OPERATING INSTRUCTIONS

MECON
SAFETY CONTROL

MENKAR

Level indicator

Content

IMPRINT

1 SAFETY INSTRUCTIONS

1.1 Intended use

MENKAR series level indicators are suitable for continuous measurement and monitoring of the level of a liquid in open or closed containers as required.

The liquid level in the container to be monitored is transmitted by a float in a 1:1 ratio as an analogue value. The measurement is independent of the operating pressure. The instruments are noted for their robust construction, trouble-free usage and good readability, even from further away.

Various magnetically operated contact units for control and regulation processes (acoustic and optical signals, motor and valve controllers or similar) are available as accessories. Apart from requiring a certain minimum distance, the contacts can be fitted in any order and in any number.

The robust design means it can even be used in tough conditions. Various types of process connections and floats meet the diverse conditions found across industry.

Special features:

» Universal applications for almost all types of liquids
» Simple, robust construction with magnetic data transmission
» Strong, magnetic coupling system without any mechanical transmission elements
» Good readability, even from a distance
» Can also be supplied for use under high pressures and temperatures
» Number of contacts and arrangement of the contact is defined by the user; and only limited by the contact housing dimensions
» No hydraulic connection between indicator and medium
» Easy to install
» High measurement / displayed range. Also available in a split design above 5000 mm.
» Also available with a magnetic flapper display,

1.2 Certifications

CE marking  0035

By affixing the CE mark, the manufacturer certifies that the MENKAR level indicator, where applicable, complies with the legal requirements of the following EU directive:

» Pressure Equipment Directive 2014/68/EU
» The permitted media are Group 1 gases and liquids
» Class III (Classification under the condition PS.V <1000 (Article 4.1.1a)

1.3 Manufacturer's safety instructions

Disclaimer

The manufacturer is not liable for damages of any kind caused by the use of the instrument, including, but not limited to, direct, indirect, incidental, punitive and consequential damages.

A warranty applies to every product purchased from the manufacturer, according to the relevant product documentation and our valid terms and conditions.
The manufacturer reserves the right to revise the content of the documents, including this disclaimer, without notice, and is not liable in any way for any possible consequences of such changes.

Product liability and warranty

The responsibility for ensuring that the measuring instrument is suitable for the particular application rests solely with the operator. MECON GmbH assumes no liability for the consequences of misuse, modifications or repairs that were carried out by the customer without prior consultation.

In case of a complaint the disputed elements must be cleaned of any hazardous substances and be returned to the manufacturer, unless otherwise agreed.

General information

To prevent injury to the user or damage to the instrument, it is necessary that you read these operating instructions carefully before starting to use it.

This handbook is intended to cover the correct installation, operation and maintenance of the instrument. Special designs for special applications and custom models are not covered by this documentation.

2 INSTRUMENT DESCRIPTION

2.1 Scope of delivery

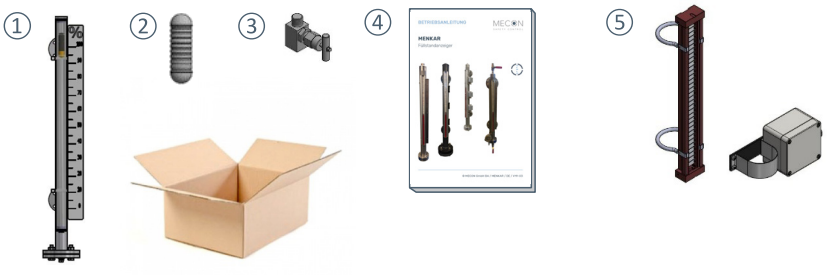
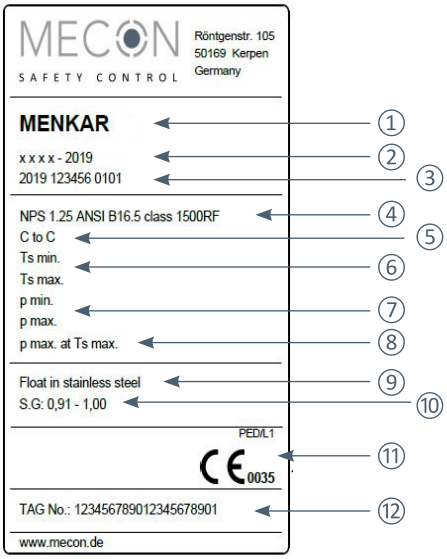


Fig. 1 Scope of delivery

① MENKAR with local indicator, cap and drain plug
② Float
③ Valve (vent/drain) - optional
④ Operating instructions
⑤ Optional: Magnetic flapper (mounted), contacts, reed chain

2.2 Nameplate



①	Type	Device name
②	Drawing No.	Drawing number
③	Serial No.	Serial number
④	Connection	Process connection
⑤	C to C	Nozzle distance (centre to centre)
⑥	Ts min. / max.	Temperature range (min./max.) of medium in °C
⑦	p min. / max.	Pressure (min / max)
⑧	p max. at Ts max.	Maximum permissible operating pressure at Ts max.
⑨	Material	Material used for the wetted parts
⑩	Specific density	Relative density
⑪	CE	CE marking, classification according to the Pressure Equipment Directive
⑫	TAG No.	TAG number

3 INSTALLATION AND PRINCIPLE OF OPERATION

3.1 Installation notes

Information!

All instruments are carefully checked for proper functionality before shipment.

Immediately on receipt, check the outer packing carefully for damage or signs of improper handling. Report any damage to the carrier and your local sales staff. In such cases, a description of the damage, the type and the serial number of the instrument should be given.

Unpack the instrument carefully to avoid damage.

Check the delivery for completeness on the basis of the delivery note and the match between the valve and the float.

Check the nameplate to ensure that the delivered level indicator meets with your order.

3.2 Installation conditions

The following points must be observed when installing the instrument.

- The MENKAR level indicator must be mounted vertically on the tank.
- It must be ensured that any magnetic fields generated by other instruments do not affect the measurements.
- Select screws and gaskets (to be provided by the customer) that meet the pressure specifications of the connection flange and the operating pressure.
- The process connections (flanges) must fit, i.e. they must be centred and parallel and properly bolted on to prevent any unnecessary mechanical stress being applied to the installation.
- The tank must be free of any contamination. The use of shut-off elements is recommended e.g. taps, valves, etc., installed between tank and level indicator, so that the level indicator can be cleaned independently of the tank. The drain plug (if ordered) in the bottom flange should also be replaced with a drain tap fitted with a drain pipe.

The following points should be noted when installing the instruments in the pipeline:

» Remove the transport lock from the valve.
» Before installation, check that the float in the valve can move freely without jamming.

3.3 Installation instructions

» The effective pressure of the installation (the maximum pressure allowed by the pressure relief valve) must never exceed the maximum allowable pressure PS indicated on the nameplate.
» The user must ensure that the materials (guide tube, floats, seals, etc.) that come into contact with the fluid are compatible with this fluid and meet the ageing characteristics of the fluid and the measurement environment. The appropriate information is either given in the manual or listed in the contract under own specifications.
» The external pressure (P_{ext}) must equal the atmospheric pressure (P_{atm}).

3.4 Principle of operation

The MENKAR level indicators operate with a system of communicating tubes or the float principle:

The medium enters from the tank through the lower connecting tube in the standpipe. The float located in the standpipe then floats in the liquid, its height (see Fig. 1) corresponding directly to the level in the tank.

Each movement of the float (when the level changes) is transmitted to the magnetic flappers by a magnet inserted in the float (rotation from white to red) - other colours on request - the red side indicating the level.

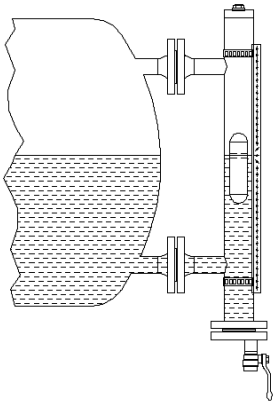


Fig. 1: Principle of operation

As an option, contact devices are available that are also actuated by the float.

The magnetic transmission system works without contact in all cases.

3.5 Display of the actual level

The float is equipped with a ring system made of permanent magnets in order to transmit the liquid level.

For design reasons, the minimum level in the measuring tube is indicated by the axis of the lower lateral connecting flange, i.e. the zero point forms the centre line of the lower connecting flange.

In the event of a major change in the product density specified in the order, or when installing another float, the scale on the MENKAR may need to be adjusted to ensure a correct reading.
In such a case, please contact MECON GmbH.

3.6 Available floats

All magnetic level indicators are equipped with a float. As standard, the float is supplied in stainless steel, but can also be ordered in titanium, Hastelloy, PVC-C, PVC-U, PP or PVDF. The float must have sufficient buoyancy, so the process conditions should be considered when making the selection.

The following information is required for choosing the right float:
» Medium
» Density
» Operating pressure
» Operating temperature

The lowest selectable density is 380 kg/m³, depending on the process conditions. In the case of aggressive liquids, the float can also be ordered with a lining. Examples include: E-CTFE, PFA and ETFE.

3.7 Change of process conditions

If the user wishes to use the MENKAR to measure another product, the following points should be considered:
» Contact MECON GmbH for information about the compatibility of instruments and products, especially if the instrument is to be used in hazardous areas.
» Where applicable, ensure that the requirements of the Pressure Equipment Directive 2014/68 / EU are adhered to.
» The immersion depth of the float increases with decreasing density of the product. This depth also depends on the model of float and the material used (stainless steel or titanium).

3.8 Configuration

MENKAR level indicators are manufactured in lengths of up to 5,000 mm, depending on the type, and with a split design for longer lengths in order to facilitate transport. The connection is made using flanges. The following points must be observed taking account of the particular operating data and local conditions:

- Type of fitting
- Type and design of instrument
- Length / measuring range
- Scale type (%, volume or height units): For scales in volume units, the user must provide an outflow table. The scale can also be retrofitted and installed by the user. For rectangular and cylindrical containers with flat or curved bases, in a horizontal or vertical position, the scale can be calculated at the factory in units of volume (at reimbursement of cost). For this, the geometric dimensions of the container must be specified.
- Gate valve: It is advisable to provide a gate valve in the connecting pipes, so that the level indicator can be cleaned, removed or re-installed.

Additional data:

- Type of medium (with density)
- Operating pressure and operating temperature
- Nominal diameter and design of the connection flanges
- Nominal width and design of front and blank flanges, if different from standard
- Sealing material.

4 START-UP

The operating instructions are to be read in their entirety before installation and commissioning. Installation and repair may only be carried out by suitable personnel!
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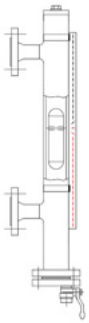
Great care has been taken in the development and preparation of this manual. Nevertheless, mistakes cannot be fully eliminated. The company and the author are not able to accept any legal or other liability for incorrect functionality or information and any consequences that may arise.

MECON GmbH offers no warranty, express or implied, as to its suitability for any purpose other than that described in this manual.

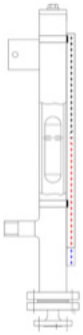
We reserve the right to change technical data as a result of technological progress. The latest information on this product can be found at www.mecon. You can also contact our sales department via e-mail at info@mecon.de.

5 TECHNICAL DATA

5.1 Max. pressure 16 bar, 150 lbs



MENKAR D

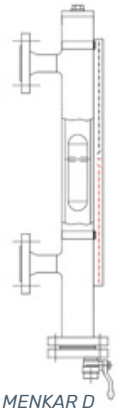


MENKAR L

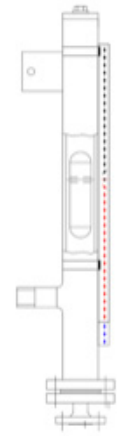
Type	D-16 / D 150 - L-16 / L-150
Material	Stainless steel 1.4404 (316L), stainless steel 1.4301 (304), PP, PVC, PVDF, PE, Monel, Titanium, Hastelloy, 6Mo
Pipe	60.3 x 2 mm or 60.3 x 2.77 mm
Pressure	Max. 16 bar / 150 lbs
Temperature	Max. +400 °C
Measuring length	Up to 5500 mm in 1 piece, longer in several parts
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C)
Process connection	DIN DN 15 – DN 32 / PN 16, B = 75 mm ANSI ½" – 1¼" 150# RF (RTJ), B = 85 mm Welding end / thread (external / internal thread), W = 70 mm DN 40 – DN 50 and ANSI 1.½" – 2" on 1" pipe, B = 130 mm
Drain	¼ ", ½" or ¾ "plug or valve BSP / NPT or flange Side entry as above Additional flange according to DIN or ANSI Without
Sealing material	PTFE, aramides, graphite, spirally wound
Upper side	¼ ", ½" or ¾ "plug or valve BSP / NPT or flange Flange DN 50 / PN 16 or ANSI 2 "150 # RF Flange DN 25 / PN 16 (like drain) Without
Float	Density min. 380 kg/m³
Path length	Density min. 920 kg/m³ A = 210 mm (*) Density min. 830 kg/m³ A = 245 mm (*) Density min. 720 kg/m³ A = 295 mm (*) Density min. 660 kg/m³ A = 350 mm (*)
Additional reinforcement	Spigot spacing C to C> 3 metres for offshore Spigot distance C to C> 4 metres for onshore
MENKAR	Stainless steel
Marking	Nameplate according to standard design in VA PED marking up to Category III standard
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test NACE MR 01.75 / ISO 15156 WPS / PQR standard material
Special	Insulation, steam jacket, spring, electric heater

(*) Special length (also shorter) available on request.

5.2 Max. pressure 40 bar, 300 lbs



MENKAR D

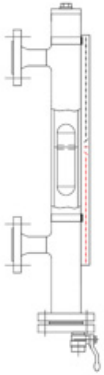


MENKAR L

Type	D-40 / D-300, L-40 / L-300
Material	Stainless steel 1.4404 (316L), stainless steel 1.4301 (304), PP, PVC, PVDF, PE, Monel, Titanium, Hastelloy, 6Mo
Pipe	60.3 x 2 mm or 60.3 x 2.77 mm
Pressure	40 bar / 300 lbs
Temperature	Max. +400 °C
Measuring length	Up to 5500 mm in 1 piece, longer in several parts
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C) Aluminium with stainless steel VA4 flaps Completely stainless steel VA4
Process connection	DIN DN 15 – DN 32 / PN 40, B = 75 mm ANSI ½" – 1¼" 300# RF (RTJ), B = 85 mm Welding end / thread (external / internal thread), W = 70 mm DN 40 – DN 50 and ANSI 1.½" – 2" on 1" pipe, B = 130 mm
Drain	¼ ", ½" or ¾ "plug or valve BSP / NPT or flange Side entry as above Additional flange according to DIN or ANSI Without
Sealing material	PTFE, aramides, graphite, spirally wound
Upper side	¼ ", ½" or ¾ "plug or valve BSP / NPT or flange Side entry as above Additional flange according to DIN or ANSI Without
Float	Density min. 390 kg/m³
Path length	Density min. 920 kg/m³ A = 210 mm (*) Density min. 830 kg/m³ A = 245 mm (*) Density min. 720 kg/m³ A = 295 mm (*) Density min. 660 kg/m³ A = 350 mm (*)
Additional reinforcement	Spigot spacing C to C> 3 metres for offshore Spigot distance C to C> 4 metres for onshore
MENKAR	Stainless steel
Marking	Nameplate according to standard design in VA PED marking up to Category III standard
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test NACE MR 01.75 / ISO 15156 WPS / PQR standard material
Special	Insulation, steam jacket, spring, electric heater

(*) Special length (also shorter) available on request.

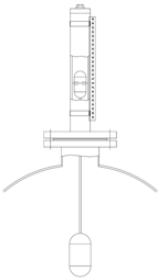
5.3 Max. pressure 250 bar, 1500 lbs



MENKAR D

Type	D-64 / D-100 / D-160 / D-600 / D-900 / D-1500 / D-2500
Material	Stainless steel 1.4404 (316L) / 1.4571 (316Ti)
Pipe	60.3 x 2.77 mm / 60.3 x 3.91 mm
Pressure	Max. 250 bar
Temperature	Max. +450 °C
Measuring length	Up to 5500 mm in 1 piece, longer in several parts
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C) With stainless steel VA4 flaps Completely stainless steel VA4
Process connection	DIN DN 15 – DN 32 / PN 64 – PN 160, B = 80 mm ANSI ½" – 1¼" 600# – 2500# RF – RTJ, B = 85 mm Welding end / thread (external / internal thread), W = 75 mm DN 40 – DN 50 and ANSI 1.½" – 2" on 1" pipe, W = 130 mm
Drain	¼", ½" or ¾" plugs BSP or NPT ¼ ", ½" or ¾ "valve Additional flange according to DIN or ANSI Without
Sealing material	PTFE, aramides, graphite, spirally wound
Upper flange (possibly ventilation)	¼ ", ½" or ¾ "plug or valve BSP / NPT or flange ¼ ", ½" or ¾ "valve Additional flange according to DIN or ANSI Without
Float	Density min. 610 kg/m³
Path length	A = depending on pressure and temperature
Additional reinforcement	Spigot spacing C to C> 3 metres for offshore Spigot distance C to C> 4 metres for onshore
MENKAR	High & low in stainless steel
Marking	Nameplate according to standard design in VA PED marking up to Category III standard
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test NACE MR 01.75 / ISO 15156 WPS / PQR standard material
Special	Insulation, spring, electric heater

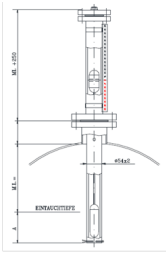
5.4 Without surge pipe (surface tank mounting)



MENKAR F00

Type	F-00A / F-00B
Material	Stainless steel 1.4404 (316L), others on request
Pipe	60.3 x 2 mm (upper tank)
Surge pipe	without
Pressure	Max. 60 bar (depending on type)
Temperature	Max. +350 °C
Measuring length	Max. 5500 mm
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C) Aluminium with stainless steel VA4 flaps Completely stainless steel VA4
Process connection	DIN DN 50 – DN 150 / PN 40, B ANSI 2" – 6" 150# RF ANSI 2" – 6" 300# RF ANSI 2" – 6" 600# RF
Upper side	¼ ", ½" or ¾ "plug or valve BSP / NPT, flange
Float F-00A	Float OD 52 mm Density min. 480 kg/m³ Density depending on the measuring length With a measuring length of 1 m for standard floats: From density 1210 kg/m³ A = 115 mm From density 1030 kg/m³ A = 185 mm From density 810 kg/m³ A = 205 mm From density 670 kg/m³ A = 255 mm
Float F-00B	Float OD 67 or 72 mm Density min. 380 kg/m³ Density depending on the measuring length For a measuring length of 1 m for standard floats (OD 72 mm): From density 970 kg/m³ A = 100 mm From density 690 kg/m³ A = 150 mm From density 570 kg/m³ A = 200 mm From density 500 kg/m³ A = 250 mm
MENKAR	Stainless steel
Marking	Nameplate according to standard design in VA
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test BV certificate NACE MR 01.75 / ISO 15156 WPS / PQR standard material

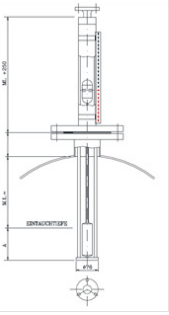
5.5 With surge pipe Ø 54 or 60.3 (surface tank mounting)



MENKAR F-01A

Type	F-01 / F-01A
Material	Stainless steel 1.4404 (316L), others on request
Pipe	60.3 x 2 mm (upper tank)
Surge pipe	Pipes 54 or 60.3
Pressure	Max. 60 bar (depending on type)
Temperature	Max. +350 °C
Measuring length	Max. 5500 mm
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C) Aluminium with stainless steel VA4 flaps Completely stainless steel VA4
Process connection	DIN DN 50 – DN 150 / PN 40, B ANSI 2" – 6" 150# RF ANSI 2" – 6" 300# RF ANSI 2" – 6" 600# RF
Upper side	¼ ", ½" or ¾ "plug or valve BSP / NPT, flange
Float F-01	Surge pipe OD 60.3, float OD 52 Density min. 480 kg/m³ Density depends on the measuring length. With a measuring length of 1 m for standard floats: From density 1160 kg/m³ A = 150 mm From density 1030 kg/m³ A = 185 mm From density 810 kg/m³ A = 205 mm From density 670 kg/m³ A = 255 mm
Float F-01A	Surge pipe OD 54, float OD 47 Density min. 600 kg/m³ Density depending on the measuring length With a measuring length of 1 m for standard floats: From density 1050 kg/m³ A = 150 mm From density 910 kg/m³ A = 200 mm From density 800 kg/m³ A = 250 mm From density 730 kg/m³ A = 300 mm
MENKAR	Stainless steel
Marking	Nameplate according to standard design in VA
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test BV certificate NACE MR 01.75 / ISO 15156 WPS / PQR standard material

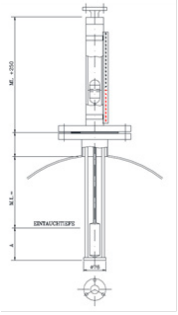
5.6 With 3 guide rods Ø 76 or Ø 104 (surface tank mounting)



MENKAR F-02

Type	F-02 / F-04
Material	Stainless steel 1.4404 (316L), others on request
Pipe	60.3 x 2 mm (upper tank)
Surge pipe	3 guide rods Ø 76 or Ø 104
Pressure	Max. 60 bar (depending on type)
Temperature	Max. +350 °C
Measuring length	Max. 5500 mm
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C) Aluminium with stainless steel VA4 flaps Completely stainless steel VA4
Process connection	DIN DN 50 – DN 150 / PN 40, B ANSI 2" – 6" 150# RF ANSI 2" – 6" 300# RF ANSI 2" – 6" 600# RF
Upper side	¼ ", ½" or ¾ "plug or valve BSP / NPT, flange
Float F-02	3 guide rods Ø 76, float OD 52 mm Density min. 480 kg/m³ Density depending on the measuring length With a measuring length of 1 m for standard floats: From density 1160 kg/m³ A = 150 mm From density 1030 kg/m³ A = 185 mm From density 810 kg/m³ A = 205 mm From density 670 kg/m³ A = 255 mm
Float F-04	3 guide rods Ø 104, float OD 72 mm Density min. 380 kg/m³ Density depending on the measuring length With a measuring length of 1 m for standard floats: From density 970 kg/m³ A = 100 mm From density 690 kg/m³ A = 150 mm From density 570 kg/m³ A = 200 mm From density 500 kg/m³ A = 250 mm
MENKAR	Stainless steel
Marking	Nameplate according to standard design in VA
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test BV certificate NACE MR 01.75 / ISO 15156 WPS / PQR standard material

5.7 With surge pipe Ø 76.1 or 88.9 (surface tank mounting)



MENKAR F-03

Type	F-03A / F-03B
Material	Stainless steel 1.4404 (316L), others on request
Pipe	60.3 x 2 mm (upper tank)
Surge pipe	Pipes 76.1 or 88.9
Pressure	Max. 20 bar (depending on type)
Temperature	Max. +350 °C
Measuring length	Max. 5500 mm
Indicator rail	Polycarbonate (max temp. +105 °C, temporary +120 °C) Aluminium with stainless steel VA4 flaps Completely stainless steel VA4
Process connection	DIN DN 50 – DN 150 / PN 40, B ANSI 2" – 6" 150# RF ANSI 2" – 6" 300# RF ANSI 2" – 6" 600# RF
Upper side	¼ ", ½" or ¾ "plug or valve BSP / NPT, flange
Float F-03A	Pipe 76.1, float OD 67 Density min. 470 kg/m³ Density depending on the measuring length With a measuring length of 1 m for standard floats: From density 1050 kg/m³ A = 100 mm From density 760 kg/m³ A = 150 mm From density 630 kg/m³ A = 200 mm From density 560 kg/m³ A = 250 mm
Float F-03B	Pipe 88.9, float OD 72 Density min. 380 kg/m³ Density depending on the measuring length With a measuring length of 1 m for standard floats: From density 970 kg/m³ A = 100 mm From density 690 kg/m³ A = 150 mm From density 570 kg/m³ A = 200 mm From density 500 kg/m³ A = 250 mm
MENKAR	Stainless steel
Marking	Nameplate according to standard design in VA
Certifications	Material certificate EN 10204 3.1 + drawing Pressure test BV certificate NACE MR 01.75 / ISO 15156 WPS / PQR standard material

6 Contactors

You will receive electrical signals by mounting one or more magnetic switches on the level indicator. With several switches you can, for example, output a pump control command (pump on / off) and / or an alarm (high / low). Level switches for general use as well as switches for hazardous areas can be supplied.

Important!

The power supply must be switched off before wiring the instrument.

The density of the liquid can change due to changing pressure / temperature. In this case, the float can indicate a different level. In the case of intrinsically safe systems, it may be necessary to provide electrical galvanic isolation.

The process temperature of the switches may depend on the isolation options of the level indicator.

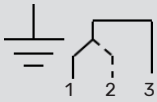
Operating manual:
1. Mount the switch in the correct position.
2. Move the float from the bottom to the top and back.
3. Check the function of the switch.
4. If necessary, change the connections of the switch if another function is required.
5. Connect the switch to the mains.
The integrated cables must be protected against pulling, twisting and mechanical damage.

Overvoltage protection for reed switch:

Capacitive loads (in the case of extremely long cable guides) and lamp loads may cause high starting currents, which can greatly reduce the life of the switch contacts when closing. It is recommended that an overvoltage protection circuit is used in series with the switch and as close as possible to the switch.

For normal signal circuits, the capacity in the cable can be neglected because several hundred metres of cable must be connected to the switch to cause damage.

6.1 General use level switch

Type	HLS-15	LMS-Ha2	LMS-Ha1
Function	SPDT	SPDT	SPDT
System	Reed switch bi-stable	Reed switch bi-stable	Reed switch bi-stable
Max. rated	2.5 A / 60 W / 60 VA	0.8 A / 60 W / 40 VA	2 A / 40 W / 100 VA
Supply voltage	10 - 230V	10 - 230V	10 - 230V
Temperature range	-25… +95 °C	-40… +180 °C	-50… +380 °C
Lifetime	1 x 10^9	1 x 10^8	1 x 10^7
Housing protection	IP66 / 67 and IP68	IP 65	IP 67
Connection	5 metres of PVC cable	M16 cable gland.	M16 cable gland.
Dimensions	65 x 25 x 15 mm	100 x 75 x 40 mm	95 x 65 x 54 mm
Material	Resin	Aluminium housing	AlSi housing
Circuit	black brown blue 		
Options	Temperature up to +130 °C		Temperature up to +130 °C
			

6.2 Intrinsically safe level switches (Ex i)

Type	HLS-25i	LMS-Ha1E
Function	SPDT	SPDT
System	Reed switch bi-stable	Micro switch
Max. rated	250 mA / 1.3 W / 1.3 VA	0.5 A / 20 W / 30 VA
Supply voltage	10 - 30 V	10 - 24 V
Temperature range	-25… +100 °C	-50… +380 °C
Lifetime	1 x 10^9	1 x 10^7
Housing protection	IP66 / 67 and IP68	IP 67
Connection	5 metres of PVC cable	M20 cable gland. (blue)
Dimensions	80 x 25 x 20 mm	95 x 65 x 54 mm
Material	Stainless steel VA4 housing	AlSi housing
Circuit	black brown blue 	
Options		M16 cable gland. (blue)
Approval	II 1 GD Exia IIC T6 Ga II 1 GD Exia IIC T85°C IP 66/67 Da	Ex i "Simple resource"
		

6.3 Pressure-safe level switches

Type	HLS-25d	LMS-HaD
Function	SPDT	SPDT
System	Reed switch bi-stable	Micro switch
Max. rated	2.5 A / 60 W / 45 VA	2 A / 40 W / 100 VA
Supply voltage	10 - 230 V	10 - 230 V
Temperature range	-25… +100 °C	-40… +380 °C
Lifetime	1 x 10^9	1 x 10^7
Housing protection	IP66 / 67 and IP68	IP66 / 67 and IP68
Connection	5 metres of PVC cable	¾ "NPT or M20 x 1.5 max 1.5 mm^2
Dimensions	90 x 25 x 20 mm	130 x 130 x 90 mm
Material	Stainless steel VA4 housing	Aluminium housing
Circuit	black brown blue 	 1 = brown, 2 = blue, 3 = black
Options		Stainless steel VA4 housing 2 x SPDT
Approval	II 2 GD Exd IIC T6 Gb II 2 GD Ex tb IIIC T85 °C Db	II 2G Ex d IIC T3..T4 Gb II 2D Ex tb IIIC T135 °C..T200 °C Db
		

6.4 Reed chain for continuous display

It is possible to generate a 4-20 mA signal by using a reed chain. The reed chain is mounted as standard on the entire length of the indicator.

Important!

If necessary, mount the reed chain on the level indicator. The 4 mA setting (0%) is marked on the reed chain and should correspond to the lowest point of the lower process connection.
Supply 12 - 30 VDC

Only + and - terminals should be used for the wiring. The other terminals (3, 4, 5 and 6) can only be used for the factory.

Type	Standard	Ex i	Ex d
Transmitter	"SMART" type	"SMART" type	"SMART" type
Approval		II 1G Ex ia IIC T4..T6	II 2G Ex db IIC T5..T1 Gb II 2D Ex tb T100 °C..T350°C
Supply voltage	8 – 35 VDC	8 – 30 VDC	8 – 30 VDC
Temperature range	-50… +350 °C	-50… +350 °C	-50… +350 °C
Measuring accuracy	± 5 mm	± 5 mm	± 5 mm
Pipe material	Stainless steel 1.4404 (316)	Stainless steel 1.4404 (316)	Stainless steel 1.4404 (316)
Max. measuring length	5.5 metres	5.5 metres	5.5 metres
Housing material	ABS or aluminium	Aluminium or VA	Aluminium or stainless steel SS316
Type of protection	IP 67	IP 67	IP 66 – IP 68
Connection	M16 x 1,5	M20 x 1,5	¾ "NPT, M20 x 1.5
Signal range	4 - 20 mA / 2 conductors	4 - 20 mA / 2 conductors	4 - 20 mA / 2 conductors
Options	Higher accuracy (± 2.5 or ± 1 mm)		
	M16 x 1.5, M20 x 1.5; ½ "NPT; ¾ "NPT connection		
	HARD		
	IP 68 housing		
	PROFIBUS		
	FIELDBUS		
	Stainless steel VA4 housing		
	Housing with LCD display (also with optical buttons)		
	Signal range (ohm or V) output		
			

7 SERVICE

7.1 Storage

Store the instrument in a dry and dust-free place. Keep away from direct continuous sun and heat. Avoid external loads being placed on the instrument.

The permissible storage temperatures for standard instruments with electrical components are -40 °C to +70 °C.

7.2 Maintenance

Attention!

Appropriate safety precautions must be taken when removing the instrument from the pipeline. As a rule, new seals must be used when they are being reinstalled in the pipeline!

7.3 Returning the instrument to the manufacturer

Due to careful manufacturing processes and final checks on the instrument, the MENKAR is expected to operate without any trouble where both installation and operation are carried out in accordance with these instructions

Should you nevertheless need to return a instrument to MECON GmbH please observe the following points:

Attention!

In order to protect the environment and safeguard the health and safety of our personnel, all instruments sent to MECON GmbH for repair must be free of toxic and hazardous substances. This also applies to cavities in these instruments. If necessary, the customer is kindly requested to neutralise or rinse these instruments before returning them to MECON GmbH.
The customer must confirm this by filling in an appropriate form which is available for download on the MECON website.

» ***https://www.mecon.de/en/device-returns/***

Attention!

If, in spite of these requirements, instruments are returned that contain toxic and dangerous substances, MECON GmbH is entitled to dispose of these substances at the expense of the customer without making any further enquiries.

7.4 Disposal

Attention!

Comply with the regulations in your country when disposing of instruments

8 FAULT REPORTING

Fault description	Possible cause of fault and rectification
Magnetic indicator does not react	Impurities blocking the float: Cleaning and checking if the float is intact.
	Float defective: The float must be replaced.
No electrical signal	Check electrical connections according to wiring diagram.

MECON
SAFETY CONTROL

MECON GmbH
Röntgenstr. 105
50169 Kerpen
Germany

Tel.: +49 (0) 2237 600 06 - 0
Fax: +49 (0) 2237 600 06 - 40
E-mail: info@mecon.de

Web: www.mecon.de