



HEAT SPY®  
MONITOR R40  
SERIES FIXED  
INFRARED SENSOR



- . Back-lit 5-Digit LCD display with 4-Key Pad for convenient on-site viewing and setting.
- . 12-Pin connection cable for simultaneous analog/digital input and output. •
- . 0-20 or 4-20 mA Linear Current Loop, sub-range programmable, user selectable.
- RS485 for networking, up to 32 sensors.
- Relay for alarm and PLC control, user programmable.
- External Input for reset and parameter adjusting of AVG, PEAK HOLD and VALLEY HOLD.
- . Built-in Laser to simplify alignment operation. (Not available on Models P3 or F4)
- . Programmable for OEM applications through RS485 for remote setup and monitoring.
- . Optional non-contact Thermocouple Type IR tube with extremely long life is available as an alternative to traditional contact thermocouples



## Description

### Overview

**A high-tech non-contact infrared sensor, designed to meet all application requirements by delivering high performance and advanced features. A rugged and waterproof IP65 (NEMA 4) one-piece system, with optics and electronics integrated in a single housing, the R40 is easy to install and offers the flexibility to handle almost any application.**

**The R40 includes signal processing features including Peak Hold, Valley Hold and Averaging, all of which are field adjustable via the keypad or controlled remotely when interfaced with user software.**

## Specifications

Sensor Specifications	
Ambient temperature	0 ° to 65 ° C, (32 ° to 149 ° F)
with air cooling	0 ° à 120 ° C, (32 ° à 250 ° F)
with water cooling	0 ° to 175 ° C, (32 ° to 350 ° F)
Storage room	-20 ° to 70 ° C (-4 ° to 158 ° F)
Relative humidity	10% to 95% non-condensing
Protection class	IP65 (NEMA-4) (with air purge)
Laser sighting	650 nm <1 mW, Class II
Shock and vibrations	MIL-STD-810D
Housing material	ANSI 304 stainless steel
Dimensions	45 mm in diameter. x 183 mm (1.77 x 7.20 inches) approx.
Weight	0.72 kg (1.58 lb)

Measurement specifications		
	1M/2M	P34 / MT / F4 / G5 / P7 / G7 / L
Precision 1	± 0.25% of reading	± 0.6% of reading or ± 1 ° C, whichever is greater
Repeatability 2	± 0.10% of reading or ± 1 ° C, whichever is greater	± 0.3% of reading or ± 0.3 ° C, whichever is greater
LCD resolution	1 ° C / 1 ° F	1 ° C / 1 ° F
Response time 3	5 mS	150 mS
Emissivity	0.10 to 1.00	0.10 to 1.00

## Models and accessories

PHOTODIODE MODELS - Step 1 - Select: Series	
R40	Fixed infrared, includes: certificate of conformity and user manual

Step 2 - Select: Spectral range and temperature range			
Coded	Spectral range	Temperature range	Application
1ML	1.0µm	400 ° to 1800 ° C, (752 ° to 3272 ° F)	Molten metal / ceramic Hot graphite Ferrous metal
1MM	1.0µm	600 ° to 1800 ° C, (1112 ° to 3272 ° F)	Molten metal / ceramic Hot graphite Ferrous metal
1MH	1.0µm	600 ° to 3000 ° C, (1112 ° to 5432 ° F)	Molten metal / ceramic Hot graphite Ferrous metal
2ML	1,6µm	300 ° to 1400 ° C, (572 ° to 2552 ° F)	Hot metal Hot ceramic Non-ferrous metal
2MM	1.6 µm	400 ° to 1600 ° C, (752 ° to 2912 ° F)	Hot metal Hot ceramic Non-ferrous metal
2MH	1,6µm	400 ° to 2300 ° C, (752 ° to 4172 ° F)	Hot metal Hot ceramic Non-ferrous metal

Step 3 - Select the optics		
Coded	Optical	
D100	100:1	
F100	2mm@100mm	50:1
F300	3mm@300mm	100:1
F500	6mm@500mm	83:1

### Model

Step 4 - Select the length of the connection cable	
Coded	Cable length
CB1	Cable, 1 meter, (3.28 feet) Standard



CB3	Cable, 3 meters, (9.84 feet)
CB5	Cable, 5 meters, (16.40 feet)
CB8	Cable, 8 meters, (26.24 feet)
CB15	Cable, 15 meters, (49.21 feet)
CBX	Cable, customer specified length (100 m (300 ft) max.)

Series	Spectral range / temperature code	Optical code	Connection cable length code
R40			
Insert the codes in the boxes above to construct the part number			

THERMOPILE MODELS - Step 1 - Select Series			
R40	Fixed infrared, includes: certificate of conformity and user manual		
Step 2 - Select: Spectral and Temperature Range			
Coded	Spectral range	Temperature difference	Application
P3M	3,43µm	100 ° to 300 ° C, (212 ° to 572 ° F)	Plastics
P3H	3,43µm	100 ° to 500 ° C, (212 ° to 932 ° F)	Plastics
MTM	3,9µm	600 ° to 1300 ° C, (1112 ° to 2372 ° F)	Through the flame
MTH	3,9µm	600 ° to 1500 ° C, (1112 ° to 2732 ° F)	Through the flame
F4M	4.11 to 4.72µm	400 ° to 1500°C, (752 ° to 2732 ° F)	Flue gas
F4H	4.11 to 4.72µm	400 ° to 1600 ° C, (752 ° to 2912 ° F)	Flue gas
G5M	5,1µm	400 ° to 1600°C, (752 ° to 2912 ° F)	Glass
G5H	5,1µm	400 ° to 2250 ° C, (752 ° to 4082 ° F)	Glass
P7	7,9µm	40 ° to 600 ° C, (104 ° to 1112 ° F)	Plastics
G7	7,9µm	40 ° to 1000 ° C, (104	Glass



		° to 1832 ° F)	
LTL	8 to 14µm	0 ° to 600°C, (32 ° to 1112 ° F)	Low temperature
LTM	8 to 14µm	0 ° to 800°C, (32 ° to 1472 ° F)	Medium temperature

Step 3 - Select the optics			
Coded		Optical	
D30		30 :1	
F150	3.5mm@150mm	42:1	
F300	8mm@300mm	37.5:1	
F600	20mm@600mm	30:1	

Step 4 - Select the length of the connection cable	
Coded	Cable length
CB1	Cable, 1 meter, (3.28 feet) (Standard)
CB3	Cable, 3 meters, (9.84 feet)
CB5	Cable, 5 meters, (16.40 feet)
CB8	Cable, 5 meters, (16.40 feet) Cable, 8 meters, (26.24 feet)
CB15	Cable, 15 meters, (49.21 feet)
CBX	Cable, customer specified length (100 m (300 ft) max.)

Series	Spectral range / temperature code	Optical code	Connection cable length code
R40			

Insert the codes in the boxes above to construct the part number

## Accessories

### **R40 Surface mount brackets**

### **16451 - R40 surface mount bracket, fixed, diameter: 45mm (1.77 ")**



**16453 - R40 surface mount bracket, adjustable, diameter: 45mm  
(1.77 ")  
Shown**

## SIGHT TUBES / IR Tube

**R40 / 60 series for use with R40 Code D100 optics (D to S: 100: 1).**

**M30 x 1, length: 11.81 in (300 mm)**

**16491-1 - SS304, 1500 ° F (800 ° C)**

**16491-2 - Inconel, 2000 ° F (1100 ° C)**

**16491-3 - Silicon Carbide, 3000 ° F (1600 ° C)**

**16491-4 - High purity alumina, (99.8%), 3500 ° F (1900 ° C)**

**16491-5 - Glassy carbon, 5430 ° F (3000 ° C)**

**R40 / 60 series IR thermocouple tube for use  
with R40 Code F300 optics (D to S: 100: 1). M30  
x 1, length: 11.81 in (300 mm)**

**16492-1 - SS304, 1500 ° F (800 ° C)**

**16492-2 - Inconel, 2000 ° F (1100 ° C)**

**16492-3 - Silicon Carbide, 3000 ° F (1600 ° C)**

**16492-4 - High purity alumina, (99.8%), 3500 ° F (1900 ° C)**

**16492-5 - Glassy carbon, 5430 ° F (3000 ° C)**

**R40 air purge**

**16472 - Air purge R40, M44x1.5 to M30x1**





## PROTECTION WINDOWS R40 Protective windows (includes locking ring)

**16465-1 - BK7 protection window for R40 to be used with models 1M and 2M.**

**16465-2 - Sapphire protection window for R40 for use with models 1M, 2M, MT, F4 and G5.**

**16465-3 - ZnSe protection window for R40 for use with P3, MT, F4, G5, P7 and LT models.**

## AIR / WATER COOLING JACKET

### R40 air / water cooling jacket

**16460 - R40 air / water cooling jacket**

## supply

**16116 - Compact AC / DC power supply unit, 24V, 31W**

**16117 - AC / DC power supply unit, 24V, 25 to 150 W**







Heat Spy® Monitor R40 Series Fixed  
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