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ESTB1 & ESTS1 series sensors

Light color and intensity sensors / screwdriver tip recognizer.

Used in applications

Light sources color check.

RGB lamp checker.

Screwing tip recognizer.

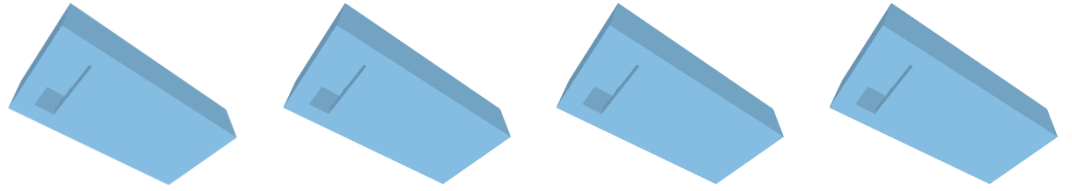
Light intensity.



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SENSOR TYPES



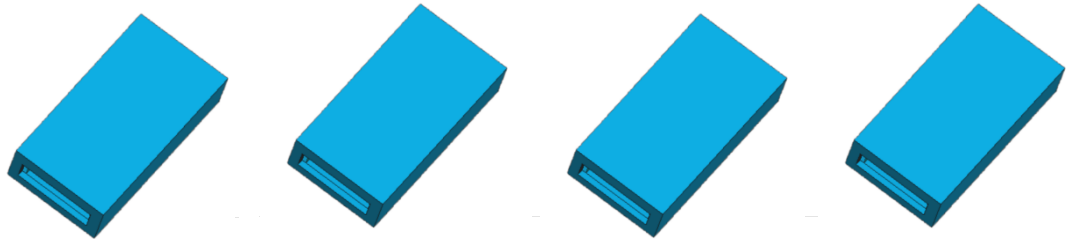
ESTS1PC02F

ESTS1PC05F

ESTS1NC02F

ESTS1NC05F

Type	Color sensor	Color sensor	Color sensor	Color sensor
Detection face	Front	Front	Front	Front
Switching output	PNP	PNP	NPN	NPN
Connection type	cable	cable	cable	cable
Cable length	2 m	5 m	2 m	5 m
Signals	Digital + RS232	Digital + RS232	Digital + RS232	Digital + RS232
Number of I/O	0/4	0/4	0/4	0/4
Accessories				
Programing cable	ESTPCUSB0	ESTPCUSB0	ESTPCUSB0	ESTPCUSB0



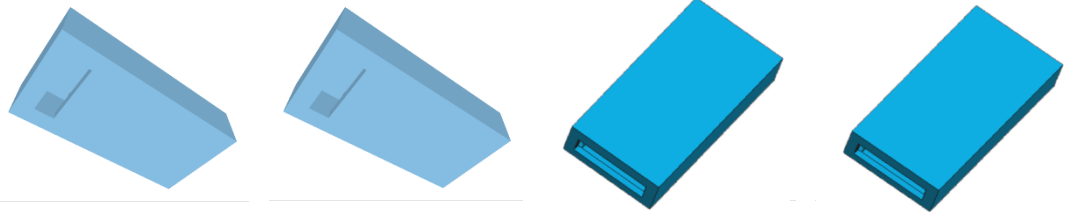
ESTS1PC02T

ESTS1PC05T

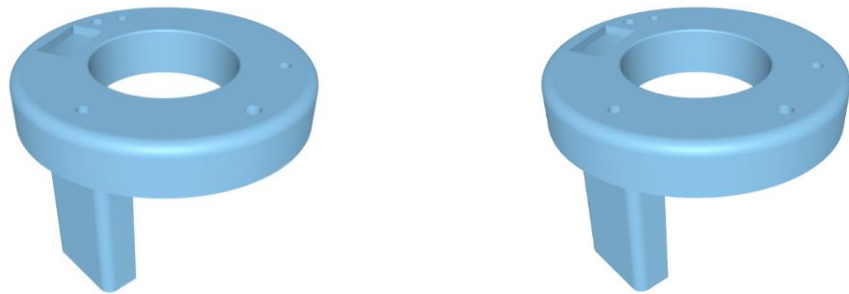
ESTS1NC02T

ESTS1NC05T

Type	Color sensor	Color sensor	Color sensor	Color sensor
Detection face	Top	Top	Top	Top
Switching output	PNP	PNP	NPN	NPN
Connection type	cable	cable	cable	cable
Cable length	2 m	5 m	2 m	5 m
Signals	Digital + RS232	Digital + RS232	Digital + RS232	Digital + RS232
Number of I/O	0/4	0/4	0/4	0/4
Accessories				
Programing cable	ESTPCUSB0	ESTPCUSB0	ESTPCUSB0	ESTPCUSB0



	ESTS1PM12F	ESTS1NM12F	ESTS1PM12T	ESTS1NM12T
Type	Color sensor	Color sensor	Color sensor	Color sensor
Detection face	Front	Front	Top	Top
Switching output	PNP	NPN	PNP	NPN
Connection type	M12 8-pole	M12 8-pole	M12 8-pole	M12 8-pole
Cable length	—	—	—	—
Signals	Digital + RS232	Digital + RS232	Digital + RS232	Digital + RS232
Number of I/O	0/4	0/4	0/4	0/4
Accessories				
Programing cable	ESTPCUSB1	ESTPCUSB1	ESTPCUSB1	ESTPCUSB1
Connection cable	ESTC2M12.2 ESTC2M12.5	ESTC2M12.2 ESTC2M12.5	ESTC2M12.2 ESTC2M12.5	ESTC2M12.2 ESTC2M12.5



	ESTB1P36	ESTB1N36
Type	Tool recognizer/tip recognizer	Tool recognizer/tip recognizer
Detection face	Inside	Inside
Switching output	PNP	NPN
Connection type	IDC Plug 8-pole	IDC Plug 8-pole
Cable length	—	—
Signals	Digital + RS232	Digital + RS232
Number of I/O	0/4	0/4
Accessories		
Programing cable	ESTPCUSB2	ESTPCUSB2
Connection cable	ESTC1IDC.2 ESTC1IDC.5	ESTC1IDC.2 ESTC1IDC.5
Mount bracket	ESTMB1.35 ESTMB1.45 ESTMB1.55	ESTMB1.35 ESTMB1.45 ESTMB1.55
Screw tip	ESTG3.20.15GN(BL/PU/RD/OR/YE/WT/BK)	ESTG3.20.15GN(BL/PU/RD/OR/YE/WT/BK)
Set screw tip	ESTG3.20.15/6x2 (4x4)	ESTG3.20.15/6x2 (4x4)

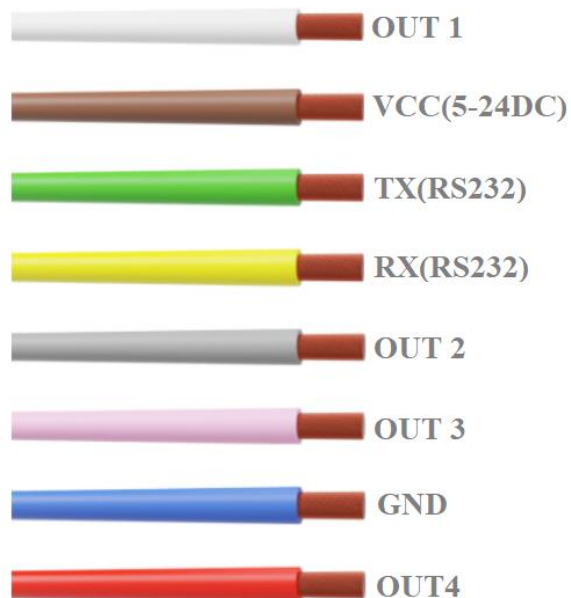
Electrical characteristics

Ratings and Specifications

Power supply voltage	5-24 VDC
Current consumption	30mA max
Control output	Output voltage = power supply voltage 5-24V DC, Load current : 50 mA max
Protection circuits	Power supply reverse polarity
Response time	0.1 – 6 sec depending of settings
Ambiental temperature	Operating: -25 to 55 °C (with no condensation) Storage: -40 to 60 °C (with no condensation)
Ambiental humidity	Operating: 35% to 85 % (with no condensation) Storage: 35% to 90 % (with no condensation)
Materials	Case: ABS/PMMA Lens: Polycarbonate/acrylic
Weight	Approx. 35g
Degree of protection	IEC IP 40(ESTB1-series), IP 54(ESTS1-series)

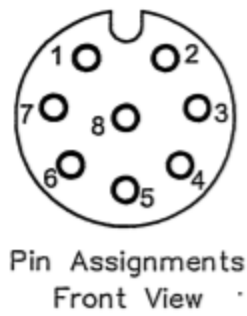
Wiring ESTS1xCxxx

Cable with color code acc. to DIN 47100, 8x0.14mm



Wiring ESTS1xMxxx

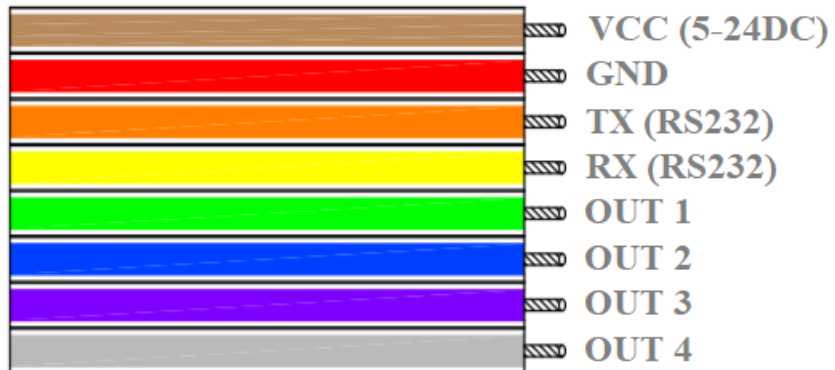
M12 female connector with 8 poles



- 1 - RX (RS232)
- 2 - VCC (5-24DC)
- 3 - OUT 3
- 4 - OUT 2
- 5 - OUT 1
- 6 - TX (RS232)
- 7 - GND
- 8 - OUT 4

Wiring ESTB1xxx

IDC Plug 8-pole with multi color flat cable

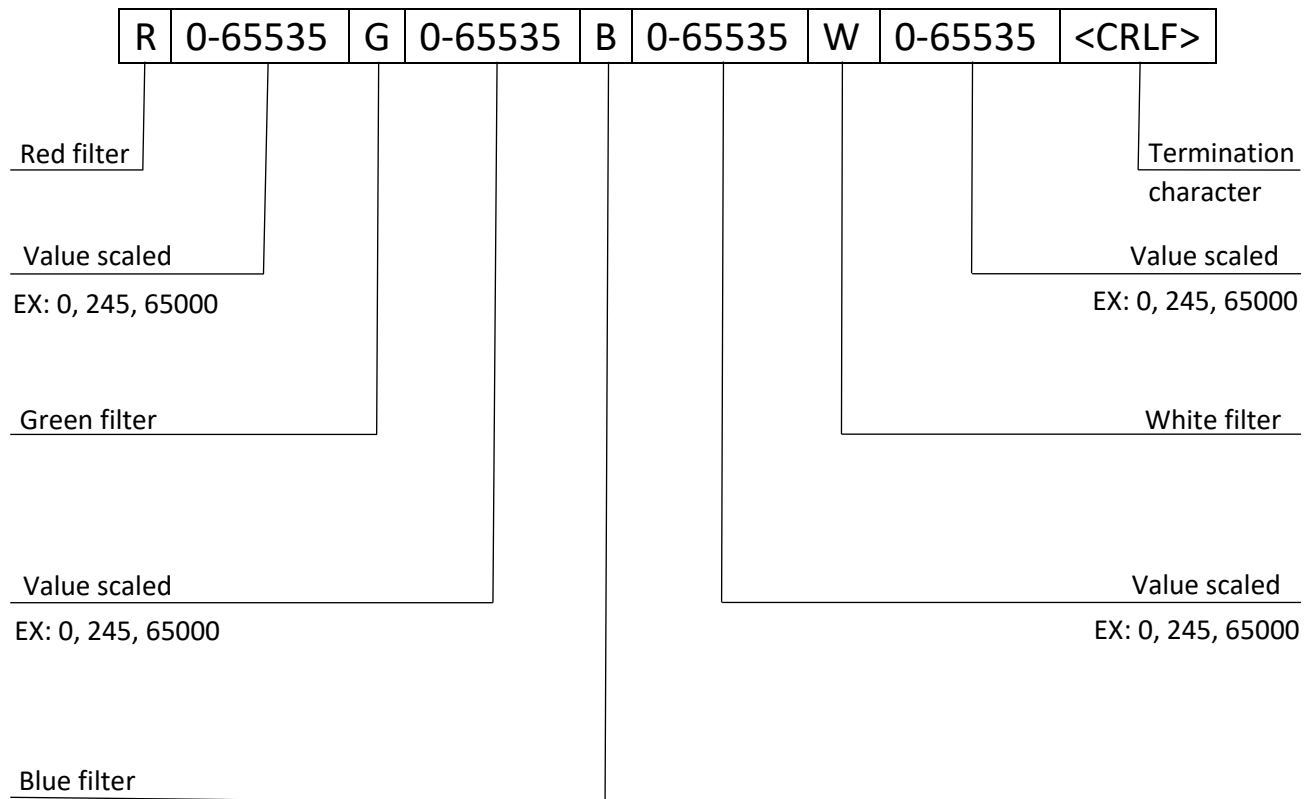


Programing

The sensor come in a preset mode with the next features:

- cyclically read and transmit on RS232 at a refresh time 0.1 sec
- With light OFF, only a short blink at power up as startup sign
- RS232 Trigger command "trigger"
- RS232: Data size = 8, Parity = none, Stopbits = 1, Handshake = OFF
- RS232 transmission on 9600 baud rate with the next string

characteristics:



Examples: R5G10B150W2000<CRFL>
 R11111G22222B33333W44444<CRFL>

Also the sensor have a PC software which make the setup easier and offer the backup/restore facility. This software is called EST-EYE and can be downloaded from our official webpage <https://Eagle-STech.com/>

The connection between PC and sensor can be done in few procedures:

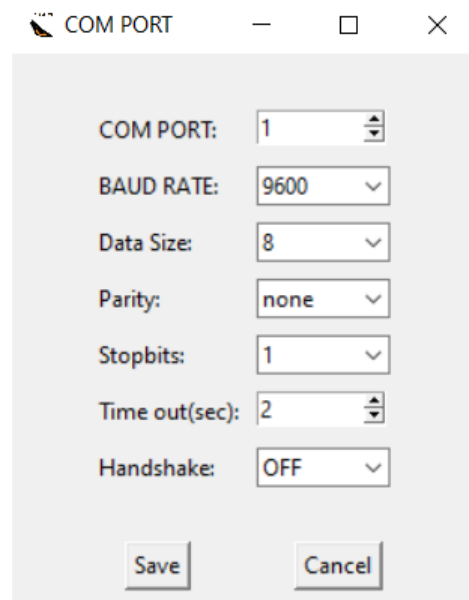
- 1) With one of our connection cable: ESTPCUSB0, ESTPCUSB1, ESTPCUSB2
- 2) With a custom made cable with respecting the next few things
 - 2.1) Insure a power supply on VCC and GND in 5-24VDC interval
 - 2.2) Use a USB to RS232 converter and connect the GND to GND, RX to TX, TX to RX.

Connecting to Sensor:

- 1) Open the EST-EYE software



- 2) In Navbar go to Communication->Settings select the communication parameters. For first connection only choose your COM PORT and make sure the rest looks like in the next image. Press save and Connect button on main window.



- 3) If the communication is correct the PC software will collect all dates from sensor. IN stead of NO CONNECTION text you will see the sensor type.

EST-EYE software

The screenshot shows the EST-EYE software interface. At the top left, a menu bar contains 'File', 'Communication', and 'Help'. Below the menu bar, a status bar displays 'NO CONNECTION' next to a bird logo. The main area is divided into two columns of 'OUT binary' settings, numbered 1 through 15. Each setting includes 'Set Point' and 'Histerezis' (sic) fields with color-coded buttons (RED, GREEN, BLUE, WHITE) and 'TEACH' and 'SAVE' buttons. On the right side, there is a control panel with 'Connect' and 'Disconnect' buttons, a 'READ VALUE' display, three sliders for 'LIGHT INTENSITY', 'READ SPEED', and 'OUTPUT ON TIME', a 'MANUAL' control section with four output toggle switches, and a 'TRIGGER' section with a checkbox and 'READ'/'SAVE' buttons.

- 1- Navbar
- 2- Sensor type
- 3- Output parameterization frame
- 4- Connection buttons + indicator
- 5- Sensor last read value
- 6- Light intensity selector
- 7- Read speed selector
- 8- Output delay after each read
- 9- Manual output control
- 10- Trigger settings

1- Navbar:

- **Open** from **File** let you check the parameters from a backup file.
- **Backup** from **File** save all parameters from the connected sensor.
- **Restore** from **File** load all parameters from a backup file into connected sensor.
- **Exit** from **File** close the program.

- **Connect** from **Communication** establish the connection with sensor
- **Settings** from **Communication** open the communication parameters window. In that window can will be all setting for the connection
- **Sensor COM** from **Communication** will open a window where can change the sensor baud rate. Hat can be finished only if a sensor is connected, instead will appear an error message.

- **About** from **Help** will give you more details about software
- **Quick induction** from **Help** will show you a short & quick how to use instruction.

2- NO CONNECTION – is a field for connected sensor type

3- Is one Frame of the fifteen which contents the set points, hysteresis values for the binary combination of outputs. The values must be in 0-65535 interval. **TEACH** button will transfer the last read values to the corresponding OUT binary frame. Save button will load the frame values in the sensor. This may take few seconds, the green button confirm the successful transfer.

4- Connection buttons and status indicator.

5- READ VALUE are the result from last read of sensor for each filter (red, green, blue, white)

6- LIGHT INTENSITY is the brightness of LEDs. This LEDs increase the stability of sensor if you have fluctuations in ambient light. **Please take this into account when you working in an open area especially when you use screwdriver tip recognizer sensor.**

7- READ SPEED are the number of reads per second. That speed is influenced by the OUTPUT ON TIME in the TRIGGER MODE.

In trigger mode the:

$$\text{read period} = \text{READ SPEED} + \text{OUTPUT ON TIME.}$$

8- OUTPUT ON TIME means how much the output states is active after a sensor read. This is work only in the Trigger mode

9- MANUAL frame is a good help when you firstly connect the sensor with another device or at a debugging procedure. PLEASE NOTE the MANUAL controls will stay ON/OFF in selected form until the next sensor read. So if you want to keep the manual ON/OFF states please put the sensor in trigger mode and do not send any trigger message.

10- TRIGGER FRAME contains the trigger mode selection checkbox, trigger command field, read and save buttons. The trigger command cannot exceed 10 characters.

Errors

Code	Description	Solve
E1	Can't connect	Check cables, PC port Check connection parameter Check if sensor is powered
E2	Connection lost	Check cables, PC port Check if sensor is powered Check connection parameter
E3	Connection lost(sensor doesn't replay)	Check cables, PC port Check connection parameter Check if sensor is powered
E4	Sensor new baudrate value doesn't saved	Check if connection established Reconnect to sensor
E5	Too many threads active	Close all EST-EYE software's Restart the PC
E6	Sensor backup file cannot be generated (better if generate backup at the start of connection)	Reset the connection Restart the sensor
E7	Connection lost (PC port lost)	Check the port if exist Unplug and plug the cable Check the port number/ID Restart sensor

Note:



Connection don't establish with green dot(what means port open) but no errors generated. Also no NAME and READ VALUE windows doesn't load.
Connection settings parameters wrong. EX: baudrate 600 instead of 9600



At the parameter settings the Set point + hysteresis must be > 65 535 otherwise the max point will reset to 0 and increment with the rest value
EX MAX LIMIT: 64 000(setpoint) + 2000(hysteresis) = 466 not 66 000

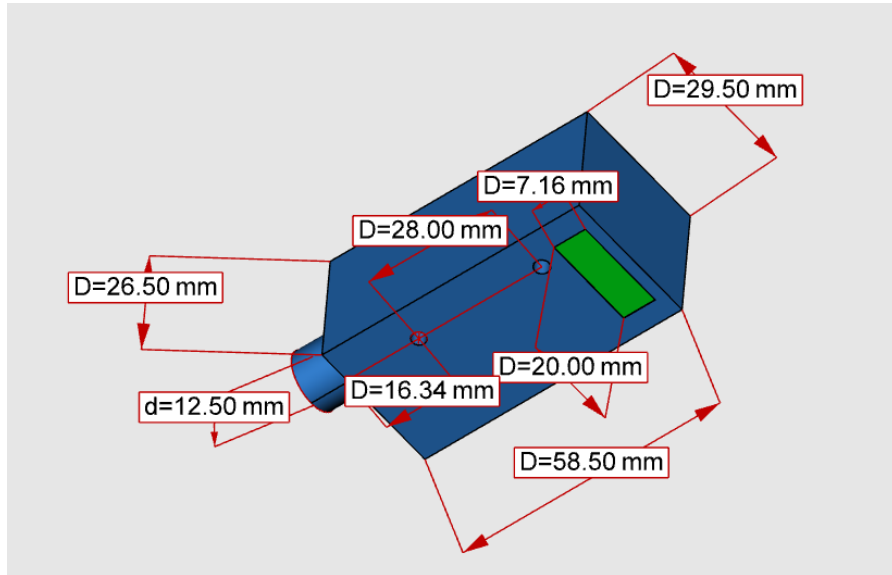


At the parameter settings the Set point - hysteresis must be < 0 otherwise the min point will decrement the rest value from 65 535
EX MAX LIMIT: 1 000(setpoint) + 2000(hysteresis) = 64535 not -1000

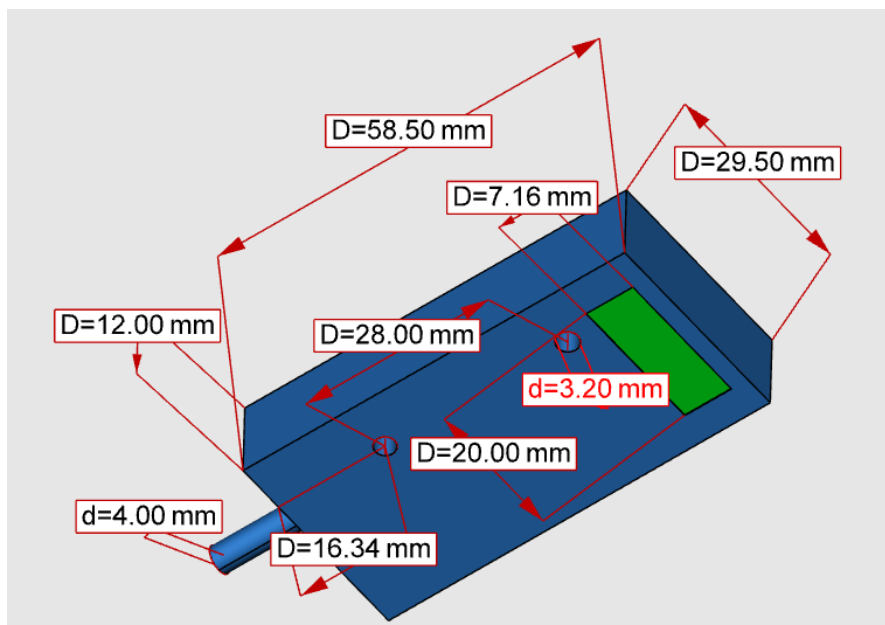
Mechanical

Green window is the lens(detection part) of sensor. The lens for ESTS1 series can be positioned on front or top side of sensor.

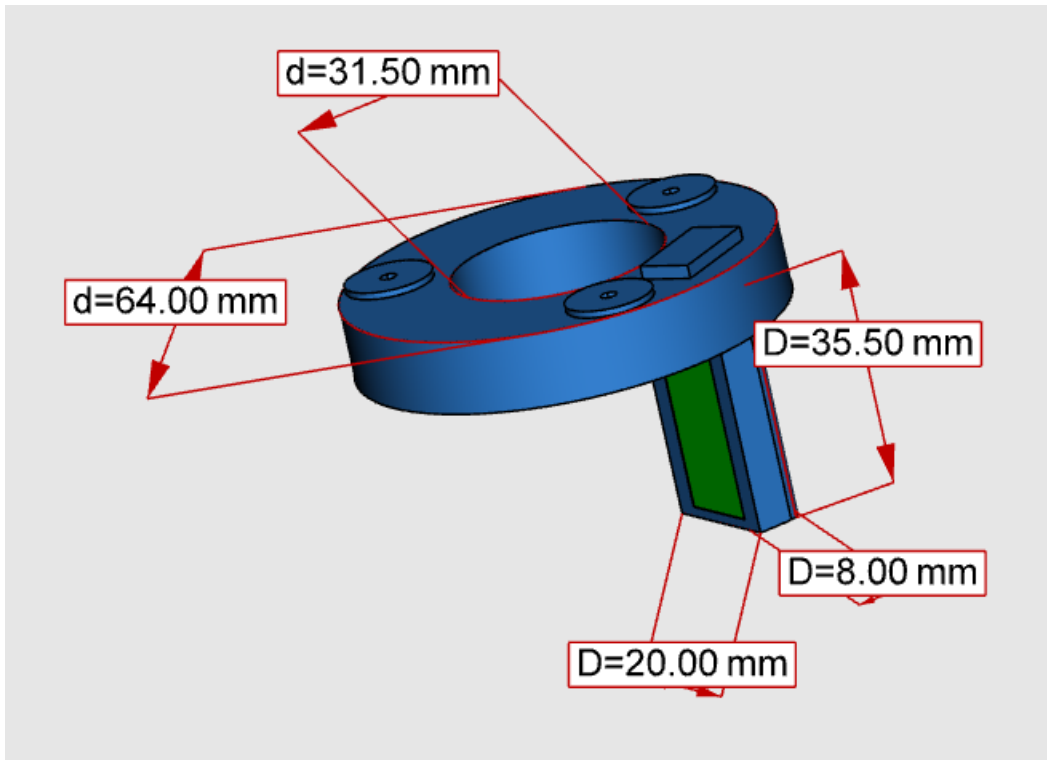
ESTS1xMxxx approximative dimensions: L=58.5mm+M12 connector, l=29.5mm, H=26.5mm



ESTS1xCxxx approximative dimensions: L=58.5mm+ $\varnothing 4$ cable, l=29.5mm, H=12mm



ESTS1xCxxx approximative dimensions: Inside=31.5mm, Outside=64mm, H=47mm



ACCESSORIES

FOR ESTS1xCxxx

PC connection cable ---- **ESTPCUSB0**

FOR ESTS1xMxxx

PC connection cable ---- **ESTPCUSB1**

Cable 2m ---- **ESTC2M12.2**

Cable 5m ---- **ESTC2M12.5**

FOR ESTB1xxx

PC connection cable ---- **ESTPCUSB2**

Cable 2m ---- **ESTC1IDC.2**

Cable 5m ---- **ESTC1IDC.5**

Mounting bracket with \varnothing 43 and 3 fixing points----- **ESTMB1.43x55.3**

Mounting bracket with \varnothing 43 and 4 fixing points----- **ESTMB1.43x55.4**

Distinction elements --- pack of 6 green --- **ESTG3.20.15GN**

pack of 6 blue ----- **ESTG3.20.15BL**

pack of 6 purple -- **ESTG3.20.15PU**

pack of 6 red ----- **ESTG3.20.15RD**

pack of 6 orange - **ESTG3.20.15OR**

pack of 6 yellow -- **ESTG3.20.15YE**

pack of 6 white --- **ESTG3.20.15WT**

set of 6x2 color --- **ESTG3.20.15/6x2**(RD,GN,BL,WT,YE,BK)

set of 4x4 color --- **ESTG3.20.15/4x4**(RD,GN,BL,WT)

