

OPTIWAVE Marine series

Technical Datasheet

Cargo Level Radar (FMCW)

- Redundant ullage indication
- Completely non-contact level device
- Fully stand alone unit with local display
- Closed tank cleaning and service of all components
- Designed to operate in the roughest marine conditions
- Narrow and ultra narrow beam versions

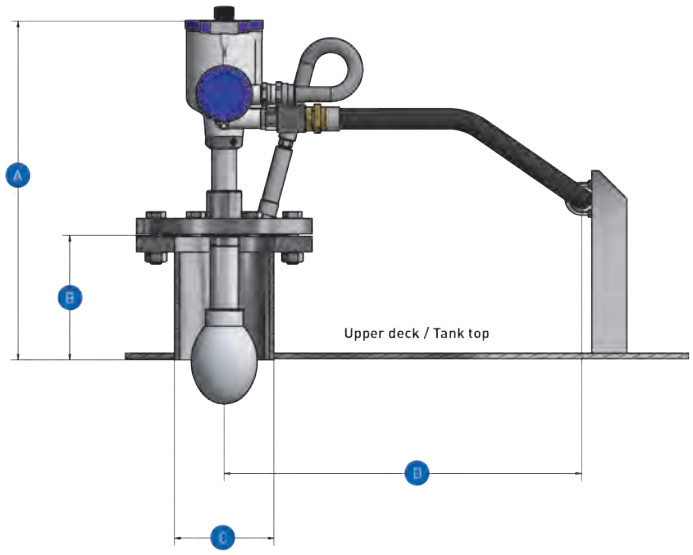
CARGOMASTER®

MEDITECNA
Instrumentación | Proyectos | Servicios

KROHNE Marine

© KROHNE Marine 01/2018

Dimensions and weight (DN125 standard flange) 24 GHz



Dimensions (mm)				Weight (kg)	Dimensions (inches)				Weight (lbs)
A	B	C	D		A	B	C	D	
307	141	ø 168	400	20	12	5.6	ø 6.6	15.8	44

Radar antennas

Horn antenna:
Suitable for small/ medium tankers with closed cleaning



OPTIWAVE-M 7400 C
24 GHz
Horn antenna

Drop antenna:
The construction of the drop antenna makes it ideal for sticky/ contaminating liquids or dust-laden atmospheres where product build-up inside a horn antenna is likely to occur.



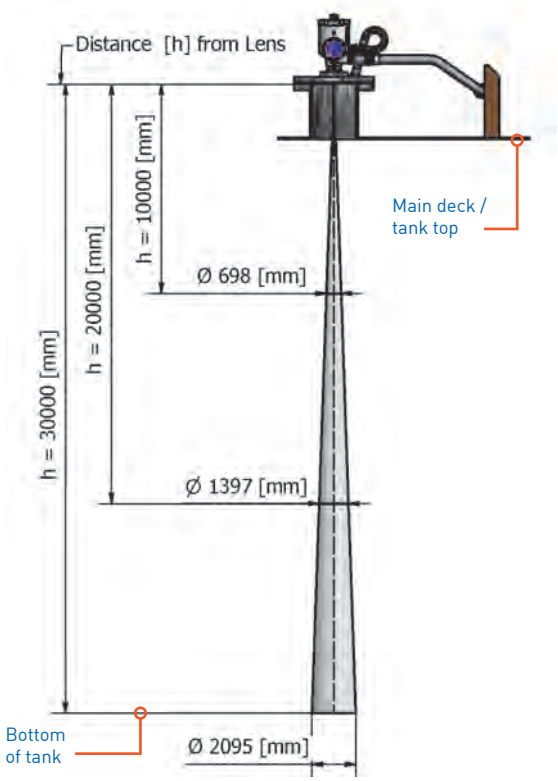
OPTIWAVE-M 7400 C
24 GHz
Drop antenna

Lens antenna:
Narrow beam. Suitable for large oil and product tankers.



OPTIWAVE-M 7500 C
80 GHz
Lens antenna

Ultra narrow beam installation (DN 150) 80 GHz for narrow tanks



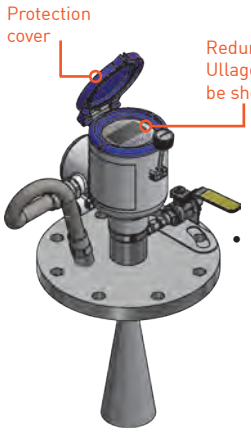
Footprint at different levels (height from lens to liquid surface) (mm)					
OPTIWAVE-M 7500 C Lens Antenna d 40mm Peek Beam angle ± 4°					
Tank height (h)	5 000	10 000	20 000	25 000	30 000
Diameter footprint Ø	699	1399	2797	3496	4196
OPTIWAVE-M 7500 C Lens Antenna d 70mm Peek Beam angle ± 2°					
Tank height (h)	5 000	10 000	20 000	25 000	30 000
Diameter footprint Ø	349	698	1397	1746	2095
Footprint at different levels (height from lens to liquid surface) (inch)					
OPTIWAVE-M 7500 C Lens Antenna d 40mm Peek Beam angle ± 4°					
Tank height (h)	197	394	787	984	1181
Diameter footprint Ø	28	55	110	138	165
OPTIWAVE-M 7500 C Lens Antenna d 70mm Peek Beam angle ± 2°					
Tank height (h)	197	394	787	984	1181
Diameter footprint Ø	14	27	55	69	82

The OPTIWAVE-M 7500 C 80 GHz radar keeps operating under the most difficult conditions in the tank and on the deck. The beam of ±2° makes it easy to install even on narrow tanks.

The OPTIWAVE-M 7500 C 80 GHz radar is the ideal choice for measuring ullage on tankers and marine applications, from the smallest up to the largest tanks.

Measuring system	OPTIWAVE-M 7400 C 24 GHz	OPTIWAVE-M 7500 C 80 GHz
Measuring principle	Frequency Modulated Continuous Wave (FMCW), 24 GHz	Frequency Modulated Continuous Wave (FMCW), 80 GHz
Application range	Level measurement of liquids, pastes, slurries and solids	Level measurement of liquids, pastes, slurries and solids
Measuring range	0...40 m / 0-132 ft	0...40 m / 0-132 ft
Beam angle	± 4°	± 2° / ± 4°
Measuring accuracy		
Accuracy (at reference conditions)	up to 20 m / 66 ft < 2 mm / 0.08" 20...40 m / 66...132 ft ± 0.01% of distance	up to 20 m / 66 ft < 2 mm / 0.08" 20...40 m / 66...132 ft ± 0.01% of distance
Repeatability	≤ 0.5 x error of measurement	≤ 0.5 x error of measurement
Measured value resolution	0.1 mm / 0.04"	0.1 mm / 0.04"
Ambient conditions		
Hazardous locations	Intrinsically safe, zone 0, 1, 2 Temperature classes: T6...T3 Explosion groups: IIA...IIC	Intrinsically safe, zone 0, 1, 2 Temperature classes: T6...T3 Explosion groups: IIA...IIC
Ambient temperature	-40...+70°C / -40...+160°F (signal converter)	-40...+70°C / -40...+160°F (signal converter)
Flange temperature	-40...+200°C / -40...+390°F optional -60...+250°C / -75...+480°F	-40...+200°C / -40...+390°F optional -60...+250°C / -75...+480°F
Ingress protection	IP 66 and IP 67 (signal converter)	IP 66 and IP 67 (signal converter)
Product conditions		
Dielectric constant (ε_r)	Down to 1.5	Down to 1.5
Product limitations	Liquid ammonia (NH_3), Liquid hydrogen (H_2), Liquid helium (He), LNG (due to CT requirements)	Liquid ammonia (NH_3), Liquid hydrogen (H_2), Liquid helium (He), LNG (due to CT requirements)
Process temperature	Unrestricted (but observe ambient and flange temperatures)	Unrestricted (but observe ambient and flange temperatures)
Materials		
Signal converter	Stainless steel 316L	Stainless steel 316L
Flange system	Stainless steel 316L (1.4404) (standard) or higher Molybden (Mo) on request	Stainless steel 316L (1.4404) (standard) or higher Molybden (Mo) on request
Horn Antenna	Stainless steel 316L (1.4404) (standard) or higher Molybden (Mo) on request	N/A
Bulb Antenna	PP or PTFE	N/A
Lens Antenna	N/A	Peek
Gaskets	FPM (Viton), Kalrez 6375 (others optional)	FPM (Viton), Kalrez 6375 (others optional)
Process connection	DIN 2501 DN 125 / PN 16 (standard)	DIN 2501 DN 125 / PN 16 (standard)
Power supply and output		
Powered by	4-20 mA (Loop power, 2 wired)	4-20 mA (Loop power, 2 wired)
Protocols	HART®	HART®
Current output	4-20 mA passive	4-20 mA passive
Certificates and approvals		
Ex approvals	Intrinsically safe according to ATEX and IEC	Intrinsically safe according to ATEX and IEC
IACS approvals	DNV, ABS, GL, LR, BV, CCS, NK, RINA, KR	DNV, ABS, GL, LR, BV, CCS, NK, RINA, KR

Redundant level indication



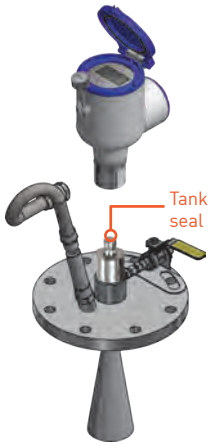
- Fully stand alone radar

Closed cleaning of lens/horn antenna



- Connect cleaning hose to quick coupling on ball valve
- Tank remains closed during all cleaning

Replacement of OPTIWAVE-M 7400 C



- The radar head can be replaced without opening the tank and releasing tank vapours
- Replacement can be done at any time, even during cargo operations.

The OPTIWAVE Cargo Level Radars are highly accurate and reliable instruments for measuring the ullage/level. With heavy duty stainless steel housing, they are designed to withstand the roughest conditions on deck.

Well protected by a stainless steel cover, they carry a backup display for redundant indication. Cargo operations may continue with a man on deck, if level information is lost on the main monitoring station.



For further technical details, please contact:
KROHNE Marine
Stromtangveien 21, NO-3950 Brevik, NORWAY
Tel.: +47 35 56 12 20, Fax: +47 35 56 12 21
marine-support@krohne.com

KROHNE Marine

www.krohne-marine.com