

Low cost single rod vibrating level switch
for all kinds of dry granular solids

Vibrating Level Switch CV600

Purpose

The **CV600** is a vibration type level control instrument that detects the minimum or maximum level in bins, silos and hoppers filled with any kind of easy flowing solids, e.g. granules or pellets like grains, granular plastics, foods, etc. The **CV600** is good for detecting materials with bulk densities of 20 grams per litre and higher.

How it works

The signal from the electronic circuit of the **CV600** excites the stainless steel rod of the probe to vibrate on its resonance frequency of approx. 460Hz. When material covers the rod of the probe the vibration stops. This is sensed by the electronic circuit which forces its relay to switch. When the rod gets uncovered, the vibration restarts and the relay switches back.



Advantages

➤ The vibration technique of the **CV600** offers many unique advantages over alternative level sensing technologies:

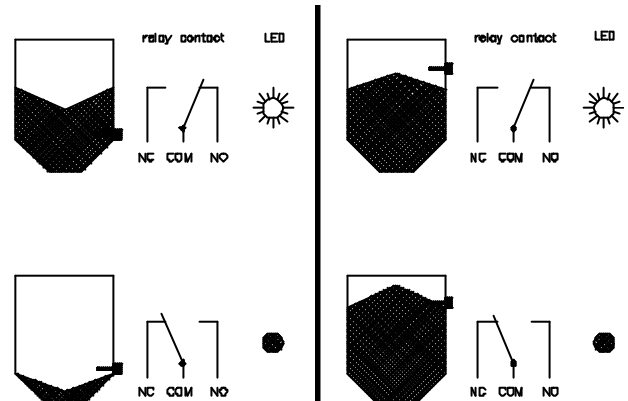
- easy installation, no calibration required
- no problems at material changes in the silo: the function is independent from material characteristics, e.g. dielectricity
- no readjustment required: unaffected by environmental changes e.g. temperature, pressure, humidity
- unaffected by dust clouds and agitation
- no maintenance required: the vibration has a self cleaning effect
- high durability: no moving parts, no wear-out

➤ reliable function due to unique patented single rod design

- the **CV600** has only one single rod that comes in touch with the material to be detected; thus the typical bridging problem, where material builds a bridge from one rod to the other, well known at instruments with so called "tuning fork" designs, is ruled out
- material build-up on the container wall has no influence on the function of the **CV600** as only the tip of the vibrating blade is sensitive and not the base

➤ Fail-safe

the electronic circuit of the **CV600** indicates power failure: if power supply fails the relay drops into alarm condition





- High quality
 - solid stainless steel construction
 - enclosure aluminium diecast, protection IP66 / IP67
 - designed and manufactured at PTL in Germany according to DIN EN ISO9001:2000 and with the background of over 20 years of experience in the field of vibrating level switches
- Low cost

In spite of all the above mentioned advantages the **CV600** is available for a very attractive price.

Failsafe high (H) / Failsafe low (L)

The **CV600** operates in either failsafe high (H) or failsafe low (L) mode. The failsafe mode is selected by a jumper on the PCB. The relay status is indicated by the red LED on the PCB.

Low Level Alarm L

High Level Alarm H

high level alarm H:

the relay is deenergized
(LED off), when the rod is covered by material or power has failed.

low level alarm L:

the relay is deenergized
(LED off), when the rod is free or power has failed.

Special Models

- *Remote Electronics Installation (not available in combination with dust-ex approval)*

For some applications it is necessary to keep the electronics separated from the container, e.g. if the ambient temperature at the silo exceeds the max. allowed 60°C or if the silo is exposed to heavy vibrations or shocks. The standard length of the cable between probe and electronics is 2 meters. Longer cables are possible.

- *High Temperature Model HT*

The standard models of the **CV600** can be used at temperatures inside the container of maximum 80°C. For applications where temperatures inside the container exceed 80°C the high temperature model HT must be used. This model allows temperatures inside the container up to 150°C. In order to ensure that the ambient temperature of the electronics will not be exceeded due to thermal conduction via the probe a temperature insulating tube is mounted between the probe and the enclosure. Instead it also is possible to install the electronics at a place with low ambient temperature by using the remote electronics installation.

Options

The following options are available:

- second cable gland (not available in combination with remote electronics)
- enclosure powder coated grey, blue or orange
- dust-ex according to ATEX directive 94/9/EC



Approvals

- CE approval according to the following directives: - EMC-directive 89/336/EEC
- Low Voltage-directive 73/23/EEC
- Dust-Ex according to ATEX-directive 94/9/EC: equipment group II, Cat. 1/2D
for zones 20, 21, 22

Specifications

Enclosure: diecast aluminium, protection IP 66 / 67
1 cable duct M16 for cable diameter 4,5 to 10 mm (optional 2nd cable duct)

Power Supply: wide range 20 to 250V AC/DC

Power consumption: 3 VA

Relay: one potential-free change-over contact (SPDT)
max. switching AC: 250V-AC, 5A, 1250VA, $\cos \varphi = 1$
max. switching DC: 30V-DC, 5A, 150W

Time Delay: 1 second from stop of vibration
2 to 5 seconds for start of vibration

Probe: stainless steel 1.4301 / AISI 304
thread 1" conical DIN 2999 (equals BSPT) or 1" NPT
insertion length approx. 157mm
resonance frequency approx. 460 Hz
max. load upon the end of the blade: 80N

Indication: relay: red LED on PCB
power: yellow LED on PCB

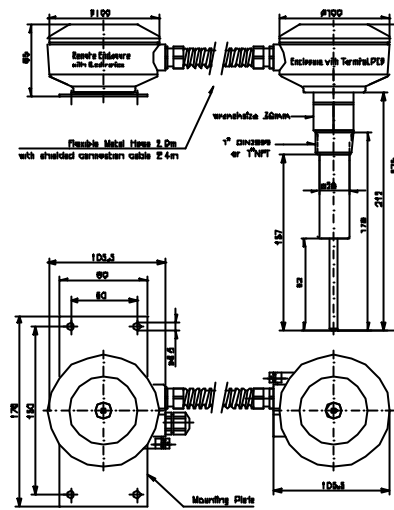
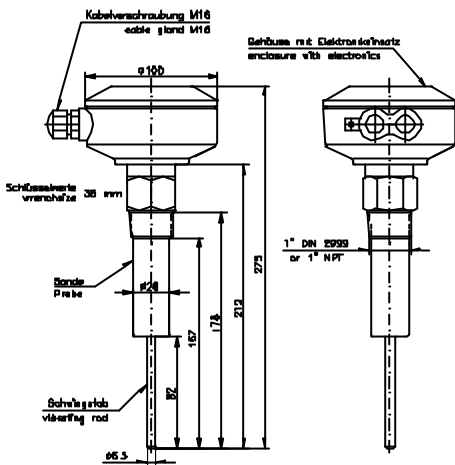
min. density of material to be monitored: 20 g / liter

max. pressure inside bin: 10 bar

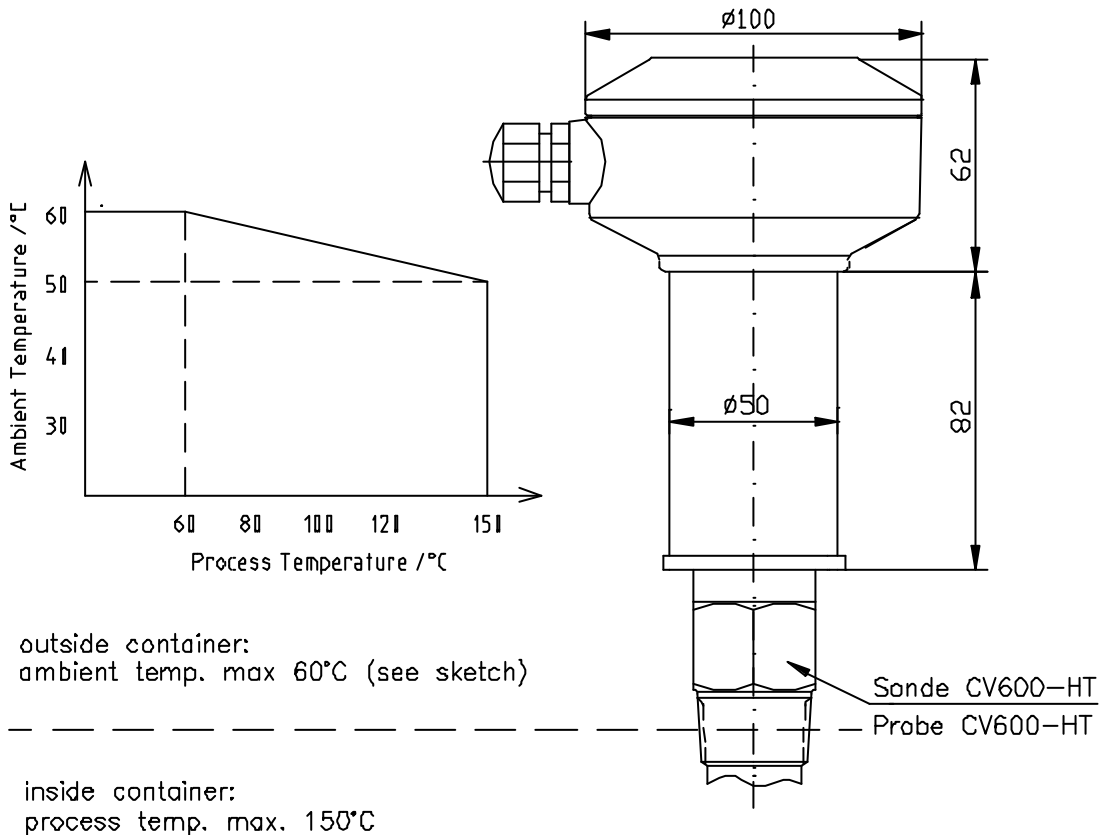
ambient temperatures: electronics: -20°C ... + 60°C process: -20°C ... + 80°C
-20°C ... + 150°C (special model HT)

Dimensions

remote electronics installation



➤ special model HT with temperature insulating tube



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