



# CVN 92 - 93 - 94 - 410

## Minimum and maximum level control with vibrating foil

ELECTRONIC EQUIPMENT

ACOUSTIC

WEIGHING

ANTI-TILTING

VALVES

TEMPERATURE

DETECT A FIRE®

FLOW/RATE

DENSITY

INTERFACE

PRESSURE

LEVEL



**CVN92**  
Lmax: 190mm



**CVN92HT / CVN93HT**



**CVN410**  
Lmax: 4000mm



**CVN93**  
Lmax: 2000mm



**CVN94**  
Lmax: 20.000mm

Suitable for any type of silo and hopper, as minimum or maximum level control, no counter electrode required. It works with any type of polyvalent product with variable electrical capacity or that packs, such as:

- powdered milk
- coffee beans
- coffee grounds
- foundry ground
- wood shavings
- expanded polystyrene (eps)
- plastic granules
- powdered clay
- ballast
- dried soot
- kaolin
- micronized
- frozen fries
- sugar
- freeze-dried coffee
- tea (leaves)
- powdered cellulose
- spices
- fine ground glass
- polystyrene powder
- chalk
- pellets chips
- cement
- feldspar
- green beans
- salt
- dehydrated mud
- pieces of stearin
- sawdust
- animal fats
- peanuts
- tobacco
- soda
- minium
- smoky black
- detergent

### FL: Minimum Safety/FH Maximum Safety

Fig. 1

	Minimum-Alarm			Maximum-Alarm		
	Relay-Ausgang	Transistor-Ausgang	Strom-Ausgang	Relay-Ausgang	Transistor-Ausgang	Strom-Ausgang
	NC COM NO LED on leuchtet	conductive leitet LED on leuchtet	8mA LED off aus	NC COM NO LED on leuchtet	conductive leitet LED on leuchtet	8mA LED off aus
	NC COM NO LED flashes blinkt	non-conduct. sperrt LED flashes blinkt	16mA LED on leuchtet	NC COM NO LED flashes blinkt	non-conduct. sperrt LED flashes blinkt	16mA LED on leuchtet

Continuous product development may lead to changes in the data displayed.

### Principle of operation

The Terry Ferraris vibrating foil level control is set in vibration in air at 165 Hz by an electronic circuit: when the material wraps around the foil, the vibration is damped; then, there is a voltage variation that through the electronic circuit controls the relay. For products that pack on the walls, there is no problem, since the foil is not very sensitive to the BASE, while it is very sensitive to its EXTREME, and the vibration itself is self-cleaning.

## Minimum or maximum safety

The probe is equipped with a minimum safety circuit (Fig. 1). That is, if the material fails or the voltage fails, the relay de-energises. If the probe is to be operated in a fail-safe circuit, simply change the switch position on the circuit board from FSL to FSH, so that the relay de-energises when there is no material or no voltage.

## Features

- When the CVN 92/93 is mounted on the side of the silo, the foil looks downwards tilted by 45° (Fig. 2)
- The foil cannot be bent because its function would be impaired
- Mount the probe in such a way that it is not hit by the material during filling. Provide a protective shroud to protect it from damage (Fig. 4) in containers where there is permanent vibration we recommend fitting a plastic nipple type 54195 or using separate electronics (Fig. 5 and 6)
- Protect the probe from sunlight or install it so that it is always in the shade
- When the probe is mounted in a silo with a product temperature above 80°C, put in thermal insulation and adopt the HT design
- In the case of installation on pressurised silos, wrap the thread of the nozzle with Teflon tape to ensure tightness
- To tighten the probe use a 50 mm spanner, never use the enclosure to tighten the probe

- Position the foil so that it is always cutting (the notch on the nozzle indicates the position of the foil), so that the material does not have a chance to settle
- The cable glands must always be oriented downwards, to prevent the ingress of moisture - if the cable glands are oriented upwards once the probe is mounted, proceed as follows: a) remove the cover b) loosen the screw in the centre of the circuit board c) orient the enclosure to the correct position d) tighten the screw in the centre of the circuit board e) refit the cover

## Electrical

- The terminals are suitable for 2.5mm<sup>2</sup> cable
- Cable glands are suitable for cables from 6 to 9mm Ø, cable gland IP65
- Atex execution on request

## Electronic system

Fig. 2

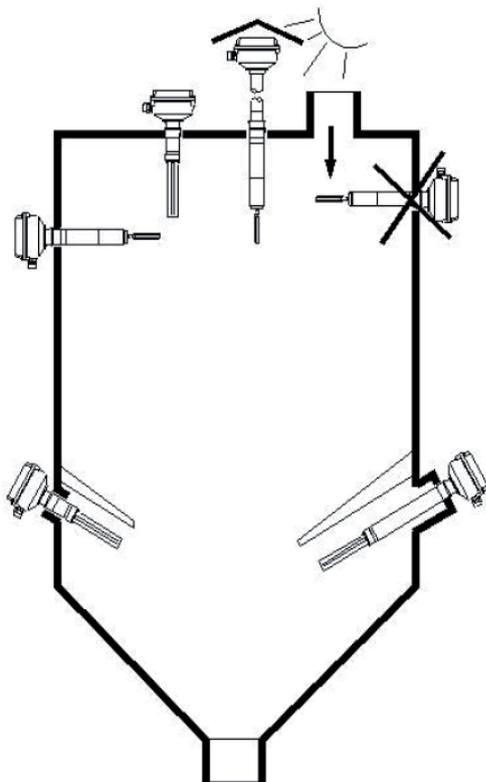
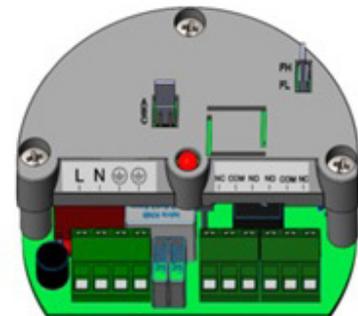
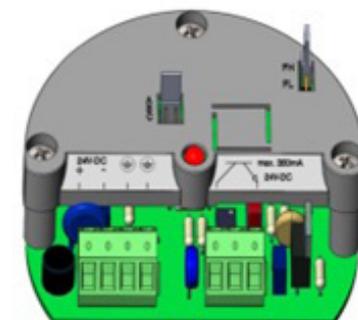


Fig. 3



Universal power supply for voltages 20 to 250Vac/dc with DPDT relay output



24 V DC power supply with transistor output

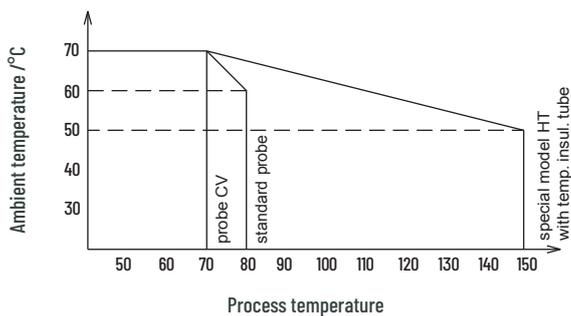


# Technical specifications

Enclosure	aluminium die-casting
Antifreeze	IP55/IP65 for ADPE enclosure
Max. ambient temperature	-20 ÷ 70°C
Dimensions	see Fig. 4/6
Vibrating plate	in AISI 304 or AISI 316 stainless steel on request
Connection	1 1/2" conical gas (DIN 2999) UNI 339-66
Minimum volumetric weight	30 g/l
Maximum operating temperature in the silo	-30 ÷ 90°C or 140°
Maximum operating pressure	10 bar
Power supply	20 to 250 Vac/dc < 3VA, or 24Vdc 20W with transistor output or 20 to 30 Vdc, with 8 to 16mA output (2 wires) < 0.5W
Max consumption	0.78VA
Relay	1 volt-free DPDT changeover contact with max. capacity 100VA 5A 250Vdc
Delay time to foil coating	1 second
Uncovering the foil	2 ÷ 5 seconds
On-demand relay status display	by means of a light-emitting diode on the circuit board
Execution	enclosure-mounted indicator light

Max. ambient or working temperature and max. process temperature range:

	Std CV Probe	Probe CV84	Probe for-HT
<b>Process temperature</b>	-40...+80°C	-40...+70°C	-15...+150°C
<b>Ambient temperature</b>	-40...+70°C	-40...+70°C	-15...+70°C
<b>ATEX ambient temperature</b>	-20...+60°C	-20...+60°C	-15...+60°C



## Conformità alla Direttiva CE

Gli strumenti CVN92/CVN93/CVN410/CVN94 rispondono ai seguenti regolamenti:

- EG-EMC-directive 2014/34/EU
- EG-Low Voltage Directive 2014/35/EU
- Standard applicati EN 61326-1, EN 61010-1