

FT 50 RLA 20

Distance sensor



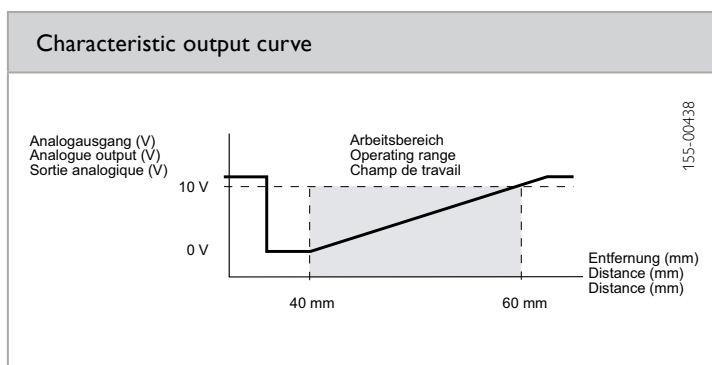
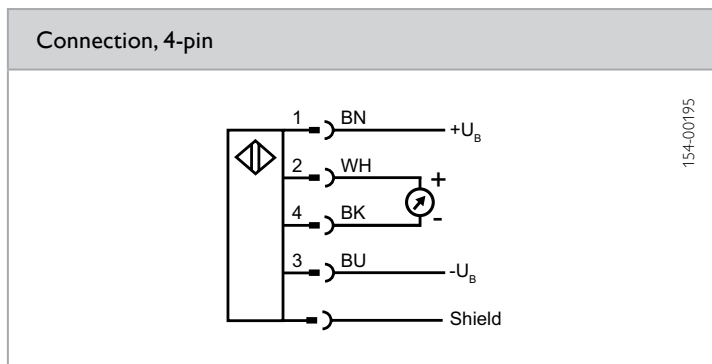
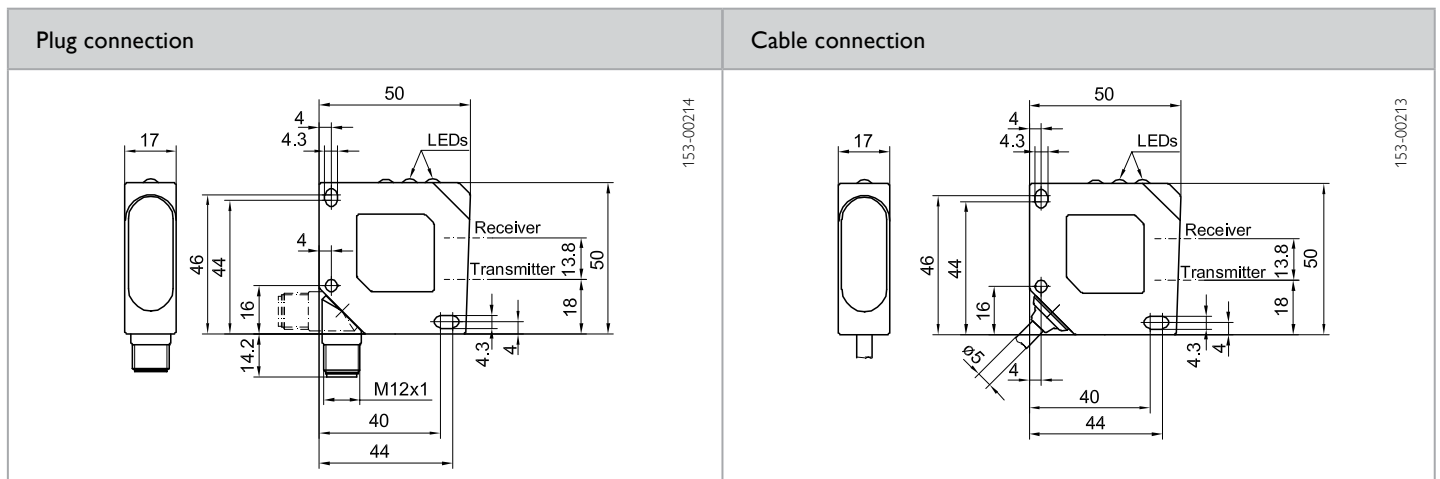
PRODUCT HIGHLIGHTS

- High resolution and small laser light spot
- Operating range: 40 ... 60 mm
- Small, easily visible laser light spot
- No adjustments necessary
- Resolution: 7 µm / 40 µm
- Analogue output: 0 ... 10 V
- Device plug rotatable through 270°

Optical data		Functions	
Operating range	40 ... 60 mm ¹	Indicator LED, green	Operating voltage indicator
Measurement range	20 mm	Indicator LED, red	Contamination indicator
Type of light	Laser, red, 670 nm	Scanning distance adjustment	Fixed setting
Laser Class (DIN EN 60825-1:2008-5)	2		
Resolution	40 µm / 7 µm (see Selection Table)		
Linearity	< 1 %		
Light spot size	< 1 mm bei 50 mm		
Repeatability	< 0.1 mm / 0.05 mm (see Selection Table)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 28 V DC	Dimensions	50 x 50 x 17 mm
No-load current, I ₀	≤ 35 mA	Enclosure rating	IP 67 ²
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection, Q	Material, housing	ABS, impact-resistant
Protection Class	2	Material, front screen	PMMA
Analogue output	0 ... 10 V / max. 3 mA	Type of connection	See Selection Table
Limit frequency	400 Hz / 40 Hz (see Selection Table)	Ambient temperature: operation	0 ... +45 °C
Temperature drift	10 µm / K	Ambient temperature: storage	-20 ... +60 °C
Rise time (10 to 90 %)	3 ms / 30 ms (see Selection Table)	Weight (plug device)	40 g
Fall time (90 to 10 %)	2 ms / 20 ms (see Selection Table)	Weight (cable device)	260 g
		Vibration and impact resistance	EN 60947-2

¹ Reference material: Kodak grey, 18 % ² With connected IP 67 plug

Resolution	Repeatability	Rise time	Fall time	Limit frequency	Type of connection	Part number	Article number
40 µm	< 0.1 mm	3 ms	2 ms	400 Hz	Plug, M12x1, 4-pin	FT 50 RLA-20-F-L4S	574-41005
7 µm	< 0.05 mm	30 ms	20 ms	40 Hz	Plug, M12x1, 4-pin	FT 50 RLA-20-S-L4S	574-41007
40 µm	< 0.1 mm	3 ms	2 ms	400 Hz	Cable, 6 m, 4-wire	FT 50 RLA-20-F-K5	574-41004
7 µm	< 0.05 mm	30 ms	20 ms	40 Hz	Cable, 6 m, 4-wire	FT 50 RLA-20-S-K5	574-41006



Accessories	
Connection cables	From Page A-34
Brackets	From Page A-4

FT 50 RLA 40

Distance sensor



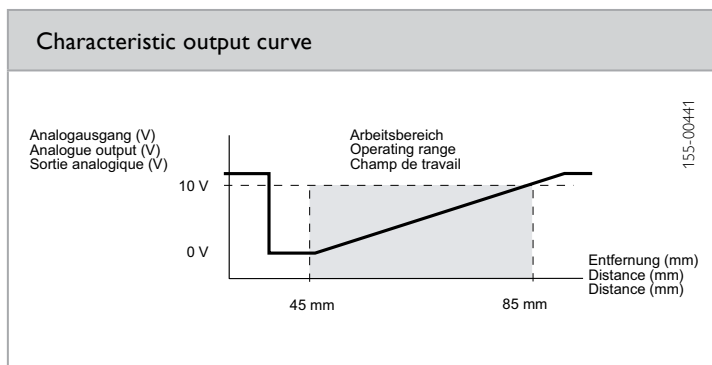
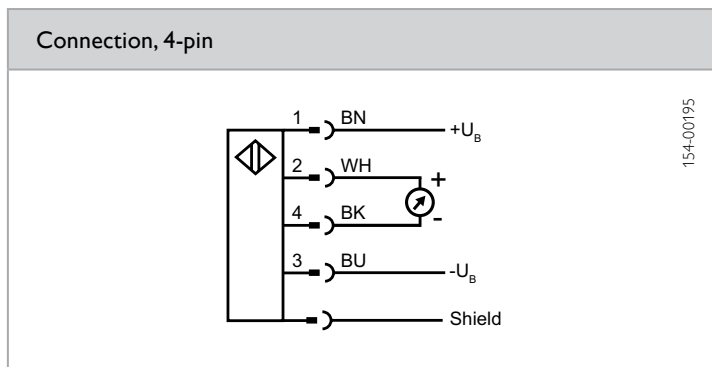
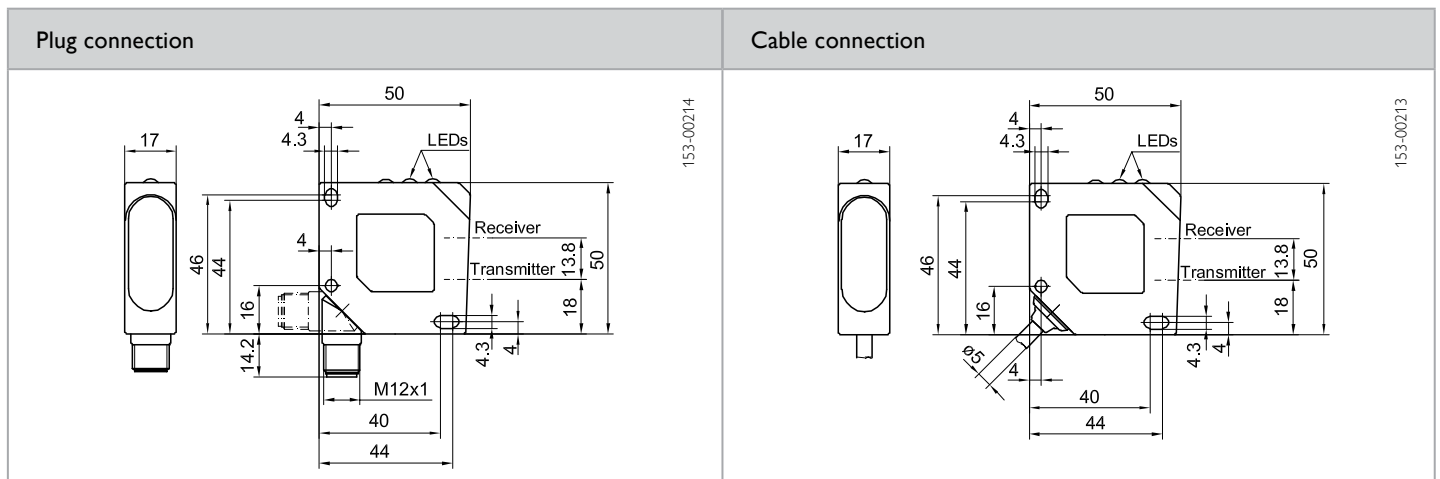
PRODUCT HIGHLIGHTS

- High resolution and small light spot
- Operating range: 45 ... 85 mm
- Laser red light (670 nm)
- Small, easily visible light spot
- No adjustments necessary
- Resolution: 0.02 mm / 0.08 mm
- Analogue output: 0 ... 10 V
- Device plug rotatable through 270°

Optical data		Functions	
Operating range	45 ... 85 mm ¹	Indicator LED, green	Operating voltage indicator
Measurement range	40 mm	Indicator LED, red	Contamination indicator
Type of light	Laser, red, 670 nm	Scanning distance adjustment	Fixed setting
Laser Class (DIN EN 60825-1:2008-5)	2		
Resolution	80 µm / 20 µm (see Selection Table)		
Linearity	< 1 %		
Light spot size	< 0.8 mm at 65 mm		
Repeatability	< 0.2 mm / 0.1 mm (see Selection Table)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 28 V DC	Dimensions	50 x 50 x 17 mm
No-load current, I ₀	≤ 35 mA	Enclosure rating	IP 67 ²
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection, Q	Material, housing	ABS, impact-resistant
Protection Class	2	Material, front screen	PMMA
Analogue output	0 ... 10 V (max. 3 mA)	Type of connection	See Selection Table
Limit frequency	400 Hz / 40 Hz (See Selection Table)	Ambient temperature: operation	0 ... +45 °C
Temperature drift	18 µm / K	Ambient temperature: storage	-20 ... +60 °C
Rise time (10 to 90 %)	3 ms / 30 ms (See Selection Table)	Weight (plug device)	40 g
Fall time (90 to 10 %)	2 ms / 20 ms (See Selection Table)	Weight (cable device)	260 g
		Vibration and impact resistance	EN 60947-2

¹ Reference material: Kodak grey, 18 % ² With connected IP 67 plug

Resolution	Repeatability	Rise time	Fall time	Limit frequency	Type of connection	Part number	Article number
80 µm	< 0.2 mm	3 ms	2 ms	400 Hz	Plug, M12x1, 4-pin	FT 50 RLA-40-F-L4S	574-41001
20 µm	< 0.1 mm	30 ms	20 ms	40 Hz	Plug, M12x1, 4-pin	FT 50 RLA-40-S-L4S	574-41003
80 µm	< 0.2 mm	3 ms	2 ms	400 Hz	Cable, 6 m, 4-wire	FT 50 RLA-40-F-K5	574-41000
20 µm	< 0.1 mm	30 ms	20 ms	40 Hz	Cable, 6 m, 4-wire	FT 50 RLA-40-S-K5	574-41002



Accessories	
Connection cables	From Page A-34
Brackets	From Page A-4

FT 50 RLA 70 / 100 / 220

Distance sensor



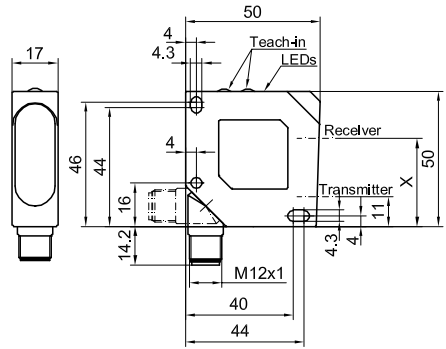
PRODUCT HIGHLIGHTS

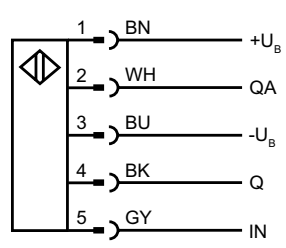
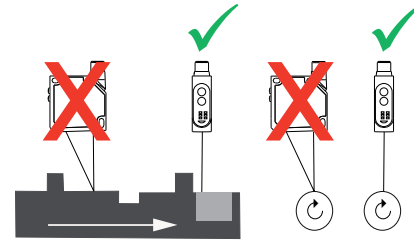
- Precise distance measurement
- Largely independent of target object reflectivity (highly reflective and glossy objects)
- High long-term stability and low temperature effects
- High resolution
- Very high update rate of analogue output (response time)
- One switching output, one analogue output 4 ... 20 mA
- Simple adjustment via teach-in button

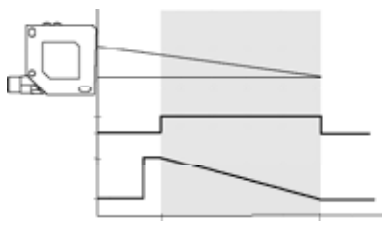
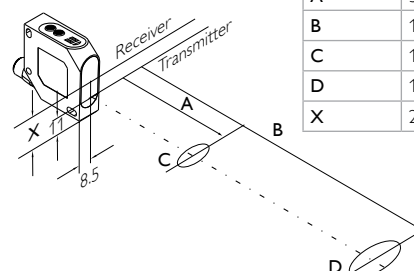
Optical data		Functions	
Operating range	30 ... 100 mm / 70 ... 170 mm / 80 ... 300 mm ¹	Indicator LED, green	Operating voltage indicator
Measurement range	70 mm, 100 mm, 220 mm	Indicator LED, yellow	Switching output indicator
Type of light	Laser, red, 650 nm	Scanning distance adjustment	Via Teach-in button and control input
Laser Class (DIN EN 60825-1:2008-5)	2	Adjustment possibilities	N.O. / N.C. via Teach-in button and control input
Resolution	< 0.1 % of operating range end-value ² (see Selection Table)		Button lock via control input
Linearity	< 0.25 % of operating range end-value (see Selection Table)		
Repeatability	< 0.25 % of measurement value		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30V DC	Dimensions	50 x 50 x 17 mm
No-load current, I ₀	≤ 40 mA	Enclosure rating	IP 67 ³
Output current, I _e	≤ 100 mA	Material, housing	ABS, impact-resistant
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection, Q	Material, front screen	PMMA
Protection Class	2	Type of connection	See Selection Table
Power On Delay	< 300 ms	Ambient temperature: operation	-10 ... +60 °C
Switching output, Q	PNP	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O. / N.C.	Weight	43 g
Max. capacitive load, Q	< 100 nF	Vibration and impact resistance	EN 60947-2
Analogue output	4 ... 20 mA		
Temperature drift	< 0.02 % of operating range end-value / K		
Load	≤ 500 Ω (recommended)		
Switching frequency, f (ti/tp 1:1)	≤ 1 kHz (speed mode) ≤ 10 Hz (averaging mode)		
Response time	0.4 ms (speed mode) 40 ms (averaging mode)		
Control input, IN	When High (+U _B) = laser disable When Low (-U _B) = button lock When open = free-running		

¹ Reference material: Kodak grey, 18 % ² Smallest measurable change ³ With connected IP 67 plug

Operating range	Measurement range	Resolution	Linearity	Type of connection	Part number	Article number
30 ... 100 mm	70 mm	0.1 mm	0.25 mm	Plug, M12x1, 5-pin	FT 50 RLA-70-PL5	574-41027
70 ... 170 mm	100 mm	0.17 mm	0.42 mm	Plug, M12x1, 5-pin	FT 50 RLA-100-PL5	574-41032
80 ... 300 mm	220 mm	0.3 mm	0.75 mm	Plug, M12x1, 5-pin	FT 50 RLA-220-PL5	574-41029

Plug connection	Type	X (distance, receiver)
	FT 50 RLA 70	29.4 mm
	FT 50 RLA 100	32.5 mm
	FT 50 RLA 220	32.5 mm

Connection, 5-pin	Installation
	

Characteristic analogue curve		Light spot geometry																																		
Operating range (default setting)  <table><tr><td>FT 50 RLA 70</td><td>30 mm</td><td>100 mm</td></tr><tr><td>FT 50 RLA 100</td><td>70 mm</td><td>170 mm</td></tr><tr><td>FT 50 RLA 220</td><td>80 mm</td><td>300 mm</td></tr></table>		FT 50 RLA 70	30 mm	100 mm	FT 50 RLA 100	70 mm	170 mm	FT 50 RLA 220	80 mm	300 mm	155-00271  <table><tr><th>FT 50 RLA</th><th>70 ...</th><th>100 ...</th><th>220 ...</th></tr><tr><td>A</td><td>30</td><td>70</td><td>80</td></tr><tr><td>B</td><td>100</td><td>170</td><td>300</td></tr><tr><td>C</td><td>1.5 x 3</td><td>1.5 x 3.5</td><td>1.5 x 3.5</td></tr><tr><td>D</td><td>1.5 x 3.25</td><td>1.7 x 3.9</td><td>2 x 4.5</td></tr><tr><td>X</td><td>29.4</td><td>32.5</td><td>32.5</td></tr></table> 155-00269		FT 50 RLA	70 ...	100 ...	220 ...	A	30	70	80	B	100	170	300	C	1.5 x 3	1.5 x 3.5	1.5 x 3.5	D	1.5 x 3.25	1.7 x 3.9	2 x 4.5	X	29.4	32.5	32.5
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Accessories	
Connection cables	From Page A-34
Brackets	From Page A-4

FT 50 RLA 70 / 100 / 220

Distance sensor with RS485 interface



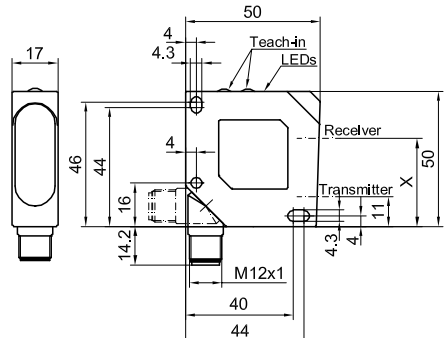
PRODUCT HIGHLIGHTS

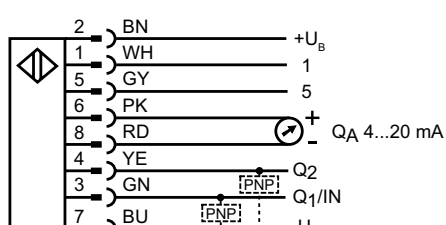
- Largely independent of target object reflectivity (highly reflective and glossy objects)
- RS485 interface for parameterisation and measurement value output
- High resolution
- Rapid response time
- 2 switching outputs, 1 analogue output 4 ... 20 mA
- High long-term stability and low temperature effects

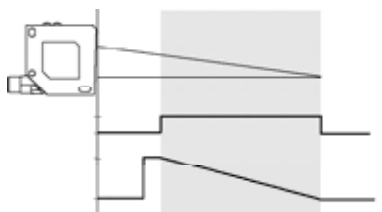
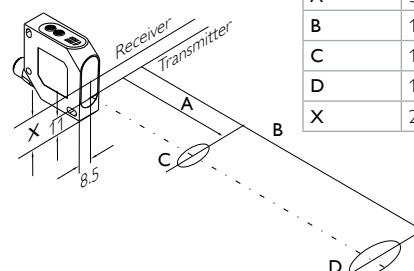
Optical data		Functions	
Operating range	30 ... 100 mm / 70 ... 170 mm / 80 ... 300 mm ¹	Indicator LED, green	Operating voltage indicator
Measurement range	70 mm, 100 mm, 120 mm	Indicator LED, yellow	Switching output indicator
Type of light	Laser, red, 650 nm	Scanning distance adjustment	Via Teach-in button and control input
Laser Class (DIN EN 60825-1:2008-5)	2	Adjustment possibilities	N.O. / N.C. via Teach-in button and control input
Resolution	< 0.1 % of operating range end-value (0.1 mm / 0.17 mm / 0.3 mm) ²	Default settings	Button lock via control input
Linearity	< 0.25 % of operating range end-value (0.25 mm / 0.42 mm / 0.75 mm)		Max. scanning distance and N.O.
Repeatability	< 0.25 % of measurement value		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30V DC	Dimensions	50 x 50 x 17 mm ³
No-load current, I ₀	≤ 40 mA	Enclosure rating	IP 67 ³
Output current, I _e	≤ 100 mA	Material, housing	ABS, impact-resistant
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection, Q (not Type S1)	Material, front screen	PMMA
Protection Class	2	Type of connection	See Selection Table
Power On Delay	≤ 300 ms	Ambient temperature: operation	-10 ... +60 °C
Switching output, Q ₁ / Q ₂	PNP	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O. / N.C.	Weight	43 g
Analogue output	4 ... 20 mA	Vibration and impact resistance	EN 60947-2
Temperature drift	< 0.02 % of operating range end-value / K		
Load	≤ 500 Ω		
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz		
Response time	≥ 0.4 ms (when mean value formation = off) / 4 ms / 40 ms to end-value		
Serial interface	See Selection Table		

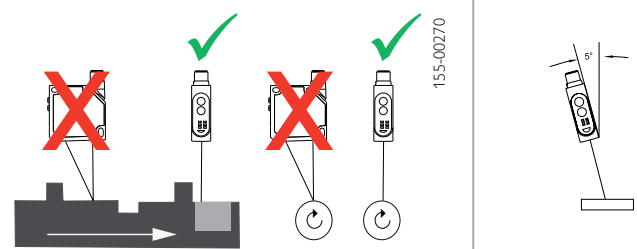
¹ Reference material: Kodak grey, 18 % ² Smallest measurable change ³ With connected IP 67 plug

Scanning distance	Measurement range	Resolution	Linearity	Serial interface	Type of connection	Part number	Article number
30 ... 100 mm	70 mm	0,1 mm	0,25 mm	—	Plug, M12x1, 8-pin	FT 50 RLA-70-L8	574-41018
30 ... 100 mm	70 mm	0,1 mm	0,25 mm	RS485	Plug, M12x1, 8-pin	FT 50 RLA-70-S1L8	574-41019
70 ... 170 mm	100 mm	0,17 mm	0,42 mm	RS485	Plug, M12x1, 8-pin	FT 50 RLA-100-S1L8	574-41033
80 ... 300 mm	220 mm	0,3 mm	0,75 mm	—	Plug, M12x1, 8-pin	FT 50 RLA-220-L8	574-41014
80 ... 300 mm	220 mm	0,3 mm	0,75 mm	RS485	Plug, M12x1, 8-pin	FT 50 RLA-220-S1L8	574-41015

Plug connection	Type	X (distance, receiver)
	FT 50 RLA 70	29,4 mm
	FT 50 RLA 100	32,5 mm
	FT 50 RLA 220	32,5 mm

Connection, 8-pin	Type	Pin 1	Pin 5
	FT 50 RLA -S1L8.	RS485 Y/A	RS485 Z/B
	FT 50 RLA -L8.	-	-

Characteristic analogue curve	Light spot geometry																																	
Operating range (default setting)  OK LED (green) (Good Target) Analogue output (invertible) <table><tr><td>FT 50 RLA 70</td><td>30 mm</td><td>100 mm</td></tr><tr><td>FT 50 RLA 100</td><td>70 mm</td><td>170 mm</td></tr><tr><td>FT 50 RLA 220</td><td>80 mm</td><td>300 mm</td></tr></table>	FT 50 RLA 70	30 mm	100 mm	FT 50 RLA 100	70 mm	170 mm	FT 50 RLA 220	80 mm	300 mm	155-00271  <table><tr><th>FT 50 RLA</th><th>70 ...</th><th>100 ...</th><th>220 ...</th></tr><tr><td>A</td><td>30</td><td>70</td><td>80</td></tr><tr><td>B</td><td>100</td><td>170</td><td>300</td></tr><tr><td>C</td><td>1.5 × 3</td><td>1.5 × 3.5</td><td>1.5 × 3.5</td></tr><tr><td>D</td><td>1.5 × 3.25</td><td>1.7 × 3.9</td><td>2 × 4.5</td></tr><tr><td>X</td><td>29.4</td><td>32.5</td><td>32.5</td></tr></table> 155-00269	FT 50 RLA	70 ...	100 ...	220 ...	A	30	70	80	B	100	170	300	C	1.5 × 3	1.5 × 3.5	1.5 × 3.5	D	1.5 × 3.25	1.7 × 3.9	2 × 4.5	X	29.4	32.5	32.5
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Installation	Accessories
	Connection cables Brackets
	From Page A-34 From Page A-4