875F/875L Capacitive Sensors

Bulletin Numbers 875F, 875L

AB QUALITY

Allen-Bradley

by **ROCKWELL AUTOMATION**

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

⚠	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

⚠	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

These labels may also be on or inside the equipment to provide specific precautions.

⚡	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

♨	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

⚠	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

The following icon may appear in the text of this document.

💡	Identifies information that is useful and can help to make a process easier to do or easier to understand.

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

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This manual is a reference guide for Bulletin 875F and 875L capacitive proximity sensors with IO-Link. It describes how to install, configure, and use the device.

Who Should Use This Manual?

This manual contains important information regarding installation. Qualified personnel familiar with proximity capacitive sensors must be read and understand this manual completely. We recommend that you read the manual carefully before installation of the sensor. Save the manual for future use.

Terminology

Term	Definition
I/O	Input/output
PD	Process data
PLC	Programmable logic controller
SIO	Standard input/output
SP	Setpoints
IODD	I/O device description
IEC	International Electrotechnical Commission
N.O.	Normally open contact
N.C.	Normally closed contact
NPN	Pull load to ground
PNP	Pull load to V+
Push-Pull	Pull load to ground or V+
QoR	Quality of run
QoT	Quality of teach
UART	Universal asynchronous receiver-transmitter
SO	Switching output
SSC	Switching signal channel

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Download Firmware, AOP, EDS, and Other Files

Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center at rok.auto/pcdc.

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated 875L AC Tubular Capacitive Proximity Sensors section	7
Updated 875L DC Tubular Capacitive Proximity Sensors section	10
Moved Specifications to 875-TD001	—

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
EtherNet/IP Network Devices User Manual, ENET-UM006	Describes how to configure and use EtherNet/IP™ devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications.	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at rok.auto/literature.

Product Overview

Non-IO-Link Sensors

875L AC Tubular Capacitive Proximity Sensors

- Capacitive proximity switches with either sensing distance:
  - M18 housing: Sensing distance of 8 mm (0.31 in.) flush mounted or 12 mm (0.47 in.) non-flush mounted. Black M18 polyester housing with 2 m (6.6 ft) PVC cable or M12 plug.
  - M30 housing: Sensing distance of 16 mm (0.63 in.) flush mounted or 25 mm (0.98 in.) non-flush mounted. Black M30 polyester housing with 2 m (6.6 ft) PVC cable or 1/2-20 UNF plug.
  - 2-wire AC output with make (N.O.) or break (N.C.) switching. Ideal for use in level and plastic machinery applications.
- SCR output
- Make or break switching function
- Status indicators
- High noise immunity
- Flush and non-flush types
- Plug and cable versions
- For full product specifications, see 875-TD001
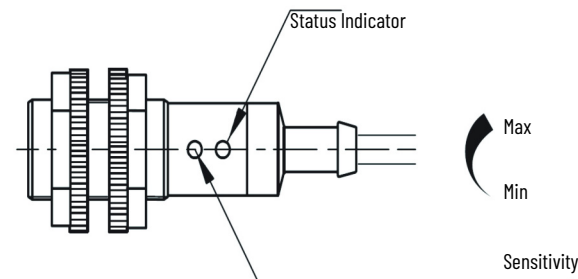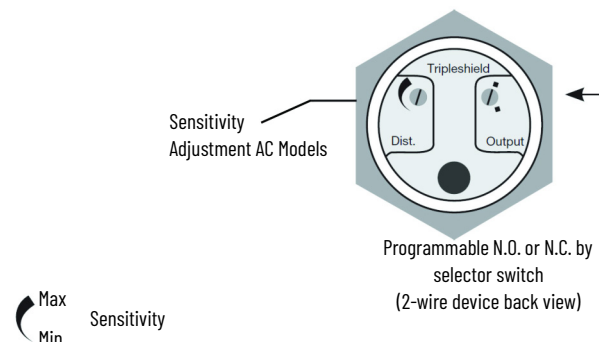
Housing

Figure 1 - M18 Housing

Figure 2 - M30 Housing

Catalog Number Explanation

875	L	-	F	8	N	18	A2
	a		b	c	d	e	f

a	
Housing Style	
Code	**Description**
L	Cylindrical housing with threaded barrel

b	
Shielding	
Code	**Description**
F	Shielded
G	Unshielded

c	
Sensing Distance	
Code	**Description**
8	8 mm (0.31 in.)
12	12 mm (0.47 in.)
16	16 mm (0.63 in.)
25	25 mm (0.98 in.)

d	
Output Function	
Code	**Description**
N	Normally open (N.O.)
C	Normally closed (N.C.)
B	N.O./N.C.

e	
Barrel Diameter	
Code	**Description**
18	18 mm (0.71 in.)
30	30 mm (1.18 in.)

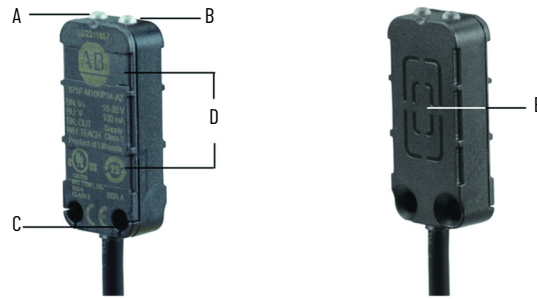| f	
Output Type	
Code	**Description**
A2	2 m (6.6 ft) PVC cable
R3	AC micro connector

875F DC Rectangular Capacitive Proximity Sensors

- Detection of water-based fluids inside a container or tube without direct contact with the fluids.
- The sensor detects the liquids reliably while compensating for residue film, moisture, or foam build-up from liquids such as water, milk, bodily fluids (blood), acid, or alkaline solutions with conductivity as high as 50 mS/cm inside or outside the container wall.
- Flexible and fast universal mounting bracket.
- The sensing principle detects only the level of the liquids while it ignores any foam, film, or build-up that causes faulty detection with standard capacitive sensors.
- For full product specifications, see 875-TD001

Features

- Compact housing
- Supply voltage: 10…30V DC
- Output: 100 mA, NPN or PNP preset
- Make or break switching function
- Status indication for output and power ON
- Protection: reverse polarity, short circuit, and transients
- Cable and pigtail M8 plug versions
- Excellent EMC performance
- IP65, IP66, IP67, IP68, and IP69K for hose-down applications
- cULus Listed
- ECOLAB

Housing

Item	Description
A	Yellow status indicator (output)
B	Green status indicator (power ON)
C	Two M3 mounting holes
D	Recessed area for cable strips, 5 mm (0.2 in.) wide, max
E	Sensing surface

Table 1 - Status Indicators

Green Status Indicator	Yellow Status Indicator	Output
Flashing 1 Hz	OFF	Full calibration (2…7 s)
Flashing 1 Hz	ON	Empty calibration (7…12 s)
–	Flashes three times 1 Hz	Successful full calibration
–	Flashes three times 1 Hz	Successful empty calibration
–	Flashes ten times 4 Hz	Unsuccessful calibration (canceled or error) (>12 s)

Catalog Number Explanation

875	F	-	M	10	NP	34	A2
	a		b	c	d	e	f

a	
Housing Style	
Code	**Description**
F	Rectangular housing

b	
Mounting	
Code	**Description**
M	Flush

c	
Sensing Distance	
Code	**Description**
10	10 mm (0.39 in.)

d	
Output Function	
Code	**Description**
NP	N.O. PNP
NN	N.O. NPN
CP	N.C. PNP
CN	N.C. NPN

e	
Housing Length	
Code	**Description**
34	34 mm (1.34 in.)

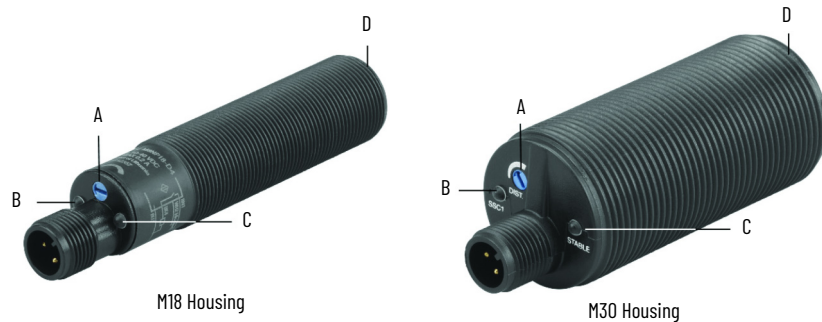| f	
Output Type	
Code	**Description**
A2	2 m (6.6 ft) PVC cable
FP02	0.2 m (0.66 ft) PVC cable 4-pin DC pico

IO-Link Sensors

875L DC Tubular Capacitive Proximity Sensors

- The sensor can be operated in IO-Link mode once it is connected to an IO-Link master or in standard I/O mode.
- Adjustable parameters via IO-Link interface: Sensing distance and hysteresis.
  - Sensing modes: single-point, two-point, or window mode.
  - Timer functions like: on-delay, off-delay, one shot leading edge, or trailing edge.
  - Logic functions such as: AND, OR, XOR, and SR-FF.
  - External input.
  - Logging functions: Maximum temperatures, minimum temperatures, operating hours, operating cycles, power cycles, minutes above maximum temperature, minutes below minimum temperature, and so on.
- For full specifications, see 875-TD001

Features

- Available in robust M18 and M30, IP69K, ECOLAB-certified, PBT, shielded and unshielded housings.
  - M18 housing operates at 8 mm (0.31 in.) shielded and 12 mm (0.47 in.) unshielded
  - M30 housing operates at 16 mm (0.63 in.) shielded and 25 mm (0.98 in.) unshielded
- The output can be operated either as a switching output or in IO-Link mode.
- Fully configurable via output IO-Link v 1.1. Electrical outputs can be configured as PNP/NPN/Push-pull/External input, normally open or normally closed.
- Timer functions can be set, such as on-delay, off-delay, and one shot.
- Logging functions: temperatures, detection counter, power cycles, and operating hours.
- Detection modes: single-point, two-point, and window mode.
- Analog output: In IO-Link mode, the sensor generates 16-bit analog process data output that represents the dielectric value that the sensor measures.

Housing

M18 Housing

M30 Housing

Item	Description
A	Sensitivity adjustment
B	Yellow status indicator
C	Green status indicator
D	Sensing face

Catalog Number Explanation

875	L	-	M	8	NP	18	A2
	a		b	c	d	e	f

a	
Housing Style	
Code	**Description**
L	Cylindrical housing with threaded barrel

b	
Mounting	
Code	**Description**
M	Flush
N	Non-flush

c	
Sensing Distance	
Code	**Description**
8	8 mm (0.31 in.)
12	12 mm (0.47 in.)
16	16 mm (0.63 in.)
25	25 mm (0.98 in.)

d	
Output Function	
Code	**Description**
NP	N.O. PNP
NN	N.O. NPN
CP	N.C. PNP
CN	N.C. NPN

e	
Barrel Diameter	
Code	**Description**
18	18 mm (0.71 in.)
30	30 mm (1.18 in.)

f	
Output Type	
Code	**Description**
A2	2 m (6.6 ft) PVC cable
D4	DC micro connector

Notes:

Configure with IO-Link

Bulletin 875 sensors offer five different tabs (shown in <u>Table 2</u>) to describe the device functionality and operations.

Table 2 - Tab Descriptions

Tab	Description
Common (<u>page 13</u>)	Provides general product information about sensor specifications and IO-Link IODD information.
Identification (<u>page 14</u>)	Provides sensor catalog number, series letter, product firmware, and hardware revisions.
Observation (<u>page 15</u>)	Displays real-time measurement information, including distance measurement value, switching outputs, and operation conditions.
Parameter (<u>page 16</u>)	Allows you to configure sensors by modifying parameter settings.
Diagnosis (<u>page 17</u>)	Provides information of operation status and sensor health diagnosis, and enables you to restore factory default settings and physically locate the sensor for troubleshooting.

Common Tab

The Common tab contains the following device information:

Parameter	Description
Vendor	Provides the vendor name of the product.
Vendor Text	Field that is used to describe additional product information.
Vendor ID	Describes the vendor ID of the manufacturer of the product as designated in the IO-Link Consortium.
URL	Displays the vendor URL.
Device	Provides the specific catalog number of the product.
Description	Describes the sensor features and range performance.
Device ID	Displays the unique device ID as defined in the IO-Link specifications.
IO-Link Revision	Displays the current IO-Link version that the device supports.
Hardware Revision	Displays the latest sensor hardware information.
Firmware Revision	Displays the latest sensor Firmware information.

Parameter	Description
Bitrate	Displays the supported bitrate for communications as defined in the IO-Link 1.1 standard.
SIO Mode	Describes whether the sensor is also designed to operate without and IO-Link connection.
IODD	Displays the complete file name of the IODD that is assigned to the product.
Document Version	Displays the version control for the IODD.
Date of Creation	Displays when the IODD file was creation.

Identification Tab

The Identification tab contains the following device information:

Parameter	Description
Device Information	
Vendor Name	The vendor name of the product.
Product Name	The product catalog number information.
Product ID	Product catalog number information with series letter.
Product Text	Product description.
Serial Number	Serial number of the device as unique numeric value.
User-Specific Information	
Application-Specific Tag	Device-specific name that is assigned to the device for device identification. This tag is a unique identity of each device. You can customize this read/write field.
Revision Information	
Hardware Version	Hardware version of the 875 sensor that is provided as alphanumeric value
Firmware Version	Firmware revision of the875 sensor that is provided as numeric value.

Observation Tab

The Observation tab displays real-time device status. For more information, see .

Name	R/W	Value	Unit
[-] Process-Data			
.AnalogValue	ro	1046	
.ShortCircuit	ro	Off	
.TemperatureAlarm	ro	Off	
.MarginAlarm 2	ro	Off	
.MarginAlarm 1	ro	Off	
.SwitchingSignalChannel 2	ro	Off	
.SwitchingSignalChannel 1	ro	Off	
.Triggered 2	ro	On	
.Triggered 1	ro	On	

Common | Identification | Observation | Parameter | Diagnosis

Parameter Tab

The Parameter tab allows you to configure the sensor. For more information, see .

Name	R/W	Value	Unit
[+] Triggered 1			
[-] Triggered 2			
.Phy Mode	rw	Disabled Output	
.Input Selector 2	rw	SSC 1	
.Logic function	rw	Direct	
.Timer Mode	rw	Disabled Timer	
.Timer Scale	rw	Milliseconds	
.Timer Value	rw	0	
.Polarity	rw	Not inverted (Normal Open)	
[+] Switching Signal Channel 1			
[-] Switching Signal Channel 2			
.Mode	rw	Single Point	
.Set Point 1	rw	1000	
.Set Point 2	rw	10000	
.Hysteresis	rw	10	%
.Switching Logic	rw	High Active	
[-] Sensor Specific			
Adjustment Method Selection	rw	Trimmer Input	
Trimmer Value	ro	984	
Sensor Application Pre-set	rw	Full Scale Range	
[-] Temperature Alarm			
.High Threshold	rw	120	°C
.Low Threshold	rw	-30	°C
[-] Safe ON/OFF limit			
.SSC 1 - Safe limit	rw	20	%
.SSC 2 - Safe limit	rw	20	%
Filter scaler	rw	1	
[-] Teach-in			
Teach-in Select	rw	Switching Signal Channel 1	
[-] Teach-in SSC1			
[-] Teach-in Single Value SSC1			
Standard Command	wo	Teach SP1	
.Teach-in State	ro	IDLE	
Quality of Teach	ro	6	%
[+] Teach-in Two Value SSC1			
[+] Teach-in Dynamic SSC1			
[-] Teach-in Two Value SSC2			
Standard Command	wo	Teach Apply	
Standard Command	wo	Teach Cancel	
Standard Command	wo	Teach SP1 TP1	
Standard Command	wo	Teach SP1 TP2	
.SP1 TP1 result	ro	Not OK	
.SP1 TP2 result	ro	Not OK	
.Teach-in State	ro	IDLE	
Quality of Teach	ro	6	%
[-] Teach-in Dynamic SSC2			
Standard Command	wo	Teach SP1 Stop	
Standard Command	wo	Teach SP1 Start	
.Teach-in State	ro	IDLE	
Quality of Teach	ro	6	%
[-] Process data configuration			
.Analogue value	rw	Enabled	
.Switching Output 1	rw	Enabled	
.Switching Output 2	rw	Enabled	
.Switching Signal Channel 1	rw	Disabled	
.Switching Signal Channel 2	rw	Disabled	
.Margin Alarm 1	rw	Disabled	
.Margin Alarm 2	rw	Disabled	
.Temperature Alarm	rw	Disabled	
.Short-circuit	rw	Disabled	

Diagnosis Tab

The Diagnosis tab provides information on operation status and sensor health diagnosis. For more information, see Appendix A on page 31.

Name	R/W	Value	Unit
[-] Device Access Locks			
Device Access Locks.Parameter (write) Access Lock	rw	false	
Device Access Locks.Data Storage Lock	rw	false	
Device Access Locks.Local Parameterization Lock	rw	false	
[-] Operation Information			
Operating Hours	ro	87	h
Number of Power Cycles	ro	10	
Detection counter SSC1	ro	113	
Maintenance event counter	ro	0	
Download counter	ro	162	
Quality of Teach	ro	6	%
Quality of Run	ro	255	%
Error Count	ro	0	
Device Status	ro	Device is OK	
[-] Service Function			
Standard Command	wo	Restore SSC	
Standard Command	wo	Restore Factory Settings	
.Locator Indicator	rw	Disabled	
.LED Indicator	rw	Enabled	
[-] Event configuration			
.Maintenance event (0x8C40)	rw	Disabled	
.Temperature fault event (0x4000)	rw	Enabled	
.Temperature over-run event (0x4210)	rw	Disabled	
.Temperature under-run event (0x4220)	rw	Disabled	
.Short circuit event (0x7710)	rw	Enabled	
[-] Temperature			
Current temperature	ro	34	℃
Maximum temperature since inception	ro	34	℃
Minimum temperature since inception	ro	19	℃
Maximum temperature since power-up	ro	34	℃
Minimum temperature since power-up	ro	20	℃
Minutes above Maximum Temperature	ro	0	min
Minutes below Minimum Temperature	ro	0	min

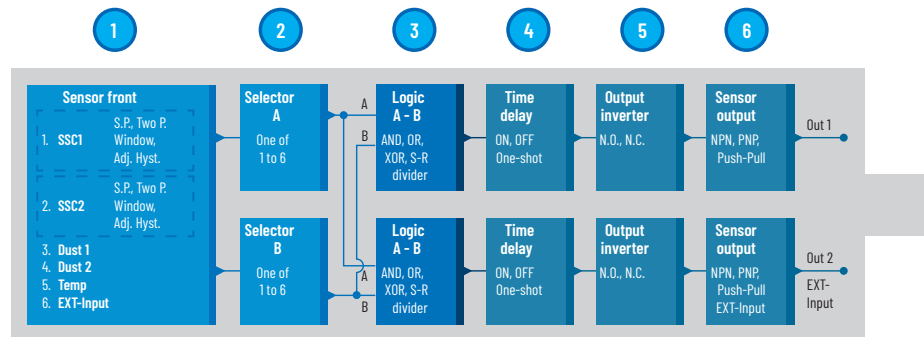| Parameter	Description
Operating hours	The sensor has a built-in counter that logs every full hour that the sensor has been operational, the maximum hours that can be recorded is 2,147,483,647 hours, this value can be read from an IO-Link master.
Number of power cycles	The sensor has a built-in counter that logs every time that the sensor has been powered-up, the value is saved every hour, the maximum numbers of power cycles that can be recorded is 2,147,483,647 cycles, this value can be read from an IO-Link master.
Event configurations	See Event Configuration on page 30.
Maximum temperature - all-time high [℃]	The sensor has a built-in function that logs the highest temperature that the sensor has been exposed to during the full operational lifetime. This parameter is updated once per hour and can be read from an IO-Link master.
Minimum temperature - all-time low [℃]	The sensor has a built-in function that logs the lowest temperature that the sensor has been exposed to during the full operational lifetime. This parameter is updated once per hour and can be read from an IO-Link master.
Maximum temperature since last power-up [℃]	The maximum registered temperature has been since startup. This value is not saved in the sensor.
Minimum temperature since last power-up [℃]	The minimum registered temperature has been since startup. This value is not saved in the sensor.
Current temperature [℃]	The current temperature of the sensor.
Detection counter [cycles]	The sensor logs every time the SSC1 change state. This parameter is updated once per hour and can be read from an IO-Link master.
Minutes above maximum temperature [min]	The sensor logs how many minutes the sensor has been operational above the maximum temperature for the sensor, the maximum number of minutes to be recorded is 2,147,483,647. This parameter is updated once per hour and can be read from an IO-Link master.
Minutes below minimum temperature [min]	The sensor logs how many minutes the sensor has been operational below the minimum temperature for the sensor, the maximum number of minutes to be recorded is 2,147,483,647. This parameter is updated once per hour and can be read from an IO-Link master.

Notes:

Switch Output Configuration

The sensor measures five different physical values. These values can be independently adjusted and used as source for the Switching Output 1 or 2. An external input can also be selected for SO2. After selecting one of these sources, it is possible to configure the output of the sensor with an IO-Link master following the steps that are shown in the Switching Output configuration (Figure 3).

Once the sensor has been disconnected from the master, it switches to the SIO mode and keeps the last configuration setting.

Figure 3 - Switch Output Configuration

Item	Description
1	Sensor front (see page 19)
2	Input selector (see page 21)
3	Logic function block (see page 21)
4	Timer (see page 22)
5	Output inverter (see page 23)
6	Output stage mode (see page 23)

Sensor Front

When an object (solid or liquid) approaches the face of the sensor, the capacitance of the detecting circuit is influenced and the sensor output changes its status.

SSC (Switching Signal Channel)

For presence (or absence of presence) detection of an object in front of the face of the sensor, the following settings are available: SSC1 or SSC2.

The setpoints can be set from 0…10,000 units that represent the change of capacitance of the detecting circuit. The higher the value, the closer the target appears to the sensing face of the sensor, also a higher dielectric value of the target increases the value. For example, a metal target has a higher dielectric value than a plastic target.

Switchpoint Mode

The switchpoint mode setting can be used to create more advanced output behavior. The following switchpoint modes can be selected for the switching behavior of SSC1 and SSC2.

Mode	Description
Disabled	SSC1 or SSC2 can individually be disabled, which also disables the output if it is selected in the input selector (the logic value is always 0).
Single-point mode	The switching information changes, when the measurement value passes the threshold that is defined in setpoint SP1, with rising or falling measurement values, considering the hysteresis.
Two-point mode	The switching information changes when the measurement value passes the threshold that is defined in setpoint SP1. This change occurs only with rising measurement values. The switching information also changes when the measurement value passes the threshold that is defined in setpoint SP2. This change occurs only with falling measurement vales. Hysteresis is not considered in this case.
Window mode	The switching information changes, when the measurement value passes the thresholds that are defined in setpoint SP1 and setpoint SP2, with rising or falling measurement values, considering the hysteresis.

Hysteresis Settings

In SSC1 and SSC2 - single point mode and in windows mode the hysteresis can be set 1...100% of the actual switching value.

(SP2 + Hysteresis < SP1) & (SP1 + hysteresis < Sensing range upper limit)

Margin Alarm 1 and 2

The safe limit between when the sensing output is switching and the value at where the sensor can detect safely even with a slight buildup of dust can be set.

Temperature Alarm (TA)

The sensor constantly monitors the internal temperature in the front part of the sensor. With the temperature alarm setting, it is possible to get an alarm from the sensor if temperature thresholds are exceeded.

The temperature alarm has two separate values, one for setting the maximum temperature and one for setting the minimum temperature.

It is possible to read the temperature of the sensor via the acyclic IO-Link parameter data.

External Input

The output 2 (SO2) can be configured as an external input that allows external signals to be feed into the sensor from a second sensor, a PLC, or directly from the machine output.

Input Selector

This function block allows you to select any of the signals from the sensor front to the Channel A or B.
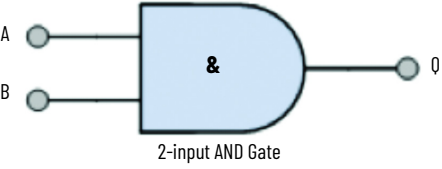
Channel A and B: Can select between SSC1, SSC2, margin alarm 1, margin alarm 2, temperature alarm, and external input.
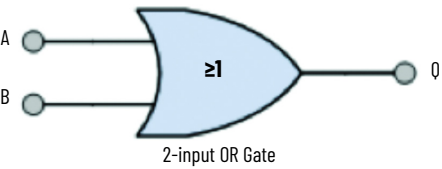
Logic Function Block

In the logic function block, the selected signals from the input selector can be added a logic function directly without using a PLC - which makes decentral decisions possible.

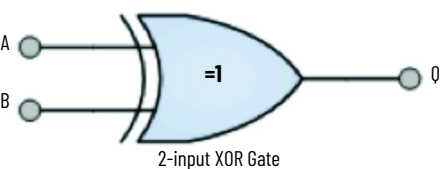The logic functions available are AND, OR, XOR, and gated SR-FF.

AND Function

Symbol	Truth Table		
	A	B	Q
	0	0	0
	0	1	0
	1	0	0
	1	1	1
Boolean Expression Q = A.B	Read as A AND B gives Q		

2-input AND Gate

OR Function

Symbol	Truth Table		
	A	B	Q
	0	0	0
	0	1	1
	1	0	1
	1	1	1
Boolean Expression Q = A + B	Read as A OR B gives Q		

2-input OR Gate

XOR Function

Symbol	Truth Table		
	A	B	Q
	0	0	0
	0	1	1
	1	0	1
	1	1	0
Boolean Expression Q = A + B	A OR B but NOT BOTH gives Q		

2-input XOR Gate

Gated SR-FF Function

The function is designed to function as filling or emptying function with only two interconnected sensors.

Symbol	Truth Table		
	A	**B**	**Q**
	0	0	0
	0	1	X [1]
	1	0	X [1]
	1	1	1

(1)   X = No changes to the output.

Timer

This parameter can be set individually for Out1 and Out2.

The Timer allows you to introduce different timer functions by editing the three timer parameters:

- Timer mode
- Timer scale
- Timer value

Timer Mode

Selects which type of timer function is introduced on the Switching Output. Any one of the following is possible:

Mode	Description
Disabled	This option disables the timer function no matter how timer scale and timer delay are configured.
Turn On delay (T-on)	The activation of the switching output is generated after the actual sensor actuation. Presence of target
Turn Off delay (T-off)	The deactivation of the switching output is delayed compared to the time of removal of the target in the front of the sensor. Presence of target
Turn ON and Turn Off delay (T_{on} and T_{off})	When selected both the T_{on} and the T_{off} delays are applied to the generation of the switching output. Presence of target

Mode	Description
One shot leading edge	Each time a target is detected in front of the sensor, the switching output generates a pulse of constant length on the leading edge of the detection.
One shot trailing edge	Similar in function to the one-shot leading-edge mode, but in this mode the switching output is changed on the trailing edge of the activation.
Timer scale	Parameter defines if the delay specified in the Timer delay is in milliseconds, seconds, or minutes.
Timer value	Parameter defines the actual duration of the delay. The delay can be set to any integer value from 1... 32,767.

Output Inverter

This function allows you to invert the operation of the switching output between normally open and normally closed.

> **IMPORTANT** The recommended function is found in the parameters under 64 (0x40) sub index 8 (0x08) for SO1 and 65 (0x40) sub index 8 (0x08) for SO2 does not have any negative influence on the Logic functions or the timer functions of the sensor as it is added after those functions.

> ⚠️ **ATTENTION:** We do not recommend using the Switching logic function that is found under 61 (0x3D) sub index 1 (0x01) for SSC1 and 63 (0x3D) sub index 1 (0x01) for SSC2 as they have a negative influence on the logic or timer functions.
> For example, this function turns an ON-delay into an OFF-delay as it is added for the SSC1 and SSC2 and not only for the SO1 and SO2.

Output Stage Mode

In this function block, you can select how the switching outputs operate:

- SO1: Disabled, NPN, PNP, or Push-Pull configuration.
- SO2: Disabled, NPN, PNP, Push-Pull, External input (Active high/Pull-down), External input (Active low/pull up), or External Teach input.

Notes:

Teach Procedure

External Teach (Teach-by-wire)

IMPORTANT	This function works in single point mode and only for SP1 in SSC1.

The Teach-by-wire must be first configured with an IO-Link master:

1. Select 2=Teach by wire in the Selection of local/remote adjustment parameters 68 (0x44).
2. Select 1=Single Point Mode is already selected in SSC1 Configuration 61(0x3D), "Mode 1" 2(0x02) (this value should already be set as default).
3. Select 6=Teach-In (Active High) in Chanel 2 (SO2) 65 (0x41) sub index 1 (0x01).

Teach-by-wire Procedure

1. Place the target in front of the sensor and connect the teach-by-wire input (pin 2 white wire) to V+ (pin 1 Brown wire). The yellow status indicator flashes at a 1 Hz rate (ON 100 ms and OFF 900 ms).
2. Within 3…6 seconds the wire must be disconnected, and the yellow status indicator flashes at a 1 Hz rate (ON 900 ms and OFF 100 ms).
3. After a successful teach, the yellow status indicator flashes at a 2 Hz rate (ON 250 ms and OFF 250 ms).

IMPORTANT	If the Teach procedure is to be canceled, do not remove the wire after 3…6 second. Keep the connection for 12 sec until the yellow status indicator flashes at a 10 Hz rate (On 50 ms and off 50 ms).

Teach from IO-Link Master

To enable teach from the IO-Link master, first disable the trimmer input:

1. Select 0=Disabled in the Selection of local/remote adjustment parameters 68 (0x44).
2. The individual team commands can be written to index 2.

Single-point Mode Procedure

Select the Switching channel to be taught:

1. Select: 1=SSC1 or 2=SSC2 in the Teach-in Select 58(0x3A) or 255 = All SSC.
2. Change the Hysteresis if requested for SSC1 or SSC2.
   - SSC1 configuration 61(0x3D) Hysteresis 3(0x03).
   - SSC2 configuration 62(0x3D) Hysteresis 3(0x03).

IMPORTANT	It is not recommended to change the hysteresis below the values stated in the SSC parameter list (see).

Teach Command Sequence	Description
Single-value	1. #65 SP1 Single value teach 2. #64 Teach apply (optional command)
Dynamic	1. #71 SP1 dynamic teach start 2. #72 SP1 dynamic teach stop 3. #64 Teach apply (optional command)
Two-value	1. #67 SP1 two value teach TP1 2. #68 SP1 two value teach TP2 3. #64 Teach apply (optional command)

Two-point Mode Procedure

Teach Command Sequence	Description
Two-value	1. #67 SP1 two value teach TP1 2. #68 SP1 two value teach TP2 3. #64 Teach apply (optional command) 4. #69 SP2 two value teach TP1 5. #70 SP2 two value teach TP2 6. #64 Teach apply (optional command)
Dynamic teach	1. #71 SP1 dynamic teach start 2. #72 SP1 dynamic teach stop 3. #73 SP2 dynamic teach start 4. #74 SP2 dynamic teach stop 5. #64 Teach apply (optional command)

Windows Mode Procedure

Teach Command Sequence	Description
Single-value	1. #65 SP1 Single value teach 2. #66 SP2 Single value teach 3. #64 Teach apply (optional command)
Dynamic	1. #71 SP1 dynamic teach start 2. #72 SP1 dynamic teach stop 3. #73 SP2 dynamic teach start 4. #74 SP2 dynamic teach stop 5. #64 Teach apply (optional command)

Notes:

Sensor-specific Adjustable Parameters

Besides the parameters that are directly related to output configuration, the sensor also has various internal parameters useful for setup and diagnostics.

Local or Remote Adjustment Selection

It is possible to select how to set of the sensing distance by either select the Trimmer, Teach-by-wire using the external input of the sensor, or to disable the potentiometer to make the sensor tamper-proof.

Process Data and Variables

When the sensor is operated in IO-Link mode, you have access to the cyclic Process Data Variable.

By default the process data shows the following parameters as active: 16-bit Analog value, Switching Output1 (SO1), and Switching Output 2 (SO2).

The following parameters are set as Inactive: SSC1, SSC2, DA1, DA2, TA, SC.

However, by changing the Process Data Configuration parameter, you can also decide to enable status of the inactive parameters. This way several states can be observed in the sensor simultaneously.

Byte 0	31	30	29	28	27	26	25	24
	MSB							
Byte 1	23	22	21	20	19	18	17	16
								LSB
Byte 2	15	14	13	12	11	10	9	8
			SC	TA	DA2	DA1	SSC2	SSC1
Byte 3	7	6	5	4	3	2	1	0
							SO2	SO1

Sensor Application Setting

The sensor has three presets depending on the application:

Preset	Description
Full scale range	The setpoints of the sensor can be adjusted at full scale and the sensing speed are set to maximum.
Liquid level	This preset is used for slow-moving objects with a high dielectric value such as detection of water-based liquids. When this function is selected, the teach and potentiometer settings are optimized to high-range scaling. In this mode, the Filter Scaler is set to 100.
Plastic pellets	This preset is used for slow-moving objects with a low dielectric value such as detection of plastic pellets. When this function is selected, the teach and potentiometer settings are optimized to low-range scaling. In this mode, the Filter Scaler is set to 100.

Temperature Alarm Threshold

The temperature where the temperature alarm activates can be changed for the maximum and minimum temperature. This setting means that the sensor gives an alarm in the maximum or minimum temperature is exceeded. The temperatures can be set between -50...+150 $^{\circ}$C (-58...+302 $^{\circ}$F). The default factory settings are:

- Low threshold = -30 $^{\circ}$C (-22 $^{\circ}$F)
- High threshold = +120 $^{\circ}$C (+248 $^{\circ}$F)

Safe Limits

The sensor has a built-in safety margin that helps adjust the sensing up to the setpoints with an additional safe margin. The factory settings are set to two times the standard hysteresis of the sensor.

Event Configuration

Temperature events that are transmitted over the IO-Link interface are turned off by default in the sensor. If you want to get information about critical temperatures detected in the sensor application, this parameter allows you to enable or disable the following events:

Event	Description
Temperature fault event	The sensor detects temperature outside the specified operating range.
Temperature over-run	The sensor detects temperatures higher than set in the Temperature Alarm threshold.
Temperature under-run	The sensor detects temperatures lower than set in the Temperature Alarm threshold.
Short-circuit	The sensor detects if the sensor output is short-circuit.
Maintenance	The sensor detects if maintenance is needed like the sensor need cleaning.

Quality of Run (QoR)

The quality of run value informs about the actual sensing performance compared to the setpoints of the sensor (the higher the value, the better the quality of detection). The value for QoR can vary to any value from 0...255%. The QoR value is updated for every detection cycle.

Table 3 - QoR Examples

QoR Values	Definitions
>150%	Excellent sensing conditions, the sensor is not expected to require any maintenance issues.
100%	Good sensing conditions, the sensor performs as well as when the setpoints were taught or setup manually with a safety margin of two times the standard hysteresis. • Long-term reliability is expected for all environmental conditions. • Maintenance is not expected to be required.
50%	Average sensing conditions. • Short-term reliability and maintenance are expected due to environmental conditions. • Reliable detection can be expected with restricted environmental influence.
0%	Poor to unreliable sensing conditions are expected.

Quality of Teach (QoT)

The quality if teach value informs about how well the actually teach procedure was done, meaning the margin between the actual setpoints and the environmental influence of the sensor. The value for QoT can vary to any value from 0...255%. The QoT value is updated after every teach procedure.

Table 4 - QoT Examples

QoT Value	Definitions
> 150%	Excellent teach conditions, the sensor is not expected to require any maintenance issues
100%	Good teach conditions, the sensor has been taught with a safety margin of two times the standard hysteresis. • Long-term reliability is expected for all environmental conditions. • Maintenance is not expected to be required.
50%	Average teach conditions. • Short-term reliability and maintenance are expected due to environmental conditions. • Reliable detection can be expected with restricted environmental influence.
0%	Poor teach result. • Unreliable sensing conditions are expected (for example, too small of a measuring margin between the target and the surroundings).

Filter Scaler

This function can increase the immunity towards unstable targets and electromagnetic disturbances. The value can be set from 1...255, the default factory settings is 1. A filter setting of 1 gives the maximum sensing frequency and a setting of 255 gives the minimum sensing frequency.

Status Indication

This parameter allows you to disable the status indication in the sensor if you do not want the status indicators to illuminate in your application.

Parameter Values

Device Parameters

Parameter Name	Index Dec (Hex)	Access	Default value	Data range	Data Type	Length
Vendor Name	16 (0x10)	Read-only	Allen Bradley	–	StringT	20 bytes
Vendor Text	17 (0x11)	Read-only	www.ab.com/sensors	–	StringT	26 bytes
Product Name	18 (0x12)	Read-only	(Sensor name) For example, 875L-N25CP30-D4	–	StringT	20 bytes
Product ID	19 (0x13)	Read-only	For example, 875L-N25CP30-D4 Series A	–	StringT	13 bytes
Product Text	20 (0x14)	Read-only	Capacitive sensor. M30m25mm Sn Unshielded...	–	StringT	30 bytes
Serial Number	21 (0x15)	Read-only	(Unique serial number) for example, LU23123610003	–	StringT	13 bytes
Hardware Revision	22 (0x16)	Read-only	(Hardware revision) For example, v01.00	–	StringT	6 bytes
Firmware Revision	23 (0x17)	Read-only	(Software version) For example, v01.00	–	StringT	6 bytes
Application-Specific Tag	24 (0x18)	Read/write	***	Any string up to 32 characters	StringT	32 bytes, max
User Tag1	25 (0x19)	Read/write	***	Any string up to 32 characters	StringT	32 bytes, max
User Tag2	26 (0x1A)	Read/write	***	Any string up to 32 characters	StringT	32 bytes, max
Error Count	32 (0x20)	Read-only	0	0...65,535	IntegerT	16 bit
Device Status	36 (0x24)	Read-only	0 = Device is operating properly	0 = Device is operating properly 1 = Maintenance required 2 = Out-of-specification 3 = Functional-Check 4 = Failure	UIntegerT	8 bit
Maintenance Required	–	Read-only	–	–	OctetStringT	3 bytes
Process-DataInput	40 (0x28)	Read-only	–	–	IntegerT	32 bit

SSC Parameters

Parameter Name	Index Dec (Hex)	Access	Default value	Data range	Data Type	Length
Teach-In Select	58 (0x3A)	Read/write	1 = Switching Signal Channel 1	0 = Default channel 1 = Switching Signal Channel 1 2 = Switching Signal Channel 2 255 = All SSC	UIntegerT	8 bit
Teach-In Result	59 (0x3B)	–	–	–	RecordT	8 bit
Teach-in State	1 (0x01)	Read-only	0 = Idle	0 = Idle 1 =Success 4 = Wait for command 5 = Busy 7 = Error	–	–
SP1 TP1 Result	2 (0x02)	Read-only	0 = Not OK	0 = Not OK 1 = OK	–	–
SP1 TP2 Result	3 (0x03)	Read-only	0 = Not OK	0 = Not OK 1 = OK	–	–
SP2 TP1 Result	4 (0x04)	Read-only	0 = Not OK	0 = Not OK 1 = OK	–	–
SP2 TP2 Result	5 (0x05)	Read-only	0 = Not OK	0 = Not OK 1 = OK	–	–
SSC1 Parameter (Switching Signal Channel)	60 (0x3C)	–	–	–	–	–
Setpoint 1 (SP1)	1 (0x01)	Read/write	1000	0...10,000	IntegerT	16 bit
Setpoint 2 (SP2)	2 (0x02)	Read/write	10,000	0... 10,000	IntegerT	16 bit
SSC1 Configuration (Switching Signal Channel)	61 (0x3D)	–	–	–	–	–
Logic 1	1 (0x01)	Read/write	0 = High active	0 = High active 1 = Low active	UIntegerT	8 bit
Mode 1	2 (0x02)	Read/write	1 = Single Point Mode	0 = Deactivated 1 = Single Point Mode 2 = Window Mode 3 = Two Point Mode	UIntegerT	8 bit
Hysteresis 1	3 (0x03)	Read/write	875L-M8xx18: 6% 875L-N12xx18: 15% 875L-M16xx30: 7% 875L-N25xx30: 10%	1...100	UIntegerT	16 bit
SSC2 Parameter	62 (0x3E)	–	–	–	–	–
Setpoint 1 (SP1)	1 (0x01)	Read/write	1000	0...10,000	IntegerT	16 bit
Setpoint 2 (SP2)	2 (0x02)	Read/write	10,000	0...10,000	IntegerT	16 bit
SSC2 Configuration	63 (0x3F)	–	–	–	UIntegerT	8 bit
Logic 2	1 (0x01)	Read/write	0 = High active	0 = High active 1 = Low active	UIntegerT	8 bit
Mode 2	2 (0x02)	Read/write	1 = Single Point Mode	0 = Deactivated 1 = Single Point Mode 2 = Window Mode 3 = Two Point Mode	UIntegerT	8 bit
Hysteresis 2	3 (0x03)	Read/write	875L-M8xx18: 6% 875L-N12xx18: 15% 875L-M16xx30: 7% 875L-N25xx30: 10%	1...100	UIntegerT	16 bit

Output Parameters

Parameter Name	Index Dec (Hex)	Access	Default value	Data range	Data Type	Length
Channel 1 (SO1)	64 (0x40)	–	–	–	–	–
Phy Mode	1 (0x01)	Read/write	1 = PNP output	0 = Disabled output 1 = PNP 2 = NPN 3 = Push-pull	UIntegerT	8 bit
Input selector 1	2 (0x02)	Read/write	1 = SSC 1	0 = Deactivated 1 = SSC 1 2 = SSC 2 3 = Margin Alarm 1 (DA1) 4 = Margin Alarm 2 (DA2) 5 = Temperature Alarm (TA) 6 = External logic input	UIntegerT	8 bit
Timer 1 - Mode	3 (0x03)	Read/write	0 = Disabled timer	0 = Disabled timer 1 = T-on delay 2 = T-off delay 3 = T-on/T-off delay 4 = One-shot leading edge 5 = One-shot trailing edge	UIntegerT	8 bit
Timer 1 - Scale	4 (0x04)	Read/write	0 = Milliseconds	0 = Milliseconds 1 = Seconds 2 = Minutes	UIntegerT	8 bit
Timer 1 - Value	5 (0x05)	Read/write	0	0...32,767	IntegerT	16 bit
Logic function 1	7 (0x07)	Read/write	0 = Direct	0 = Direct 1 = AND 2 = OR 3 = XOR 4 = Gated SR-FF	UIntegerT	8 bit
Polarity 1	8 (0x08)	Read/write	0 = Not inverted (N.O.)	0 = Not inverted (Normal Open) 1 = Inverted (Normal Closed)	UIntegerT	8 bit
Channel 2 (SO2)	65 (0x41)	–	–	–	–	–
Phy Mode 2	1 (0x01)	Read/write	1 = PNP output	0 = Disabled output 1 = PNP 2 = NPN 3 = Push-pull 4 = Digital logic input (Active high/ Pull-down) 5 = Digital logic input (Active low/ Pull-up) 6 = Teach-in (Active high)	UIntegerT	8 bit
Input selector 2	2 (0x02)	Read/write	1 = SSC 1	0 = Deactivated 1 = SSC 1 2 = SSC 2 3 = Margin Alarm 1 (DA1) 4 = Margin Alarm 2 (DA2) 5 = Temperature Alarm (TA) 6 = External logic input	UIntegerT	8 bit
Timer 2 - Mode	3 (0x03)	Read/write	0 = Disabled timer	0 = Disabled timer 1 = T-on delay 2 = T-off delay 3 = T-on/T-off delay 4 = One-shot leading edge 5 = One-shot trailing edge	UIntegerT	8 bit
Timer 2 - Scale	4 (0x04)	Read/write	0 = Milliseconds	0 = Milliseconds 1 = Seconds 2 = Minutes	UIntegerT	8 bit
Timer 2 - Value	5 (0x05)	Read/write	0	0...32,767	IntegerT	16 bit
Logic function 2	7 (0x07)	Read/write	0 = Direct	0 = Direct 1 = AND 2 = OR 3 = XOR 4 = Gated SR-FF	UIntegerT	8 bit
Polarity 2	8 (0x08)	Read/write	1 = Inverted (Normal Closed)	0 = Not inverted (Normal Open) 1 = Inverted (Normal Closed)	UIntegerT	8 bit

Sensor-specific Adjustable Parameters

Parameter Name	Index Dec (Hex)	Access	Default value	Data range	Data Type	Length
Selection of local/remote adjustment [1]	68 (0x44)	Read/write	1 = Trimmer input	0 = Disabled 1 = Trimmer input 2 = Teach-by-wire	UintegerT	8 bit
Trimmer value	69 (0x45)	Read-only	–	10 ... 10 000	–	–
Process data configuration	70 (0x46)	Read/write	–	–	RecordT	16 bit
Analog value	1 (0x01)	Read/write	1 = Enabled	0 = Disabled 1 = Enabled	–	–
Switching Output 1	2 (0x02)	Read/write	1 = Enabled	0 = Disabled 1 = Enabled	–	–
Switching Output 2	3 (0x03)	Read/write	1 = Enabled	0 = Disabled 1 = Enabled	–	–
Switching Signal Channel 1	4 (0x04)	Read/write	0 = Disabled	0 = Disabled 1 = Enabled	–	–
Switching Signal Channel 2	5 (0x05)	Read/write	0 = Disabled	0 = Disabled 1 = Enabled	–	–
Margin alarm 1	6 (0x06)	Read/write	0 = Disabled	0 = Disabled 1 = Enabled	–	–
Margin alarm 2	7 (0x07)	Read/write	0 = Disabled	0 = Disabled 1 = Enabled	–	–
Temperature alarm	8 (0x08)	Read/write	0 = Disabled	0 = Disabled 1 = Enabled	–	–
Short-circuit	9 (0x09)	Read/write	0 = Disabled	0 = SC Inactive 1 = SC Active	–	–
Sensor Application Pre-set [2]	71 (0x47)	Read/write	0 = Full scale range	0 = Full scale range 1 = Liquid level 2 = Plastic pellets	UintegerT	8 bit
Temperature Alarm Threshold [3]	72 (0x48)	Read/write	–	–	RecordT	30 bit
High Threshold	1 (0x01)	Read/write	120	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Low Threshold	2 (0x02)	Read/write	-30	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Safe ON/OFF Limits [4]	73 (0x49)	Read/write	–	–	RecordT	16 bit
SSC 1 - Safe limit	1 (0x01)	Read/write	2 x standard hysteresis	0...100	UintegerT	8 bit
SSC 2 - Safe limit	2 (0x02)	Read/write	2 x standard hysteresis	0...100	UintegerT	8 bit
Event Configuration [5]	74 (0x4A)	Read/write	–	–	RecordT	16 bit
Maintenance (0x8C30)	1 (0x01)	Read/write	0 = Maintenance Notification - Inactive	0 = Notification event Inactive 1 = Notification event Active	–	–
Temperature fault event (0x4000)	2 (0x02)	Read/write	0 = Temperature fault Error event - Inactive	0 = Error event Inactive 1 = Error event Active	–	–
Temperature over-run (0x4210)	3 (0x03)	Read/write	0 = Temperature over-run Warning event - Inactive	0 = Warning event Inactive 1 = Warning event Active	–	–
Temperature under-run (0x4220)	4 (0x04)	Read/write	0 = Temperature under-run Warning event - Inactive	0 = Warning event Inactive 1 = Warning event Active	–	–
Short circuit (0x7710)	5 (0x05)	Read/write	0 = Short circuit Error event - Inactive	0 = Error event Inactive 1 = Error event Active	–	–
Quality of Teach [6]	75 (0x4B)	Read-only	–	0...255	UintegerT	8 bit
Quality of Run [7]	76 (0x4D)	Read-only	–	0...255	UintegerT	8 bit
Filter Scaler [8]	77 (0x4D)	Read/write	1	1...255	UintegerT	8 bit
LED Indication [9]	78 (0x4E)	Read/write	1 = Enabled	0 = Disabled 1 = Enabled	BooleanT	8 bit

(1)   See Local or Remote Adjustment Selection on page 29.
(2)   See Sensor Application Setting on page 29.
(3)   See Temperature Alarm Threshold on page 29.
(4)   See Safe Limits on page 30.
(5)   See Event Configuration on page 30.
(6)   See Quality of Teach (QoT) on page 30.
(7)   See Quality of Run (QoR) on page 30.
(8)   See Filter Scaler on page 30.
(9)   See Status Indication on page 30.

Diagnosis Parameters

Parameter Name	Index Dec (Hex)	Access	Default value	Data range	Data Type	Length
Operating Hours	201 (0xC9)	Read-only	0	0...2,147,483,647 [h]	IntegerT	32 bit
Number of Power Cycles	202 (0xCA)	Read-only	0	0...2,147,483,647	IntegerT	32 bit
Maximum temperature - All time high	203 (0xCB)	Read-only	0	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Minimum temperature - All time low	204 (0xCC)	Read-only	0	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Maximum temperature since power up	205 (0xCD)	Read-only	–	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Minimum temperature since power up	206 (0xCE)	Read-only	–	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Current temperature	207 (0xCF)	Read-only	–	-50...+150 °C (-58...+302 °F)	IntegerT	16 bit
Detection counter SSC1	210 (0xD2)	Read-only	–	0...2,147,483,647	IntegerT	32 bit
Minutes above Maximum Temperature	211 (0xD3)	Read-only	–	0...2,147,483,647 [min]	IntegerT	32 bit
Minutes below Minimum Temperature	212 (0xD4)	Read-only	–	0...2,147,483,647 [min]	IntegerT	32 bit
Maintenance event counter	213 (0xD5)	Read-only	0	0...2,147,483,647	IntegerT	32 bit
Download counter	214 (0xD6)	Read-only	0	0...65,536	UIntegerT	16 bit
Event Configuration	74 (0x4A)	Read/write	–	–	RecordT	16 bit
Maintenance (0x8C30)	1 (0x01)	Read/write	0 = Maintenance Notification - Inactive	0 = Notification event Inactive 1 = Notification event Active	–	–
Temperature fault event (0x4000)	2 (0x02)	Read/write	0 = Temperature fault Error event - Inactive	0 = Error event Inactive 1 = Error event Active	–	–
Temperature over-run (0x4210)	3 (0x03)	Read/write	0 = Temperature over-run Warning event - Inactive	0 = Warning event Inactive 1 = Warning event Active	–	–
Temperature under-run (0x4220)	4 (0x04)	Read/write	0 = Temperature under-run Warning event - Inactive	0 = Warning event Inactive 1 = Warning event Active	–	–
Short circuit (0x7710)	5 (0x05)	Read/write	0 = Short circuit Error event - Inactive	0 = Error event Inactive 1 = Error event Active	–	–
Quality of Teach	75 (0x4B)	Read-only	–	0...255	UintegerT	8 bit
Quality of Run	76 (0x4D)	Read-only	–	0...255	UintegerT	8 bit
Filter Scaler	77 (0x4D)	Read/write	1	1...255	UintegerT	8 bit
LED Indication	78 (0x4E)	Read/write	1 = Enabled	0 = Disabled 1 = Enabled	BooleanT	8 bit
Location Indicator	94 (0x5E)	Read/write	1 = Enabled	0 = Disabled 1 = Enabled	BooleanT	8 bit

Notes:

Notes:

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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