Certified to
DIN EN ISO9001:2015

PTL Physikalisch-Technisches Labor Hermann GmbH

SHT120/130/140

Vibrating Level Switch for hot bulk solids up to 250°C

For all applications where conventional level switches cannot be used due to high process temperatures.

0823

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Description

SHT120/130/140 are piezoelectric driven vibration type level sensors that detect the minimum and maximum level in bins, silos and hoppers, filled with grained or powdered materials, (bulk solids). The units can be used for overfill protection, for high-, mid-, or low level alarm. A patented special piezo system enables the ***SHT*** to withstand process temperatures as high as **250°C.**

How it works

The signal from the electronic circuit of the unit excites the blade to vibrate on its resonance frequency of 286 Hz. When material covers the blade of the probe, the vibration stops. This gets sensed by the electronic circuit which forces its output signal to switch. When the blade gets uncovered the vibration restarts and the output signal switches back.

Models

SHT120:	model with fixed insertion length of 184mm measured from the tip fo the probe to the beginning of the process connection thread
SHT130:	model with welded pipe extension, insertion length up to 2,0m
SHT140:	model with threaded pipe extension, insertion length up to 4,0m

Advantages

- easy installation and setup: - no calibration required
- no subsequent costs: - no readjustment required: unaffected by environmental changes e.g. temperature, pressure, humidity
- high durability:
  - no moving parts hence no wear-out
  - high mechanical toughness due to the patented reinforced membrane and a patented special piezo system
  - habitual high PTL-quality: development and production at PTL in Germany according to DIN EN ISO9001:2015
- high performance:
  - single blade construction eliminates the bridging problem typical for the „tuning fork“ design
  - fail-safe-function: the instrument switches into alarm condition when power supply fails
- maximum versatility:
  - applicable for very light materials with densities down to 20 grams/litre as well as for heavy materials,
  - applicable for powders as well as for materials with grain size up to 40mm

Specifications

Enclosure: die cast aluminum, (option powder coated)
protection IP 66 and IP 67 (IP65 for remote electronics installation)
2 cable glands M20 x 1,5

Electronics: **Wide range power supply 22 ... 250V AC/DC with relay output:**
two potential-free change-over contacts (DPDT)
max. switching datas AC: 250V-AC, 8A, 2000VA, cosφ = 1
max. switching datas DC: 8,0A at 24V-DC / 1,5A at 48V-AC
min. switching datas DC: 24V / 100mA
Power consumption: < 3 VA

or: **power supply 24V-DC with transistor output (3-wire):**
potential free, NPN or PNP type
350mA @ 24V-DC, shorttime max. 1A, max. power 20W
power loss max. 3V, max. leakage current 100µA; short circuit proof
power consumption at blocked transistor: < 1 W

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

Indication: LED on PCB (option: externally visible)

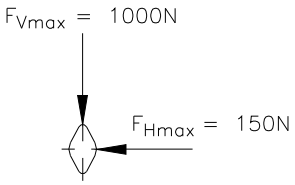
Probe: Material: stainless steel 1.4301 / AISI 304

connection:
- thread 1-1/2“ EN10226 (equals BSPT) or 1-1/2“ NPT
- process connection “Tri-Clamp” according to DIN32626 (for SHT130 only)

resonance frequency: approx. 286 Hz

max. horizontal load upon the end of the blade: 150 N

max. vertical load upon the end of the blade: 1000 N



Material to be detected: non sticky bulk solids
min. density 20 grams per liter,
grain size from powder to max. 40mm

Ambient conditions:

max. pressure inside bin:	10 bar
ambient temperature electronics:	-20°C ... + 70°C
process temperature probe:	-20°C ... + 250°C

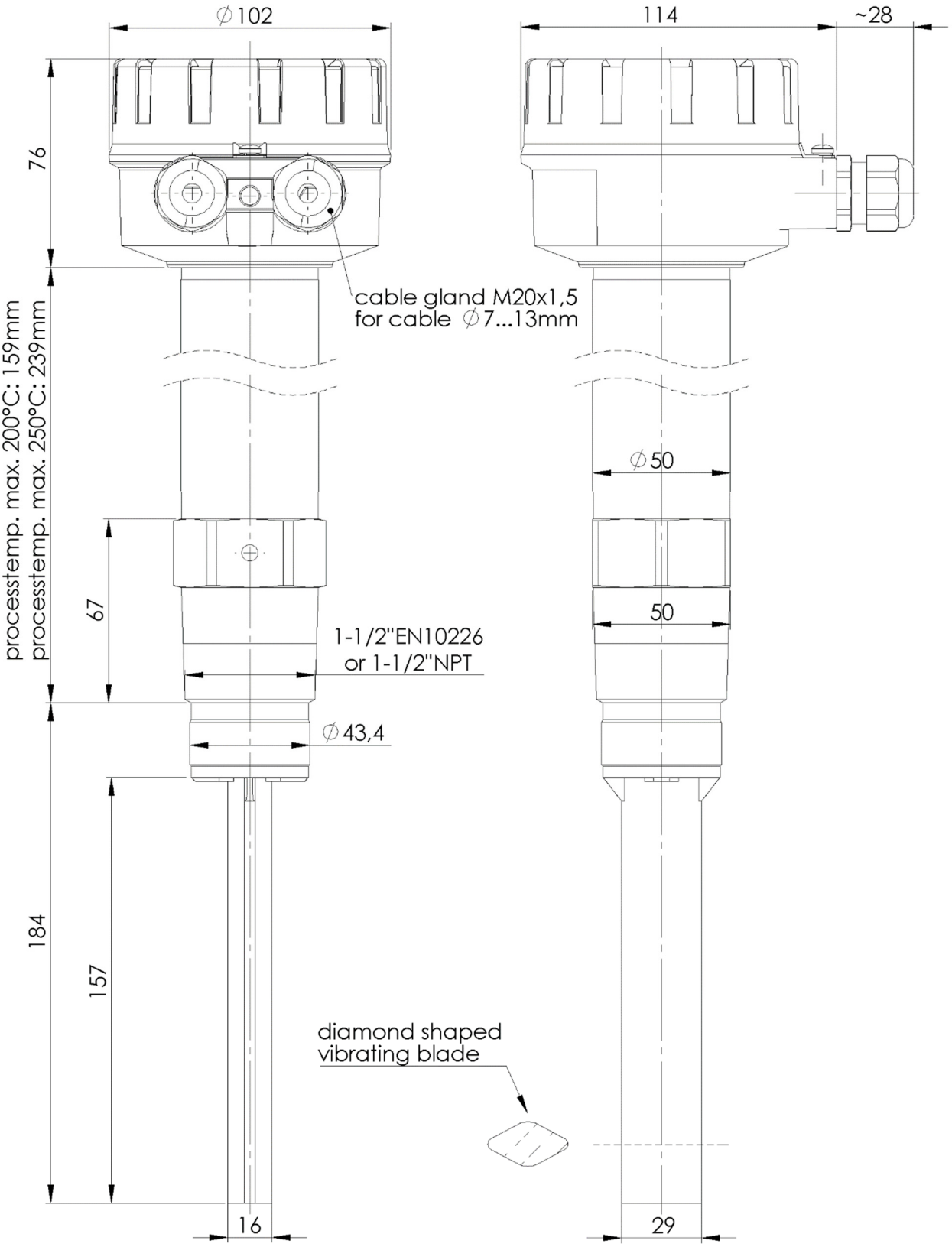
CE-Conformity:
- EMC-directive 2004/108/EG
- Low Voltage-directive 2006/95/EG

Options

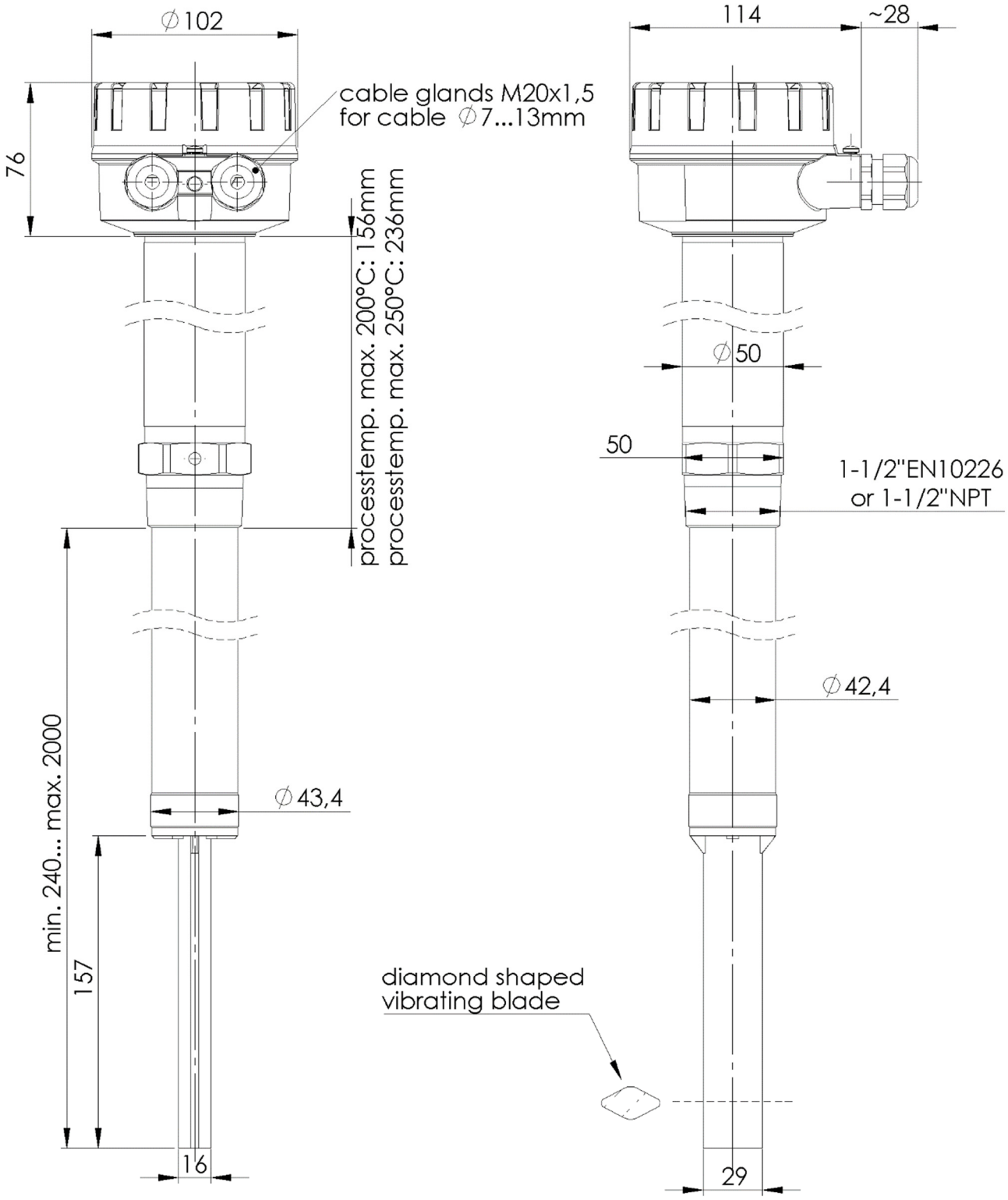
- remote electronics installation, to be used if ambient temperature near the container wall exceeds 70°C or if container is exposed to high vibrations
- enclosure powder coated grey, blue, beige or orange
- externally visible LED for relay status

Dimension

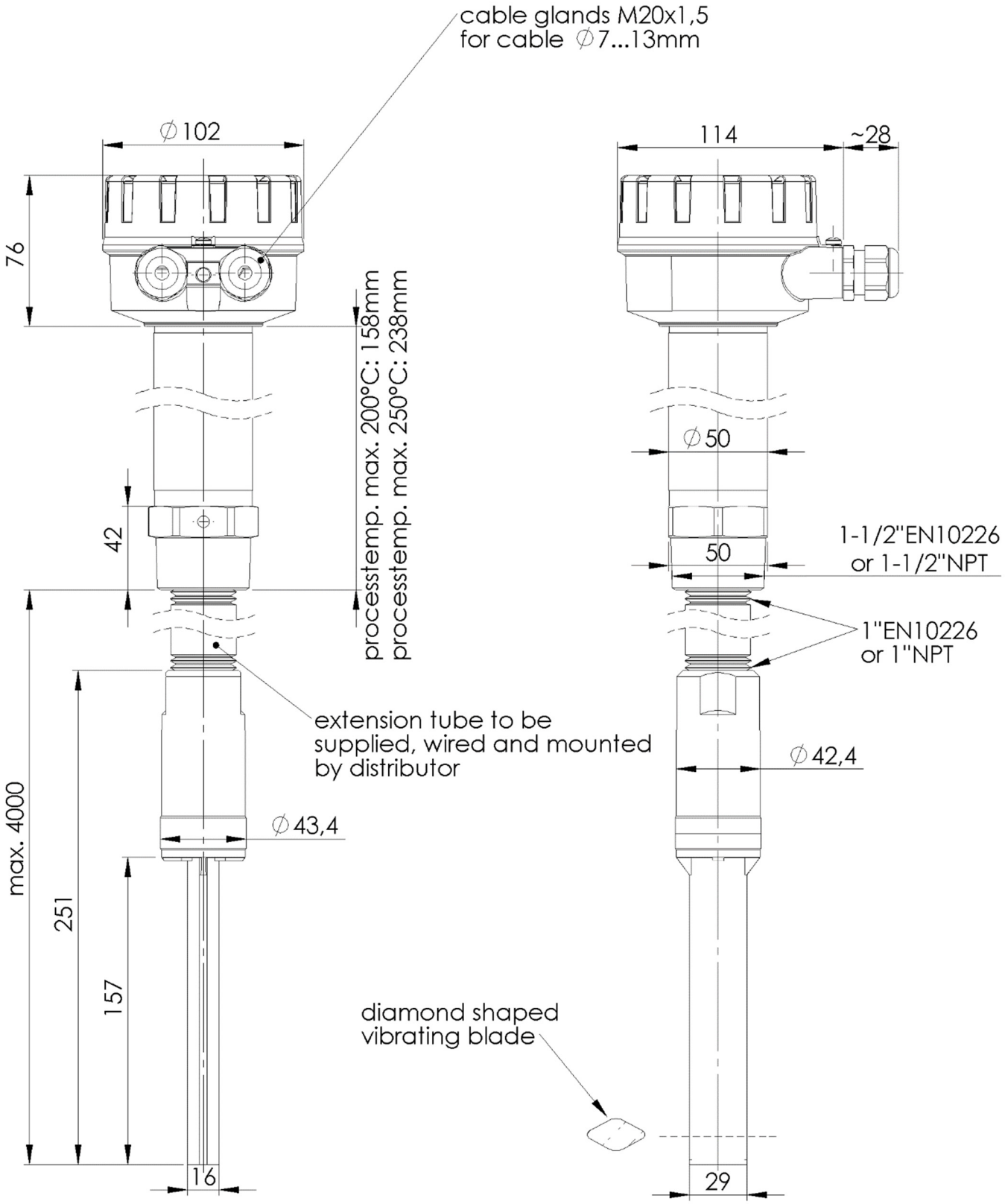
- *SHT120*



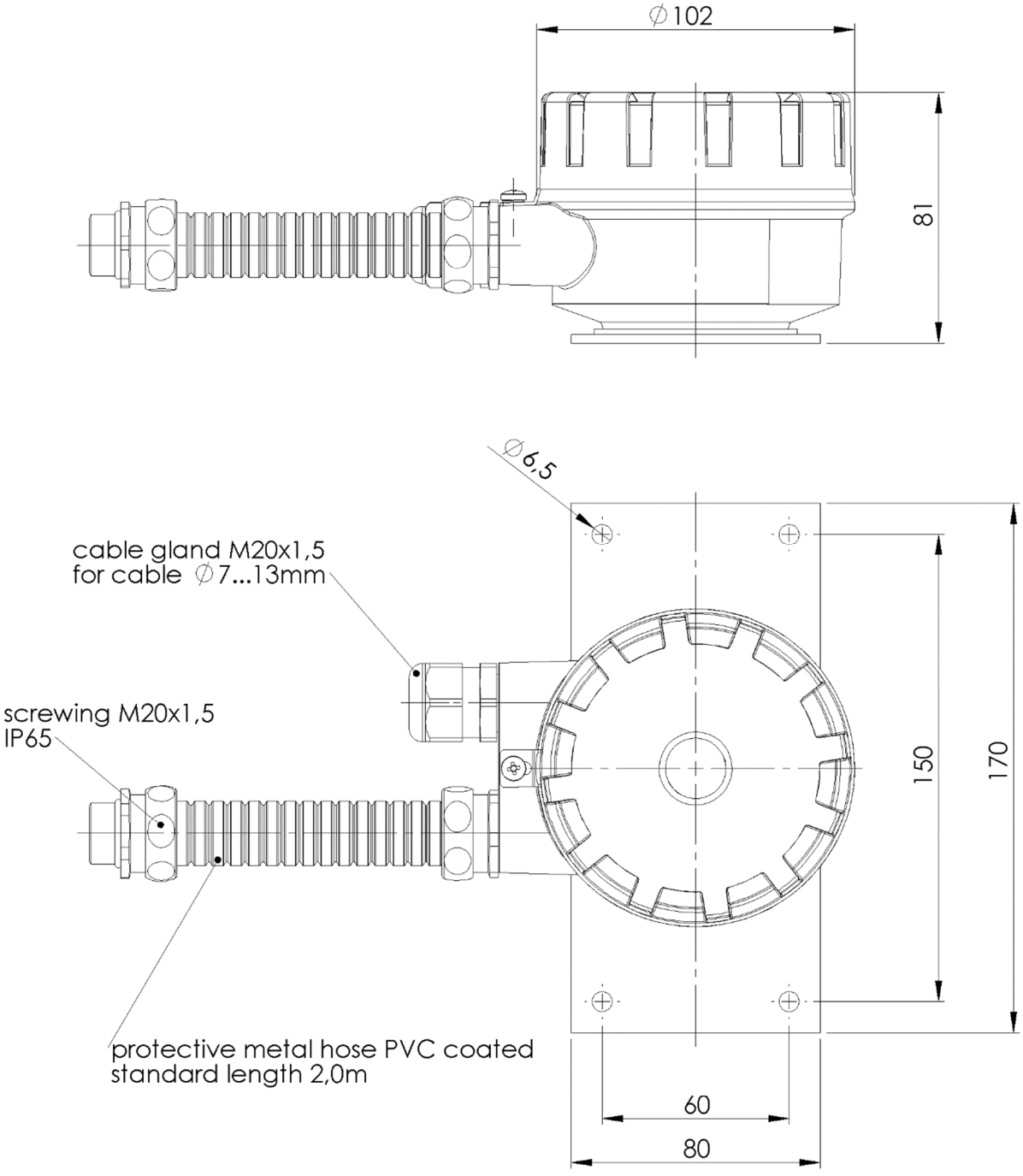
- *SHT130*


⌀102
76
cable glands M20x1,5
for cable ⌀7...13mm
processtemp. max. 200°C: 156mm
processtemp. max. 250°C: 236mm
min. 240... max. 2000
157
⌀43,4
16
114
~28
⌀50
50
1-1/2"EN10226
or 1-1/2"NPT
⌀42,4
diamond shaped
vibrating blade
29

- *SHT140*


cable glands M20x1,5
for cable ∅7...13mm
∅102
114
~28
76
processtemp. max. 200°C: 158mm
processtemp. max. 250°C: 238mm
∅50
42
50
1-1/2"EN10226
or 1-1/2"NPT
1"EN10226
or 1"NPT
extension tube to be
supplied, wired and mounted
by distributor
∅42,4
∅43,4
max. 4000
251
157
diamond shaped
vibrating blade
16
29

➢ *remote electronics installation*



Set includes:
- enclosure on mounting plate
- 2,0m protective hose with connection cable
- terminal PCB to be mounted into probe housing for connecting probe to connection cable