

## Glass-fiber wave guides FO Series

- Non contact detection, positioning, counting, supervision
- Glass instead of plastic!
- Very robust, no aging thanks to glass
- Fiber cross sections 0.5...4mm<sup>2</sup>
- Lengths 250...5000mm
- Various small scanner heads
- For high temperatures and ATEX
- Customized versions available
- Swiss made



### Properties

Glass fiber wave guides are used for detection of smallest objects in confined space. Thus the miniature scanner head is separated from the real (bigger) sensor. The proximity switches types OPE or OPD are infrared sensors suitable for glass fiber wave guides of SNT Sensortechnik AG (see data sheets OPE/D). The wave guide is mounted with a nut on the sensor thread. The O-ring sealing makes the connection absolutely tight. The compact design of the scanner heads permits scanning in very small spaces, at extreme ambient temperatures, in explosive areas and in strong electromagnetic fields. It is possible to detect very small parts.

### Function

#### FOY scanner:

The FOY glass fiber scanners perform as reflection scanner sensors. Transmitter and receiver are accommodated in the same wave guide. The pulsed infrared light is fully or partially reflected by the target and received by the sensor through the receiver glass fiber. As soon as the received light exceeds the value which was selected in the sensor, the sensor activates its binary output. The amount of reflected signal depends on target material, distance, surface, size, color and detection angle. Further more the reflected light must sufficiently differ in intensity from the reflection of the background.

#### FOI barrier:

With an FOI glass fiber wave guide the sensor works as light barrier. Transmitter and receiver are accommodated in separate guides. When the (invisible) light beam between transmitter and receiver head is interrupted, the sensor activates its binary output.

With glass fiber barriers all targets can be detected which reduce the received signal by at least the hysteresis of the sensor. Taking into account a certain power reserve, it is therefore necessary to choose the fiber optic barrier whose light beam is obscured to the greatest possible extent by the target object. Taking into account the working distance, the fiber optic barrier with the smallest possible glass cross-section should always be used. In general, fiber optic barriers having larger glass cross-sections also have larger effective distances.

### Selection

The appropriate glass fiber wave guide can be selected with the help of the tables on pages 2 and 3. When the wave guide length is preselected, then the maximum detection distance is given as a function of sensor model (OPE/D) and glass cross section.

Further moiré wave guides with plastic (PU) or metal hoses (HT) are available.

**FOY scanners**

Type	Art. #	Short description	Detection distance [mm]				Hose		Head
			OPE 300	OPE 500	OPE 750	OPD 1500	PUR	Metal	
FOY 500-0.5G	50100	mini, straight, M4	10	15	25		•	C	
FOY 1000-0.5G	50200	mini, straight, M4	8	13	20		•	C	
FOY 500-0.5GHT	50900	mini, straight, HT, M4	10	15	25		•	D	
FOY 1000-0.5GHT	51000	mini, straight, HT, M4	8	13	20		•	D	
FOY 2000-0.5GHT	51100	mini, straight, HT, M4	7	11	17		•	D	
FOY 500-0.5GBHT 100	52650	mini, bendable, HT, M4	10	15	25		•	E	
FOY 500-0.5GW	51200	mini, angle 90°, M4	7	12	17		•	F	
FOY 1000-0.5GW	51300	mini, angle 90°, M4	6	10	15		•	F	
FOY 500-0.5GWHT	52000	mini, angle 90°, HT, M4	7	12	17		•	G	
FOY 1000-0.5GWHT	52100	mini, angle 90°, HT, M4	6	10	15		•	G	
FOY 500-0.5GWR	53950	mini, thread 90°, M3	7	11	17		•	I	
FOY 500-1G	52900	standard, straight, M4	18	30	45		•	K	
FOY 1000-1G	53000	standard, straight, M4	17	28	42		•	K	
FOY 500-1GHT	53700	standard, straight, HT, M4	18	30	45		•	L	
FOY 1000-1GHT	53800	standard, straight, HT, M4	17	28	42		•	L	
FOY 2000-1GHT	53900	standard, straight, HT, M4	15	25	37		•	L	
FOY 500-1GW	54000	standard, 90°	17	28	42		•	M	
FOY 1000-1GW	54100	standard, 90°	16	26	40		•	M	
FOY 500-1GWHT	54600	standard, angle 90°, HT	17	28	42		•	N	
FOY 1000-1GWHT	54700	standard, angle 90°, HT	16	26	40		•	N	
FOY 2000-1GWHT	54800	standard, angle 90°, HT	14	23	35		•	N	
FOY 500-1GWR	53960	standard, thread 90° M4	16	26	40		•	O	
FOY 1000-1GWR	53965	standard, thread 90° M4	15	25	37		•	O	
FOY 500-2GWR	55650	medium, thread 90° M4	35	58	87		•	O	
FOY 1000-2GWR	55655	medium, thread 90° M4	30	50	75		•	O	
FOY 500-4G	57300	big, rugged, straight, M6	70	120	170		•	P	
FOY 1000-4G	57400	big, rugged, straight, M6	60	100	150		•	P	
FOY 2000-4G	57500	big, rugged, straight, M6	50	85	120		•	P	
FOY 3000-4G	57600	big, rugged, straight, M6	40	65	100		•	P	
FOY 500-4GHT	58300	big, rugged/, HT, M6	70	120	170		•	R	
FOY 1000-4GHT	58400	big, rugged, HT, M6	60	100	150		•	R	
FOY 2000-4GHT	58500	big, rugged, HT, M6	50	85	120		•	R	
FOY 3000-4GHT	58520	big, rugged, HT, M6	40	65	100		•	R	
FOY 4000-4GHT	58530	big, rugged, HT, M6	30	50	75		•	R	
FOY 5000-4GHT	58540	big, rugged, HT, M6	25	42	65		•	R	
FOY 500-4GW	58600	big, rugged, 90°	70	120	170		•	S	
FOY 1000-4GW	58700	big, rugged, 90°	60	100	150		•	S	
FOY 500-4GWHT	59200	big, rugged, 90°, HT	70	120	170		•	T	
FOY 1000-4GWHT	59300	big, rugged, 90°, HT	60	100	150		•	T	
FOY 2000-4GWHT	59400	big, rugged, 90°, HT	50	85	120		•	T	

**FOI barriers**

Type	Art. #	Short description	Barrier with [mm]				Hose		Head
			OPE 300	OPE 500	OPE 750	OPD 1500	PUR	Metal	
FOI 500-0.5BP 50	59705	mini, bendable	50	85	120	250	•		B
FOI 500-0.5PU	97900	mini, straight, thread M4	50	85	120	250	•		K
FOI 500-1PU	59800	mini, straight, thread M4	130	210	300	500	•		K
FOI 1000-1PU	59900	mini, straight, thread M4	100	160	250	450	•		K
FOI 500-1HT	60600	mini, straight, thread M3, HT	130	210	300	500		•	E1
FOI 1000-1HT	60700	mini, straight, thread M3, HT	100	160	250	450		•	E1
FOI 2000-1HT	60800	mini, straight, thread M3, HT	80	130	200	420		•	E1
FOI 500-1WPU	60900	mini, 90°, thread M4	120	200	300	500	•		F
FOI 1000-1WPU	61000	mini, 90°, thread M4	80	130	200	450	•		F
FOI 500-1WHT	62000	mini, 90°, thread M4, HT	120	200	300	500		•	G
FOI 1000-1WHT	62100	mini, 90°, thread M4, HT	80	130	200	450		•	G
FOI 2000-1WHT	62200	mini, 90°, thread M4, HT	60	100	150	420		•	G
FOI 500-1WHTL	62050	mini, 90°, long, thread M4, HT	120	200	300	500		•	H1
FOI 1000-1WHTL	62150	mini, 90°, long, thread M4, HT	80	130	200	450		•	H1
FOI 500-1WR	62510	mini, thread 90° M3	130	210	300	500		•	I
FOI 1000-1WR	62520	mini, thread 90° M3	90	150	220	450		•	I
FOI 500-2WR	62550	medium, thread 90° M4	250	400	600	700*		•	O
FOI 1000-2WR	62560	medium, thread 90° M4	150	250	370	600		•	O
FOI 500-4PU	62900	big, straight, thread M4	700	700*	700*	700*	•		K
FOI 1000-4PU	63000	big, straight, thread M4	600	900	1500	1500*	•		K
FOI 2000-4PU	63100	big, straight, thread M4	400	600	1000	1800	•		K
FOI 500-4HT	64000	big, straight, thread M4, HT	700	700*	700*	700*		•	L
FOI 1000-4HT	64100	big, straight, thread M4, HT	600	900	1500	1500*		•	L
FOI 2000-4HT	64200	big, straight, thread M4, HT	400	600	1000	1800		•	L
FOI 3000-4HT	64250	big, straight, thread M4, HT	300	500	700	1700		•	L
FOI 5000-4HT	64270	big, straight, thread M4, HT	150	250	400	1600		•	L
FOI 500-4WPU	64300	big, 90°, without thread	600	600*	600*	600*	•		L1
FOI 1000-4WPU	64400	big, 90°, without thread	500	800	1200	1500*	•		L1
FOI 500-4WHT	65500	big, 90°, high temp., HT	600	600*	600*	600*		•	M1
FOI 1000-4WHT	65600	big, 90°, high temp., HT	500	800	1200	1500*		•	M1
FOI 2000-4WHT	65700	big, 90°, high temp., HT	400	600	1000	1800		•	M1
FOI 500-4WPUL	64600	big, 90°, long	600	600*	600*	600*	•		N1
FOI 1000-4WPUL	64700	big, 90°, long	500	800	1200	1500*	•		N1
FOI 500-4WHTL	65520	big, 90°, long, HT	600	600*	600*	600*		•	O1
FOI 1000-4WHTL	65550	big, 90°, long, HT	500	800	1200	1500*		•	O1

\*) limited by the physical wave guide length

**Type key „FOY XXX-Z...“**

FOY = scanner, FOI = barrier  
 XXX = length [mm]  
 Z = fibre area [mm<sup>2</sup>]

HT = metal hose (200°C)  
 PU = Polyurethan hose (80°C)  
 W = 90° bended  
 WR = angle with thread

Scanner heads

