

Infrared measuring technology

Infrared Measuring Heads in Two-Wire Design AMiR 7838



- Compact, robust and precise infrared measuring heads.
- Wide range of versions for applications in intelligent process control and monitoring systems, as well as in production and test lab.
- Low cost standard version with fixed set temperature and output current range and emissivity can be manually set at the measuring head.
- The standard version without programming functions is ideally suitable for connecting to ALMEMO® devices.
- Measuring heads also available as addressable and remotely programmable versions.

Accessories	Order no.
ALMEMO® connecting cable, 2 meters, ALMEMO® connector, programmed for the probe head's temperature range, Sensor supply via ALMEMO® device (use of the device mains unit is recommended) (cable not suitable for ALMEMO® 4490-2, available here on request)	ZA7838AK
for programmable measuring heads MR7838xP	
Protective window, snap-on, according to above lens detail	ZR7838SF
Remote control set incl. HART adapter and software	OR7838SH
Industrial mains adapter 110/220V – 24VDC	ZR7838NT

Options	
Other focus point optics (also see page 07.44 / 07.45)	
Water/air cooling housing including air blow attachment, factory mounted	OR7838KL
Inherent safety (Ex in IIC T4), only available with programmable meas. heads without cooling jacket	OR7838IS4
Factory test certificate, based on DAkKS/NIST certified sensors (only with delivery of new devices)	OR7800KZ1

Types (incl. rigid mounting angle and fastening screw)	Order no.
For universal applications, standard optics OR7838OS1 (Fresnel Lens) Meas. range –18 to 500°C, spectral range 8 to 14 µm, response time 165ms, optical resolution 15:1	MR783810(P)
For universal applications, standard optics OR7838OS3 (Amtir Lens) Meas. range –18 to 500°C, spectral range 8 to 14 µm, response time 165ms, optical resolution 33:1	MR783811(P)
For high temperature measurements in metal finishing and in rotary tubular kilns, standard optics OR7838OS3 (Sapphire Lens) Meas. range 200 to 1000°C, spectral range 3.9 µm, response time 165ms, optical resolution 33:1	MR783821(P)
For maximum temperature measurements in metal finishing, standard optics OR7838OS6 (Float Glass Lens) Meas. range 500 to 2000°C, spectral range 2.2 µm, response time 100ms, optical resolution 60:1	MR783851(P)
For high temperature measurements in glass production and at heating up and hardening, standard optics OR7838OS3 (Calcium Fluoride Lens) Meas. range 250 to 1650°C, spectral range 5.0 µm, response time 165ms, optical resolution 33:1	MR783831(P)
For low temperature measurements in the production of plastic foils and normal foils, standard optics OR7838OS3 (Calcium Fluoride Lens) Meas. range 10 to 360°C, spectral range 7.9 µm, response time 165ms, optical resolution 33:1	MR783841(P)

(P) Measuring heads remotely programmable

DAkKS- oder Factory calibration KI9xxx temperature for sensor (see chapter Calibration certificates).

DAkKS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Device Functions

only AMiR 7838-xxP (programmable AMiR Heads)

Programming:	through PC via HART® adapter (OR7838SH)
Emissivity:	0.10 to 1.00 programmable
Data functions:	max, min, average value hold, compensation of ambience radiation
Limit value programming:	1 limit value incl. hysteresis, also usable for monitoring the temperature of the measuring head
ALMEMO® application:	To acquire and save measured values using those measuring head variants which cannot be addressed and remotely programmed we recommend our ALMEMO® 4390-2 panel meters. For other ALMEMO® devices please see Chapter 01. Measuring instruments

Technical Data

Accuracy:	±1% of meas. value or ±1.4°C, the higher value of either is always valid
Reproducibility:	±0.5% of meas. value or ±0.7°C, the higher value of either is always valid
Response time:	165ms, at 7838 - 51(P) 100ms
Nominal temperature:	+23°C, ±5°C
Temperature resolution:	AMiR 7838 -10, -11: 0.125°C, AMiR 7838 -21, -31, -41, -51: 1°C
Relative humidity:	10 to 95%, non-condensing, at 30°C max.
Power supply:	12–24VDC, for AMiR 7838xxP: 24VDC
Output signal:	4 ... 20mA linear, two-wire technology
Emissivity:	0.10 to 1.00 manually adjustable at measuring head (only noprogrammable heads)
Operating temperature:	without cooling: 0 to 70°C, with air cooling: 0 to 120°C with water cooling: 0 to 175°C, with protective housing: 0 to 315°C
Protection system:	IP 65, (IEC 529)
Shock:	IEC 68-2-27 (MIL STD 810D), 50G, each axis, 11ms
Vibration:	IEC 68-2-6 (MIL STD 810D), 3G, each axis, 11 to 200Hz
Dimensions:	without water cooling housing: 187mm long, Ø 42mm with water cooling housing: 187mm long, Ø 60mm
Weight:	without water cooling housing: 330 g with water cooling housing: 595 g

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Digital Signal Processing and Configuration

HART® protocol:

The Hart® protocol ('Highway Accessible Remote Transducer Protocol') is one of the most popular intelligent field bus protocols. It is more often used in industry than any other protocol and is supported by a large number of products and software of other manufacturers. The Hart® signal combines the standard output of 4 to 20mA with a simultaneously running digital remote data transmission. As a result, the measuring heads can, additionally, digitally communicate through the 2-conductor current loop (4 to 20mA) with the measuring computer.

Single installation:

The most frequently used installation method is the single current loop. Analog displays and controls, recorders or measuring equipment within the current loop will not be influenced by digital signals in the current loop.

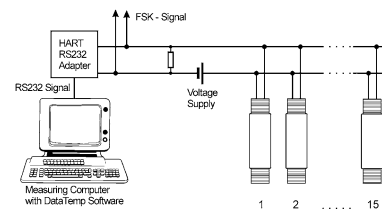
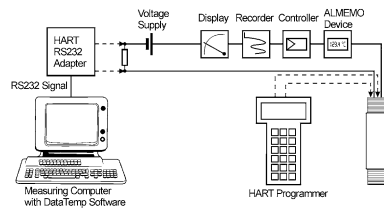
Parallel working:

Up to 15 measuring heads can be switched in parallel and the measured values can be digitally further processed. For evaluation a powerful software with a menu-driven and user-friendly interface is available. It allows a graphical display of the ONLINE data including storing the measured values as an ASCII file for data export to other applications.

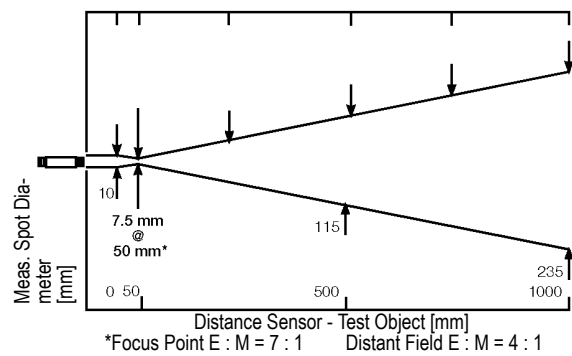
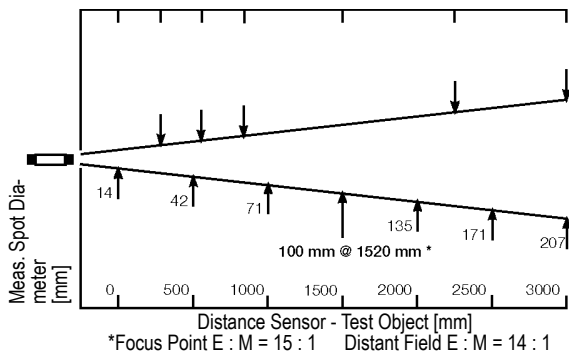
Configuration examples:

Single installation

Parallel working.



Measuring Field Diagrams: AMiR 7838-10(P)



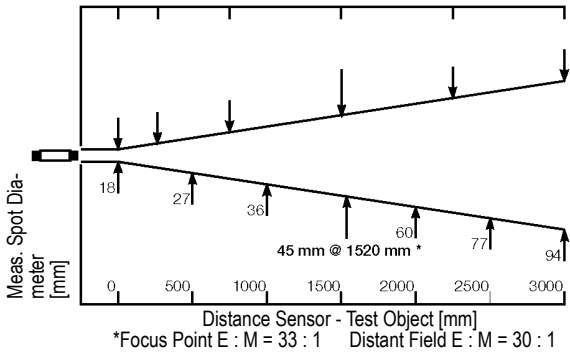
Standard Optics OS1

Focal Point Optics OS2

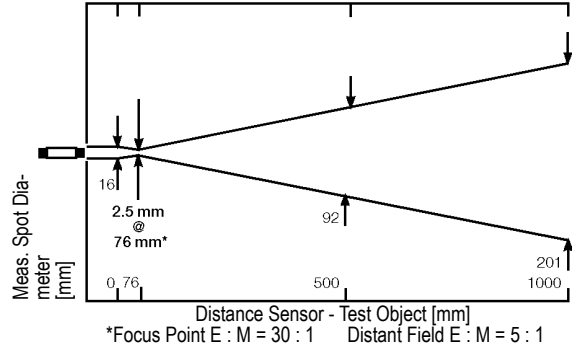
Order no. OR7838OS2

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Measuring Field Diagrams: AMiR 7838-11(P)/-21(P)/-31(P)/-41(P)



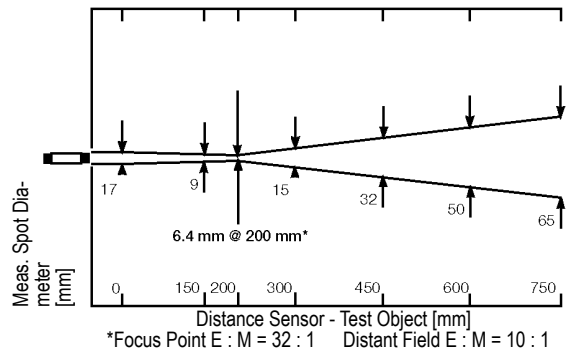
Standard Optics OS3



Focal Point Optics OS4

Order no. **OR7838OS4**

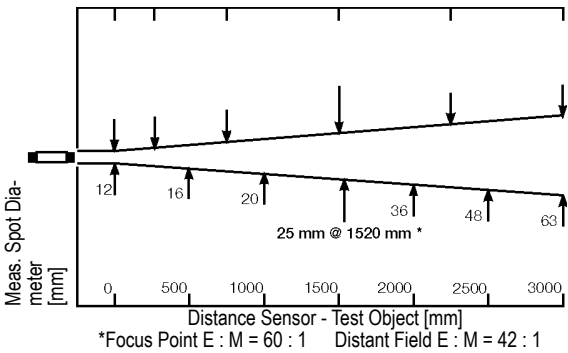
! The devices AMiR 7838-31(P) and AMiR 7838-41(P) are only available with standard optics OS3.



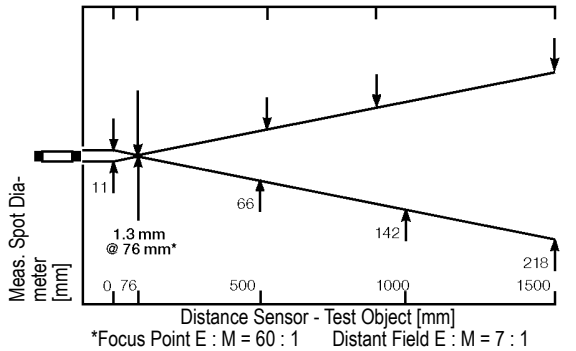
Focal Point Optics OS5

Order no. **OR7838OS5**

Measuring Field Diagrams: AMiR 7838-51(P)

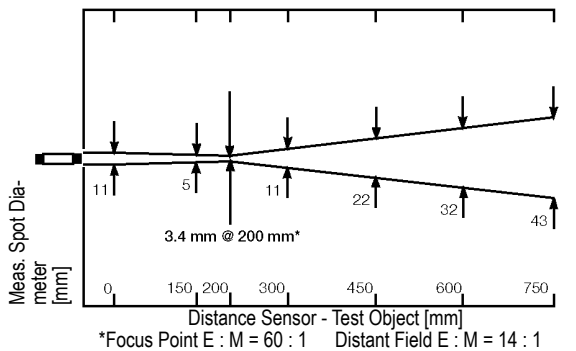


Standard Optics OS6



Focal Point Optics OS7

Order no. **OR7838OS7**



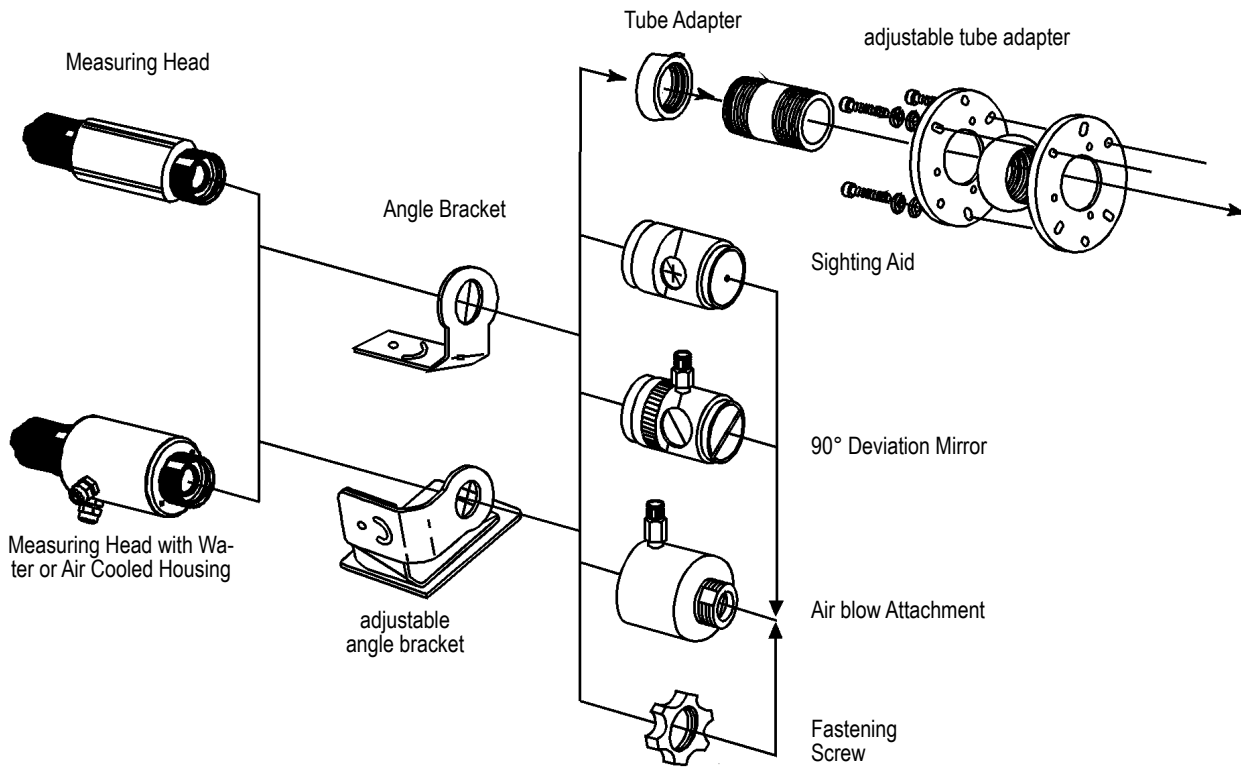
Focal Point Optics OS8

Order no. **OR7838OS8**

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Accessories for All Measuring Heads AMiR 7838, 7845, 7850 Without Use of the Thermo jacket Protective Housing

06/2018 • We reserve the right to make technical changes.



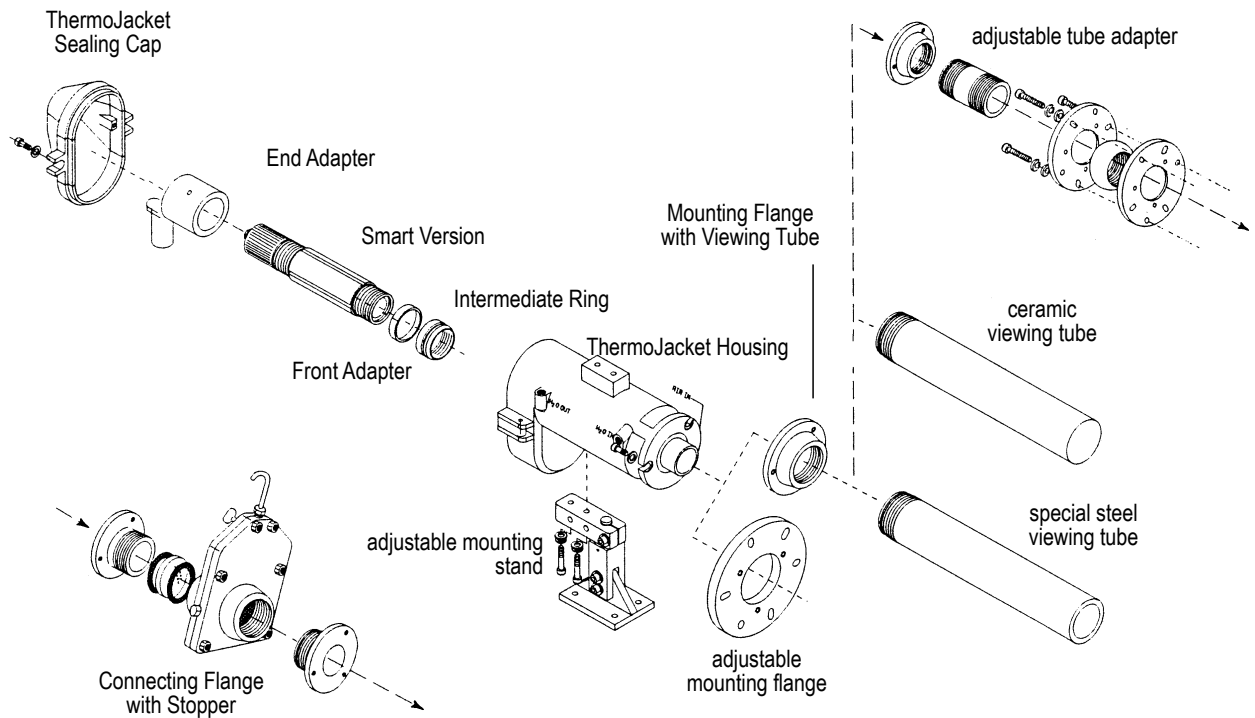
Accessories

Order no.

Rigid mounting angle (spare)	ZR7838H
Adjustable mounting angle	ZR7838JH
Fastening screw (spare)	ZR7838BM
Sighting aid, screw-on	ZR7838VS
90° deviation mirror	ZR7838US
Air blow attachment	ZR7838LB
Tube adapter onto 1 1/2" NPT	ZR7838RA

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Accessories for All Measuring Heads AMiR 7838, 7845, 7850 With Use of the ThermoJacket Protective Housing



Accessories

Thermojacket protective housing (3.26kg)	ZR7838SH
Adjustable mounting stand	ZR7838MF
Adjustable mounting flange	ZR7838JM
Mounting flange for anti-reflective tube	ZR7838FR
30cm anti-reflective tube, special steel	ZR7838RE
30cm anti-reflective tube, ceramics	ZR7838RK
Adjustable tube adapter	ZR7838JR
Connecting flange with stopper and Amtir window (from 3.9 to 14 mm)	ZR7838SA
Connecting flange with stopper and quartz window (from 1 to 2.2 mm)	ZR7838SQ
Water quantity regulator	ZR7838WR
Air quantity/pressure regulator	ZR7838LR

Order no.

ZR7838SH
ZR7838MF
ZR7838JM
ZR7838FR
ZR7838RE
ZR7838RK
ZR7838JR
ZR7838SA
ZR7838SQ
ZR7838WR
ZR7838LR