

## MODEL R82

Non contact radar transmitter  
for level and volume

### DESCRIPTION

The Model R82 is an economical, loop-powered radar transmitter bringing radar to everyday applications. Daily applications that have been considered for Ultrasonic can now use radar technology with its superior performance.

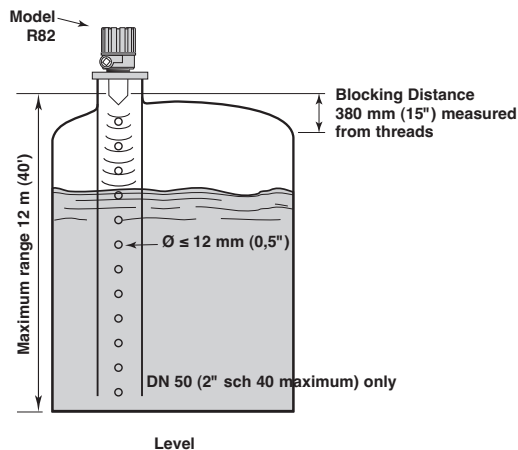
The electronics are housed in a single compartment cast aluminium or Lexan® housing. The R82 measures effectively even when atmospheres above the liquid are saturated with vapour. Pulse Burst technology and advanced signal processing manage common disturbances such as false echoes caused by obstructions, multi-path reflections from tank sidewalls or turbulence caused by agitators, aggressive chemicals, or aerators.

### FEATURES

- 2-wire, intrinsically safe loop powered
- 26 GHz frequency
- Fast and easy configuration via 2 x 16 character display and 4-pushbutton keypad
- Intuitive false target profiling
- Rotatable microwave beam for optimized operation
- Encapsulated Polypropylene or Tefzel® antennas in lengths of 50 mm (2") and 200 mm (8")
- Process
  - Temperature: -40 °C to +93 °C (-40 °F to +200 °F)
  - Pressure: Vacuum to 13,8 bar (200 psi)
  - Dielectric: 1,7 – 100

### APPLICATIONS

- Open channel flow flumes and weirs
- Paint, ink and solvent tanks
- Chemical storage
- Thick and viscous media
- Food and beverage
- Batch and day tanks



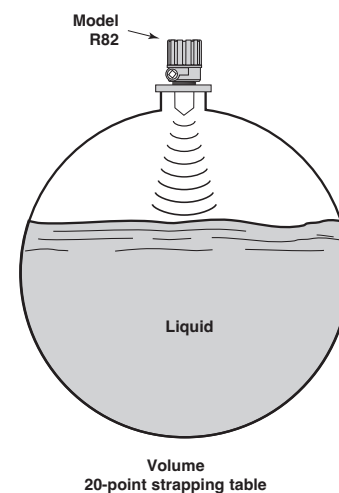
### Up to 12 m (40 ft) range



### AGENCY APPROVALS

Agency	Approvals
ATEX Ex	II 1 G Ex ia IIC T4, intrinsically safe
FM US APPROVED	Non Incendive and I.S. (pending)

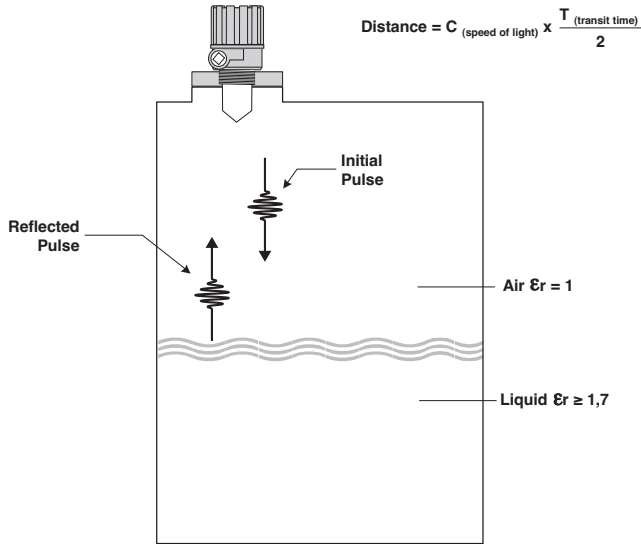
① Consult factory for proper part numbers.



# PRINCIPLE OF OPERATION

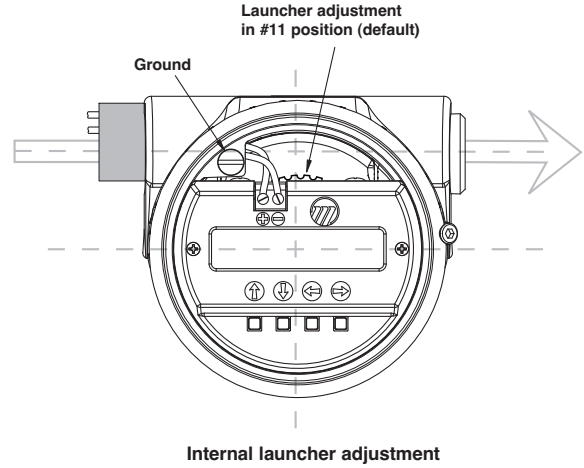
Model R82 Pulse Burst Radar emits short bursts of 26 GHz energy to a liquid surface. An ultra-high-speed timing circuitry measures the time of the signal reflected off the liquid surface.

Sophisticated signal processing filters out false reflections and other background noises. The exact level is then calculated, by factoring tank height and sensor offset information. The Model R82 circuitry is extremely energy efficient so no duty cycling is needed like with likewise radars. This allows to track high rates of level changes up to 4,5 m/minute (180"/min).



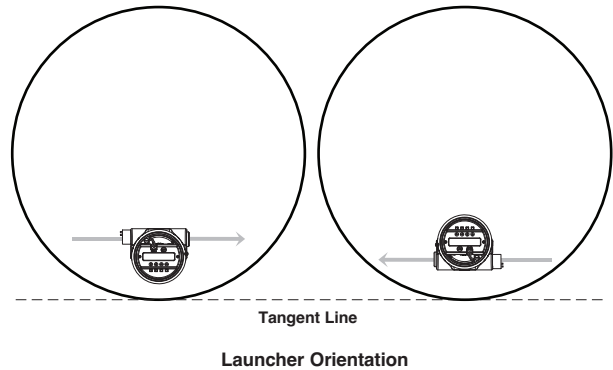
## ORIENTATION

The R82 transmitter utilizes a linearly polarized, microwave beam that can be rotated to improve its performance. Proper orientation can minimize unwanted target reflections, decrease sidewall reflections (multipath) and maximize direct reflections from the liquid surface. The polarization pattern is parallel to the transmitter Display when the mechanism is at the #11 position.



In a typical vertical tank, the Launcher should be adjusted so the polarization pattern is parallel to a line tangent to the nearest tank wall.

For horizontal cylindrical vessels aim beam down the long axis of the vessel.



## EXPEDITE SHIP PLAN (ESP)

Several models are available for quick shipment, within max. 4 weeks after factory receipt of purchase order, through the Expedite Ship Plan (ESP).

Models covered by ESP service are conveniently grey coded in the selection data charts.

To take advantage of ESP, simply match the colour grey model number codes (standard dimensions apply).

ESP service may not apply to orders of ten units or more. Contact your local representative for lead times on larger volume orders, as well as other products and options.

# SELECTION DATA

## 1. Order code for Model R82 transmitter

### BASIC MODEL NUMBER

R 8 2 - 5	24 V DC 2-wire loop powered non contact radar transmitter with HART®
-----------	----------------------------------------------------------------------

### MOUNTING / APPROVAL

A	Integral mount, Weatherproof
B	Integral mount, ATEX intrinsically safe

### HOUSING / CABLE ENTRY

0	IP 66, Cast aluminium, 3/4" NPT cable entry (2 entries - 1 plugged)
1	IP 66, Cast aluminium, M20 x 1,5 cable entry (2 entries - 1 plugged)
6	IP 66, Lexan® plastic, 3/4" NPT cable entry (2 entries - 1 plugged)
7	IP 66, Lexan® plastic, M20 x 1,5 cable entry (single entry)

### ACCESSORIES

A	Digital display and keypad
---	----------------------------

### ANTENNA TYPE

0 1	Polypropylene antenna for 50 mm (2") tall nozzles
0 2	Polypropylene antenna for 200 mm (8") tall nozzles
0 3	Tefzel® antenna for 50 mm (2") tall nozzles
0 4	Tefzel® antenna for 200 mm (8") tall nozzles

### PROCESS CONNECTION – SIZE/TYPE

1	Threaded 2" NPT
2	Threaded 2" BSP (G2)
A	2 1/2" Tri-Clamp® (only with Tefzel® antenna)
B	3" Tri-Clamp® (only with Tefzel® antenna)
D	DN 80 Varivent® (only with Tefzel® antenna)

R
8
2
5
 
 
A
0
 
 
**complete order code for Model R82 transmitter**

→ X = if there are any deviations from a standard part number

## TRANSMITTER SPECIFICATIONS

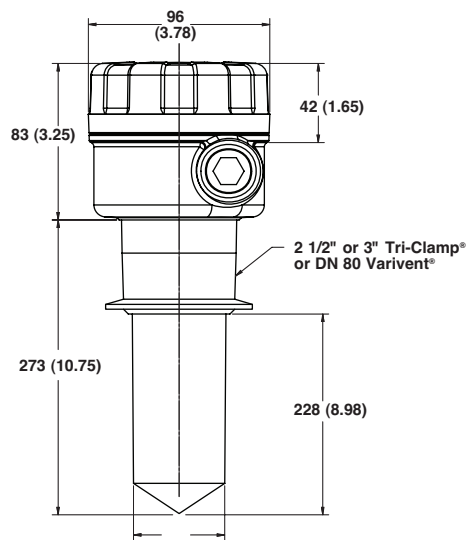
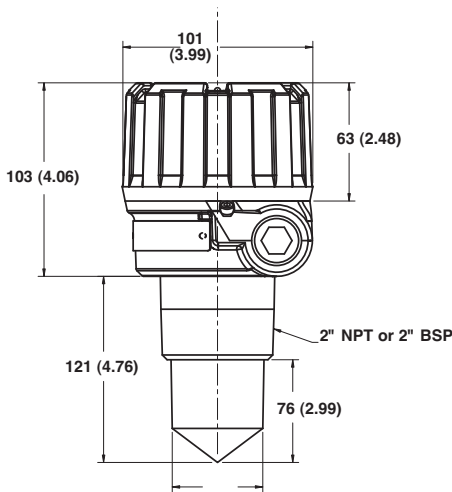
### FUNCTIONAL/PHYSICAL

Description	Specification	
Power (at terminals)	Weatherproof: 16 to 36 V DC / ATEX Intrinsically Safe: 16 to 28,4 V DC	
Output	4-20 mA with HART®, 3,8 mA to 20,5 mA useable (meets NAMUR NE 43)	
Span	380 mm (15") to 12 m (40') - depending process conditions	
Resolution	Analog: 0,01 mA Display: 0,1 cm (inch)	
Loop Resistance	400 Ω @ 20 mA - 24 V DC or 350 Ω @ 22 mA - 24 V DC	
Damping	Adjustable 0-45 s	
Diagnostic Alarm	Adjustable 3,6 mA, 22 mA, HOLD last output	
User Interface	HART® communicator, PACTware® and/or 4-button keypad	
Display	2-line x 16-character LCD	
Menu Language	English/Spanish/French/German	
Housing Material	IP 66/Aluminium A356T6 (< 0.20 % copper) or Lexan® Thermoplastic	
Approvals	ATEX II 1 G Ex ia IIC T4, intrinsically safe cFMus, Non incendive and intrinsically safe (pending)	
SIL (Safety Integrity Level)	Functional safety to SIL 1 as 1oo1 in accordance to IEC 61508 – SFF of 89,1 %	
Electrical Data	Ui = 28,4 V, li = 94 mA, Pi = 0,67 W // Ui = 28 V, li = 120 mA, Pi = 0,84 W	
Equivalent Data	Ci = 5,5 nF, Li = 370 μH	
Shock/Vibration Class	ANSI/ISA-S71.03 SA1 (Shock), ANSI/ISA-S71.03 VC2 (Vibration)	
Net Weight	Cast aluminium	1,45 kg (3,2 lbs) incl. 50 mm (2") Polypropylene® antenna
	Lexan®	0,73 kg (1,6 lbs) incl. 50 mm (2") Polypropylene® antenna
Overall Dimensions	Max: H 376 mm (14.80") x W 101 mm (3.98") - cast alu housing and tall sensor Min: H 204 mm (8.03") x W 96 mm (3.78") - Lexan® housing and short sensor	

**PERFORMANCE**


Description	Specification
Linearity	± 5 mm (0,2") or 0,05 % of tank height, whichever is greater
Accuracy	± 5 mm (0,2") or 0,05 % of tank height, whichever is greater
Blocking distance	380 mm (15")
Resolution	2,5 mm (0,1")
Repeatability	< 2,5 mm (0,1") or 0,025 % of tank height
Response time	< 1 second
Warm-up time	30 seconds
Ambient temp.	-40 °C to +70 °C (-40 °F to +160 °F) (weatherproof upto +80 °C (+175 °F)) Display: -20 °C to +70 °C (-5 °F to +160 °F)
Humidity	0-99 %, non-condensing
Dielectric range	1,7 - 100
Process temp.	-40 °C to +93 °C (-40 °F to +200 °F)
Process pressure	Full vacuum up to 13,8 bar (200 psi)
Electromagnetic compatibility	Meets CE requirements (EN 61326: 1997 + A1 + A2)

**DIMENSIONS in mm (inch)**



Cast aluminium housing with standard Polypropylene/Tefzel® antenna

Lexan® housing with extended Polypropylene/Tefzel® antenna



**DNV**  
Accredited by the RvA  
ISO-9001:2008 REGISTERED FIRM  
DNV Certification B.V., THE NETHERLANDS

**QUALITY ASSURANCE - ISO 9001:2008**

THE QUALITY ASSURANCE SYSTEM IN PLACE AT MAGNETROL GUARANTEES THE HIGHEST LEVEL OF QUALITY DURING THE DESIGN, THE CONSTRUCTION AND THE SERVICE OF CONTROLS. OUR QUALITY ASSURANCE SYSTEM IS APPROVED AND CERTIFIED TO **ISO 9001:2008** AND OUR TOTAL COMPANY IS COMMITTED TO PROVIDING FULL CUSTOMER SATISFACTION BOTH IN QUALITY PRODUCTS AND QUALITY SERVICE.

**PRODUCT WARRANTY**

ALL MAGNETROL ELECTRONIC AND ULTRASONIC LEVEL CONTROLS ARE WARRANTED FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP FOR ONE FULL YEAR 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, MAGNETROL INTERNATIONAL WILL REPAIR OR REPLACE THE CONTROL AT NO COST TO THE PURCHASER (OR OWNER) OTHER THAN TRANSPORTATION. MAGNETROL SHALL NOT BE LIABLE FOR MISAPPLICATION, LABOR CLAIMS, DIRECT OR CONSEQUENTIAL DAMAGE OR EXPENSE ARISING FROM THE INSTALLATION OR USE OF THE EQUIPMENT. THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED, EXCEPT, SPECIAL WRITTEN WARRANTIES COVERING SOME MAGNETROL PRODUCTS.



BULLETIN N°: BE 58-110.0  
EFFECTIVE: SEPTEMBER 2009  
SUPERSEDES: New

UNDER RESERVE OF MODIFICATIONS

BENELUX FRANCE	Heikensstraat 6, 9240 Zele, België -Belgique Tel. +32 (0)52.45.11.11 • Fax. +32 (0)52.45.09.93 • E-Mail: info@magnetrol.be
DEUTSCHLAND	Alte Ziegelei 2-4, D-51491 Overath Tel. +49 (0)2204 / 9536-0 • Fax. +49 (0)2204 / 9536-53 • E-Mail: vertrieb@magnetrol.de
INDIA	C-20 Community Centre, Janakpuri, New Delhi - 110 0058 Tel. +91 (11) 41661840 • Fax +91 (11) 41661843 • E-Mail: info@magnetrolindia.com
ITALIA	Via Arese 12, I-20159 Milano Tel. +39 02 607.22.98 (R.A.) • Fax. +39 02 668.66.52 • E-Mail: mit.gen@magnetrol.it
U.A.E.	DAFZA Office 5EA 722 • PO Box 293671 • Dubai Tel. +971-4-6091735 • Fax +971-4-6091736 • E-Mail: info@magnetrol.ae
UNITED KINGDOM	Unit 1 Regent Business Centre, Jubilee Road Burgess Hill West Sussex RH 15 9TL Tel. +44 (0)1444 871313 • Fax +44 (0)1444 871317 • E-Mail: sales@magnetrol.co.uk

www.magnetrol.com

**OUR NEAREST REPRESENTATIVE**