

**HYCONTROL**  
LEVEL MEASUREMENT SOLUTIONS



**RA SERIES**  
**RD SERIES**  
**RF SERIES**  
**80 GHz RADAR**  
**LEVEL GAUGES**

# WHY USE 80 GHz RADAR FOR LEVEL MEASUREMENT?

## UNAFFECTED BY CHANGES IN

- ◆ Dielectric
- ◆ Pressure
- ◆ Vacuum
- ◆ Humidity
- ◆ Dust
- ◆ Viscosity
- ◆ Foam
- ◆ Temperature

## 80 GHz RADAR'S KEY FEATURES INCLUDE

- ◆ Measuring range of up to 100 m (328 ft) with accuracy of +/- 2 mm (0.08")
- ◆ Versatile technology for powdered solid product and liquids
- ◆ Measures level, distance or volume
- ◆ Selection of antenna types to suit differing, challenging applications
- ◆ Two-wire loop powered 24 vDC
- ◆ Compact, durable IP66/68 design suitable for tough industrial environments
- ◆ Profibus outputs pending
- ◆ HART Protocol output for ease of system compatibility
- ◆ ATEX Ex ia hazardous area options available
- ◆ Powerful 80 GHz signal with narrow beam angle, ideal for narrow tanks
- ◆ Simple to install and retrofit with a wide selection of process connections
- ◆ Suitable for low dielectric materials or materials with limited reflectivity
- ◆ Unaffected by solid product angle of repose within the vessel
- ◆ Empty tank spectrum function eliminates false reflections caused by tank internals

## APPLICATIONS IN MANY INDUSTRIES

- ◆ Wastewater
- ◆ Quarry
- ◆ Chemical
- ◆ Food
- ◆ Plastics
- ◆ Power Generation
- ◆ Oil & Gas
- ◆ Construction
- ◆ Pharmaceutical
- ◆ Pulp & Paper
- ◆ Animal Feed
- ◆ Recycling

## EFFECTIVE REPLACEMENT FOR

- ◆ Capacitance transmitters
- ◆ Laser transmitters
- ◆ TDR
- ◆ Ultrasonic transmitters

## MANUFACTURED TO ISO9001 Q.M.S.



*The standard of all Hycontrol products is strictly monitored to conform to all ISO quality requirements.*

*This ensures we meet the needs of customers as well as statutory and regulatory requirements.*



Flour



Water



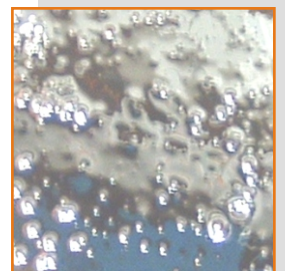
Plastics



Oils



Fly ash



Acids

# REFLEX RD SERIES RADAR - POWDERS & DUST

The **RD Series two-wire 80 GHz FMCW radar level transmitter** is designed for demanding applications with **powders in very dusty atmospheres**. With its small beam angle, this radar is particularly suited for continuous, non-contact level measurement in high and narrow silos, hoppers or buffer storage containers **up to 100 m/328 ft**. Due to the high signal dynamics of the FMCW radar, the level transmitter is ideal for low-reflective media, dust, uneven surfaces or tanks with obstacles. As it features a flush-mounted PEEK lens antenna, there is no intrusion of the antenna into the tank.

The RD Series provides **accurate and reliable readings** in process conditions with temperatures up to +150°C/302°F and pressures up to 40 bar/580 psi. It offers flange or thread connections as well as an optional 112 mm/4.4" antenna extension for the DN40/1.5" antenna. Approvals for use in hazardous areas are also available. The level transmitter comes with HART®7 communication.

- ◆ Aluminium or stainless steel housing
- ◆ Measuring range up to 100 m (328 ft)
- ◆ Unaffected by angle of repose
- ◆ PEEK antenna for zero intrusion
- ◆ Large, backlit LCD display
- ◆ Empty tank spectrum counters false echoes
- ◆ 4~20 mA & HART output
- ◆ Max. temperature 150°C (302°F)
- ◆ Suitable for dusty environments
- ◆ Variety of process connections
- ◆ Accuracy of +/- 2 mm (0.08")
- ◆ Two-wire loop powered

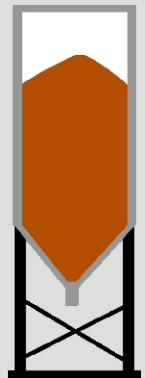


## RD SERIES TECHNICAL DATA

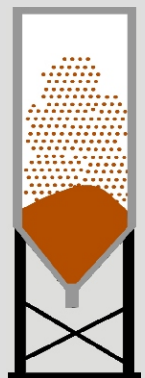
TYPE	RD SERIES FMCW RADAR
Frequency range	W-band 80 GHz
Dielectric constant $\epsilon_r$	>1.4 (TBF 1.1)
Measuring range	0 ... 100 m (0 ... 328 ft)
Accuracy	±2 mm (±0.08")
Repeatability	±1 mm (±0.04")
Housing material	Aluminium, 316L, Deep drawn 316L
Ingress protection	IP66/68
Process connection	G1½", G3", 1½" NPT, 3" NPT, DN50...200, 2...8", 50...200 A
Gasket	FKM/FPM, EPDM, Kalrez® 6375
Ambient temperature	-40°C - +80°C (-40°F - +176°F)
Process temperature	-50°C - +150°C (-58°F - +302°F) -50°C - +200°C (-58°F - +392°F)
Process pressure	-1 - 40 bar (-14.5 - 580 psi)
Power supply	12...30 V DC (Ex i), 16...36 V DC (Ex d), 2-wire
Output	2-wire: 4-20 mA (HART®7), PROFIBUS PA (pending)
ATEX	Yes

## RD SERIES ANTENNA OPTIONS

TYPE	SIZE	BEAM ANGLE
Lens (PEEK)	DN40 (1.5")	8°
Lens (PEEK)	DN70 (2.75")	4°



Solids, powders, flakes



Dusty atmospheres



# REFLEX RF SERIES RADAR - NARROW LIQUID TANKS

The **RF Series** is a **two-wire 80 GHz FMCW radar level transmitter** for **challenging liquid applications involving narrow tanks** with long nozzles and internal obstructions like agitators or heating coils. The minimal beam angle and dead zone make this an optimal choice for continuous, non-contact level measurement in both **very small and very high tanks** (up to 100 m/328 ft). The level transmitter can also **measure through tank roofs** made of non-conductive materials.

The RF Series provides accurate readings even in processes with **fast-changing levels**. The PEEK lens antenna is resistant to build-up and well-suited to **corrosive** environments. As the antenna is flush-mounted, there is no intrusion into the tank. Operating temperatures are up to +150°C/+302°F, with pressures up to 40 bar/580 psi. The RF Series offers a range of flange and thread connections, starting from ¾". It comes with approvals for use in hazardous areas as well as extensive device diagnostics (acc. to NE 107) and HART®7 communication.

- ◆ Aluminium or stainless steel housing
- ◆ Measuring range up to 100 m (328 ft)
- ◆ Monitor fast-changing levels (60 m/min)
- ◆ PEEK flange protection against corrosion
- ◆ Large, backlit LCD display
- ◆ Empty tank spectrum counters false echoes
- ◆ 4~20 mA & HART output
- ◆ Max. temperature 150°C (302°F)
- ◆ Suitable for small and high tanks
- ◆ Variety of process connections
- ◆ Accuracy of +/- 2 mm (0.08")
- ◆ Two-wire loop powered

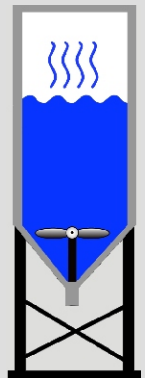


## RF SERIES TECHNICAL DATA

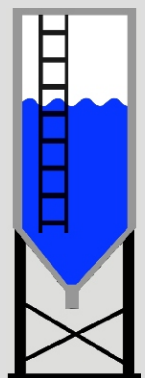
TYPE	RF SERIES FMCW RADAR
Frequency range	W-band 80 GHz
Dielectric constant $\epsilon_r$	>1.4 (TBF 1.1)
Measuring range	0 ... 100 m (0 ... 328 ft)
Accuracy	±2 mm (±0.08")
Repeatability	±1 mm (±0.04")
Housing material	Aluminium, 316L, Deep drawn 316L
Ingress protection	IP66/68
Process connection	G¾", G1", G1½", G3", ¾" NPT, 1" NPT, 1½" NPT, 3" NPT, DN50...200, 2...8", 50...200 A
Gasket	FKM/FPM, EPDM, Kalrez® 6375
Ambient temperature	-40°C - +80°C (-40°F - +176°F)
Process temperature	-50°C - +150°C (-58°F - +302°F) -50°C - +200°C (-58°F - +392°F)
Process pressure	-1 - 40 bar (-14.5 - 580 psi)
Power supply	12...30 V DC (Ex i), 16...36 V DC (Ex d), 2-wire
Output	2-wire: 4-20 mA (HART®7), PROFIBUS PA (pending)
ATEX	Yes

## RF SERIES ANTENNA OPTIONS

TYPE	SIZE	BEAM ANGLE
Lens (PEEK)	DN20 (¾")	15°
Lens (PEEK)	DN25 (1")	10°
Lens (PEEK)	DN40 (1.5")	8°
Lens (PEEK)	DN70 (2.75")	4°



Liquids with agitators/coils



High/narrow/obstructed tanks



Corrosive applications

# REFLEX RA SERIES RADAR - HYGIENIC LIQUIDS

Hycontrol's Reflex RA Series two-wire 80 GHz FMCW radar level transmitter is designed for **hygienic liquids applications**, where high precision is essential. It provides continuous, non-contact level measurement. A **flush-mounted PEEK lens antenna** with a small beam angle and short dead zone allows for precise level measurement even in small and narrow tanks with agitators. It is also well suited for use on larger tanks, with **measuring distances up to 50 m/164 ft**.

The RA series is ideally suited for the **pharmaceutical** and **food and beverage** industries in applications with any finished or raw product, such as **raw milk, wine, juice** or **solvents**. As the radar withstands process temperatures up to +150°C/+302°F and pressures up to 25 bar/362 psi, it **can be used in CIP/SIP cleaning procedures**. The RA Series offers a large choice of hygienic process connections and comes with extensive device diagnostics as well as HART®7 communication.

- ◆ Aluminium or stainless steel housing
- ◆ Measuring range up to 50 m (164 ft)
- ◆ Unaffected by vapour and humidity
- ◆ PEEK antenna for zero intrusion
- ◆ Large, backlit LCD display
- ◆ Empty tank spectrum counters false echoes
- ◆ 4~20 mA & HART output
- ◆ Max. temperature 150°C (302°F)
- ◆ Designed for hygienic applications
- ◆ Variety of process connections
- ◆ Accuracy of +/- 2 mm (0.08")
- ◆ Two-wire loop powered

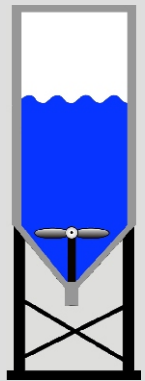


## RA SERIES TECHNICAL DATA

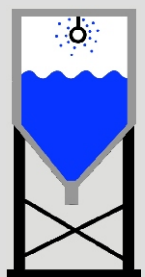
TYPE	RA SERIES FMCW RADAR
Frequency range	W-band 80 GHz
Dielectric constant $\epsilon_r$	>1.4 (TBF 1.1)
Measuring range	0 ... 50 m (0 ... 164 ft)
Accuracy	±2 mm (±0.08")
Repeatability	±1 mm (±0.04")
Housing material	Aluminium, 316L, Deep drawn 316L
Ingress protection	IP66/68
Process connection	Tri-Clamp® ISO 2852: 1½", 2"; DIN 11851 or DIN 11864-1 Form A: DN40, DN50; VARIVENT® or NEUMO BioControl®: DN50; SMS 1145: DN51
Gasket	PEEK
Ambient temperature	-40°C - +80°C (-40°F - +176°F)
Process temperature	-40°C - +150°C (-40°F - +302°F)
Process pressure	-1 - 25 bar (-14.5 - 362.6 psi)
Power supply	12...30 V DC (Ex i), 16...36 V DC (Ex d), 2-wire
Output	2-wire: 4-20 mA (HART®7), PROFIBUS PA (pending)
ATEX	Yes

## RA SERIES ANTENNA OPTIONS

TYPE	SIZE	BEAM ANGLE
Lens (PEEK)	DN25 (1")	10°
Lens (PEEK)	DN40 (1.5")	8°



Liquids with agitators



Small/narrow tanks & CIP/SIP

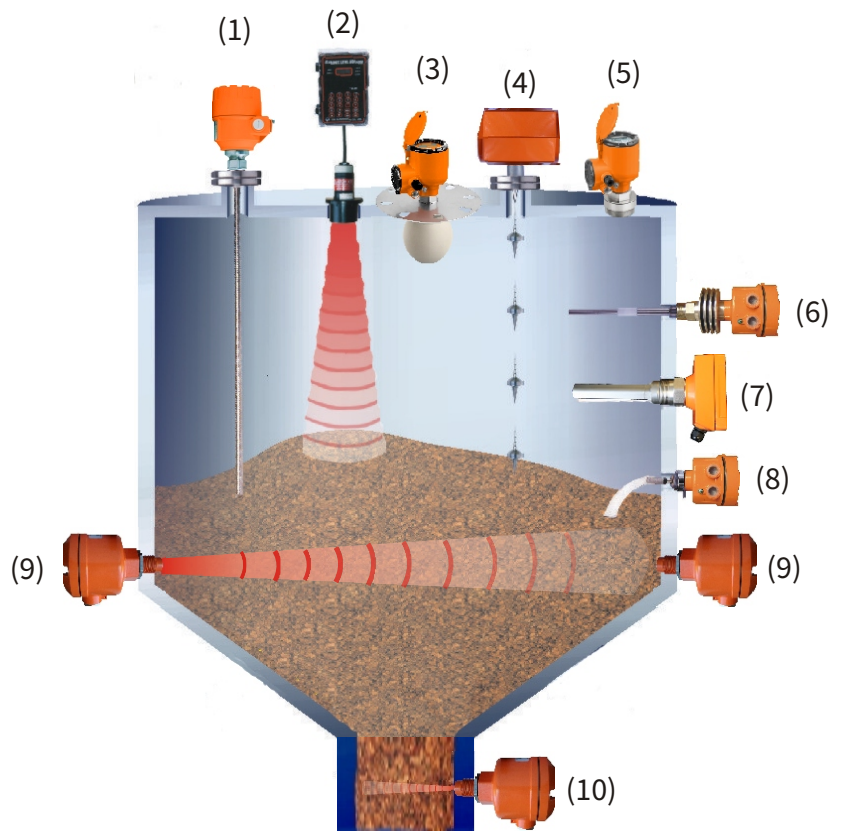


Hygienic applications



## Product Range For Solids:

- (1) TDR Radar for Solids
- (2) 2-Wire Ultrasonic Transmitter
- (3) 24 GHz FMCW 2-Wire Radar
- (4) Continuous Servo Level Indicator
- (5) 80 GHz FMCW 2-Wire Radar
- (6) Capacitance Level Switch
- (7) Vibrating Probe Level Switch
- (8) Rotating Paddle Level switch
- (9) Microwave Level Switch



## Product Range For Liquids:

- (1) Bypass Level Indicator
- (2) TDR Radar for Liquids
- (3) 2-Wire Ultrasonic Transmitter
- (4) 24 GHz FMCW 2-Wire Radar
- (5) Magnetic Float Switches
- (6) 80 GHz FMCW 2-Wire Radar
- (7) Capacitance Level Switch
- (8) RF Admittance Level Switch
- (9) Side Mounting 316 SS Float Switch
- (10) Tuning Fork Level Switch
- (11) Tuning Fork Level Switch
- (12) Ultrasonic Through Wall

