

IFPY SERIES INSTALLATION MANUAL



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Declaration of conformity INPROX Corporation

Declare under our sole responsibility that these products are in conformity with the following EEC directive: 89/336 and 73/23 and successive amendments.

PACK CONTENT

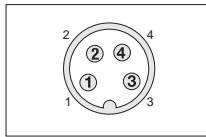
• 1 INPROX Operating Manual

- 1 IFPY Amplifier for synthetic optical Fibers

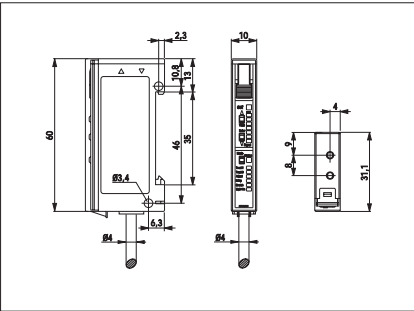
GENERAL DESCRIPTION

- Fiber-optic amplifier for DIN-rail mounting (DIN/EN 50022)
- Distance setting by means of teach in with additional manual fine adjustment
- Adjustable pulse delay and stretching
- High switching frequency: 1.5 kHz
- Ideal for stacking, thanks to 10 mm housing width
- Easy to operate
 - Teach 1 (background), Teach 2 (target and background)
 - Large setting range of 20...200 mm

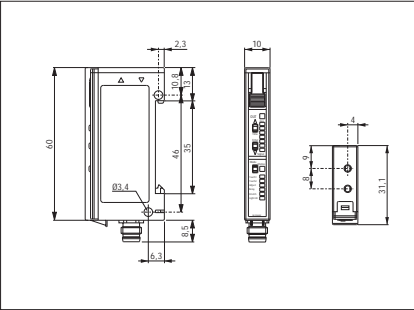
CONNECTOR



MECHANICAL DRAWINGS IFPY-A1



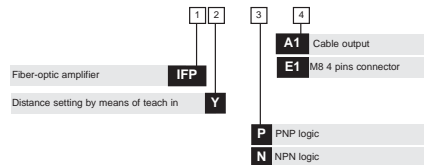
IFPY-E1



WARNING These products are NOT safety sensors and are NOT suitable for use in personal safety application

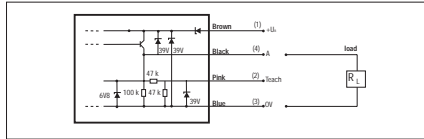
SPECIFICATIONS (ACC. TO IECEN 60947-5-2 / DIN 44030)

Model	IFPY
Rated operating distance Sn	200 mm (-4FC/CB1-20)
setting range:	20 ... 200 mm
Teach increment	< 1 mm
Hysteresis	10 % typ.
Standard target	100x100mm white
Emitter (regulated light power)	red 680 nm
Output (switchable)	LON/DON
Output state indication	LEDs (amber)
Excess light indication	LEDS BAR graph
Supply voltage range UB	10 ... 30 Vcc / VDC
Max. ripple content	< 20% V a / UB
Output current	200 mA
Output voltage drop	< 2.0 V a / at 200 mA
No-load supply current	< 25 mA typ. a / at UB = 24 V
Leakage current	0,1 mA
Switching frequency	1500 Hz
Switching time	330 µsec
Modulation frequency	15 kHz
Time delay before availability	80 ms
Max. ambient light, halogen	5000 Lux
Max. ambient light, sun	10000 Lux
Sensitivity setting	Teach-in
Pulse delay / stretching	10 ... 150 msec
Ambient temperature range	-25 ... +55 °C
Temperature drift of sn	0,2 % / °C
Voltage reversal protection	built-in
Induction protection	built-in
Short-circuit protection	built-in
Shocks and vibration	IEC 60947-5-2 / 7.4
Cable length	300 mm max.
Weight (cable / connector)	68 g / 17 g
Degree of protection	IP 64
EMC protection: IEC 60255-5	5 kV
IEC 61000-4-2	Level 2
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 2
Optical fiber connection	Ø 2,2 mm
Housing material	PBT
Connection cable (IFPY-A1)	2m PVC 4x0,25mm ² /128x0,05 mm Ø
Connector type (IFPY-E1)	S8 4p

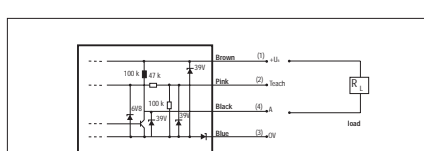


ELECTRIC DIAGRAMS OF THE CONNECTIONS

IFPY PNP



IFPY NPN



Device mounting

- Mounting of the device is most easily effected by snapping 1/2 onto a top-hat rail (according to DIN / EN 50022).
- To remove the device, push towards the optical fiber 1. and lift 2.
- Alternatively, fixing can be effected using the optical fiber through the two holes 5 provided into the device.

Fixing the optical fibers

- Lift catch 4.
- Insert the optical fibers through the two holes 5 provided into the device.
- Lower catch 4.

Important:

- When inserting the optical fibers, the rest of the device's internal O-ring seal must be overcome.
- The optical fibers must be fed right to the stop without fail.
- The optical fibers must not be crushed.
- The sequence (emitter / receiver) is usually immaterial, however:
 - With coaxial optical fibers, the optical fiber bundle must be connected on the receiver side. The emitter and receiver openings are marked with arrows on the housing.

Cutting the optical fibers

- Cut synthetic optical fibers to the desired length. Use only the cutting tool.
- A maximum of 3 cuts should be made per cutting-tool hole.

Separating the optical fibers

- Grasp the optical fiber ends with both hands and pull both strands apart to a length of about 50 mm.
- According to the type (above all for thin-fiber executions), prior twisting helps.

Optical fiber mounting

(All diameters refer to the optical diameter.)

- No bending should occur in zone "A"
- Fiber Ø 1 mm A 20 mm R 25 mm
- Fiber Ø 0.5 mm A 10 mm R 10 mm

- The bending radius should not be less than "R"
- Fiber Ø 1 mm R 25 mm
- Fiber Ø 0.5 mm R 10 mm

- Bendable light-outlet tubes should be bent as little as possible; best bent around a cylindrical object.
- Maximum 3 bends.

Teach 1

Setting of the sensing range (teach) is carried out in one cycle, and can be manually fine adjusted at any time (using the Adjust function, see below).

- Diffuse sensors C*/CB: Teach only takes place on the background. The target is not taken into consideration. The device adjusts itself automatically to approximately 80% of the background distance.
- Through-beam sensors C*/RB: Teach is effected with a target located in the beam. The device automatically adjusts itself so that approximately 80% of the darkening created by the target triggers the switching process.

- 1 Diffuse sensors C*/CB: Remove target, leave or place background in position.
- 2 Activate Teach 1 mode by pressing the Mode key twice.
- 3 Press / Enter key, Teach successful! The Status LED blinks green for 5 seconds. The device is ready for

Teach 2

Setting of the sensing range (teach) is carried out in two cycles, and can be manually fine adjusted at any time (using the Adjust function, see below).

- Diffuse sensors C*/CB: Teach is effected firstly on the target, then on the background. The device automatically adjusts itself to a distance between that of the target and that of the background.
- Through-beam sensors C*/RB: Teach takes place firstly without the target, then with the target located in the beam. The device automatically adjusts itself to part of the darkening created by the target.

- 1 Diffuse sensors C*/CB: Position (or leave) target and background. Through-beam sensors C*/RB: Remove target.
- 2 Activate Teach 2 mode by pressing the Mode key 3 times.
- 3 Press / Enter key, the first cycle begins. Teach successful! The Status LED lights up green. The device is ready for the second cycle.
- 4 Diffuse sensors C*/CB: Remove target, leave background in position. Through-beam sensors C*/RB: Position target.
- 5 Press / Enter key, the second cycle begins. Teach successful! The Status LED blinks green for 5 seconds. The device is ready for use.

NPN MODELS

PNP MODELS

DESCRIPTION

Max. distance / sensitivity
C*/CB Remove target and background. Execute Teach 1.

C*/RB Place emitter and receiver so that no light is transmitted. Execute Teach 1.

Min. distance / sensitivity
C*/CB Place fiber-optic head about 5 mm from white paper. Execute Teach 1.

C*/RB Place emitter and receiver in direct contact so that a maximum of light is transmitted. Execute Teach 1.

Remote teach launching
Launch by H signals or by closing a contact at the "Teach" input.

• Teach 1
C*/CB: Remove target.
C*/RB: Position target.
Send pulses T1 and T3.
Timing: T1, T3 = 0.5 ... 2 sec
T2 = 1.5 ... 2 sec

• Teach 2
C*/CB: Position target and background.
C*/RB: Remove target. Send pulse T1, then C*/RB: Position target.
Send pulse T3.
Timing: T1, T3 = 0.5 ... 2 sec
T2 3 sec

Adjust

The detection zone can be set manually, or when set by the teach function, can be manually fine adjusted. All activated functions (except delay and stretch) are in operation, and the output switched.

- 1 Activate Adjust mode by pressing the Mode key 4 times.
- 2 For each press on the / Time key, the current detection zone is increased by 1 increment.
- 3 For each press on the / Enter key, the current detection zone is reduced by 1 increment.
- 4 Return to working mode by pressing the Mode key.

Delay

Switching of the output is delayed by the set time. In this way, short-term disturbances can be suppressed. All activated functions (except delay and stretch) are in operation, and the output switches.

- 1 Activate Delay mode by pressing the Mode key 5 times.
- 2 Pressing the / Enter key switches the delay (factory setting: 10 msec) on or off. The current status is shown by the Status LED (green = Delay switched on).
- 3 Each time the / Time key is pressed, the delay time is increased by 10 msec, up to a maximum of 150 msec.
- 4 Return to working mode by pressing the Mode key.

Stretch

Switching of the output is stretched by the set time. In this way, even short pulses can be detected. All activated functions (except delay and stretch) are in operation, and the output switches.

- 1 Activate Stretch mode by pressing the Mode key 6 times.
- 2 Pressing the / Enter key switches the stretching (factory setting: 10 msec) on or off. The current status is shown by the Status LED (green = Stretch switched on).
- 3 Each time the / Time key is pressed, the stretch time is increased by 10 msec, up to a maximum of 150 msec.
- 4 Return to working mode by pressing the Mode key.

Light/Dark-ON

Setting of the output function (factory setting N.O., i.e. light switching in operation as diffuse sensor, dark switching as through-beam sensor).

- 1 Activate Light-ON mode by pressing the Mode key 7 times. The current status is shown by the Status LED (Light-ON • LED off / Dark-ON • LED on).
- 2 Pressing the / Enter key changes the output function.
- 3 Return to working mode by pressing the Mode key.