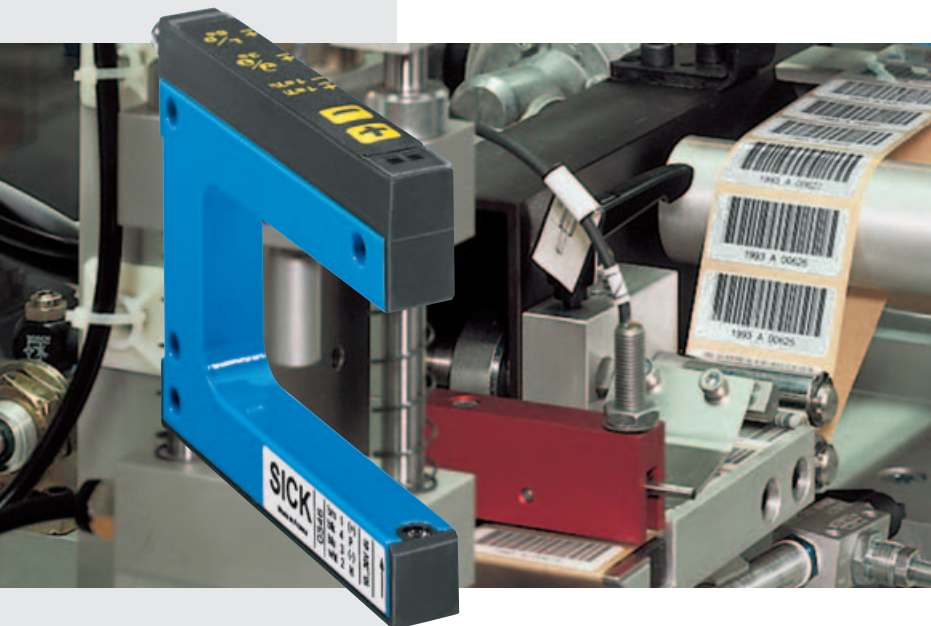




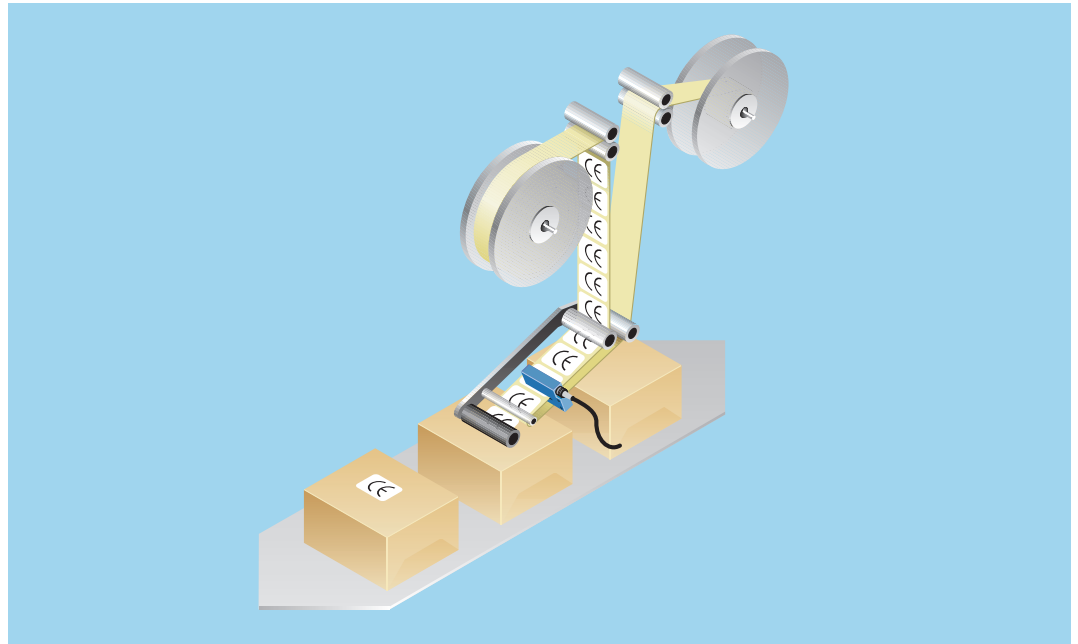
WF: Fork sensors for a wide range of applications



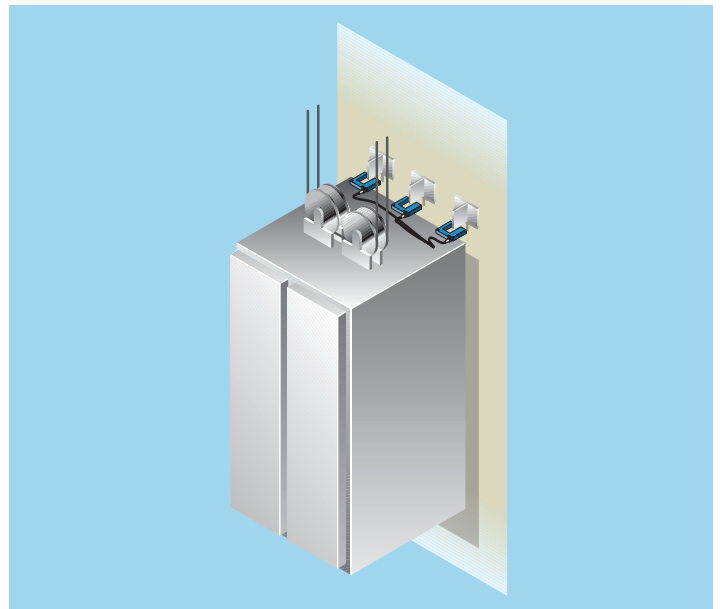
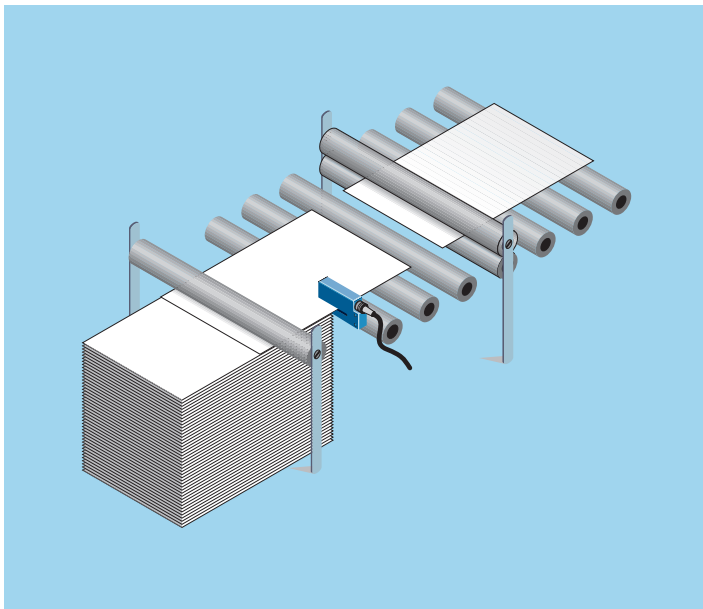
- Slot widths between 2 and 225 mm, slot depths of 40, 60 and 95 mm,
- manual adjustment via user-friendly keyboard or multiplex potentiometers,
- simple and quick adjustment via Teach-in,
- switching output PNP and NPN,
- L/D adjustable via button,
- rugged metal housing with glass optics,
- shortest response time,
- fine resolution.

The detection of labels, marks and double sheets, as well as holes and edges are typical applications for the new WF fork sensors. A complete range of sensors with the following features is available for a variety of operating conditions:

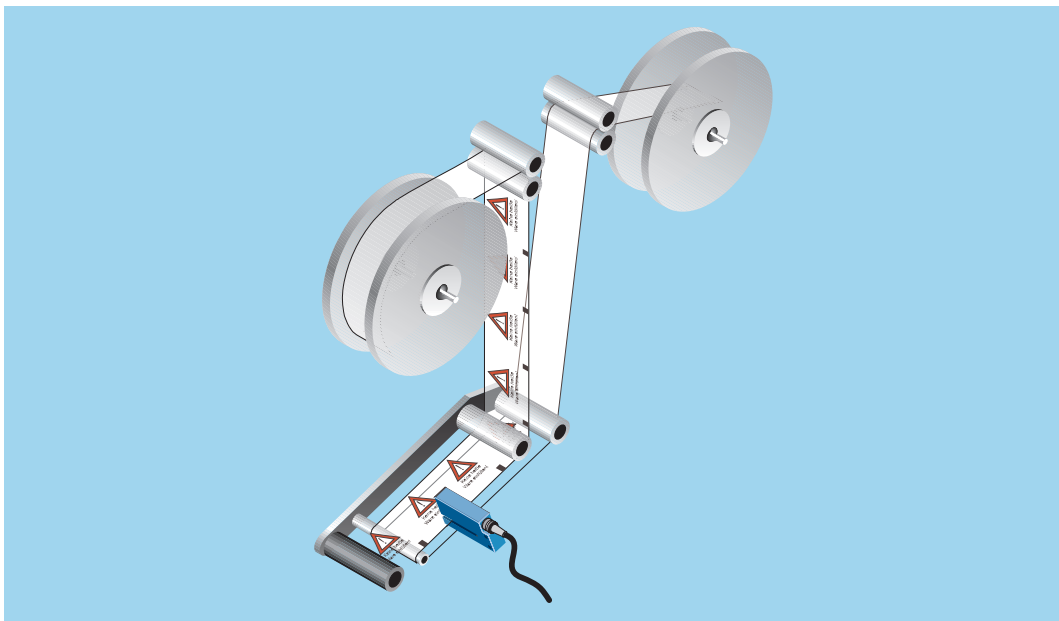
► Fork sensors on a labelling machine monitoring the label strip to ensure that a label is attached to every package.



▼ The fork sensor reliably detects double sheets on conveyor belts carrying material to guillotine cutters.



▲ Checking the position of transport cranes is an ideal application for fork sensors.



◄ Labels can only be cut and punched if printing and control marks can be accurately detected. Fork sensors are used to ensure that everything runs smoothly and reliably.

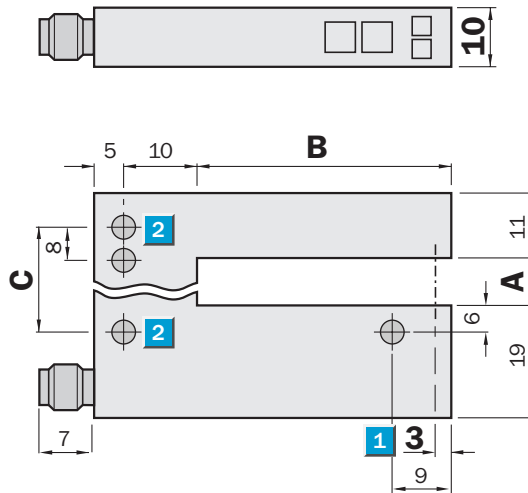
Fork width
2 ... 120 mm

Fork sensors

- Simple and accurate adjustment via “+” and “-” buttons
- PNP and NPN switching output
- Light/dark switching, adjustable
- Rugged aluminium housing

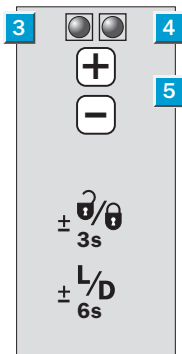
Dimensional drawing

All types



Adjustments possible

All types



- 1 Optical axis
- 2 Mounting holes, \varnothing 4.2 mm
- 3 Function indicator (red)
- 4 Function indicator (yellow), switching output
- 5 “+”/“-” buttons and function button

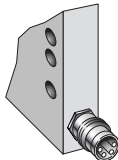
Dimensions

Dimensions (mm)	A Fork width	B Fork depth	C
WF 2	2	42/59/95	14
WF 5	5	42/59/95	14
WF 15	15	42/59/95	27
WF 30	30	42/59/95	42
WF 50	50	42/59/95	40
WF 80	80	42/59/95	70
WF 120	120	42/59/95	110

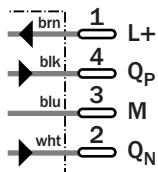


Connection types

All types



4-pin, M8



See chapter Accessories

Cables and connectors

Technical data		WF	2-XX ¹⁾ B410	5-XX ¹⁾ B410	15-XX ¹⁾ B410	30-XX ¹⁾ B410	50-XX ¹⁾ B410	80-XX ¹⁾ B410	120-XX ¹⁾ B410			
Fork width	2 mm											
	5 mm											
	15 mm											
	30 mm											
	50 mm											
	80 mm											
	120 mm											
Fork depth	40, 60 or 95 mm											
Light source	LED, infra-red modulated											
Minimum detectable object size	0.2 mm											
Supply voltage U_V	10 ... 30 V DC ²⁾											
Current consumption ³⁾	40 mA											
Residual ripple ⁴⁾	< 10 %											
Switching output	PNP and NPN											
	Light/dark adjustable via button											
Signal voltage												
PNP	HIGH = U _V - (< 2 V)/LOW = 0 V											
NPN	HIGH = U _V /LOW = < 2 V											
Output current I _A	100 mA											
Stability of response time ⁵⁾	± 20 µs											
Response time ⁵⁾ , switching frequency ⁶⁾	Max. 100 µs; 10,000/s											
Initialisation time	100 ms											
Ambient light safety												
Incandescent lamp	5,000 Lux											
Sunlight	10,000 Lux											
VDE protection class⁷⁾	III											
Enclosure rating	IP 65											
Circuit protection⁸⁾	A, B, C											
Ambient temperature⁹⁾	Operation -20 °C ... +60 °C											
	Storage -30 °C ... +80 °C											
Housing	Aluminium											
Weight	Approx. 36 g to 160 g ¹⁰⁾											

1) XX = Fork depth (E.g. 40 = fork depth equivalent to 40 mm)
 2) Limit values, reverse-polarity protected
 3) Without load

4) May not exceed or fall short of V_S-tolerances
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1; no time delay
 7) Reference voltage 50 V DC

8) A = U_V connections reverse-polarity protected
 B = Outputs short-circuit protected
 C = Interference pulse suppression
 9) Do not bend below 0 °C

10) Depending on fork width

Truth table

Switching type	Light-switching (Q)		Dark-switching (Q̄)	
	yes	no	yes	no
Light path free	yes	no	yes	no
PNP/NPN output	HIGH	LOW	LOW	HIGH
Function indicator (yellow) On	Off	Off	Off	On

Order information

Fork depth 40 mm		Fork depth 60 mm		Fork depth 95 mm	
Type	Order no.	Type	Order no.	Type	Order no.
WF2-40B410	6 028 428	WF2-60B410	6 028 436	WF2-95B410	6 028 443
WF5-40B410	6 028 429	WF5-60B410	6 028 437	WF5-95B410	6 028 444
WF15-40B410	6 028 430	WF15-60B410	6 028 438	WF15-95B410	6 028 445
WF30-40B410	6 028 431	WF30-60B410	6 028 439	WF30-95B410	6 028 446
WF50-40B410	6 028 432	WF50-60B410	6 028 440	WF50-95B410	6 028 447
WF80-40B410	6 028 433	WF80-60B410	6 028 441	WF80-95B410	6 028 448
WF120-40B410	6 028 435	WF120-60B410	6 028 442	WF120-95B410	6 028 449

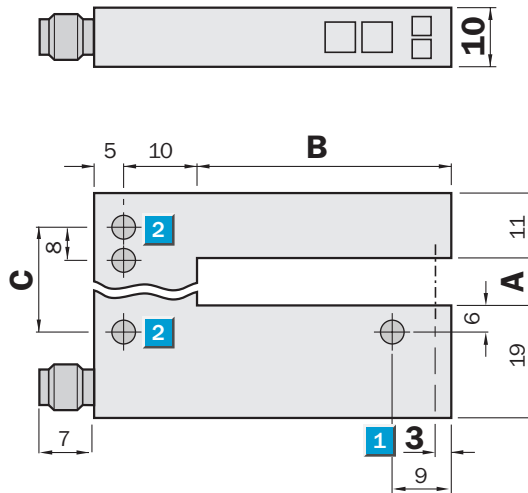
Fork width
2 ... 120 mm

Fork sensors

- Simple setting using 2-point Teach-in
- PNP and NPN switching output
- Light/dark switching adjustable
- Rugged aluminium housing

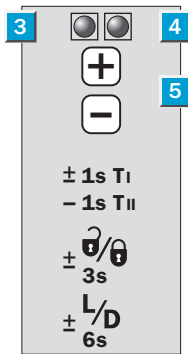
Dimensional drawing

All types



Adjustments possible

All types



- 1 Optical axis
- 2 Mounting holes, Ø 4.2 mm
- 3 Function indicator (red)
- 4 Function indicator (yellow), switching output
- 5 "+" / "-" buttons and function button

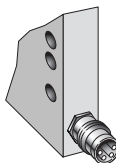
Dimensions

Dimensions (mm)	A Fork width	B Fork depth	C
WF 2	2	42/59/95	14
WF 5	5	42/59/95	14
WF 15	15	42/59/95	27
WF 30	30	42/59/95	42
WF 50	50	42/59/95	40
WF 80	80	42/59/95	70
WF 120	120	42/59/95	110

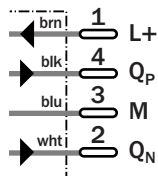


Connection types

All types



4-pin, M8



See chapter Accessories
Cables and connectors

Technical data		WF	2-XX ¹⁾	5-XX ¹⁾	15-XX ¹⁾	30-XX ¹⁾	50-XX ¹⁾	80-XX ¹⁾	120-XX ¹⁾			
			B416	B416	B416	B416	B416	B416	B416			
Fork width	2 mm											
	5 mm											
	15 mm											
	30 mm											
	50 mm											
	80 mm											
	120 mm											
Fork depth	40, 60 or 95 mm											
Light source	LED, infra-red modulated											
Minimum detectable object size	0.2 mm											
Supply voltage U_V	10 ... 30 V DC ²⁾											
Current consumption ³⁾	40 mA											
Ripple ⁴⁾	< 10 %											
Switching output	PNP and NPN											
	Light/dark adjustable via button											
Signal voltage												
PNP	HIGH = U _V - (< 2 V)/LOW = 0 V											
NPN	HIGH = U _V /LOW = < 2 V											
Output current I _A	100 mA											
Stability of response time ⁵⁾	± 20 µs											
Response time ⁵⁾ , switching frequency ⁶⁾	Max. 100 µs; 10,000/s											
Teach-in via button												
Initialisation time	100 ms											
Ambient light safety												
Incandescent lamp	5,000 Lux											
Sunlight	10,000 Lux											
VDE protection class⁷⁾	III											
Enclosure rating	IP 65											
Circuit protection⁸⁾	A, B, C											
Ambient temperature⁹⁾	Operation -20 °C ... +60 °C											
	Storage -30 °C ... +80 °C											
Housing	Aluminium											
Weight	Approx. 36 g to 160 g ¹⁰⁾											

1) XX = Fork depth (E.g. 40 = fork depth equivalent to 40 mm)
 2) Limit values, reverse-polarity protected
 3) Without load

4) May not exceed or fall short of V_S-tolerances
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1; no time delay
 7) Reference voltage 50 V DC

8) A = U_V connections reverse-polarity protected
 B = Outputs short-circuit protected
 C = Interference pulse suppression
 9) Do not bend below 0 °C

10) Depending on fork width

Truth table

Switching type	Light-switching (Q)		Dark-switching (Q̄)	
	yes	no	yes	no
Light path free	yes	no	yes	no
PNP/NPN output	HIGH	LOW	LOW	HIGH
Function indicator (yellow) On	Off	Off	Off	On

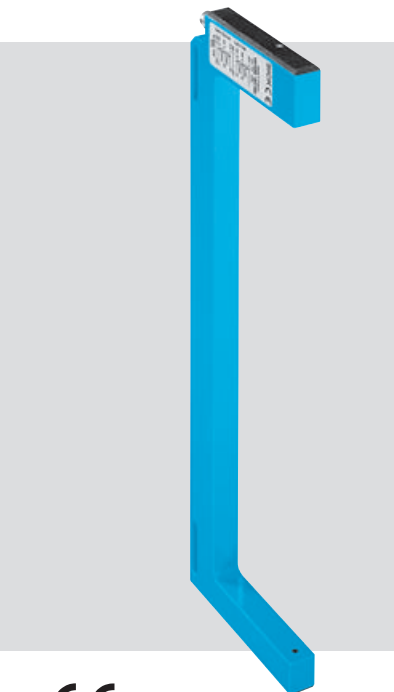
Order information

Fork depth 40 mm		Fork depth 60 mm		Fork depth 95 mm	
Type	Order no.	Type	Order no.	Type	Order no.
WF2-40B416	6 028 450	WF2-60B416	6 028 457	WF2-95B416	6 028 464
WF5-40B416	6 028 451	WF5-60B416	6 028 458	WF5-95B416	6 028 465
WF15-40B416	6 028 452	WF15-60B416	6 028 459	WF15-95B416	6 028 466
WF30-40B416	6 028 453	WF30-60B416	6 028 460	WF30-95B416	6 028 467
WF50-40B416	6 028 454	WF50-60B416	6 028 461	WF50-95B416	6 028 468
WF80-40B416	6 028 455	WF80-60B416	6 028 462	WF80-95B416	6 028 469
WF120-40B416	6 028 456	WF120-60B416	6 028 463	WF120-95B416	6 028 470

 **Fork width
225 mm**

Fork sensors

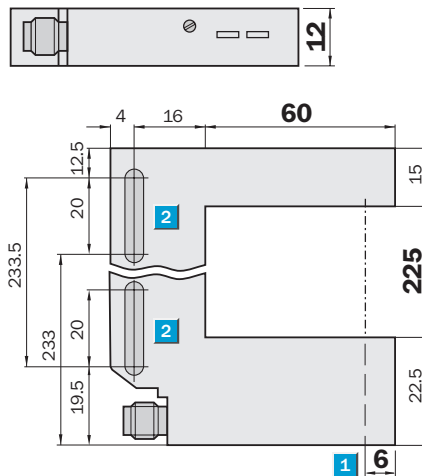
- Simple accurate setting using multi-path potentiometer
- Universal switching output
- Light-/dark-switching
- Robust aluminium housing



CE

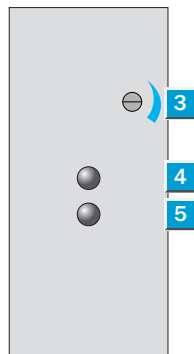
See chapter Accessories
Cables and connectors

Dimensional drawing
WF 225-B4150



Adjustments possible

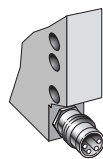
All types



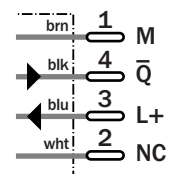
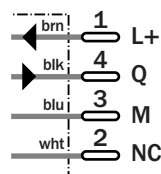
- 1 Optical axis
- 2 Mounting holes, \varnothing 4.2 mm
- 3 Sensitivity control
- 4 Function indicator (red), lightbeam blocked
- 5 Function indicator (yellow), lightbeam made

Anschlussart

WF 225-B4150



Light-switching 4-pin, M8 Dark-switching 4-pin, M8



Technical data		WF	225-B4150										
Fork width	225 mm												
Light source	LED, infrared light, pulsed												
Supply voltage V_S¹⁾	10...30 V DC												
Current consumption ²⁾	30 mA												
Residual ripple ³⁾	< 10 %												
Switching outputs	PNP/NPN, light-/dark-switching												
Signal voltage HIGH at I_A max.	$V_S - (< 2 V)$ PNP, Q												
Signal voltage LOW at I_A max.	Approx. 0 V PNP, Q												
Output current I_A max.	100 mA												
Response time⁴⁾	1 ms												
Max. switching frequency⁵⁾	500/s												
Ambient light safety	3,000 Lux												
VDE protection class⁶⁾	III												
Enclosure rating	IP 65												
Circuit protection⁷⁾	B, C												
Ambient temperature⁸⁾	Operation - 20 °C...+ 60 °C												
	Storage - 20 °C...+ 80 °C												
Housing material	Aluminium												
Weight	Approx. 160 g												

¹⁾ Limit values, reverse-polarity protected

²⁾ Without load

³⁾ May not exceed or fall short of V_S tolerances

⁴⁾ Signal transit time with resistive load

⁵⁾ With light/dark ratio 1:1; no time delay

⁶⁾ Reference voltage 50 V DC

⁷⁾ B = Outputs short-circuit protected

C = Interference pulse suppression

⁸⁾ Do not bend below 0 °C

Truth table				
Switching mode	Light-switching (Q)		Dark-switching (\bar{Q})	
	Yes	No	Yes	No
Lightbeam made	Yes	No	Yes	No
Output NPN	LOW	HIGH	HIGH	LOW
Output PNP	HIGH	LOW	LOW	HIGH

Order information	
Type	Order no.
WF 225-B4150	6 022 139