

RADAR LEVEL SENSOR



1052 DISPLAY

Type: **LM210**

- RANGE 0.5 ... 30 m
- ACCURACY ± 2 mm
- COLOUR LCD, HEAD TURNS 330°
- IP67 · STAINLESS STEEL 304



ORDER CODE

Code	Field	Meaning
FRKA	series	radar level sensor
A3 · V5	output signal	two switching outputs and 4 ... 20 mA · and 1 ... 5 V
G114M · G112M	process connection	G1-1/4" · G1-1/2 male thread
F25 · F50	process connection	DN 25 · DN 50 flange
500 ... 30000	measuring range	range in mm, in steps of 500 mm

Example: FRKA-A3-G114M-2000 — two switching outputs and 4 ... 20 mA, G1-1/4" thread, measuring range 2 000 mm. Other ranges on request.



OVERVIEW

A radar sensor measures without touching the medium and without a part that can silt up: the antenna under the process connection sends a narrow beam of 6° down onto the surface and reads the level from the echo, over a range of 0.5 to 30 m and to ± 2 mm. Because nothing dips into the vessel, viscous, sticky and abrasive media are no obstacle, and the same sensor works on liquids and on bulk solids. The all-metal housing carries a colour LCD that shows the level, the percentage of the range and the state of both switching outputs; the head turns through 330° , so the display faces the walkway whatever the thread does. Two switching outputs and one analogue output are configured over three keys — set point, reset point, window or hysteresis, delay, damping and the colours of the display.

MEASUREMENT	DEVICE AND MOUNTING
• Radar principle — no part reaches into the medium • Measuring range 500 ... 30 000 mm, blind zone 50 mm at the top • Accuracy ± 2 mm over the whole range • Liquids and bulk solids, viscous and fouling media included • Beam angle 6° — the wall distance follows from the height • Two switching outputs, PNP or NPN, normally open or closed • One analogue output, 0/4 ... 20 mA or 0/1 ... 5 V • Reverse-polarity, overload and short-circuit protection	• All-metal housing and probe of stainless steel 304, probe coated with PTFE • Process connection G1-1/4" or G1-1/2, DN 25 or DN 50 flange • Pressure resistance 10 bar, protection rating IP67 • Colour LCD with level, percentage of range and output state • The display head turns through 330° after mounting • Three keys and a two-level menu — no software, no adapter • Set point, reset point, delay and damping are set per output • M12 x 1 connector, supply 16 ... 28 V DC



TECHNICAL DATA

MEASUREMENT

Principle	radar, non-contact
Measuring range	500 ... 30 000 mm
Blind zone	50 mm at the top
Accuracy	± 2 mm
Beam angle	6°
Medium	liquids and bulk solids

PROCESS AND MATERIALS

Process connection	G1-1/4" · G1-1/2
Flange connection	DN 25 · DN 50
Pressure resistance	10 bar
Housing	stainless steel 304
Probe	stainless steel 304, PTFE
Protection rating	IP67

OUTPUT AND SUPPLY

Switching output	2 x PNP or NPN, NO or NC
Switching current	< 500 mA
Analogue output	0 ... 20 mA · 4 ... 20 mA, three-wire, load ≤ 500 Ω
Analogue output	0 ... 5 V · 1 ... 5 V, three-wire, load > 10 kΩ
Linearity, analogue	≤ ± 1.5 % of the range
Supply voltage	16 ... 28 V DC
No-load current	≤ 30 mA at 24 V DC
Protection	reverse polarity · overload · short circuit

DISPLAY AND ENVIRONMENT

Display	colour LCD
Shown	level · % of range · unit
Signal lamps	one per switching output
Head	turns through 330°
Operating temperature	-20 °C ... +80 °C
Medium temperature	-20 °C ... +80 °C
Storage temperature	-30 °C ... +80 °C
Connection	M12 x 1 connector

SETTING AND INSTALLATION

Menu, level 1	set and reset point of both switching outputs (SP1/RP1, SP2/RP2), lower and upper range limit (L-LRV, L-URV)
Menu, level 2	output mode window or hysteresis, normally open or closed · switching and reset delay per output · unit · PNP or NPN · damping · low-level cut-off · decimal places · display colours
Distance from the wall	60 mm at 1 m measuring distance · 110 mm at 2 m · 160 mm at 3 m · 270 mm at 5 m · 530 mm at 10 m; on a mirror-smooth metal wall half of that
Alignment	vertical to the surface; keep ladders, steps and the filling inlet out of the beam; on a conical vessel aim the beam at the bottom



ACCESSORIES

Connecting cable	M12 x 1, 5-pin, PUR or PVC, 2 · 5 · 10 m, straight or angled
Protective cover	shields the display head against sun and mechanical damage

Accessories are ordered by description; please state the sensor type with the enquiry.

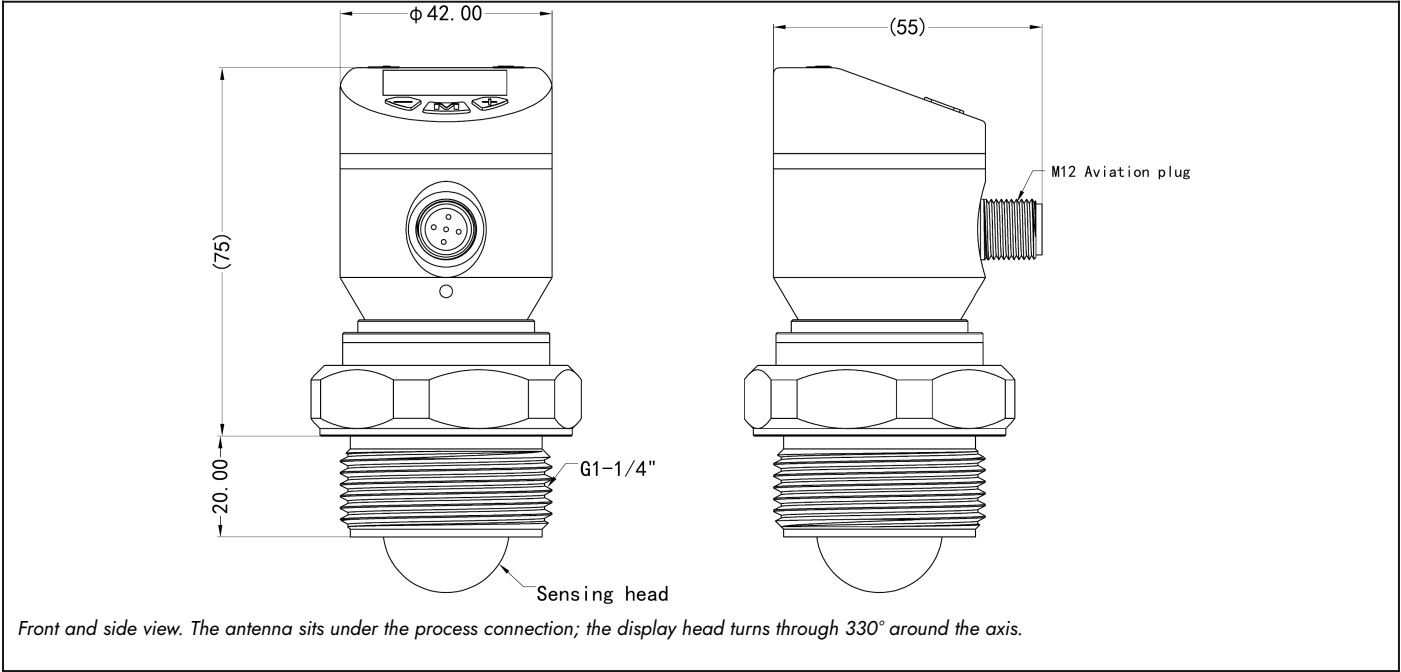
COMPLIANCE

 IP67	Protection rating	IP67 to IEC 60529
 Stainless Steel AISI 304 - 3.4301	Materials	housing and probe of stainless steel 304, probe with a PTFE outer layer
 M12	Electrical connection	M12 x 1, 5-pin, to IEC 61076-2-101

No approval beyond the protection rating is documented for this device.



DIMENSIONS (mm)



ELECTRICAL CONNECTIONS

BN	1	+
BK	4	OUT1
WH	2	OUT2
GY	5	OUT3
BU	3	GND -

M12 x 1, 5-pin. Pin 1 brown supply 16 ... 28 V DC (+), pin 3 blue supply (-), pin 4 black OUT1, pin 2 white OUT2, pin 5 grey OUT3, the analogue output.

