

Controller SBRD-Q

Key features

Functional principle

The images taken by the remote camera heads are sent to the electronic evaluation unit. Here, different inspection features are calculated, such as length, height, area, centre of mass, grey or colour value and roundness, depending on the application task.

By scanning various sample parts when setting up the camera, tolerance ranges for good parts are determined for each inspection feature. During the running operation, the camera computes characteristic values for the part to be inspected. Depending on whether these are within or outside the programmed tolerance range, the part is identified as good or bad. The results from the calculation of the characteristics can also be transmitted to a PLC via Ethernet, PROFINET, Telnet or EtherNet/IP.

Up to 256 inspection programs can be stored on the camera.

The characteristics calculated by the camera are not dependent on the angular orientation and position of the inspection part; they are determined relative to the position of the inspection part and so any tilting and/or movement of the inspection part in the field of vision is irrelevant for the inspection process. The behaviour of the camera during inspection is determined by the so-called evaluation mode. There are two different modes:

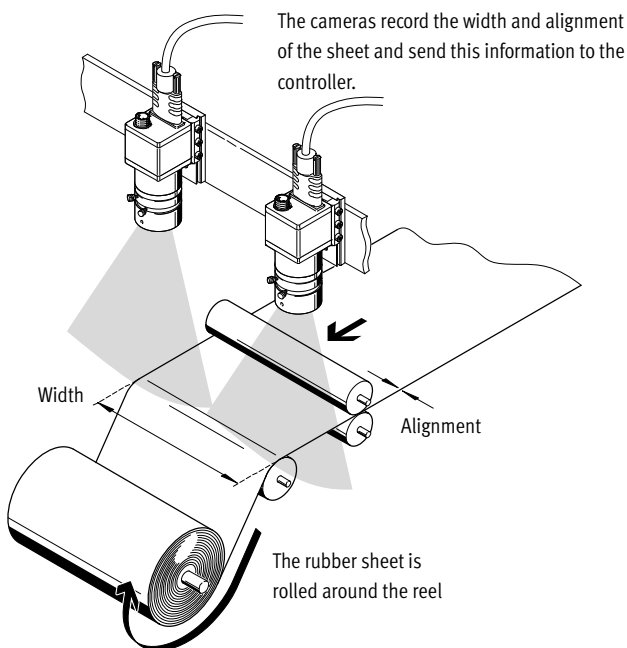
- Triggered: single image recording and inspection with each trigger signal (image evaluation is triggered by an external signal)
- Free run: continuous image recording and inspection (without fixed frame rate) as long as there is a trigger signals.

Areas of application

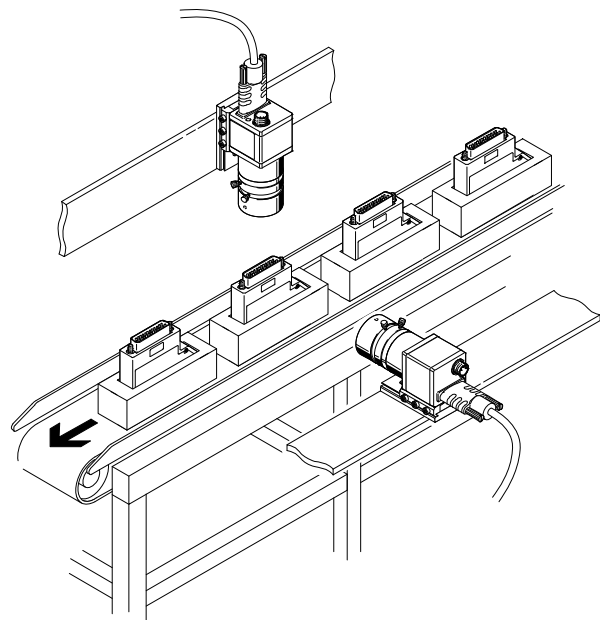
- Detecting the position and rotary orientation of parts
- Pick & place
- Quality inspection
- Measurement
- Reading bar codes and data matrix codes (1D and 2D codes)
- Reading plain text (OCR)

Application examples

Roller alignment



Measurement

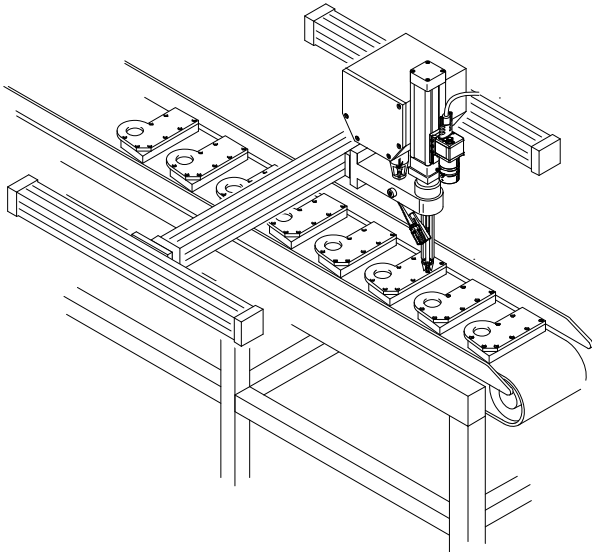


Controller SBRD-Q

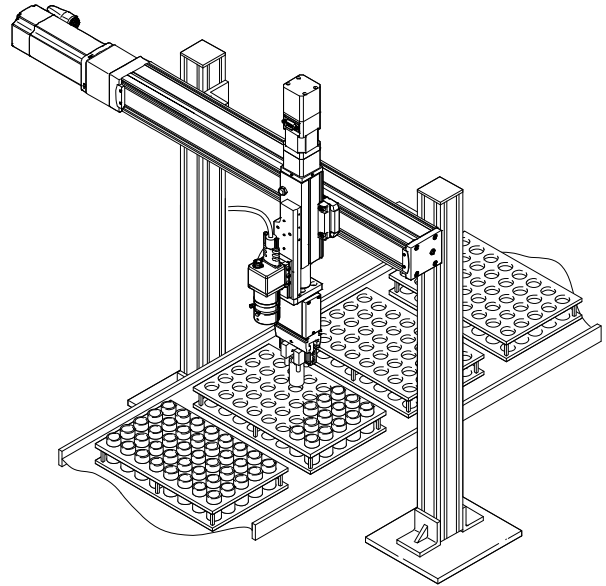
Key features

Application examples

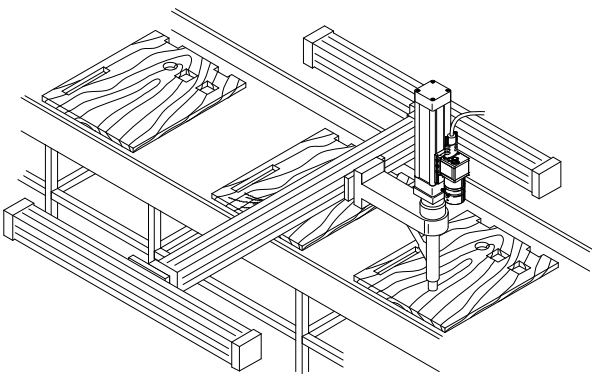
Screws



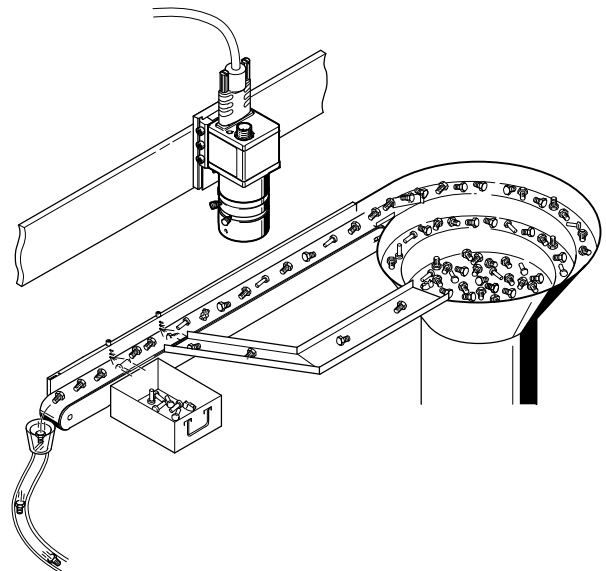
Pick & place



Gluing

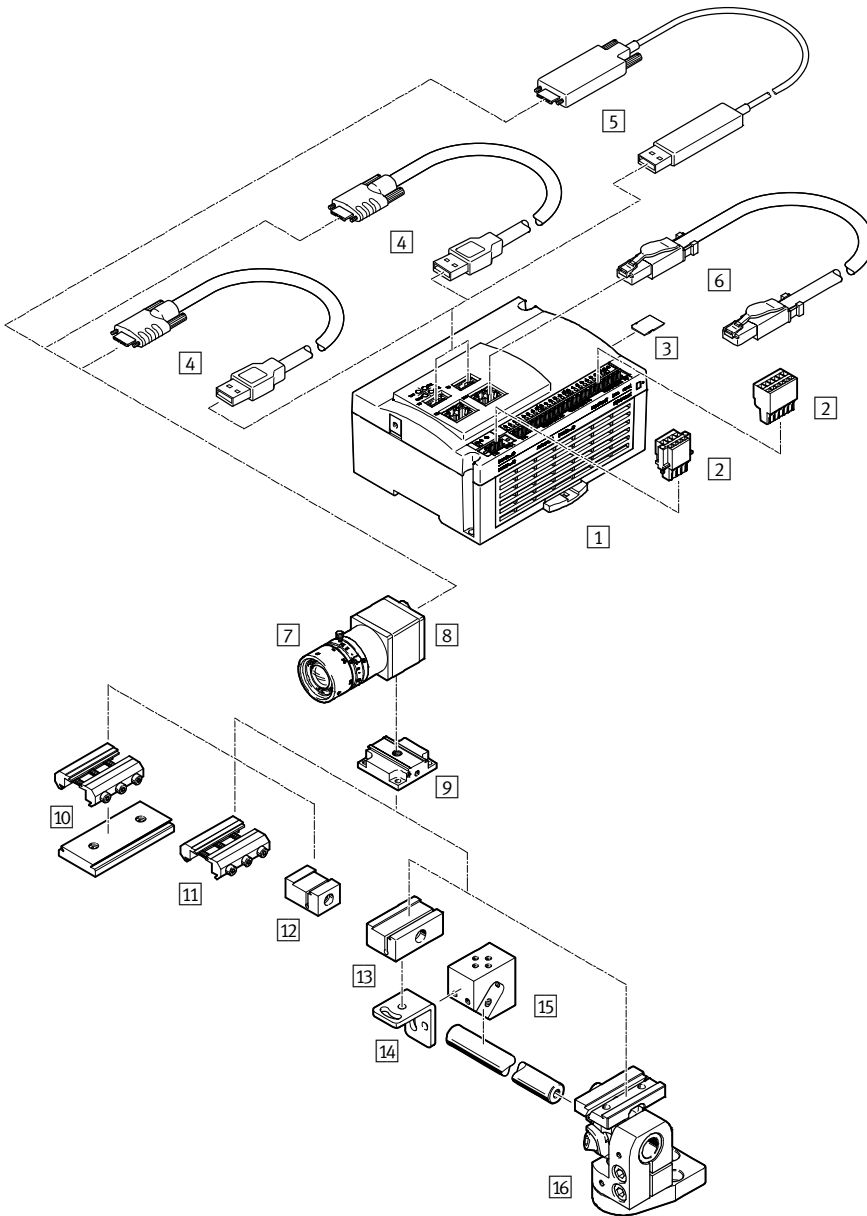


Sorting screws



Controller SBRD-Q

Peripherals overview

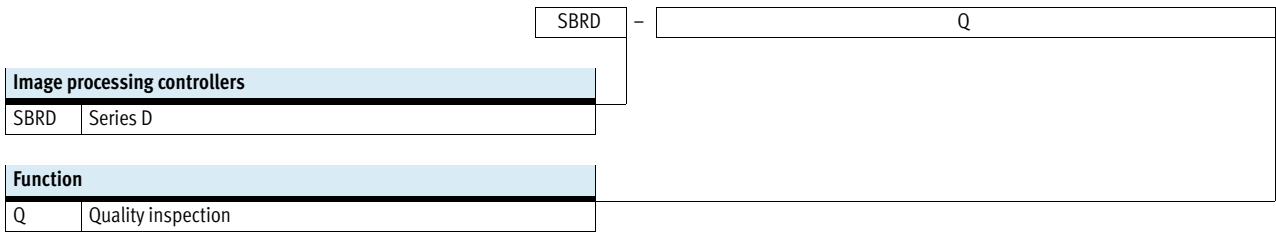


Accessories	→ Page/Internet
1 Controller SBRD-Q	7
2 Plug NECC-L2G...	17
3 Memory card CAMC-M-MS-G32	17
4 Connecting cable NEBC-U7G10-KS-5-N-S-U5G9	17
5 Connecting cable NEBC-U7G10-EH-...-N-S-U5G9	17
6 Connecting cable NEBC-R3G4-ES-1-S-R3G4-ET	17
7 Camera head SBPB-R2...	10
8 Lens SASF-C-L...	12
9 Mounting SBAM-C11-CP	12

Accessories	→ Page/Internet
10 Adapter kit SBOA-HMSV-39	13
11 Adapter kit SBOA-HMSV-40	13
12 Adapter kit SBOA-HMSV-41	13
13 Mounting SBAM-C6-CP	14
14 Mounting bracket SBAM-C6-A	16
15 Mounting SBAM-C6-CP-AF	15
16 Swivel mounting SBAM-C6-...	14

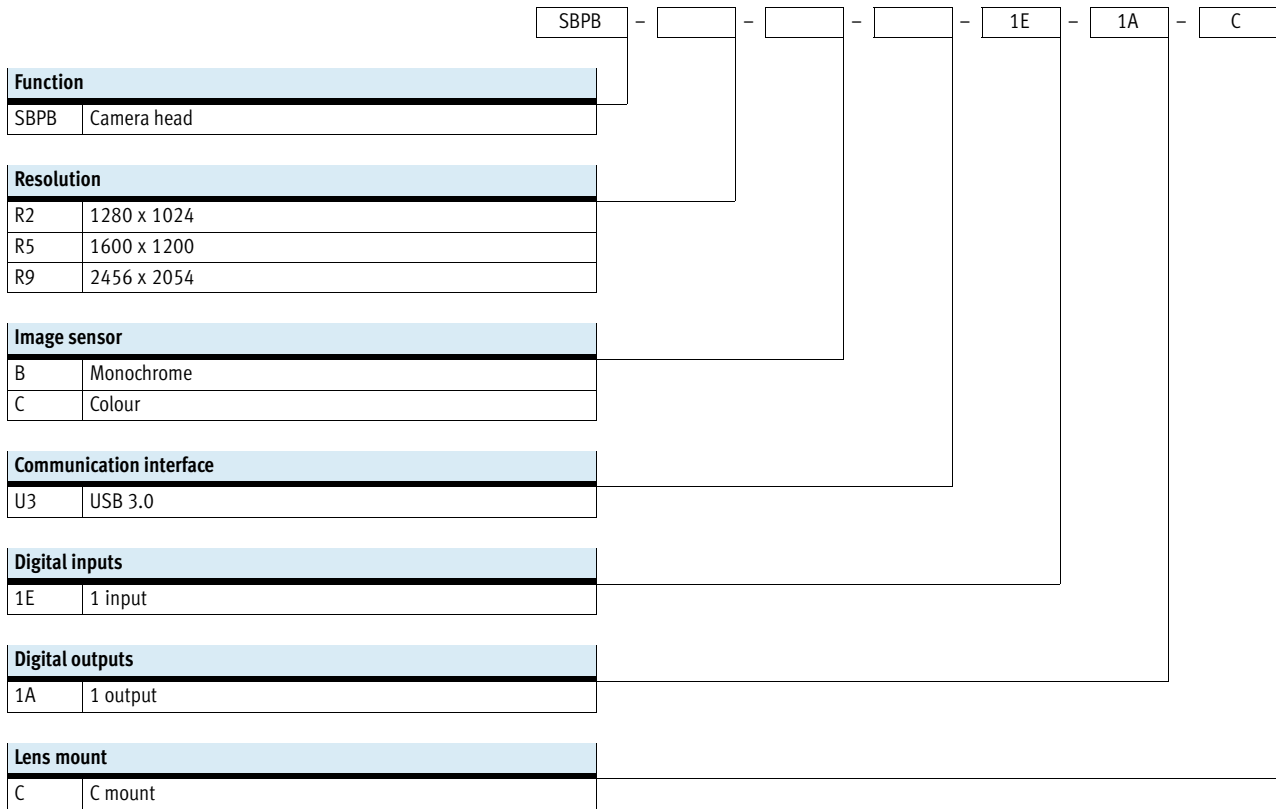
Controller SBRD-Q

Type codes - Controller




Controller SBRD-Q

Type codes - Camera head



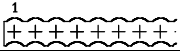
Controller SBRD-Q

Technical data

-  - Temperature range
-5 ... +50 °C

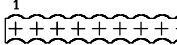



General technical data		
Dimensions W x H x L	[mm]	130 x 106 x 60
Type of mounting		With through-hole for M4 screw
		With H-rail
Product weight	[g]	315
CE marking (see declaration of conformity)		To EU EMC Directive
Protection against direct and indirect contact		PELV
Nominal operating voltage DC	[V]	24
Permissible voltage fluctuations	[%]	±10
Power consumption 24 V	[W]	20

Input/output interface	
Function	10x digital input
	2x digital input with pull-up resistor
	8x digital output
	Ground
	Power supply
Connection type	Plug
Connection technology	[mm] Circuit board plug, contact spacing 3.5 mm
Number of pins/wires	24
Connection pattern	
Number of inputs	12
Note on inputs	2 of the 12 inputs with integrated pull-up resistor
Switching level	[V] Signal 1: ≥ 10
	Signal 0: ≤ 1
Note on the switching level	[V] Signal 0: ≤ 1
	Signal 1: ≥ 8
	For integrated pull-up resistor
Switching logic at inputs	PNP (positive switching)
Number of outputs	8
Digital outputs, output current	[mA] 450
Switching logic at outputs	PNP (positive switching)

Controller SBRD-Q

Technical data

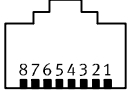
Power supply	
Function	Electronic system
Connection type	Plug
Connection technology	[mm] Circuit board plug, contact spacing 3.5 mm
Number of pins/wires	4
Connection pattern	

Camera interface	
Function	Only communication with camera
Connection type	2x socket
Connection technology	USB 3.0 type A
Number of pins/wires	9
Note on the camera interface	Only use the cables explicitly identified by Festo as accessories
Connection pattern	<p>9 8 7 6 5</p> 

Fieldbus interface	
Function	PROFINET

Card slot	
Storage medium	microSD
Memory capacity	≤ 32 GB

Immissions/emissions		
Storage temperature	[°C]	-20 ... +70
Degree of protection		IP20
Ambient temperature	[°C]	-5 ... +50
Relative humidity	[%]	95
		Non-condensing

Ethernet interface	
Protocol	TCP/IP
Function	Diagnostics Programming
Connection type	Socket
Connection technology	RJ45
Number of pins/wires	8
Transmission rate	[Mbit/s] 10
	[Mbit/s] 100
	[Mbit/s] 1000
Connection pattern	

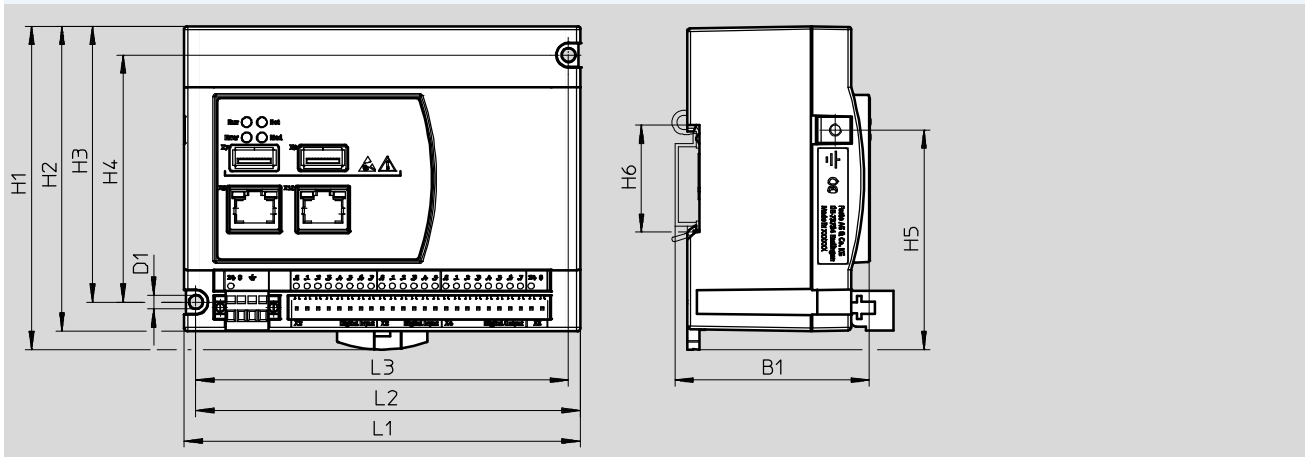
Operating and environmental conditions	
Housing material	PA reinforced
Note on materials	RoHS-compliant

Controller SBRD-Q

Technical data

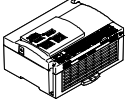
Dimensions

Download CAD data → www.festo.com





Type	B1	D1	H1	H2	H3	H4	H5	H6	L1	L2	L3
SBRD-Q	63.7	4.5	106	100	90.5	81	72	35.2	130	126.1	122.2

Ordering data

Controller	Part no.	Type
	8067301	SBRD-Q

Camera head, SBPB

Accessories – Ordering data

-  Voltage
5 V
-  Temperature range
0 ... +40 °C



General technical data		
Sensor resolution	-R2	1280 x 1024 pixels (SXGA)
	-R5	1600 x 1200 pixels (UXGA)
	-R9	2456 x 2054 pixels (5MPix)
Sensor type	-B	Monochrome
	-C	Colour
Lens mounting		C mount
Field of vision	[mm]	Depends on the lens chosen
Width	[mm]	29
Height	[mm]	29
Length	[mm]	49
Type of mounting		Via through-hole for M3 screw
Product weight	[g]	52
CE marking (see declaration of conformity)		To EU EMC Directive

USB interface		
Function		Power supply
		Communication
Connection type		Socket
Connection technology		USB 3.0 type B micro
Number of pins/wires		10
Nominal operating voltage DC	[V]	5
Permissible voltage fluctuations	[%]	+/- 5
Electrical power consumption	-R2 [W]	1.3 ... 1.5
	-R5 [W]	1.3 ... 1.5
	-R9 [W]	2.3 ... 3

Input/output interface	
Function	No function

Immissions/emissions	
Degree of protection	IP30 in assembled state
Storage temperature	[°C] -20 ... +60
Ambient temperature	[°C] 0 ... +40

Electronic system		
Working distance	[mm]	Depends on the lens chosen
Exposure time	-R2	9 µs - 2000 ms
	-R5	20 µs - 10000 ms
	-R9	27 µs - 999 ms

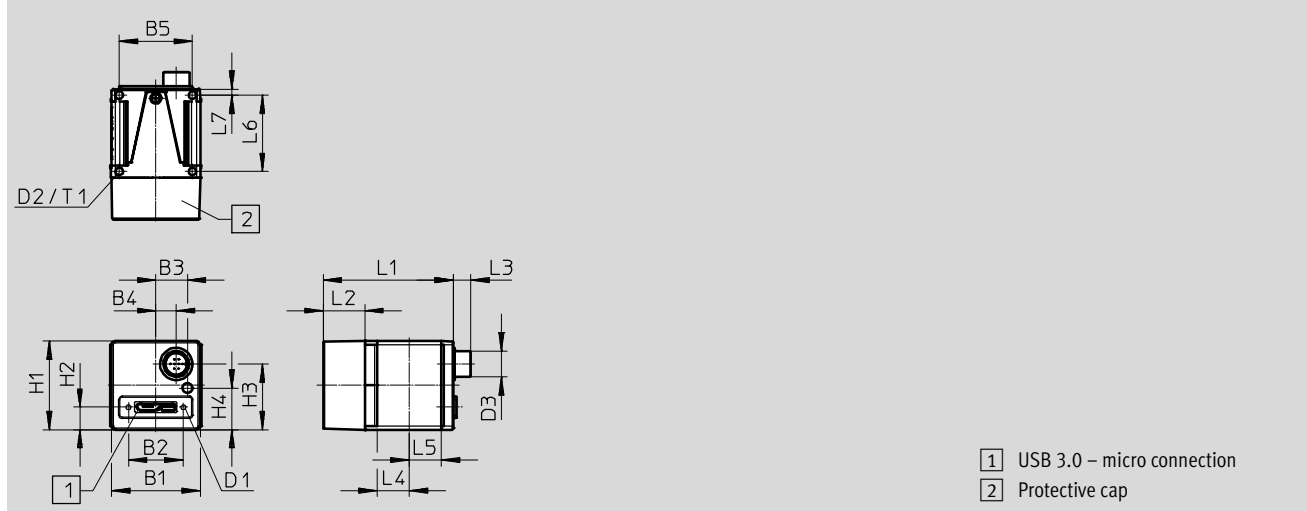
Camera head, SBPB

Accessories – Ordering data

Operating and environmental conditions	
Ambient conditions	Screened from extreme external light sources
	Cleanest possible ambient air
	Dry
Relative humidity	[%] 20 ... 80
Housing material	Anodised wrought aluminium alloy
Note on materials	RoHS-compliant

Dimensions Download CAD data → www.festo.com

SBPB-R...-U3-1E1A-C

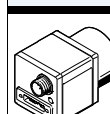


1 USB 3.0 – micro connection
2 Protective cap

Type	B1	B2	B3	B4	B5	D1	D2	D3	H1	H2
SBPB-R ... -U3-1E1A-C	29	18	10.4	6.7	24	M2x4	M3	8.5	29	7.3



Type	H3	H4	L1	L2	L3	L4	L5	L6	L7	T1
SBPB-R ... -U3-1E1A-C	21.5	13.6	42.6	13.6	5.7	10.5	10.5	25	2	3.5

Ordering data – Camera head

	Sensor resolution	Exposure time	Frame rate (full image) [fps]	Part no.	Type
	1280 x 1024 pixels (SXGA)	9 µs - 2000 ms	60	8066466	SBPB-R2B-U3-1E1A-C
			60	8066467	SBPB-R2C-U3-1E1A-C
	1600 x 1200 pixels (UXGA)	20 µs - 10000 ms	60	8066468	SBPB-R5B-U3-1E1A-C
			60	8066469	SBPB-R5C-U3-1E1A-C
	2456 x 2054 pixels (5MPix)	27 µs - 999 ms	36	8066470	SBPB-R9B-U3-1E1A-C
			36	8066471	SBPB-R9C-U3-1E1A-C

Controller SBRD-Q

Accessories – Ordering data

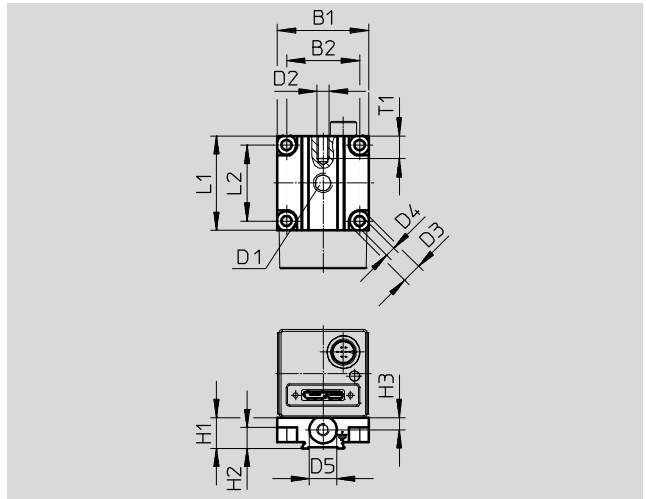
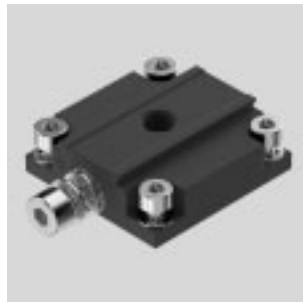
Ordering data – Lenses				Technical data → Internet: sasf-c	
	Format [inch]	Working distance [mm]	Focal length [mm]	Part no.	Type
	1/2	≥200	6	572910	SASF-C-L-F6
		≥250	12	572911	SASF-C-L-F12
	2/3	≥250	16	572912	SASF-C-L-F16
			25	572913	SASF-C-L-F25
		≥350	35	572914	SASF-C-L-F35

Mounting SBAM-C11-CP

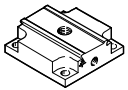
Type of mounting: clamped with thread

Material: anodised wrought aluminium alloy

Note on materials:
RoHS-compliant



Type	B1	B2	D1	D2	D3	D4	D5	H1	H2	H3	L1	L2	T1
SBAM-C11-CP	30	24	1/4-20 UNC	M4	6.5	3.4	9	10.2	6.9	4	31	25	7.5

Ordering data			
Mounting	Weight [g]	Part no.	Type
	19	8066474	SBAM-C11-CP

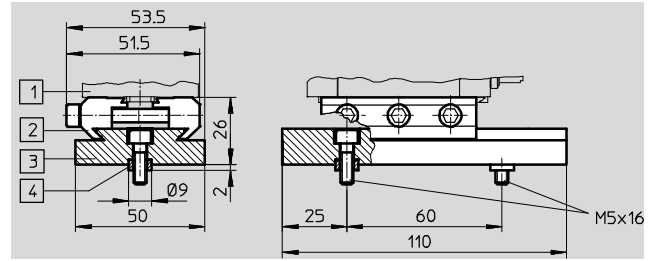
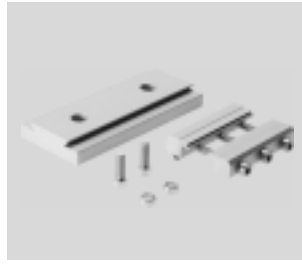
Controller SBRD-Q

Accessories – Ordering data

Adapter kit SBOA-HMSV-39

With screw-on adapter plate

Material:
Anodised wrought aluminium alloy

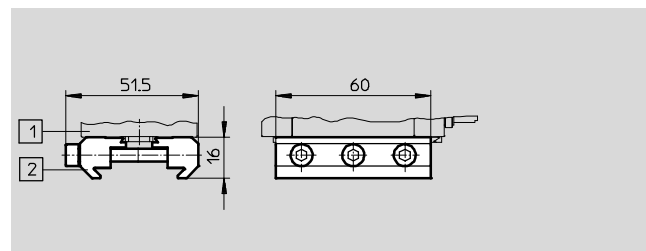


Ordering data		Part no.	Type
Adapter kit		541599	SBOA-HMSV-39

Adapter kit SBOA-HMSV-40

Without screw-on adapter plate

Material:
Anodised wrought aluminium alloy

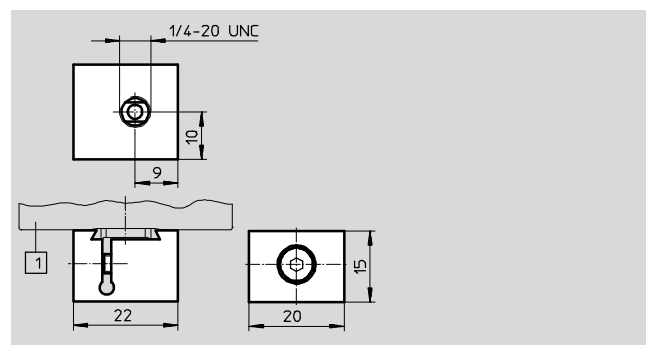


Ordering data		Part no.	Type
Adapter kit		541600	SBOA-HMSV-40

Adapter kit SBOA-HMSV-41

With female thread G1/4 for mounting
on commercially available tripods

Material:
Anodised wrought aluminium alloy



Ordering data		Part no.	Type
Adapter kit		542140	SBOA-HMSV-41

Controller SBRD-Q

Accessories – Ordering data

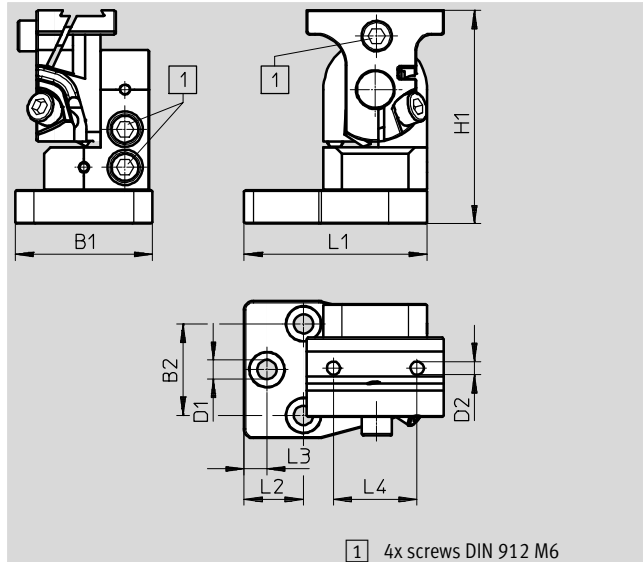
Swivel mounting

SBAM-C6-...

Type of mounting: with dovetail slot,
with through-hole

Information on materials: anodised
wrought aluminium alloy

Note on materials: RoHS-compliant



Dimensions [mm] and ordering data											
B1	B2	D1	D2	H1	L1	L2	L3	L4	Weight [g]	Part no.	Type
		∅	∅								
45	30	6.3	4.3	70	65.5	19.5	7.5	27.4	209	8058739	SBAM-C6-A2-AF
									28	8058740	SBAM-C6-CP-AF

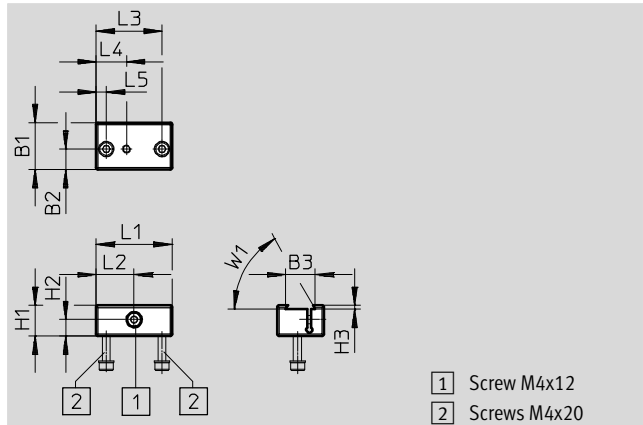
Mounting

SBAM-C6-CP

Type of mounting: with dovetail slot,
with thread

Information on materials: anodised
aluminium

Note on materials: RoHS-compliant



Dimensions [mm] and ordering data															
B1	B2	B3	H1	H2	H3	L1	L2	L3	L4	L5	W1	Weight [g]	CRC ¹⁾	Part no.	Type
23	10	14.5	15	8	1.8	37.4	18.7	32.4	15	5	60°	28	2	8031376	SBAM-C6-CP

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Controller SBRD-Q

Accessories – Ordering data

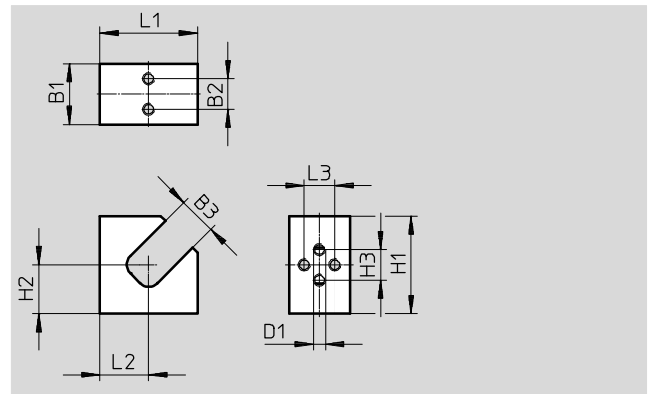
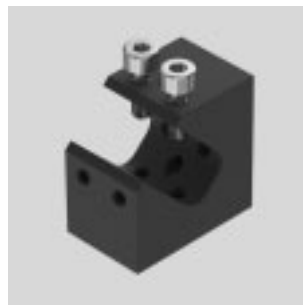
Mounting

SBAM-C6-CP-AF

Type of mounting: with thread, clamped

Information on materials: anodised wrought aluminium alloy

Note on materials: RoHS-compliant



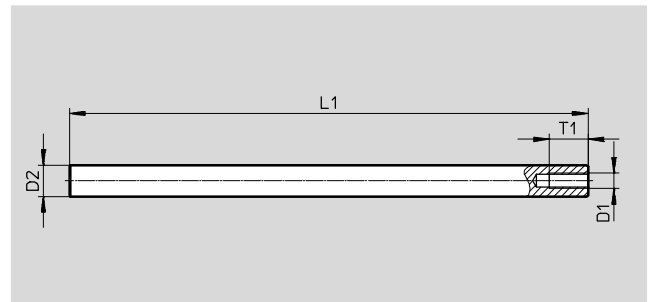
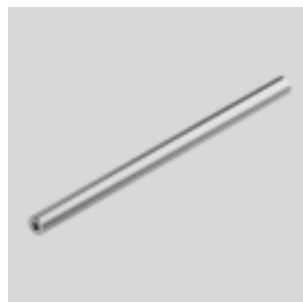
Dimensions [mm] and ordering data												
B1	B2	B3	D1	H1	H2	H3	L1	L2	L3	Weight [g]	Part no.	Type
20	10	12.5	M4	32	16	10	32	16	10	28	8058740	SBAM-C6-CP-AF

Mounting

Type of mounting: with thread, clamped

Information on materials: high-alloy steel

Note on materials: RoHS-compliant



Dimensions [mm] and ordering data							
D1	D2	L1	T1	Corrosion resistance [CRC ¹]	Weight [g]	Part no.	Type
M6	12	200	15	2	178	8058741	SBAM-C6-MR-200
		300			265	8058742	SBAM-C6-MR-300

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Controller SBRD-Q

Accessories – Ordering data

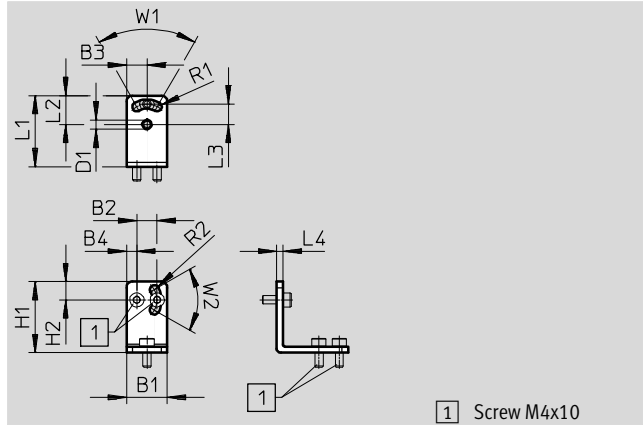
Mounting bracket

SBAM-C6-A

Type of mounting: with through-hole

Information on materials: high-alloy steel

Note on materials: RoHS-compliant



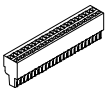


Dimensions [mm] and ordering data									
B1	B2	B3	B4	D1 Ø	H1	H2	L1	L2	L3
20	10	10	5	4.5	35	9	35	14.3	10
L4	R1	R2	W1	W2	Weight [g]	CRC ¹⁾	Part no.	Type	
3	2.3	2.3	60°	60°	27	2	8031377	SBAM-C6-A	


1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

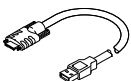
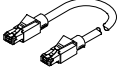
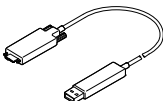
Controller SBRD-Q

Accessories – Ordering data

Ordering data – Plug				
	Description	PU ¹⁾	Part no.	Type
	Plug for self-assembly	1	575303	NECC-L2G4-C1-M
	Plug for self-assembly, 2-pin	1	575302	NECC-L2G2-C1
	Plug for self-assembly, 4-pin	1	8024782	NECC-L2G4-C1
	Plug for self-assembly, 5-pin	1	575304	NECC-L2G5-C1
	Plug for self-assembly, 6-pin	1	575305	NECC-L2G6-C1
	Plug for self-assembly, 8-pin	1	575306	NECC-L2G8-C1
	Plug for self-assembly, 24-pin	1	575307	NECC-L2G24-C1

1) Packaging unit

Ordering data – Memory card					
	Memory capacity [GB]	Speed class	Max. read speed [MB/s]	Part no.	Type
	32	Class 10	20	4553880	CAMC-M-MS-G32

Ordering data – Connecting cable						
	Electrical connection 1	Electrical connection 2	Cable length [m]	Weight [g]	Part no.	Type
	Straight plug USB 3.0 type B micro	Straight plug USB 3.0 type A	5	282	8072582	NEBC-U7G10-KS-5-N-S-U5G9
	Straight plug, RJ45	Straight plug, RJ45	1	87	8040455	NEBC-R3G4-ES-1-S-R3G4-ET
	Straight plug USB 3.0 type B micro	Straight plug USB 3.0 type A	15	444	8093271	NEBC-U7G10-EH-15-N-S-U5G9
	Straight plug USB 3.0 type B micro	Straight plug USB 3.0 type A	30	530	8093272	NEBC-U7G10-EH-30-N-S-U5G9