LEVEL MEASUREMENT SOLUTIONS

Eclipse® Model 706 High Performance Guided Wave Radar Level Transmitter for Hygienic Applications

DESCRIPTION

The Eclipse® Model 706 High Performance Transmitter is a loop-powered, 24 VDC level transmitter that is based upon the proven and widely accepted technology of Guided Wave Radar (GWR). Encompassing a number of significant engineering accomplishments, this leading edge level transmitter is designed to provide measurement performance well beyond that of many of the more traditional technologies.

Utilizing patented “diode switching” technology, along with the most comprehensive probe offering on the market, this single transmitter can be used in a wide variety of applications ranging from very light hydrocarbons to water-based media.

Offered in a deep-drawn 304 ss enclosure for hygienic industries, the housing is angled to maximize ease of wiring, configuration, and viewing of the versatile graphic LCD display.

One universal Model 706 transmitter can be used and interchanged with all probe types, and offers enhanced reliability as it is certified for use in critical SIL 2 hardware safety loops. With the use of a unique adapter, the model 706 transmitter can even operate with older hygienic GWR probes.

The Eclipse Model 706 supports both the FDT/DTM and Enhanced DD (EDDL) standards, which allow viewing of valuable configuration and diagnostic information such as the echo curve in tools such as PACT*ware*™, AMS Device Manager, and various HART® Field Communicators.

Eclipse® Model 706 DTM

Measures Level and Volume

ASME BPE

APPLICATIONS

MEDIA: Liquids, solids, or slurries; hydrocarbons to water-based media (Dielectric Constant ε_r = 1.2–100)

VESSELS: Most process or storage vessels up to rated probe temperature and pressure.

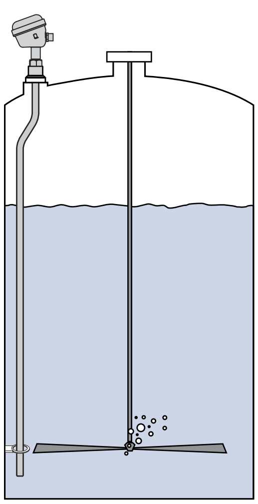
CONDITIONS: All level measurement and control applications including process conditions exhibiting visible vapors, foam, surface agitation, bubbling or boiling, high fill/empty rates, low level and varying dielectric media or specific gravity.

FEATURES

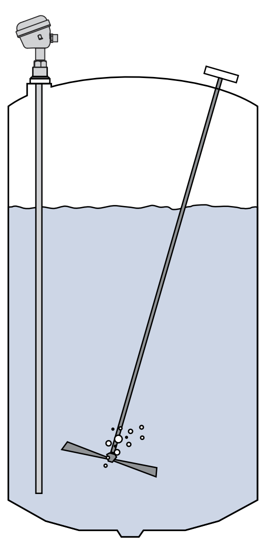
- Multivariable, two-wire, 24 VDC loop-powered transmitter for level, interface, volume, or flow.
- Diode switching technology offers best-in-class signal strength and signal-to-noise ratio (SNR) resulting in enhanced capability in difficult applications.
- Level measurement not affected by changing media characteristics.
- No need to move levels for calibration.
- Can measure reliably from the tip of the probe to the top of the vessel.
- 4-button keypad and graphic LCD display allow for convenient viewing of configuration parameters and echo curve.
- Proactive diagnostics advise not only what is wrong, but also offer troubleshooting tips.
- Nine common tank shapes for volumetric output.
- 360° rotatable housing can be separated from probe without depressurizing the vessel.
- Transmitter can be remote-mounted up to 12 feet (3.6 m) away from the probe.
- SIL certification allows use in SIL 2/3 Loops
- No moving parts.
- 30-point custom strapping table for uncommonly-shaped tanks.
- Standard C of C documentation included. (The C of C includes certification of o-rings and PEEK as 21 CFR-177 GRAS and USP <88> Class VI at 121 C, and metallic material CMTRs and surface finish specification).
- Probes available in 316L SS, AL6XN, and Hastelloy C22 (15 Ra MAX electropolished probe rod finish).
- Designed to BPE standards

TYPICAL HYGIENIC APPLICATIONS

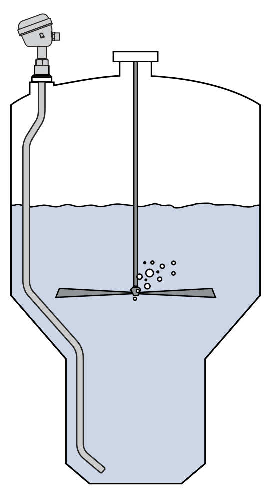
The Model 706 can be installed in a variety of media systems including bioreactors, fermentors, media storage, crystallizers, decanters, ultra filtration skid receivers, cook kettles, CIP systems, balance tanks, mixing tanks, storage tanks, etc.



25K Liter Reactor



1500K Liter Fermentor or Mix Tank



Tulip Tank

Buffer systems, Media Systems and Filtration including:

- primary mix tanks
- hold tanks
- day tanks
- bulk tanks

CIP systems including:

- wash and rinse tanks
- bulk tanks
- skid delivery tanks

Utility systems including:

- ammonia storage
- CO_2 storage
- inlet water
- deaerator systems
- condensate receivers
- boiler drums
- fuel oil storage
- various sumps
- waste tanks
- neutralization tanks
- kill vessels

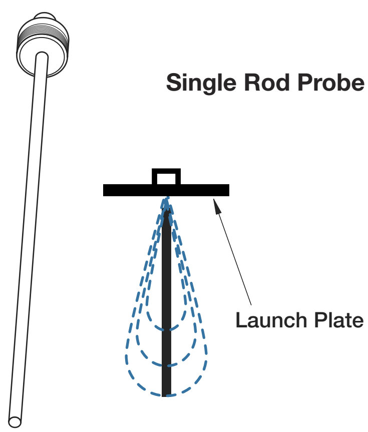
PROBE OVERVIEW

The description below contains facts relating to the physics of GWR technology and are not specific to AMETEK LMS or to the Eclipse Model 706.

SINGLE ROD PROBES

Single element GWR probes operate quite differently from the typical GWR coaxial design. With only one conductor to work with, the pulses of energy develop between the single rod probe and the mounting nut or flange. In other words, the pulse propagates down and around the rod as it references its ground at the top of the tank.

The energy and efficiency of the pulse are directly related to how much metallic surface exists around it at the top of the vessel. This metallic surface at the top of the probe is called the “launch plate.” The larger the launch plate, the more efficient the signal propagation down the probe.



The above illustrates the single element design and how the electromagnetic pulse effectively expands into a teardrop shape as it propagates away from the top of the tank (the inherent ground reference). This single element configuration (rod or cable) is the less efficient of the two probe types, but can still operate with a minimum dielectric detection of approximately $\varepsilon_r > 1.7$ in an open, non-metallic vessel.

However, this dielectric constant performance improves considerably ($\varepsilon_r > 1.4$) when the single rod probe is installed in a metal cage/bridle, or mounted 2–6" (50–150 mm) away from a metal tank wall. Because the design is “open,” it exhibits two strong tendencies:

- It is the most forgiving of coating and buildup. (The PFA-insulated probe is the best choice for severe buildup and coating.)
- It can be affected by objects in close proximity.

It is important to note that a parallel metal wall INCREASES the performance of a single rod probe while a singular, metal object protruding out near the probe may be improperly detected as a liquid level.

The 0.5-inch diameter 316L SS probe with a 15Ra MAX surface finish is available in lengths up to 240" (6 meters) and with Tri-Clover® type connection sizes from 1" through 4".

Probes can be bent to avoid internal obstructions such as agitator blades and spray balls, and to ensure lowest possible level detection.

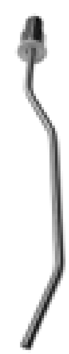
Contact the factory for additional support and questions.

PROBE & HOUSING FEATURES

Stainless Steel Housing with Model 7yH Hygienic Probe

Eclipse Model 706 transmitter in a 304 SS housing for use in a variety of hygienic applications.

0.5-inch diameter 316L SS probe with a 15Ra MAX surface finish is available with lengths up to 240" (6 meters) and with Tri-Clover® type connection sizes from 1" through 4".



Hygienic Connection with Bend

Probes can be bent to avoid internal obstructions such as agitator blades and spray balls, and to ensure lowest possible level detection.

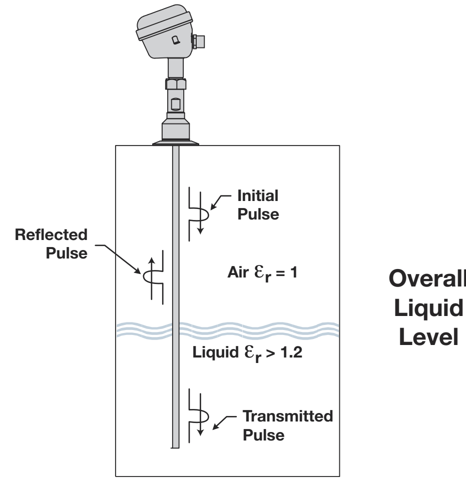
Aluminum Dual Compartment Housing

The Eclipse Model 706 transmitter is also available with an industrial dual compartment aluminum housing.

TECHNOLOGY

PRINCIPLE OF OPERATION

Eclipse Guided Wave Radar is based upon the technology of TDR (Time Domain Reflectometry). TDR utilizes pulses of electromagnetic energy transmitted down a wave guide (probe). When a pulse reaches a surface that has a higher dielectric constant than the air ($\varepsilon_r = 1$) in which it is traveling, a portion of the pulse is reflected. The transit time of the pulse is then measured via high speed timing circuitry that provides an accurate measure of the liquid (or solids) level. The amplitude of the reflection depends on the dielectric constant of the product. The higher the dielectric constant, the larger is the reflection.



TRANSMITTER SPECIFICATIONS

FUNCTIONAL/PHYSICAL

System Design		
Measurement Principle		Guided Wave Radar (GWR) based on Time Domain Reflectometry (TDR)
Input		
Measured Variable		Level, as determined by GWR time of flight
Span		6 inches to 20 feet (15 cm to 6 m)
Output		
Type		4 to 20 mA with HART: 3.8 mA to 20.5 mA useable (per NAMUR NE43)
Resolution	Analog:	.003 mA
	Digital Display:	1 mm
Loop Resistance		591 ohms @ 24 VDC and 22 mA
Diagnostic Alarm		Selectable: 3.6 mA, 22 mA (meets requirements of NAMUR NE 43), or HOLD last output
Diagnostic Indication		Meets requirements of NAMUR NE107
Damping		Adjustable 0–10 seconds
User Interface		
Keypad		4-button menu-driven data entry
Display		Graphic liquid crystal display
Digital Communication/Systems		HART Version 7— with Field Communicator, AMS, or FDT
		DTM (PACT*ware*™), EDDL
	Future:	FOUNDATION fieldbus, PROFIBUS PA
Menu Languages	Transmitter LCD:	English, French, German, Spanish, Russian
	HART DD:	English, French, German, Spanish, Russian, Chinese, Portuguese, Polish
Power (at transmitter terminals)		HART: General Purpose (Weatherproof)/Intrinsically Safe/Explosion-proof:
		16 to 36 VDC
		11 VDC minimum under certain conditions (refer to I&O Manual 57-643)
Housing		
Material		Deep Drawn 304 Stainless Steel or die-cast aluminum A413 (<0.4% copper)
Ingress Protection		IP66/IP67
Net/Gross Weight		3 lbs (1.36 kg) / 4 lbs (1.81 kg)
Overall Dimensions		H 4.5" (114mm) x W 3.0" (76mm)
Cable Entry		½" NPT or M20 x 1.5
SIL 2/3 Capable (Certified)		Safe Failure Fraction = 93% (HART only)
		Functional Safety to SIL 2/3 in accordance with IEC 61508

TRANSMITTER SPECIFICATIONS CONTINUED

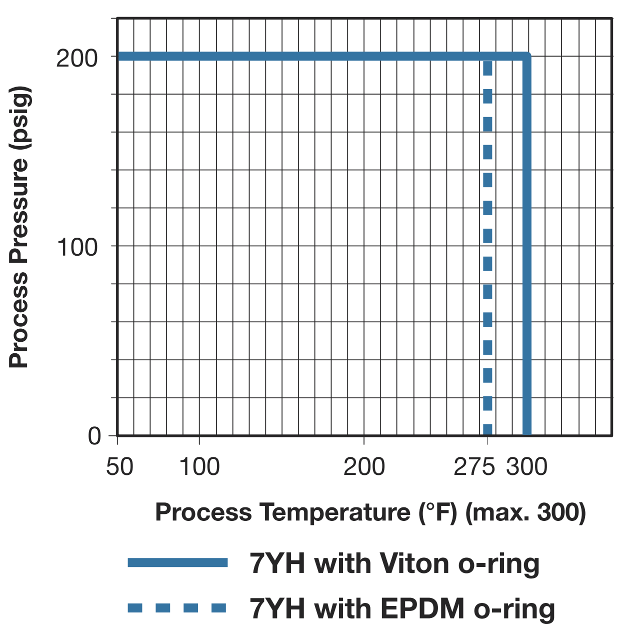
FUNCTIONAL/PHYSICAL

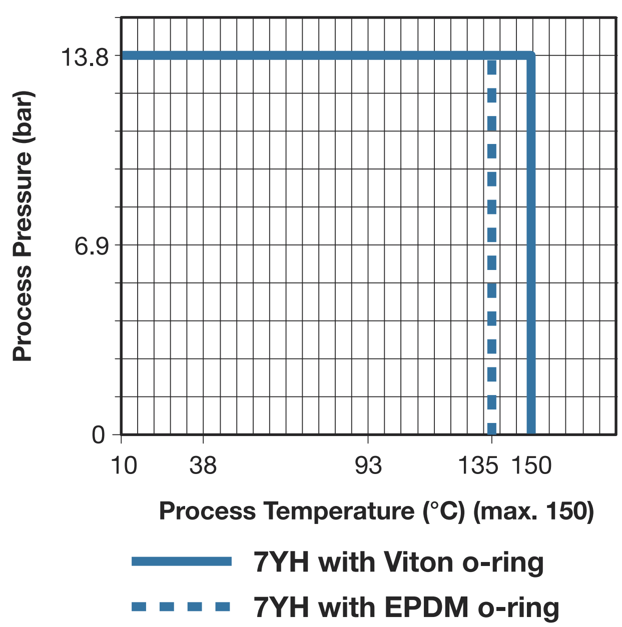
Environment	
Operating Temperature	-40 to +175 °F (-40 to +80 °C); LCD viewable -5 to +160 °F (-20 to +70 °C)
Storage Temperature	-50 to +185 °F (-45 to +85 °C)
Humidity	0 to 99%, non-condensing
Electromagnetic Compatibility	Meets CE requirement (EN 61326) and NAMUR NE 21 ①
Surge Protection	Meets CE EN 61326 (1000V)
Shock/Vibration	ANSI/ISA-S71.03 Class SA1 (Shock); ANSI/ISA-S71.03 Class VC2 (Vibration)
Performance	
Reference Conditions	Reflection from liquid, with dielectric constant in center of selected range, with a 72" (1.8 m) single rod probe at +70 °F (+20 °C), in Auto Threshold Mode
Linearity ②	<0.1% of probe length or 0.1 inch (2.5 mm), whichever is greater
Accuracy	±0.1% of probe length or ±0.1 inch (2.5 mm), whichever is greater
Resolution	±0.1 inch or 1 mm
Repeatability	<0.1 inch (2.5 mm): ±0.025% of Volume ③
Hysteresis	<0.1 inch (2.5 mm)
Response Time	Approximately 1 second
Initialization Time	Less than 10 seconds
Ambient Temperature Effect	Approx. ±0.02% of probe length/degree C (for probes greater than 8 feet (2.5 m))

① Single rod probes must be used in metallic vessel or stillwell to maintain CE noise immunity
② Linearity in top 12 inches (30 cm) of single rod probes in tanks will be application dependent.
③ When used with Strapping Table

PROCESS SEAL TEMPERATURE/PRESSURE CHART

Note: Tri-clamp connection service rating may further limit pressure.





HYGIENIC SINGLE ROD GWR PROBE

	7yH Hygienic BPE
Recommended For	Applications demanding stringent hygienic specifications
Materials/Wetted Metallic Parts	316L SS, <15 R_a electropolished finish (Optional: Hastelloy C, AL6XN SS)
Elastomer and Polymeric Wetted Parts	PEK HT and O-ring (Viton or EPDM) (GRAS 21CFR177 and USP <88> Class VI at 121 °C)
Diameter	∅.50 (13 mm) rod
Flange ANSI (DIN)	1 to 4" (38 to 100 cm); Tri-Clamp® fitting
Length ①	24 to 240" (60 to 610 cm)
Transition Zone ② Top	1" (25 mm) @ $\varepsilon_r > 10$
Bottom	1" (25 mm) @ $\varepsilon_r > 10$
Blocking Distance Top	0–12" (0–30cm) /. probe length/application dependent
Process Temperature ③ (Max.)	+300 °F @ 200 psig (+150 °C @ 13.8 bar)
Min. (Cryogenic)	Consult factory
Process Pressure Max.	200 psig @ +300 °F (13.8 bar @ +150 °C) or limit of tri-clamp service rating, whichever is lower
Min. (Vacuum Service)	N/A
Dielectric ④	1.2 to 100
Max. Viscosity (cP)	10,000 (consult factory if severe agitation/turbulence)
Mounting Effects	See Nozzles and Obstructions on page 15
Coating/Buildup	Yes; maximum error 10% of coated length; % of coated length; % error related to dielectric of media, thickness of coating & coated probe length above media
Foam	Yes
Corrosives	Yes
Hygienic	Yes
Overfill	No
Approvals FM	Yes
CSA	Yes
ATEX	Yes
IEC	Yes

① Contact factory for applications requiring probe lengths less than 24" (60 cm).

② Transition zones (areas with reduced accuracy) are dielectric dependent. It is recommended to set the 0-100% measuring range outside of the transition zones.

③ Refer to Process Temperature vs. Process Pressure Graph

④ 1.2 minimum dielectric when end of probe analysis is enabled.

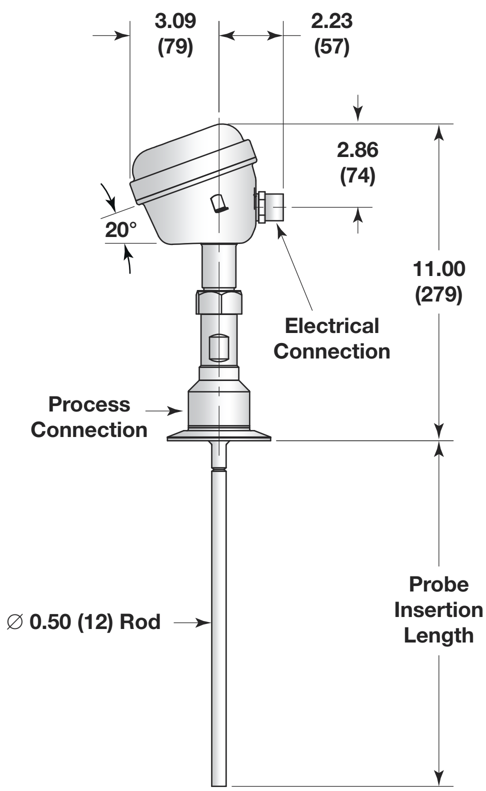
PACTWARE PC SOFTWARE PROGRAM

PACT*ware* PC software and the new Field Device Tool (FDT) standard take radar level measurement to a new level of setup efficiency and user-friendliness. The powerful Eclipse guided wave radar transmitter has always been easy to use. PACT*ware* builds on that ease of use by adding a graphical software interface. Simply connect your PC through a serial interface to the HART loop and all functionality can be accessed quickly, conveniently, and safely.

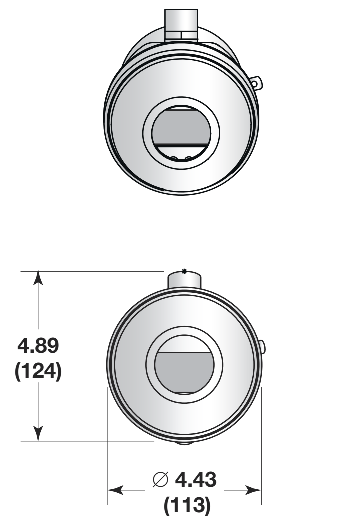
PACT*ware* offers distinct advantages in loop tuning and configuration documentation.

DIMENSIONAL SPECIFICATIONS

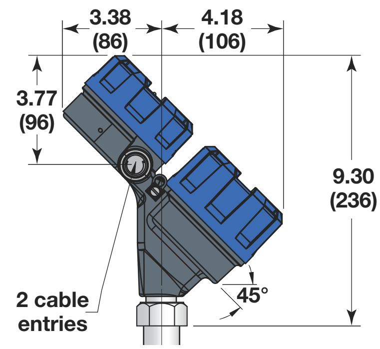
SINGLE ROD PROBES — inches (mm)



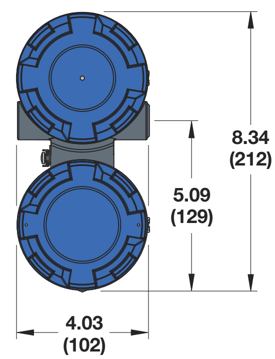
Model 7yH Probe with
304ss Single Compartment
Housing



304ss Single Compartment
Housing (20° Top View)



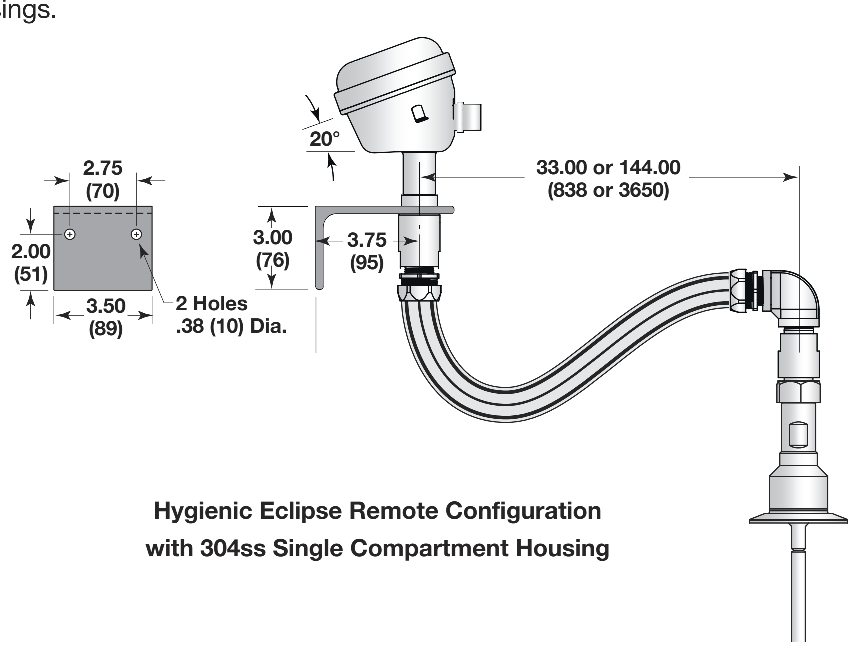
Aluminum Dual
Compartment Housing



Dual Compartment
Aluminum Housing
(45° View)

REMOTE ASSEMBLY — inches (mm)

The remote assembly is meant to be a simple and cost-effective way to remove the transmitter electronics and locate it 33" (84 cm) or 144" (3650 cm), which offers a greater degree of flexibility during installation. It is supplied with a remote bracket and flexible armor conduit as a complete assembly. This can be employed with both styles of housings.



Hygienic Eclipse Remote Configuration
with 304ss Single Compartment Housing

AGENCY APPROVALS

AVERTISSEMENT! Danger d'explosion éventuel. Ne brancher ou débrancher des équipements que si l'alimentation électrique a été coupée ou si la zone est réputée non dangereuse.

These units are in compliance with the EMC-directive 2014/30/EU, the PED-directive 2014/68/EU and the ATEX directive 2014/34/EU.

Explosion Proof (with intrinsically Safe Probe)

US/Canada:
Class I, Div 1, Group B, C and D, T4
Class I, Zone 1 AEx db/ia [ia IIC Ga] IIB + H2 T4 Gb/Ga
Class I, Zone 1 Ex db/ia [ia IIC Ga] IIB + H2 T4 Gb/Ga
Ta = -40°C to +70°C
Type 4X, IP66/IP67

Flame Proof
ATEX – FM14ATEX0041X/FM22UKEX0048X:
II 2/1 G Ex db/ia [ia IIC Ga] IIB + H2 T6 to T1 Gb/Ga
Ta = -40°C to +70°C
IP66/IP67

IEC- IECEx FMG 14.0018X:
Ex db/ia [ia IIC Ga] IIB + H2 T6 to T1 Gb/Ga
Ta = -40°C to +70°C
IP66/IP67

Non- Incendive

US/Canada:
US: Class I, II, III, Division 2, Group A, B, C, D, E, F, G, T4
Canada: Class I, Division 2, Group A, B, C, D
Class I, Zone 2 AEx ec [ia Ga] IIC T4 Gc
Class I, Zone 2 Ex ec [ia Ga] IIC T4 Gc
Ta = -40°C to +70°C
Type 4X, IP66/IP67

ATEX – FM14ATEX0042X:
II 3 (1) G Ex ec [ia Ga] IIC T4 Gc
Ta = -15°C to +70°C
IP66/IP67

ATEX – FM22ATEX0003X
II 3 G Ex ic IIC T4 Gc
Ta = -40°C to +70°C
IP66/IP67

IEC – IECEx FMG 14.00018X:
Ex ec [ia Ga] IIC T4 Ga/Gc
Ta = -15°C to + 70°C
IP66/IP67

Intrinsically Safe

US/Canada:
Class I, II, III, Div 1, Group A, B, C, D, E, F, G, T4,
Class I, Zone 0 AEx ia IIC T4 Ga
Class I, Zone 0 Ex ia IIC T4 Ga
Class I, Zone 2 AEx ic IIC T4 Gc
Class I, Zone 2 Ex ic IIC T4 Gc
Ta =-40°C to + 70°C
Type 4X, IP66/IP67

ATEX – FM14ATEX0041X/FM22UKEX0048X:
II 1 G Ex ia IIC T4 Ga
Ta = -40°C to +70°C
IP66/IP67

ATEX – FM22ATEX0003X:
II 3 G Ex ic IIC T4 Gc
Ta = -40°C to +70°C
IP66/IP67

IEC – IECEx FMG 14.0018X:
Ex ia IIC T4 Ga
Ex ic IIC T4 Gc
Ta = -40°C to +70°C
IP66/IP67

Dust Ignition Proof

US/Canada:
Class II, III, Division 1, Group E, F and G, T4
Ta = -40°C to +70°C
Type 4X, IP66/IP67

ATEX – FM14ATEX0041X/FM22UKEX0048X:
II 1/2 D Ex ia/tb [ia Da] IIIC T85°C to T450°C Da/Db
Ta = -15°C to +70°C
IP66/IP67

IEC – IECEx FMG 14.0018X:
Ex ia tb [ia Da] IIIC T85°C to T450°C Db
Ex ia IIIC T85°C to T450°C Da
Ta = -15°C to +70°C
IP66/IP67

INMETRO Certification
Brazil:

InMetro -TUV 13.1484X:
BR-Ex ia IIC T4 Ga -40 C < Ta < +70 C
BR-Ex ec [ia GA] IIC T4 Gc -15 C < Ta < +70 C
BR-Ex db/ia [ia IIC Ga] IIB + H2 T6…
T1 Ga/Gb -40 C < Ta < +70 C
BR-Ex ia tb [ia Da] IIIC T85 C…T450 C -15 C < Ta < +70 C
BR-Ex db [ia] IIC T6…T1 Ga/Gb -40 C < Ta < +70 C
BR-Ex tb [ia] IIIC T85C…T450C Da/Db -15 C < Ta < +70 C
BR-Ex ic IIC T4 Gc -40 C < Ta < +70 C
IP66/IP67

Special Conditions of Use

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
2. The risk of electrostatic discharge shall be minimized at installation, following the directions given in the instructions.
3. Contact the original manufacturer for information on the dimensions of the flameproof joints.
4. For installation with ambient temperature of +70 °C, refer to the manufacturer's instructions for guidance on proper selection of conductors.
5. WARNING—Explosion Hazard: Do not disconnect equipment when flammable or combustible atmosphere is present.
6. For IEC and ATEX: To maintain the T1 to T6 temperature codes, care shall be taken to ensure the enclosure temperature does not exceed +75 °C.
7. For U.S. and Canada: To maintain the T4 temperature code, care shall be taken to ensure the enclosure temperature does not exceed +70 °C.
8. Temperature codes for the ratings Ex db/ia [ia IIC] IIB+H2 and Ex ia/tb [ia] IIIC are defined by the following table:

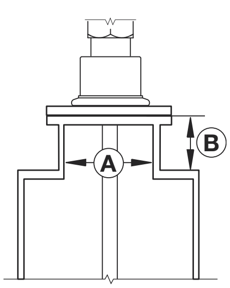
Process Temperature (PT)	Temperature Code-TCG (GAS)	Temperature Code-TCD (Dust)
Up to 75 °C	T6	TCD= PT+10K=85 °C
From 75 to 90 °C	T5	TCD= PT+10K=100 °C
From 90 to 120 °C	T4	TCD= PT+15K=135 °C
From 125 to 185 °C	T3	TCD= PT+15K=200 °C
From 185 to 285 °C	T2	TCD= PT+15K=300 °C
From 285 to 435 °C	T1	TCD= PT+15K=450 °C

9. To maintain FM approval, the Model 706 transmitter with adapter shall only be used on Model 705 assemblies approved by FM Global. (Includes FM, CSA, ATEX and IEC).
10. Provisions shall be made to provide transient over-voltage protection to a level not to exceed 119Vdc.

MOUNTING CONSIDERATIONS

1. **Turbulence**
   The bottom of a single rod probe should be stabilized if turbulence will cause a deflection of more than 3 inches (80 mm) at 10 feet (3 m) of length. A metallic capture ring can be employed at the bottom of the probe to eliminate torque buildup

2. **Nozzle**
   Single rod performance in nozzles can be improved by ensuring the following:



Correct Installation

- Nozzle should be as short as possible.
- Nozzle inside diameter (A) should be ≥ to nozzle height (B).
  - If this is not the case, adjustments to BLOCKING DISTANCE and/or SENSITIVITY parameters may be required.

3. **Metallic (conductive) obstructions in tank.**
   While it heavily depends on the transmitter configuration, objects in the proximity of the probe can cause erroneous readings. Please refer to the table below for guidelines, but please contact the factory with any questions as the distances shown can be reduced with the use of PACT*ware*™.

Distance to probe	Acceptable objects
< 6" (150 mm)	Continuous, smooth, parallel, conductive surface (e.g. metal tank wall); probe should not touch tank wall
> 6" (150 mm)	< 1"/DN25 diameter pipe and beams, ladder rungs
> 12" (300 mm)	< 3"/DN80 diameter pipe and beams, concrete walls
> 18" (450 mm)	All remaining objects

4. **Non-metallic vessels**
   A metal flange is highly recommended for optimum performance in plastic vessels.

NOTE: Single rod probes must be used in metallic vessels or stillwell to maintain CE noise immunity.

MODEL NUMBER

TRANSMITTER

1 2 3 | BASIC MODEL NUMBER

7 0 6	Eclipse 4th Generation Guided Wave Radar (GWR) Level Transmitter

4 | POWER

5	24 VDC, Two-Wire

5 | SIGNAL OUTPUT

1	4–20 mA with HART

6 | SAFETY OPTIONS

2	SIL 2/3 Certified - HART only (5th digit = 1)

7 | ACCESSORIES/MOUNTING

0	No Digital Display or Keypad – Integral
A	Digital Display and Keypad – Integral
B	Digital Display and Keypad – 3-foot (1 meter) remote
C	Digital Display and Keypad – 12-foot (3.6 meter) remote

8 | CLASSIFICATION

0	General Purpose, Weatherproof (IP66/IP67)
1	Intrinsically Safe (FM & CSA CL 1 Div 1, Grps A, B, C, D)
3	Explosion-proof (FM & CSA CL 1 Div 1, Grps B, C, D)
A	Intrinsically Safe (ATEX/IEC Ex ia IIC T4)
B	Flame-proof (ATEX/IEC Ex d ia IIC T6)
C	Non-sparking (ATEX Ex n IIC T6) / Non-incendive (FM & CSA, CL 1 Div 2)
D	Dust Ex (ATEX II)

9 | HOUSING

1	Die-cast Aluminum, Dual-compartment, 45-degree
2	Investment Cast, Stainless Steel, Dual-compartment, 45-degree
3	304 stainless steel, single compartment ①
A	Die-cast Aluminum, Dual-compartment, 45-degree with 705/706 adapter ①
B	Investment Cast, Stainless Steel, Dual-compartment, 45-degree with 705/706 adapter

① Not available with 8th digit = 3 or B.

10 | CONDUIT CONNECTION

0	½" NPT
1	M20 × 1.5

7	0	6	—	5	1	2		—			
1	2	3		4	5	6	7		8	9	10

MODEL NUMBER

SINGLE ROD RIGID HYGIENIC PROBE

1 | TECHNOLOGY

7	Eclipse GWR Probes - Model 706

2 | MEASUREMENT SYSTEM

A	English (inches)
C	Metric (centimeters)

3 | CONFIGURATION/STYLE

H	Hygienic Single Rod

4 5 | PROCESS CONNECTION – HYGIENIC SIZE/TYPE

3 P	1½" Tri-Clover® type, 16 AMP Hygienic Flange
4 P	2" Tri-Clover® type, 16 AMP Hygienic Flange
5 P	3" Tri-Clover® type, 16 AMP Hygienic Flange
6 P	4" Tri-Clover® type, 16 AMP Hygienic Flange
9 P	2½" Tri-Clover® type, 16 AMP Hygienic Flange

6 | CONSTRUCTION CODES

0	Industrial

7 | FLANGE OPTIONS

0	None

8 | MATERIAL OF CONSTRUCTION ①

E	316/316L SST Hygienic
G	AL6XN SST Hygienic
H	Hastelloy C22 Hygienic
L	316L SST (Material Number 1.4435)

① 15Ra surface finish, Electropolished, CMTRs provided

9 | SPACER MATERIAL

0	None

10 | O-RING MATERIALS

0	Viton® GF
1	EPDM

11 | PROBE SIZE

0	Standard Single Rod

12 | SPECIAL OPTIONS

0	None

13 14 15 | INSERTION LENGTH

X X X	inches (012 – 240) cm (030 – 610)

unit of measure determined by 2nd digit of model number

7		**H**	—		**P**	**0**	**0**	—		**0**		—	**0**	**0**	—			
1	2	3		4	5	6	7		8	9	10		11	12		13	14	15

QUALITY

MAGNETROL
REGISTERED TO
ISO 9001
Your Assurance of
Quality and Service

The quality assurance system in place at AMETEK Level Measurement Solutions (LMS) guarantees the highest level of quality throughout the company. AMETEK LMS is committed to providing full customer satisfaction both in quality products and quality service.

The AMETEK LMS quality assurance system is registered to ISO 9001 affirming its commitment to known international quality standards providing the strongest assurance of product/service quality available.

WARRANTY

All AMETEK (LMS) electronic level and flow controls are warranted free of defects in materials or workmanship for eighteen months from the date of original factory shipment.

If returned within the warranty period; and, upon factory inspection of the control, the cause of the claim is determined to be covered under the warranty; then, AMETEK LMS will repair or replace the control at no cost to the purchaser (or owner) other than transportation.

AMETEK LMS shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of equipment. There are no other warranties expressed or implied, except special written warranties covering some AMETEK LMS products.

For additional information, see Instruction Manual 57-643.

Eclipse Guided Wave Radar transmitters may be protected by one or more of the following U.S. Patent Nos. US 6,062,095: US 6,247,362; US 6,588,272; US 6,626,038; US 6,640,629; US 6,642,807; US 6,690,320; US 6,750,808; US 6,801,157;
US 6,867,729; US 6,879,282; 6,906,662. May depend on model. Other patents pending.

MAGNETROL® / AMETEK®
LEVEL MEASUREMENT SOLUTIONS

ametek-measurement.com

705 Enterprise Street • Aurora, Illinois 60504-8149 USA
630.969.4000 • info.magnetrol@ametek.com

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