CAPTRON

液位传感器

Level measurement

公司发展历程

DEVELOPMENT OF THE COMPANY

CAPTRON代表着传感器领域中高品质，有创造性的产品。公司的研发及生产重点是各种电容式传感器，产品主要应用于工业控制自动化，公共交通运输以及楼宇技术等领域。

CAPTRON stands for high-quality, innovative sensor technology products. The focus of development and production is on capacitive sensors for use primarily in automation and traffic engineering.

除大量生产的标准产品外，CAPTRON公司同时还是为客户提供订制传感器的专业供应商。

Beyond the standard programme, CAPTRON is a specialist for individual customer and application solutions.

CAPTRON公司于1983年由Reinhard Bellm先生在德国慕尼黑创立。在公司创建初期，公司的主营业务集中在电容式液位传感器。1992年，光电传感器成为CAPTRON公司生产销售的产品之一。在1994年，全新研发的触摸式感应开关SENSOR*switch*开始在工业控制自动化，公共交通运输及楼宇技术等领域投入使用，并从此成为CAPTRON公司最主要的产品之一。

CAPTRON Elektronic GmbH was founded by Reinhard Bellm in Munich in 1983. Initially, the company focused on capacitive level measurement. Since 1992, optical sensors have been added to the product portfolio. In 1994, capacitive SENSORswitches for industry and traffic engineering were added - one of the main business fields of CAPTRON since then.

30多年的专业积淀，使CAPTRON成为电容式液位传感器领域最知名的制造商和最具创造力的引领者。CAPTRON的所有产品均可根据客户的实际需求量身定制，并同时确保产品一贯的高品质和可靠性的要求。

More than 30 years of experience make CAPTRON one of the most renowned manufacturers and innovative leaders in the field of capacitive level measurement. CAPTRON produces all probes according to the single order and customer-specific requirements whilst ensuring outstanding quality and reliability.

Quality Management ISO 9001:2008

MADE IN BAVARIA

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电容式液位传感器的测量原理和选择标准

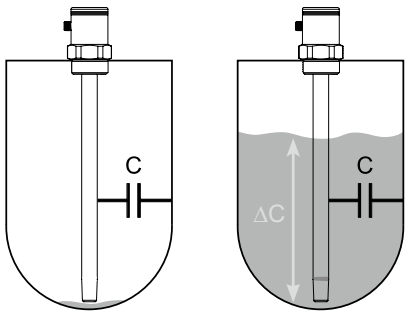
PRINCIPLE OF CAPACITIVE MEASUREMENT AND SELECTION CRITERIA

测量原理

我公司的电容式液位传感器的测量原理是基于容器内电容的变化，在这种情况下，液位传感器的探测棒与容器壁形成正负两极，容器内的液体（或固体）充当电介质。容器内液位的变化引起电容的变化，一个空的容器内电容较低，而一个装满液体的容器内电容就较高。

Measuring principle

The functional principle of our capacitive level measurement is based on a changing condensator capacity. In this case, the probe rod and the tank wall form the two electrodes; the medium functions as dielectric medium. A level change causes a change in capacity. An empty tank has a low capacity; a filled tank has a high one.



选择标准

容器材质：

如果是金属材质的容器，选择单探测棒的液位传感器即可。

如果是塑料材质的容器，单探测棒或者双探测棒的液位传感器均可供选择。

液体（或固体）介质：

油性介质只需介电常量高于1.8的液体均可以测量，水性介质如果介电常量较高（高于80）的话，测量精度则与探测棒的绝对长度有关。

温度和压力：

一体式的液位传感器中与探测棒紧密连接在一起的放大器可在0-70°C环境下正常工作，而通过导线外接放大器的分离式液位传感器，其探测棒可承受的最大工作温度可达230°C，同时容器中的最大压强不能超过10bar。

防护等级与连接器件：

所有的产品均具有高达IP67的防护等级。依据不同的设计，我们的产品可使用M8连接器、M12连接器或固定连接导线的方式来传输信号。

Selection criteria

Tank material:

In metal tanks, one-rod probes are used.

In plastic tanks either the double-rod probe or the one-rod probe is used.

Media:

Oily media with a DK value higher than 1.8 can be detected without any problems. In the case of watery media with a high DK value (>80), measurement accuracy is related to the absolute rod length.*

Temperature and pressure:

The temperature range of the medium of the compact probe (CAPselect) is 0...+70 °C. The probe can be used with a maximum temperature of 230 °C if provided with an external amplifier. However, the maximum tank pressure of 10 bar must not be exceeded.

Protection class and device connection:

The different versions are available with a protection class up to IP67. Depending on the design, the device is connected using a M8 connector, a M12 connector or a fixed cable.

行业应用案例

为便于理解本目录，我们将产品根据不同工业领域的应用做了分类。
不同的领域对产品和材质有着不同的要求。
而我们独特的探测系统兼顾了这些不同的要求，从而使其在不同领域均可得到广泛应用。
在后面章节中，不同型号的产品所能应用的领域都会标注有如下相应的图案。

工程机械 化工行业 双组分系统

水 / 废水 制药工业 食品饮料行业

化工行业：

- 在注料设备中既可以对存料设备进行监测，也可以对注入产品的液位进行监控
- 防腐材料设计
- 符合WHG（德国水系统管理法）第19条规定，从而保证过程自动化的绝对安全

水及废水：

- 通过液位传感器以及泄漏检测器对液体进行监测
- 通过探测棒对关键程序进行安全监测，符合WHG（德国水系统管理法）第19条规定

食品及制药：

- 防腐材料设计
- 使用高质量的不锈钢（V4A）、特氟龙（PTFE）及PEEK等材料保证生产安全
- 不断适应通用标准及法规

工程机械：

- 多款电容式感应器可应用于存料设备监测
- 有特殊的传感器可应用于液压油位监测
- 可应用于安全监测中的泄露检测器

双组分系统：

- 逾30年的双组分系统领域应用经验
- 可根据不同行业制定相应解决方案
- 可用于监测介质中的空气及气泡

Application in branche-groups

To allow easy use of this catalogue, we have classified our products with regard to different industry sectors.
Each sector makes special demands on the products and the materials used.
Our individually combinable probe systems take account of these demands - that is what makes them so outstanding.
In each chapter, the relative fields of application of the probes are indicated by the corresponding symbol.

Mechanical engineering *Chemical industry* *Two-component system*

Water / waste water *Pharmaceutical industry* *Beverage and food industry*

Chemical industry:

- *Both tank and continuous level monitoring in dosing-filling machines*
- *Corrosion resistant material*
- *Process safety ensured by probes approved according to WHG §19 (German Water Management Act)*

Water and waste water:

- *Liquid monitoring by means of capacitive level monitoring and leakage probes*
- *Safe monitoring of critical processes ensured by probes approved according to WHG §19 (German Water Management Act)*

Food + pharmaceutical industry

- *Corrosion-resistant material*
- *Product safety owing to the high-quality materials V4A, PTFE and PEEK*
- *Continuous adaption of common standards and regulations*

Mechanical engineering:

- *Numerous capacitive sensors for use in the field of tank monitoring*
- *Special sensors for hydraulic oil level monitoring*
- *Leakage sensors for safety monitoring*

Two-component systems:

- *Almost 30 years of experience in the two-component system sector*
- *Sector-specific individual solutions*
- *Air bubble detector for monitoring gas and air pockets in the medium*

液位传感器选型指南

07

CAPSELECT

CAPSELCT – 根据需求定制您的产品

CAPSELECT - MEETS YOUR REQUIREMENTS

通过CAPselect（液位传感器选型指南），您可以更快捷地找到适合您应用的产品。根据应用的不同需求以及料筒的不同构造，这个选型指南可以帮助您选择到切合使用需求，甚至是检测长度精确到毫米的产品。按照放大器是否集成，您有两种不同的选择：一种我们称之为一体式液位传感器，其探测棒以及放大器集成为一个整体，另一种我们称之为分离式液位传感器，其探测棒和放大器通过导线连接，可以将它们分别置于不同的位置，这种结构非常适合有高温需求的应用。

首先我们要向您介绍液位传感器的不同组成部分以及其不同的特性和功能。根据这些不同组成部分的特征信息并结合第20页的表格内容，您基本就可以定义出所需的液位传感器并判断其可行性。这样一来，通过CAPselect（液位传感器选型指南）来对液位传感器进行选型，不仅节省了时间，而且提高了的效率。如果您仍然对于选型或是相关问题存在疑问，请您随时与我们联系，我们将竭诚为您服务。

The CAPselect system for level measurement probes made by CAPTRON is the right choice for your individual probe. Depending on application and tank type, this system allows you to create the probe you require - up to the probe length adjusted to the nearest millimetre. You may choose between two systems: compact probes in which electronics and the probe form a unit and probes with external amplifiers that are suitable for high-temperature applications.

We would first like to give you an overview of the different components, their special features and specific functions. According to this information and by means of the combination table on page 20, you may create your own probe and verify whether the desired design can be realised. Further customer-specific variations are possible upon request. This saves you time and effort. If you do not find an answer to your question, our competent staff will be pleased to assist you.

STRUCTURE AND FUNCTIONALITY OF CAPSELECT

关于液位传感器的选型，请参阅以下页面中的内容，您可以根据需求从多种电路模式、连接部件尺寸、探测棒类型、探测棒长度等多方面进行选择，找出您需要的组合。除此之外，为了满足有特殊需求的客户，产品还可以增加多种可选功能。例如集成高亮度LED观察灯的LightCAP、集成PT100温度检测功能的液位传感器、增加抗压或提高卫生标准的设计等。传感器每一个部件的选择多样化使得您定能找到一款符合需求的液位传感器。

Take a look at the following pages and choose from the numerous possible combinations with regard to electronics, process connection, rod type and rod length. You may also select additional options such as LightCAP, integrated temperature sensor PT100, higher compressive strength or hygienic design. The free selection of single components allows you to create a probe that exactly meets your requirements.

放大器
Amplifier

连接件
Process connection

探测棒
Probe rod

一体式液位传感器
Compact probe

可适用于不同型号的放大器
Amplifier available in different versions.

多种材质及长度的探测棒
Probe rods made of different materials and with freely selectable rod length.

多种材质和尺寸的螺纹类型
Thread type in different materials and sizes.

分离式液位传感器
Probe with external amplifier

可适用于不同型号的分离式放大器
External amplifier available in different versions.

多种材质及长度的探测棒
Probe rods made of different materials and with freely selectable rod length.

多种材质和尺寸的螺纹类型
Thread type in different materials and sizes.

液位传感器放大器

THE SENSOR AMPLIFIER

为保证产品在不同液体（或固体）介质中均能够达到尽可能高的测量精确度，在一个电子单元中，CAPTRON的产品会使用高达8个不同的放大器等级。产品在每次使用前的校准过程中，都会针对不同的待测介质自动选择一个合适的放大器等级。

放大器上直观的操作部件使探测棒只需要通过三个简单的感应按键就可以快速的校准，同时在操作界面还集成有明亮的LED灯，以便能够在相当的距离范围都可以观察到实时的液位。除此之外，放大器表面非线性的百分比指示标识，也使得液位在接近最大或最小两端数值时能够做到更精准的显示。客户在使用时也可根据实际需求选择模拟量输出和开关量输出，开关量的报警位置也会由相应LED作出显示。目前根据输出形式不同有三种不同的放大器型号可供选择，电路连接部分也根据不同型号拥有4针或者8针的M12连接口。铝制的放大器外壳均进行了氧化处理，同时，我们还可以提供不锈钢材质的外壳以满足高卫生标准行业（例如食品和医药行业）的要求。

To guarantee the highest possible accuracy of the electronic unit for a possibly high number of media, CAPTRON uses a total of eight amplifier levels in one electronic unit. During a very simple calibration process, it autonomously chooses the ideal amplifier level.
The intuitive operating unit allows fast probe calibration with the help of three SENSORswitches only. A bright LED bar indicator was integrated in the operating element so that the level can even be read from a great distance. In addition, the bar indicator is not linear to allow a higher indication accuracy near the limit values. The user can also choose between different analogue and switching outputs. The switching points are represented optically. At the moment, three different versions are available that differ with respect to the output type. The electronics is provided with a robust M12 connector with 4 or 8 pins depending on the version. The housing is made of anodised aluminium or stainless steel (V4A) with slanted head in hygienic design.

放大器特性

液位传感器的放大器部分通过连接件与探测棒牢固地连为一体，安装后，放大器通过拧下侧面螺丝可以旋转350°来调节连接器的位置。除此之外，放大器的不锈钢版本可以满足高标准的卫生要求。

Properties of the probe amplifier

The probe amplifier is firmly connected to the rod probe via a process connection. After installation, the probe amplifier can be moved to the desired position up to 350° by unscrewing the fixing screw. It is also available in hygienic version (V4A).

分离式放大器的特殊功能

分离式放大器通过一根防尘耐高温的PTFE（特氟龙）导线与探测棒相连接，也正因为探测棒与放大器空间上的分离，这类液位传感器的探测棒可承受的最高工作温度可达到230°。放大器部分可以通过一个法兰固定安装在其他平滑的表面上，或者根据需求，放大器可以通过适配器安装在符合DIN标准的导轨上。

Special features of the external amplifier

The external amplifier is connected to the rod probe via a shielded, temperature resistant teflon cable. Due to the spatial separation of the rod probe and the amplifier, these probes are suitable for temperatures up to 230°C. They can be mounted on a planar surface using the fastening flange. Optionally, an adapter for DIN rail mounting is available.

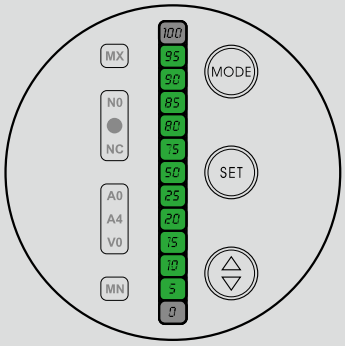
Schutzdeckel bei WHG gekennzeichneten Sonden im Lieferumfang enthalten

Protection cap included with delivery for WHG characterized probes

带一个开关量和一个模拟量输出的放大器型号（VA-214）

Probe amplifier with one switching output and one analogue output VA-214

WHG§19 konform



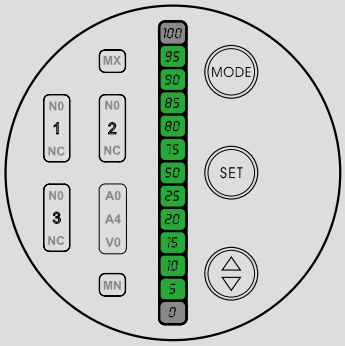
- 可自由设置一个开关量开关点（PNP-NO常开/PNP-NC常闭）
- 模拟值输出可在三种形式中选择：0...20mA，4...20mA或0...10V
- 实时液位在放大器中可通过LED百分比指示灯反映出来

- *One selectable switching point PNP-NO/PNP-NC that can be freely placed on the probe rod*
- *One analogue value can be output in three different versions: 0...20 mA, 4...20 mA or 0...10 V*
- *Optical level representation by means of LED bar indicator*

带三个开关量和一个模拟量输出的放大器型号（VA-234）

Probe amplifier with three switching outputs and one analogue output VA-234

WHG§19 konform



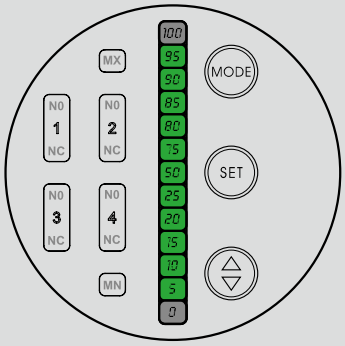
- 可自由设置三个开关量开关点（PNP-NO常开/PNP-NC常闭）
- 模拟值输出可在三种形式中选择：0...20mA，4...20mA或0...10V
- 实时液位在放大器中可通过LED百分比指示灯反映出来

- *Three selectable switching points PNP-NO/PNP-NC that can be freely placed on the probe rod*
- *One analogue value can be output in three different versions: 0...20 mA, 4...20 mA or 0...10 V*
- *Optical level representation by means of LED bar indicator*

带四个开关量输出的放大器型号（VA-244）

Probe amplifier with four switching outputs VA-244

WHG§19 konform



- 可自由设置四个开关量开关点（PNP-NO常开/PNP-NC常闭）
- 实时液位在放大器中可通过LED百分比指示灯反映出来

- *Four selectable switching points PNP-NO/PNP-NC that can be freely placed on the probe rod*
- *Optical level representation by means of LED bar indicator*

连接件

THE PROCESS CONNECTION

基于产品本身精致紧凑的设计，CAPTRON液位传感器可以便捷地安装在容器上，而实现这一安装需求，您只需一把AF55的扳手即可。

连接件的可选材料也有多种：不锈钢（V4A）、PTFE、PEEK等材料的多种选择使得CAPTRON液位传感器基本可以适用于任何应用环境。除此之外，通过一个M8接口集成的PT100温度传感器、高亮度的LED观察灯都可以作为附加选择，集成到液位传感器产品之中。根据不同的需求，您还可选择圆环形或锥形法兰。

Owing to its compact design, the process connection can be easily integrated in a tank. For mounting, only a AF 55 wrench is required.
Numerous possible process connections make installation even easier. Stainless steel (V4A), teflon or PEEK process connection are available so that the probes may be used for any kind of application. A M8 connector for an integrated PT 100 temperature sensor as well as an integrated high-power LED illumination are available as optional extras. Different alternative flange designs, in the form of TriClamp and conical couplings, are available upon request.

标准螺纹 *Standard thread*						
CAPTRON 连接件型号 *CAPTRON process connection designation*	G1	G2	G4	G5	G6	G7
DIN ISO 228-1 螺纹尺寸 *DIN ISO 228-1 pipe thread in inch*	G3/8	G1/2	G3/4	G1	G1 1/4	G1 1/2

可选项 *Options*						
CAPTRON 连接件型号 *CAPTRON process connection designation*	N1	N2	N4	N5	N6	N7
NPT (美国标准锥管螺纹)根据 ASME/ANSI B1.20.1螺纹尺寸（英尺） *NPT (National Pipe Thread) according to ASME/ANSI B1.20.1 (inch)*	NPT3/8	NPT1/2	NPT3/4	NPT1	NPT1 1/4	NPT1 1/2
CAPTRON 连接件型号 *CAPTRON process connection designation*	F70			F160		
法兰直径（mm） *Flange ø in mm*	70			160		

单探测棒
1-rod

WHG§19 konform

- 不锈钢材质（V4A）
- 螺纹尺寸可选： G½, G1, G1¼ 以及 G1½
- 探测棒材料可选（PTFE或PEEK），直径可选（21mm或14mm）
- 扳手尺寸SW55

- *Process connection made of V4A (1.4404)*
- *Sizes G½, G1, G1¼ and G1½*
- *For PTFE or PEEK probe rod, with diameter of 21 mm or 14 mm*
- *Across flats SW55*

温度传感器 (PT100)
Temperature sensor (PT100)

WHG§19 konform

- 不锈钢材质（V4A）
- 螺纹尺寸为 G1½
- PT100温度传感器配有M8连接器

- *Process connection made of V4A (1.4404)*
- *Thread size G1½*
- *M8 connector for connection of the integrated PT100 temperature sensor*

管套外罩
Jacket tube

- 不锈钢材质（V4A）
- 螺纹尺寸为 G1½

- *Process connection made of V4A (1.4404)*
- *Thread size G1½*

LightCAP
LightCAP

WHG§19 konform

- 不锈钢材质（V4A）
- 螺纹尺寸为 G1½
- 螺纹下方带有4个高亮度LED观察灯，以便于观察容器内的情况

- *Process connection made of V4A (1.4404)*
- *Thread size G1½*
- *4 high-power white-light LEDs in the lower part for illumination of the tank inside*

双探测棒
2-rod

- 连接件为PEEK或者PTFE材料
- 螺纹尺寸为 G1½
- 双探测棒（PTFE）设计

- *Process connection made of PEEK or PTFE*
- *Thread size G1½*
- *For two PTFE rods (electrode and earth rod)*

探测棒

THE PROBE RODS

CAPTRON公司标准探测棒所使用的都是纯PTFE材料，有14mm和21mm两种直径尺寸可供选择，同时提供多种探测棒类型：单探测棒、双探测棒及带管套外罩的探测棒。除此之外，普通的液位传感器都是以标准长度为准，无法生产预制长度，而CAPTRON公司生产的探测棒另一大显著优势就是，它的长度可以根据客户的需求在3000mm以内的任一毫米单位里进行定制。

一体式液位传感器能够适应70℃的工作温度，外接的分离式液位传感器工作温度更高达230℃。另外如果客户选择例如PEEK材质的探测棒，那么工作温度能够更高。

不同的容器材质
需要不同的探测棒类型：
在金属容器中因螺纹与金属容器壁连接，单探测棒即可使用；在塑料容器或者表面有涂层的容器中，双探测棒或者带金属管套外罩的探测棒类型均可使用。由于带管套外罩探测棒的封闭性设计，大大提高了液位传感器的测量精度，不过这种型号只适用于流动性较好的液体介质中。

The CAPTRON standard probe rod is made of virgin PTFE (teflon). It is available with diameters of 21 mm and 14 mm. The probe rod version can be selected: 1-rod version, 2-rod version and jacket tube version are available. One of the outstanding features of the probe rods is that they are not available in pre-fabricated standard lengths, but that CAPTRON produces each probe with a maximum length of 3000 mm to the nearest millimetre in line with the customer's request.
The compact design allows medium temperatures of max. 70 °C, the external version allows temperatures up to 230 °C. In addition, other rod materials, e.g. PEEK, are available upon request.

Different tank types require different probe rod versions:
In metal tanks that are electrically connected to the tank wall, 1-rod probes are used. In plastic tanks or in metal tanks with dielectric coating, either the 2-rod probe or the jacket tube probe is used. Due to its closed shielding, the jacket tube version has a higher measuring accuracy, but can only be used with liquid media.

单探测棒
1-rod

WHG§19 konform

技术资料
- 材质：PTFE
- 最大长度：3000mm（带温度传感功能的探测棒最长1000mm）
- PEEK材质最大长度为300mm
- 直径可选：21mm或14mm（带温度传感功能的只可选21mm）
- 适用于液体及浆状介质

Technical information
- *Material: PTFE (Teflon)*
- *Max. length 3000 mm (Max. 1000 mm for PT100)*
- *Alternatively up to 300 mm made of PEEK*
- *ø 21 mm or ø 14 mm (ø 21 mm for PT100)*
- *Suitable for liquid and pasty media*

双探测棒
2-rod

技术资料
- 材质：PTFE
- 最大长度：3000mm
- 直径：14mm
- 适用于液体及浆状介质

Technical information
- *Material: PTFE (Teflon)*
- *Max. length 3000 mm*
- *2x ø 14 mm*
- *Suitable for liquid and pasty media*

带管状外套
Jacket tube

技术资料
- 探测棒材质：PTFE　外罩材质：不锈钢（V4A）
- 探测棒直径： ø 21 mm
- 外罩直径： ø 38 mm
- 最大长度： 3000 mm
- 只适用于液体介质

Technical information
- *Rod material: PTFE (Teflon), jacket tube material: V4A*
- *Rod ø 21 mm*
- *Jacket tube ø 38 mm*
- *Max. length: 3000 mm*
- *Suitable for liquid media only*

可选功能：温度传感器，LIGHTCAP

OPTIONS: TEMPERATURE SENSOR, LIGHTCAP

为了适应客户的不同检测需求，我们将液位传感器的类型多样化，在标准型号的基础上进行了可选功能的补充。

To meet sector-specific requirements, we are expanding the programme by various optional modified versions, at variance with the standard versions.

除了测量电容值，集成PT100温度传感功能的液位传感器还可测量介质的温度。因此客户无须再多加装另外的传感器来达到测量温度的目的。温度传感器的输出信号通过外置M8连接器进行传输。

Apart from detecting the capacitive level, the PT100 probe allows to determine the medium temperature. Thus, there is no need of an additional sensor. The temperature sensor is connected by means of a separate M8 connector in the process connection.

LightCAP（带LED灯）的液位传感器则是在螺纹下方加装有4个高亮度的LED观察灯以达到观察容器内状况的目的，探测棒最大长度为3000mm。

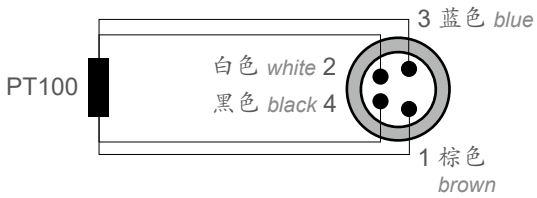
The LightCAP version is equipped with four high-power LEDs located in the base that permit the illumination of the tank. The max. range is 3000 mm.

PT100（温度传感器）

PT100 (Temperature sensor)

- 探测棒最长：1000mm　直径：21mm
  Probe rod max. 1000 mm length and ø 21 mm
- 测量温度范围：　0...70 °C
  Temperature range 0…70 °C
- 测量精度：± 1 °C　B级
  Accuracy: ± 1 °C class B
- 4针的M8连接器
  4-wire M8 connector

M8连接器的连接配置
Connection assignment of M8 connector



LightCAP

LightCAP

按SET键开启LED灯，一次照明15秒
Activation of LED illumination by pressing the SET key. Illumination 15 sec.

工作电压及功耗
Operating voltage and power consumption

20 V	24 V	30 V
ca. 130 mA	ca. 200 mA	ca. 300 mA

照明灯工作会使功耗增加!
Increased internal power consumption with Power LED function activated!

一体式液位传感器的选型表及产品型号

OVERVIEW AND ORDERING CODE OF COMPACT PROBES

产品选型表 **Combination table compact probes**

● 标配 *Standard*
○ 可选 *Option*
– 不可选 *Not available*

			探测棒类型 *Probe rod type*				
			单探测棒 *1-rod*		双探测棒 *2-rod*		带管状外套 *Jacket tube*
		材料 *Material*	PTFE	PEEK max.300 mm	PTFE	PEEK max.300 mm	PTFE +VA-Rohr
连接件 *Process connection*	G2	V4A	●	●	–	–	–
		PTFE	–	–	–	–	–
		V2A	–	–	–	–	–
		铜 *Brass*	–	–	–	–	–
	G5	V4A	●	●	–	–	–
		PTFE	–	–	–	–	–
		PEEK	○	○	–	–	–
	G5 + PT100	V4A	●	●	–	–	–
	G6	V4A	●	●	–	–	–
		PTFE	–	–	–	–	–
		PEEK	○	○	–	–	–
	G6 + PT100	V4A	○	○	–	–	–
	G7	V4A	●	●	○	○	●
		PTFE	–	–	–	–	–
		PEEK	●	●	●	●	–
	G7 + PT100	V4A	●	●	–	–	●
	G7 + LightCAP	V4A	●	●	–	–	–
	F70	Alu	●	●	–	–	–

一体式液位传感器产品型号

Ordering code compact probe

CAT-1250-□-□21G7/VA-214/*Optionen

工作原理
C: 电容式
Scanning principle
C: capacitive

螺纹材质
A= 不锈钢
K= PEEK
Thread material
A= V4A
K= PEEK

探测棒材质
T= PTFE
K= PEEK
Rod material
T= PTFE
K= PEEK

探测棒长度范围（mm）
200...3000
Rod length in mm (variable)
200...3000

2= 双探测棒
2= 2-rod probe

H= 带管套外罩的探测棒
H= jacket tube

探测棒或管套直径（14, 21, 38mm）
Probe rod or jacket tube diametre in mm (14, 21, 38)

VA= 模拟量放大器 2 = DC
VA= analogue Amplifier capacitive 2 = DC

输出
1= 1个开关量+1个模拟量
3= 3个开关量+1个模拟量
4= 4个开关量

Output
1= 1x switching output and 1x analogue output
3= 3x switching output and 1x analogue output
4= 4x switching output

外壳尺寸
4 = ø 50 mm
Housing version
4 = ø 50 mm

螺纹尺寸
Thread size in inch
G2= 1/2"
G5= 1"
G6= 1 1/4"
G7= 1 1/2"

法兰尺寸（请咨询相应销售人员）
F70= Ø 70 mm
F160= Ø 160 mm

Available upon request
Flange
F70= Ø 70 mm
F160= Ø 160 mm

可选功能
PT= 温度传感器PT100
D10= 耐压10 bar
VST= 加固探测棒
LightCAP= 高亮度LED灯
WHG= 符合德国水系统管理法

Options
PT= Temperature sensor PT100
D10= compression-proof up to 10 bar
VST= reinforced probe rod
LightCAP= Power LED
WHG= Federal Water Act

*** 注意：** 一些选项组合需要通过更进一步的符号表示。例如： ... /K2-2/T230/D10
并非所有的组合方式都存在。

**** Note:** Combination of several options is indicated by further hyphens. Example: ... /K2-2/T230/D10*
Not all combinations are possible.

分离式液位传感器的选型表及产品型号

OVERVIEW AND ORDERING CODE OF PROBES WITH EXTERNAL AMPLIFIER

产品选型表 *Combination table for probe with external amplifier*

● 标配 *Standard*
o 可选 *Option*
– 不可选 *Not available*

连接件 Process connection		材料 Materia	探测棒类型 Probe rod type				
			单探测棒 1-rod		双探测棒 2-rod		带管状外套 Jacket tube
			PTFE	PEEK max.300 mm	PTFE	PEEK max.300 mm	PTFE +VA-Rohr
	G2	V4A	●	●	–	–	–
		PTFE	●	●	–	–	–
		V2A	●	●	–	–	–
		铜 Brass	●	●	–	–	–
	G5	V4A	●	●	–	–	–
		PTFE	●	●	–	–	–
		PEEK	●	●	–	–	–
	G5 + PT100	V4A	o	o	–	–	–
	G6	V4A	●	●	–	–	–
		PTFE	●	●	–	–	–
		PEEK	●	●	–	–	–
	G6 + PT100	V4A	o	o	–	–	–
	G7	V4A	●	●	o	o	●
		PTFE	●	●	●	●	–
		PEEK	●	●	●	●	–
	G7 + PT100	V4A	o	o	–	–	–
	F70	Alu	o	o	–	–	–

分离式液位传感器产品型号

Ordering code analog probe

CAT-1250-□-□21G7/A/*Optionen/LS

工作原理
C: 电容式
Scanning principle
C: capacitive

螺纹材质
T= PTFE
A= V4A
B= V2A
K= PEEK
C= Messing
Thread material
T= PTFE
A= V4A
B= V2A
K= PEEK
C= brass

探测棒材料
T= PTFE
K= PEEK
Rod material
T= PTFE
K= PEEK

探测棒长度范围（mm）
50...3000
Rod length in mm
50...3000

2= 双探测棒
2= 2-rod probe

H= 带管套外罩的探测棒
H= jacket tube

探测棒或管套直径（14, 21, 38mm）
Probe rod or jacket tube diametre in mm (14, 21, 38)

A= 模拟量
A= Analogue

螺纹尺寸
Thread size in inch
G2= 1/2"
G5= 1"
G6= 1 1/4"
G7= 1 1/2"

法兰尺寸（请咨询相应销售人员）
F70= Ø 70 mm
F160= Ø 160 mm

Available upon request:
Flange:
F70= Ø 70 mm
F160= Ø 160 mm

LS= Lemo连接器
LS= Lemo connector

可选功能
T230= 温度传感器（耐温230°C）
D10= 耐压10bar
VST= 加固探测棒
导线长度
K2-1= 1 m
K2-2= 2 m
K2-3= 3 m

Options
T230= Temperature range up to 230 °C
D10= compression-proof up to 10 bar
VST= reinforced probe rod
Cable lengths
K2-1= 1 m
K2-2= 2 m
K2-3= 3 m

*** 注意：** 一些选项组合需要通过更进一步的符号表示。例如： ... /K2-2/T230/D10 并非所有的组合方式都存在。

**** Note:** Combination of several options is indicated by further hyphens. Example: ... /K2-2/T230/D10 Not all combinations are possible.*

外置放大器产品型号

Ordering code external amplifier

VA-214-SEP

外置放大器
External amplifier

4= 直径 ø 50 mm
4= housing ø 50 mm

VA= 模拟量放大器
2= DC

VA= analogue Amplifier capacitive
2= DC

1= 1个开关量+1个模拟量
3= 3个开关量+1个模拟量
4= 4个开关量
1= 1x switching output and 1x analogue output
3= 3x switching output and 1x analogue output
4= 4x switching output

WHG§19 konform

放大器技术参数

TECHNICAL DATA AMPLIFIER

VA-214

技术参数（24 VDC, 20 °C） *Technical data at 24 V and 20 °C*			
接口 *Connection*	连接器 M12 *M12 connector*		
工作电压 *Supply voltage*	DC 24 V (20...30 V)		
电流消耗 *Current consumption*	Max. 80 mA		
模拟量输出 *Analogue output*	0...10 V R_L= min. 500 Ω 0...20 mA R_L= max. 500 Ω 4...20 mA R_L= max. 500 Ω 短接保护，反向电极防护		*0...10 V RL= min. 500 Ω* *0...20 mA RL= max. 500 Ω* *4...20 mA RL= max. 500 Ω* *Short-circuit proof, reverse polarity protection*
开关量输出 *Switching output*	PNP, NO/NC 可切换 *PNP, NO/NC switchable*		
负载电流 *Load current*	Max. 200 mA, 短接保护 *Max. 200 mA, short-circuit proof*		
开关点位置 *Switching point position*	5%...95% 可调 *Adjustable between 5% and 95%*		
测量精度 *Measuring accuracy*	测量范围最大值 ± 3% *± 3% of the upper limit of the effective range*		WHG法规要求为：± 5 % *With approval according to WHG§19: ± 5 %*
重复精度 *Repeat accuracy*	测量范围最大值 ± 1% *± 1% of the upper limit of the effective range*		WHG法规要求为：± 3 % *With approval according to WHG§19: ± 3 %*
防护等级 *Degree of protection*	IP 67, 防水 *IP67, waterproof*		
温度范围 *Temperature range*	环境温度 0...+60 °C 介质温度 0...+70 °C 库存温度 -25...+80 °C	*Environment*	*0...+60 °C* *Medium 0...+70 °C* *Storage -25...+80 °C*
抗压强度 *Compressive strength*	3 bar（可选: 10 bar）*3 bar (option: 10 bar)*		
可测介质介电常数 *Dielectric constant medium*	>1.8 （介电常数） *>1.8 (dielectric constant Er)*		

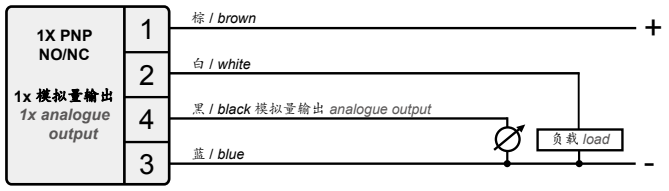
VA-234

技术参数（24 VDC, 20 °C） *Technical data at 24 V and 20 °C*			
接口 *Connection*	连接器 M12 *M12 connector*		
工作电压 *Supply voltage*	DC 24 V (20...30 V)		
电流消耗 *Current consumption*	Max. 80 mA		
模拟量输出 *Analogue output*	0...10 V R_L= min. 500 Ω 0...20 mA R_L= max. 500 Ω 4...20 mA R_L= max. 500 Ω 短接保护，反向电极防护		*0...10V RL= min. 500 Ω* *0...20mA RL= max. 500 Ω* *4...20mA RL= max. 500 Ω* *short-circuit proof, reverse polarity protection*
开关量输出 *Switching output*	3x PNP, NO/NC 可切换 *3x PNP, NO/NC switchable*		
负载电流 *Load current*	3x 200 mA, 短接保护 *3x 200 mA, short-circuit proof*		
开关点位置 *Switching point position*	5%...95% 可调 *Adjustable between 5% and 95%*		
测量精度 *Measuring accuracy*	测量范围最大值 ± 3% *± 3% of the upper limit of the effective range*		WHG法规要求为：± 5 % *With approval according to WHG§19: ± 5 %*
重复精度 *Repeat accuracy*	测量范围最大值 ± 1% *± 1% of the upper limit of the effective range*		WHG法规要求为：± 3 % *With approval according to WHG§19: ± 3 %*
防护等级 *Degree of protection*	IP 67, 防水 *IP67, waterproof*		
温度范围 *Temperature range*	环境温度 0...+60 °C 介质温度 0...+70 °C 库存温度 -25...+80 °C	*Environment*	*0...+60 °C* *Medium 0...+70 °C* *Storage -25...+80 °C*
抗压强度 *Compressive strength*	3 bar （可选: 10 bar）*3 bar (option: 10 bar)*		
可测介质介电常数 *Dielectric constant medium*	>1.8 （介电常数） *>1.8 (dielectric constant Er)*		

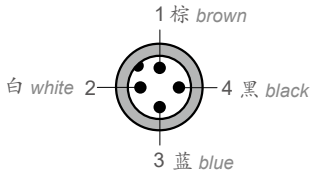
VA-244

技术参数（24 V DC, 20 °C） *Technical data at 24 V and 20 °C*		
接口 *Connection*	连接器 M12 *M12 connector*	
工作电压 *Supply voltage*	DC 24 V (20...30 V)	
电流消耗 *Current consumption*	Max. 80 mA	
开关量输出 *Switching output*	4x PNP, NO/NC 可切换 *4x PNP, NO/NC switchable*	
负载电流 *Load current*	4x 200 mA, 防短接 *4x 200 mA short-circuit proof*	
开关点位置 *Switching point position*	5%...95% 可调 *Adjustable between 5% and 95%*	
测量精度 *Measuring accuracy*	测量范围最大值 ± 3% *± 3% of the upper limit of the effective range*	WHG法规要求为：± 5 % *With approval according to WHG§19: ± 5 %*
重复精度 *Repeat accuracy*	测量范围最大值 ± 1% *± 1% of the upper limit of the effective range*	WHG法规要求为：± 3 % *With approval according to WHG§19: ± 3 %*
防护等级 *Degree of protection*	IP 67, 防水 *IP67, waterproof*	
温度范围 *Temperature range*	环境温度 0...+60 °C 介质温度 0...+70 °C 库存温度 -25...+80 °C	*Environment* 0...+60 °C *Medium* 0...+70 °C *Storage* -25...+80 °C
抗压强度 *Compressive strength*	3 bar （可选: 10 bar） *3 bar (option: 10 bar)*	
可测介质介电常数 *Dielectric constant medium*	>1.8 （介电常数） *>1.8 (dielectric constant Er)*	

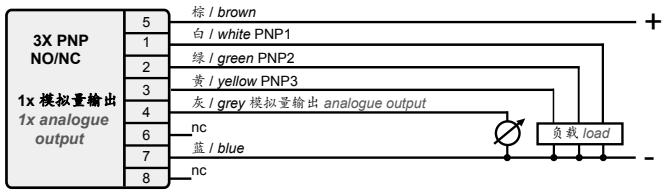
电路接线图 VA-214
Connection diagram VA-214



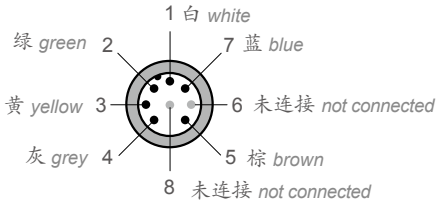
连接器 M12
Connector M12



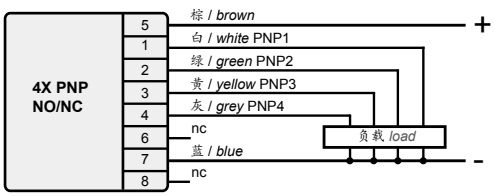
电路接线图 VA-234
Connection diagram VA-234



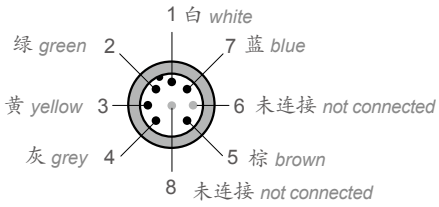
连接器 M12
Connector M12



电路接线图 VA-244
Connection diagram VA-244



连接器 M12
Connector M12



产品技术图纸

TECHNICAL DRAWINGS

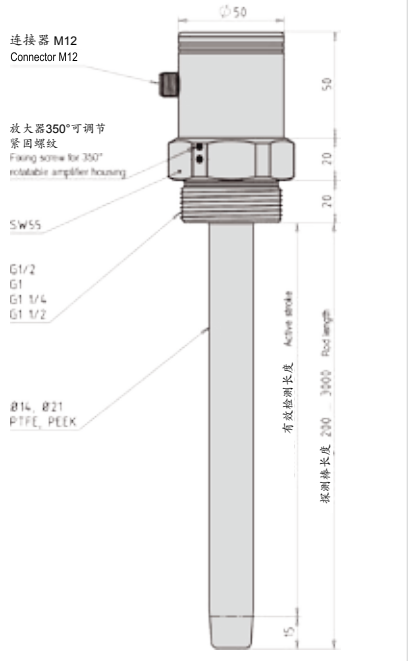
产品详细信息请参阅我司官网www.captron.cn中的“产品”栏，这里您就可以找到相应的产品使用说明、3D模型图、行业手册、政府批文等资料。

For detailed information on the different possible configurations, please refer to"Products" on our homepage www.captron.com. Here you will find manuals, 3D CAD data, sector-specific brochures, approval documents and others.

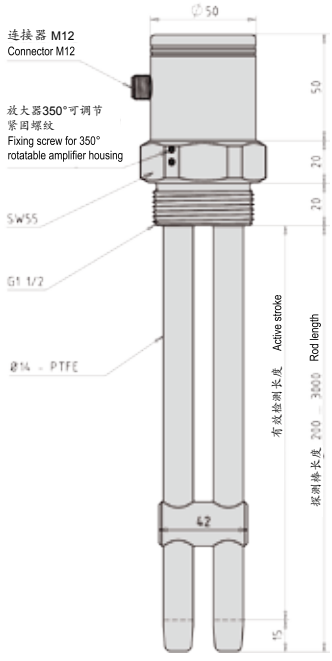
传感器放大器VA-214、VA-234和VA-244具有相同的外观尺寸设计。

The design of the amplifier types VA-214, VA-234 and VA-244 is identical.

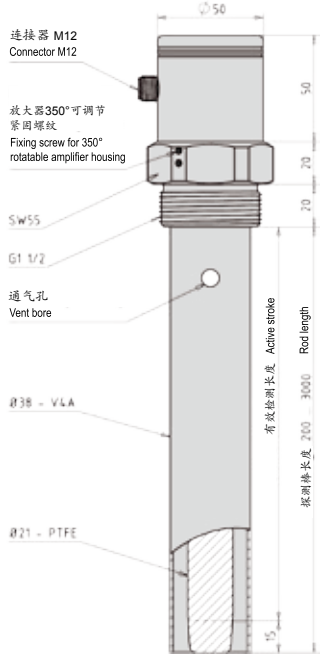
一体式液位传感器
CAPselect compact probes



单探测棒 *1-rod*



双探测棒 *2-rod*

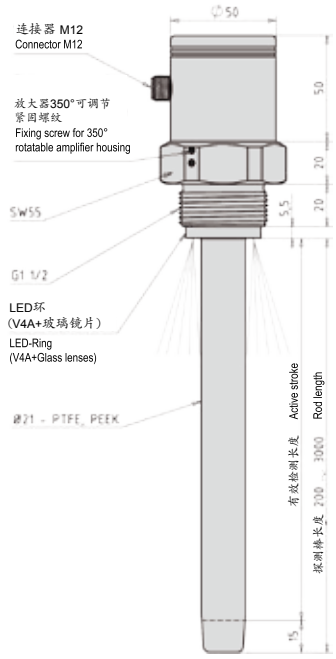


带管状外套 *Jacket tube*

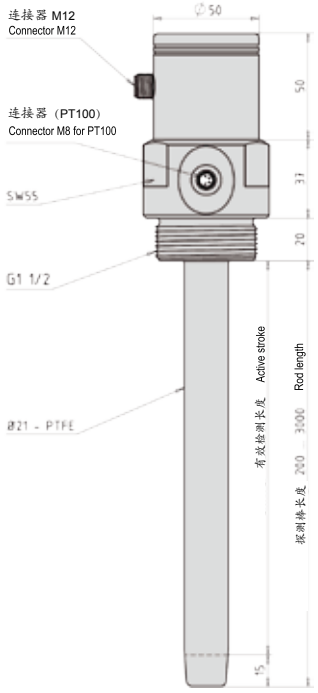
CAPTRON公司保留对内容的最终解释权
图中所涉及尺寸的单位均为毫米（mm）

All technical information without guarantee and subject to change.
All dimensions in mm.

可选功能： LightCAP，温度传感器
CAPselect options: LightCAP, temperature sensor

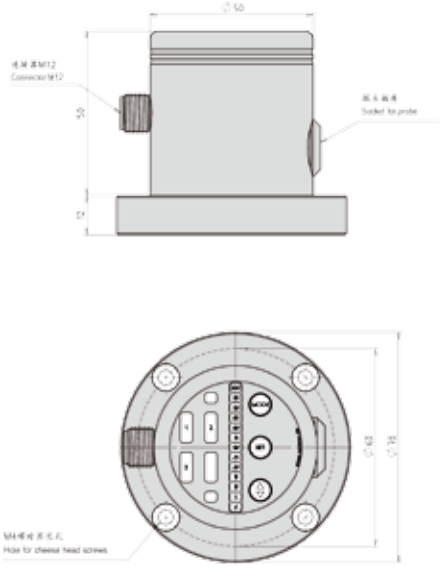


LightCAP（带有高亮度LED观察灯）

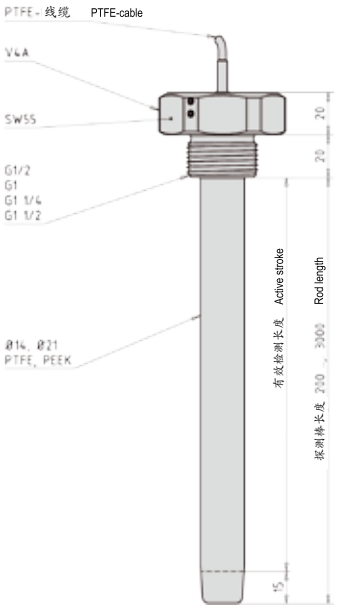


PT100 （温度传感器）*Temperature sensor*

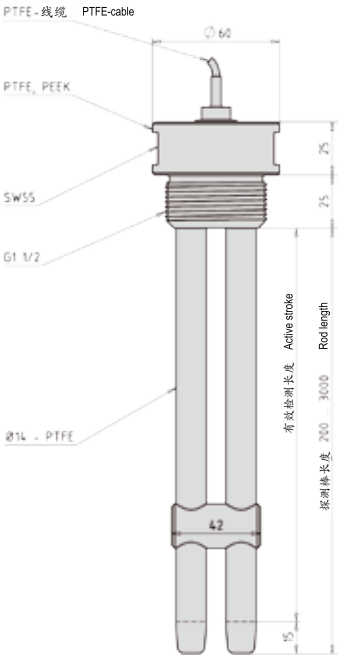
分离式液位传感器
CAPselect external amplifier with rod probe



外置放大器 *External amplifier*
VA-214-SEP
VA-234-SEP
VA-244-SEP



单探测棒 *1-rod*



双探测棒 *2-rod*

CAPTRON公司保留对内容的最终解释权
图中所涉及尺寸的单位均为毫米（mm）

All technical information without guarantee and subject to change.
All dimensions in mm.

小型液位传感器 CAA-60

MINIATURE PROBE CAA-60

WHG§19 konform

小型液位传感器 CAA-60 （开关量输出）

MINIATURE SENSOR CAA-60 (SWITCHING OUTPUT)

一体式设计，可调节开关
标准型号的探测棒长度为60mm，如有需要，最长可定制达600mm，开关量输出可由用户自行设置为常闭或常开。

Compact probe with adjustable switching point.
Available standard rod length 60 mm. Upon request, max. configurable rod length up to 600 mm. The switching output is available as both NC and NO.

- **适用于流动性较好的液体介质**
  Suitable for liquid media
- **适用于传导性较弱的介质，例如PUR、环氧树脂、油等**
  Suitable for poorly conducting media such as PUR, epoxy, oil, etc.
- **可调节激活开关的输出位置**
  Exact switching point adjustable
- **开关量输出（常闭或常开）**
  With switching output PNP-NC or PNP-NO

产品型号
Ordering code

CAA-60-H18G4T-PS6

探测棒长度
标准：60 mm
可选：40...600 mm
Rod length
Standard: 60 mm
Option: 40...600 mm

管套直径： Ø 18 mm
Jacket tube Ø 18 mm

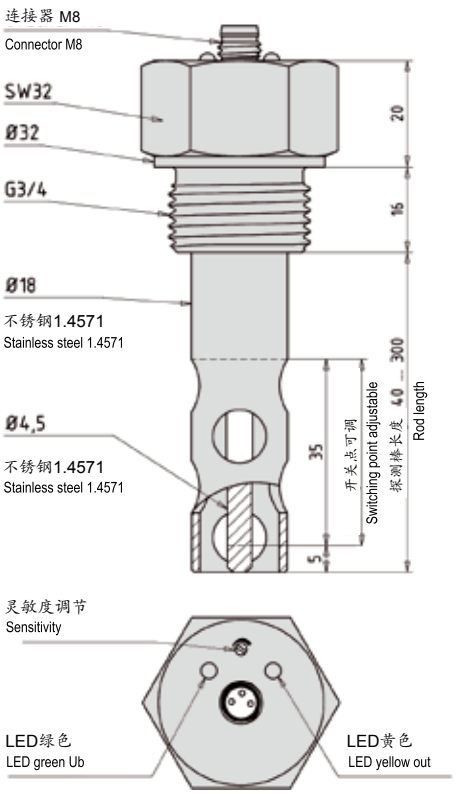
连接器： M8
Connector M8

螺纹尺寸：
Thread size in inch
G4=3/4"

开关量输出 PNP
Switching output PNP
PS= PNP-NO
PO= PNP-NC

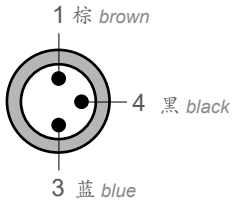
Schutzdeckel im Lieferumfang enthalten

Protection cap included with delivery

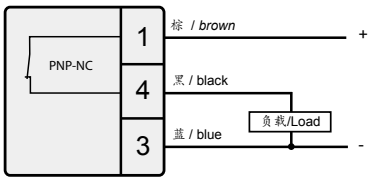


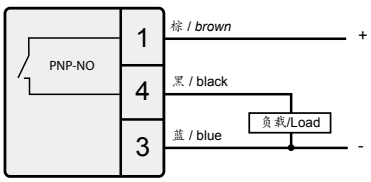
图中所涉及尺寸的单位均为毫米（mm） *All dimensions in mm.*

连接器 M8
Connector M8



电路接线图
Connection diagram





技术参数（24 V DC, 20 °C） *Technical data at 24 V and 20 °C*	
工作电压 *Supply voltage*	DC 10...30 V, 反向极性保护 *DC 10...30 V, reverse polarity protection*
电流消耗 *Current consumption*	Max. 20 mA
输出 *Output*	PNP-NO/NC
负载电流 *Load current*	200 mA, 短接保护 *200 mA, short-circuit proof*
温度范围 *Temperature range*	-20...+80 °C　WHG法规要求为：-10...+80 °C *With approval according to WHG§19: -10...+80 °C*
测量精度 *Measuring accuracy*	符合WHG法规要求为：± 5 % *With approval according to WHG§19: ± 5 %*
重复精度 *Repeat accuracy*	符合WHG法规要求为：± 3 % *With approval according to WHG§19: ± 3 %*
开关状态 *Switching state*	LED 黄 *LED yellow*
接口 *Connection*	连接器 M8 *M8 connector*
外壳材料 *Casing material*	不锈钢 1.4404 *Stainless steel 1.4404*
防护等级 *Degree of protection*	IP 65

小型液位传感器CAA-60（模拟量输出）

MINIATURE SENSOR CAA-60 (ANALOGUE)

不锈钢材质的加固模拟量油用液位传感器

CAA-60型号的液位传感器专为难以实现测量的领域开发，例如安装在较为复杂的球状轴承底部或液压用油容器上。高度优化的整体设计以实现更长的使用寿命。不只是有复杂的机械结构设计，在电子电路设计中，我们同样追求简洁、高效、耐用。标准型号探测棒长度为60mm，根据需求可定制的最大长度为300mm。

Extremely robust analogue oil probe made of stainless steel V4A.

The CAA-60 was especially designed for use in areas difficult to access, e.g. oil pans for ball bearings or hydraulic oil tanks within complex plants. The complete design has been optimised to guarantee long service life. Attention was paid not only to the heavy mechanical construction, but also to the simple, long-lasting electronics. The standard rod length is 60 mm. Special lengths up to 300 mm are available upon request.

- **适用于流动性较好的液体介质**
  Suitable for liquid media
- **根据待测量介质完成出厂设置，如油类**
  Ex-works setting to determined medium, e.g. oil
- **模拟量可测量范围为整个探测棒的长度**
  Analogue measuring range on whole rod length
- **模拟量输出范围 4...20 mA**
  With analogue output 4...20 mA

定制产品型号
Ordering code

CAA-60-H21G4C-A4/CP##

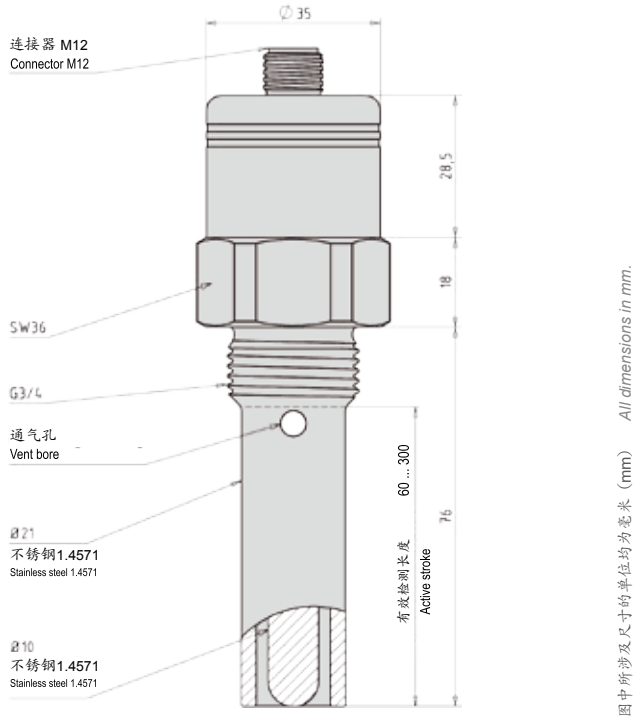
探测棒长度：
标准：60 mm
可选：60...300 mm
Rod length:
Standard: 60 mm
Option: 60...300 mm

管套直径：Ø 21 mm
Jacket tube Ø 21 mm

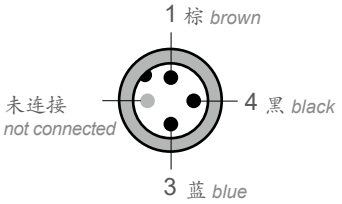
螺纹尺寸：
Thread size in inch
G4=3/4"

连接器： M12
Connector M12

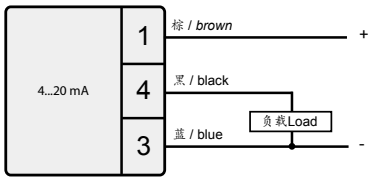
模拟量输出：4...20 mA
Analog output 4...20 mA



连接器 M12
Connector M12



电路接线图
Connection diagram



技术参数（24 V DC, 20 °C） *Technical data at 24 V and 20 °C*	
工作电压 *Supply voltage*	DC 20...28 V
模拟量输出 *Analogue output*	4...20 mA
负载电阻 *Load resistance*	0...500 Ω
接口 *Connection*	连接器 M12 *Connector M12*
外壳材料 *Casing material*	不锈钢 1.4404 *Stainless steel 1.4404*
防护等级 *Degree of protection*	IP67
温度范围 *Temperature range*	10...+50 °C
螺纹连接 *Threaded connection*	G¾ 不锈钢 1.4404 *G¾ Stainless steel 1.4404*
探测棒规格 *Probe rod*	ø 21 mm 不锈钢 1.4404 *ø 21 mm Stainless steel 1.4404*

特殊型号：外置放大器的分离式开关量液位传感器

SPECIAL VERSION: SWITCHING PROBE WITH EXTERNAL AMPLIFIER

特殊型号：外置放大器的分离式开关量液位传感器

SPECIAL VERSION SWITCHING PROBE WITH EXTERNAL AMPLIFIER

液位传感器通过放大器电路可以判断出流体介质液位升高或降低，并在达到提前设置好的参考液位时启动开关量输出并做出提示。开关量输出可选择常开或常闭信号，同时我们还可提供不同版本的开关量输出：例如PNP开关量输出，1个继电器输出或2个继电器输出。

The electronics of the probe amplifier evaluates the flow of media towards the probe rod and activates a switching output in the case that a reference mark/level adjustable by the operator is exceeded. A NC or NO contact can be selected as switching output. Possible versions are: PNP switching output, 1x relay (change-over contact) or 2x relays (change-over contact).

液位传感器中集成的时间延迟功能也使得无论是开启还是闭合信号都能增加几秒的延迟。结合时间延迟功能，不仅可以过滤掉可能产生的干扰信号，而且还可以对非平稳状态的流体介质进行液位控制，或者可以根据需求直接设置信号的延迟。

The integrated time function permits the delay of either the switch-on or the switch-off signal for several seconds. Thus, it is possible to gate out interferences, realise level regulations even with varying levels and directly set signal delays.

液位传感器的放大器外壳采用防水设计，外壳材质为ABS，透明壳盖由PC制成，可以在各种天气状况下暴露在户外使用，壳体四周并有四个固定的孔。

The probe amplifiers are available in water-proof, weather-resistant plastic housings made of ABS/Cover PC and provided with four fixing bores.

产品不仅能够提供三极管输出信号，同时可以根据需求提供直接控制其他电气产品的继电器信号。

The output is available either as transistor switching output or direct activation of consumers, e.g. relays, or potential-free relay contacts.

产品型号 / *Ordering code switching probe*

CAT-1250-21G7/*Optionen

工作原理
C: 电容式
Scanning principle
C: capacitive

螺纹材料
T= PTFE
K= PEEK
A= 不锈钢(V4A)
C= 铜
B= 不锈钢(V2A)
Thread material
T= PTFE
K= PEEK
A= V4A
C= brass
B= V2A

探测棒材料
T= PTFE
K= PEEK
Rod material
T= PTFE
K= PEEK

探测棒长度范围 (mm)
50...3000
Rod length in mm
50...3000

探测棒或管套直径（14, 21mm）
Probe rod diametre in mm (14, 21)

螺纹尺寸
Thread size in inch
G2= ½
G5= 1
G6= 1¼
G7= 1½

法兰尺寸
F70= Ø 70mm
F160= Ø 160mm

Available upon request:
Flange:
F70= Ø 70mm
F160= Ø 160mm

Options
T230= Temperature range up to 230 °C
D10= compression-proof up to 10 bar

可选功能
T230= 温度传感器（耐温230℃）
D10= 耐压10 bar

导线型号
带有雷莫连接件的PTFE导线：
K2-1/LS= 1 m
K2-2/LS= 2 m
K2-3/LS= 3 m
开端口的PVC导线：
K1-1= 1 m
K1-2= 2 m
K1-3= 3 m

Cable types
PTFE cable with Lemo connector
K2-1/LS= 1 m
K2-2/LS= 2 m
K2-3/LS= 3 m
PVC cable with open terminals
K1-1= 1 m
K1-2= 2 m
K1-3= 3 m

* **注意：** 一些选项组合需要通过更进一步的符号表示。
例如： ... /T230/K2-2/LS
并非所有的组合方式都存在。

* ***Note:*** *Combination of several options is indicated by further hyphens. Example: ... /T230/K2-2/LS*
Not all combinations are possible.

产品选型表 / *Overview switching probe*

● 标配 *Standard*
○ 可选 *Option*
– 不可选 *Not available*

		连接件 *Process connection*													
		G2				G5			G6			G7			F70
	材料 *Materia*	V2A	V4A	PTFE	铜	V4A	PTFE	PEEK	V4A	PTFE	PEEK	V4A	PTFE	PEEK	Alu
探测棒类型 *Probe rod type*	单探测棒 *1-rod* PTFE	●	●	●	●	●	●	●	●	●	●	●	●	●	○
	单探测棒 *1-rod* PEEK	●	●	●	●	●	●	●	●	●	●	●	●	●	○

外置放大器产品型号

ORDERING CODE OF EXTERNAL AMPLIFIER

产品型号 *Ordering code of external amplifier*

VC- 111N-R/Option

开关量放大器
Switching output Amplifier capacitive

工作电压
1= 230 V AC
2= 10...30 V DC
Operating voltage
1= 230 V AC
2= 10...30 V DC

开关量输出数量
Number of switching outputs

外壳材料
1= 塑料
Housing material
1= plastic

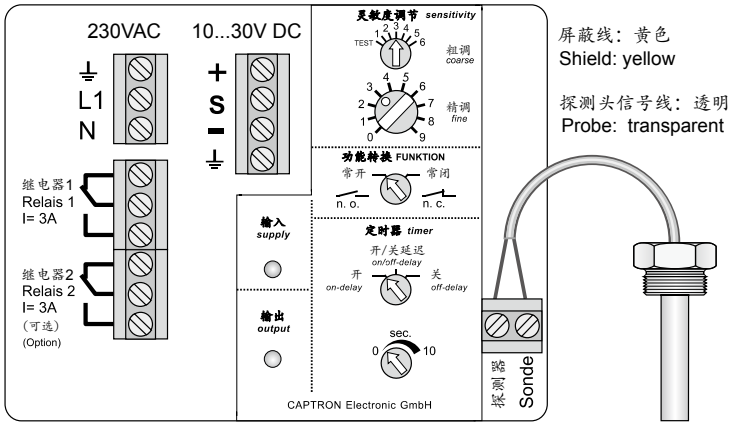
时间延迟
N= 无延迟
Z= 0...10 秒
Time delay
N= not available
Z= 0...10 sec.

输出方式
P= PNP
N= NPN
R=继电器输出
RL2= 双继电器输出
Output
P= PNP
N= NPN
R= relay
RL2= 2 relays

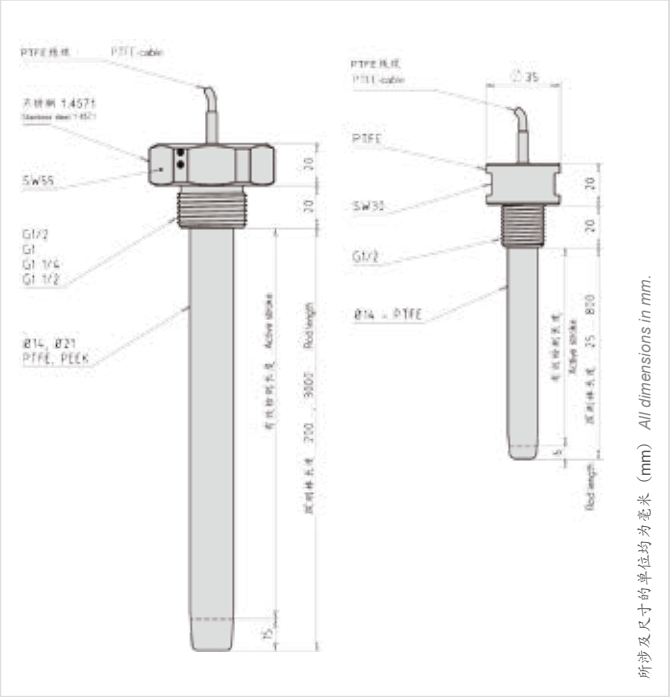
功能或标准
LB= LEMO连接器
LED= 直径20mm
24/42/110V AC
Option or standard
LB= Lemo socket
LED= LED Ø20 in the cap
24/42/110V AC

Nicht alle Kombinationsvarianten sind möglich!
并非所有的组合方式都存在。

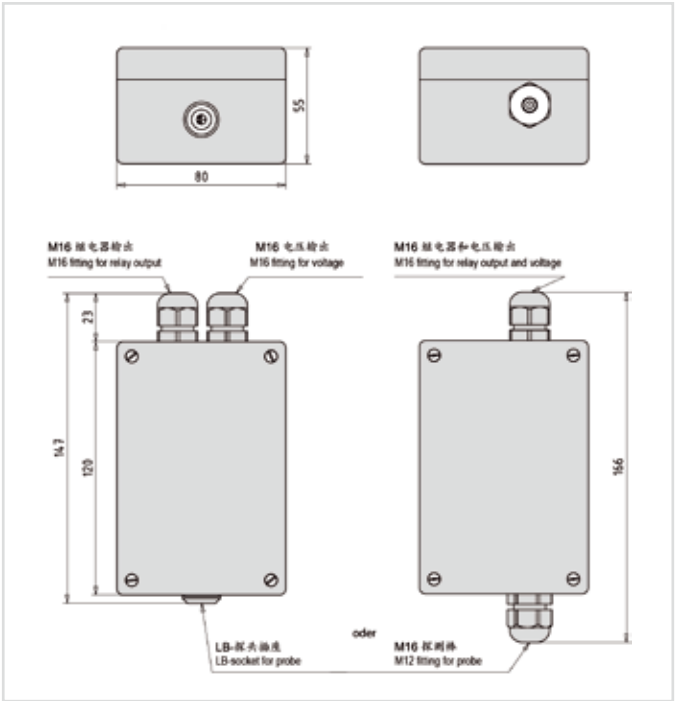
电路接线图
Connection diagram



探测棒 *Switching probe*



放大器 *Amplifier*

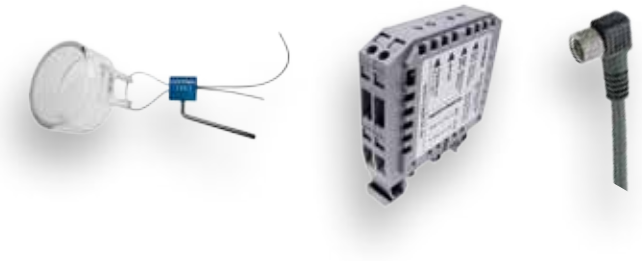


探测棒技术参数： *Technical data Switching probe*	
连接件 *Process connection*	不锈钢1.4571 *Stainless steel 1.4571*
防护等级 *Degree of protection*	IP65
连接导线 *Connection*	PTFE导线或PVC塑料导线 *Connector with PTFE cable or PVC cable for terminal connection*
温度范围 *Temperature range*	-20...+70 °C, -40...+230 °C
探测棒材料 *Probe rod*	PTFE / PEEK
探测棒长度 *Rod length*	50...3000 mm

放大器技术参数（24 V DC, 20 °C） *Technical data Amplifier at 24 V and 20 °C*		
外壳 *Housing*	壳体：灰色ABS；壳盖：透明PC；其他可选材质：铝 *Lower part: ABS grey, cap: PC transparent, option: aluminum housing*	
防护等级 *Degree of protection*	IP65	
连接器 *Connection*	LEMO连接器或终端连接 *Lemo socket or terminal connection*	
温度范围 *Temperature range*	-20°C...+70 °C	
工作电压 *Operating voltage*	10-30 V DC, 24 V DC（继电器输出） *10-30 V DC, 24 V DC at relay output*	230 V AC +10 % -15 %, 50-60 Hz
开关量输出方式 *Switching output*	PNP-常开/PNP-常闭/继电器输出 *PNP-NO/PNP-NC or relay change-over contact*	其他可选：2个继电器输出点 *Relay change-over contact (option: 2 relays)*
负载电流 *Load current*	300 mA（三极管），3 A AC （继电器） *300 mA (transistor), 3 A AC (relay)*	3 A AC
开关量呈现 *Switching state*	开关启动或继电器激活时，LED黄灯亮起 *LED lights up in yellow if output was switched or relay was activated*	继电器激活时，LED黄灯亮起 *LED lights up in yellow if relay was activated*
交换容量 *Switching capacity*	-	600 VA

附件

ACCESSORY



附件

ACCESSORY

我们提供多种液位传感器周边配件，包括液位传感器的保护罩、安装配件、适配器、电子转换器及连接导线等。

A number of different accessories are available. This includes protective caps, fixing accessories and adapters as well as different electronic converters and suitable connecting cables that perfectly complete the CAPTRON fluid sensors.

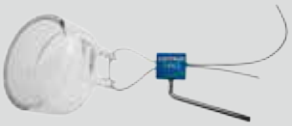
导线*
*connecting cable**

TKW-30-2, TKW-30-5	连接导线 M8- 3针，弯头导线 导线长度：2m，5m *Connecting cable M8 - 3-wire - angled wiring with connector - 2m, 5m*	小型液位传感器 开关量输出 *Miniature probe* *Switching output*	
TKG-30-2, TKG-30-5	连接导线 M8- 3针，直头导线 导线长度：2m，5m *Connecting cable M8 - 3-wire - straight wiring with connector - 2m, 5m*		
TKW-40-2, TKW-40-5	连接导线 M8- 4针，弯头导线 导线长度：2m，5m *Connecting cable M8 - 4-wire - angled wiring with connector - 2m, 5m*	PT100 （温度传感器） *PT100* *(Temperature sensor)*	
TKG-40-2, TKG-40-5	连接导线 M8- 4针，直头导线 导线长度：2m，5m *Connecting cable M8 - 4-wire - straight wiring with connector - 2m, 5m*		
LKW-40-2, LKW-40-5	连接导线 M12- 4针，弯头导线 导线长度：2m，5m *Connecting cable M12 - 4-wire - angled wiring with connector - 2m, 5m*	VA-214 CAA-60 （模拟量输出） *(Analog output)*	
LKG-40-2, LKG-40-5	连接导线 M12- 4针，直头导线 导线长度：2m，5m *Connecting cable M12 - 4-wire - straight wiring with connector - 2m, 5m*		
LKW-60-2, LKW-60-5	连接导线 M12- 6针，弯头导线 导线长度：2m，5m *Connecting cable M12 - 6-wire - angled wiring with connector - 2m, 5m*	VA-234 VA-244	
LKG-60-2, LKG-60-5	连接导线 M12- 6针，直头导线 导线长度：2m，5m *Connecting cable M12 - 6-wire - straight wiring with connector - 2m, 5m*		

*可根据客户需求提供其他导线类型

**other cable types available upon request*

附件
Accessory

VA-004-Protector	透明的聚碳酸酯材料外壳 - 可铅封设计 *Caps made of transparent polycarbonate - sealable with leads*	
VA-004-Plumb (VE5)	带序列号的铅封金属圈 - 防破坏设计 *Metall seals with serial number and tear-off protection*	
VA-004-Protector/Plumb	透明的聚碳酸酯材料外壳 - 可铅封设计及铅封金属圈 *Caps made of transparent polycarbonate - sealable with leads incl. lead seal*	
F70-HS35-Adapter	外接放大器使用的安装平台 *Mounting rail adapter for external probe amplifier VA.../SEP*	

转换器
Converter

SK-TPN-0,1	继电器终端 PNP/NPN输出方式，NC/NO转换器 0-0.1秒可调节的脉冲信号 *Relay terminal with PNP/NPN and NC/NO converter as well as an adjustable pulse lengthening of 0-0.1 sec.*	
SK-TPN-1	继电器终端 PNP/NPN输出方式，NC/NO转换器 0-1秒可调节的脉冲信号 *Relay terminal with PNP/NPN and NC/NO converter as well as an adjustable pulse lengthening of 0-1 sec.*	
SK-TPN-10	继电器终端 PNP/NPN输出方式，NC/NO转换器 0-10秒可调节的脉冲信号 *Relay terminal with PNP/NPN and NC/NO converter as well as an adjustable pulse lengthening of 0-10 sec.*	
TKW-30-2/1P-1N	带PNP/NPN转换器的M8连接导线 *M8 connecting cable with PNP/NPN converter*	
CRM1-RW	PNP信号转继电器信号转换器 *Signal convertion from transistor PNP to relay change-over contact*	

Version 11.0

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