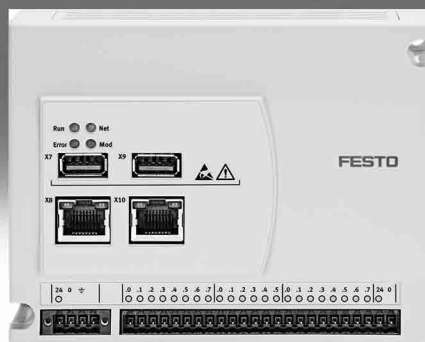


# Controller SBRD-Q

**FESTO**



# 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:

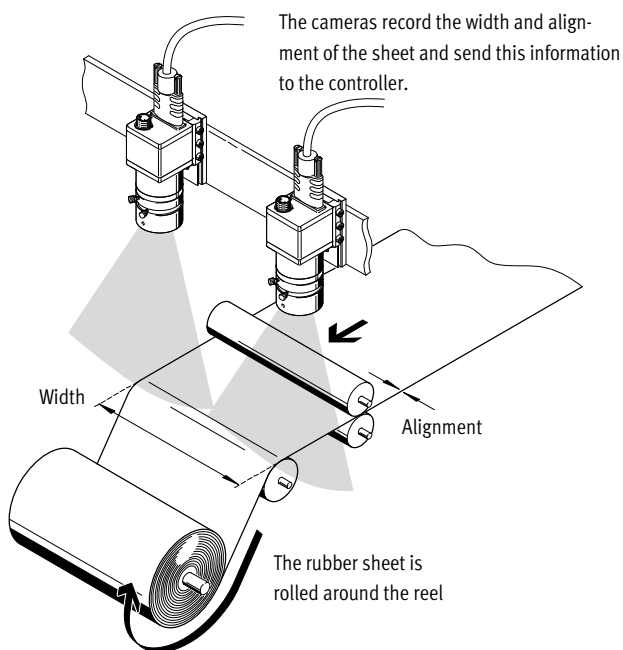
- Triggered: single image recording and inspection with each trigger signal (image evaluation is triggered by an external signal)
- Free run: continuous image recording and inspection (without fixed frame rate) as long as there is a trigger signals.

## Areas of application

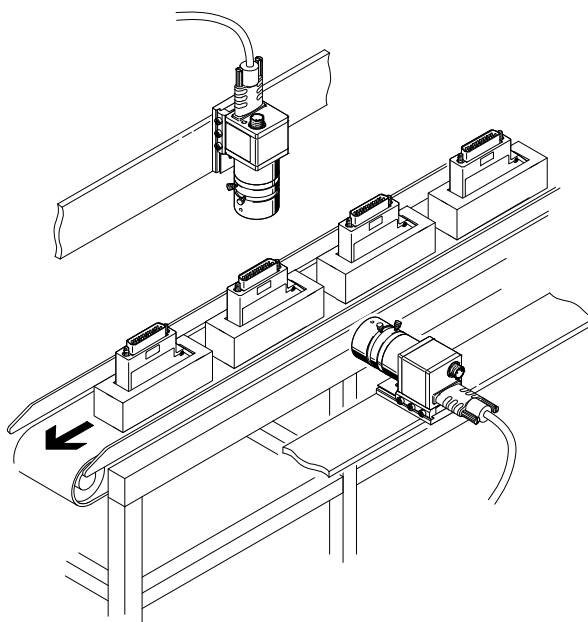
- Detecting the position and rotary orientation of parts
- Pick & place
- Quality inspection
- Measurement
- Reading bar codes and data matrix codes (1D and 2D codes)
- Reading plain text (OCR)

## Application examples

### Roller alignment



### Measurement

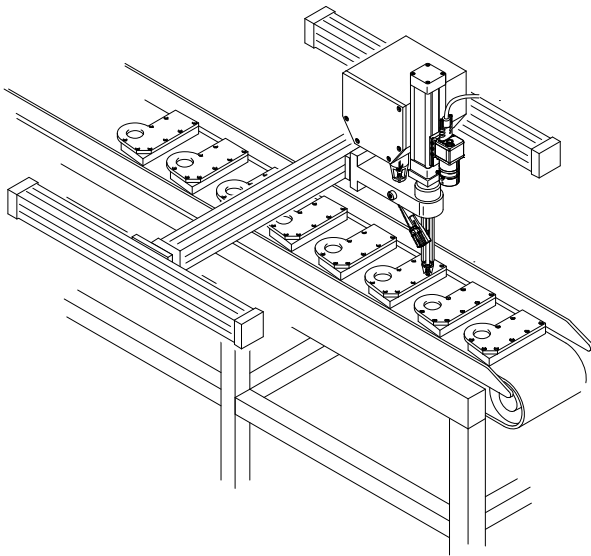


# Controller SBRD-Q

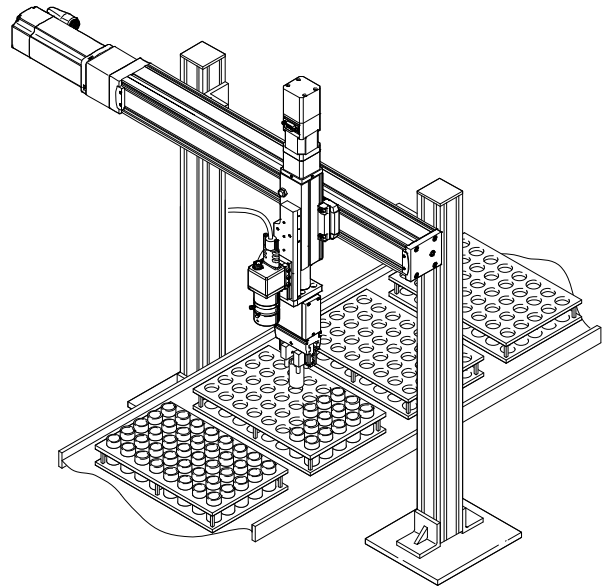
Key features

## Application examples

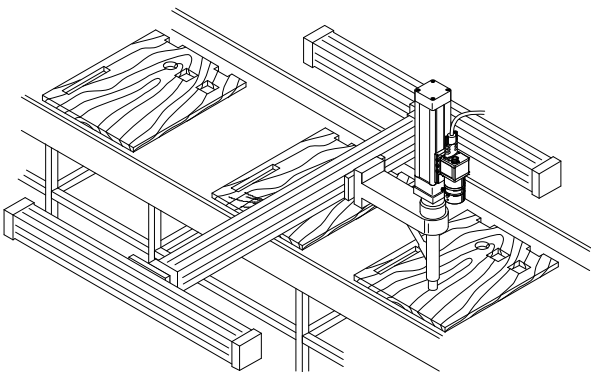
Screws



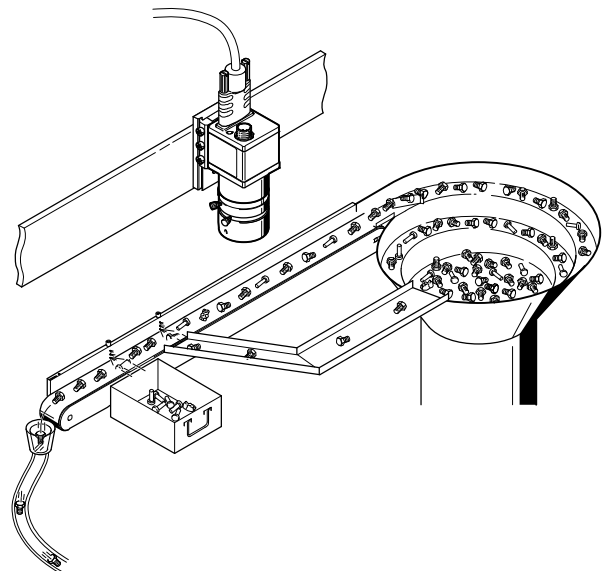
Pick & place



Gluing

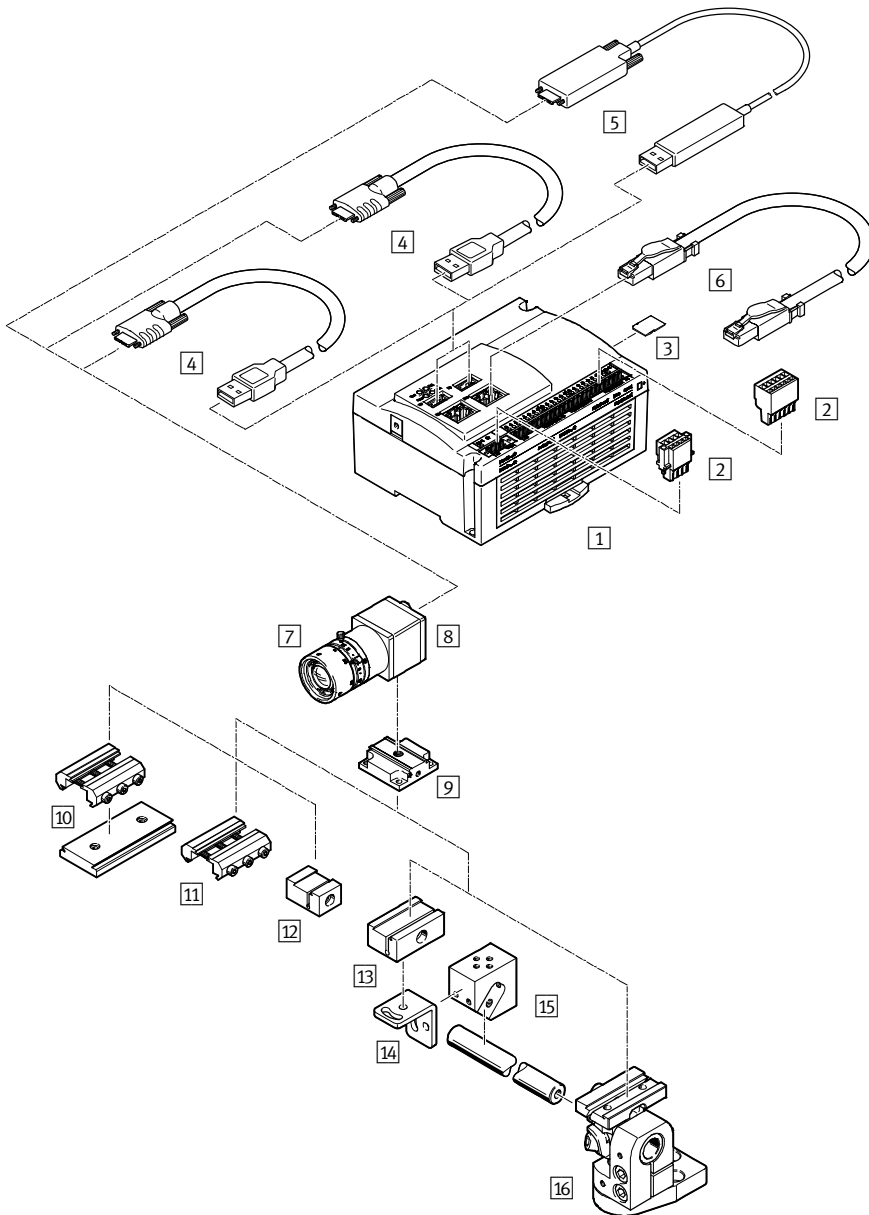


Sorting screws



# 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

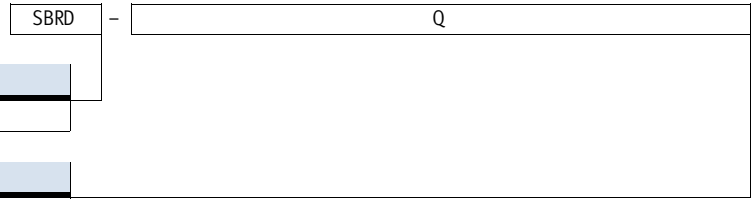
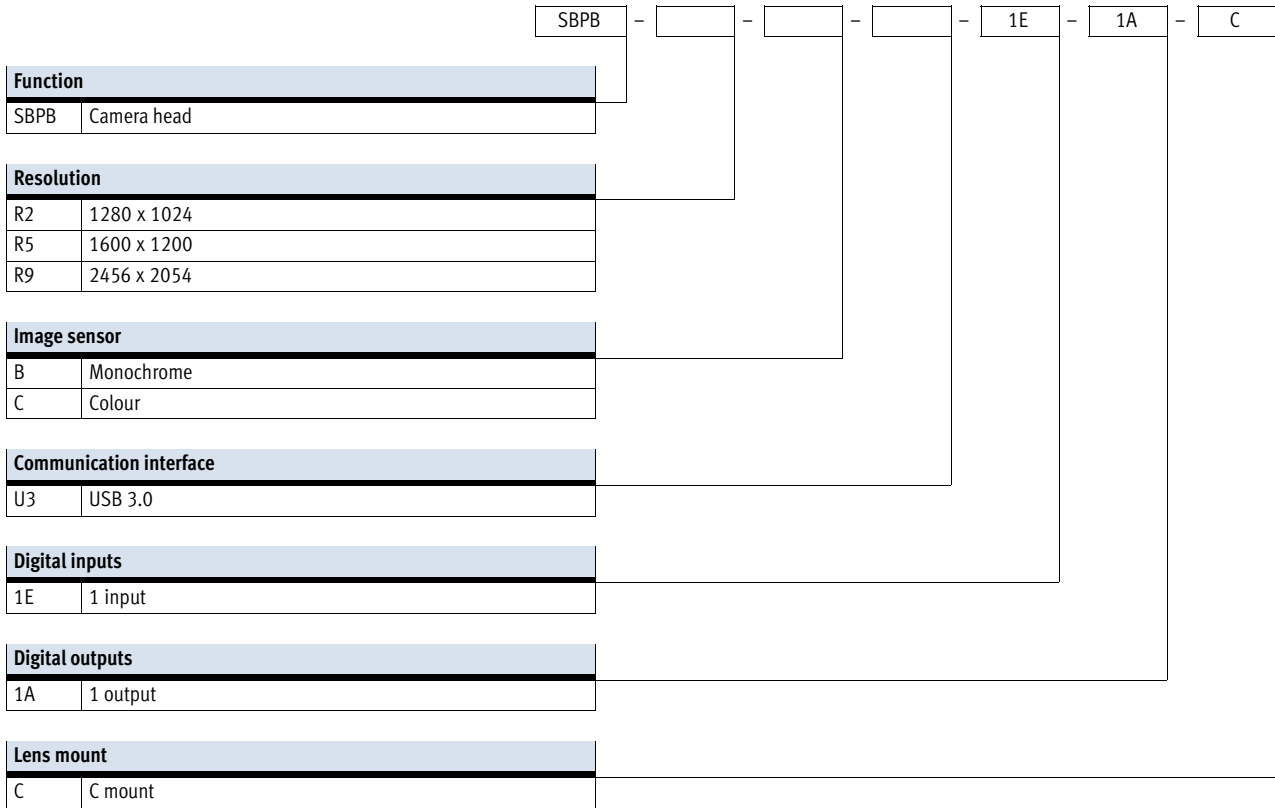


Image processing controllers	
SBRD	Series D

Function	
Q	Quality inspection


# Controller SBRD-Q

Type codes - Camera head



# Controller SBRD-Q

Technical data

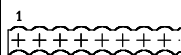
-  - Temperature range  
-5 ... +50 °C



## General technical data

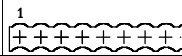
Dimensions W x H x L	[mm]	130 x 106 x 60
Type of mounting		With through-hole for M4 screw With H-rail
Product weight	[g]	315
CE marking (see declaration of conformity)		To EU EMC Directive
Protection against direct and indirect contact		PELV
Nominal operating voltage DC	[V]	24
Permissible voltage fluctuations	[%]	±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		 1 24
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

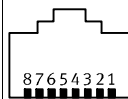
Power supply	
Function	Electronic system
Connection type	Plug
Connection technology [mm]	Circuit board plug, contact spacing 3.5 mm
Number of pins/wires	4
Connection pattern	 <span style="float: right;">24</span>

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	

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

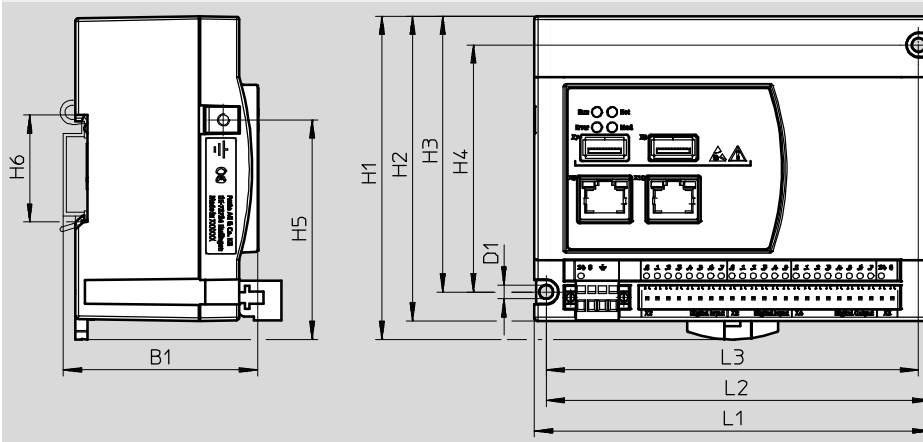


# Controller SBRD-Q

Technical data

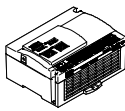
**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)





Type	B1	D1 Ø	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
	<b>8067301</b>	<b>SBRD-Q</b>

## 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

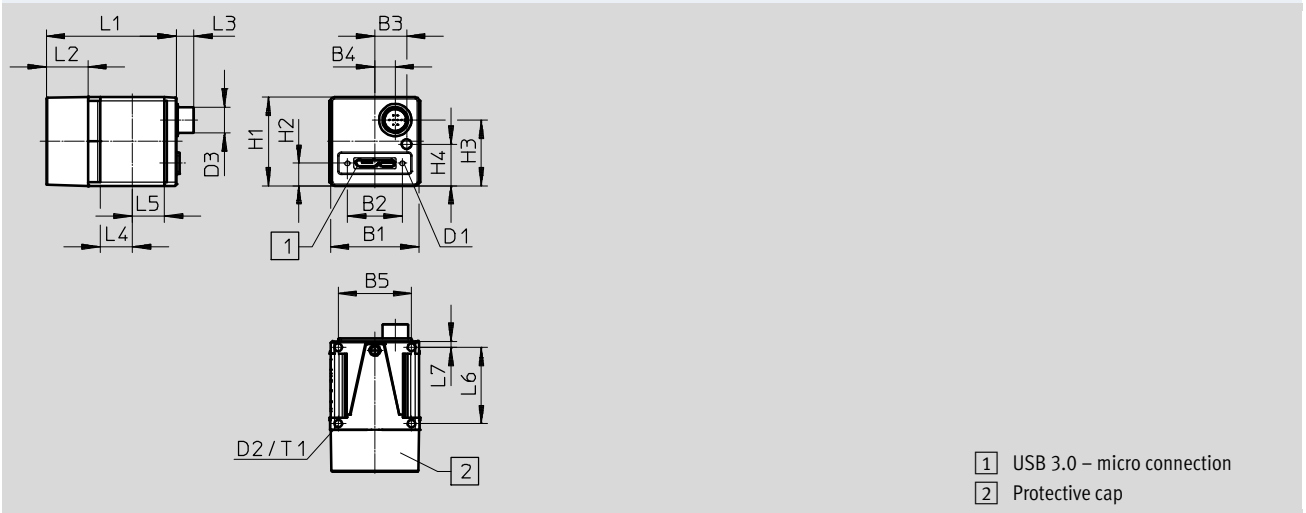
# Camera head, SBPB

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](http://www.festo.com)

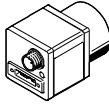
SBPB-R...-U3-1E1A-C



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

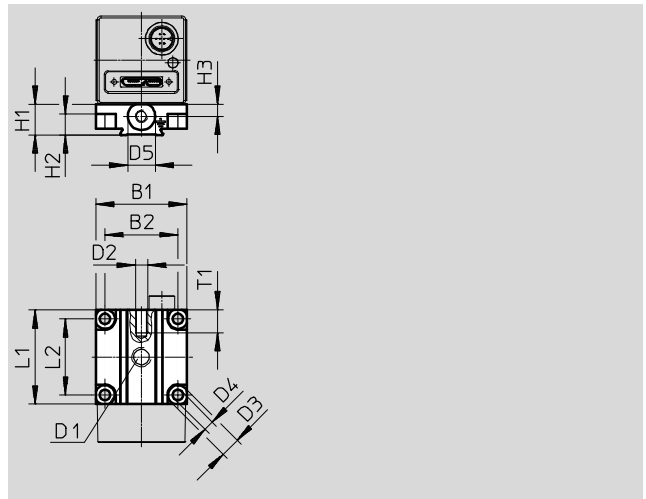
Ordering data – Lenses				Technical data → Internet: sasf-c	
	Format [inch]	Working distance [mm]	Focal length [mm]	Part no.	Type
	1/2	≥200	6	572910	SASF-C-L-F6
		≥250	12	572911	SASF-C-L-F12
	2/3	≥250	16	572912	SASF-C-L-F16
			25	572913	SASF-C-L-F25
			≥350	35	572914

## Mounting SBAM-C11-CP

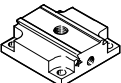
Type of mounting: clamped with thread

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

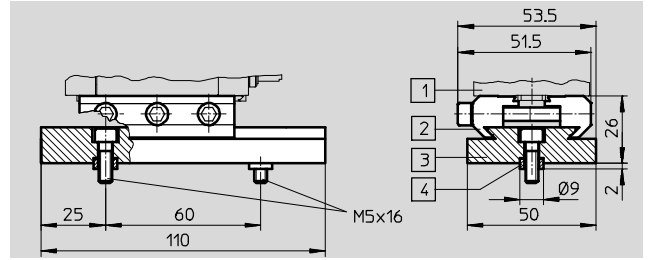
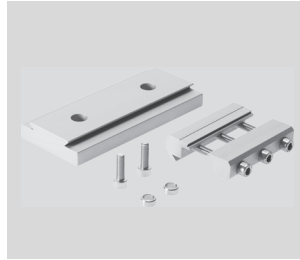
### Adapter kit

#### SBOA-HMSV-39

With screw-on adapter plate

Material:

Anodised wrought aluminium alloy



#### Ordering data

	Part no.	Type
Adapter kit	<b>541599</b>	<b>SBOA-HMSV-39</b>

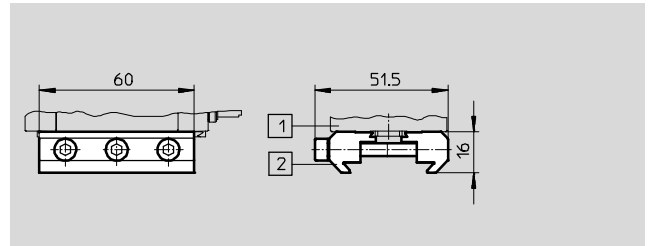
### Adapter kit

#### SBOA-HMSV-40

Without screw-on adapter plate

Material:

Anodised wrought aluminium alloy



#### Ordering data

	Part no.	Type
Adapter kit	<b>541600</b>	<b>SBOA-HMSV-40</b>

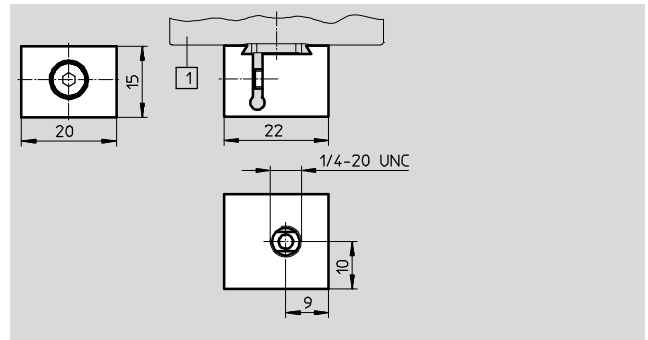
### Adapter kit

#### 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	<b>542140</b>	<b>SBOA-HMSV-41</b>

## Controller SBRD-Q

Accessories – Ordering data

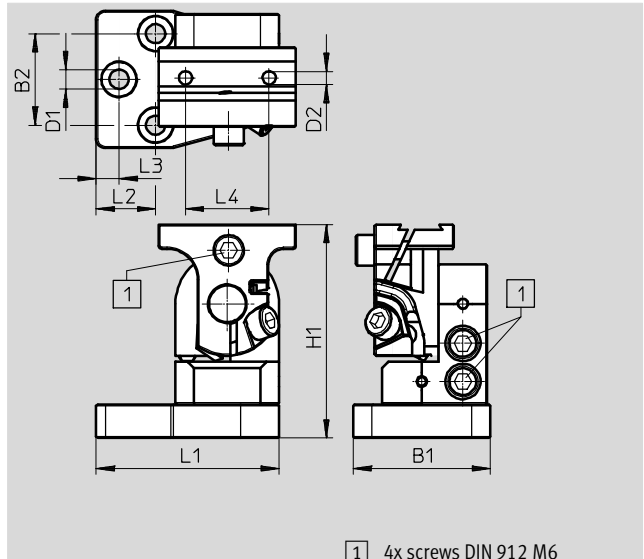
### Swivel mounting

#### 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 Ø	D2 Ø	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	<b>8058739</b>	<b>SBAM-C6-A2-AF</b>
									28	<b>8058740</b>	<b>SBAM-C6-CP-AF</b>

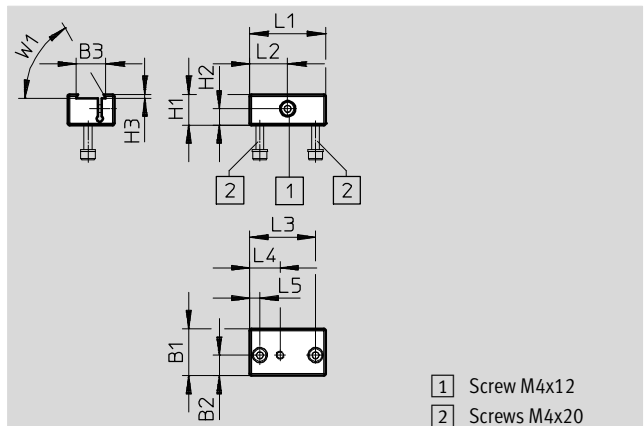
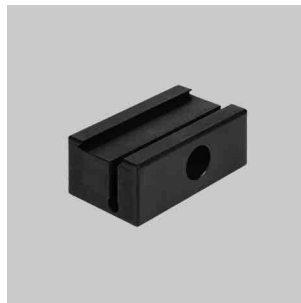
### Mounting

#### 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 <sup>1)</sup>	Part no.	Type
23	10	14.5	15	8	1.8	37.4	18.7	32.4	15	5	60°	28	2	<b>8031376</b>	<b>SBAM-C6-CP</b>

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

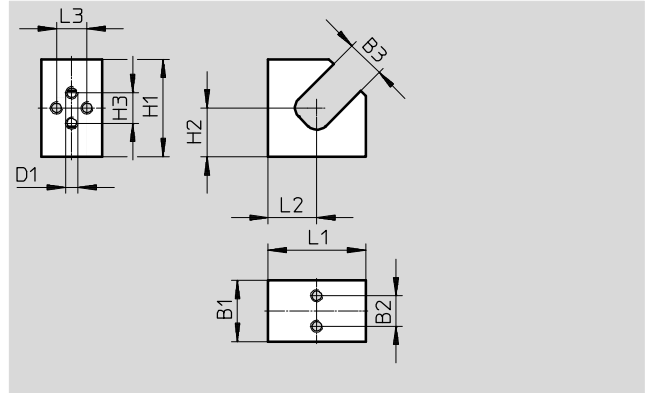
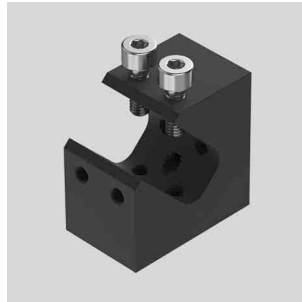
### Mounting

#### 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

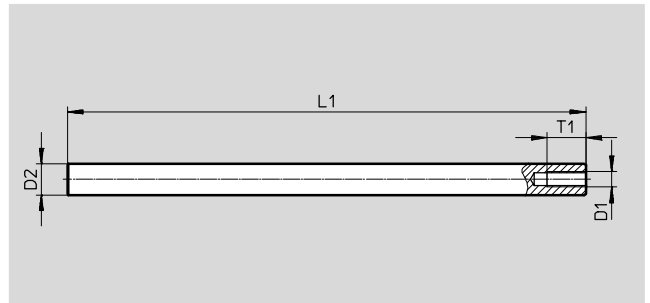
B1	B2	B3	D1	H1	H2	H3	L1	L2	L3	Weight [g]	Part no.	Type
20	10	12.5	M4	32	16	10	32	16	10	28	8058740	SBAM-C6-CP-AF

### 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 <sup>1</sup> ]	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

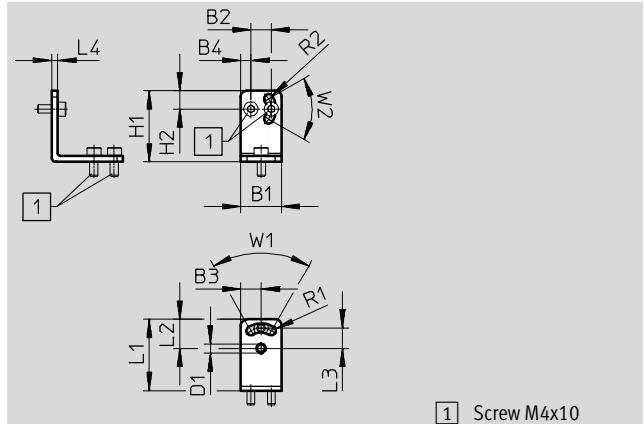
Accessories – Ordering data

### 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 ∅	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 <sup>1)</sup>	Part no.	Type
3	2.3	2.3	60°	60°	27	2	<b>8031377</b>	<b>SBAM-C6-A</b>




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.




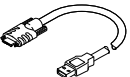
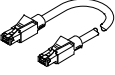
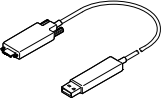
## Controller SBRD-Q

Accessories – Ordering data

Ordering data – Plug				
	Description	PU <sup>1)</sup>	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

# Festo - Your Partner in Automation



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