

1. Description

Color Sensor measures the color of visible light in terms of additive colors RGB (Red, Green, Blue). Typical applications include on-line color recognition, measurement, and inspection. Customers can apply their own optical attachments using a standard C-mount connection. Additional accessories, allowing of measuring color in different color spaces, are available. Sensor can be interfaced to a serial port, any digital I/O or controller via four single-ended signals, or the PC-compatible ISA or PCI add-on boards are available with respective software.

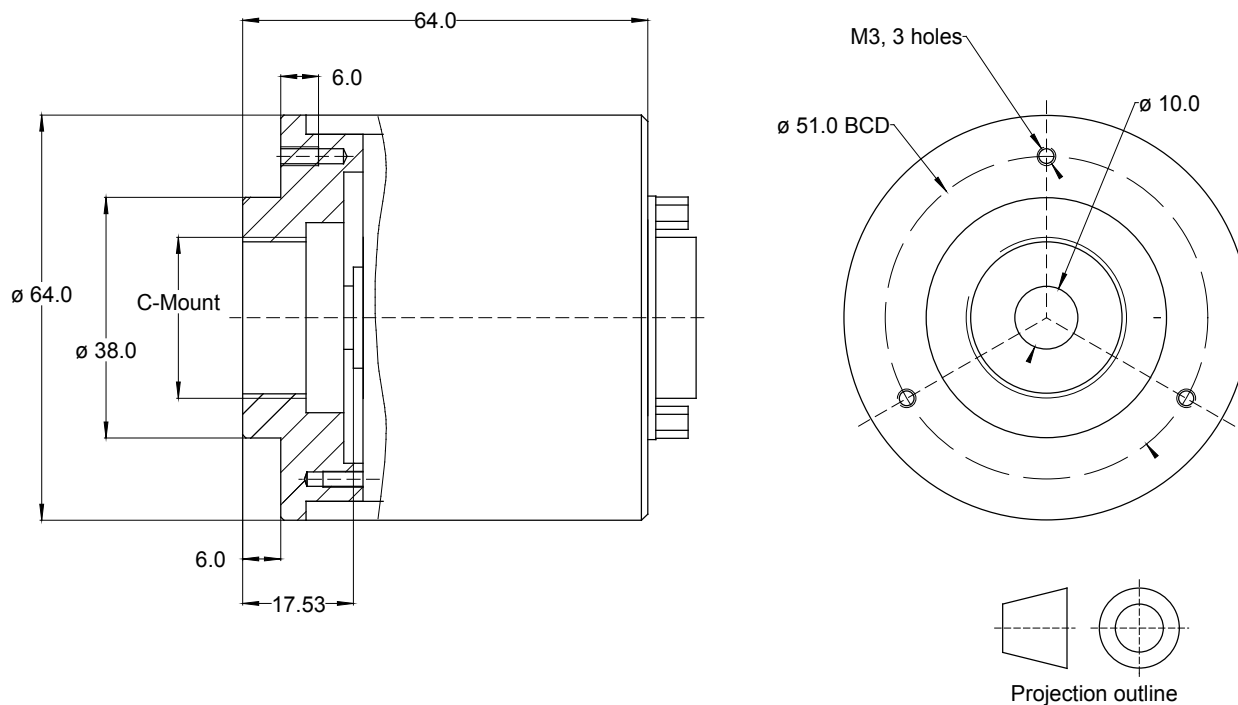
2. Optical specifications

Parameter	Value	Units
Spectral sensitivity range "Red"	590 .. 720	nm
Peak sensitivity wavelength "Red"	660	nm
Full width-half maximum "Red"	90	nm
Spectral sensitivity range "Green"	490 .. 600	nm
Peak sensitivity wavelength "Green"	540	nm
Full width-half maximum "Green"	70	nm
Spectral sensitivity range "Blue"	400 .. 540	nm
Peak sensitivity wavelength "Blue"	460	nm
Full width-half maximum "Blue"	90	nm
Input aperture diameter	10.0	mm
Spatial reception sensitivity	Cosine	-
Sensitivity (all channels)	35	A/W
Flange back length	0.69 (17.53)	in, (mm)

Sensor's input aperture is a 10mm-diameter diffuser made of a heat-absorbing glass to eliminate the influence of ambient near infra-red radiation.

3. Mechanical specifications

Parameter	Value	Units
Flange mounting diameter tolerance	-0.05 .. +0.00	mm
Flange mounting depth tolerance	-0.05 .. +0.00	mm
Weight	200	grams
Housing material	Aluminum, anodized flat black	-
Attachment thread	C-mount type (1"x32TPI)	-
Operating temperature range	-10 .. +60	Celsius deg
Protection	IP 54	-
Maximum allowable shock	3	G
Maximum allowable relative humidity	Up to 90% permissible	%
Output connector	9-pin D, male	-



4. Electrical specifications and interface

Connection (9-pin D-type connector, male)

Pin #	Function	Description
1	GND	Signal and power supply ground, isolated from the sensor's housing
2	+V	Power supply
3	NC	Not connected
4	NC	Not connected
5	NC	Not connected
6	Signal Latch IN	Input, initiates a measurement session
7	Data OUT	Output, serial synchronous data
8	Clock IN	Input, serial clock
9	Ready OUT	Output, rising edge denotes the end of a measurement session

Electrical parameters

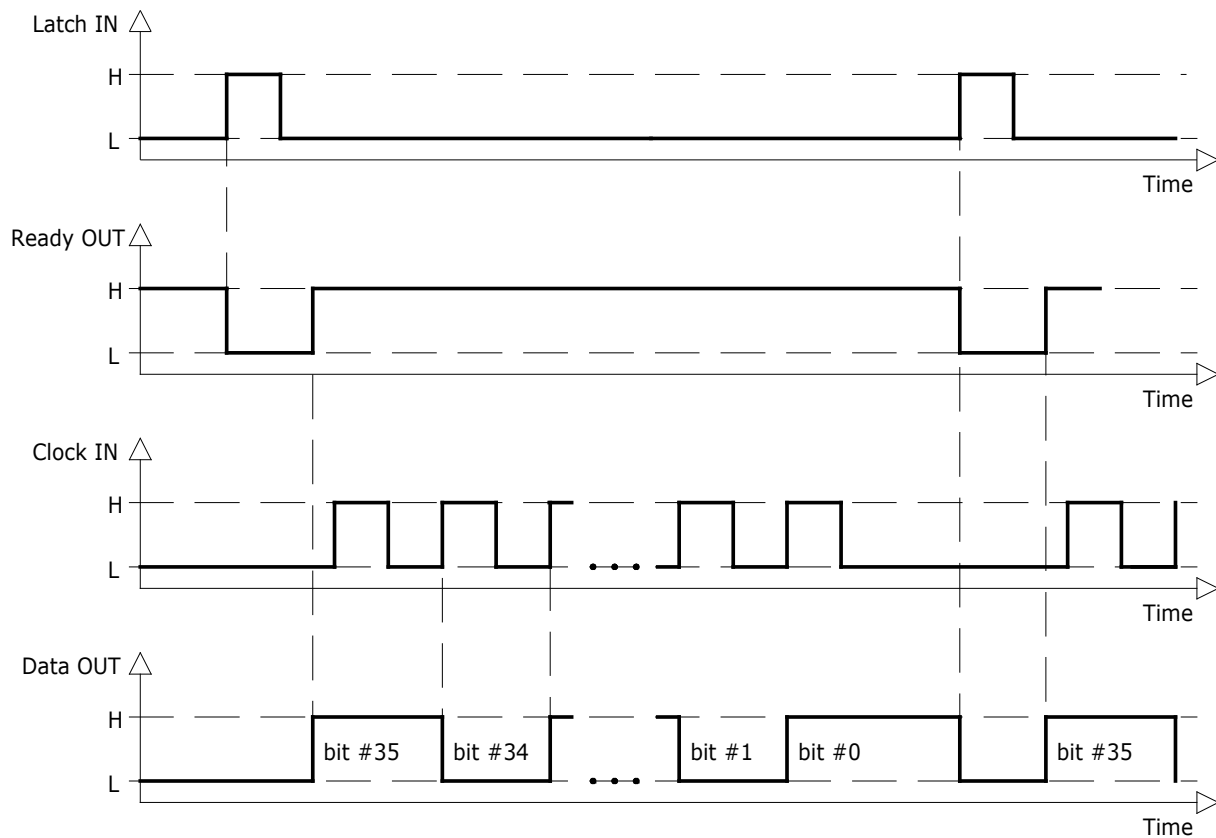
Parameter	Value	Units
Power supply +V	+5 ... +24	Volts
Electrical signal levels for data exchange	RS-232, single-ended	-
Total power consumption	0.3	Watts
Maximum cable length	40	ft
Storage temperature range	-20 .. +80	Celsius deg

Amplified RGB signals are separately processed by 12-bit ADCs.

Sensor reports 36 bits of information. First 12 bit of the data package is the intensity value of the "Red", the next 12-bit is the intensity value of the "Green", and the last 12-bit is the intensity value of the "Blue". The most significant bits for all values come first.

The Ready OUT can be omitted if the data are clocked out after approximately 2 msec. after the rising edge of the Latch IN signal.

Timing diagrams



To start a measurement, the Latch IN must be asserted high for at least 1 msec. Then data can be clocked out after the rising edge of the Ready OUT signal, at speed up to 500 kHz. Bits are shifted out on the rising edge of the Clock IN signal. First bit of the data package is asserted/valid after the rising edge of the Ready OUT.

5. Available accessories

1. Lambertian diffuser attachment
2. 2-degree CIE standard observer attachment
3. 10-degree CIE standard observer attachment
4. Device-to-PC interface kit. Includes:
 - EISA or PCI add-on board
 - Power/data cable
 - Data acquisition module for DOS - OBJ-file
 - Data acquisition module for Windows - DLL-unit

Notice

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