



Eclipse® Model 706 High Performance Guided Wave Radar Level Transmitter

DESCRIPTION

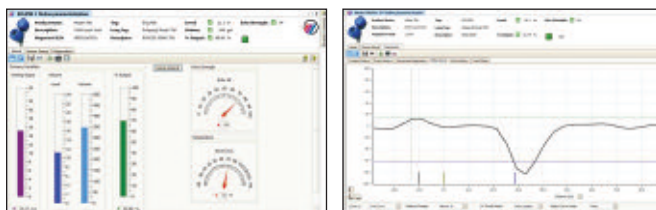
The new Eclipse® Model 706 High Performance Transmitter is a loop-powered, 24 VDC level transmitter that is based upon the proven and accepted technology of Guided Wave Radar (GWR). Encompassing a number of significant engineering accomplishments, this leading edge level transmitter is designed to provide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

Utilizing “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.

The innovative angled, dual compartment enclosure is now a common sight in the industry. This enclosure, first brought to the industry by Magnetrol® in 1998, 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 suitable for use in critical SIL 2 hardware safety loops.

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 PACTware™, AMS Device Manager, and various HART® Field Communicators.



Eclipse® Model 706 DTM

Measures Level, Interface, Volume and Flow



APPLICATIONS

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

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.

TRANSMITTER SPECIFICATIONS

FUNCTIONAL/PHYSICAL

System Design	
Measurement Principle	Guided Wave Radar based on Time Domain Reflectometry (TDR)
Input	
Measured Variable	Level, as determined by GWR time of flight
Span	6 inches to 100 feet (15 cm to 30 m); Model 7yS Probe 20 feet (610 cm) max.
Output	
Type	4 to 20 mA with HART: 3.8 mA to 20.5 mA useable (per NAMUR NE43) FOUNDATION fieldbus™: H1 (ITK Ver. 6.0.1)
Resolution	Analog: .003 mA Digital Display: 1 mm
Loop Resistance	634 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, FOUNDATION fieldbus™, AMS, or FDT DTM (PACTware™), EDDL
Menu Languages	Transmitter LCD: English, French, German, Spanish, Russian HART DD: English, French, German, Spanish, Russian, Chinese, Portuguese FOUNDATION fieldbus Host System: English
Power (at transmitter terminals)	
	HART: General Purpose (Weather proof)/Intrinsically Safe/Explosion-proof: 16 to 36 VDC 11 VDC minimum under certain conditions (refer to I&O Manual 57-606) FOUNDATION fieldbus™: FISCO 9 to 17.5 VDC FNICO, Explosion Proof, General Purpose (Weather proof) 9 to 32 VDC
Housing	
Material	IP67/die-cast aluminum A413 (<0.6% copper); optional 316 stainless steel
Net/Gross Weight	Aluminum: 4.5 lbs. (2.0 kg) 316 Stainless Steel: 10.0 lbs. (4.50 kg)
Overall Dimensions	H 8.34" (212 mm) x W 4.03" (102 mm) x D 7.56" (192 mm)
Cable Entry	½" NPT or M20
SIL 2 Hardware (Safety Integrity Level)	Safe Failure Fraction = 93% (HART only) Functional Safety to SIL 2 as 1oo1 in accordance with IEC 61508 (Full FMEDA report available upon request)

AGENCY APPROVALS

AGENCY	MODEL APPROVED	APPROVAL CATEGORY	APPROVAL CLASSES
FM  APPROVED	706-51XX-1XX	Intrinsically Safe	Class I, Div. 1; Groups A, B, C, & D Class II, Div. 1; Groups E, F, & G T4 Class III, Type 4X, IP67 Entity
	706-51XX-3XX	Explosion-proof (with Intrinsically Safe probe) Dust Ignition-proof	Class I, Div. 1; Groups B, C & D Class II, Div. 1; Groups E, F, & G T4 Class III, Type 4X, IP67
	706-51XX-XXX	Non-Incendive, Suitable for:	Class I, Div. 2; Groups A, B, C, & D Class II, Div. 2; Groups E, F & G T4 Class III, Type 4X, IP67
CSA 	706-51XX-1XX	Intrinsically Safe	Class I, Div. 1; Groups A, B, C, & D Class II, Div. 1; Group E, F & G T4 Class III, Type 4X, IP66/67 Entity
	706-51XX-3XX	Explosion-proof (with Intrinsically Safe probe) Dust Ignition-proof	Class I, Div. 1; Groups B, C, & D Class II, Div. 1; Group E, F & G T4 Class III, Type 4X, IP66/67
	706-51XX-XXX	Non-Incendive Suitable for:	Class I, Div. 2; Groups A, B, C, & D Class II, Div. 2; Group E, F & G T4 Class III, Type 4X, IP66/67
ATEX 	706-51XX-AXX	Intrinsically Safe	II 1G, Ex ia IIC T4 Ga
	706-51XX-CXX	Non-sparking	II 1/3 G Ex nA [ja Ga] IIC T4 Ga/Gc
	706-51XX-DXX	Dust Ex	II 1/2 Ex tb [ja] IIIC T85°C .. T450°C Db
	706-51XX-BXX	Flame Proof	II 1/2 G Ex d [ja] IIC T6 .. T1 Ga/Gb
IEC	706-5XXX-AXX	Intrinsically Safe	Ex ia IIC T4 Ga
	706-5XXX-CXX	Non-sparking	Ex nA [ja Ga] IIC T4 Ga/Gc
	706-5XXX-BXX	Flame Proof	Ex d [ja] IIC T6 .. T1 Ga/Gb



These units are in conformity of:

1. The EMC Directive: 2004/108/EC. The units have been tested to EN 61326.

Note: Single and twin rod probes must be used in metallic vessel or stillwell to maintain CE compliance.

MODEL NUMBER

TRANSMITTER

Models available for quick shipment, usually within one week after factory receipt of a complete purchase order, through the Expedite Ship Plan (ESP).

1 2 3 | BASIC MODEL NUMBER

7 0 6	ECLIPSE 4th Generation Guided Wave Radar (GWR) Level Transmitter
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4 | POWER

5	24 VDC, Two-Wire
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5 | SIGNAL OUTPUT

1	4–20 mA with HART
2	FOUNDATION fieldbus™ Communications — Future

6 | SAFETY OPTIONS

0	Standard (FOUNDATION fieldbus only) — Future
1	SIL 2 Hardware - HART only

7 | ACCESSORIES/MOUNTING

0	No Digital Display or Keypad - Integral
1	No Digital Display or Keypad - 3-foot (1 meter) remote
2	No Digital Display or Keypad - 12-foot (3.6 meter) remote
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 (IP 67)
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 T4)
C	Non-incendive (ATEX Ex n IIC T6)
D	Dust Ex (ATEX II)

9 | HOUSING

1	Die-cast Aluminum, Dual-compartment, 45-degree
2	Investment Cast, 316 SS, Dual-compartment, 45-degree

10 | CONDUIT CONNECTION

0	½" NPT
1	M20
2	½" NPT with sunshade
3	M20 with sunshade

