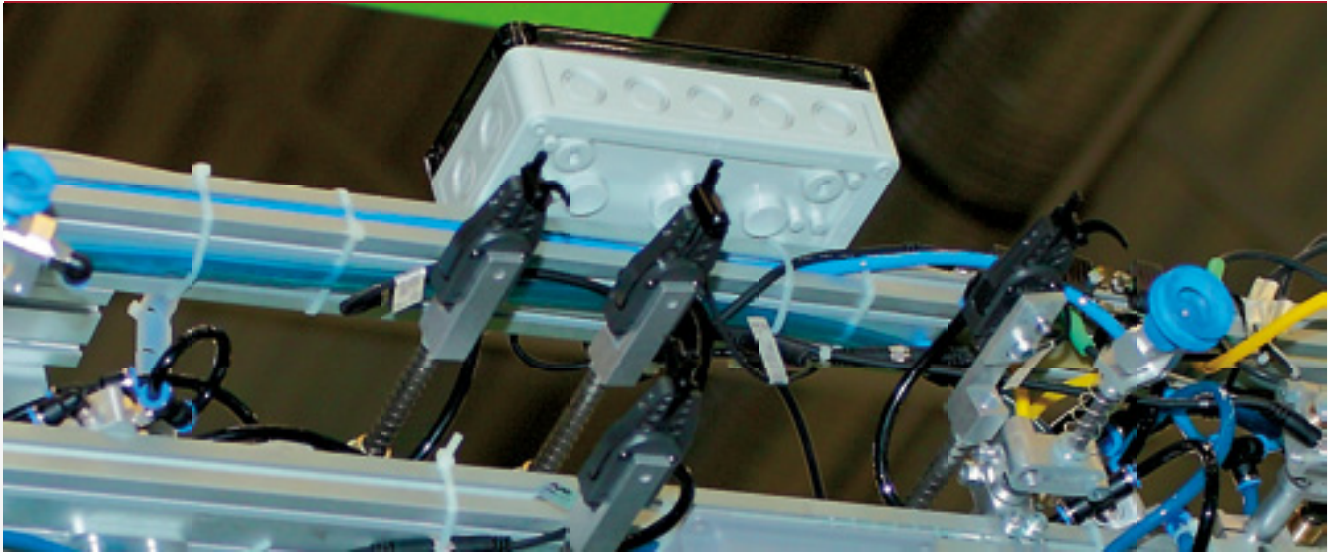


Electronics and sensors at a glance	373
Sensors	374
Cables and plugs	380
Reflective sensors	382
Signal transmitters	388





FIPA Electronics and sensors



Magnetic and proximity sensors

- > Sensors for active gripping elements, linear units, compact cylinders
- > PNP or NPN switching functions
- > With control LED

> See page 374



Connection cables and adapter plugs

- > Connection of vacuum switches, sensors or ejectors
- > Weather and oil resistant
- > Jacks / plugs M8 or M12 size, 3, 4, or 5 wires

> See page 380



Reflective sensors and suitable mounting brackets

- > Optical presence monitoring of workpiece
- > Light or dark switching with LED-display
- > Any mounting position

> See page 382



Signal transmitters and switch boxes

- > Collection of sensor signals
- > Either with or without logics (logic AND / OR)
- > 2 - 12 inlets

> See page 388



Magnetic sensors



Product description

- > C- and T-slot sensors for active gripping elements, linear units, compact cylinders
- > PNP or NPN switching functions
- > With control LED

Notes

- > PNP-Sensors: Connect supply voltage +Vs (mainly 24 V) with digital input signal
- > NPN-Sensors: Connect digital input signal with ground signal 0 V

Ordering notes

- > Cable and M8 3-pole plug included in scope of delivery
- > Connector cable for sensors:
 - 20.503: 3-Pole M8, cable straight, length 2,500 mm, open wire
 - 20.507: 3-Pole M8, cable 90°, length 2,000 mm, open wire
 - 20.570: 3-Pole M8, length 1,500 mm, end with plug 3-Pole M8

Technical data

Item no.	Nut-Model	Electric connection	Plug Design	Operating voltage [VDC]	Maximum switching current [mA]	Max. Power consumption [W]	Protection class	Cable length [mm]	Operating temperature [°C]	Weight [g]	Suitable connector cable
GR04.198	C	PNP	Straight	6 - 30	200	6	IP67	300	-10 - 70	18	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.198/NPN	C	NPN	Straight	6 - 30	200	6	IP67	300	-10 - 70	18	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.202P	C	PNP	90° elbow	5 - 30	50	1.5	IP67	150	-10 - 70	25	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.202N	C	NPN	90° elbow	5 - 30	50	1.5	IP67	150	-10 - 70	25	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.280P	C	PNP	Straight, short	4.5 - 28	50	1.5	IP67	150	-10 - 70	21	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)

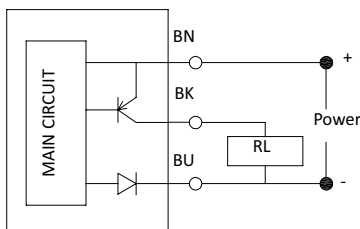


Technical data

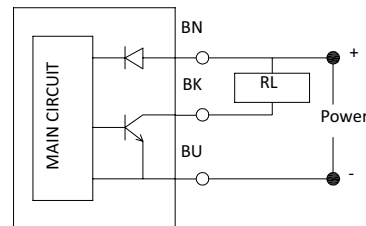
Item no.	Nut-Model	Electric connection	Plug Design	Operating voltage [VDC]	Maximum switching current [mA]	Max. Power consumption [W]	Protection class	Cable length [mm]	Operating temperature [°C]	Weight [g]	Suitable connector cable
GR04.280N	C	NPN	Straight, short	4.5 - 28	50	1.5	IP67	150	-10 - 70	21	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.199	T	PNP	Straight	10 - 30	100	3	IP67	150	-10 - 70	25	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.199/NPN	T	NPN	Straight	10 - 30	100	3	IP67	150	-10 - 70	25	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.203P	T	PNP	Straight	5 - 30	200	6	IP67	150	-10 - 70	27	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)
GR04.203N	T	NPN	Straight	5 - 30	200	6	IP67	150	-10 - 70	27	20.503 (p.380) 20.507 (p.380) 20.570 (p.380)

Wiring diagrams

PNP

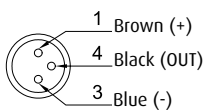


NPN



BN = Brown, BK = Black, BU = Blue

Plug assignment



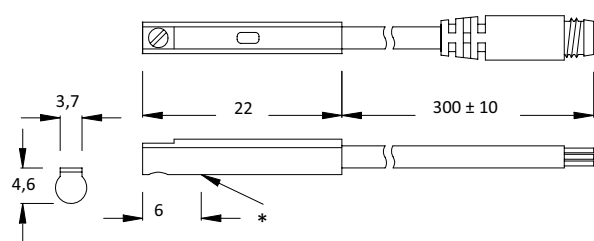
Continued on the next page →



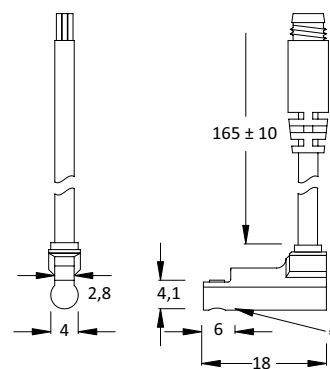
Application example



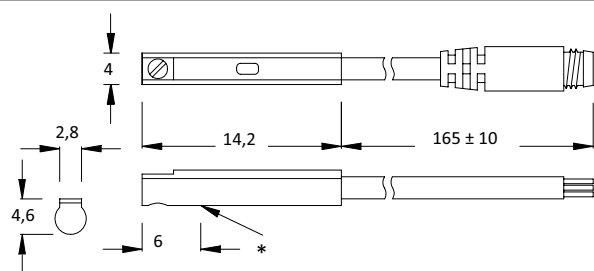
Dimensions



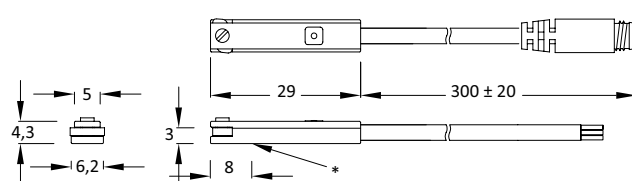
GR04.198 | GR04.198/NPN



GR04.202P | GR04.202N



GR04.280P | GR04.280N

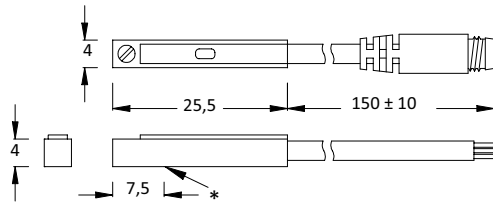


GR04.199 | GR04.199/NPN

* = Sensing point



Dimensions

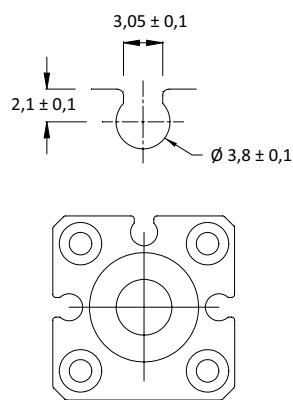


GR04.203P | GR04.203N

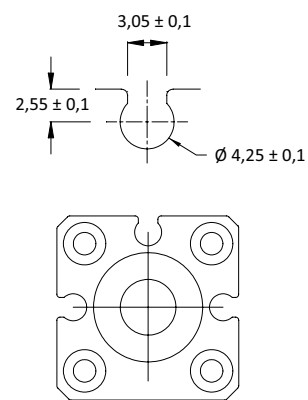
* = Sensing point

Matching nut dimensions

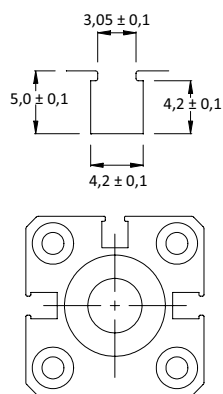
> GR04.198



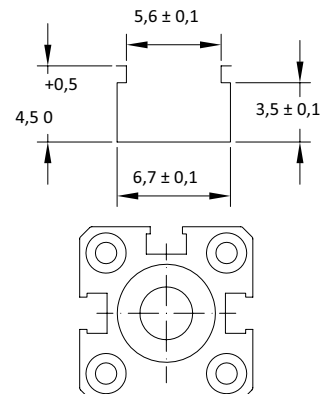
> GR04.202 | GR04.280



> GR04.203



> GR04.199





Inductive sensors



GR04.131-S1 / S2

Product description

- > Sensors for sprue grippers or parallel grippers
- > PNP or NPN switching functions
- > Integrated control LED

Notes

- > GR04.193P/N: Sensors for grippers GR04.131D/E. Direct detection of piston position
- > GR04.131-S1/S2: Sensors for parallel grippers GR04.114 -116 and sprue grippers GR04.131D/E, GR04.140B. Detection of jaw position (open / closed)

Ordering notes

Included in scope of delivery:

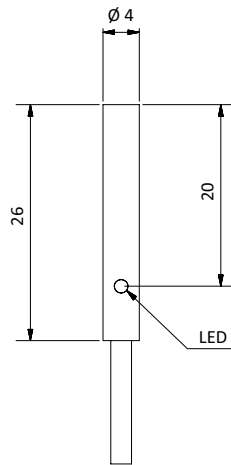
- > GR04.193P/N: 0.2 m cable, 3-pole, open wires (see accessories for suitable connectors for extension cables)
- > GR04.131-S1 / GR04.131-S2: 0.2 m cable and M8 3-pole plug

Technical data

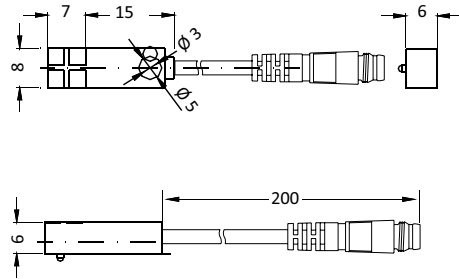
Item no.	Electric connection	Operating voltage [VDC]	Maximum switching current [mA]	Protection class	Cable length [mm]	Operating temperature [°C]	Weight [g]	Accessories
GR04.193P	PNP	10 - 30	200	IP67	200	-20 - 70	25	Plug connector 20.527 (p.381) Plug connector 20.528 (p.381) Connector cable 20.503 (p.380) Connector cable 20.507 (p.380)
GR04.193N	NPN	10 - 30	200	IP67	200	-20 - 70	25	Plug connector 20.527 (p.381) Plug connector 20.528 (p.381) Connector cable 20.503 (p.380) Connector cable 20.507 (p.380)
GR04.131-S1	PNP	10 - 30	100	IP67	200	-20 - 70	38	Connector cable 20.503 (p.380) Connector cable 20.507 (p.380)
GR04.131-S2	NPN	10 - 30	100	IP67	200	-20 - 70	38	Connector cable 20.503 (p.380) Connector cable 20.507 (p.380)



Dimensions



GR04.193P | GR04.193N



GR04.131-S1 | GR04.131-S2

Examples of application

> Sensor GR04.131-S1 mounted on gripper GR04.131E for direct part detection



> Gripper GR04.116 with two sensors GR04.193P to monitor piston position





Electronics and sensors | Cables and plugs

Connector cables M8, M12, 2 to 5-pin, Material PUR

Connector cables M8, M12, 2 to 5-pin, Material PUR



Product description

- > Electric connection of vacuum switches, sensors or ejectors
- > Weather and abrasion resistant

Technical data

Item no.	Contact	Plug Design	Cable length [mm]	Suitable for
20.503	Socket M8, 3-pin, open cable	Straight	2,500	Connection of sensors and sensor grippers
20.504	Plug M8, 3-pin 90°, socket M8, 3-pin	90° elbow	300	Connection of sensors and sensor grippers
20.507	Socket M8, 3-pin, open cable	90° elbow	2,000	Connection of sensors and sensor grippers
20.570	Plug M8, 3-pin, socket M8, 3-pin	Straight	1,500	Connection of sensors and sensor grippers
20.501	Socket M8, 4-pin, open cable	Straight	5,000	Connection of vacuum switches or compact ejectors
20.502	Plug M8, 4-pin, open cable	90° elbow	5,000	Connection of vacuum switches or compact ejectors
20.518	Socket M12, 4-pin, open cable	Straight	2,000	Connection of vacuum switches or compact ejectors
20.519	Socket M12, 4-pin, open cable	90° elbow	2,000	Connection of vacuum switches or compact ejectors
20.508	Socket M12, 5-pin, open cable	Straight	2,000	Connection of compact ejectors
20.509	Socket M12, 5-pin, open cable	90° elbow	2,000	Connection of compact ejectors
20.550	Special plug 2-pin, open cable	Straight	1,500	Connection of base ejectors with blow-off boost EBA.08H.2-A



Plug connectors M8/3-pin



Technical data

Item no.	Electric connection	Weight [g]
20.527	Plug	5
20.528	Socket	5

Adapter plug



Product description

- > Adapter plug M8/3-pin, socket on M8/4-pin plug
- > Adapter plug M8/4-pin, socket on M8/3-pin plug

Technical data

Item no.	Weight [g]
M8B3 / M8S4	10
M8B4 / M8S3	10



Reflective sensors M18



LT19

LT19 DETECTS EVEN TRANSPARENT PLASTIC PARTS



LT18OHT (light sensor with background suppression, fixing nuts not displayed)

Product description

- > Sensors for optical presence monitoring of workpiece
- > Light or dark switching with LED-display
- > With or without background suppression
- > Adjustable sensitivity
- > Robust aluminium body
- > Any mounting position

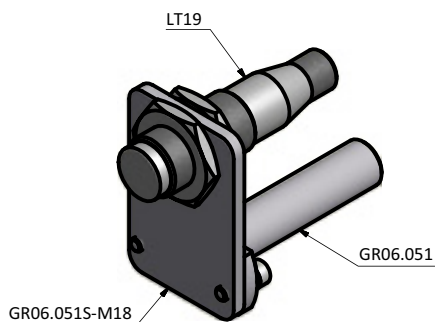
Ordering notes

- > Two fixing nuts, tightening torque 20 Nm, included in scope of delivery

Technical data

Item no.	LT19	LT19/NPN	LT18OHT	LT18OHT/NPN
Adjustable range [mm]	70 - 400	70 - 400	70 - 400	70 - 400
Operating voltage [V]	6 - 30	6 - 30	10 - 36	10 - 36
Current consumption [mA]	< 30	< 30	< 25	< 25
Maximum switching current [mA]	100	100	200	200
Protection class	IP67	IP67	IP67	IP67
Switching point principle	light / dark	light / dark	light	light
Background suppression	no	no	yes	yes
Ambient air temperature [°C]	-25 - 55	-25 - 55	-25 - 55	-25 - 55
Weight [g]	39	39	45	45
Suitable mounting brackets	GR06.051 (p.204) GR06.051S-M18 (p.386)	GR06.051 (p.204) GR06.051S-M18 (p.386)	GR06.051 (p.204) GR06.051S-M18 (p.386)	GR06.051 (p.204) GR06.051S-M18 (p.386)

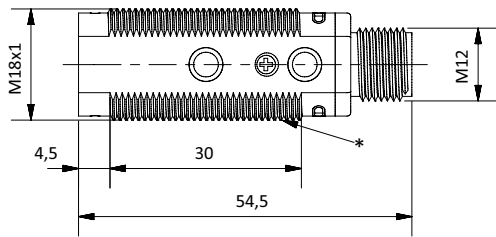
Application example



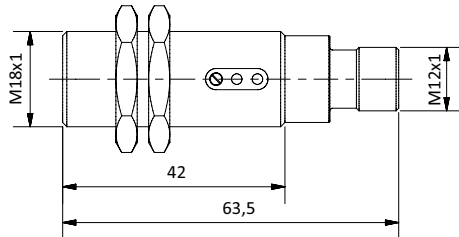
Sensor with mounting bracket



Dimensions



LT19 | LT19/NPN



LT18OHT | LT18OHT/NPN

* = Fixing nuts not shown



Reflective sensors - compact

NEW



Installation example with angle arm and rotatable mounting bracket GR06.045S

Product description

- > Sensors for optical presence monitoring of workpiece
- > Long scanning range at small foot print
- > Adjustable sensitivity
- > LED-display
- > Lightweight body
- > Any mounting position

Ordering notes

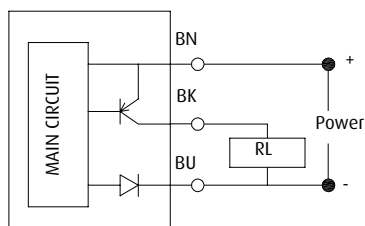
- > Mounting bracket GR06.045S for angle variable installation on extrusions optionally available
- > Connector cable for sensors:
 - 20.503: 3-Pole M8, length 2,500 mm, open wire
 - 20.507: 3-Pole M8, length 2,000 mm, end with socket 3-Pole M8 available

Technical data

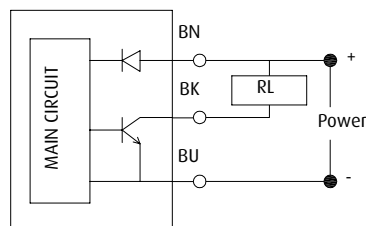
Item no.	LT10	LT10/NPN
Adjustable range [mm]	0 - 600	0 - 600
Sensor	PNP	NPN
Operating voltage [V]	10 - 30	10 - 30
Current consumption [mA]	< 25	< 25
Maximum switching current [mA]	100	100
Protection class	IP67	IP67
Background suppression	no	no
Ambient air temperature [°C]	-25 - 60	-25 - 60
Weight [g]	19	19
Accessories	Mounting bracket GR06.045S (p.387) Connector cable 20.503 (p.380) Connector cable 20.507 (p.380)	Mounting bracket GR06.045S (p.387) Connector cable 20.503 (p.380) Connector cable 20.507 (p.380)

Wiring diagrams

LT10



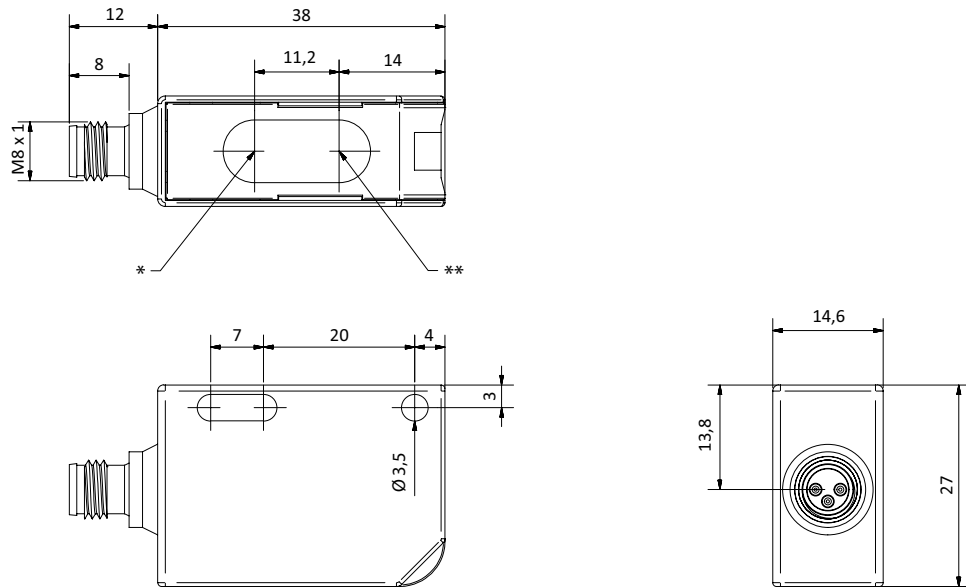
LT10/NPN



BN = Brown, BK = Black, BU = Blue



Dimensions



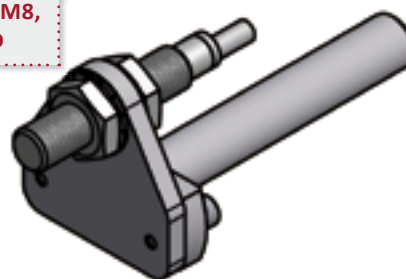
* = opt. axis transmitter ** = opt. axis receiver



NEW



SUITABLE FOR SENSORS WITH M8,
M12 OR M18 MALE THREAD



Application example with fitting GR06.050

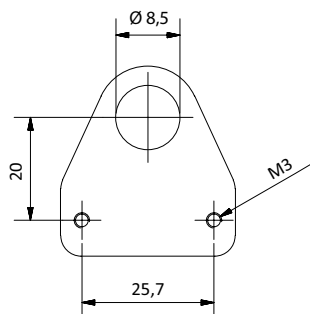
Product description

- > Mounting bracket for part control
- > Optional brackets with clamping shaft for mounting sensors to profiles

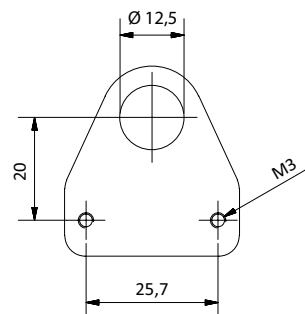
Technical data

Item no.	Suitable for	Weight [g]	Suitable mounting brackets
GR06.050S-M8	Common M8 sensors	9	GR06.050 (p.204)
GR06.050S-M12	Common M12 sensors	9	GR06.050 (p.204)
GR06.051S-M18	LT18OHT, LT18OHT/NPN, LT19, LT19/NPN	23	GR06.051 (p.204)

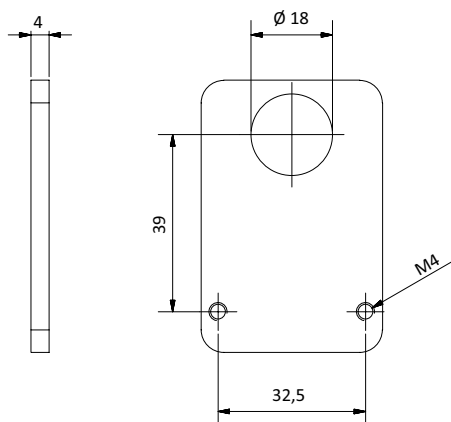
Dimensions



GR06.050S-M8



GR06.050S-M12



GR06.051S-M18



Mounting brackets for compact sensors

NEW



FITS WITH MANY COMPACT SENSORS ON THE MARKET



Installation example with sensor LT10 and angle arm

Product description

- > Mounting bracket for sensor installation on extrusions
- > Freely rotatable, when combined with angle arms or other gripper components with clamping diameter 10 mm

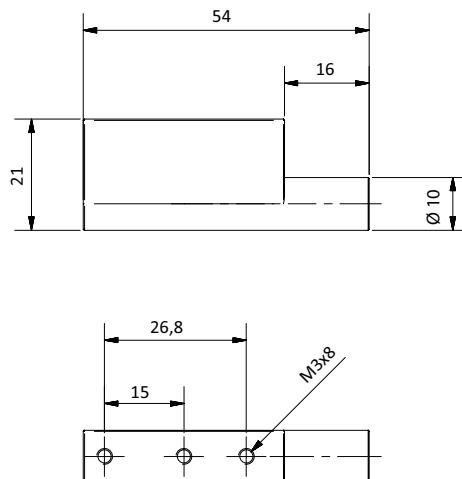
Ordering notes

- > A choice of suitable clamping elements can be found under accessories

Technical data

Item no.	Suitable for	Weight [g]
GR06.045S	Reflective sensor LT10, LT10/NPN; Profile - shaft - adapter GR01.110; Angle clamp GR02.010A; Cross clamp GR02.020; Angle arm GR02.070A; Quick-change systems GR02.240	23

Dimensions





Signal transmitters M8 - without logics

COLLECTION AND TRANSMISSION OF SENSOR SIGNALS



Product description

- > Transmits up to twelve sensor signals to the robot controller
- > Suitable for PNP / NPN sensors or 2-pole actuators
- > LED switching status display

Notes

- > Signals can be coupled via the external robot controller
- > Common output:
 - 20.540: 8-pole M12 plug, 1.9 m, open end
 - 20.541 and 20.542: 15-pole D-sub-plug, cable length 2 m, open end

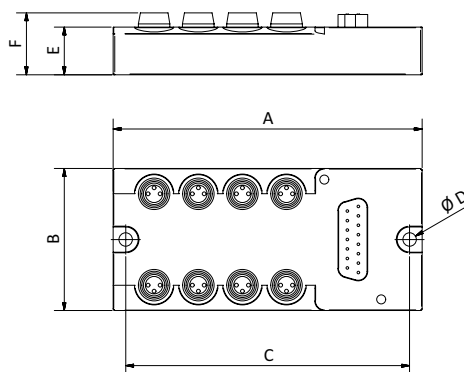
Technical data

Item no.	Number of slots M8	Power supply [V]	Weight [g]
20.540	5	24	65
20.541	8	24	120
20.542	12	24	250

Pin assignment: M8 jack according to IEC 947-5-2

- > Slot 0-7, or 0-11:
 - Signal line: Socket 4
 - DC 24 V: Socket 1
 - 0 V: Socket 3

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	F [mm]
20.540	85	25	75	3.1	12.5	25.45
20.541	98	45	90	4.3	15.1	19.6
20.542	125.6	45	117.6	4.3	15.1	19.6



Sensor-relay-switchboxes



Product description

- > Reduction of necessary inputs on the robot control via bundling (series switching logic AND) of several sensor signals
- > Inputs PNP, NPN or potential-free contact (NO or NC)
- > Outputs PNP, NPN or potential-free contact (NO)
- > Input LEDs for simplified troubleshooting
- > Assembly on SLine, MLine or XLine extrusions
- > Connection of several switch boxes possible

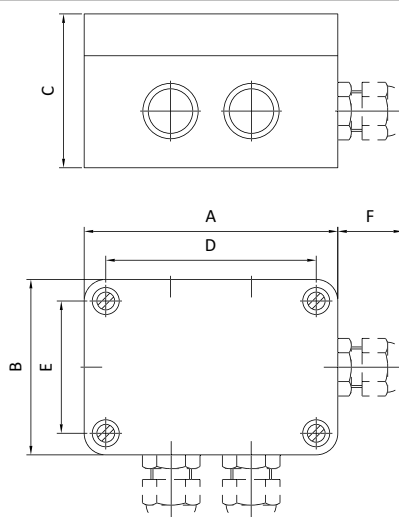
Ordering notes

- > Slot nuts and screws for SLine / MLine included in scope of delivery

Technical data

Item no.	Max. number of inputs	Max. number of outputs	Operating voltage [V]	Protection class	Weight [g]
GR04.304	4	4	24	IP65	180
GR04.300	6	6	24	IP65	171
GR04.308	8	8	24	IP65	230
GR04.312	12	12	24	IP65	325

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
GR04.304	94	65	57	79	50	25
GR04.300	94	94	57	79	79	25
GR04.308	130	94	57	115	79	25
GR04.312	180	94	57	165	79	25



T-coupler bundlers with and/or logic



20.526

Product description

- > T-coupler connects 2x M8-female with 1x M8-male
- > Interconnection of sensor signals on gripper systems

Notes

- > Please note for 20.525 and 20.525/NPN:
If more than five sensors need to be connected we recommend to use switch boxes such as GR04.300 instead of T-couplers

Technical data

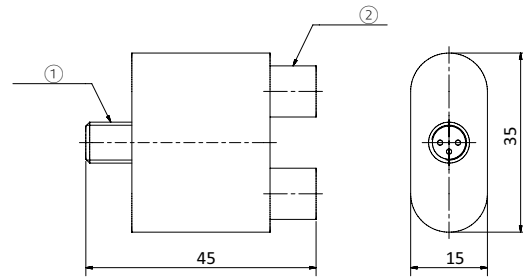
Item no.	Electric connection	Operating voltage [VDC]	Protection class	Logic	Weight [g]
20.524	PNP / NPN	24	IP67	2x or	15
20.525	PNP	24	IP67	2x and	15
20.525/NPN	NPN	24	IP67	2x and	15
20.526	PNP	10 - 35	IP67	2x and/or	25

Application example

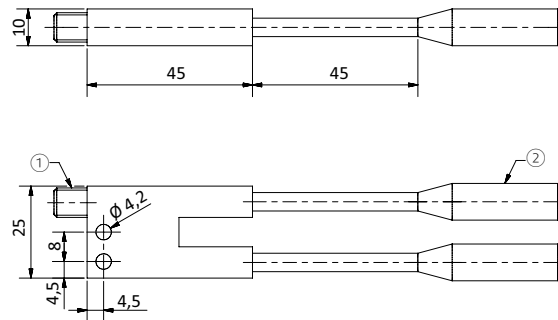




Dimensions



20.524 | 20.525 | 20.525/NPN



20.526

① = Plug, 3-pin M8x1 ② = Socket, 3-pin M8x1

Item no.	A [mm]	B [mm]	C [mm]
20.524	45	35	15
20.525	45	35	15
20.525/NPN	45	35	15
20.526	45	25	10

Signal converters M8



CONVERT SENSOR SIGNALS INDEPENDENT OF ROBOT CONTROLLER

Product description

- > Signal converter comes in two types:
 - PNP Inverter 20.530 for grippers with indirect part detection
 - PNP-NPN converter 20.531 for using PNP sensors in NPN circuits
- > LEDs to display status and switching state

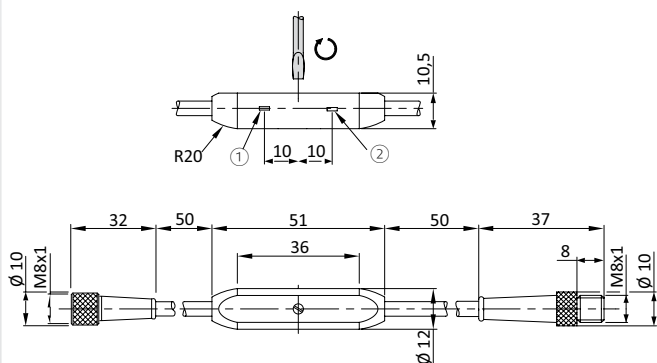
Notes

- > Using model 20.530 with grippers with indirect part detection, enables signal activation if a part has been gripped
- > Recommended for use with grippers GR04.091, GR04.111A, GR04.130F

Technical data

Item no.	20.530	20.531
Input signal	PNP	PNP
Output signal	PNP	NPN
Connection	M8x1	M8x1
Max. ampacity [mA]	200	200
Operating voltage [VDC]	10 - 35	10 - 35
Current consumption [mA]	< 20	< 20
Max. switching frequency [Hz]	3,500	5,000
Minimum pulse duration [ms]	> 0.1	> 0.1
Protection class	IP67	IP67
Ambient air temperature [°C]	-25 - 70	-25 - 70
Weight [g]	17	17

Dimensions



① = LED status ② = LED Switching output

Plug assignment

