Matsushima
Matsushima Measure Tech

Accuracy and tracking performance extremely improved

# *Radar Level Transmitter*

Version upgrade

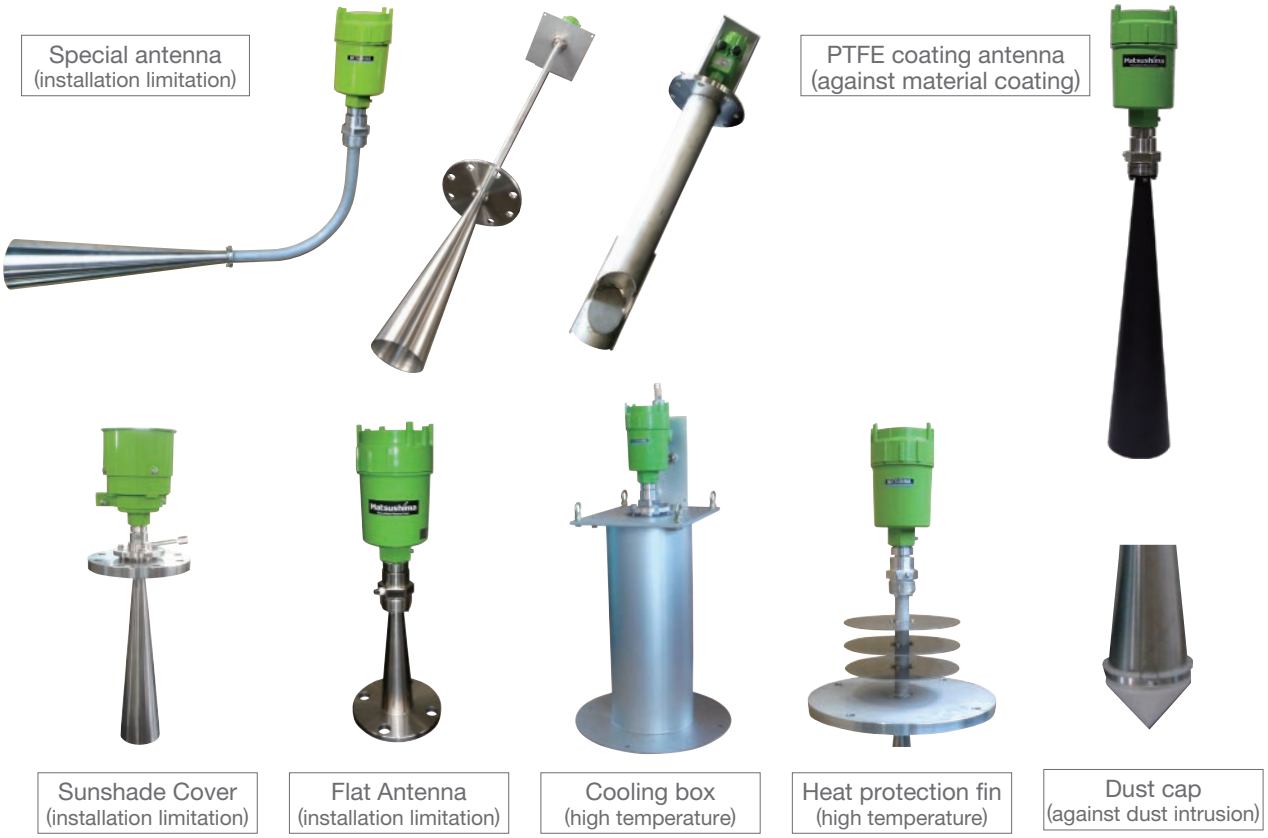
## MWLM-PR26 Series

# Extended the product warr

Matsushima's radar level transmitter is manufactured domestically from software to hardware, so it can be delivered quickly with stable supply, and also support our customers with quick maintenance. Since Matshushima has 60 years of experience in measurement control, we are able to meet our customer's requests regarding installation to the facilities.

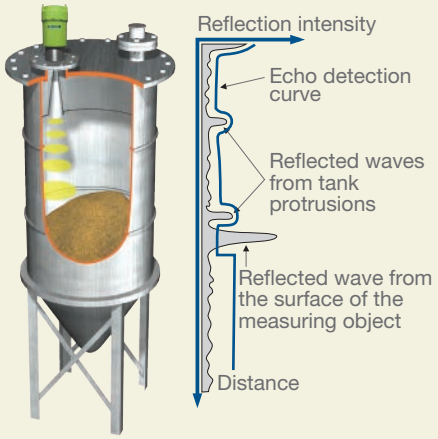
## Customization

Customize the level meter for suitable measuring environments and usage. Able to provide customized level meter in applications that have restrictions under high temperature and high pressure areas.



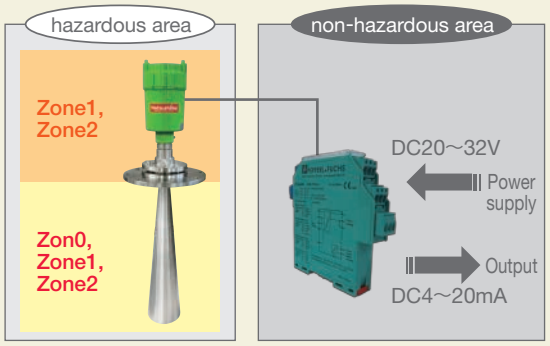

## Measuring Principle

The microwave level meter measures the time from when the level meter emits pulse radar waves from the antenna to when the waves (echoes) reflected from the object to be measured return to the meter, which is then calculated into a distance.




## Explosion-proof type

Intrinsically safe construction Ex ia ⅡB T4 X (TIIS)




Intrinsic Safety type
Radar Transmitter
MWLM-PR26H7SEx

Safety barrier
KFD2-STC4-Ex1

*Remark: MWLM-PR26C1G cannot be applied in Zon0.

anty period to 2 years.

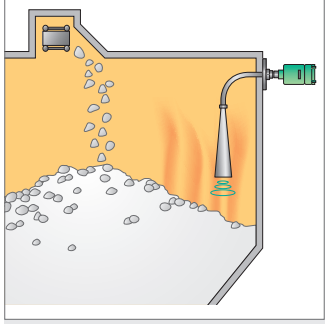
Flexible customiza capability

# Applications

Applies to a variety of applications and flexible customization capability based on our long experience and know-how.

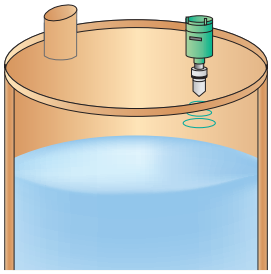
## Usage in Applications

### Material Silo



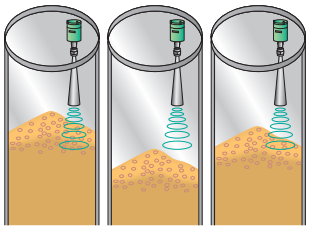
If there's no space to install on top of the silo, it is able to measure from the side of the silo.

### Chemical Tank



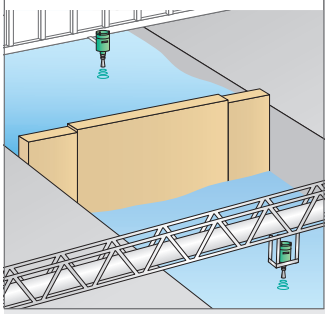
By attaching the PTFE antenna, it is able to measure corrosive chemicals.

### Food Silo



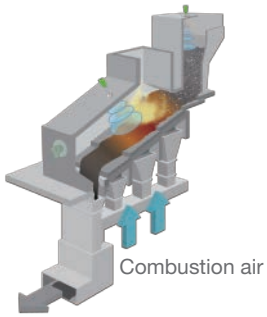
Narrow beam angle allows to measure inside a thin, long grain silos.

### Water level



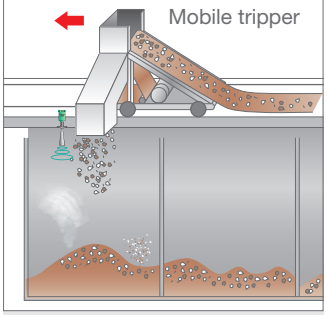
Able to continuously measure without being affected by rain, wind, and snow.

### Incinerator



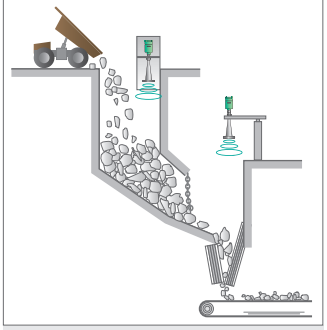

Even if antenna is not allowed to be put inside, it can be measured by flat antenna type.

### Tripper conveyor



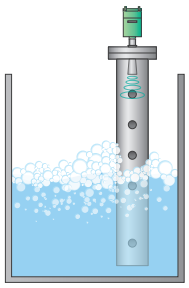

It can follow a sudden level change in bunker. Dust and vapor do not influence level measurement.

### Vertical shaft/crusher



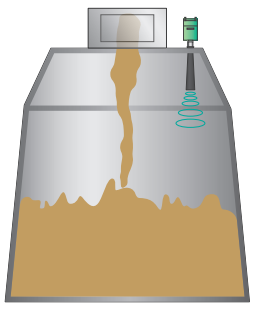
It is suitable for vertial shaft or crusher due to high tracking-speed performance.

### Guided piping



The liquid level can be measured without foam intrusion into piping.

### Material to be eaily built up



PTFE coating antenna prevents the material from being built up on the antenna, and results in stable level measurement.

tion

Well experienced in Application Supports

Displays with 4 languages Outstanding operation

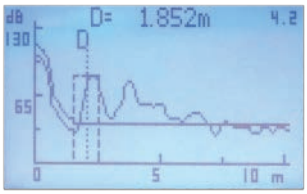
# Easy Operation

Simple and precise operation possible. Site maintenance with simple hand communicator "GRAPHIC COM4". Remote operation with customer friendly software.

## Local Operation

"GRAPHIC COM4", a detachable LCD adjuster, has a liquid crystal display with high-visibility. You can see waveforms in real time while monitoring, and you can adjust settings if needed.

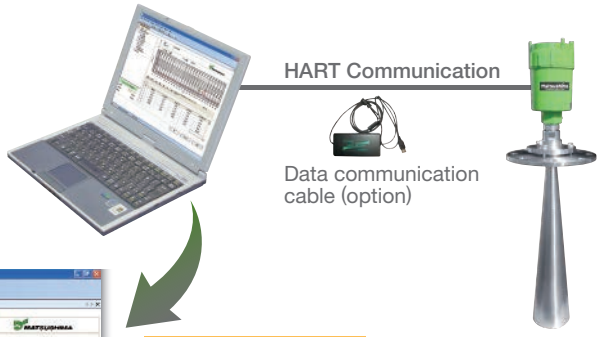

GRAPHIC COM4 on the sensor head

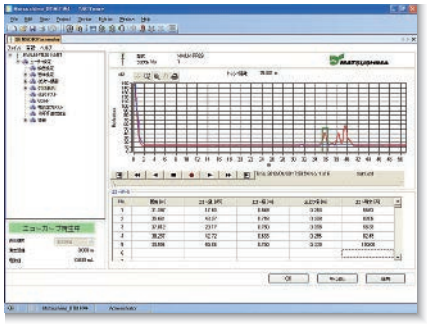



Real time indication for measurement situation

## Remote Operation

The PC with adjustment software allows easy operation for complex parameter settings.



### Software Features

- Real time indication for measurement situation
- Make adjustment
- Check waveforms while monitoring and store the data
- Record trends
- Languages: Japanese, English, Chinese, and Korean

Version upgrade

## High measuring performance under any conditions

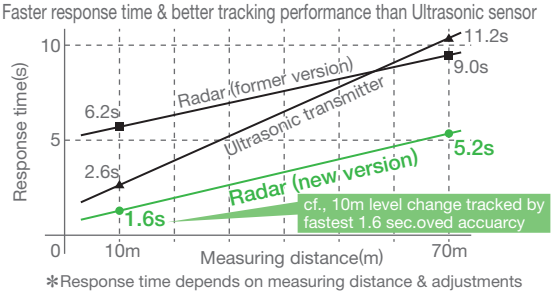
### ①Improved accuarcy

Double measuring accuracy!

| Model | Before | New version |
|---|---|---|
| For powder H7、H3 | ±50mm | ≦1.2m : ±20mm<br>>1.2m : ±10mm |
| For liquid H2、H1、C1 | ±50mm | ≦1.2m : ±30mm<br>>1.2m : ±20mm |

### ②Improved tracking speed

Faster response time & better tracking performance than Ultrasonic sensor




✻Response time depends on measuring distance & adjustments

### ③Expanded allowable power supply

Reliable under unstable power circumstances where voltage fluctuates

| LCD display | Before | New version |
|---|---|---|
| No LCD | DC20~32V | DC13~36V |
| With LCD | DC20~32V | DC16~36V |

Remark: 20 -32V for Ex-proof type

### ④Wiring distance increased

Load resistance has improved from 499Ω to 655Ω!!
Max. wiring distance extended.

| | Before | New version |
|---|---|---|
| Max. wiring distance | 4.5km | 7.5km |

Conditions: Power supply DC24V, Load resistance 250Ω, Cable (AWG#18, dia.0.75mm², Load resistance 26Ω/km)

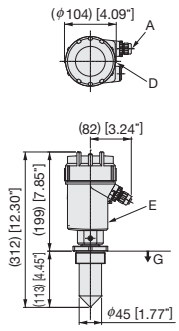
| For Liquid | | Specifications | | | |
|---|---|---|---|---|---|
| Model | | MWLM-PR26C* | MWLM-PR26H* | | |
| Product Code | | MWLM-PR26C1G* | MWLM-PR26H1G | MWLM-PR26H2G* | MWLM-PR26H2F* |
| Antenna | | Cone | Horn | | |
| Power Supply | | Standard: DC13 - 36V ✻1 DC16V or more is required for LCD unit.<br>Ex-proof: DC20 - 32V✻2 Power supplied by safety barrier KFD2-STC4-Ex1 | | | |
| Power Consumption | | Standard type: Approx. 704mW, Explosion-proof: Approx. 540mW | | | |
| Mounting | | G2 Thread | G1 Thread | G1 1/2 Thread | JIS5K50A Flange |
| Dead Zone | | 0.5m (1.64ft) below the antenna | | | |
| Max Measurable Distance | | 10.0 m (33ft) from measuring reference zero point | | 20.0 m (66ft) from measuring reference zero point | |
| Transmitting Frequency | | Approx. 26GHz | | | |
| Transmitting Cycle | | Every 83ms | | | |
| Beam Angle | | Approx. 24° (approx. 48deg. including side beam) | | Approx. 18° (approx. 36deg. including side beam) | |
| Resolution | | 1mm | | | |
| Allowable Fluctuation Rate | | 10cm/s | | | |
| Accuracy | Repeatability | Within 1.2m (3.94ft) or less: ±30mm (1.18in), Over 1.2m (3.94ft) or more: ±20mm (0.78in) or ±0.04% of measurement range (Whichever is greater) | | | |
| | Temp. Error | Standard: ±0.03% /10K, Ex-proof: 0.06%/6K | | | |
| Ambient Temperature | Housing | Standard: -40 ～ +80℃ (-40 ～ +176℉ ), With LCD: -20 ～ +60℃ (-4 ～ +140℉ ), Ex-proof: -20 ～ +50℃ (-4 ～ +122℉ )<br>1 hour is required to warm up the device if the temperature is lower than -20℃ (-4℉ ). | | | |
| | Antenna | Standard: -40 ～ +150℃ (-40 ～ +302℉ ), Ex-proof: -40 ～ +100℃ (-40 ～ +212℉ ) | | | |
| Allowable Pressure | | 500kPa | 1MPa | | 490kPa |
| Material | Housing | ADC | | | |
| | Antenna | PTFE | SUS304 | SUS316L | |
| Protection | | IP67 (Housing cover and lead outlet must be closed) | | | |
| Lead Outlet | | 1-G1/2 (Applicable cable size: ø8 to 12mm (0.31 to 0.47in) | | | |
| Output Signal | | DC4 ～ 20mA×1 (Load resistance when 24VDC power supply is used: 499 Ω max), HART communication | | | |
| Integral Time | | 0 ～ 999s | | | |
| Mass | | Approx. 1.9kg | Approx. 1.6kg | Approx. 1.9kg | Approx. 2.2kg |
| Explosion-proof construction | | Intrinsically safe construction<br>Ex ia ⅡB T4 X (TIIS) | – | Intrinsically safe construction<br>Ex ia ⅡB T4 X (TIIS) | |
| Division of hazadous section | Housing | Zone1, Zone2 | – | Zone1, Zone2 | |
| | Antenna | Zone1, Zone2 | – | Zone0, Zone1, Zone2 | |
| Accessories (option) | | · LCD adjustment unit (GRAPHIC COM4) · Data Communication cable (MHM-01) · PC adjustment software (M-DTM)<br>Safety barrier (KFD2-STC4-Ex1) is needed to use the explosion proof type. LCD display can't be used since it's a non explosion proof parts. | | | |

✻: Explosion Proof model has Ex written at the end of each model. Explosion proof structure is Ex ia ⅡB T4 (TIIS).

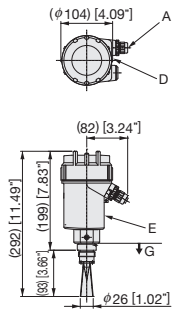
## ●Dimension mm [in]

Model : MWLM-PR26□□□

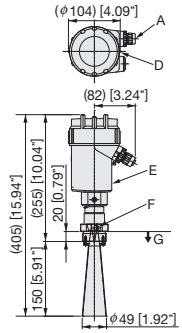
C1G



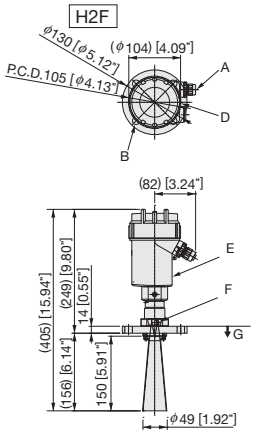

H1G




H2G

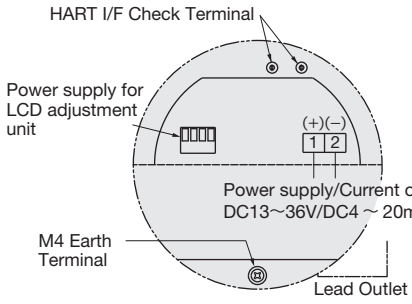



H2F



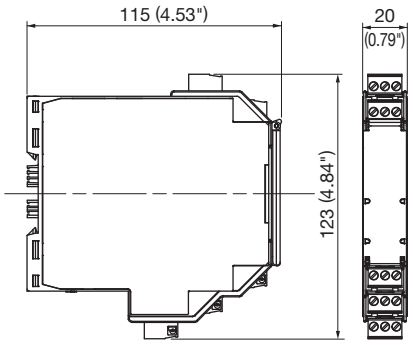

| | | |
|---|---|---|
| A | Lead outlet: G1/2 | Cable: ϕ8-12mm [0.31-0.47"] |
| B | 4×ϕ15 [0.59"] Mounting hole | |
| C | 8×ϕ19 [0.75"] Mounting hole | |
| D | Earth terminal (M4) | Be sure to ground the earth terminal. (D-class grounding) |
| E | Housing | Housing rotatable in 310°. |
| F | Purge nozzle: Rc1/8 | |
| G | Measurement reference zero poin | |

## Common for Liquid & Powder Terminal Block




✻: Two wire shielded cable is recommended.
For explosion-proof type, provide the power through the Safety Barrier.

## Specs & Dimensions of the safety barrier




Specifications

Power Specs.
- Power Supply: DC20 ～ 35V
- Power Consumption: 1.9kW

Input Specs.
- Input Signal: 0/4 ～ 20mA
- Available voltage:
  ≧16V at 20mA terminal 1+,3

Output Specs. (Safety area)
- Output signal:
  0/4～20mA ; load 0～500Ω
- Pulsating Current: ≦50μA rms

Mass: 200g (0.44lbs)

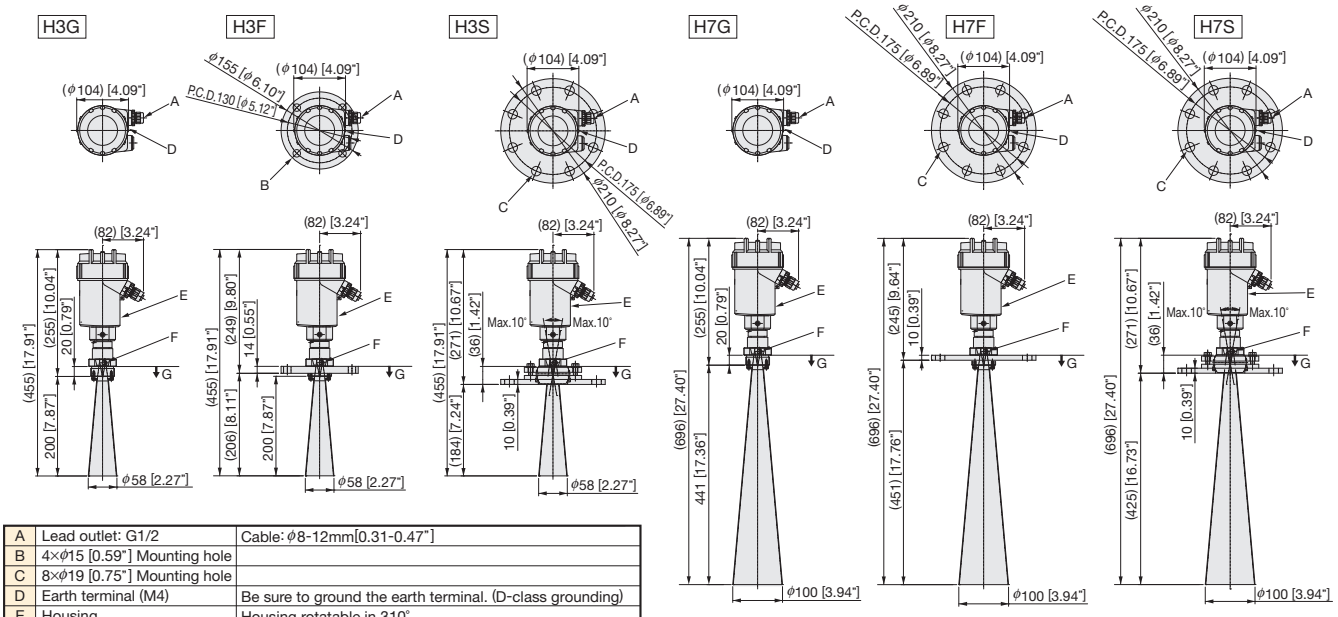
※This product uses a connection to the distributor or isolated interface(HART supported) and a card as a basic connection.
For other connection methods and for any questions, please contact us.

| For Powder | | Specifications | | | | | |
|---|---|---|---|---|---|---|---|
| Model | | MWLM-PR26H* | | | | | |
| Product Code | | MWLM-PR26H3G* | MWLM-PR26H3F* | MWLM-PR26H3S* | MWLM-PR26H7G* | MWLM-PR26H7F* | MWLM-PR26H7S* |
| Antenna | | Horn | | | | | |
| Power Supply | | Standard: DC13 - 36V ✻1 DC16V or more is required for LCD unit.<br>Ex-proof: DC20 - 32V✻2 Power supplied by safety barrier KFD2-STC4-Ex1 | | | | | |
| Power Consumption | | Standard type: Approx.704mW, Explosion-proof: Approx.540mW | | | | | |
| Mounting | | G1 1/2 Thread | JIS5K65A Flange | Swivelling Flange (Equivalent to JIS10K100A) | G1 1/2 Thread | Equivalent to JIS10K100A | Swivelling Flange (Equivalent to JIS10K100A) |
| Dead Zone | | 0.3m (0.98ft) below the antenna | | | | | |
| Max Measurable Distance | | 35.0m (115ft) from measuring reference zero point | | | 70.0 m (330ft) from measuring reference zero point | | |
| Transmitting Frequency | | Approx. 26GHz | | | | | |
| Transmitting Cycle | | Every 83ms | | | | | |
| Beam Angle | | Approx. 14deg. (approx. 28deg. including side beam) | | | Approx. 8deg. (approx. 16deg. including side beam) | | |
| Resolution | | 1mm | | | | | |
| Allowable Fluctuation Rate | | 10cm/s | | | | | |
| Accuracy | Repeatability | Within 1.2m (3.94ft) or less: ±30mm (1.18in), Over 1.2m (3.94ft) or more: ±20mm (0.78in) or ±0.04% of measurement range (Whichever is greater) | | | | | |
| | Temp. Error | Standard: ±0.03% /10K, Ex-proof: 0.06%/6K | | | | | |
| Ambient Temperature | Housing | Standard: -40 ~ +80℃ (-40 ~ +176℉ ), With LCD: -20 ~ +60℃ (-4 ~ +140℉ ), Ex-proof: -20 ~ +50℃ (-4 ~ +122℉ )<br>1 hour is required to warm up the device if the temperature is lower than -20℃ (-4℉ ). | | | | | |
| | Antenna | Standard: -40 ~ +150℃ (-40 ~ +302℉ ), Ex-proof: -40 ~ +100℃ (-40 ~ +212℉ ) | | | | | |
| Allowable Pressure | | 1MPa | 490kPa | 500kPa | 1MPa | 250kPa | 500kPa |
| Material | Housing | ADC | | | | | |
| | Antenna | SUS316L | | | | | |
| Protection | | IP67 (Housing cover and lead outlet must be closed) | | | | | |
| Lead Outlet | | 1-G1/2 (Applicable cable size: ϕ8 to 12mm (0.31 to 0.47in) | | | | | |
| Output Signal | | DC4 ~ 20mA × 1 (Load resistance when 24VDC power supply is used: 499 Ω max), HART communication | | | | | |
| Integral Time | | 0 ~ 999s | | | | | |
| Mass | | Approx. 2.3kg | Approx. 4.4kg | Approx. 6.1kg | Approx. 2.7kg | Approx. 5.3kg | Approx. 6.5kg |
| Explosion-proof construction | | Intrinsically safe construction Ex ia ⅡB T4 X (TIIS) | | | | | |
| Division of hazadous section | Housing | Zone1, Zone2 | | | | | |
| | Antenna | Zone0, Zone1, Zone2 | | | | | |
| Accessories (option) | | · LCD adjustment unit (GRAPHIC COM4) · Data Communication cable (MHM-01) · PC adjustment software (M-DTM)<br>Safety barrier (KFD2-STC4-Ex1) is needed to use the explosion proof type. LCD display can't be used since it's a non explosion proof parts. | | | | | |

✻: Explosion Proof model has Ex written at the end of each model. Explosion proof structure is Ex ia ⅡB T4 (TIIS).

## ●Dimension mm [in]

Model : MWLM-PR26 □□□




| | | |
|---|---|---|
| A | Lead outlet: G1/2 | Cable: ϕ8-12mm[0.31-0.47"] |
| B | 4×ϕ15 [0.59"] Mounting hole | |
| C | 8×ϕ19 [0.75"] Mounting hole | |
| D | Earth terminal (M4) | Be sure to ground the earth terminal. (D-class grounding) |
| E | Housing | Housing rotatable in 310° |
| F | Purge nozzle: Rc1/8 | |
| G | Measurement reference zero poin | |

Caution
●Read the instructions to ensure correct and suitable application of products.
●Contact our nearest sales office when using our products for any systems used in situations which may be life threatening.



Distributor

HEAD OFFICE

JQA-OH0299 JQA-QM8197 JQA-EM7547 091

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