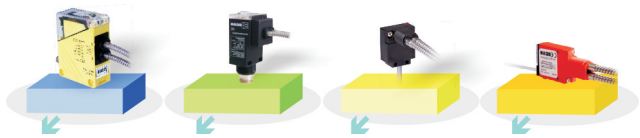
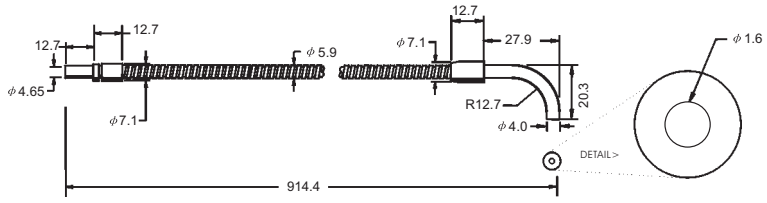
# Opposed Mode
## Individual Cables



### Dimensions (mm)

**INA13S**



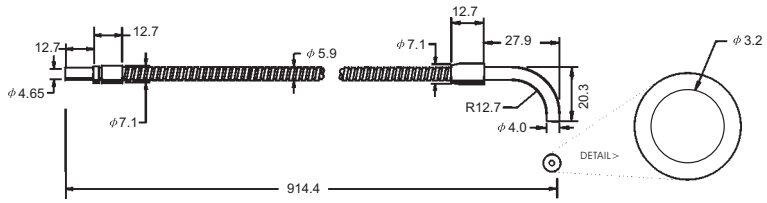

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INA13P | 910 | ϕ1.6 | PVC |
| INA13S | 910 | ϕ1.6 | SS |

**Range (mm)**

260
300
150
150

### Dimensions (mm)

**INA23S**



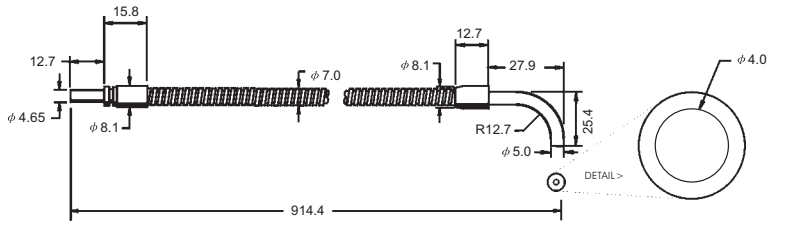

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INA23P | 910 | ϕ3.2 | PVC |
| INA23S | 910 | ϕ3.2 | SS |

**Range (mm)**

600
450
400
400

### Dimensions (mm)

**INA2.53S**



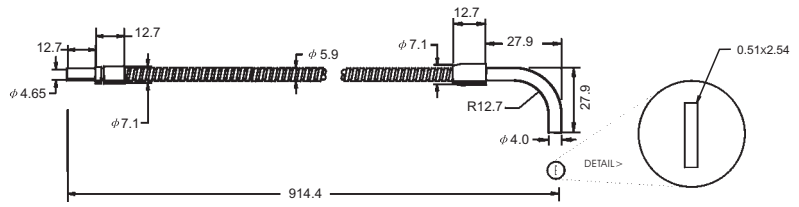

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INA2.53P | 910 | ϕ4.0 | PVC |
| INA2.53S | 910 | ϕ4.0 | SS |

**Range (mm)**

800
500
530
530

### Dimensions (mm)

**INAE.753S**

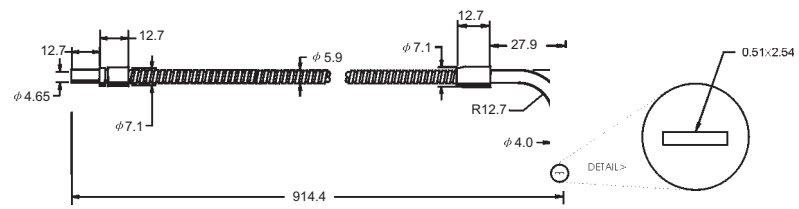



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INAE.753P | 910 | 0.51x2.54 | PVC |
| INAE.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

### Dimensions (mm)

**INAR.753S**



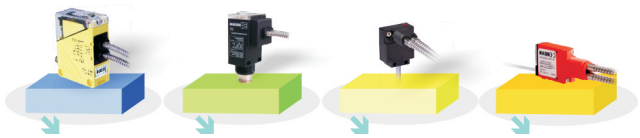

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INAR.753P | 910 | 0.51x2.54 | PVC |
| INAR.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

# Glass Fibers

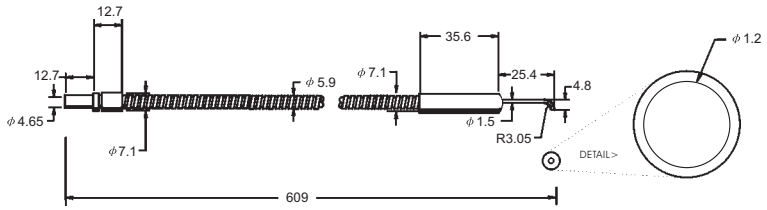
## Opposed Mode

### Individual Cables



### Dimensions (mm)

**INAM.752S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INAM.752P | 610 | ϕ 1.2 | PVC |
| INAM.752S | 610 | ϕ 1.2 | SS |

**Range (mm)**

220

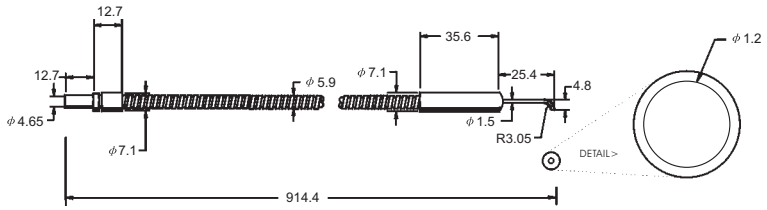
200

100

100

### Dimensions (mm)

**INAM.753S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INAM.753S | 910 | ϕ 1.2 | SS |

**Range (mm)**

220

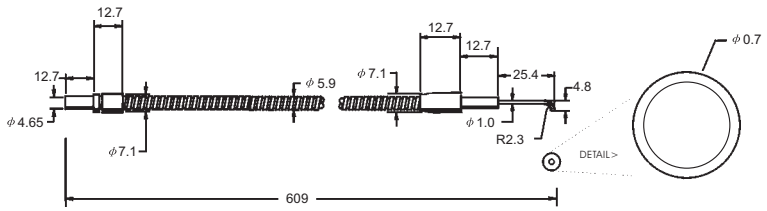
200

100

100

### Dimensions (mm)

**INAI.442S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INAI.442P | 610 | ϕ 0.7 | PVC |
| INAI.442S | 610 | ϕ 0.7 | SS |

**Range (mm)**

55

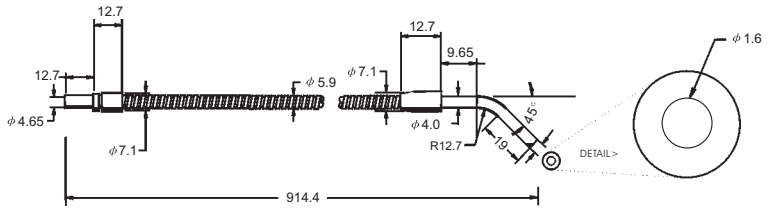
50

25

25

### Dimensions (mm)

**INH13S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INH13P | 910 | ϕ 1.6 | PVC |
| INH13S | 910 | ϕ 1.6 | SS |

**Range (mm)**

260

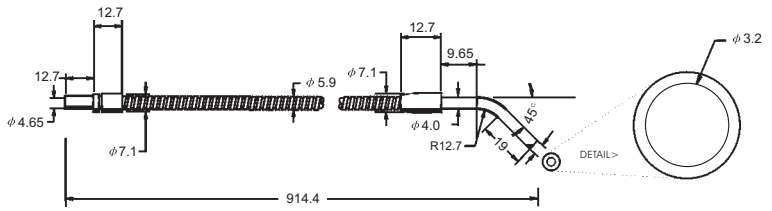
300

150

150

### Dimensions (mm)

**INH23S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INH23P | 910 | ϕ 3.2 | PVC |
| INH23S | 910 | ϕ 3.2 | SS |

**Range (mm)**

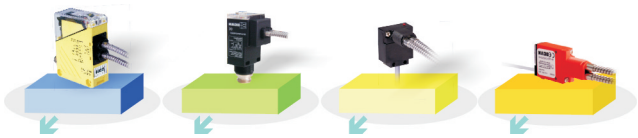
600

450

400

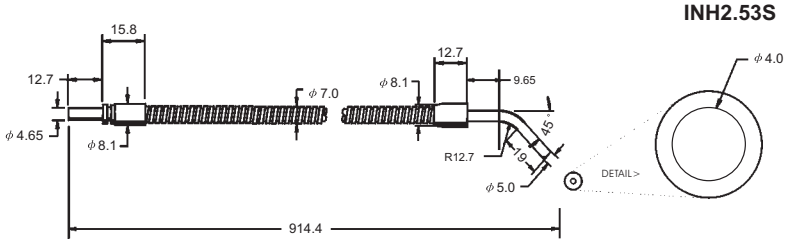
400

## Individual Cables



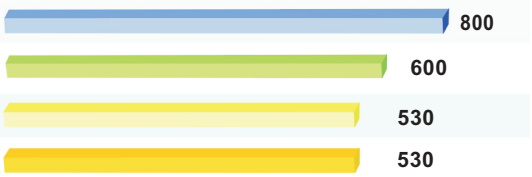
### Dimensions (mm)

INH2.53S



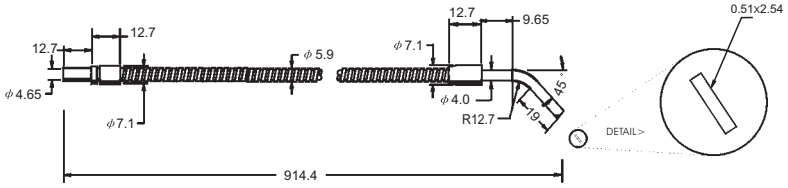

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INH2.53P | 910 | ϕ4.0 | PVC |
| INH2.53S | 910 | ϕ4.0 | SS |

Range (mm)



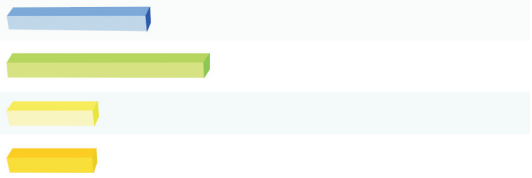

### Dimensions (mm)

INHE.753S



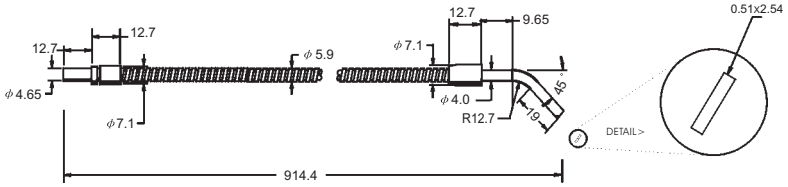

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INHE.753P | 910 | 0.51x2.54 | PVC |
| INHE.753S | 910 | 0.51x2.54 | SS |

Range (mm)



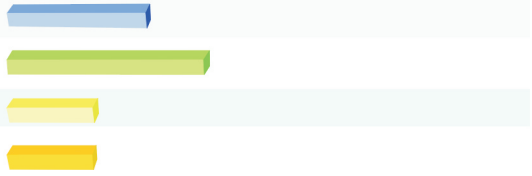
### Dimensions (mm)

INHR.753S



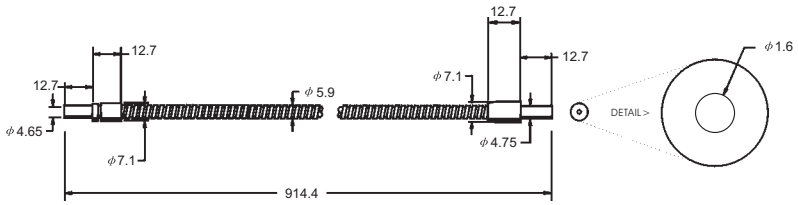

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INHR.753P | 910 | 0.51x2.54 | PVC |
| INHR.753S | 910 | 0.51x2.54 | SS |

Range (mm)



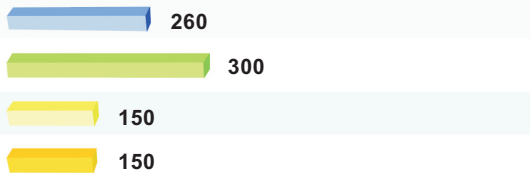
### Dimensions (mm)

INS13S



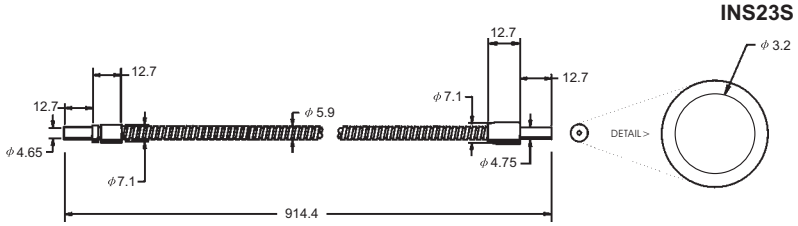

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INS13P | 910 | ϕ1.6 | PVC |
| INS13S | 910 | ϕ1.6 | SS |

Range (mm)



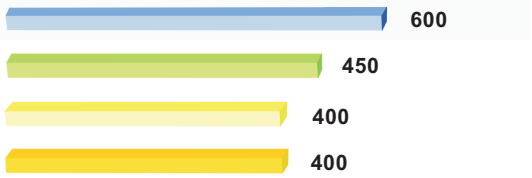

### Dimensions (mm)

INS23S




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INS23P | 910 | ϕ3.2 | PVC |
| INS23S | 910 | ϕ3.2 | SS |

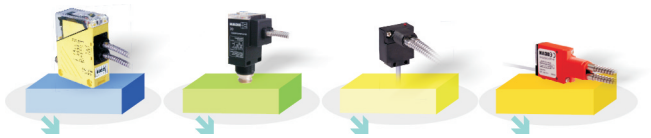
Range (mm)



# Glass Fibers

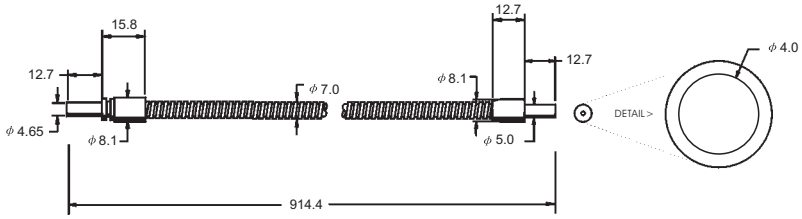
## Opposed Mode

### Individual Cables



### Dimensions (mm)

**INS2.53S**



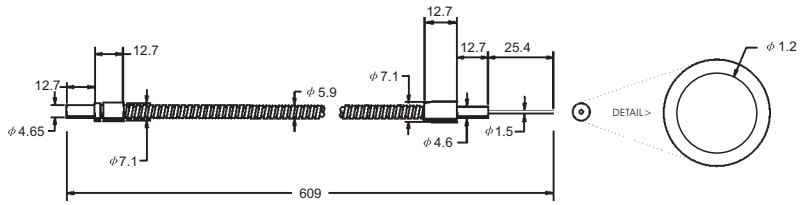

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INS2.53P | 910 | ϕ4.0 | PVC |
| INS2.53S | 910 | ϕ4.0 | SS |

**Range (mm)**

800
600
530
530

### Dimensions (mm)

**INSM.752S**



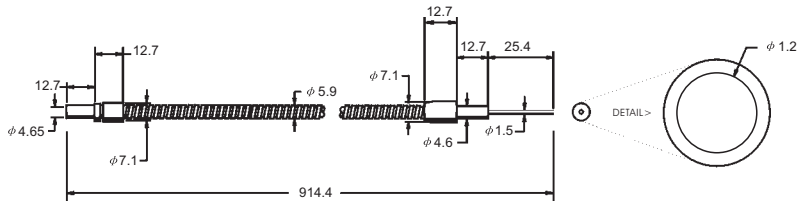

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INSM.752S | 610 | ϕ1.2 | SS |

**Range (mm)**

220
200
100
100

### Dimensions (mm)

**INSM.753S**



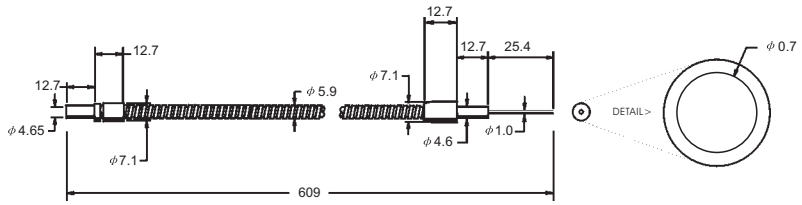

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INSM.753S | 910 | ϕ1.2 | SS |

**Range (mm)**

220
200
100
100

### Dimensions (mm)

**INSI.442S**



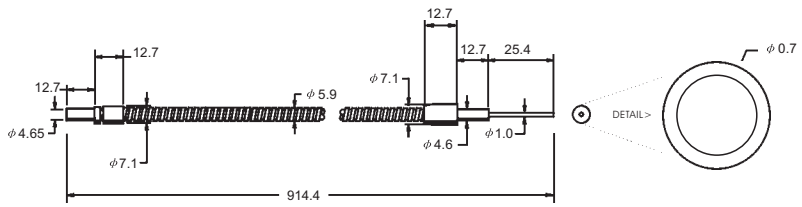

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INSI.442S | 610 | ϕ0.7 | SS |

**Range (mm)**

55
50
25
25

### Dimensions (mm)

**INSI.443S**

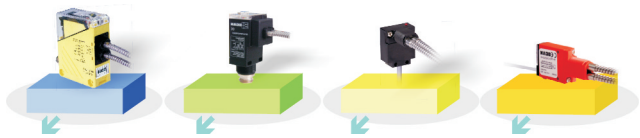



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INSI.443S | 910 | ϕ0.7 | SS |

**Range (mm)**

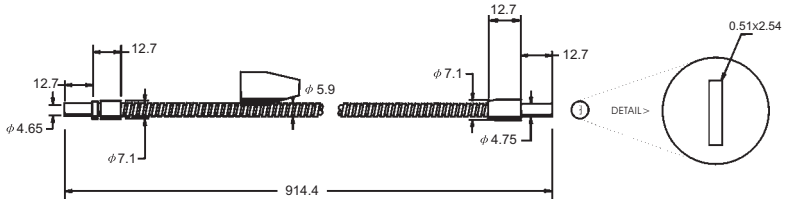
55
50
25
25

## Individual Cables



### Dimensions (mm)

**INSR.753S**



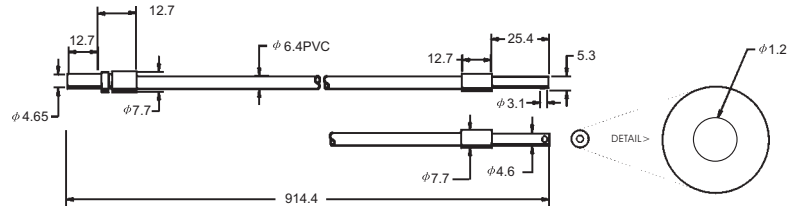

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INSR.753P | 910 | 0.51x2.54 | PVC |
| INSR.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

100
180
25

### Dimensions (mm)

**INV.753P**



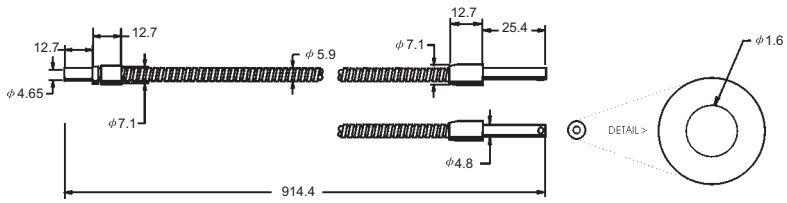

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INV.753P | 910 | ϕ 1.2 | PVC |
| INV.753S | 910 | ϕ 1.2 | SS |

**Range (mm)**

220
200
100
100

### Dimensions (mm)

**INV13S**



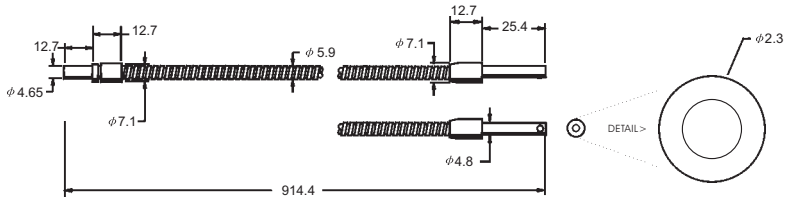

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INV13P | 910 | ϕ 1.6 | PVC |
| INV13S | 910 | ϕ 1.6 | SS |

**Range (mm)**

260
300
150
150

### Dimensions (mm)

**INV1.53S**



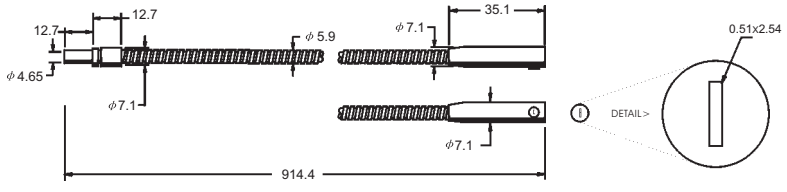

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INV1.53P | 910 | ϕ 2.3 | PVC |
| INV1.53S | 910 | ϕ 2.3 | SS |

**Range (mm)**

300
370
180
180

### Dimensions (mm)

**INVE.753S**



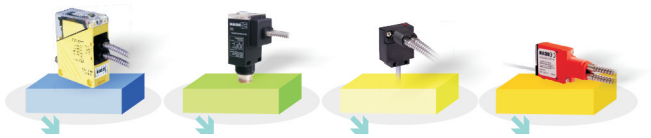

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INVE.753P | 910 | 0.51x2.54 | PVC |
| INVE.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

# Glass Fibers

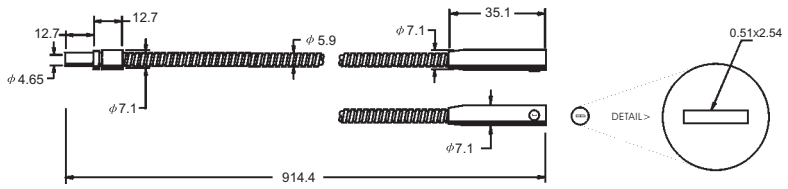
## Opposed Mode

## Individual Cables



### Dimensions (mm)

**INVR.753S**

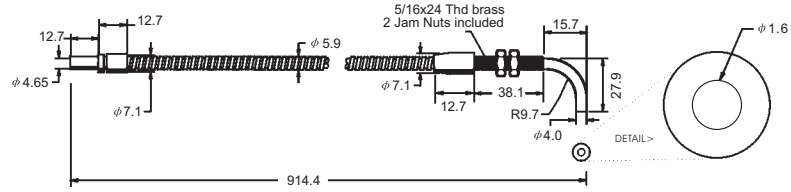



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INVR.753P | 910 | 0.51x2.54 | PVC |
| INVR.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

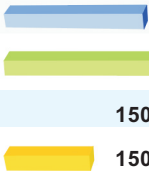
### Dimensions (mm)

**ITA13S**



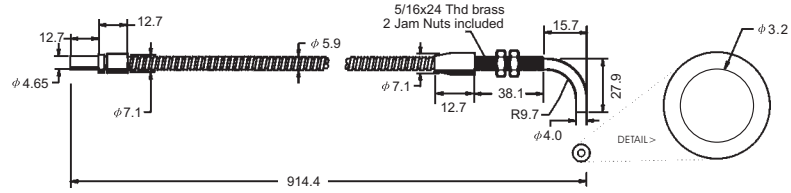

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITA13P | 910 | ϕ 1.6 | PVC |
| ITA13S | 910 | ϕ 1.6 | SS |

**Range (mm)**




### Dimensions (mm)

**ITA23S**

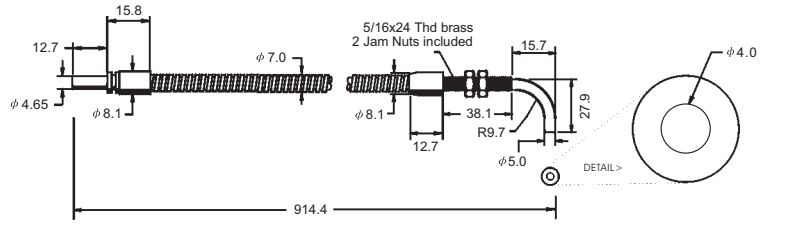



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITA23P | 910 | ϕ 3.2 | PVC |
| ITA23S | 910 | ϕ 3.2 | SS |

**Range (mm)**


### Dimensions (mm)

**ITA2.53S**

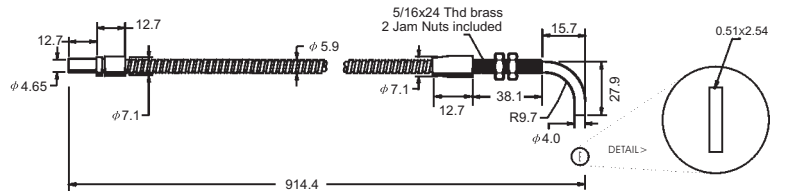



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITA2.53P | 910 | ϕ 4.0 | PVC |
| ITA2.53S | 910 | ϕ 4.0 | SS |

**Range (mm)**


### Dimensions (mm)

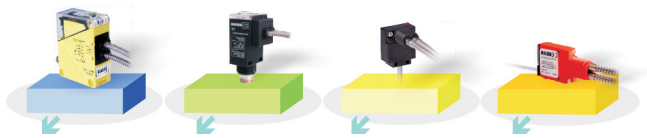
**ITAE.753S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITAE.753P | 910 | 0.51x2.54 | PVC |
| ITAE.753S | 910 | 0.51x2.54 | SS |

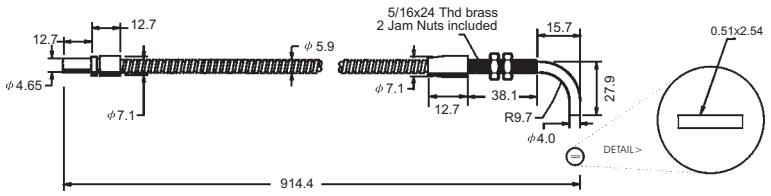
**Range (mm)**

## Individual Cables



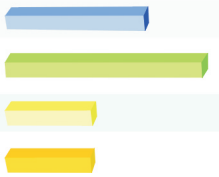
### Dimensions (mm)

**ITAR.753S**



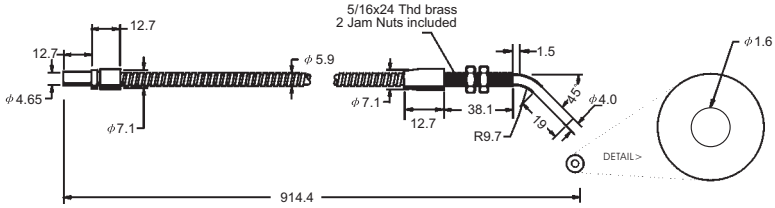

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITAR.753P | 910 | 0.51x2.54 | PVC |
| ITAR.753S | 910 | 0.51x2.54 | SS |

Range (mm)



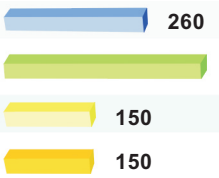
### Dimensions (mm)

**ITH13S**



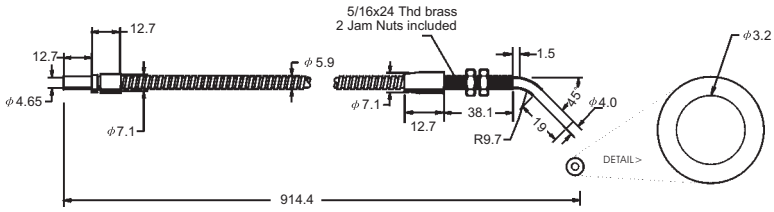

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITH13P | 910 | ϕ 1.6 | PVC |
| ITH13S | 910 | ϕ 1.6 | SS |

Range (mm)



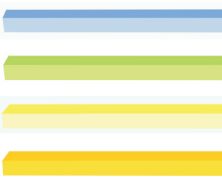

### Dimensions (mm)

**ITH23S**



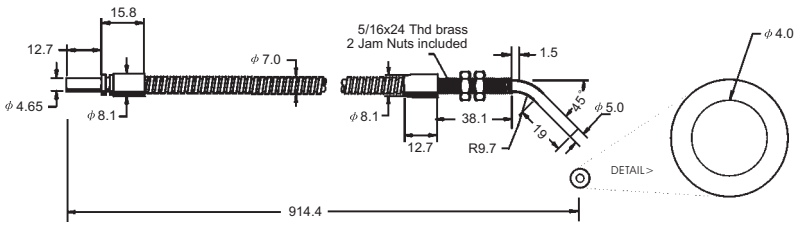

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITH23P | 910 | ϕ 3.2 | PVC |
| ITH23S | 910 | ϕ 3.2 | SS |

Range (mm)



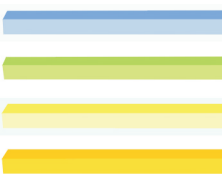

### Dimensions (mm)

**ITH2.53S**



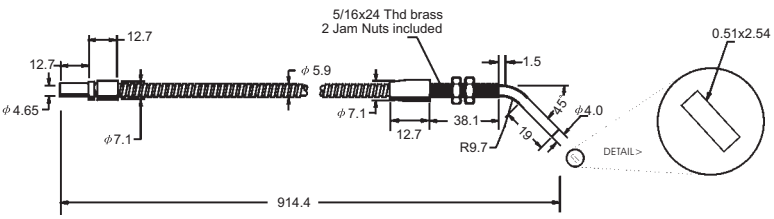

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITH2.53P | 910 | ϕ 4.0 | PVC |
| ITH2.53S | 910 | ϕ 4.0 | SS |

Range (mm)



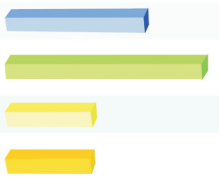

### Dimensions (mm)

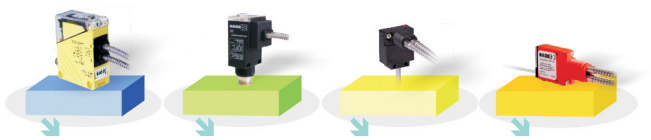
**ITHE.753S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITHE.753P | 910 | 0.51x2.54 | PVC |
| ITHE.753S | 910 | 0.51x2.54 | SS |

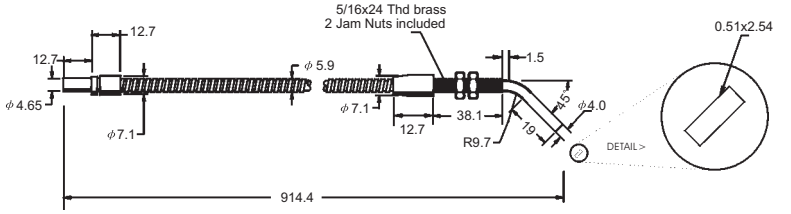
Range (mm)





## Dimensions (mm)

**ITHR.753S**

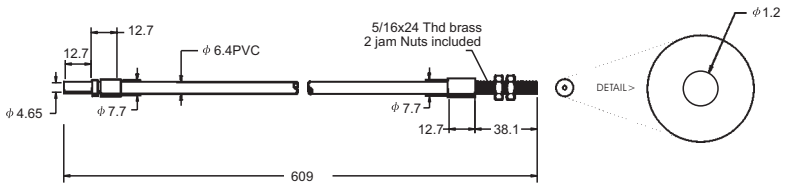



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITHR.753P | 910 | 0.51x2.54 | PVC |
| ITHR.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

## Dimensions (mm)

**ITS.752P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITS.752P | 610 | ϕ1.2 | PVC |
| ITS.752S | 610 | ϕ1.2 | SS |

**Range (mm)**

220

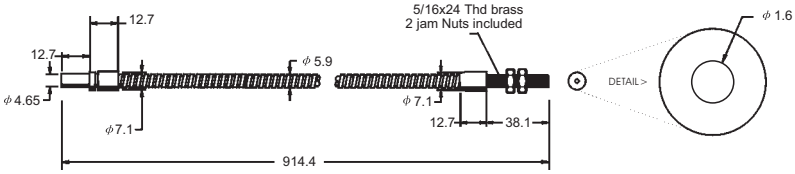
200

100

100

## Dimensions (mm)

**ITS13S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITS13P | 910 | ϕ1.6 | PVC |
| ITS13S | 910 | ϕ1.6 | SS |

**Range (mm)**

260

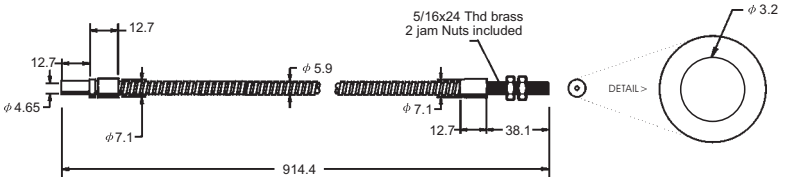
300

150

150

## Dimensions (mm)

**ITS23S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITS23P | 910 | ϕ3.2 | PVC |
| ITS23S | 910 | ϕ3.2 | SS |
| ITS26S | 1820 | ϕ3.2 | SS |

**Range (mm)**

600

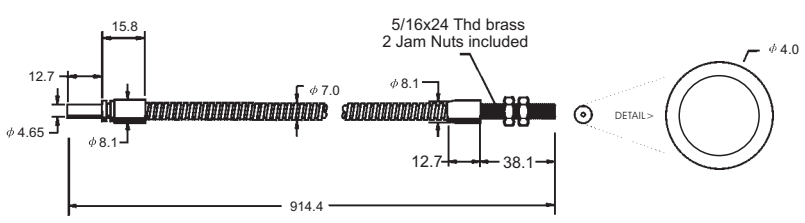
450

400

400

## Dimensions (mm)

**ITS2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITS2.53P | 910 | ϕ4.0 | PVC |
| ITS2.53S | 910 | ϕ4.0 | SS |

**Range (mm)**

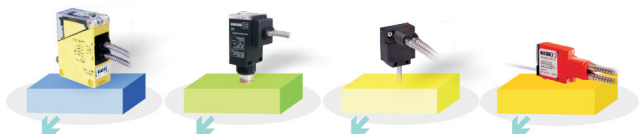
800

600

530

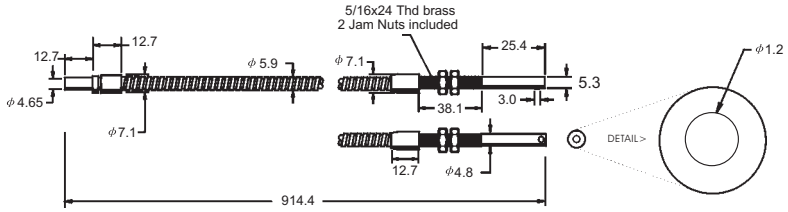
530

## Individual Cables



### Dimensions (mm)

**ITV.753S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITV.753S | 910 | ϕ1.2 | SS |

Range (mm)

220

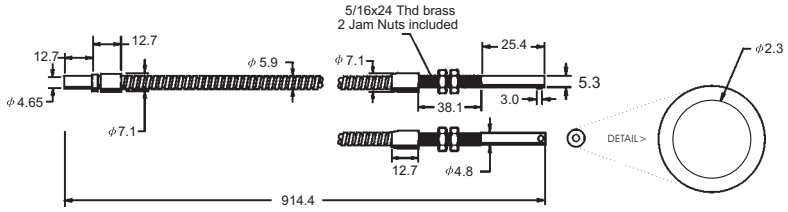
200

100

100

### Dimensions (mm)

**ITV1.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITV1.53S | 910 | ϕ2.3 | SS |

Range (mm)

300

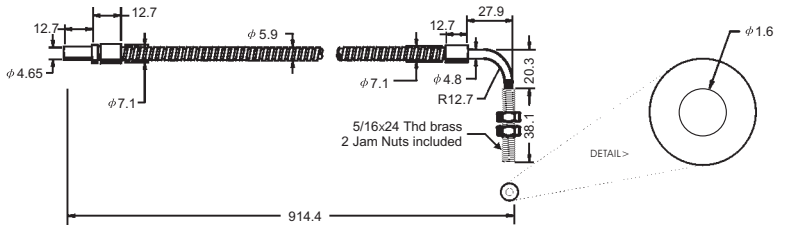
300

180

180

### Dimensions (mm)

**IEA13S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEA13P | 910 | ϕ1.6 | PVC |
| IEA13S | 910 | ϕ1.6 | SS |

Range (mm)

260

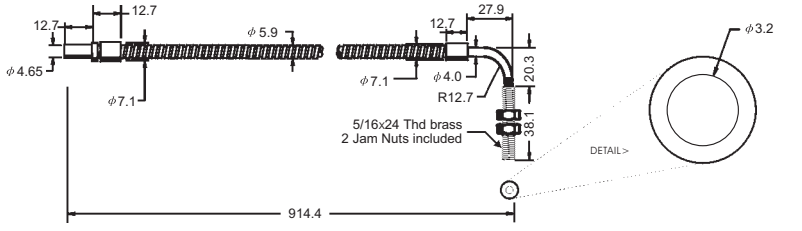
300

150

150

### Dimensions (mm)

**IEA23S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEA23P | 910 | ϕ3.2 | PVC |
| IEA23S | 910 | ϕ3.2 | SS |

Range (mm)

600

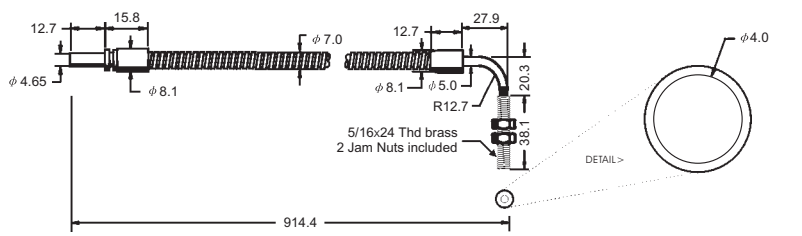
450

400

400

### Dimensions (mm)

**IEA2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEA2.53P | 910 | ϕ4.0 | PVC |
| IEA2.53S | 910 | ϕ4.0 | SS |

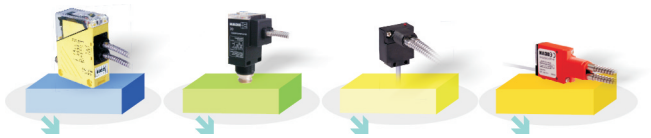
Range (mm)

800

500

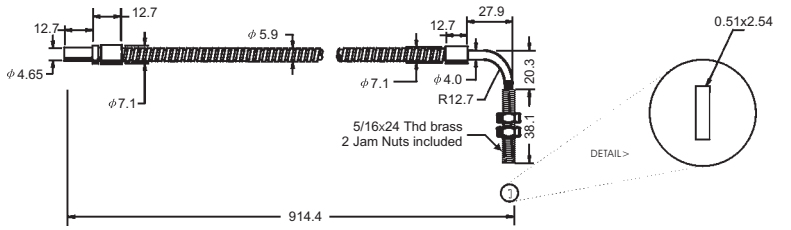
530

530



## Dimensions (mm)

**IEAE.753S**

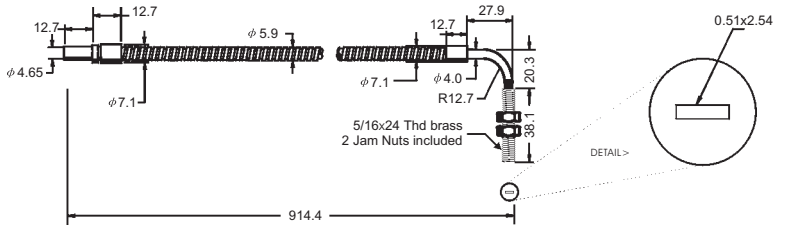



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEAE.753P | 910 | 0.51x2.54 | PVC |
| IEAE.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

## Dimensions (mm)

**IEAR.753S**

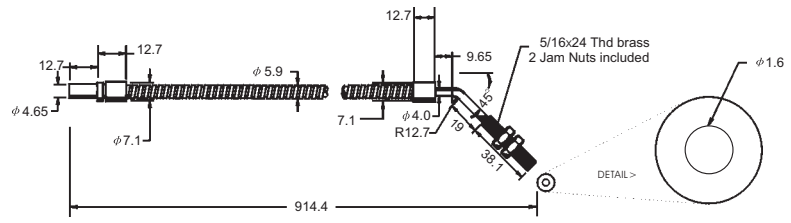



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEAR.753P | 910 | 0.51x2.54 | PVC |
| IEAR.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

## Dimensions (mm)

**IEH13S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEH13P | 910 | ϕ 1.6 | PVC |
| IEH13S | 910 | ϕ 1.6 | SS |

**Range (mm)**

260

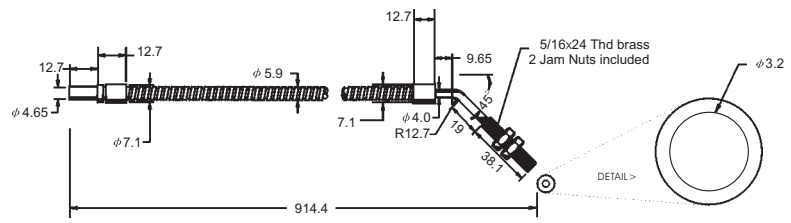
300

150

150

## Dimensions (mm)

**IEH23S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEH23P | 910 | ϕ 3.2 | PVC |
| IEH23S | 910 | ϕ 3.2 | SS |

**Range (mm)**

600

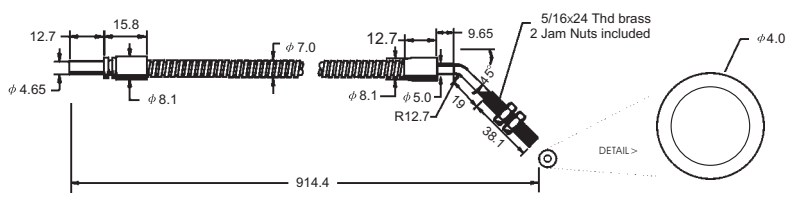
450

400

400

## Dimensions (mm)

**IEH2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEH2.53P | 910 | ϕ 4.0 | PVC |
| IEH2.53S | 910 | ϕ 4.0 | SS |

**Range (mm)**

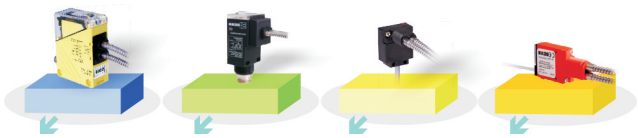
800

600

530

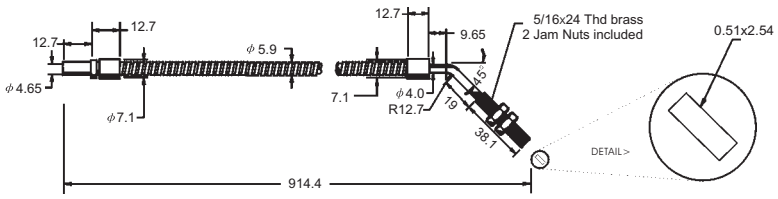
530

# Individual Cables



## Dimensions (mm)

**IEHE.753S**

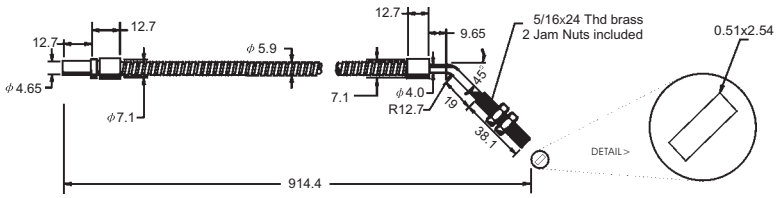



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEHE.753P | 910 | 0.51x2.54 | PVC |
| IEHE.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

## Dimensions (mm)

**IEHR.753S**

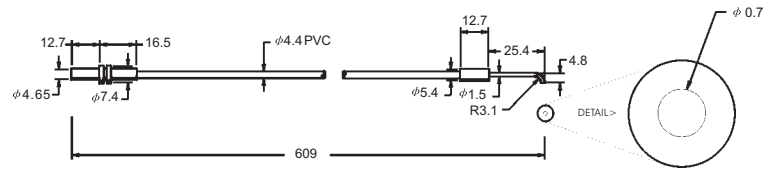



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEHR.753P | 910 | 0.51x2.54 | PVC |
| IEHR.753S | 910 | 0.51x2.54 | SS |

**Range (mm)**

## Dimensions (mm)

**IMAM.442P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMAM.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

55

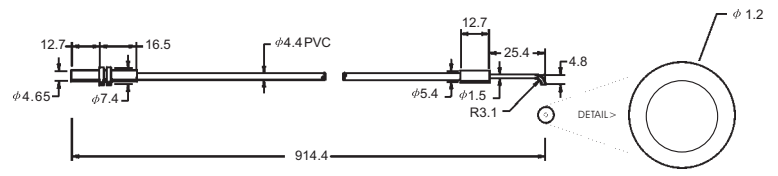
50

25

25

## Dimensions (mm)

**IMAM.753P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMAM.753P | 910 | ϕ1.2 | PVC |

**Range (mm)**

220

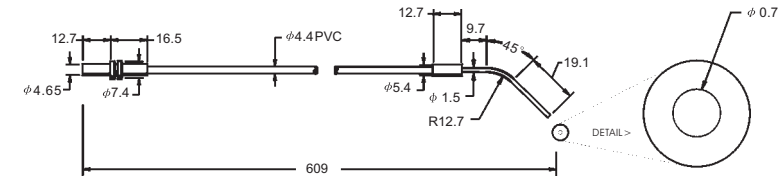
200

100

100

## Dimensions (mm)

**IMHM.442P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMHM.442P | 610 | ϕ 0.7 | PVC |

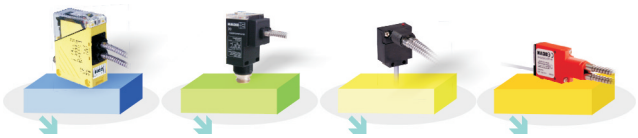
**Range (mm)**

55

50

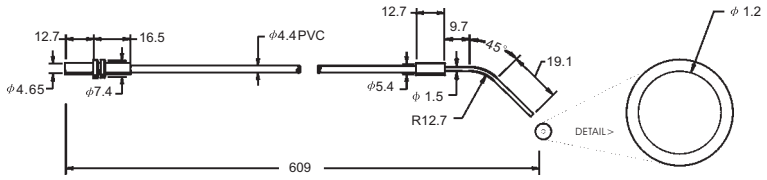
25

25



## Dimensions (mm)

**IMHM.753P**



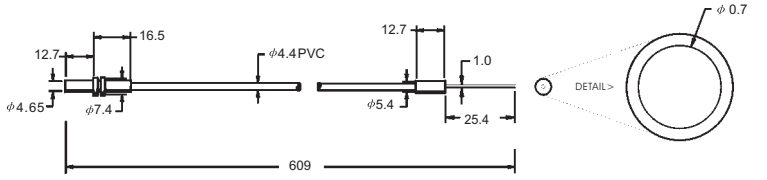

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMHM.753P | 910 | ϕ 1.2 | PVC |

**Range (mm)**

| | |
|---|---|
| 220 | |
| 200 | |
| 100 | |
| 100 | |

## Dimensions (mm)

**IMSI.442P**



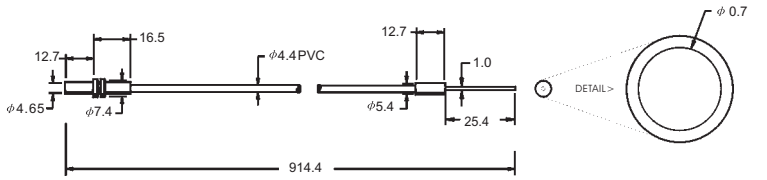

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMSI.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

| | |
|---|---|
| 55 | |
| 50 | |
| 25 | |
| 25 | |

## Dimensions (mm)

**IMSI.443P**



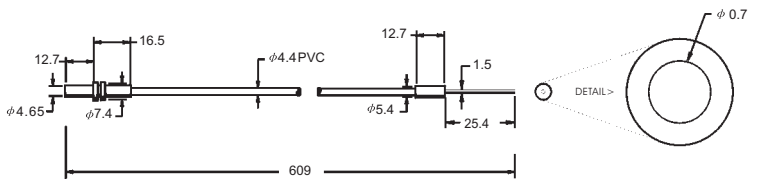

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMSI.443P | 910 | ϕ 0.7 | PVC |

**Range (mm)**

| | |
|---|---|
| 55 | |
| 50 | |
| 25 | |
| 25 | |

## Dimensions (mm)

**IMSM.442P**



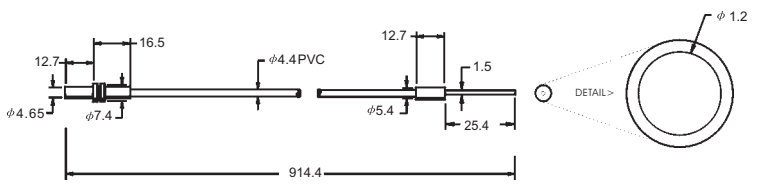

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMSM.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

| | |
|---|---|
| 55 | |
| 50 | |
| 25 | |
| 25 | |

## Dimensions (mm)

**IMSM.753P**

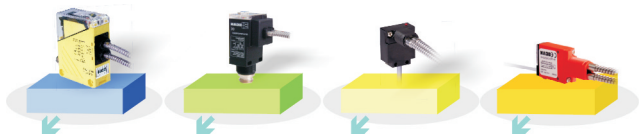



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IMSM.753P | 910 | ϕ 1.2 | PVC |

**Range (mm)**

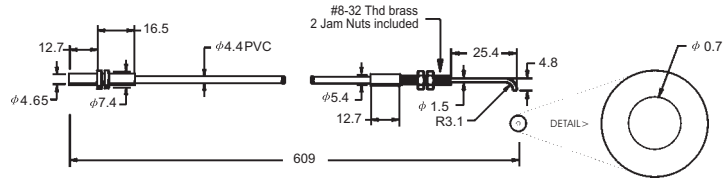
| | |
|---|---|
| 220 | |
| 200 | |
| 100 | |
| 100 | |

## Individual Cables



### Dimensions (mm)

**ISAM.442P**



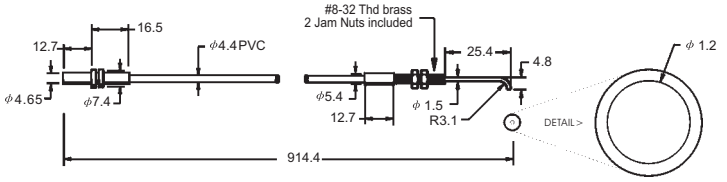

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISAM.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

| | |
|---|---|
| 55 | |
| 50 | |
| 25 | |
| 25 | |

### Dimensions (mm)

**ISAM.753P**



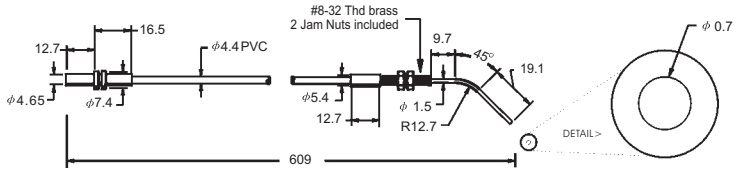

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISAM.753P | 910 | ϕ 1.2 | PVC |

**Range (mm)**

| | |
|---|---|
| 220 | |
| 200 | |
| 100 | |
| 100 | |

### Dimensions (mm)

**ISHM.442P**



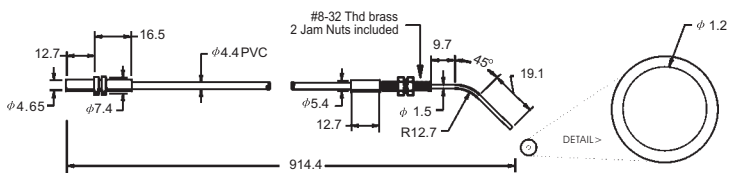

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISHM.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

| | |
|---|---|
| 55 | |
| 50 | |
| 25 | |
| 25 | |

### Dimensions (mm)

**ISHM.753P**



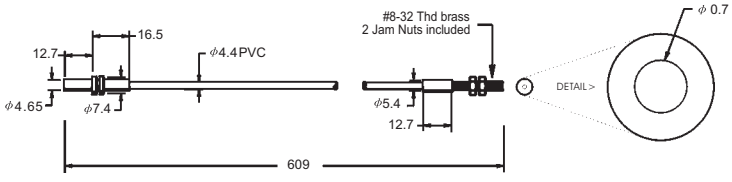

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISHM.753P | 910 | ϕ 1.2 | PVC |

**Range (mm)**

| | |
|---|---|
| 220 | |
| 200 | |
| 100 | |
| 100 | |

### Dimensions (mm)

**ISS.442P**

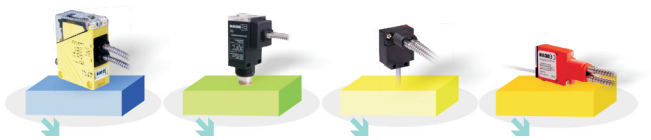



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISS.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

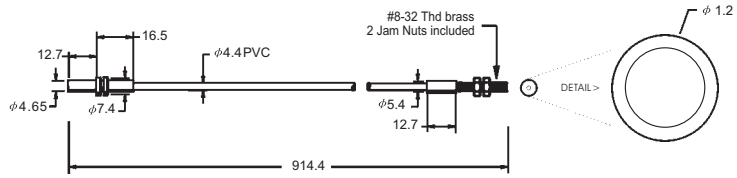
| | |
|---|---|
| 55 | |
| 50 | |
| 25 | |
| 25 | |

## Individual Cables



### Dimensions (mm)

**ISS.753P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISS.753P | 910 | ϕ 1.2 | PVC |

**Range (mm)**

220

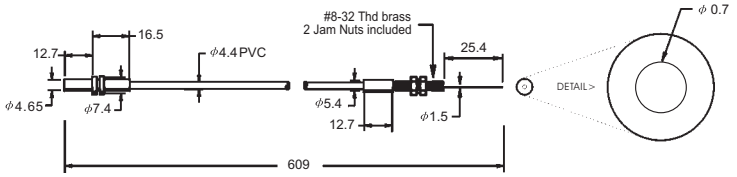
200

100

100

### Dimensions (mm)

**ISSM.442P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISSM.442P | 610 | ϕ 0.7 | PVC |

**Range (mm)**

55

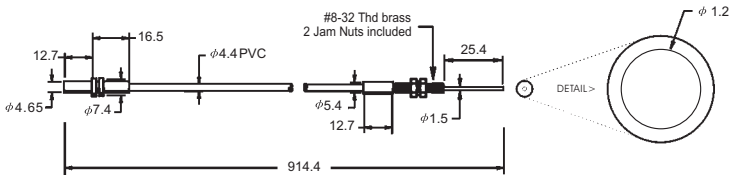
50

25

25

### Dimensions (mm)

**ISSM.753P**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ISSM.753P | 910 | ϕ 1.2 | PVC |

**Range (mm)**

220

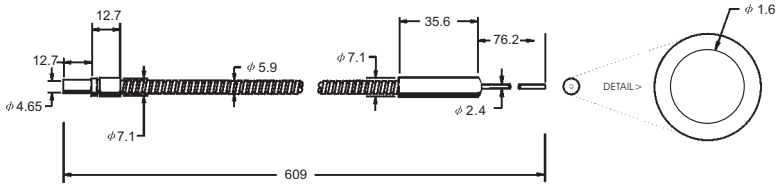
200

100

100

### Dimensions (mm)

**IPS12S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IPS12P | 610 | ϕ 1.6 | PVC |
| IPS12S | 610 | ϕ 1.6 | SS |

**Range (mm)**

260

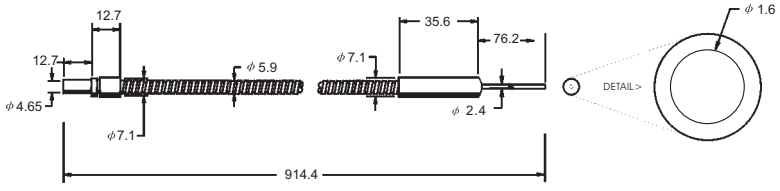
300

150

150

### Dimensions (mm)

**IPS13S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IPS13P | 910 | ϕ 1.6 | PVC |
| IPS13S | 910 | ϕ 1.6 | SS |

**Range (mm)**

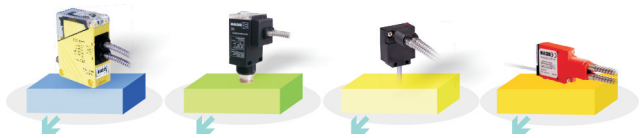
260

300

150

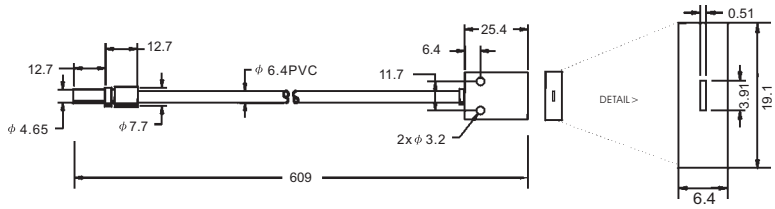
150

## Individual Cables



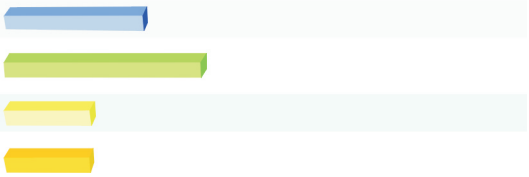
### Dimensions (mm)

**IRSR12P**



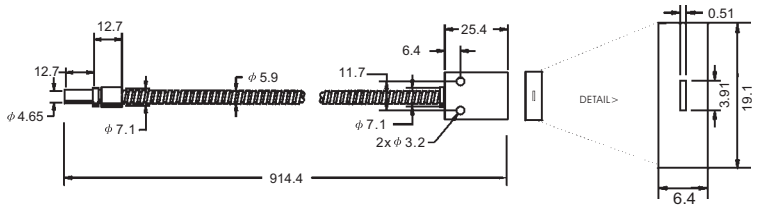

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRSR12P | 610 | 0.51x3.91 | PVC |
| IRSR12S | 610 | 0.51x3.91 | PVC |

**Range (mm)**



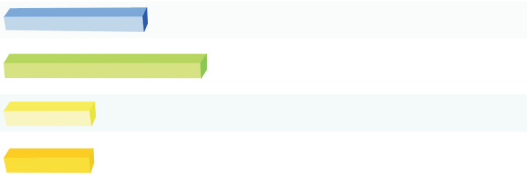
### Dimensions (mm)

**IRSR13S**



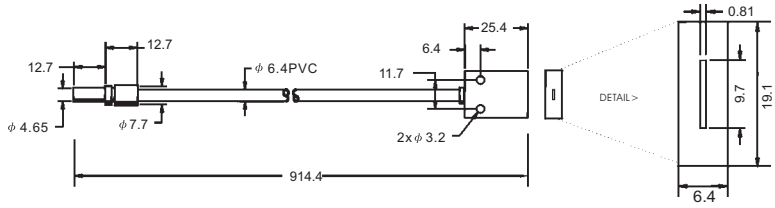

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRSR13P | 910 | 0.51x3.91 | PVC |
| IRSR13S | 910 | 0.51x3.91 | SS |

**Range (mm)**



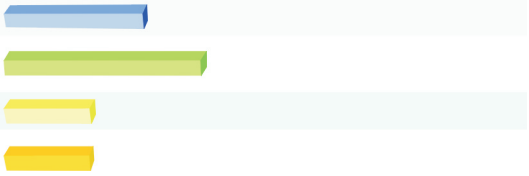
### Dimensions (mm)

**IRSR23P**



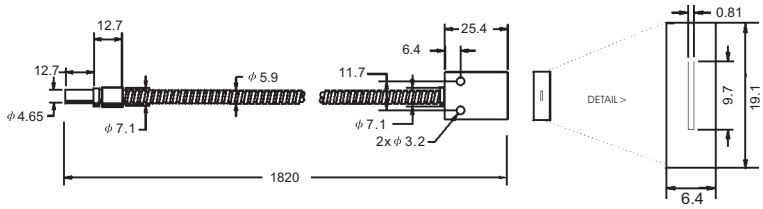

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRSR23P | 910 | 0.81x9.7 | PVC |
| IRSR23S | 910 | 0.81x9.7 | SS |

**Range (mm)**



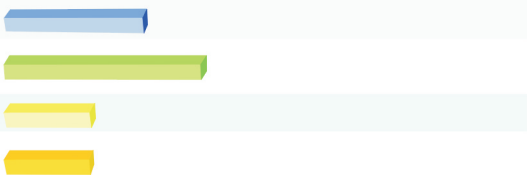
### Dimensions (mm)

**IRSR26S**



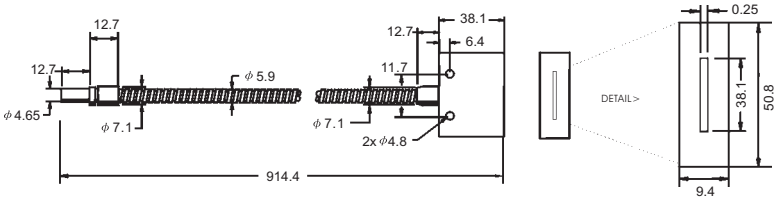

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRSR26P | 1820 | 0.81x9.7 | PVC |
| IRSR26S | 1820 | 0.81x9.7 | SS |

**Range (mm)**



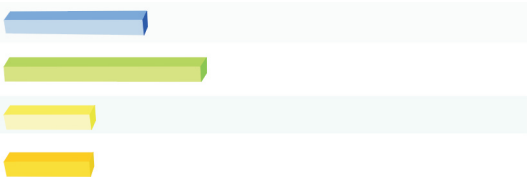
### Dimensions (mm)

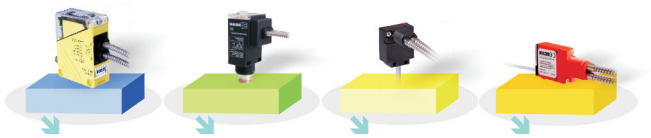
**IRSR2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRSR2.53P | 910 | 0.25x38.1 | PVC |
| IRSR2.53S | 910 | 0.25x38.1 | SS |

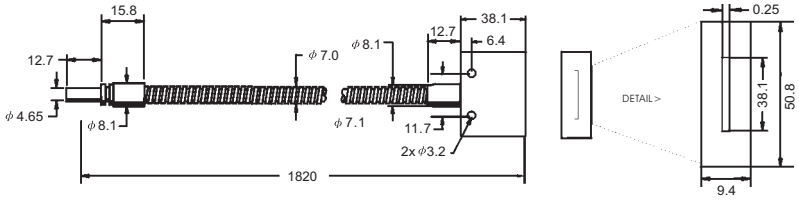
**Range (mm)**





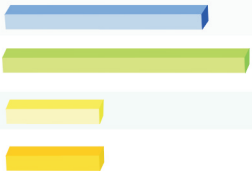
## Dimensions (mm)

IRSR2.53S




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRSR2.56P | 1820 | 0.25x38.1 | PVC |
| IRSR2.56S | 1820 | 0.25x38.1 | SS |

Range (mm)



## Dimensions (mm)

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| | | | |

Range (mm)

## Dimensions (mm)

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| | | | |

Range (mm)

## Dimensions (mm)

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| | | | |
| | | | |

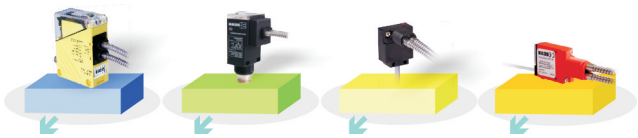
Range (mm)

## Dimensions (mm)

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| | | | |
| | | | |

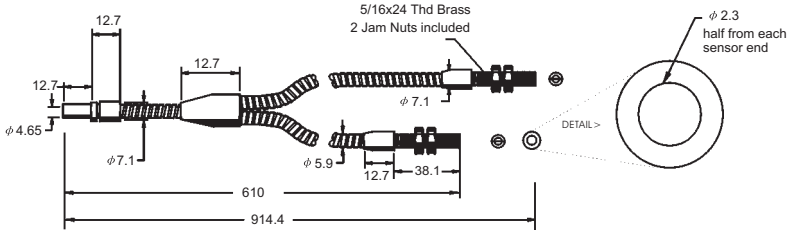
Range (mm)

## Individual Cables



### Dimensions (mm)

**I2TS23S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I2TS23S | 910 | ϕ 2.3 | SS |

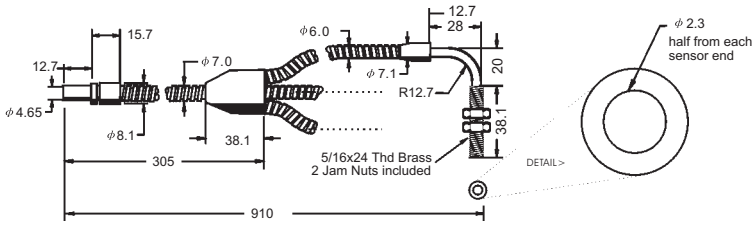
**Range (mm)**

| | |
|---|---|
| 220 | |
| 370 | |
| 180 | |
| 180 | |

**Most bifurcated fiber assemblies are used in the diffuse (proximity) sensing mode, but this one is used (in pairs) in the opposed mode. The common end of one cable connects to an emitter, and the common end of the other cable, to a receiver. The two opposed beams created with the branched ends must both be broken in order to obtain an output from the sensor ("dark-AND" logic). Threaded ends are used to extend the opposed sensing range with addition of lenses L9 or L16F.**

### Dimensions (mm)

**I3EA2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I3EA2.53S | 910 | ϕ 2.3 | SS |

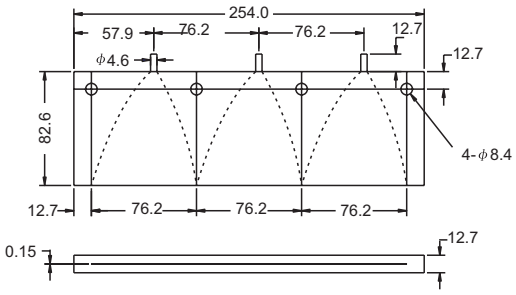
**Range (mm)**

| | |
|---|---|
| 220 | |
| 370 | |
| 180 | |
| 180 | |

**This assembly was designed as a Trifurcated-Ferruled Version of model IEAT23S. However, the bundle size on the sensing end tips is 0.09 inches in diameter. Opposed sensing range can be increased with the use of L9 or L16F lenses. The lenses should be used on all three ends of the two opposed fibers to achieve the maximum sensing range.**

### Dimensions (mm)

**I3RSR2.53S**



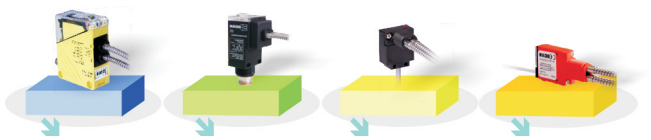

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I3RSR2.53S | 250 | 0.15x76.2 | Aluminum |

**Range (mm)**

| | |
|---|---|
| | |
| | |
| | |
| | |

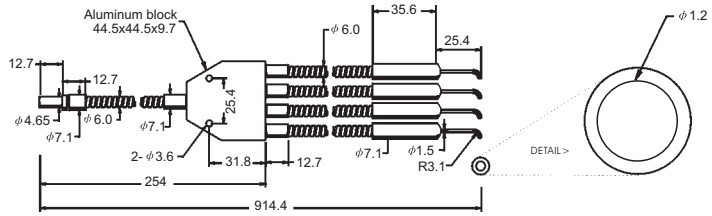
**This Triple-Individual Rectangular assembly is used in the opposed mode (2 required) to cover an area nine inches wide. It may be used with high-powered sensor pair SM51EB6 and SM51RB6 equipped with FOF-500 fittings, for detecting small holes in opaque webs.**

## Individual Cables



### Dimensions (mm)

**I4NAM1.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I4NAM1.53S | 910 | 1.2 | SS |

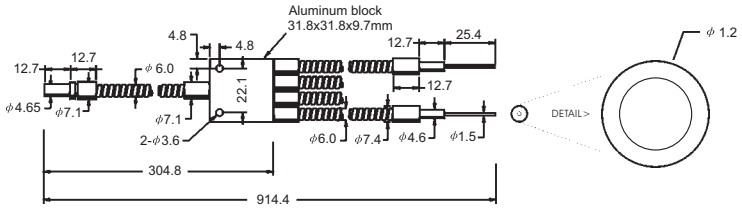
**Range (mm)**

220
200
100
100

**This fiber is an example of using multiple opposed miniature beams with one photoelectric sensor. Each sensing end has the same end tip as model IAM.752S for easy mounting via the "bullet" and the FMB-1 Mounting bracket. This model is used in pairs, typically with a high powered infrared sensor. A pair of opposed 0.046 inch diameter fibers have 1/4 of the excess gain of a pair of 0.06 inch diameter fibers (e.g. IT13S), this corresponds to a range reduction of 50%.**

### Dimensions (mm)

**I4NSM1.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I4NSM1.53S | 910 | 1.2 | SS |

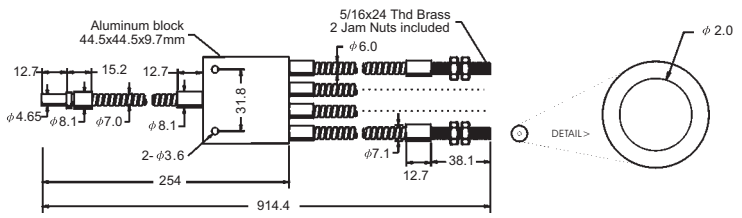
**Range (mm)**

220
200
100
100

**This assembly is similar to model I4NAM1.53S. shown on the previous page. The sensing end tips on this model have a one inch long straight probe, without a right angle. The miniature end tips are not bendable. A typical application for this style of fiber is to determine if all parts are in place. When using a sensor in the dark-operate mode, an output will occur only when all four beams are blocked ("dark-AND" logic).**

### Dimensions (mm)

**I4TS2.53S**



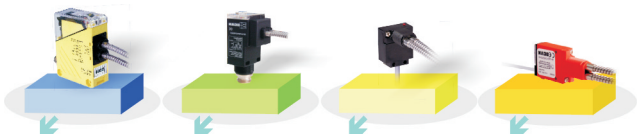

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I4TS2.53S | 910 | 2.0 | SS |

**Range (mm)**

260
350
150
150

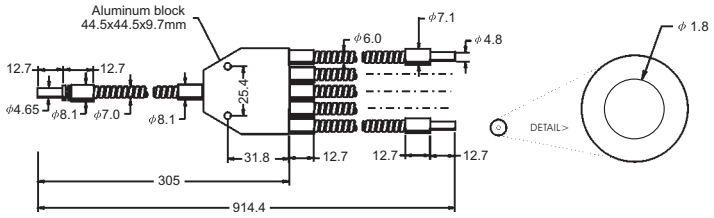
**The I4TS2.53S is a four-channel version of model ITS2.53S. It has slightly larger fiber bundles on the sensing ends, allowing more excess gain. It was designed for use in a rotary index table to insure that all four parts were in place before the table could advance. Using two fibers and one sensor set for dark operate, a programmable controller "look" for a signal from the sensor when the parts should be in place. If the controller does not receive a signal, the controller stops the machine and sounds an alarm.**

## Individual Cables



### Dimensions (mm)

**I5NS2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I5NS2.53S | 910 | ϕ1.8 | SS |

**Range (mm)**

260

280

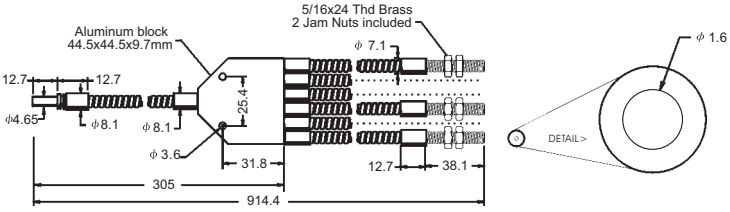
150

150

**This five-ferruled fiber is used in pairs to create 5 opposed beams using one photoelectric sensor. If the sensor is used in the light operate mode, a "light-or" logic function results. If "A" or "B" or "C", etc. senses light, the output is energized. To determine the sensing range of the fiber, use the excess gain curve for Model IT13S, located with the photoelectric sensor used for the application. The fiber optic cable uses the largest possible fiber optic bundle at the sensor end: 0.156 inch diameter.**

### Dimensions (mm)

**I6TS2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I6TS2.53S | 910 | ϕ1.6 | SS |

**Range (mm)**

260

300

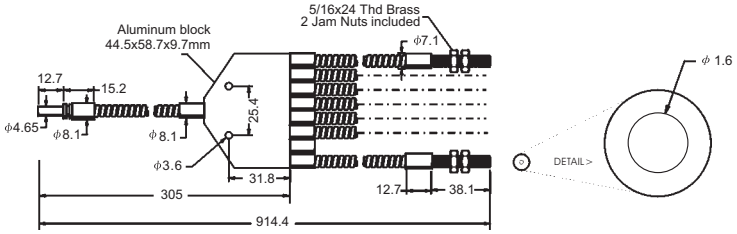
150

150

**The I6TS2.53S is used in pairs (in the opposed mode) as a six beams must be broken before the sensor responds. The fiber bundle diameter at the photoelectric sensor end is the largest (0.156 inch diameter) available. At each of the sensing ends, the bundle diameter is 0.06 inch. When determining the maximum sensing distance. use the excess gain curve for model IT13S. The number of legs on the fiber is not limited to six, and can be of different lengths. The end tip design may also be modified.**

### Dimensions (mm)

**I8TS2.53S**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| I8TS2.53S | 910 | ϕ1.6 | SS |

**Range (mm)**

260

250

150

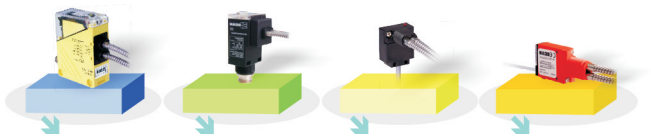
150

**This Octa-Ferruled fiber Modified with Threaded Tips is used in pairs to set up an eight input "AND" gate, where all eight fiber beams must be broken to obtain an output (when the photoelectric sensor is used in the "dark operate" mode). This fiber is similar to model HF2.53SMTT, except it has eight ends instead of six. The maximum fiber bundle diameter (0.156 inches) is used on the photoelectric sensor end, which creates 0.055 inch diameter bundles at all eight scanning ends.**

# Glass Fibers

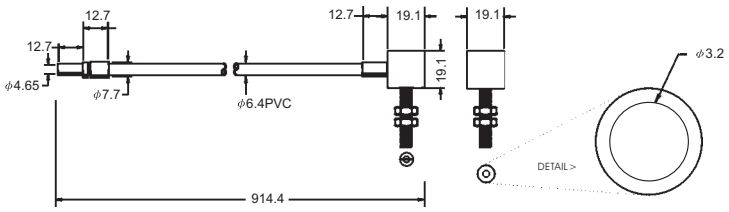
## Opposed Mode

## Individual Cables



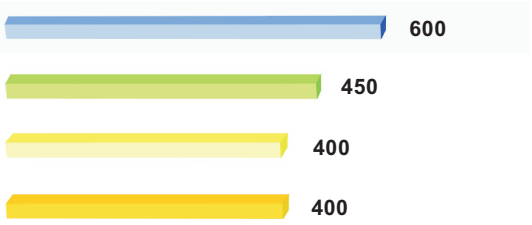
### Dimensions (mm)

**IEA23PMC20**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEA23PMC20 | 910 | ϕ 3.2 | PVC |

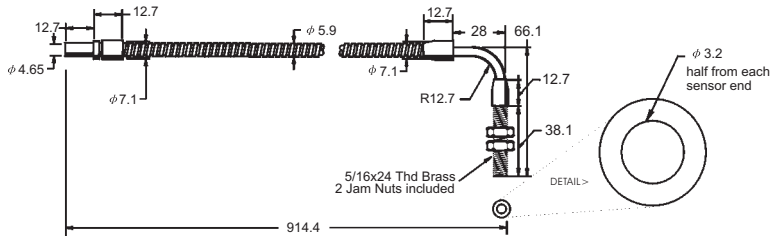
**Range (mm)**




**This special purpose fiber optic assembly is used in the manufacture of automobile batteries. It is subjected to continuous splash of electrolyte (asid). Carpenter 20 grade stainless steel is used for the threaded portion and for the right-angled block to withstand the acid environment. Modifications of the length, sheathing end top material are possible on this model.**

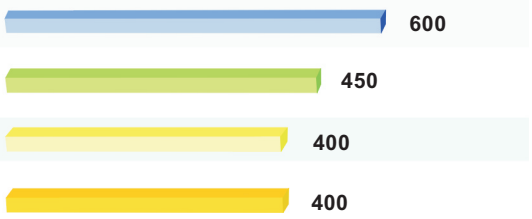
### Dimensions (mm)

**IEA23SF90**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IEA23SF90 | 910 | ϕ 3.2 | SS |

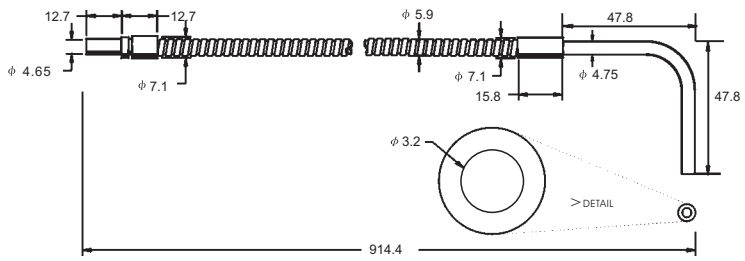
**Range (mm)**




**Model IEAT23SF90 is modified for high temperature operation to make this special fiber. Optical grade epoxy is eliminated at the sensing end of the fiber so that it can operate at up to 900 F (480 C). This change in manufacturing requires a slight dimensional change in the length of the angled portion of the sensing end. The material for the threaded portion is changed from brass to stainless steel, with brass insert.**

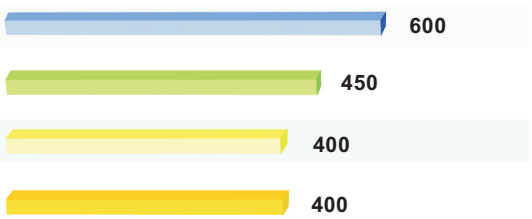
### Dimensions (mm)

**INA23SM1.9**



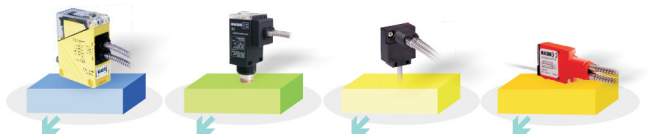

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INA23SM1.9 | 910 | ϕ 3.2 | SS |

**Range (mm)**



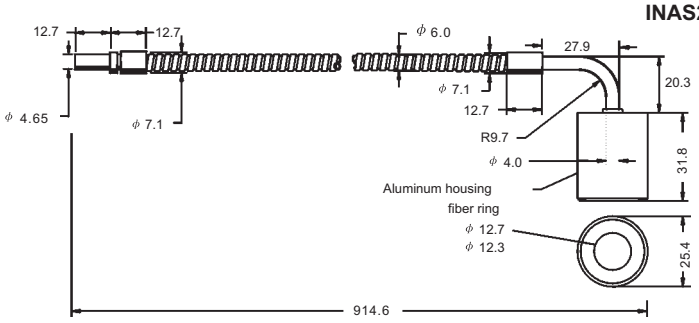

**This fiber optic assembly is an individual fiber version of model BNA23SM1.9. This assembly is modified for high temperature applications, Up to 900 F (480 C). They are used in pairs in the opposed mode, and usually with high powered infrared sensors. A typical application is part presence detection in small kilns and ovens. One INA23SM1.9 may also be used with model SBAR1GHF to sense hot metal or hot glass.**

## Individual Cables



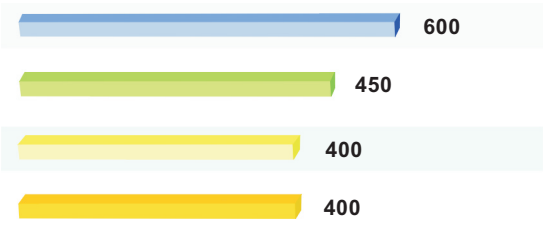
### Dimensions (mm)

**INAS23SMC**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INAS23SMC | 910 | ϕ 3.2 | SS |

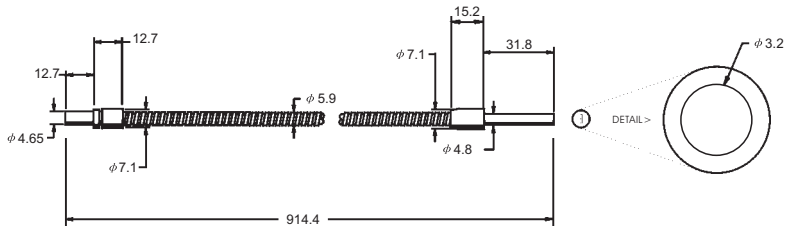
**Range (mm)**




**This Individual Axial Circle fiber was designed for a special application to inspect the entire circumference of small opaque discs for chips and cracks. The disc is stopped momentarily between an opposed pair of fibers at the inspection station. The size of the fiber circle is slightly less than that of the disc. If no light passes to the receiver, the disc is accepted and advanced to the assembly area. This circular style of fiber can be made in a wide variety of diameters and line widths. The only restriction is the maximum bundle size per sensor ferrule (0.156 inch diameter).**

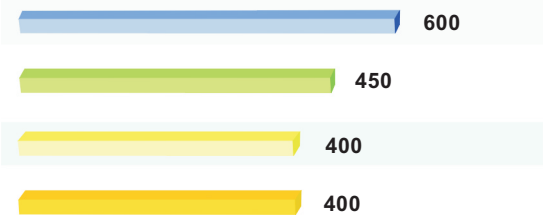
### Dimensions (mm)

**INS23SF90**




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INS23SF90 | 910 | ϕ 3.2 | SS |

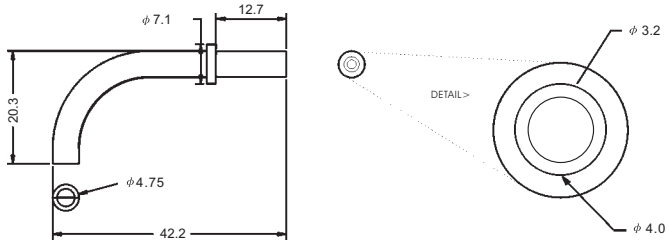
**Range (mm)**




**This fiber optic assembly is a high temperature modification of standard model INS23S. Suffix "F90" stands for modified for 900 F (480 C). Dimensional differences include crimp collar diameter and ferrule length. These changes are necessary for manufacturing of the end tip without epoxy. Ferrule length can be extended like model BTS23SM2.**

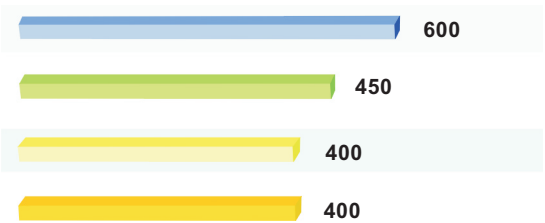
### Dimensions (mm)

**INA2.5MSS**



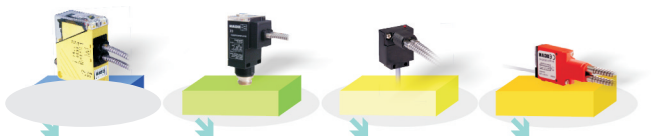

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INA2.5MSS | 42 | ϕ 3.2 | SS |

**Range (mm)**



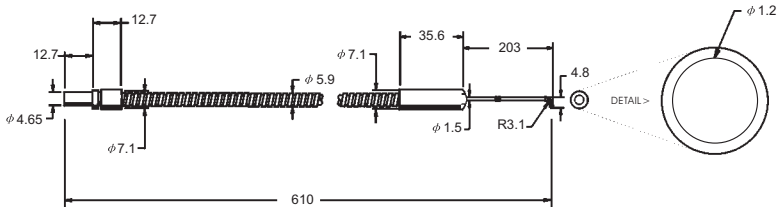

**This special fiber assembly is the shortest possible modification to model IA23S. The entire ferrule is stainless steel and is not bendable. It is used in pairs with FOF-400 fiber optic fittings and LR400/PT400 sensors where space limitations prevent the use of right angle sensors. They may also be used with other sensors to provide various degrees of convergent-proximity node sensing. The bundle diameter and overall length can be modified for your application.**

## Individual Cables



### Dimensions (mm)

INSM.752SM8




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| INSM.752SM8 | 610 | ϕ 1.2 | SS |

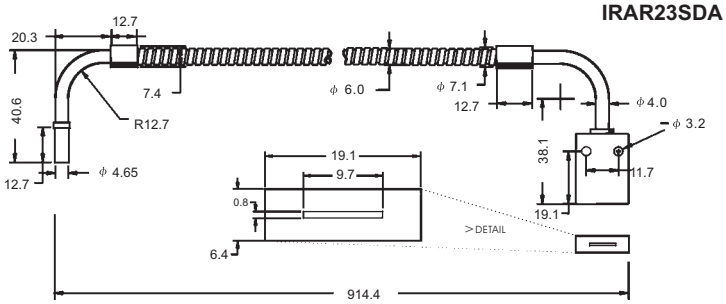
Range (mm)

| | |
|---|---|
| 220 | |
| 200 | |
| 100 | |
| 100 | |

This fiber is a modification of standard model INSM.752S. The length of the miniature end (before the angle) is extended from one inch to eight inches. This modification was required due to very limited access space in an inspection area. This style of fiber can also be built with modification to the length after the bend and to the fiber bundle diameter The minimum bend radius of the 0.06 inch diameter tubing used is 1/8 inch. This assembly uses hardened tubing, which is not bendable.

### Dimensions (mm)

IRAR23SDA



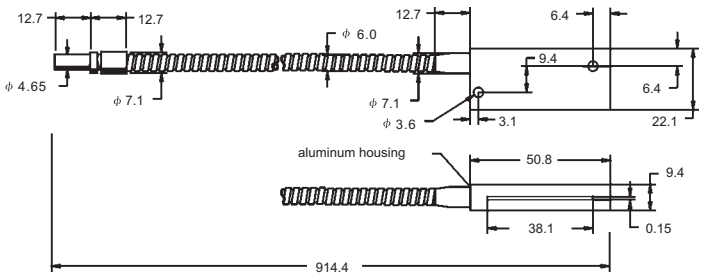

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRAR23SDA | 910 | 0.8x9.7 | SS |

Range (mm)

| | |
|---|---|
| 600 | |
| 450 | |
| 400 | |
| 400 | |

This modification of standard model IRS23S has an angle at both ends. Both modifications were due to space limitations. The angle of the stainless steel tubing can be modified to suit a particular application. This type of modification can also be made to larger rectangular fibers like models IRS2.53S and BRS53S.

### Dimensions (mm)



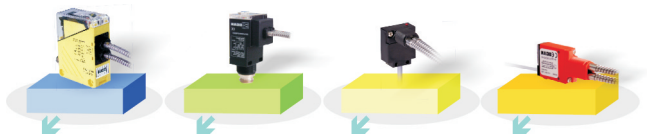

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRVR1.73S | 910 | 0.15x38.1 | SS |

Range (mm)

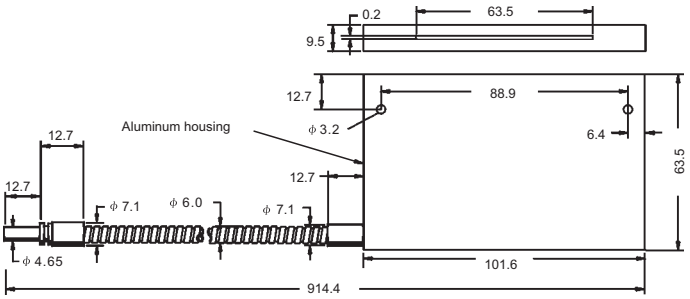
| | |
|---|---|
| 350 | |
| 400 | |
| 180 | |
| 180 | |

Model IRVR2.53S was too large to for an application requiring a long, thin rectangular fiber window. A machined housing was needed to fit the space allocated for the sensing end. The rectangular window s\is modified to only 0.006 inches wide, the smallest available. The mounting holes also had to be moved to allow the cable to exit from the side of the housing. The 1.5 inch length of the fiber windows cannot be made longer in this housing style, but the window width can increase up to 0.013 inches.

## Individual Cables

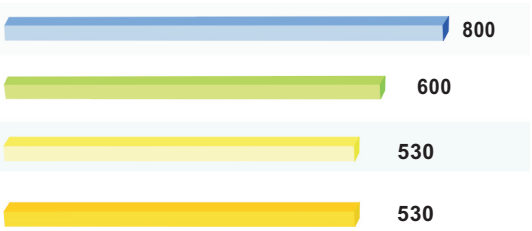


### Dimensions (mm)




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRVR2.53SM2.5 | 910 | 0.2x63.5 | SS |

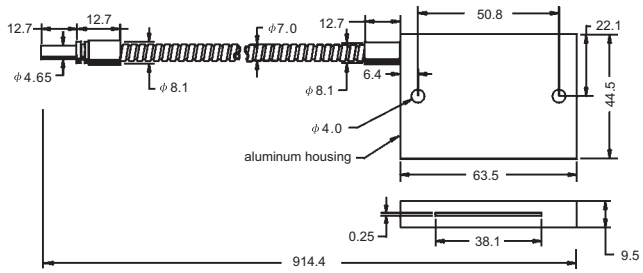
**Range (mm)**




**Model IRVR2.53SM2.5 is used in applications where the required beam size is greater than 1.5 inches long. This model incorporates a different housing and cable exit than the standard IRVR2.53S. The 0.156 inch diameter fiber bundle on the photoelectric sensor end is the largest possible for efficient coupling of the light from the LED source into the fiber optic bundle. A typical application is counting small parts falling through the fiber window using sensor model OSBFAC. Also available is model IR2.53SM3. It has a fiber window 3.00 x 0.006 inches.**

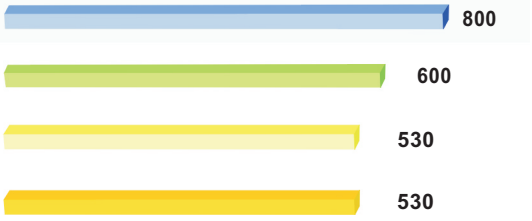
### Dimensions (mm)

IRVR2.53SMR




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| IRVR2.53SMR | 910 | 0.25x38.1 | SS |

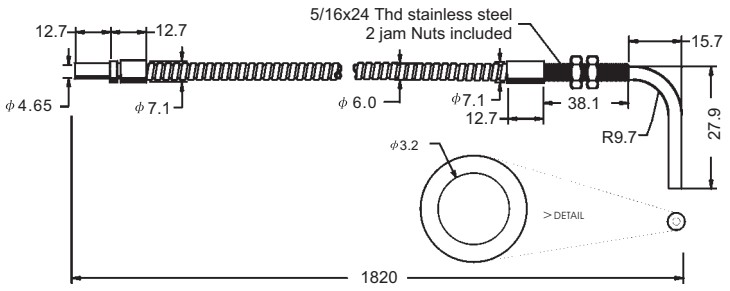
**Range (mm)**




**This customer-designed fiber is a modification of standard model IRVR2.53S. The cable exit and the mounting hole location are changed. This is one of many modifications possible to the large rectangular fiber optic assemblies.**

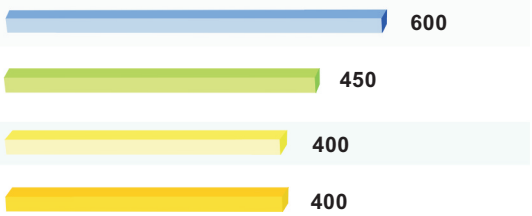
### Dimensions (mm)

ITA26SF90

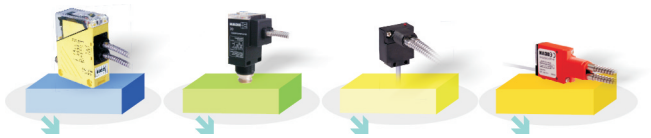



| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITA26SF90 | 1820 | ϕ 3.2 | SS |

**Range (mm)**

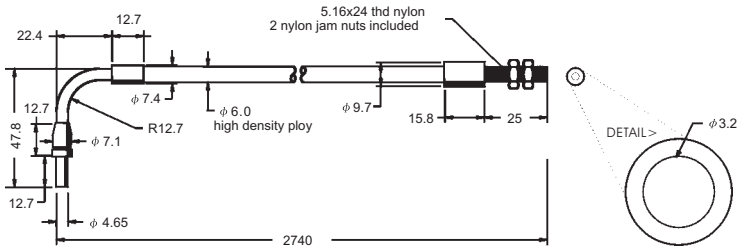



**This assembly is a high temperature modification of standard fiber ITA23S. The length of the fiber is increased to six feet to allow the photoelectric control to reside outside of the high temperature environment. The end tip is constructed without the use of epoxy, allowing the fiber to operate in 900%%DF (480%%DC) heat. Stainless steel is substituted for brass on the threaded end tip. This cable can be built in any length up to 60 feed.**



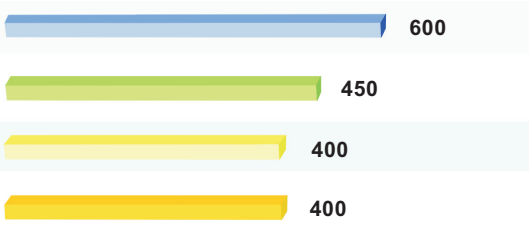
## Dimensions (mm)

**ITA29HDPASEN**



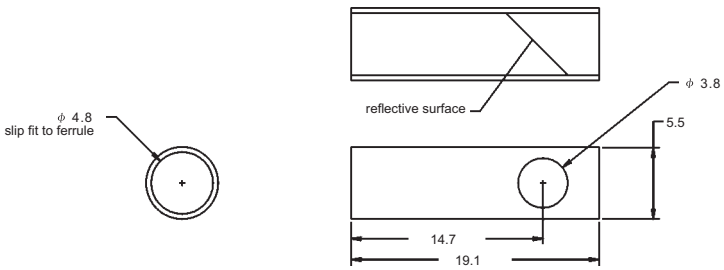

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| ITA29HDPASEN | 2740 | ϕ 3.2 | HDP |

**Range (mm)**




**This fiber optic assembly is a modified version of the IT23S. The sheathing has been changed to High Density Poly and the overall length is 9 feed. The threaded end is changed from brass to nylon and the thread length is only 1 inch. These changes are needed for an application requiring a sensing end and sheathing that are not conductive. The threaded end allows for the addition of a lens to increase the overall sensing range. The right angle bend on the sensor end permits mounting the photoelectric sensor in an area where space is restricted.**

## Dimensions (mm)




| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| NA | 19 | N/A | SS |

**Range (mm)**

**This special fiber attachment is typically used with model INS23S fibers to "bend" the light at a right angle to the length of the fiber ferrule. It is also used with model BNS23SM2 when model BNV1.53S is too large in diameter to fit in the allocated space. The NA slips over the ferrule and is held in place with an adhesive, (not supplied). The highly-polished reflective surface of the NA is recessed in the stainless tube. Therefore, this assembly should not be used in a dirty environment. Excess gain is reduced 50% when using the model NA.**

## Dimensions (mm)

| Model number | Length | Bundle | Sheath |
|---|---|---|---|
| | | | |

**Range (mm)**