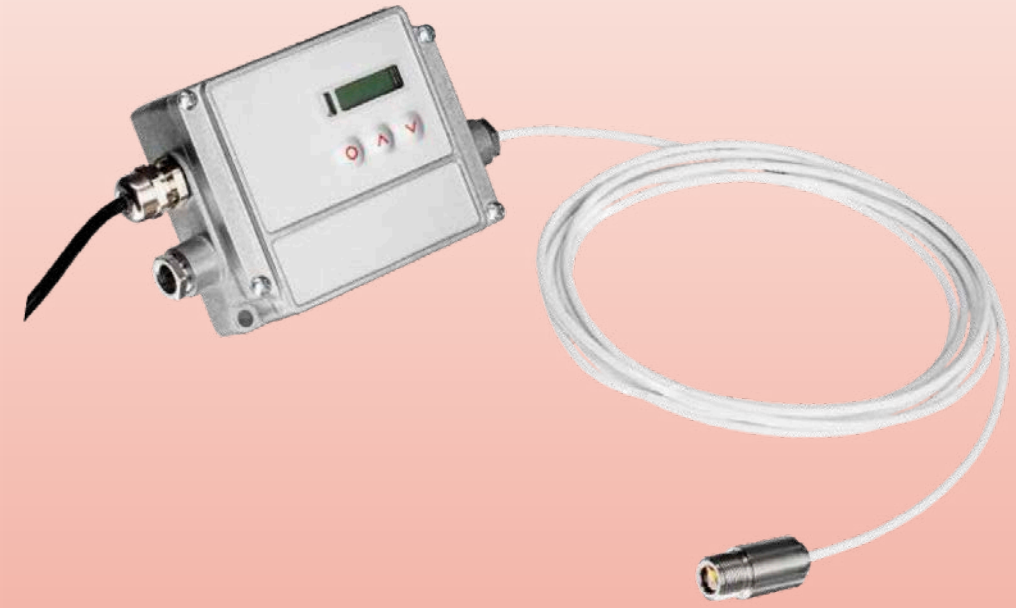
Infrared Pyrometer

TIN-SH



- One of the smallest infrared sensors worldwide with 22:1 optical resolution
- Rugged and usable up to 180 °C ambient temperature without cooling
- Separate electronics with easy accessible programming keys and LCD backlit display
- Selectable analog output: 0/4 - 20 mA, 0 - 5 V, 0 - 10 V, thermocouple type K or J

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1/07 - 2024

Description

The pyrometer TIN-SH is equipped with one of the world's smallest infrared sensors with a high optic resolution of 22:1. Additionally, it offers a high variability due to selectable analog outputs as well as several digital interfaces in the electronics box.

Technical Details

General Specifications

Material sensing head:	Stainless steel
Material electronic box:	Die casting zinc
Environmental rating:	IP 65 (NEMA-4)
Ambient temperature [1]:	-20 ... +180 °C -20 ... +85 °C (electronics)
Storage temperature:	-40 ... +130 °C (sensing head) -40 ... +85 °C (electronics)
Relative humidity:	10 - 95 %, non condensing
Vibration (sensor):	IEC 60068-2-6 (sinus shaped) IEC 60068-2-64 (broadband noise)
Shock (sensor):	IEC 60068-2-27 (25G and 50G)
Weight:	40 g (sensing head) 420 g (electronics)

Electrical Specifications

Outputs / analog:	Channel 1:0 / 4 - 20 mA, 0 - 5 / 10 V, thermocouple J, K Channel 2: sensind head temperature (-20 ... +180 °C as 0 - 5 V or 0 - 10 V), alarm output
Output / alarm:	24 V / 50 mA (open collector)
Optional:	Relay: 2 x 60 V_{DC}/ 42 V ACeff; 0.4 A; optically isolated
Outputs / digital (optional):	USB, RS232, RS485, Ethernet
Output impedances:	mA max. 500 Ω (with 8 - 36 V_{DC}) mV min. 100 kΩ load impedance thermocouple 20 Ω
Inputs:	Programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions)
Cable length:	3 m
Power Supply:	8 - 36 V_{DC}
Current draw:	Max. 100 mA

Measurement Specifications

Temperature range (scalable via programming keys or software):	-50 ... +975 °C
Spectral range:	8 - 14 µm
Optical resolution (90 % energy):	22:1 (precision glass optics)
CF-lens (optional):	0.6 mm @ 10 mm (with LT22)
System accuracy [2] [3] (at ambient temp. 23 ±5 °C):	±1 % or ±1 °C
Repeatability 2), 3) (at ambient temp. 23 ±5 °C):	±0.5 % or ±0.5 °C
Temperature resolution (display):	0.1 K
NETD 3) 4):	0.05 K (LT22 / LT15) 0.1 K (LT02)
Response time:	150 ms (95 %)
Emissivity/ Gain (adjustable via programming keys or software):	0.100 - 1.100
Transmissivity/ Gain (adjustable via programming keys or software):	0.100 - 1.100
Signal processing (parameter adjustable via programming keys or software, respectively):	Peak hold, valley hold, average; extended hold function with threshold and hysteresis
Software:	for Windows®, download at www.kobold.com/qr/TIN

[1] The LCD displays capacity may be limited at ambient temperatures below 0 °C
[2] Whichever is greater
[3] At object temperatures >0 °C, ε = 1
[4] At time constant 200 ms and T_{Obj} 25 °C

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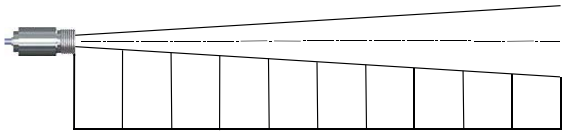
Order Details Model TIN-SH (Example: TIN-SH N7 S 20 3 0)

Model	Measuring range	Analog output	Optics / Spectral range	Cable length	Laser
TIN-SH = High Accuracy pyrometer (2-part)	**N7** = -50 ... +975 °C	**S** = Channel 1: 0/4 - 20 mA, 0 - 5 / 10 V, Thermoelement J, K; Channel 2: Sensing Head Temperature (-20 ... +180 °C as 0 - 5 V or 0 - 10 V)	**20** = 22:1/ 8 - 14 µm	**3** = 3 m	**0** = without laser pointer

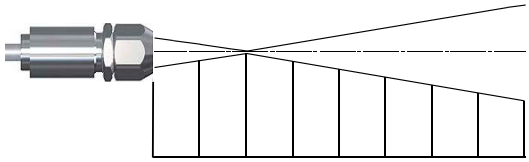
Optical Specifications

Optics SF, D:S = 22:1



S	6.5	10.9	15.2	19.6	23.9	28.3	32.6	37	41.3	45.7	50	(mm)
D	0	110	220	330	440	550	660	770	880	990	1100	(mm)

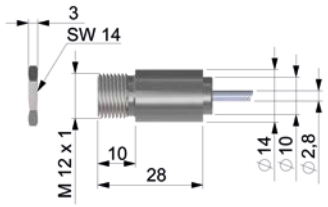
Optics CT LT CF, D:S = 22:1 (far field = 1.5:1)



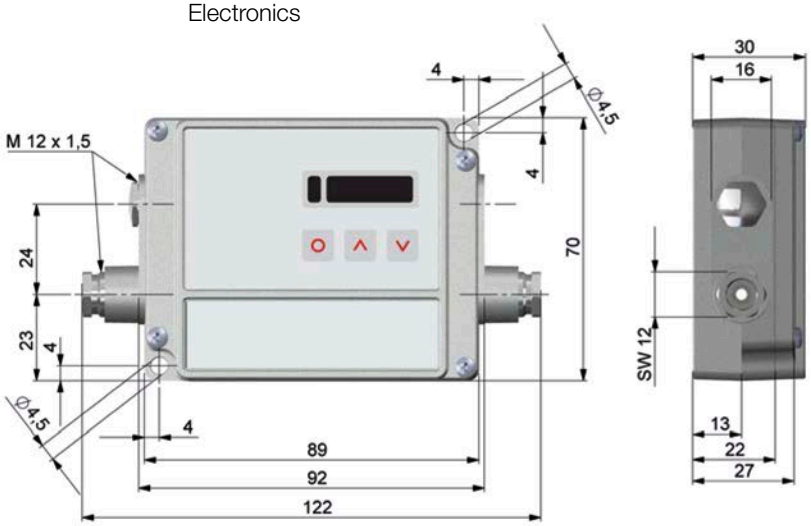
S	7	3.8	0.6	4.4	8.2	12	15.8	19.6	23.4	(mm)
D	0	5	10	15	20	25	30	35	40	(mm)

Dimensions [mm]

Sensing head (standard)



Electronics



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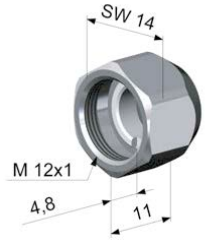
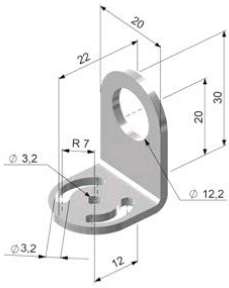
Accessories for TIN

Designation	Code	Description	Image
TIN-Z...	**TCF**	CF-lens for TIN-SS/-SH	
	TFB	Mounting bracket, fixed for TIN-SS/-SH, adjustable in one axis	
	TAB	Mounting bracket, fixed for TIN-SS/-SH, adjustable in two axis	
	HIA	USB Interfacekit for TIN-SH with Windows Software	
	MLS	OEM laser sighting aid for TIR-SH to connect to the electronics box	
	TRA	Carrier rail mounting plate for TIN-SH to connect to the electronics box	
	TF2	Mounting bracket, for TIN-SS/-SH, adjustable in one axis, probe and laser sighting aid	
	TAP	Air purge collar for TIN-SS/-SH, with mounting fork, adjustable in two axis	
	TAP2	Air purge collar for TIN-SH combinable with mounting brackets TFB/TAB/TF2	

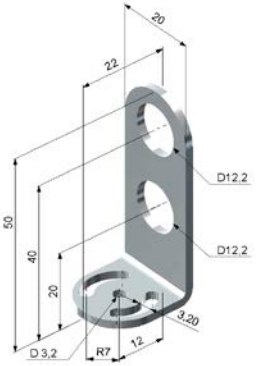
CF-lens model TIN-ZTCF



Mounting bracket, fixed model TIN-ZTFB



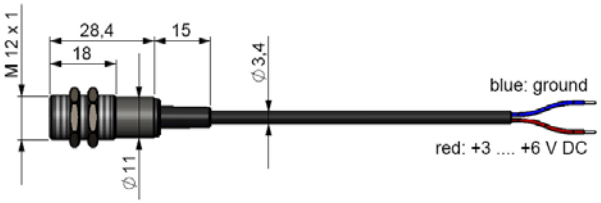
Mounting bracket, adjustable in one axis model TIN-ZTF2



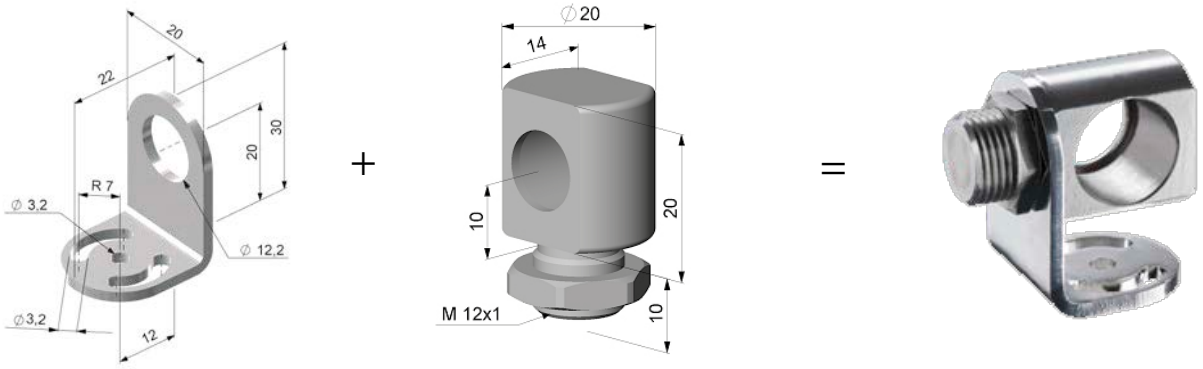
USB Interfacekit model TIN-ZSIA with Micro-USB plug and adapter USB-C and USB-A

(Software Download at www.kobold.com/qr/TIN)

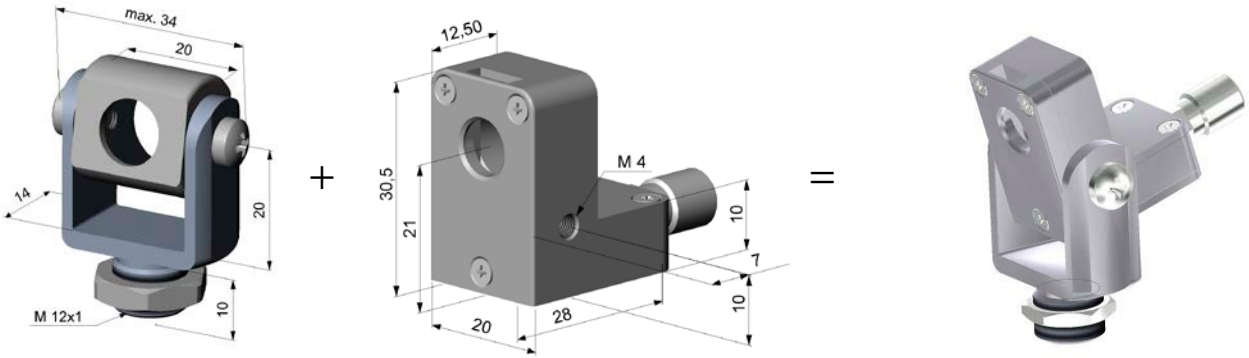
OEM laser sighting aid model TIN-ZMLS



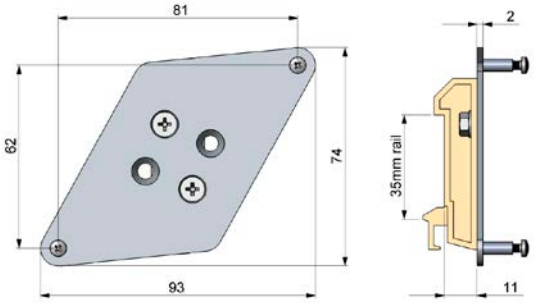
Mounting bracket, fixed for TIN-SS/-SH, adjustable in one axis,
Model TIN-ZTAB



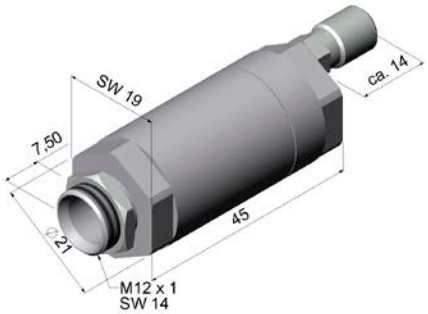
Free blowing offset, with mounting fork, adjustable in two axis,
Model TIN-ZTAP



Carrier rail mounting plate,
model TIN-ZTRA



Air purge collar for TIN-SH combinable with mounting brackets
Typ TIN-ZTAP2



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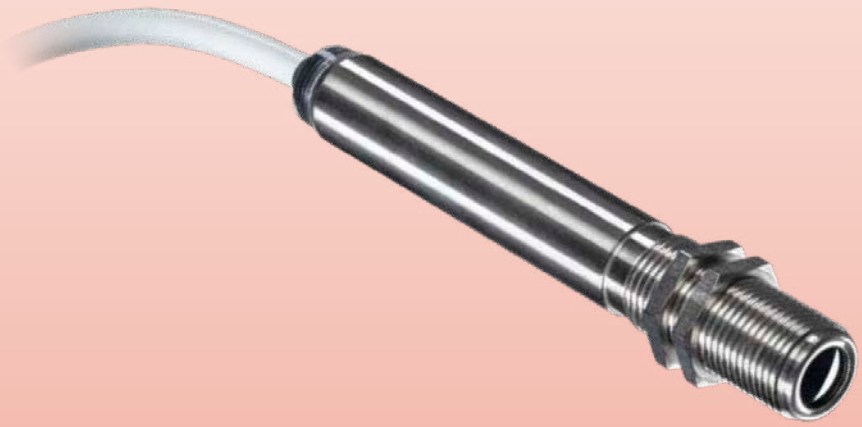
Infrared Pyrometer

TIN-SS



- Temperature range: -50 °C ... +1030 °C
- Response time: 14 ms
- Optical Resolution: 15:1
- Green LED alarm indication, aiming support, selfdiagnostic or temperature code indication
- Usable up to 80 °C ambient temperature without cooling
- Several outputs selectable: 0 - 10 V or 0 - 5 V free scalable or thermocouple type K, alarm output or digital output
- Easy adjustment via Windows software
- Power supply: 5 - 30 V_{DC}

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Description

The infrared pyrometer TIN-SS is perfectly suited for temperature measurement in small and narrow environments. The robust measuring heads have been developed for use in temperature ranges from -50 °C to 1,030 °C and can be employed in ambient temperatures of up to 80 °C without additional cooling.

The inexpensive IR pyrometers are perfectly suited for OEM solutions. They also work ideally for multiple employments of infrared measurement points. The plug version optris CSmed LT additionally allows for a quick assembly and removal, e.g. for regular calibration of medical devices.

Technical Details

General Specifications

Material:	Stainless steel
Environmental rating:	IP 63
Ambient temperature:	-20 ... +80 °C
Storage temperature:	-40 ... +85 °C
Relative humidity:	10 - 95 %, non condensing
Vibration:	IEC 68-2-6: 3 G, 11 - 200 Hz, any axis
Shock:	IEC 68-2-27: 50 G, 11 ms, any axis
Weight:	58 g

Electrical Specifications

Output / analog:	Selectable: 0 - 5 V or 0 - 10 V free scalable or thermocouple type K/ alarm with adjustable voltage levels
Output / alarm:	0 - 30 V / 50 mA (open collector)
3-state alarm output:	Adjustable threshold values and voltage level for: no alarm, pre-alarm, alarm
Output / digital:	Uni/ bidirectional, 9,6 / 115,2 kBaud (adjustable via software), 0/3 V digital level/ USB optional
Input (0 - 10 V):	Programmable functional input for external emissivity setting / ambient temperature adjustment, triggered signal output or peak-hold function
LED-functions:	Alarm indication, automatic aiming support, self diagnostic, temperature indication (via. temp.code)
Cable length:	3 m
Power supply:	5 - 30 V_{DC}
Current draw:	4 mA (without LED) / 10 mA

Measurement Specifications

Temperature range (scalable via software):	-50 ... +1030 °C
Spectral range:	8 - 14 µm
Optical resolution (90 % energy):	15:1
CF-lens (optional):	0,8 mm @ 10 mm
System accuracy (at ambient temp. 23 ±5 °C):	±1,5 % or ±1,5 °C [1]
Repeatability (at ambient temp. 23 ±5 °C):	±0,75 % or ±0,75 °C [1]
Temperature coefficient:	±0,05 K/K or ±0,05 % / K [2]
NETD:	50 mK [3]
Response time (90 %):	14 ms (adjustable up to 999 s)
Emissivity / Gain (adjustable via 0 - 10 V_{DC} input or software):	0,100 - 1,100
Transmissivity (adjustable via software):	0,100 - 1,100
Signal processing (parameter adjustable via software):	Peak hold, valley hold, average; extended hold function with threshold and hysteresis
Software:	for Windows®, download at www.kobold.com/qr/TIN

[1] Object temperature > 0°C ; whichever is greater
[2] For ambient temperatures <18°C and >28°C; whichever is greater
[3] At time constant 200 ms and T_{Obj} 200°C

Order Details Model TIN-SS (Example: **TIN-SS T3 V1530**)

Model	Measuring range	Analog output	Optics / Spectral range	Cable length	Laser
TIN-SS = compact pyrometer (standard)	**T3** = -50 ... +1030 °C	**V** = selectable: 0 - 5 V or 0 - 10 V free scalable or thermoelement type K	**15** = 15:1/ 8 - 14 µm	**3** = 3 m	**0** = without laser pointer

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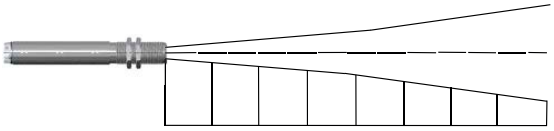
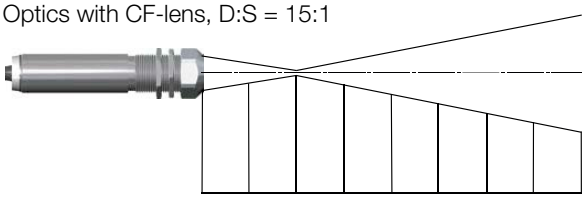
Optical Specifications

Optics, D:S = 15:1



S	6,5	11,6	16,6	21,7	26,7	35	43,3	51,6	59,9	(mm)
D	0	100	200	300	400	500	600	700	800	(mm)

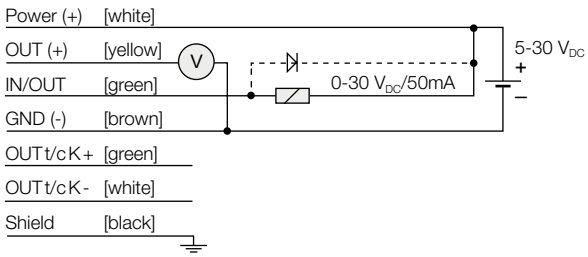
Optics with CF-lens, D:S = 15:1



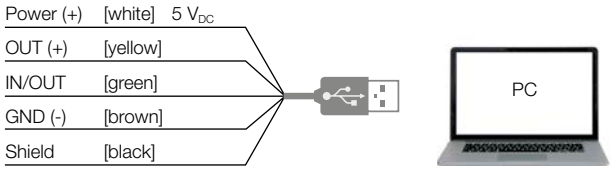
S	7	3,9	0,8	4,7	8,6	12,5	16,6	20,3	24,2	(mm)
D	0	5	10	15	20	25	30	35	40	(mm)

Connections

Connection analog with open collector alarm output (e.g. to actuate a relay)



Connection digital with the optional USB-adapter **TIN-ZSIA**



Accessories for TIN

Designation	Code	Description	Image
TIN-Z...	**TCF**	CF-lens for TIN-SS/-SH	
	TFB	Mounting bracket, fixed for TIN-SS/-SH, adjustable in one axis	
	TAB	Mounting bracket, fixed for TIN-SS/-SH, adjustable in two axis	
	SIA	USB Interfacekit for TIN-SS with Windows Software	
	TLS	Laser sighting aid for TIN-SS (battery supply)	
	TF2	Mounting bracket, for TIN-SS/-SH, adjustable in one axis, probe and laser sighting aid	
	TAP	Air purge collar for TIN-SS/-SH, laminar, with mounting fork, adjustable in one axis	

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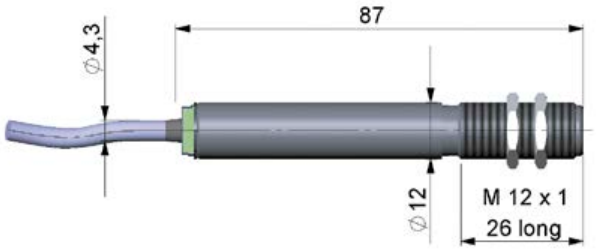
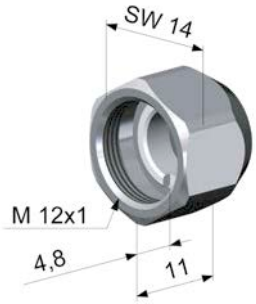
Dimensions / Accessories (examples) [mm]

Dimensions TIN-SS

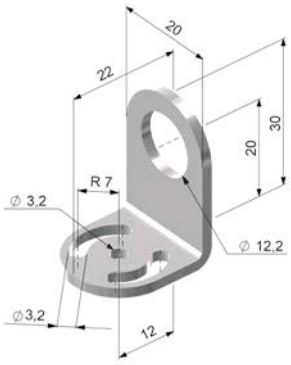


Model TIN-ZSIA:
USB Interface Kit with Micro-USB plug and adapter USB-C and USB-A (Software Download at www.kobold.com/qr/TIN)

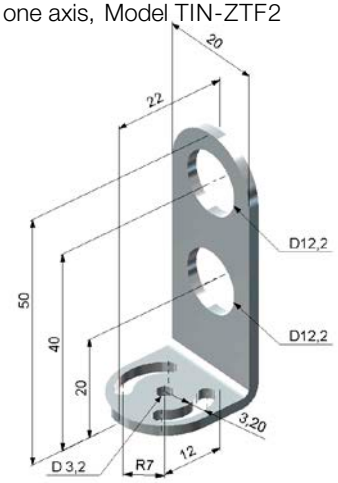
CF-lens Model TIN-ZTCF



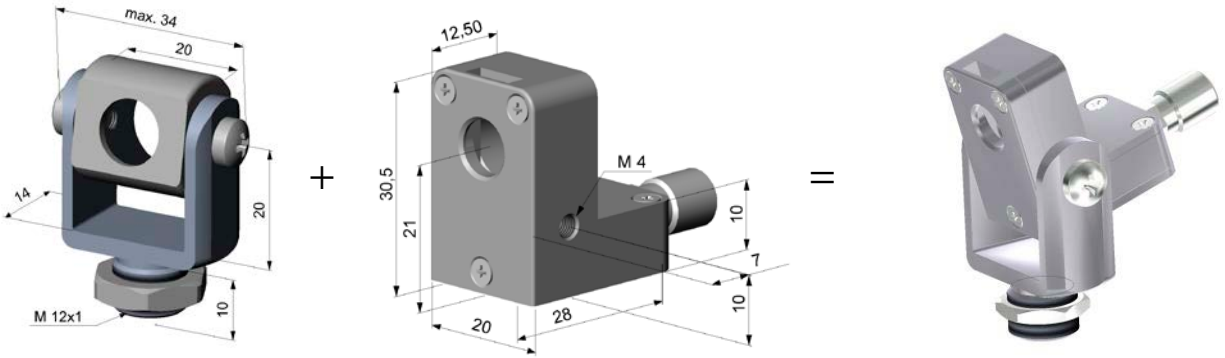
Mounting bracket, fixed
Model TIN-ZTFB



Mounting bracket, adjustable in one axis, Model TIN-ZTF2



Free blowing offset, laminar, with mounting fork, adjustable in one axis,
Model TIN-ZTAP



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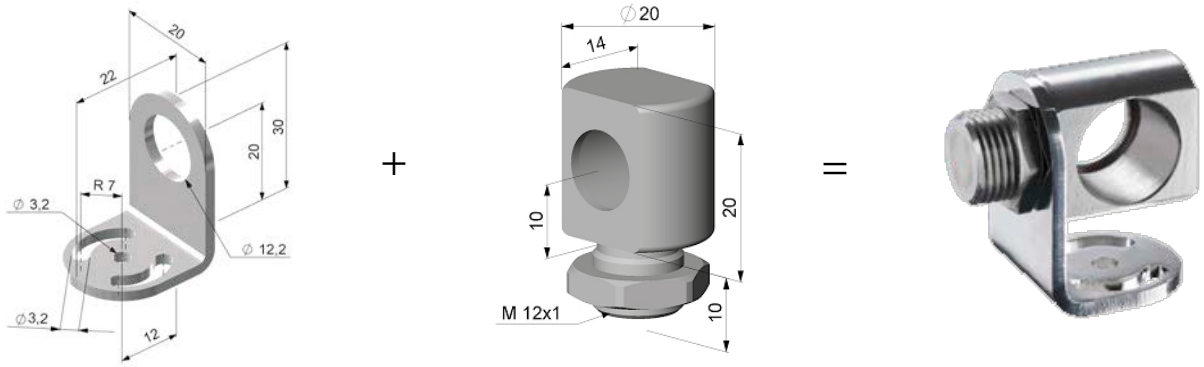
Mounting bracket, fixed for TIN-SS/-SH, adjustable in one axis,
Model TIN-ZTAB



Laser sighting aid Model TIN-ZTLS

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