uprox® IO-Link – Types and Features

IO-Link configurable features

						Features				
						1 SP	2 SP	Analog	Rotation-al speed	Pulse
Switching distance Sn										
Switching distance output 1 (pin 4)	20 %	40 %	60 %	80 %	100 %*	●	●			●
Switching distance output 2 (pin 2)	20 %	40 %	60 %	80 %	100 %*	●	●			●
Hysteresis	Small		Normal*			●				
Output configuration										
Output function 1 (pin 4)	NO contact*	PNP*		NPN	Push-pull	●	●	●	●	●
	NC contact	PNP		NPN	Push-pull	●	●	●	●	●
	On	PNP		NPN	Push-pull	●	●	●	●	●
Output function 2 (pin 2)	NO contact	PNP		NPN	Push-pull		●		●	●
	NC contact*	PNP*		NPN	Push-pull		●		●	●
	On	PNP		NPN	Push-pull		●		●	●
	Off	PNP		NPN	Push-pull		●		●	●
	Temperature indicator					●		●		●
Special functions/Unique functions										
Switch-on/off delay	Off*			0…60 s		●				
Start-up delay	Off*			0…60 s					●	
Identification	32-byte application-specific marker					●	●	●	●	●
Oscillation frequency F2 (only NI devices)	F1*			F2		●	●	●	●	●
LED mode	Ub(gn)/Out-put (ge)*	Output (ge)		Off		●	●	●	●	●
Temperature indicator	Actual tem-perature	Alarm low temper-ature		Alarm high temperature		●	●	●	●	●
LED temperature display	Off*	1 Hz flashing when leaving temperature limits				●	●	●	●	●
Pulse divider	1…128									●
Min. pulse duration	0 ms*	1 ms	10 ms	100 ms						●

*Factory default

Process data [Bit]								
0	1	2	3	4	5	6	7	8-15
Out1	Out2	Sp 2^0	Sp 2^1	Sp 2^2	Start-up	low temp.	high temp.	1. byte of AST

Technical data	
Assured switching distance	≤ (0.81 × 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 code	ID number	Total length	Electrical connection	Maximum switching distance
	M12	BI6U-M12-IOL6X2-H1141	1644873	52 mm	Connector, M12 x 1	6 mm
	M18	BI10U-M18-IOL6X2-H1141	1644875	52 mm	Connector, M12 x 1	10 mm
	M30	BI20U-M30-IOL6X2-H1141	1644882	62 mm	Connector, M12 x 1	20 mm

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

	Design	Type code	ID number	Total length	Electrical connection	Maximum switching distance
	MT12	BI6U-MT12-IOL6X2-H1141	1644874	52 mm	Connector, M12 x 1	6 mm
	MT18	BI10U-MT18-IOL6X2-H1141	1644876	52 mm	Connector, M12 x 1	10 mm
	MT30	BI20U-MT30-IOL6X2-H1141	1644883	62 mm	Connector, M12 x 1	20 mm

uprox® IO-Link – Rectangular sensors

	Design	Type code	ID number	Total length	Electrical connection	Maximum switching distance
	CK40	NI50U-CK40-IOL6X2-H1141	1625871	40 x 40 x 65 mm	Connector, M12 x 1	50 mm
	QV40	NI50U-QV40-IOL6X2-H1141	1625872	40 x 40 x 65 mm	Connector, M12 x 1	50 mm

28 subsidiaries and over
60 representations worldwide!

D102209 | 2016/04

www.turck.com

Your Global Automation Partner

TURCK

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

Inductive Factor 1 Sensors with IO-Link

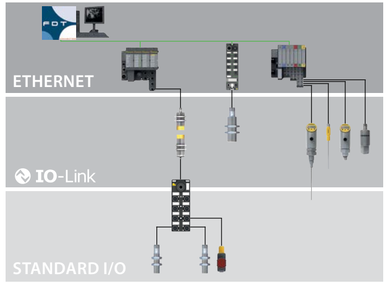
With the new uprox® IO-Link Turck offers its Factor 1 sensors with highest switching distances now also with IO-Link. The resulting flexibility turns the uprox® IO-Link into the "Swiss Army knife" of Factor 1 sensors: The functions of the two outputs 1 and 2 can be set independently of each other (PNP, 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®. 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® 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

With the use of the uprox® IO-link sensors, you reduce costs in new and existing applications. Easy configuration allows you to flexibly and variably adapt the sensors to your needs. You can not only set the output functions and the real switching distances. In addition, expensive special functions are already included and and can be used whenever needed. Furthermore, each adjustable switching distance can be run sequentially in combination with an IO-Link master. The sensor is thus able to simulate a kind of low-resolution analog mode. Also, the sensors include all uprox®3 benefits such as factor 1 with highest switching distances and an excellent magnetic field strength. The reduction of variants can thus minimize procurement, storage and administrative costs of your company.



Production efficiency

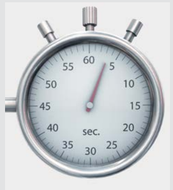
The parameterizable inductive factor 1 sensors communicate via a standard IO-Link interface and come with a structured configuration file (IODD) that is identical for all uprox® sensors. This ensures simple handling before, during and after commissioning. The intelligent tool identification feature using the 32-byte Application Specific Tag allows greater efficiency in production control. Using uprox® 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.

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 switching points means that in particular applications the uprox® 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.

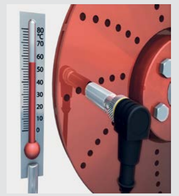
Switching distance
The uprox® IO-Link sensors can be configured flexibly and individually to meet the respective application needs. Thereby, the switching distance can be changed in percentage terms within the physically defined limits. Through sequential queries of all switchpoints, a low-resolution analog signal is produced.

Output function
Any desired combination of function at both outputs is configurable using the IO Link interface. Regardless of whether PNP - NC contact, NPN – NO contact, both at the same time or complementary – everything is possible.



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.

Rotation speed/Pulse divider
With the integrated start-up delay or the variable pulse divider with configurable pulse duration, the uprox IO-Link sensors are excellently suited for rotation speed measurement or monitoring of a rotationally symmetric application, as well as for use in packing plants.



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.