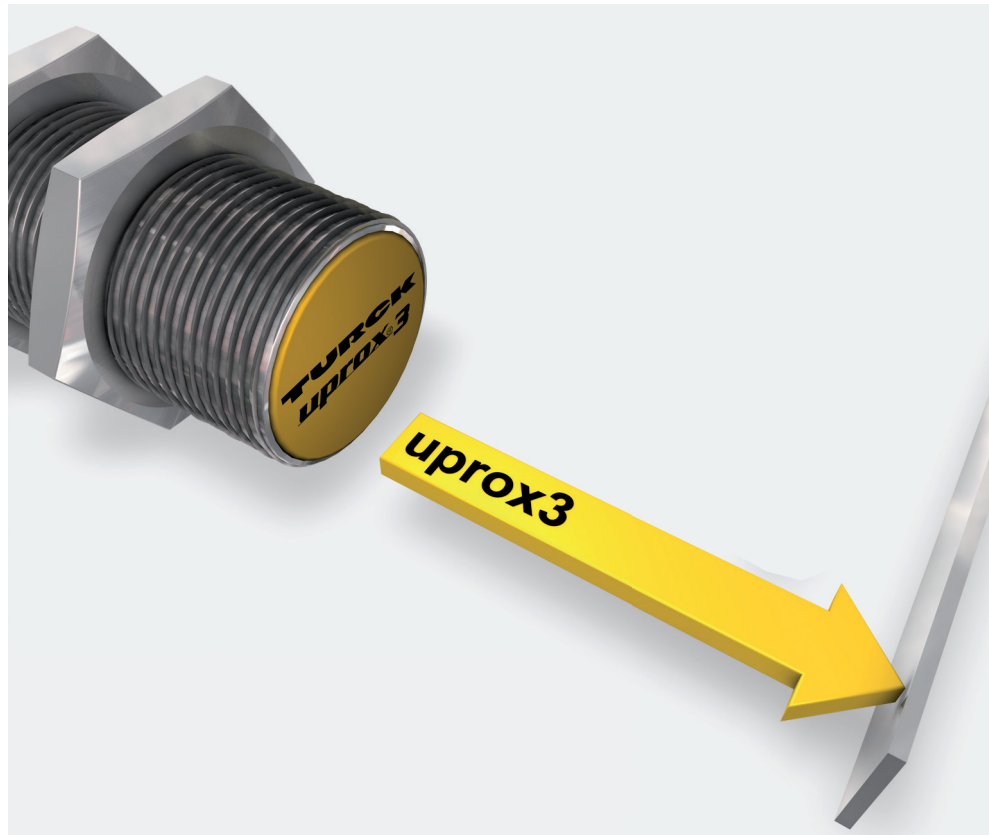
www.turck.com

Inductive Factor 1 Sensors with IO-Link

With the new uprox®3 IO-Link Turck offers its Factor 1 sensors with highest switching distances now also with IO-Link. The resulting flexibility turns the uprox®3 IO-Link into the "Swiss Army knife" of Factor 1 sensors: The functions of the two outputs 1 and 2 can be set independently of each other (PNP, NPN, N/O contact, N/C contact). The switching distance and the hysteresis can be set individually, and the adjustable switching distance can even be set separately for each output if required in order to replace two sensors with an uprox®3. An integrated temperature monitoring helps preventative maintenance, by detecting faults indicated by abnormal plant temperatures early on.

The consistent data retention of the sensor parameters is also ensured with IO-Link version 1.1. The 32-byte Application Specific Tag can be used for systematic tool identification without any other identification sensors required. The first byte here is mapped directly to the process data and is thus always available in the controller without any additional IO-Link call.

The uprox®3 IO-Link sensors can naturally also be used on conventional digital inputs. The sensor then operates in the so-called SIO mode like a conventional switching sensor.

Cost reductions

The use of the uprox®3 IO-Link enables you to reduce costs in new and existing applications since the sensors can be adapted flexibly and variably to your requirements through a simple configuration. Not only the output functions and the specific switching distances can be set here. Additional functions can also be implemented if required, which would otherwise only be possible as expensive special functions. The sensors also come with all the benefits of uprox®3, such as factor 1 with maximum switching distances and an excellent magnetic field immunity. The reduction of variants thus keeps procurement, inventory and management costs in your company down to a minimum.
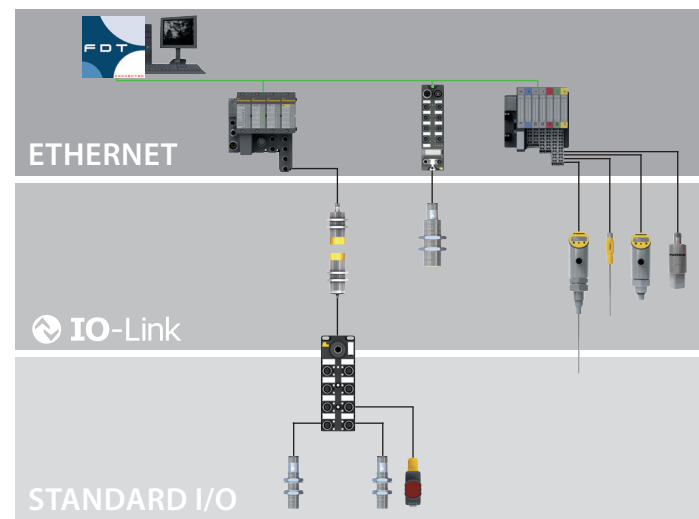
Production efficiency

The parameterizable inductive factor 1 sensors communicate via a standard IO-Link interface and come with a structured configuration file (IODD) that is identical for all uprox®3 sensors. This ensures simple handling before, during and after commissioning. The intelligent tool identification feature using the 32-byte Application Specific Tag allows greater efficiency in production control. Using uprox®3 IO-Link sensors enables you to benefit from Turck's extensive IO-Link system know-how and the comprehensive IO-Link portfolio offering everything, from sensors, I/O hubs and IO-Link master right through to the connection to the fieldbus level and the required software integration.

ETHERNET

IO-Link

STANDARD I/O
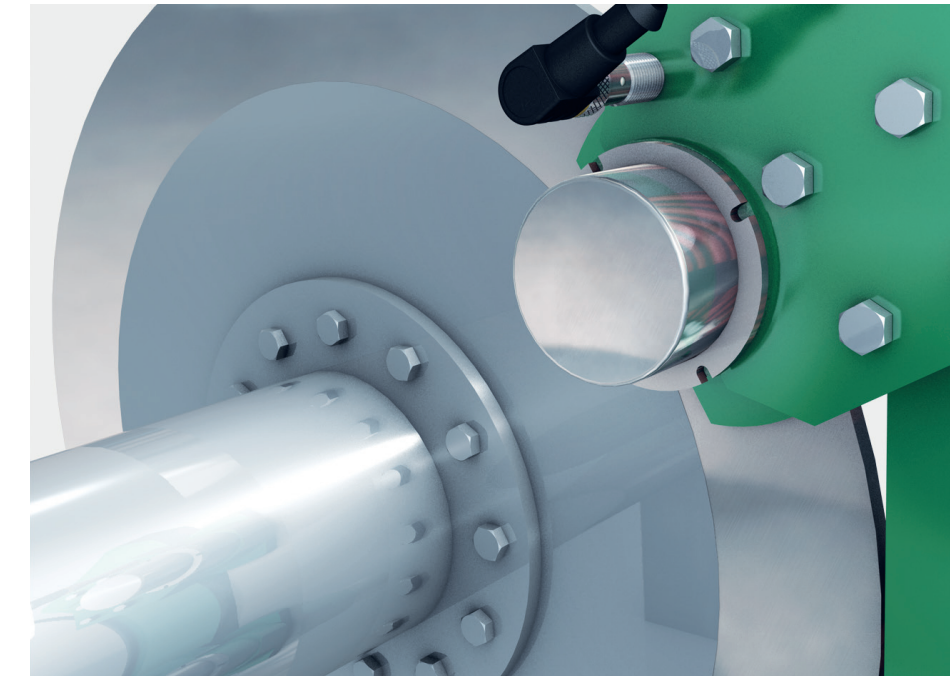
Improved availability through diagnostics

The integrated temperature measuring provides you with extensive diagnostics features for the sensor and the application area around the sensor. The current temperature is measured by the sensor and can be read out. User-defined temperature limits can also be configured – within the physical and technical maximum and minimum temperature – and can be output as alarms via the process data in the event of limit violations. This enables you to prevent possible faults in cooling systems or impending temperature damage, e.g. in couplings or gears. In this way you can prevent the risk of an impending plant failure. The ability to configure two separate switch points means that in particular applications the uprox®3 IO-Link can replace two conventional sensors for monitoring different positions. This makes it possible, for example, to implement the indication of the open/closed brake state with integrated wear monitoring with only one sensor.
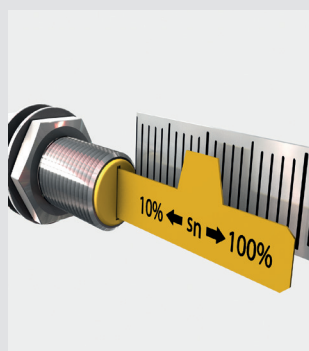
Switching distance
The uprox®3 IO-Link sensors can be configured flexibly and individually to meet particular application requirements. The switching distance here can be varied in percentages within the physically defined limits.

Output function
Each required function combination on both outputs can be configured via the IO-Link. Regardless of whether PNP N/C contacts, NPN N/O contacts both simultaneously or as antivalent contacts are required – everything is possible. It is even possible to implement a permanently switched 24 V signal as a watchdog signal.

Input/output delay
The adjustable input and output delay between 0 and 60 seconds enables the reliable suppression of unwanted fault pulses from the application.

Rotational speed monitoring
With their integrated timer functions, such as an input, output or start delay, a variable pulse divider or a configurable pulse output, the uprox®3 IO-Link sensors are excellently suited for speed measuring and monitoring a rotationally symmetrical application.
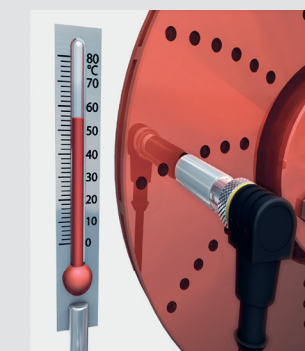
Temperature monitoring
The temperature monitoring integrated in each sensor enables condition monitoring to be used directly at the application. Minimum and maximum temperature limits can be simply adjusted to customer requirements and output as a process signal.

Identification
The 32-byte Application Specific Tag enables each sensor to be identified individually thus allowing clear identification of the application, sub-application or even an individual tool.