CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Conductive level program

Sensors

CL - Series
Conductive level program

The CL series of conductive level controllers can be used for level monitoring and pump control in many applications such as in tanks, reservoirs, sewage plants, wells, aquariums, swimming pools and mixing plants for many different conductive liquids.

Carlo Gavazzi conductive level controllers are designed specifically to meet the many demands of level monitoring such as flexibility, robustness, minimal size for space saving, affordability and most important of all, easy to use.

There are many different choices to choose from to satisfy every different level monitoring needs such as different housing, wide range of power supplies, number of levels required, cascading and others.
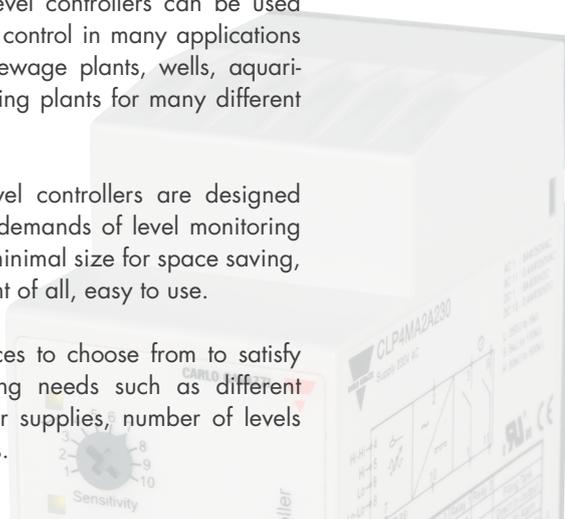
The complete product range for level measurement

Electrode probe
CL series can be used with all the Carlo Gavazzi's level probes that includes from 1 electrode up to 5 electrodes and also the level hanging probes.

Various level control functions
The level controllers can perform various level control functions such as filling, emptying or combinations of the two. It can also be cascaded up to 7 controllers for many levels. This provides full flexibility and adaptability for various applications.

Easy adjustments
The level controllers functions and sensitivity can be easily set and tuned by means of rotary switches and potentiometer. This makes installation and maintenance very easy.

Wide range of power supply
Many different power supply ranges to choose from such as 24VAC, 115VAC, 230VAC, 24VDC
Or the CLD2EB1BU24 with 24-240VAC/DC.

LED status indication
Front LEDs indicate clearly the power state and status of each of the output relays for easy monitoring.

Space-saving design
The level controller is available in the compact 17.5 mm for extra panel space saving or the standard 35mm wide DIN-rail or 11 pin plug housing for different installation needs.

Approvals and markings
Exceptional and proven quality with UL, CSA and CE certified

Sensors

Agriculture

- Level control in slurry tanks, water tanks, reservoirs, sewage plants, underground wells and mixing plants

- Flow detection in pipes, channels, and irrigation systems

Chemical

- Level in chemical tanks

- Indication of liquid build-up due to filter blockages.

- Alarm control warning of abnormal or dangerously high or low levels.

Food & beverage

- Level detection of liquids such as milk products, beer, wine, soft drinks and water, but also sticky or abrasive products such as chocolate or jam.
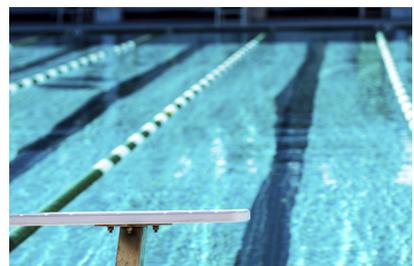

Water distribution/treatment

- For level and pump control

- Fill level control of purified city water, industrial water or sewage

- Hot water supply heated by solar energy

- Filling application of tank level

Swimming pool

- Swimming pools level control with level hanging probe

Sensors

CL - Series
Conductive level program

Slim 17.5 wide DIN-rail housing for excellent space saving and basic sensitivity range that covers the conductivity of most standard liquids in most applications. Equipped also with time delay from 1 to 30 seconds.

Features
- Max./min. control of filling or emptying of liquids by means of one level and a time delay function.
- Compact housing for mounting on standard rails in cabinet.

- Adjustable sensitivity by means of the potentiometer settings.
- SPST relay.
- Time settings from 1 to 30 seconds for filling or emptying.

Operation diagram

Filling or emptying

Filling or Emptying
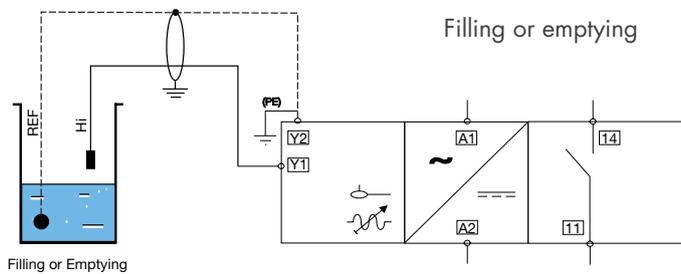
Technical data

Sensitity	5kΩ to 150KΩ
Power supply	24 VAC/DC
Operating temperature	-20° to +50°C (-4° to + 122°F)
Input probe	1 + reference
Outputs	1 x SPST relay
AC1	8A/250 VAC
Approvals	UL508, CSA, CE

CLD2EA & CLP2EA, 2-point level controller

Level controller with an extended sensitivity range that covers the conductivity of most liquids such as chemicals, sewage water, sea water, distilled water, etc.

Features
- Max./min. control of filling or emptying (charging or discharging) of liquids between two levels.
- Compact housing for mounting on standard DIN-rail or 11-pin plug-in socket.

- Extended and adjustable sensitivity by means of potentiometer with 3 sensitivity ranges.
- DPDT relay.

Operation diagram
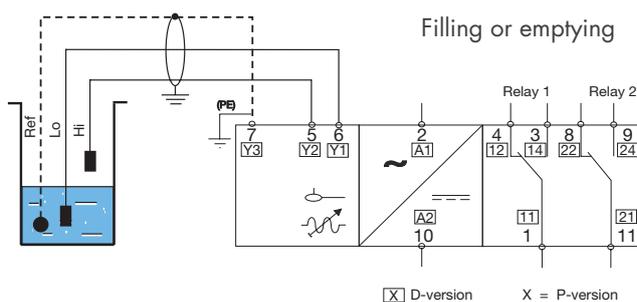
Filling or emptying

Relay 1   Relay 2

X D-version   X = P-version

Technical data

Low sensitivity	250Ω to 5KΩ
Medium sensitivity	5kΩ to 100KΩv
High sensitivity	50kΩ to 500KΩ
Power supply	24 VAC/DC, 115 VAC, 230 VAC
Operating temperature	-20° to +50°C (-4° to + 122°F)
Input probe	2 + reference
Outputs	1 x DPDT relay
AC1	8A/250 VAC
Approvals	UL508, CSA, CE

Sensors

CLD2EB1BU24, slim housing 2 point level controller

Slim 17.5mm wide housing for excellent space saving. The level controller has extended sensitivity range that covers the conductivity of most liquids in any applications. Wide range of power supply from 24-240VAC/DC in a single unit ensures flexibility and reduces inventory.
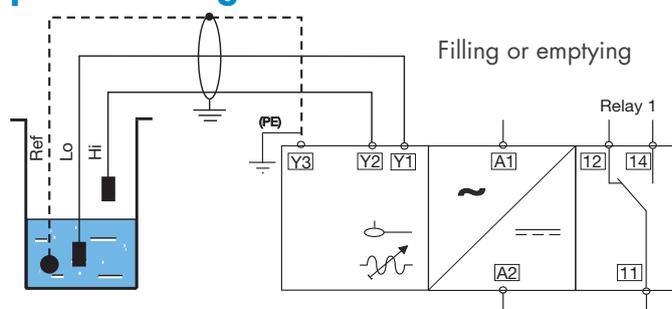
Features
- Max./min. control of filling or emptying of liquids between two levels.
- 17.5mm slim housing for mounting on standard DIN-rail
- Wide power supply 24-240VAC/DC

- Extended and adjustable sensitivity by means of potentiometer with 3 sensitivity ranges
- SPDT relay

Operation diagram

Filling or emptying

Technical data

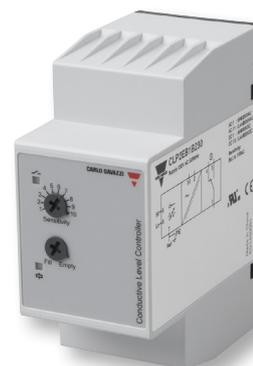| Low sensitivity	250Ω to 5KΩ
Medium sensitivity	5kΩ to 100KΩ
High sensitivity	50kΩ to 500KΩ
Power supply	24-240 VAC/DC
Operating temperature	-20° to +50°C (-4° to + 122°F)
Input probe	2 + reference
Outputs	1 x SPDT relay
AC1	8A/250 VAC
Approvals	cULus, CE

CLP2EB, 2 point basic level controller

Simple and easy to use level controller with basic sensitivity range that covers the conductivity of most standard liquids in most applications.
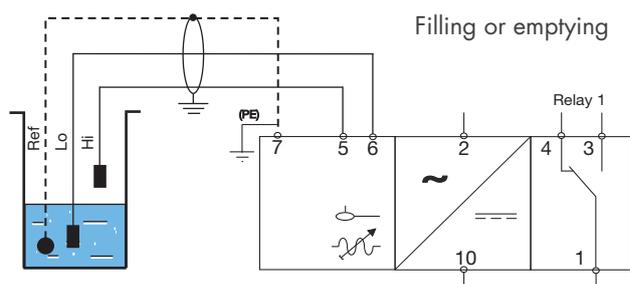
Features
- Max./min. control of filling or emptying of liquids between two levels.
- Compact housing for mounting on standard 11 pin plug in socket

- Adjustable sensitivity by means of potentiometer settings.
- SPDT relay
- Good price to performance ratio

Operation diagram

Filling or emptying

Technical data

Low sensitivity	5Ω to 150KΩ
Power supply	24 VDC, 24 VAC, 115 VAC, 230 VAC
Operating temperature	-20° to +50°C (-4° to + 122°F)
Input probe	2 + reference
Outputs	1 x SPDT relay
AC1	8A/250 VAC
Approvals	UL508, CSA, CE

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CL - Series

Conductive level program

CLP2FA, 2-point level controller, cascade coupling

A state of the art level controller that can cascade up to 7 units for many different levels. The main unit is the master that can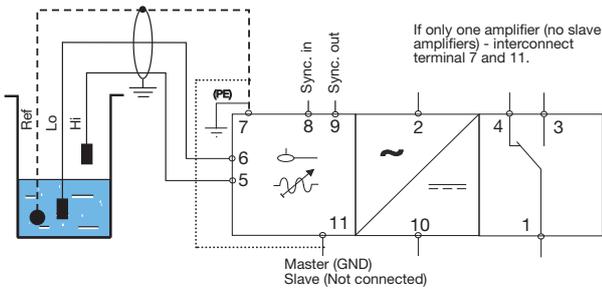 link with several slaves for the desired amount of levels. It can also be used as a standalone system with just 1 unit.
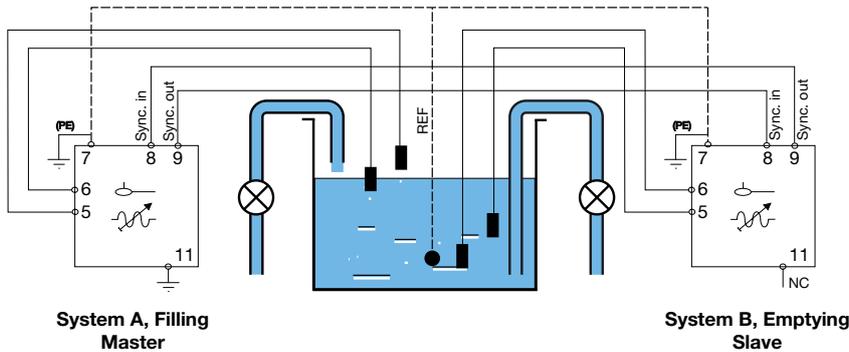
Features

- Max./min. control of filling or emptying of liquids between two levels.
- Compact housing for mounting with 11-pin plug-in socket.
- Extended and adjustable sensitivity by means of potentiometer with 3 sensitivity ranges.
- SPDT relay.
- Master/slave system for cascade connecting of up to seven systems.

Operation diagram

If only one amplifier (no slave amplifiers) - interconnect terminal 7 and 11.

Master (GND)
Slave (Not connected)

Filling and emptying with more systems in one common tank

System A, Filling
Master

System B, Emptying
Slave

Multilevel application in one tank

System A
Master

System B
Slave

System C
Slave

Technical data

Low sensitivity	250Ω to 5KΩ
Medium sensitivity	5kΩ to 100KΩv
High sensitivity	50kΩ to 500KΩ
Power supply	24 VAC/DC, 115 VAC, 230 VAC
Operating temperature	-20° to +50°C (-4° to + 122°F)
Input probe	2 + reference
Outputs	1 x SPDT relay
AC1	8A/250 VAC
Approvals	UL508, CSA, CE

Sensors

CLD4MA & CLP4MA, 2 to 4-point level controller

Advanced level controller with 2 to 4 levels that can be configured in many different operating modes. The controller can handle up to 2 filling operations or 2 emptying operations or combination of these. It can also operates with Hihi or LoLo alarm or in a tank-well situation.

Features

- Max./min. control of filling or emptying of liquids between two levels.
- Compact housing for mounting with 11-pin plug-in socket or DIN-rail.
- Extended and adjustable sensitivity by means of potentiometer with 3 sensitivity ranges.

- SPDT & SPST (Din Rail); 2 x SPST (Plug In)
- Able to work in 4 different modes with many combinations

Operation diagram

Mode 1: Direct input - output

Each of the two electrodes controls an individual relay output.

Technical data

Low sensitivity	250Ω to 5KΩ
Medium sensitivity	5kΩ to 100KΩv
High sensitivity	50kΩ to 500KΩ
Power supply	24 VAC/DC, 115 VAC, 230 VAC
Operating temperature	-20° to +50°C (-4° to + 122°F)
Input probe	4 + reference
Outputs	1 x SPDT & 1 x SPST relay
AC1	8A/250 VAC
Approvals	UL508, CSA, CE
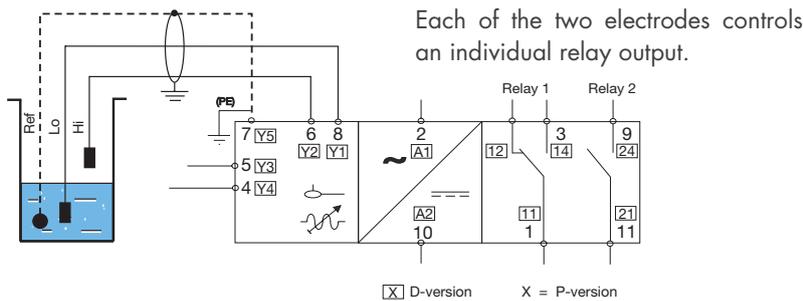
Mode 2: Filling or emptying with low and high alarms.
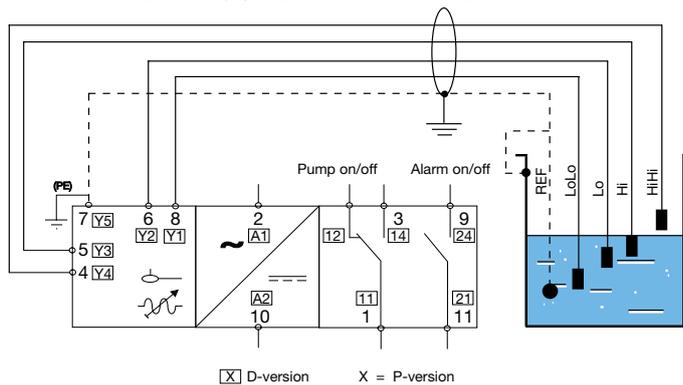
Extra 2 levels of HiHi and LoLo ensures the system is protected and output alarm when required such as in danger of over splash or dry run pump.

Mode 3: 2 in 1
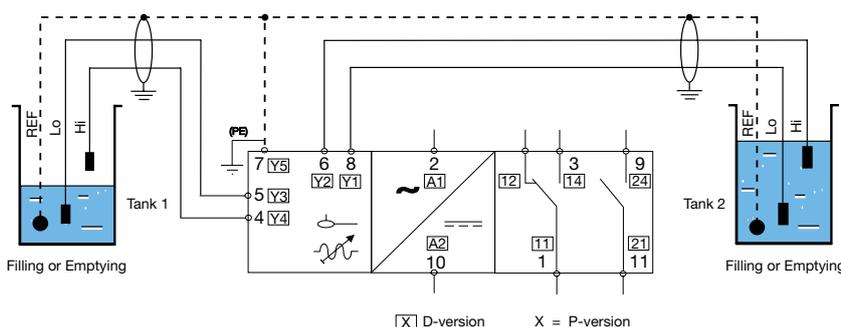
Filling or emptying of up to 2 systems with the same kind of liquid to be measured. Customer can just use one controller for 2 installations.

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Conductive level program

CLD4MA & CLP4MA, 2 to 4-point level controller

Mode 4: Tank - Well

Maximum and minimum control of two systems, a filling system and a emptying system with the same kind of liquid to be measured and one common pump especially in application to transfer from one tank to another tank.
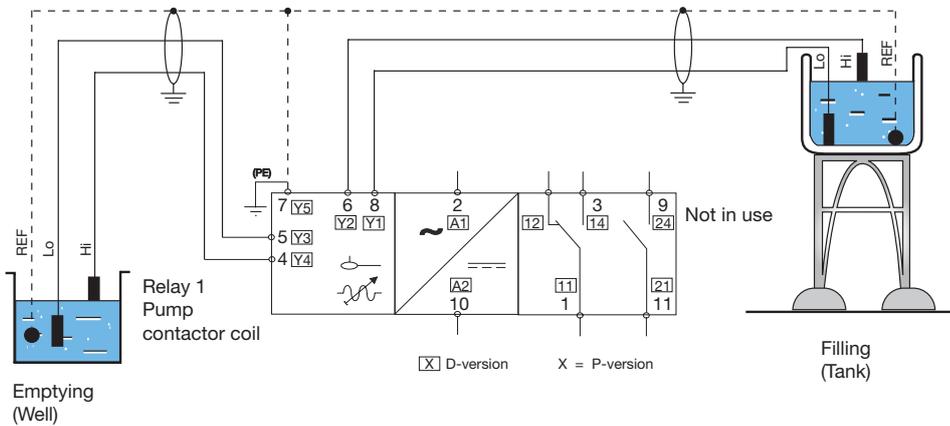
Type selection - level controller

Mounting	Relay	Power supply					
		115 VAC	**230 VAC**	**24 VAC/DC**	**24 VAC**	**24 DC**	**24-240 VAC/DC**
CLD1, 1-point basic level controller							
DIN-rail	SPST	-		**CLD1EA1CM24**		-	
CLD2 & CLP2, 2-point level controller							
DIN-rail	DPDT	**CLD2EA1C115**	**CLD2EA1C230**	**CLD2EA1CM24**		-	
11-pin plug*	DPDT	**CLP2EA1C115**	**CLP2EA1C230**	**CLP2EA1CM24**		-	
CLD2EB1BU24, slim housing 2 point level controller							
DIN-rail	SPDT	-					**CLD2EB1BU24**
CLP2EB, 2 point basic level controller							
11-pin plug*	SPDT	**CLP2EB1B115**	**CLP2EB1B230**	-	**CLP2EB1B024**	**CLP2EB1B724**	-
CLP2FA, 2-point level controller, cascade coupling							
11-pin plug*	SPDT	**CLP2FA1BM115**	**CLP2FA1B230**	**CLP2FA1BM24**		-	
CLD4MA & CLP4MA, 2 to 4 point level controller							
DIN-rail	SPDT + SPST	**CLD4MA2D115**	**CLD4MA2D230**	**CLD4MA2DM24**		-	
11-pin plug*	2 SPST	**CLP4MA2A115**	**CLP4MA2A230**	**CLP4MA2AM24**		-	

Accessories
* The 11- pin plug in level controller requires base socket which must be purchased separately with the part no ZPD11A.

Sensors

CLH3 & CLH5 level probes

Flexible conductive level probe that can accommodate up to five electrodes for four different levels with 1 electrode used for reference. The electrodes are available without isolation or coated with isolation material for aggressive or sticky mediums. Length of the electrode can be extended by using extension electrode according to the requirements.

Features

- Mounting probe head up to 5 electrodes (CLH 5) or 3 electrodes (CLH 3)
- Electrode length can be extended using extension electrodes.

- With Isolation or without isolation electrodes.

Technical data probe head

Material	Polypropylene
No of possible electrodes	3 or 5
Degree of protection	IP65 (Housing) IP68 (Elec. Conn.)
Operating temperature	-20° to 90°C (-4° to + 194°F)
Electrode connection	Screw terminals

Technical data electrodes

Material	Stainless steel AISI316
Length	1000 mm
Diameter	Ø 4 mm
Isolation	Kynar or polyolefine

Type selection - probes and electrodes

	Probes		Electrodes		
	For 3 electrodes	For 5 electrodes	1000 mm basic	2000 mm extended	Extension 1000 mm
	CLH3	CLH5	-	-	-
Electrode without isolation	-	-	CLE1	CLE2	CLE1X
Electrode with isolation, kynar (PVDF)	-	-	CLE1K	CLE2K	CLE1KX
Electrode with isolation, polyolefine (FR)	-	-	CLE1P	CLE2P	CLE1PX
Pipe thread	1.5"		-		
Housing material	PP		-		
Description	-		1000 mm basic electrode for no further extension	1000 mm basic electrode for extension. 1000 mm extension electrode. 1 extension joint. 1 isolation tube.	1000 mm extension electrode. 1 extension joint. 1 isolation tube.

- Please order 3 electrodes if using CLH3 or 5 electrodes if using CLH5.
- Example: if you need 3 levels with Kynar isolated 1m probe, you need to order 1 x CLH3 + 3 x CLE1K.
- Please order CLE1X or CLE1KX or CLE1PX if you require further extension according to the isolation type required.

Conductive level program

VH3 & VH4 hanging probes

VH3 is a level hanging probe specifically designed to be used in swimming pools and resists high chlorine and high salinity. It is also suitable to be used in wells, reservoirs and tanks.

VH4 is a simple and easy to install level probe for general use. VH3-4-MB1 Snap-on brackets for easy and secure installation.

VH3   VH4

Features

- VH3 – resistant to chlorine and salinity and suitable for use in swimming pools
- VH4- simple and easy to install probe for general use and comes with double screw terminal for secure cable connection
- Can be used outdoors under sunlight
- Snap on bracket for easy installation

Technical data VH3

| Electrode material	Stainless steel AISI316
Housing material	Polycarbonate
Over mould material	PA6
Operating temperature	0° to +80°C (32° to + 176°F)
Connection	6 m UV resistant PVC cable

Technical data VH4

Electrode material	Stainless steel AISI304
Housing material	Polycarbonate
Operating temperature	0° to +80°C (32° to + 176°F)
Connection	2 x M4 Screw terminal

VH3-4-MB1

- Snap on bracket exclusively for VH3 and VH4
- Positioning pin on the bracket ensures right installation
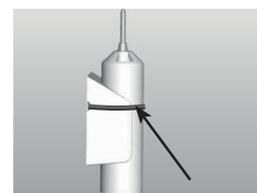- Durable polycarbonate bracket

Installation
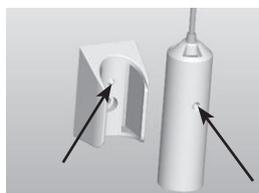
Step 1
Align the probe to the positioning pin of the bracket. Clamp the probe firmly in place.

Step 2
A misalignment of the pin and the blind hole prevents proper installation of the probe.

Step 3
Once the probe is snapped into the bracket, you can secure it with a cable tie around the recess on the rear of the bracket.

Type selection - hanging probes

6 m cable	**VH3**
No cable	**VH4**
Snap-on bracket*	**VH3-4-MB1**

* Bracket to be purchased separately. Bracket only for VH3 and VH4.

Sensors

Conductive level sensors

Types	VN / VNI	VNY / VNYI	VPC	VPP	VT / VTI
Connections	Cable 2 m (PVC)	Screw connection	Screw connection	Screw connection	Cable 1 m (Silicone)
Electrodes					
Number of electrodes	1, 2, 3 or 4	1, 2, 3 or 4	1, 2 or 3	1, 2 or 3	1, 2, 3 or 4
Diameter/length (mm)	D5/1000	D5/1000	D4/500	D4/500	D5/1000
Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Isolation of electrodes	Yes (VNI)	Yes (VNYI)	Yes	Yes	Yes (VTI)
Isolation	Polyethylene	Polyethylene	Polyethylene	PVDF	Teflon
Housing					
Pibe thread	1½"	1½"	½"(VPCx05) or 1" (VPCx10)	½"(VPPx05) or 1" (VPPx10)	1½"
Material	Nylon 6	Nylon 6	PVC	Polyethylene	Teflon
References					
1 electrode	VN1 · VNI1	VNY1 · VNYI1	VPC105 · VPC110	VPP105 · VPP110	VT1 · VTI1
2 electrodes	VN2 · VNI2	VNY2 · VNYI2	VPC205 · VPC210	VPP205 · VPP210	VT2 · VTI2
3 electrodes	VN3 · VNI3	VNY3 · VNYI3	VPC310	VPP310	VT3 · VTI3
4 electrodes	VN4 · VNI4	VNY4 · VNYI4			VT4 · VTI4
Specifications					
Degree of protection	IP67	IP67	IP67	IP67	IP67
Operating temperature	0°C to 90°C	0°C to 90°C	0°C to 60°C	0°C to 100°C	0°C to 145°C
Approvals/marks	CE	CE	CE	CE	CE

Types	VH1 / VH2	VH3	VH4	A 94-10
Connections	Cable 5 m (Neoprene)	Cable 6 m (UV resistant PVC)	Screw connection	Cable 6 m (PVC)
Electrodes				
Number of electrodes	1	1	1	2
Diameter/length (mm)	D18/36.5 or D32/75.5	D19/65	D19/65	D22/75.0
Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Isolation of electrodes	No (VH1) - Yes (VH2)	No	No	No
Isolation	Nylon 6	-	-	-
Housing				
Material	Nylon 6	Polycarbonate	Polycarbonate	Polyester
References				
1 electrode	VH1 OR VH2	VH3	VH4	-
2 electrodes	-	-	-	A 94-10
Snap On Bracket	-	VH3-4-MB1	VH3-4-MB1	-
Specifications				
Degree of protection	IP67	IP67	-	IP67
Operating temperature	0°C to 90°C	0°C to 80°C	0°C to 80°C	0°C to 60°C
Approvals/marks	CE	CE	CE	CE

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