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.

approved to
DIN EN ISO9001:2008

0412

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Description

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

How it works

The signal from the electronic circuit of the ***SHT120*** excites the blade of the instrument to vibrate on its resonance frequency of 285 Hz. When material covers the blade of the probe, the vibration stops. This is 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

Additional to the *SHT120* two models with tube extension are available:

- *SHT130* model with welded tube extension, insertion length up to 2,0m
- *SHT140* model with threaded tube 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 ISO9001:2008
- 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, for powders as well as for materials with grain sizes up to 40mm

Specifications

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

Electronics: **Wide range power supply 20 ... 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

or: **power supply 20…30V-DC with 8/16mA-output (2-wire):**
power consumption: < 0,5 W
The probe can be supplied by the supply and analyzing unit *CV2000AE* e.g.

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

Indication: LED on PCB (option: externally visible)

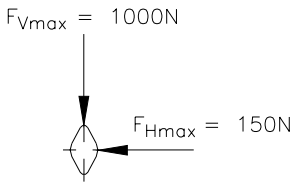
Probe: Material: stainless steel 1.4301 / AISI 304

connection:
- thread 11/2“ DIN 2999 (equals BSPT) or 11/2“ NPT
- process connection “Tri-Clamp” according to DIN32626 (for SHT130 only)

resonance frequency: approx. 285 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 litre,
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

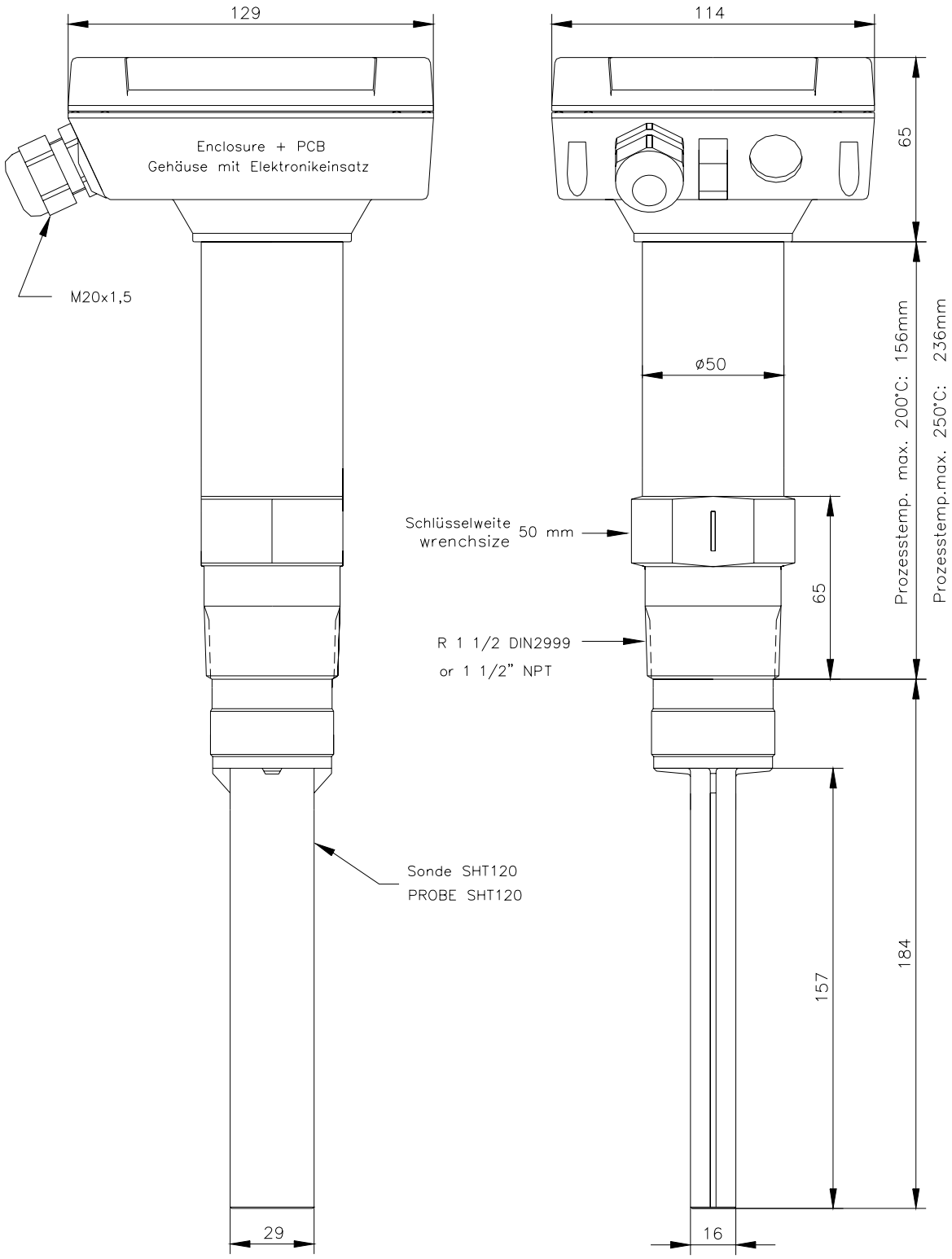
CE-Conformity:
- EMC-directive 2004/108/EG
- Low Voltage-directive 2006/95/EG

Options

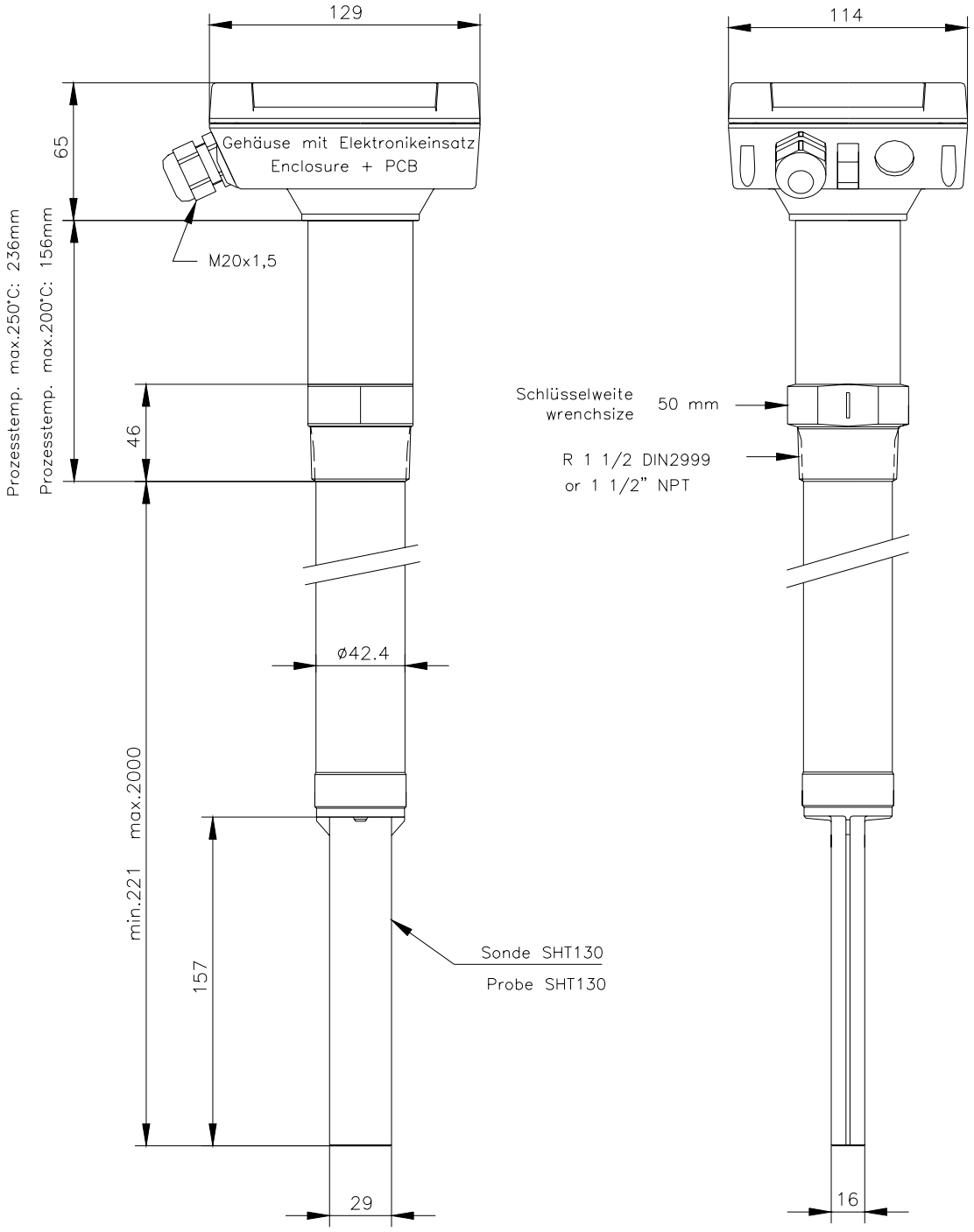
- remote electronics installation, to be used if ambient temperature near the container wall exceeds 70°C or if container is exposed to high vibrations
- second cable gland (not available in combination with remote electronics)
- enclosure powder coated grey, blue, beige or orange
- externally visible LED for relay status

Dimension

- *SHT120*

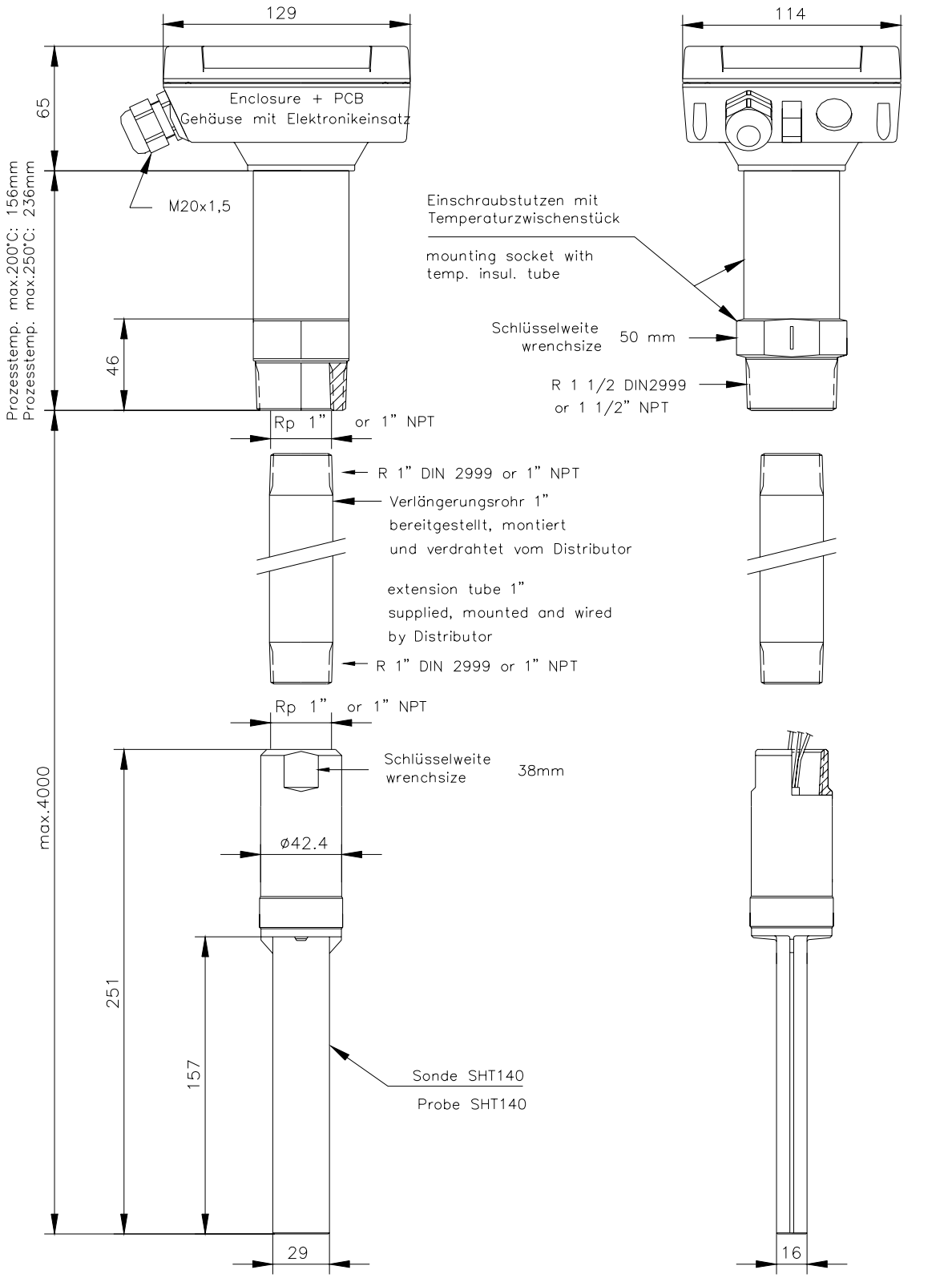


- *SHT130*



Bemassung in mm wenn nicht anders angegeben
all dimensions are in millimeters unless otherwise stated

➢ SHT140



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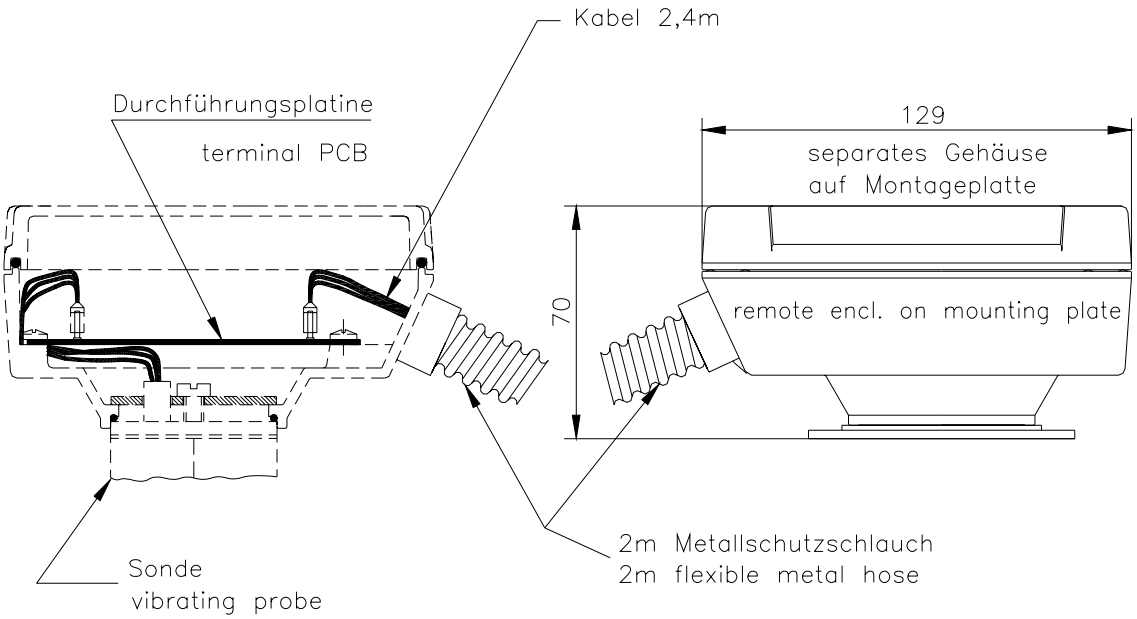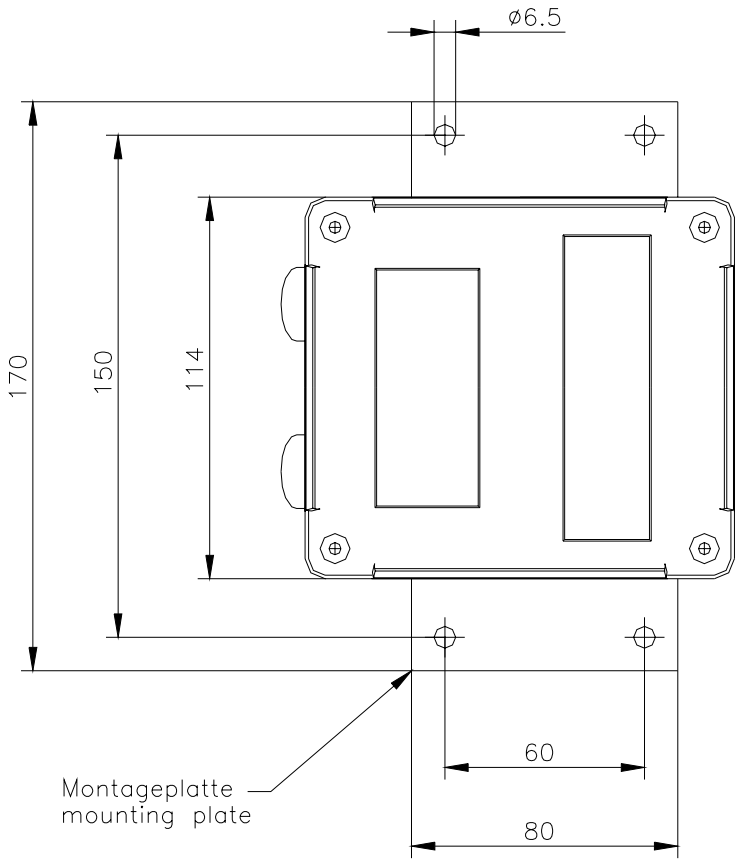
➢ *remote electronics installation*