

## DESCRIPTION ECLIPSE® 705 Guide wave radar level transmitter

Eclipse® 705 Transmitter is a loop-powered, 24 V DC liquid-level transmitter based on the revolutionary Guided Wave Radar (GWR) technology. Encompassing a number of significant engineering accomplishments, this leading edge level transmitter is designed to provide measurement performance well beyond that of many traditional technologies, as well as "through-air" radars.

The innovative enclosure is a first in the industry, orienting dual compartments (wiring and electronics) in the same plane, and angled to maximise ease of wiring, configuration, set-up and data display.

This single transmitter can be used with all probe types and offers enhanced reliability, for use in SIL 2 / SIL 3 loops.

### FEATURES

"Real Level", measurement not affected by media variables eg. dielectrics, pressure, density, pH, viscosity, ...

Easy bench configuration - no need for level simulation.

2-wire loop powered intrinsically safe level transmitter.

20-point custom strapping table for volumetric output.

360° rotatable housing can be dismantled without depressurising the vessel via "Quick connect/disconnect" probe coupling.

2-line x 8-characters display and 3-button keypad.

Probe designs: up to +425 °C / 430 bar (+800 °F / 6250 psi).

Saturated steam applications up to 155 bar @ +345 °C (2250 psi @ +650 °F).

Cryogenic applications down to -196 °C (-320 °F).

Integral or remote electronics.

Suited for SIL 1 or SIL 2 Loops (full FMEDA report available).

Suited for SIL 3 Loops (EXIDA Certificate available).

### APPLICATIONS

**MEDIA:** Liquids or slurries hydrocarbons to water-based media (dielectric 1,4 - 100) and solids (dielectric 1,9 - 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 vapours, foam, surface agitation, bubbling or boiling, high fill/empty rates, low level and varying dielectric media or specific gravity.

### AGENCY APPROVALS

	Ex d	Ex ia	Ex n	Ex t	XP	IS	NI	Other
ATEX	•	•	•	•				
CCOE	•	•						
C A					•	•	•	
FM					•	•	•	
EAC (GOST)	•	•						Metrology
IEC	•	•						
nmetro	•	•						
Korea	•	•						
NEPSI								CPA
Marine	Lloyd's Register of Shipping (LRS)							
SIL	SIL1/2 (1oo1)							
Steam Drum	Lloyds EN 12952-11 (water tube boilers) Lloyds EN 12953-9 (shell boilers)							
TÜV	WHG § 63, overfill prevention							
Other approvals are available, consult factory for more details								
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## ECLIPSE® 705 HEAVY DUTY

Guided wave radar probes for heavy duty applications



### DESCRIPTION

Eclipse® 705 Transmitter is a loop-powered, 24 V DC liquid-level transmitter based on the revolutionary Guided Wave Radar (GWR) technology. Encompassing a number of significant engineering accomplishments, this leading edge level transmitter is designed to provide measurement performance well beyond that of many traditional technologies, as well as "through-air" radars. The innovative enclosure is a first in the industry, orienting dual compartments (wiring and electronics) in the same plane, and angled to maximise ease of wiring, configuration, set-up and data display. This single transmitter can be used with all probe types and offers enhanced reliability, for use in SIL 2 / SIL 3 loops.

### FEATURES

"Real Level", measurement not affected by media variables eg. dielectrics, pressure, density, pH, viscosity, ...

Easy bench configuration - no need for level simulation.

2-wire loop powered intrinsically safe level transmitter.

20-point custom strapping table for volumetric output.

360° rotatable housing can be removed without depressurising the vessel via "Quick connect/disconnect" probe coupling.

2-line x 8 characters display and 3-button keypad.

Probe designs: up to +425 °C / 430 bar (+800 °F / 6250 psi).

Saturated steam applications up to 155 bar @ +345 °C (2250 psi @ +650 °F).

Cryogenic applications down to -196 °C (-320 °F).

Integral or remote electronics.

Suited for SIL 1 or SIL 2 Loops (full FMEDA report available).

Suited for SIL 3 Loops (EXIDA Certificate available).

### APPLICATIONS

**MEDIA:** Liquids or slurries hydrocarbons to water-based media (dielectric 1,4 - 100), up to 10.000 cP.

**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 vapours, foam, surface agitation, bubbling or boiling, high fill/empty rates, low level and varying dielectric media or specific gravity.

### AGENCY APPROVALS

	Ex d	Ex ia	Ex n	Ex t	XP	IS	NI	Other
ATEX	•	•	•	•				
CCOE	•	•						
CSA					•	•	•	
FM					•	•	•	
EAC (GOST)	•	•						Metrology
IEC	•	•						
Inmetro	•	•						
Korea	•	•						
NEPSI								CPA
Marine	Lloyd's Register of Shipping (LRS)							
SIL	SIL1/2 (1oo1)							
Steam Drum	Lloyds EN 12952-11 (water tube boilers) Lloyds EN 12953-9 (shell boilers)							
TÜV	WHG § 63, overfill prevention							
Other approvals are available, consult factory for more details								

## ECLIPSE® 705 PROBE SELECTION

### Coaxial style GWR probes

Application/Type	7MR-7MM (coax)	7MD-7ML (coax)	7MS /7MQ (coax)	7MT-7MN (coax)	7MG (single rod) <sup>(2)</sup>
Function	Level	HTHP <sup>(1)</sup>	Steam	Level - Interface	Level - Interface
Temperature					
-40 / +150 °C (-40 / +300 °F)	Yes	Yes	No	Yes	Yes
-40 / +200 °C (-40 / +400 °F)	Yes	Yes	No	Yes	Yes
-196 / +425 °C (-320 / +800 °F)	No	Yes	No	No	No
Up to +300 °C (+575 °F)	No	No	Saturated steam: 7MS: < 300 °C (575 °F) 7MQ: > 300 °C (575 °F)	No	No
Pressure					
0 to 50 bar (0 to 750 psi)	Yes	Yes	Yes	Yes	Yes
0 to 70 bar (0 to 1000 psi)	Yes	Yes	Yes	Yes	Yes
0 to 155 bar (0 to 2250 psi)	No	Yes	Yes	No	No
Vacuum to 430 bar (6250 psi)	No	Yes	No	No	No
Min. dielectrics		Level: 1.4 or 1.7 to 100		Level: 1.4 or 1.7 to 100	Level: 1.4 or 1.7 to 100
≥ 1.4	Yes	Interface: Upper liquid: 1.4 or 1.7 to 5.0 Lower liquid: 15 to 100	No	Interface: Upper liquid: 1.4 to 5.0 Lower liquid: 15 to 100	Interface: Upper liquid: 1.4 to 5.0 Lower liquid: 15 to 100
≥ 1.7	Yes		No		
≥ 1.9	Yes		No		
≥ 10	Yes		Yes		
Available probe length	6,1 m (240")	6,1 m (240")	4,5 m (177")	6,1 m (240")	6,1 m (240")
Wetted materials					
316/316L	Yes	Yes	Yes	Yes	Yes
Hastelloy® C	Yes	Yes	No	Yes	Yes
Monel®	Yes	Yes	No	Yes	Yes
Seal type	"O"ring type with various materials	Borosilicate seal (Full vacuum)	Dynamic steam seal with HT PEEK / Aegis	"O"ring type with various materials	"O"ring type with various materials
Liquid					
Clean	Yes	Yes	Yes	Yes	Yes
Film coating	Yes	Yes	Yes	Yes	Yes
Weak build-up	Yes	Yes	Yes	Yes	Yes
Strong build-up	Use Ø 45 mm (1.75") (7MM)	Use Ø 45 mm (1.75") (7ML)	No	Use Ø 45 mm (1.75") (7MN)	Yes
aggressive	Yes	Yes	No	Yes	Yes
Probe Ø/section	Ø 22,5 (7MR) - 45 (7MM) mm (0.88 - 1.75")	Ø 22,5 (7MD) - 45 (7ML) mm (0.88 - 1.75")	Ø 22,5 mm (0.88")	Ø 22,5 (7MT) - 45 (7MN) mm (0.88 - 1.75")	Ø 13, 19 or 25 mm (0.5, 0.75 or 1")

<sup>(1)</sup> High Temperature / High Pressure (HTHP) GWR probes with multi venting holes are suitable for level and liquid-liquid interface measurement.

<sup>(2)</sup> Caged single rod probe with the same performance as a coax set up.

## ECLIPSE® 705 PROBE SELECTION

Single and dual lead GWR probes

Application/Type	7MF-A (single rod)	7MF-F (single rod)	7MJ (single rod)	7M1/7M2 (single cable)	7MB (twin rod)	7M7/7M5 (twin flex)	7MF-X / 7MH (single rod)
Function	Level liquids	PFA coated	HTHP	Liquids / Solids	Level - Interface	Liquids / Solids	Hygienic use
Temperature							
-40 / +150 °C (-40 / +300 °F)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
-40 / +200 °C (-40 / +400 °F)	No	No	Yes	Yes (7M1 only)	Yes	Yes (7M7) - ambient (7M5)	No
-40 / +315 °C (-40 / +600 °F)	No	No	Yes	As "X" <sup>(1)</sup>	No	No	No
Pressure							
0 to 70 bar (0 to 1000 psi)	Yes	Yes	Yes	Yes	Yes	Yes	No
0 to 245 bar (0 to 3550 psi)	No	No	Yes	As "X" <sup>(1)</sup>	No	No	No
Min. dielectrics							
≥ 1.4	No	No	No	7M1: ≥ 1.9	No	No	No
≥ 1.9	Yes	Yes	Yes	7M2: ≥ 4.0	Yes	Yes	Yes
≥ 10	Yes	Yes	Yes		Yes	Yes	Yes
Available probe length	6,1 m (240")	6,1 m (240")	6,1 m (240")	22 m (72.18')	6,1 m (240")	22 m (72.18')	6,1 m (240")
Wetted materials							
316/316L	Yes	Yes	Yes	Yes	Yes	Yes - FEP insul.	Yes
Hastelloy® C	No	No	Yes	No	Yes	No	Yes
Monel®	No	No	Yes	No	Yes	No	No
AL-6XN	No	No	No	No	No	No	Yes
Seal type	"O"ring type with Viton®/EPDM/Kalrez® 4079/PEEK materials (not for use with ammonia, use only 7MD)						Hygienic
Liquid							
Clean	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Film coating	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weak build-up	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strong build-up	Yes	Yes	Yes	Yes	Yes	No	Yes
aggressive	No	Yes	Yes	No	Yes	No	No
Probe Ø/section	Ø 13 mm (0.5")	Ø 16 mm (0.6")	Ø 13 mm (0.5")	Ø 5 mm (0.2")	2 x Ø 13 mm (0.5")	2 x Ø 6 mm (0.2")	Ø 13 mm (0.5")

Remote transmitter head



<sup>(1)</sup> As "X" = optionally available.

## ECLIPSE® 705 HYGIENIC

Guided wave radar level transmitter for hygienic use



### DESCRIPTION

Eclipse® 705 Transmitter is a loop-powered, 24 V DC liquid-level transmitter based on the revolutionary Guided Wave Radar (GWR) technology. Encompassing a number of significant engineering accomplishments, this leading edge level transmitter is designed to provide measurement performance well beyond that of many traditional technologies, including “through-air” radar.

Typical for these devices is that the probe can be bended (upon request) to follow the shape of the vessel. This way mixing blades can be avoided and measurement can be

carried out to the last drop present.

ECLIPSE 705 offers enhanced reliability, as demonstrated by a Safe Failure Fraction of 91 %.

### FEATURES

density, pH, viscosity, ...

2-wire loop powered intrinsically safe level transmitter.

20-point custom strapping table for volumetric output.

Housing can be removed without depressurising the vessel.

2-line x 8 characters display and 3-button keypad.

Suitable design for CIP/SIP cleaning.

Integral or remote electronics.

Suited for SIL 1 or SIL 2 Loops (full FMEDA report available).

**MEDIA:** From non-conductive liquids up to water-based media (dielectric 1,9 - 100).

**VESSELS:** Most process or storage vessels.

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

### AGENCY APPROVALS

	Ex d	Ex ia	Ex n	Ex t	XP	IS	NI	Other
ATEX		•						
CCOE		•						
CSA						•	•	
FM						•	•	
EAC (GOST)		•						Metrology
IEC		•						
SIL	SIL1/2 (1001)							
TNO	EHEDG TYPE EL CLASS I							
Other approvals are available, consult factory for more details								