

Easiest use for every site in various industries

80GHz Radar Level Transmitter

MWLM-FM79 series





79GHz series

User-friendly functions for World top class quality hi

User-friendly functions in the field



Easily confirmed by mobile

Easily confirmed by mobile or PC by bluetooth connection. No wiring required for adjustment. Can be operated from safe location even in difficult-to-reach sites.



Easily angle adjustment after maintenance

Only Matsushima unique function

Angle / dimension sensor system · After taking out the sensor for maintenance, it is easy to restore the sensor.



Notification of adhesion alarm and inspection date

Acquired patent

The adhesion alarm and inspection date are notified by making the beating signal of 4-20mA output, which avoids unstable measurement.



Adhesion prevention with 360° air purge mechanism

360° slit for purge contacting with the lens surface prevents adhesion to the lens surface.



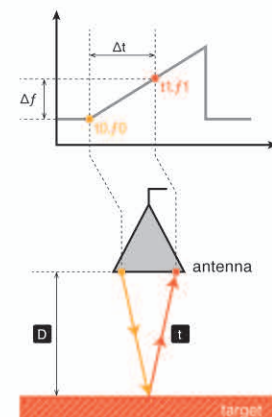
Operation principle



In the FM-CW method, the sensor transmits a high frequency radar signal while modulating the frequency at a constant cycle.

When it is reflected and received by the target, the frequency deviation from the transmitted signal is converted into round-trip time and measured as distance.

1. Transmit modulation frequency f_0 from antenna.
2. Receive f_0 reflected by the target with antenna. At this time, f_0 is received at the timing of t_1 .
3. When f_0 is received, the frequency is f_1 shifted by Δf , which means that it was received with a shift of Δf .
4. This frequency deviation Δf can be converted to the propagation time \mathbf{L} by correlating with Δt .
5. Calculate the distance \mathbf{D} by operating the propagation speed of the radio wave with this propagation time \mathbf{L} .



various industries!

High frequency Radar Transmitter!

World's highest standard

Specialized inspection facility, so called **"Wave Lab"**, guarantees the performance of the world's highest standards of **80GHz Radar Level Transmitter**

For 80GHz Radar Level Transmitter, we newly built a large automatic inspection facility **"Wave Lab"** with a darkroom structure. As a radiowave darkroom that is not affected by disturbance reflection, it is one of the largest (20m long) in Japan. It results in the world's highest level of measuring performance.



Darkroom in Wave Lab

Special features



Measurable in narrow space

Measurable in narrow space inside silo due to its high directivity.



Measurable for low dielectric constant materials

Measurable for low dielectric constant materials which does not make enough reflection for former Radar Transmitter.



Measurable for high temperature materials

A radio wave is not affected by temperature or gas. Because the max. temperature is 200 deg. C, it can be applied even in the inaccessible environment.



Measurable at small liquid tank

Because the dead zone is 0.3 m from the reference point, it can measure up to upper limit of the tank.



Matsushima style support and service

01 Short lead time

Stable and short lead time by stock management for each part of Radar Transmitter.



02 Remote service support

Remote technical service is provided in real time for commissioning and inspection of Radar Transmitter at local sites.



Specifications

Model	MWLM-FM79					
Version	F03	F06	F12	S03	S06	S12
Power supply*1	DC 12V ~ DC 36V					
Power Consumption	800mW					
Mounting	Equivalent to JIS10K80A Flange			Equivalent to JIS10K100A Swivelling Flange		
Dead Zone	0.3m	0.4m	0.7m	0.3m	0.4m	0.7m
Max Measurable Distance*2	30m	60m	120m	30m	60m	120m
Transmitting Frequency	77GHz ~ 81GHz					
Accuracy	F03,S03: <1.1m:±10mm、≥1.1m:±3mm F06,S06: <1.1m:±20mm、≥1.1m:±5mm F12,S12: <1.1m:±20mm、≥1.1m:±10mm					
Beam Angle	Approx.4°(including side beam approx. 8°)					
Measuring Cycle*3	Approx.0.5s - 4s(when 24VDC is supplied)					
Resolution	1mm					
Allowable level change rate	30cm/s					
Allowable Temp	Ambient Temp.*4	-20°C ~ +80°C (Without condensation)				
	Process Temp.	-40°C ~ +200°C (Without condensation)				
Allowable Pressure	Max.490kPa					
Enclosure	IP67(Housing cover and lead outlet firmly fixed)					
Lead outlet	1-G1/2(Applicable size: φ8mm to φ12mm)					
Output Signal	DC 4mA ~ DC 20mA					
Load resistance	Approx.545Ω (when 24VDC is supplied)					
Communication system	Bluetooth 5.0					
Mass	Approx.4.3kg			Approx.4kg		

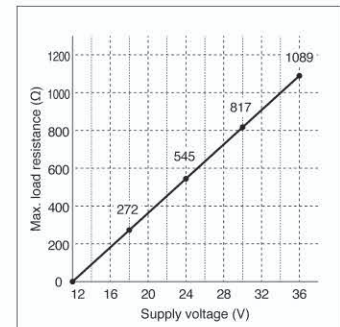
*1 The load resistance depends on supply voltage. The wiring load cannot exceed the max. load resistance of the applying power voltage. (cf. Figure 1)

*2 Max Measurable Distance : Distance from reference point

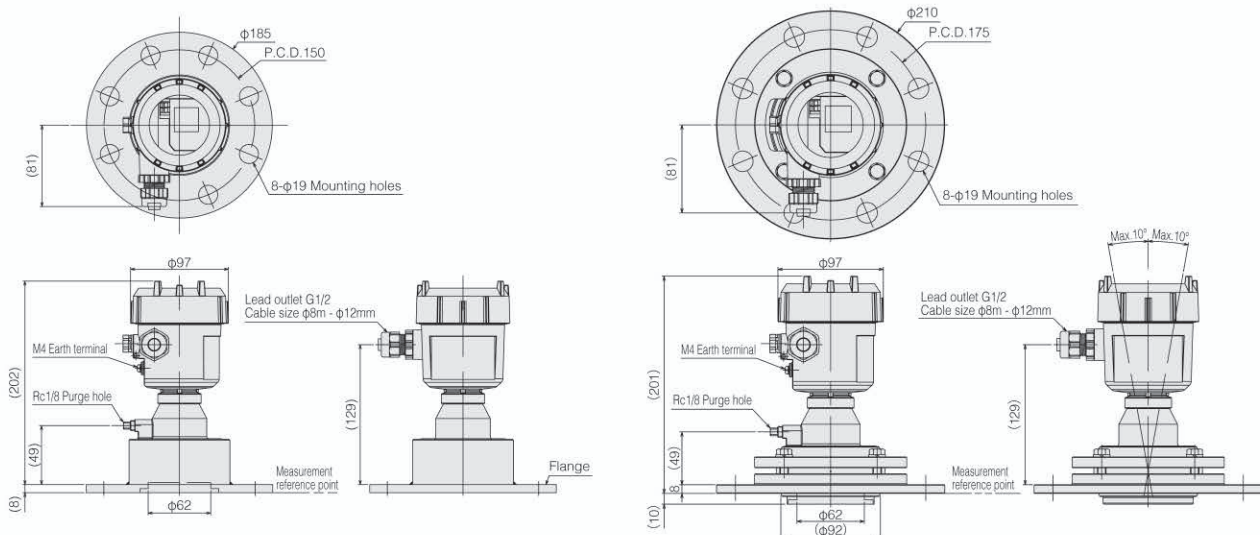
*3 Measuring cycle depends on power supply and analog output signal.

*4 The display turns off when the temperature is +70°C or higher.

Figure 1



Dimensions(mm)



Specifications are subject to change without notice.
All Rights Reserved Copyrights©2023, Matsushima Measure tech Co., Ltd.



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



Matsushima Measure Tech Co., Ltd.

HEAD OFFICE
 1-8-18, NORIMATSU-HIGASHI, YAHATANISHI-KU, KITAKYUSHU, 807-0837 JAPAN
 Tel: +81-93-691-3731 FAX: +81-93-691-3735
<https://www.matsushima-m-tech.com> E-mail: info@matsushima-m-tech.com

Seoul Branch
 220, 2F Hyundai Knowledge Industry Center, 70, Dusan-ro, Geumcheon-gu, Seoul, Republic of Korea
 Tel: +82-(0)2-852-3731 FAX: +82-(0)2-852-3734

Affiliated company
 Shanghai Dahong Matsushima Machinery Co., Ltd.
 70 Hengcang Road, Dahong, Malu, Jiading, Shanghai 201818, China
 Tel: +86-(0)21-5951-4138 FAX: +86-(0)21-5951-4139