

# UHC-01

# Dinel<sup>®</sup>

## DATA CONVERTER

## Universal USB to HART converter



**HART**  
COMMUNICATION PROTOCOL



- **Setting and reading measured data via PC from a device supporting HART<sup>®</sup> communication protocol over the current loop of 4–20 mA**
- **Using with an external power supply for current loop or with an internal power supply (24 V / 45 mA) with short-circuit protection**
- **Integrated and disconnectable HART<sup>®</sup> communication resistor (250 Ω)**
- **Supplied with setup and diagnostic software with the support of HART<sup>®</sup> protocol revision 5 and 7**
- **Communication indicated by means of LEDs**
- **Very compact dimensions and low weight**

### Technical specifications

|                                       |  |
|---------------------------------------|--|
| Supply voltage                        | USB (5 V DC)   |
| Operational environment (EN 60079-14) | non-explosive areas  |
| Input / Output to PC                  | USB 2.0  |
| Input / Output to measuring device    | current loop 4–20 mA + HART <sup>®</sup>   |
| Power supply – external               | max. 36 V  |
| HART <sup>®</sup> resistor – external | min. 230 Ω, the max. value depends on the lowest supply voltage of the probe and the real time current in the loop |
| Ambient temperature range             | -40 ... +80 °C   |
| Protection class                      | IP 30  |
| Device weight                         | approx. 0.1 kg   |
| Housing body                          | aluminium 6063   |
| Housing frames                        | polycarbonate  |
| Housing faces                         | fibreglass FR4   |
| Housing feet                          | rubber   |

# BASIC FEATURES AND VARIANTS

The UHC-01 converter is intended for connecting all probes supporting HART® communication of their configuration and reading measured values via the appropriate software on a PC. The software supplied by Dinel, s.r.o. or possibly other software capable of communication via the HART® protocol through a virtual serial port can be used as the software.

The converter is housed in an aluminium box. One side contains a USB-B connector for connection to a PC and the other side contains a 3-pin connector with 5 mm spacing. A terminal block with screw contacts is supplied with this connector.

Ongoing communication is indicated by two yellow LEDs. The TX LED indicates ongoing communication from the PC direction to the measuring device / probe and the RX LED indicates ongoing communication in the opposite direction.

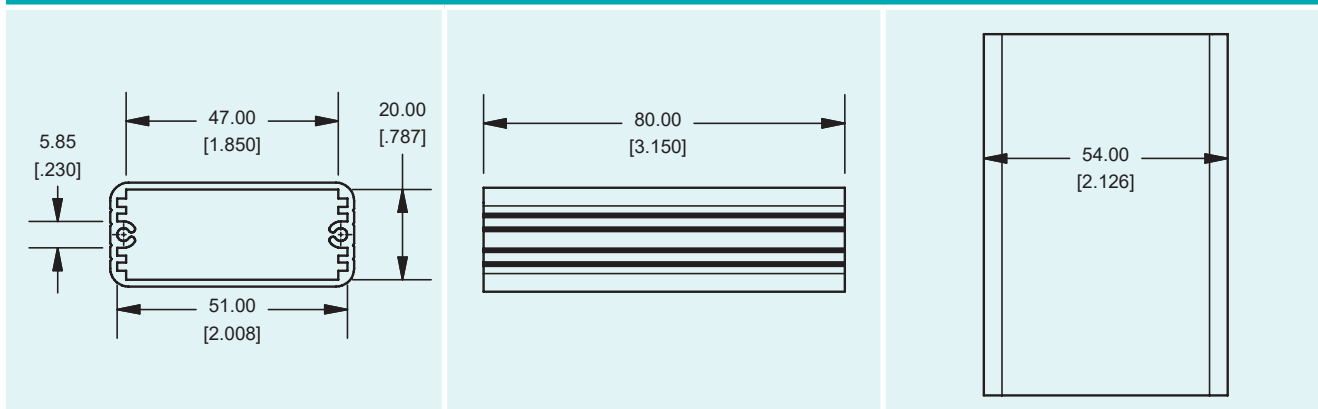
The converter allows you to turn the communication HART® resistor (250 Ω) ON or OFF using a mechanical switch.

In addition to the input and output for HART® communication, the converter also contains a power supply for measuring probes (24 V / 45 mA) with short-circuit protection. It can thus power and communicate theoretically with up to 10 devices at a time, provided that the probes are in the fixed current mode and their current consumption is 4 mA, which is the most common way of connecting multiple measuring probes at a time. However, it is necessary to count with a voltage drop across the communication HART resistor, which increases with each additional probe connected and it may happen that the prescribed minimum supply voltage of the probe will not be complied with.

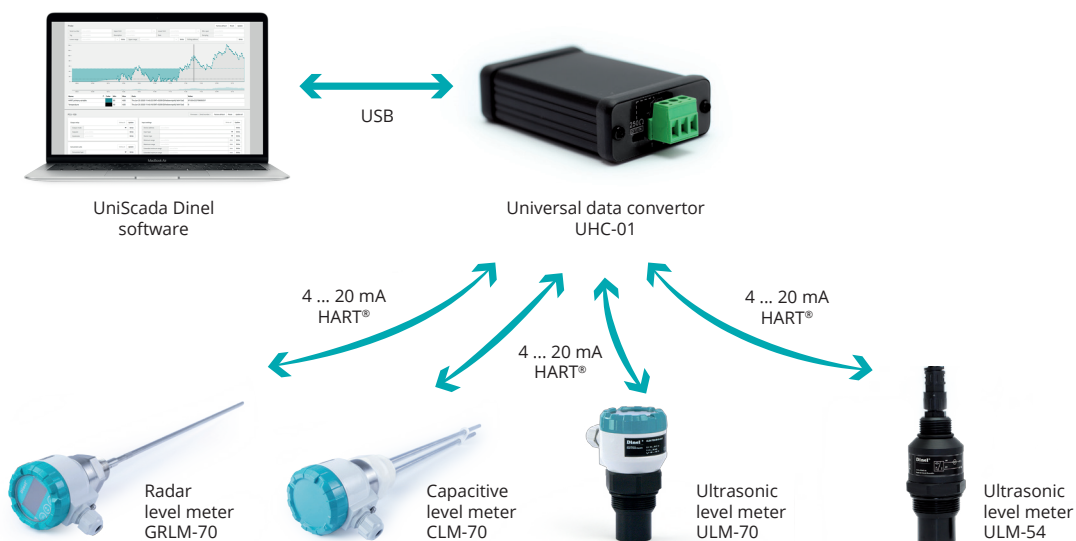
The converter can also communicate with the probes that are powered by their own voltage sources. In this case, the power supply of the converter is not connected.

The converter is delivered together with the relevant Dinel, s.r.o. software. This software allows you to make settings, diagnostics and display of the measured values from the probes connected to this converter. A more detailed description is available in the instruction manual to this software.

## DIMENSIONS



## CONNECTION SYSTEM



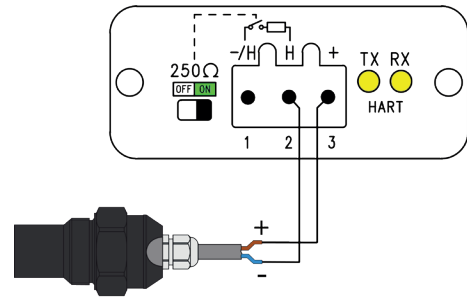
# ELECTRICAL CONNECTION

The connection of the converter to the computer is typically carried out using a standard USB-A <-> USB-B cable.

The connection of a measuring probe or multiple probes offers various variants of connection, either with the converter's power supply or with an external power supply with the internal HART® resistor ON or OFF. All possible variants of connection are listed in the following chapters. All figures show the output side of the converter in the direction to the measuring probe including communication LEDs and a switch for switching ON/OFF the communication HART® resistor (hereinafter also referred to as shunt).

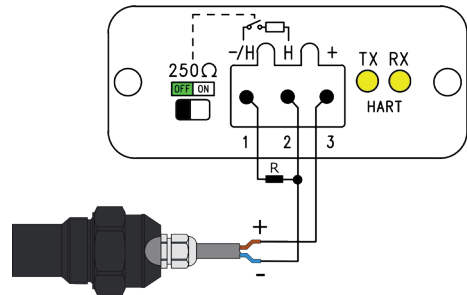
## CONNECTING A PROBE POWERED BY THE INTERNAL POWER SUPPLY WHEN USING AN INTERNAL SHUNT

This wiring is used in the case of connecting one probe where the power supply is not available or is not required and at the same time, there is no communication HART® resistor in the current loop. The switch is set to the ON position (highlighted in green).



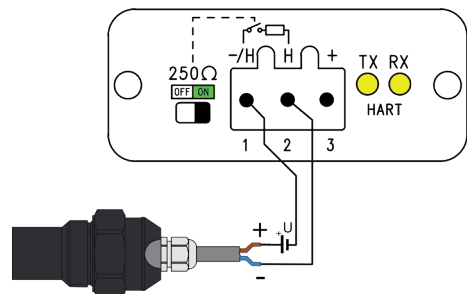
## CONNECTING A PROBE POWERED BY THE INTERNAL POWER SUPPLY WHEN USING AN EXTERNAL SHUNT

This wiring is used in the case of connecting one probe where the power supply is not available or is not required and at the same time, there is no communication HART® resistor in the current loop. The switch is set to the OFF position (highlighted in green).



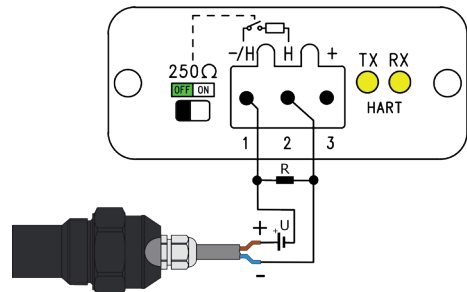
## CONNECTING A PROBE POWERED BY AN EXTERNAL POWER SUPPLY WHEN USING AN INTERNAL SHUNT

This wiring is used in the case of connecting one probe where the use of an external power supply is required and at the same time, there is no communication HART® resistor in the current loop. The switch is set to the ON position (highlighted in green). The external power supply is marked as U in the wiring.



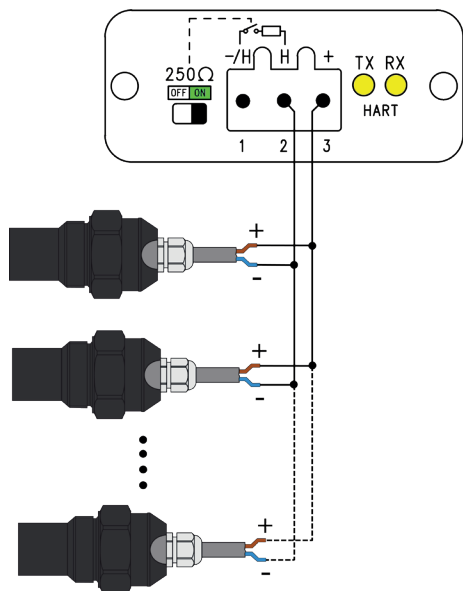
## CONNECTING A PROBE POWERED BY AN EXTERNAL POWER SUPPLY WHEN USING AN EXTERNAL SHUNT

This wiring is used in the case of connecting one probe where the use of an external power supply is required and at the same time, there is already the communication HART® resistor in the current loop. The switch is set to the OFF position (highlighted in green). The external communication resistor is marked as R in the circuit and the power supply as U.



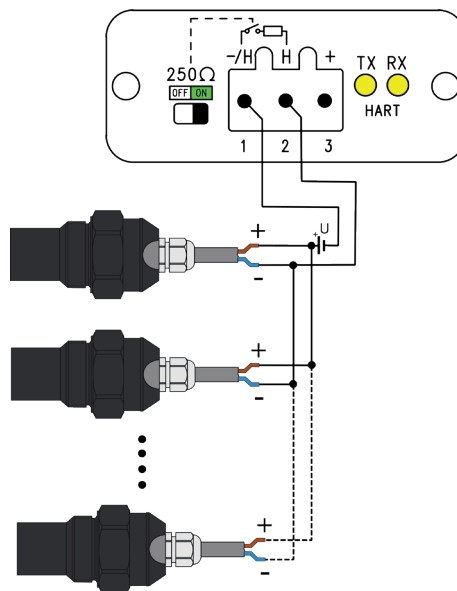
### CONNECTION OF TWO OR MORE PROBES POWERED BY THE INTERNAL POWER SUPPLY

This wiring is used in case of connection of two and more probes where the power supply is not available or not required. The figure only shows the wiring using the internal communication resistor. The external communication resistor would be connected in the same way as when using 1 probe. **The rule is that the other probes are always connected in parallel to the existing ones.**



### CONNECTING TWO OR MORE PROBES POWERED BY AN EXTERNAL POWER SUPPLY

This wiring is used in case of connection of two and more probes where the use of an external power supply is required. The figure only shows the wiring using the internal communication resistor. The external communication resistor would be connected in the same way as when using 1 probe. **The rule is that the other probes are always connected in parallel to the existing ones.** The external power supply is marked as U in the wiring.




## PROTECTION, SAFETY, COMPATIBILITY

The converter is equipped with short-circuit protection of the internal power supply, protection against a mix-up of wires when using an external power supply and protection of all inputs and outputs to the measuring device against overvoltage.

Protection against direct contact is ensured by safe voltage IEC 60364-4-41.

This equipment has been issued with a Declaration of Conformity pursuant to Act No. 90/2016 Sb., as amended. The electrical equipment supplied complies with the requirements of applicable government regulations on safety and electromagnetic compatibility.

## ACCESSORIES

|  |                       |   |
|--|-----------------------|---|
| 3-pin screw terminal block with contact spacing 5 mm                             | included in the price |  |
| USB connection cable to PC (length 2 m)  | included in the price |   |
| Software for settings, diagnostics and reading the measured data from the probes | included in the price |   |

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