FLIR

SAFER

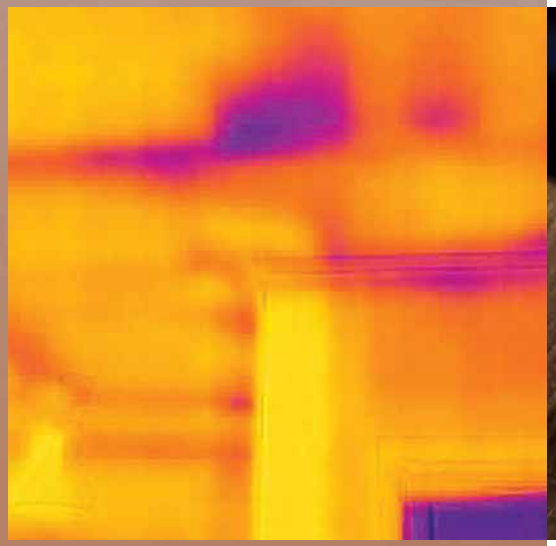
TEST & MEASUREMENT

MOISTURE METER GUIDE

FIND THE RIGHT SOLUTION

FLIR

MOISTURE METERS WITH IGM™



FLIR is proud to offer a line of high-quality building inspection systems and moisture meters to meet your needs

What if you could track moisture to its source, identify areas in need of remediation, and improve building performance? FLIR's selection of building inspection systems and moisture meters includes models with built-in thermal imaging – we call it IGM™ (Infrared Guided Measurement) – that make inspection, restoration, and remediation easy. IGM is designed to save you time by guiding you to the precise spot that may require further testing and investigation. With IGM, you can identify problems before they become major issues.

Work faster, smarter, and move on to the next job.

Field-replaceable temperature/relative humidity sensor
Large LCD color display
Record up to 15,000 images
View stored images
Easy navigation controls
Laser pointer
Work light
2 MP visual camera
160 × 120 thermal imaging sensor
Pinless moisture sensor
Charging and accessory ports
FLIR MR277
76.3 %
21.0
14.6
FLIR
IGM
INFRARED GUIDED MEASUREMENT
METER LINK
EXT

MR277

Moisture Meter, MSX IR Camera & Hygrometer

Combining the advantages of a high-resolution infrared imaging sensor, FLIR MSX® image technology, and a laser pointer, the all-in-one MR277 building inspection system helps you quickly locate, clearly identify, and easily document critical moisture and building envelope issues.

KEY FEATURES

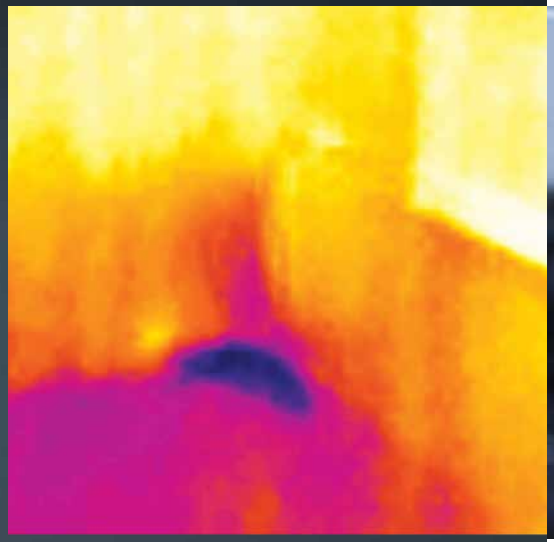
- Scan large areas for moisture, air leaks, and more with the 160 × 120 thermal camera
- Easily identify both the context and the issue; MSX embosses physical details on thermal images for clear interpretation
- Pinpoint the exact location of problems with the integrated laser
- Scan for moisture with the integrated non-invasive pinless sensor
- Capture exact measurements with an external pin probe (included) and wide range of optional moisture probes
- Simplify documenting issues with the integrated digital camera
- Create a single file documenting thermal, visual, MSX, hygrometer readings, and laser location
- Download images and data via USB cable or upload via Bluetooth® to the FLIR Tools® App

Field-replaceable temperature/relative humidity sensor*
Color LCD display
Snap and save up to 9999 images
3 m drop-tested durability
FLIR MR176
44.4
AIR 79.1 °F
RH 48.3 %
DEW 58.8 °F
MIX 71.5 GPP
VAP 1.64 kPa
Imaging Moisture Meter Plus with IGM™
REMOVE
Laser pointer
80 × 60 thermal imaging sensor
Pinless moisture sensor
EXT
Charging and accessory ports

* MR176 only

MR176/MR160

Moisture meters with IGM™



Featuring IGM technology powered by a built-in thermal imaging sensor, the MR176 and MR160 can visually guide you to the precise spot that moisture may be hiding

KEY FEATURES

- Pinpoint moisture using the 80 × 60 FLIR Lepton® thermal imaging sensor
- Take either non intrusive or intrusive measurements using the integral or external pinless probe or external pin probe
- Target easily with the laser pointer and display crosshairs
- Review images and generate reports with free FLIR Tools® software

MR176 UNIQUE FEATURES

- Measure temperature and relative humidity (the field-replaceable sensor automatically calculates and displays environmental readings)
- Prevent extreme temperatures from interfering with images using the “lock image” setting
- Take accurate readings in locations with diverse environmental conditions (the Progressive Environmental Stability Indicator lets you know when relative humidity readings have stabilized)

Field-replaceable temperature/relative humidity sensor
Pinless moisture sensor
2 m drop-tested durability
IR thermometer for non-contact temperature measurements
Bluetooth connectivity for wireless data transfer
Store readings and recall up to 99 measurement points
Charging and accessory ports
FLIR MR77
RH
COND
IR
UNIT
STORE
RECALL
CAUTION
WARNING
DO NOT OPERATE WITH BATTERY DOOR OPEN
EXT

MR77

5-in-1 MOISTURE METER WITH METERLiNK®

Everything you need in a meter for moisture remediation or HVAC: Bluetooth® METERLiNK capability, a pinless moisture sensor and pin probe, a temperature and relative humidity sensor, and an IR thermometer

KEY FEATURES

- View and share readings from a mobile device
- Wirelessly integrate moisture readings onto thermal images from compatible FLIR infrared cameras
- Measure temperature and relative humidity (The field-replaceable sensor automatically calculates and displays environmental readings)
- Manually store readings and recall up to 20 measurement points
- Calculates metrics based on multi-sensor input: Grains Per Pound or Grains Per Kilogram, Dew Point, Condensation Point, Differential Temperature (IR and Dew Point)
- Quickly take non-contact measurements with the integrated pinless moisture sensor and IR thermometer
- Capture exact measurements with an external pin probe (included) and wide range of optional moisture probes

MR60

MOISTURE METER PRO

A full-featured construction troubleshooting tool that allows the collection and storage of moisture data over time from multiple sites

KEY FEATURES

- Take either non-intrusive or intrusive measurements using the integral or external pinless probe or external pin probe
- Save up to 10,000 screenshots and readings that you can transfer and view via PC/USB
- Tune the meter to the appropriate test material using a built-in library of 11 material groups, including timbers, drywall, and concrete
- Create reports easily using free FLIR Tools PC software
- Expand your meter as needed; the MR60 is compatible with FLIR's full line of external moisture probes

MR55

PIN MOISTURE METER WITH BLUETOOTH

Optimize your workflow with wireless connectivity and a built-in library of 11 material-group settings for more accurate readings

KEY FEATURES

- Wirelessly connect the meter to FLIR Tools Mobile to remotely view readings from your mobile device
- Tune the meter to the appropriate test material using a built-in library of 11 material groups, including timbers, drywall, and concrete
- Access the correct group number for test materials by scanning the QR code on the back of the meter with your mobile device

MR59

BALL PROBE MOISTURE METER WITH BLUETOOTH

An affordable Bluetooth pinless meter with a ball-tip sensor that can help you cover a large area in a short time without leaving a mark

KEY FEATURES

- Measure into corners and around baseboards with the ball-tip sensor
- Wirelessly connect the meter to FLIR Tools Mobile to view live readings from your mobile device
- Locate hidden sources and migration paths of moisture by creating heat maps of affected areas
- Identify potential moisture problems up to 100 mm (4 in) below the surface

MR40

MOISTURE PEN + FLASHLIGHT

A pocket-portable and rugged moisture meter/flashlight combo designed to find and quantify moisture content in wood and common building materials

KEY FEATURES

- Take accurate measurements with the two-pin, single-scale moisture meter
- Carry the meter in your pocket and take measurements in tight spaces
- Eliminate the need to carry a separate flashlight
- Use in combination with a thermal camera to confirm moisture

UPGRADE YOUR MOISTURE METER WITH FLIR ACCESSORIES

MR01 Temperature / RH Sensor

Replacement temperature and relative humidity sensor designed for use with the MR77, MR176, and MR277.

MR13 Temperature / RH Sensor

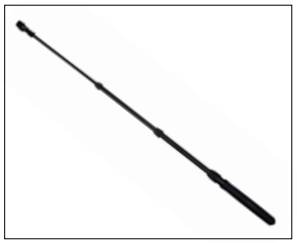
Designed for use with the FLIR MR277 to take accurate temperature and humidity measurements. The MR13 is factory calibrated and features a protective cap. A metallic screw secures the probe in place.

MR02 Standard External Pin Probe

Designed for use with the MR77, MR176, or MR277, the MR02 is an easily replaceable, calibrated pin probe.

MR11 Handheld Temperature & Humidity sensor accessory

Pre-deploy in dehumidifier exhaust vents for instantaneous readings, or use in locations where access is restricted, such as small holes inside wall cavities.



MR04 Extension Pole

Easily probe large and out-of-reach areas with this telescoping pole that extends up to 52 in.

MR05* Impact Probe

Easily test for moisture in challenging spots – on rough or uneven surfaces, in corners, in hard woods or high-density materials, and in areas without a dry reference.

MR06* Wall Cavity Probe

Penetrate into wall cavities and the inside face of exterior walls to measure insulation moisture levels.

MR07 Hammer Probe

Take measurements in the subfloor through carpet, hardwood flooring, and hard materials that are difficult to penetrate with a standard pin probe.

MR08 Hammer / Wall Probe

Comfortably hammer probe into vertical, angled, or inverted surfaces, and get down below carpet pads and the subfloor.

MR09 Baseboard Probe

Probe behind baseboards, wall trim, crown molding, and other inaccessible areas without requiring removal.

MR10-2 Protective Case

Safeguard your valuable FLIR T&M instruments with this durable EVA protective case to shield against dirt, dings, and harsh environmental conditions.

MR12 Ball probe moisture sensor accessory

Take non-invasive readings up to 100 mm (4 in) below a surface.

*FLIR recommends using the MR05 or MR06 to test moisture in concrete/building materials. Please review your instruction manual for complete details.

MOISTURE METER
ACCESSORY COMPATIBILITY

Accessory / Moisture Meter	MR40	MR55	MR59	MR60	MR77	MR160	MR176	MR277
MR01 Temperature / Relative Humidity Sensor	-	-	-	-	x	-	x	x
MR13 Temperature / Relative Humidity Sensor	-	-	-	-	-	-	-	x
MR11 Handheld Temperature / Humidity Sensor	-	-	-	-	x	-	x	x
MR02 Standard Pin Probe	-	-	-	x	x	x	x	x
MR04 Extension Pole*	-	-	x	-	-	-	-	-
MR05 Impact Pin Probe	-	-	-	x	x	x	x	x
MR06 Wall Cavity Probe	-	-	-	x	x	x	x	x
MR07 Hammer Probe (with bag)	-	-	-	x	x	x	x	x
MR08 Hammer and Wall Cavity Probe Combo (with bag)	-	-	-	x	x	x	x	x
MR09 Baseboard Probe	-	-	-	x	x	x	x	x
MR12 Ball-Type Moisture Sensor	-	-	-	x	-	x	x	x
MR10-2 EVA Protective Case	-	-	-	x	x	x	x	x

*The MR04 is compatible with the following accessories: MR05, MR06, MR11, MR12

TECHNICAL SPECIFICATIONS

	MR40	MR55	MR59	MR60
Thermal Imaging				
IR Resolution (IGM)	—	—	—	—
Field of View	—	—	—	—
Thermal Image Palettes	—	—	—	—
Display				
LCD with LED Backlight	LCD (no backlight)	Yes	Yes	—
Color QVGA Display	—	—	—	2.3″ 64K TFT graphic
Moisture Detection				
Moisture Measurement	Pin	Pin	Pinless	Pin and pinless
Pin Moisture Range	5% - 30% MC (±2% MC) 30% - 60% (reference only)	Wood groups (1-9): 7% - 30% MC (±2% MC) 30% - 99% (reference only) Construction material groups (10-11): 1 - 99% Group 10 (reference only) 1 - 35% Group 11 (reference only)	—	Wood groups (1-9): 7% - 30% MC (±1.5% MC) 30% - 100% (reference only) Construction material groups (10-11): 0 - 20% (reference only)
Pinless Moisture Range	—	—	0 to 100% relative	0 to 100% relative
Relative Humidity	—	0% - 20% (±5%) 20% - 80% (±3.5%) 80% - 100% (±5%)	—	—
Pinless Moisture Depth	—	—	Up to 100 mm (4 in)*	Up to 19 mm (0.75 in)*
Pin Moisture Material Types	Group 9 / building materials: plywood, drywall, and oriented strand board (OSB) **	9 wood groups, 2 construction material groups	—	9 wood groups, 2 construction material groups
General				
Laser Pointer	—	—	—	—
Saved Image File Format	—	—	—	.BMP with values overlaid
.CSV Stored Data Format	—	—	—	Yes
Stored Image Capacity	—	—	—	9,999 images
IR Temperature	—	—	—	—
Connectivity	—	Bluetooth (BLE)	Bluetooth (BLE)	—
Temperature/RH Sensor Calculations	—	—	—	—
Battery	2x AAA	2x 1.5 V AA	1x 9 V	Internal rechargeable Li ion
Drop Test	3 m (9.8 ft)	2 m (6.6 ft)	2 m (6.6 ft)	3 m (9.8 ft)

*Depending on material under test
** For materials other than Group 9 download the MR40 Material Conversion Table (publication MR40-AN01): http://flir.custhelp.com/app/account/fl_download_manuals

	MR77	MR160	MR176	MR277
Thermal Imaging				
IR Resolution (IGM)	—	80 × 60	80 × 60	160 × 120
Field of View	—	51° × 38°	51° × 38°	55° × 43°
Thermal Image Palettes	—	Iron, Rainbow, Ice, Gray	Iron, Rainbow, Ice, Gray	Iron, Rainbow, Arctic, White-Hot, Black-Hot
Display				
LCD with LED Backlight	Yes	—	—	—
Color QVGA Display	—	2.3" 64K TFT graphic	2.3" 64K TFT graphic	QVGA (320 × 240 pixels) 2.8 in. color TFT graphical display
Moisture Detection				
Moisture Measurement	Pin and pinless	Pin and pinless	Pin and pinless	Pin and pinless
Pin Moisture Range	Wood groups (1-9): 7% - 30% MC (±1.5% MC) 30% - 100% (Reference Only)	Wood groups (1-9): 7% - 30% MC (±1.5% MC) 30% - 100% (reference only)	Wood groups (1-9): 7% - 30% MC (±1.5% MC) 30% - 100% (reference only)	Wood groups (1-11): 7%–100% MC (±1.5% MC) 30% to 100% (reference only)
Pinless Moisture Range	0 to 99.9% relative	0 to 100% relative	0 to 100% relative	0 to 100% relative
Relative Humidity	0% - 10% (±3%) 10% - 90% (±2.5%) 90% - 99% (±3%)"	—	10%- 90%(±2.5%)	0% to 100% (±2.5%)
Pinless Moisture Depth	Up to 19 mm (0.75 in)*	Up to 19 mm (0.75 in)*	Up to 19 mm (0.75 in)*	Up to 19 mm (0.75 in)
Pin Moisture Material Types	9 wood groups	9 wood groups	9 wood groups	9 wood groups
General				
Laser Pointer	Yes, with IR temperature	Yes	Yes	Yes
Saved Image File Format	—	.BMP with values overlaid	.BMP with values overlaid	Radiometric JPG
.CSV Stored Data Format	—	Yes	Yes	Yes
Stored Image Capacity	20 points internal storage	9,999 images	9,999 images	15,000 images
IR Temperature	-20 to 200°C (-4 to 392°F)	—	—	0°C to 100°C (32°F to 212°F)
Connectivity	Bluetooth	—	—	Bluetooth
Temperature/RH Sensor Calculations	Vapor Pressure, Relative Humidity, Temperature, GPP, Dew Point	—	Vapor Pressure, Relative Humidity, Temperature, GPP, Dew Point	Vapor Pressure, Relative Humidity, Temperature, GPP, Dew Point
Battery	1x 9 V	Internal rechargeable Li ion	Internal rechargeable Li ion	Rechargeable 4.2 V, 5400 mAh LiPo
Drop Test	2 m (6.5 ft)	3 m (9.8 ft)	3 m (9.8 ft)	3 m (9.8 ft)

FLIR MOISTURE KITS PROVIDE THE COMPLETE SOLUTION

FLIR MOISTURE KITS PROVIDE THE COMPLETE SOLUTION FOR FAST AND ACCURATE TROUBLESHOOTING

FLIR MR160-KIT5
PROFESSIONAL IMAGING MOISTURE KIT
Kit includes the FLIR MR160 Imaging Moisture Meter and the FLIR MR08 Hammer / Wall Cavity Probe.

FLIR MR176-KIT5
PROFESSIONAL IMAGING MOISTURE KIT
Kit includes the FLIR MR176 Imaging Moisture Meter, the FLIR MR08 Hammer / Wall Cavity Combo Probe accessory, plus an extra FLIR MR01 Replaceable Temperature / Relative Humidity Sensor.

MR160-KIT2
BUILDING INSPECTION KIT
Kit includes the FLIR MR160 Imaging Moisture Meter, the FLIR C2 Thermal Imager, and the FLIR MR06 Wall Cavity Probe accessory.

MR176-KIT6
PROFESSIONAL REMEDIATION KIT
Kit includes the FLIR MR176 Imaging Moisture Meter, the FLIR E6-XT Thermal Imager, and the FLIR MR08 Hammer / Wall Cavity Combo Probe.

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The World's Sixth Sense®