**User Manual**

**Saratoga-Sample**

Proximity and Ambient Light Sensor

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Vendor ID 0x01DE

Device ID 0x000002

IODD V1.1 Maxim-Saratoga-20140318-IODD1.1

IODD V1.0.1 Maxim-Saratoga-20140318-IODD1.0.1

IO-Link Version: V1.1, compatible to V1.0

SIO Mode supported: yes

PIN 2 supported: as digital out (2nd channel)

Technology inside:

µController Renesas RL78/G1A

Transceiver Maxim MAX 14821EWA+

Sensor Chip Maxim MAX 44000

Software TMG TE GmbH

Introduction:

The Maxim-Saratoga-Sample demonstrates a small size design for an IO-Link sensor based on components from Maxim and Renesas and software from TMG TE. As powerful features the sensor offers proximity and ambient light (green and IR) measurement.

Standard IO Mode:

Pin 4:

In SIO Mode Pin4 will show the switch point (same as pin 2).

Pin 2:

Can be configured (V\_Pin2Mode) to show the proximity or ambient light switch point or be controlled from the IO-Link master (e.g. controlled by the PLC).

If V\_Pin2Mode is set to “Digital Output”, Pin 2 bit from the process output bits will control state of Pin2. Pin2 function is available in SIO Mode and IO-Link Mode.

IO-Link Mode – Process Data:

Inputs (16 Bits):

Switch Points

Digital Out (bit 0)

Proximity or AMB switch point (bit 1)

Measurement Value (bit 2 to bit 15)

Outputs (8 Bits):

Pin 2 only active, if Pin2Mode = “digital output”

Device specific parameters:

V\_Gain (rw) parameter for gain of the ADC

V\_Time (rw) parameter for integration time of the ADC

V\_LEDCurrent (rw) LED current in proximity mode

V\_Pin2Mode (rw) configures Pin2 behaviour

Controlled by process data output bit or

by sensor switch point

V\_AmbLightTV (rw) teach value (ambient light mode)

V\_ProxTV (rw) teach value (proximity mode)

V\_Mode (rw) operating mode

proximity sensor

ambient light green channel

ambient light IR channel

V\_TrimGain (rw) use factory-programmed values

use values in trim registers

V\_GainTrimGreen (rw) trim green (-64 to 63)

V\_GainTrimIR (rw) trim IR (-256 to 255)

V\_GainTrimGreenFactory (ro) trim green factory programmed

V\_GainTrimIRFactory (ro) trim IR factory programmed

Commands

Teach proximity or ambient light sensor (system command 160)

Reset to factory settings (system command 130)