

MANUAL

HARTConf, LHPConf

Field Configurators for Transmitters with HART or LHP Communication and HART-USB Modem



- Adjustment of the range of HART and LHP instruments by setting the numerical value or calibration on the input value
- Display of momentary input and output values of connected instrument, and up to three other variables
- Testing a current loop, and zero setting of a sensor
- Changing notes, units, damping, etc.
- Power supply for transmitter without any external power supply unit
- Configurator powering from an accumulator, USB or a prismatic battery
- Up to 15 hours of continuous operation
- Using the instrument as a HART-USB modem
- Language versions CZ, EN, DE, RU or as required

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1. General instructions and information

1.1 Symbols used



Symbol of warning; for safe use it is necessary to proceed according to the instructions



Symbol CE certifies compliance of the product with the respective government directives



This product does not belong to public waste and it is subjected to separate collection

HART® Communication protocol for reading and changes of configuration, registered trademark HART Communication Foundation

LHP Remote communication for reading and changing of the configuration

1.2 Safety warnings and cautions



The instrument may be connected only to the transmitters supplied from a safe source of voltage that meets requirements of the standard EN 61010-1 and that are installed in compliance with the national requirements and safety standards. The instrument may be operated only by a qualified person who has been familiar with this manual. The instrument may not be used for other purposes than as specified in this manual.

The maximum operational parameters of the instrument may not be exceeded to prevent any risk of injury from electric shock. Use the instrument in a suitable environment, without direct sunlight, dust, high temperature, mechanical vibrations and surges; protect it against rain and excessive moisture.

1.3 Scope of delivery

With **HARTConf** is delivered:

- Cabel HART and cabel USB,
- CD with driver,
- Accumulator NiMH 8,4 V / 200 mA h,
- Instruction manual.

With **LHPConf** is delivered:

- Cabel HART,
- Battery 9 V 6LR61 (6F22),
- Instruction manual.

1.4 Description of the delivery and packing

The product is packaged in a protective cover and provided with an identification label with a mark of the output control.

The product must not be exposed to direct rain, vibrations and shocks during transport.

1.5 Storage

The products shall be stored at temperatures from -20 °C to +40 °C and maximum relative humidity 80 % in the rooms with elimination of condensation of water vapours on the products. The stored products shall not be exposed to any shocks, vibrations and effects of harmful vapours and gases.

1.6 Installation and commissioning

During installation, commissioning, operation and maintenance follow the instructions in chapter 4.

1.7 Spare parts

Any of the compact parts of the product can be also ordered as a spare part if there are not required special procedures or technological operations for the exchange.

1.8 Repairs

Products are repaired by the manufacturer. The products for repair should be sent in a packing that guarantees damping of shocks and vibrations and protects against damage during transport.

1.9 Warranty

Products are covered by a warranty for a period of 3 years from the delivery date on the delivery note. The manufacturer guarantees technical and operational parameters of the products within scope of the applicable documentation. Warranty period is specified with individual items and begins from the day of takeover of the goods by the purchaser or delivery to the carrier. Any claims concerning to defects of the goods together can be filed in writing with the manufacturer within the warranty period and the claimed product shall be presented. The claiming party shall give identification of the product, number of the delivery note and description of the fault or defect.

The manufacturer is not responsible for any defects caused by improper storage, incorrect connection, damages caused by external effects, in particular by effects of factors with excessive values, unqualified installation, improper operation or common wearing.

2. End of service and disposal

2.1 End of service



Dismounting and disposal of the device is possible after disconnecting of a battery.

2.2 Disposal



When disposing the packing and destroyed or irreparably damaged product proceed according to the local regulations.

3. Product description

HARTConf, LHPConf Field Configurators and HART-USB Modem for Transmitters with LHP or HART Communication

- Adjustment of the range of HART and LHP instruments by setting the numerical value or calibration on the input value
- Display of momentary input and output values of connected instrument, and up to three other variables
- Testing a current loop, and zero setting of a sensor
- Changing notes, units, damping, etc.
- Power supply for transmitter without any external power supply unit
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- Up to 15 hours of continuous operation
- Using the instrument as a HART-USB modem
- Language versions CZ, EN, DE, RU or as required



3.1 Application

HARTConf and LHPConf handheld configuration devices are intended for reading, adjusting and changing the configuration of instruments with HART and LHP communication. These devices communicate with instruments connected in a current loop or they can supply these instruments being adjusted directly from their internal current supply unit. Therefore, they can be used for the adjustment of instruments before their installation, and before putting them into operation without connecting them necessarily to a power supply unit. The internal power supply unit for a transmitter can be switched off, permanently switched on or switched into standby mode, when the power supply is switched on only for the moment the communication is in progress, and then it is switched off again. This mode of operation can significantly extend the operating period in case the device is supplied from an accumulator or a battery. The configurator and its functions are controlled by means of push buttons and a colour graphic display.

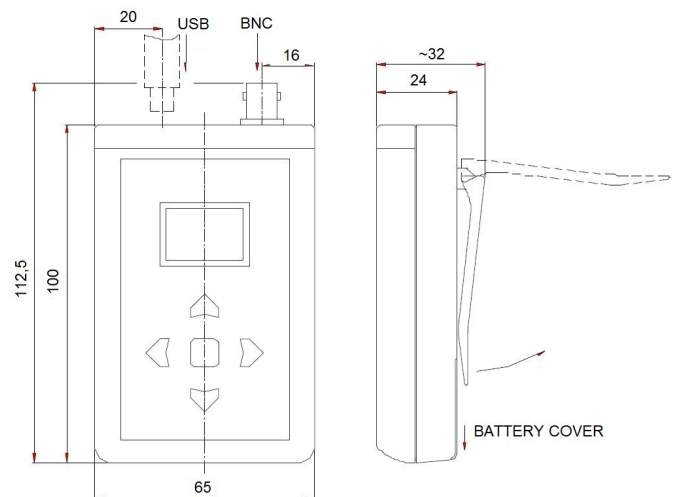
3.2 Functions of the HARTConf configurator

The HARTConf configurator is an instrument that combines a handheld device with HART or LHP communication and an intelligent HART-USB modem. It enables one to communicate with instruments equipped with HART communication at the level of universal and common practice commands. Therefore, it is possible to change the output range of any HART instrument, display actual value of input, output and up to three other variables. It is possible to test a current loop, do a zero setting of a pressure sensor, change text items etc. All available configuration parameters can be set in HART-USB Modem mode with suitable PC software (software is not included with HARTConf). It also includes all functions of a LHP configurator, and it can therefore be used for the adjustment of all parameters of LHP transmitters. It is supplied from a 9 V accumulator, which can be charged from a USB port. After connection to the USB port, the configurator is supplied through this port, which provides all necessary energy. The device is able to supply the transmitter from its own internal power supply unit both in the configurator mode and the HART-USB Modem mode.

3.3 Functions of the LHPConf configurator

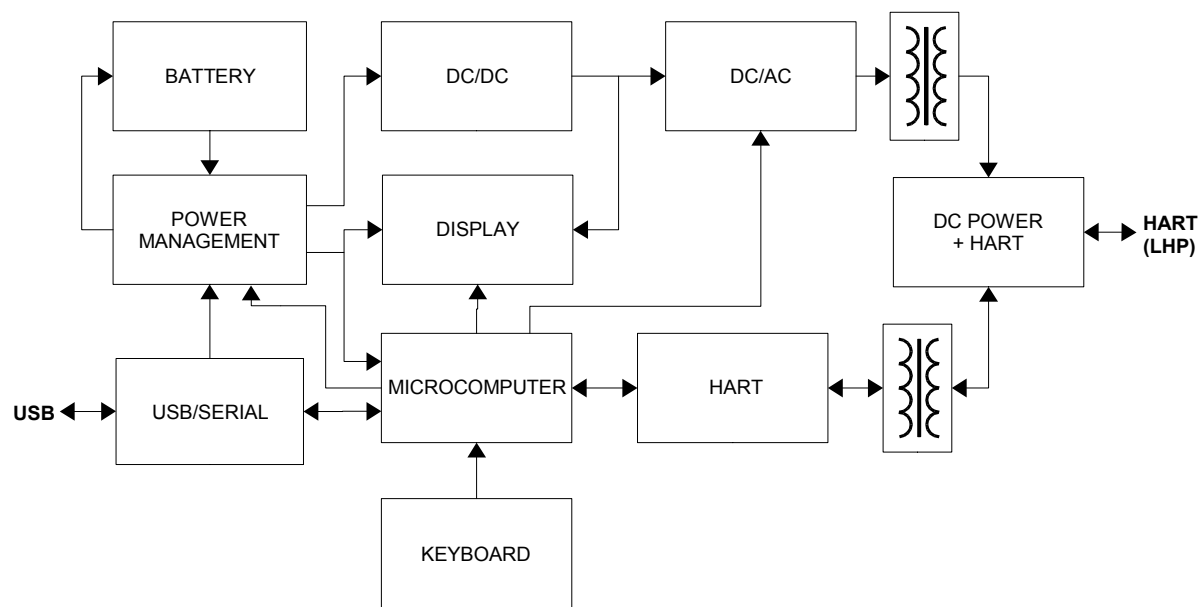
It only contains the LHPConf configurator function and does not support connection to device with HART communication. In instruments with LHP communication, the device allows to adjust all available parameters except for user linearization. It can visualize momentary input and output values and max. three other variables, as well as test an output current loop, etc. It contains the function of a transmitter supply, and operation with a transmitter therefore does not require any external power supply unit. LHPConf configurator is supplied from a 9 V battery by default. If the accumulator is used instead of battery, it is possible to charge the device by connecting to the USB port or AC adapter. After connection to the USB port, the configurator is supplied through this port, which provides all necessary energy.

3.4 Dimensional drawings

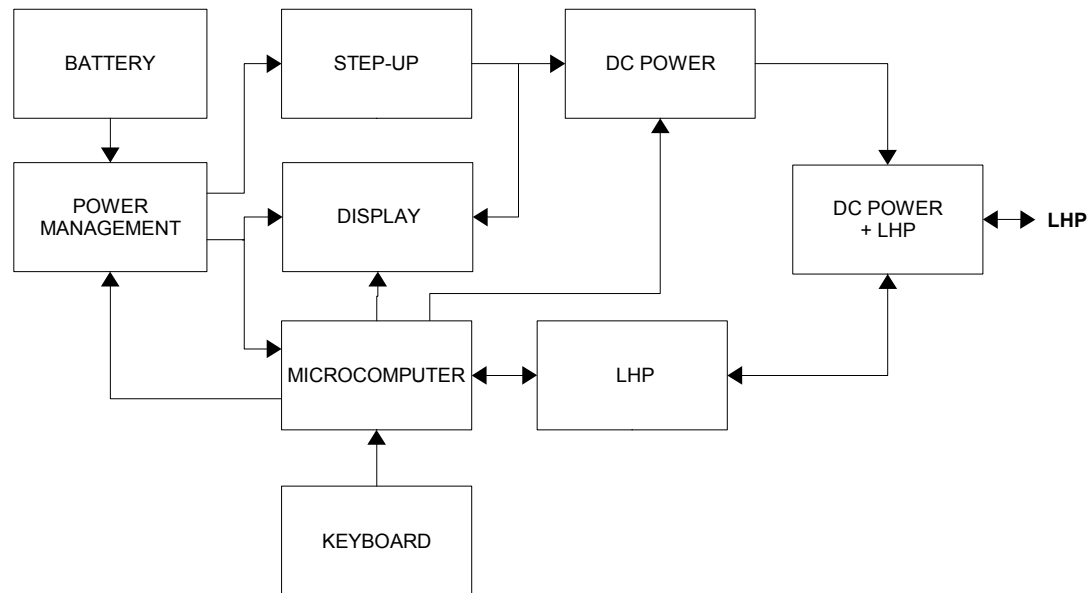


3.5 Block diagram

Block diagram of a field configurator HARTConf



Block diagram of a field configurator LHPConf



4. Installation, operation and maintenance

4.1 Installation and commissioning

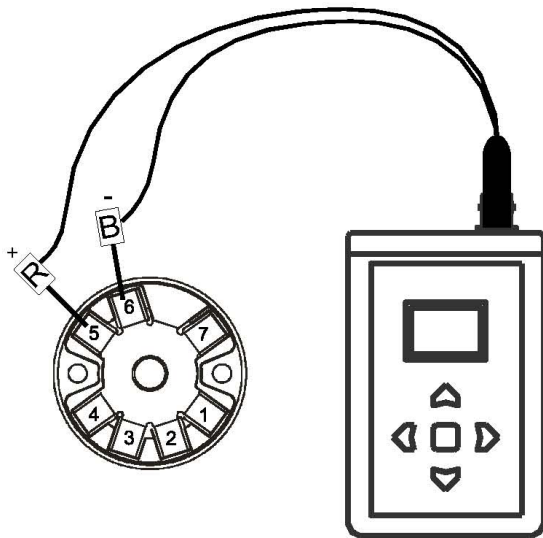
4.1.1 General

The instrument can be put into operation by installing a battery and switch on according to the instructions in this manual. During the battery installation, the right battery type in menu Options | Battery Type must be properly selected.

4.1.2 Electrical connection

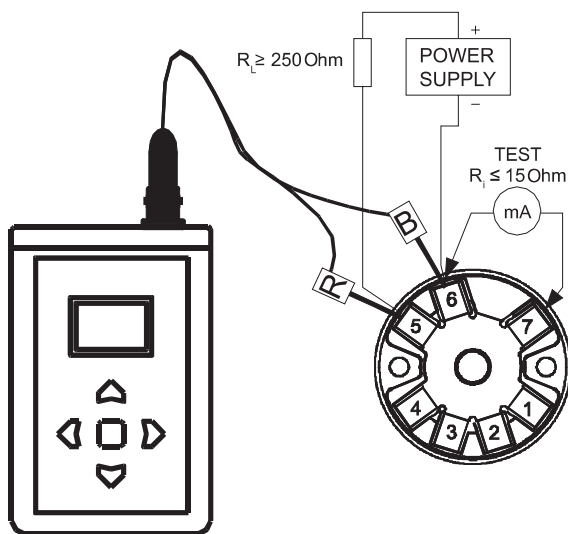
Connection of a transmitter with power supply from the configurator

(set in menu: „Options | Power supply | Int./Ext. | Internal“)



Connection of a transmitter with power supply from an external source

(set in menu: „Options | Power supply | Int./Ext. | External“)



4.1.3 Installation of a battery or accumulator into the configurator HARTConf, LHPConf

In case of installation of a dry battery, make sure that “Battery Type” is set to “Prim. Battery”! If not, set the configurator correctly.

ATTENTION! Using battery in the instrument when set to “Accumulator” may cause damage to the battery by charging it from USB!

In case you install a rechargeable accumulator, make sure that “Battery Type” is set to “Accumulator”! If not, set the switch correctly. This ensures correct charging when the instrument is connected to USB.

4.1.4 Installation of USB driver

Correct work with a USB interface and charging through a USB requires the necessary USB driver installed on the PC. Usually, operating system search for a suitable driver after connecting the configurator to the USB port. If this does not work, run „CDM v2.10.00 WHQL Certified.exe“ file from the supplied CD. When the driver is installed, the USB cable can be connected and the required port number can be set in the Device Manager.

4.1.5 Charging of rechargeable accumulator

Charging is activated after connection of the USB cable to the active port (port of running PC) or by connecting to the AC adapter. A moving icon on the display indicates charging.

ATTENTION! Accumulator charging during activities of the instrument is not possible when the internal supply source for the transmitter is switched on. In case that it is necessary to supply the transmitter and at the same time to charge the accumulator, it is necessary to activate the battery saving mode!

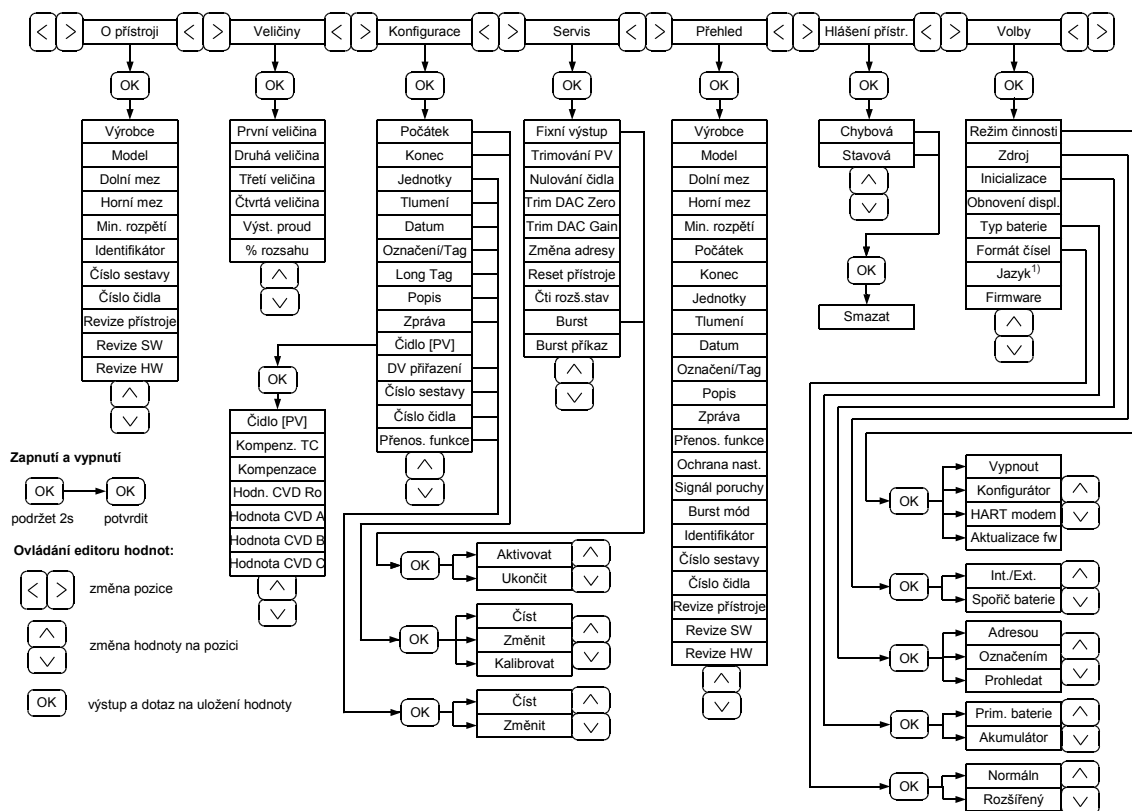
4.1.6 Instrument switch on/off

It is carried out by long pressing of the pushbutton OK, choosing YES and then confirmation by short pressing of the pushbutton OK.

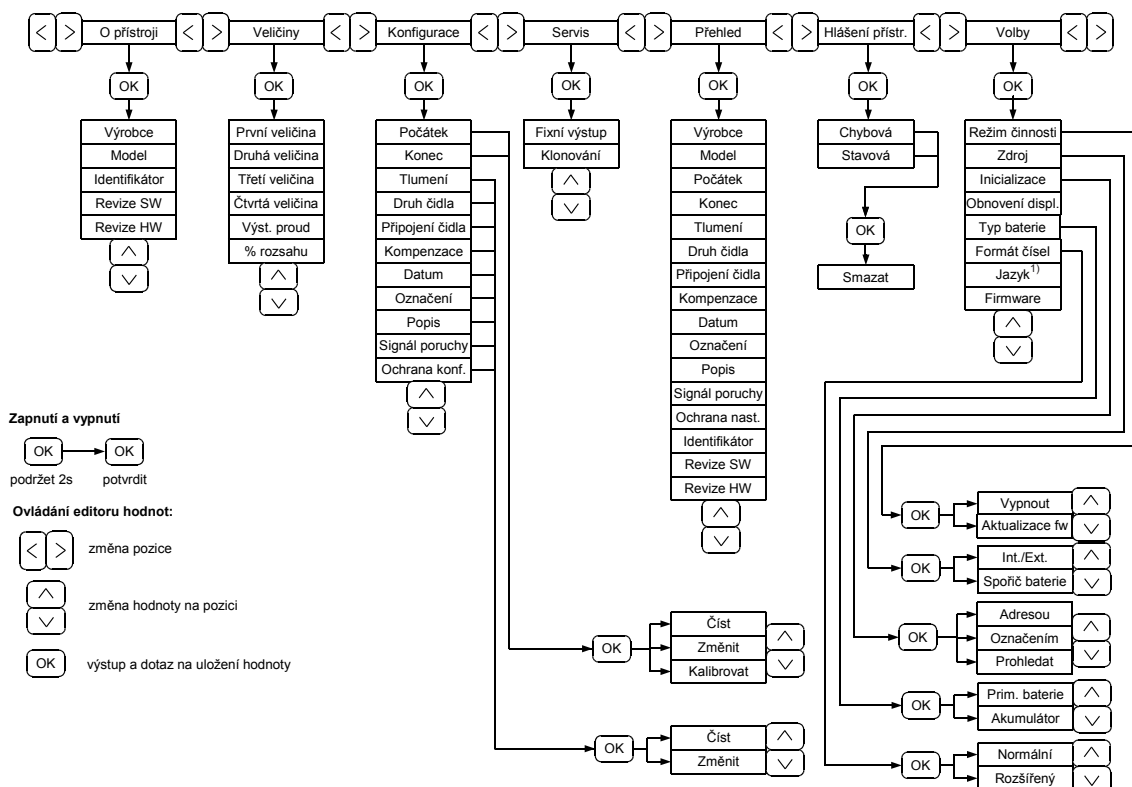
4.2 Menu

4.2.1 Menu structure - CZ

Menu structure in Configurator mode with HART device connected (generic temperature family)

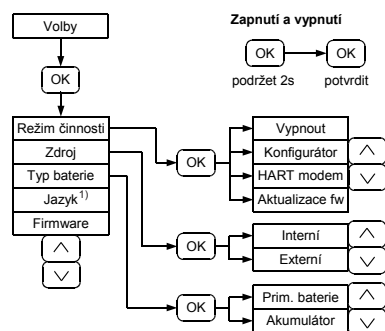


Menu structure in Configurator mode with LHP device connected



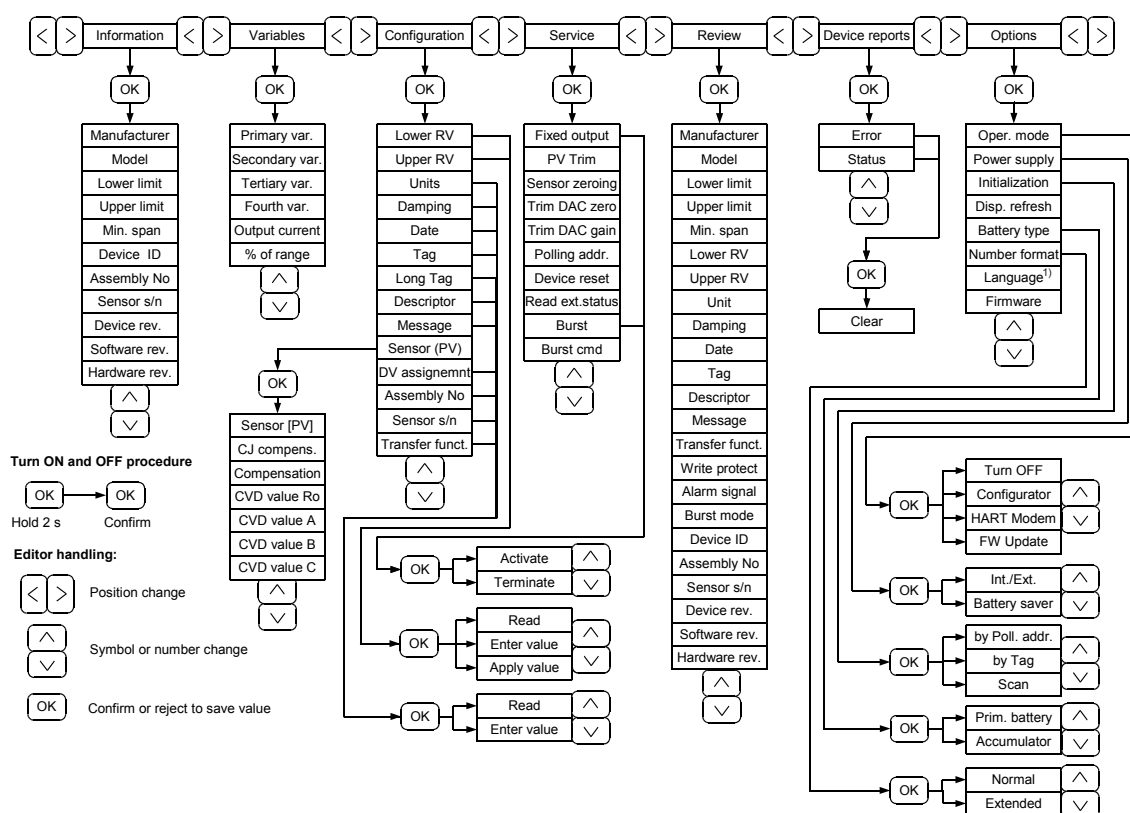
¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.

Menu structure in HART modem mode



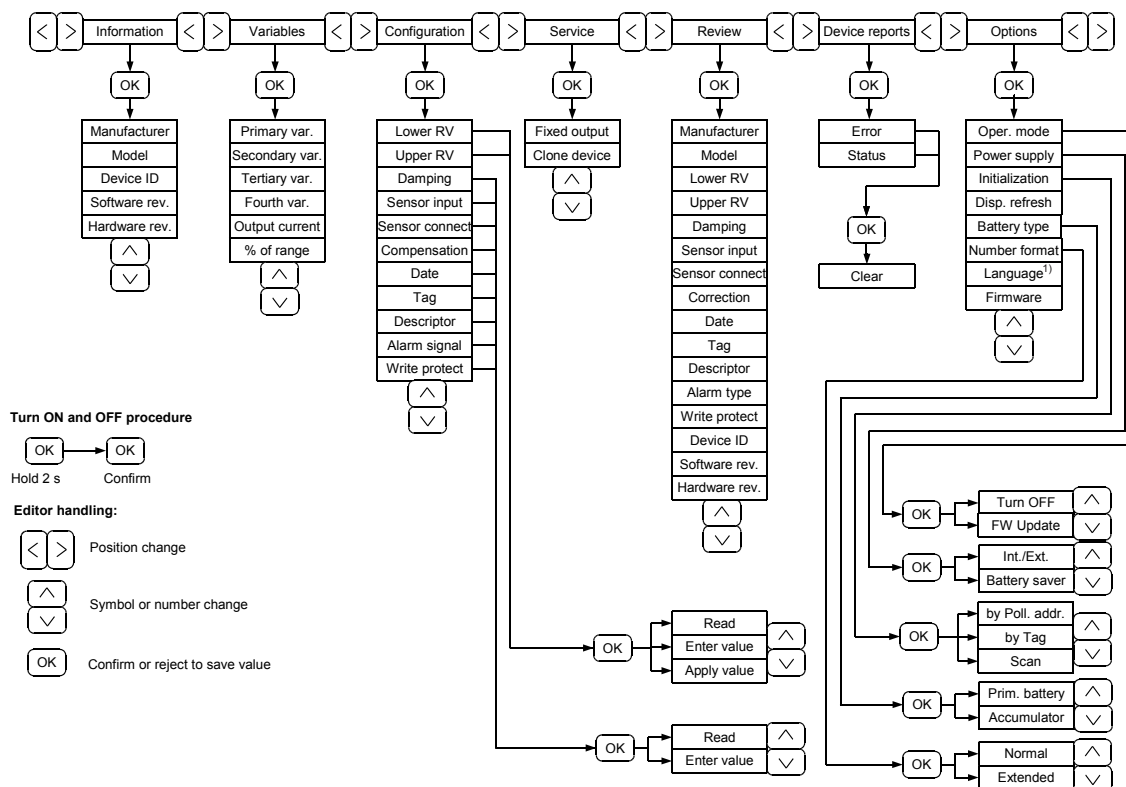
4.2.2 Menu structure - EN

Menu structure in Configurator mode with HART device connected (generic temperature family)

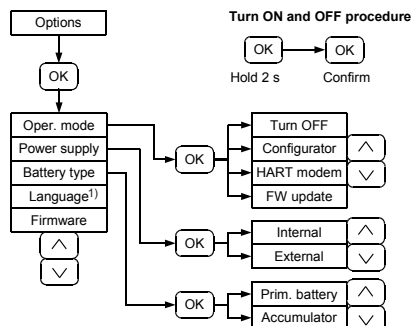


¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.

Menu structure in Configurator mode with LHP device connected



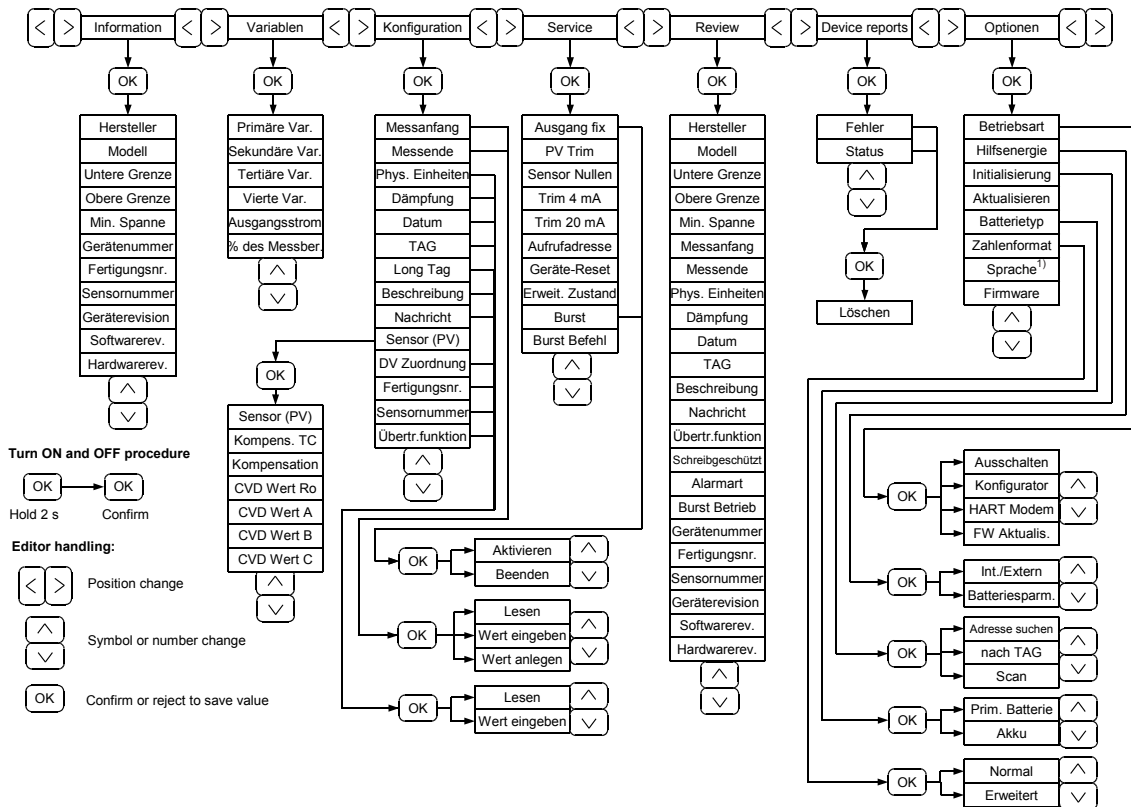
Menu structure in HART modem mode



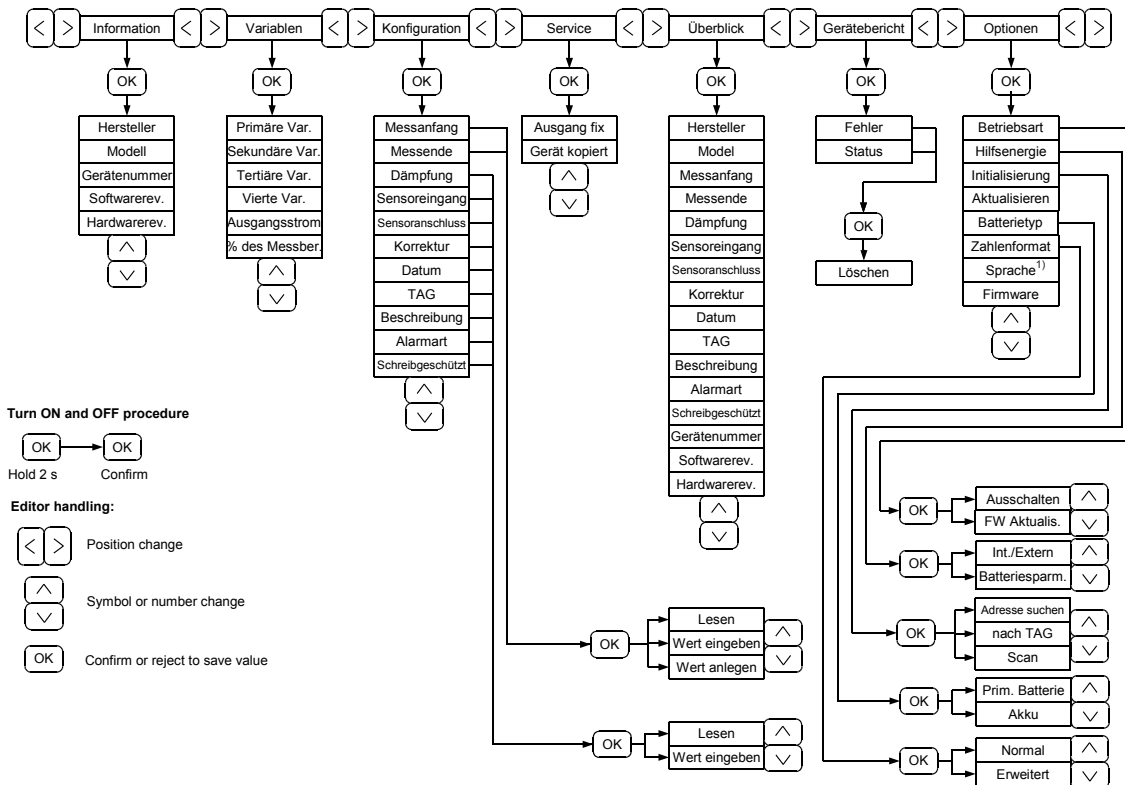
¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.

4.2.3 Menu structure - DE

Menu structure in Configurator mode with HART device connected (generic temperature family)

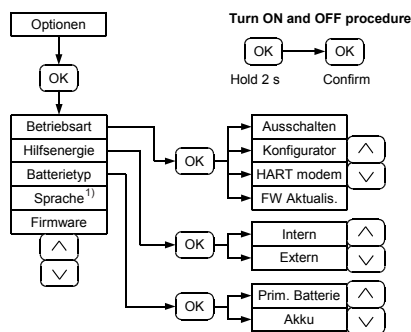


Menu structure in Configurator mode with LHP device connected



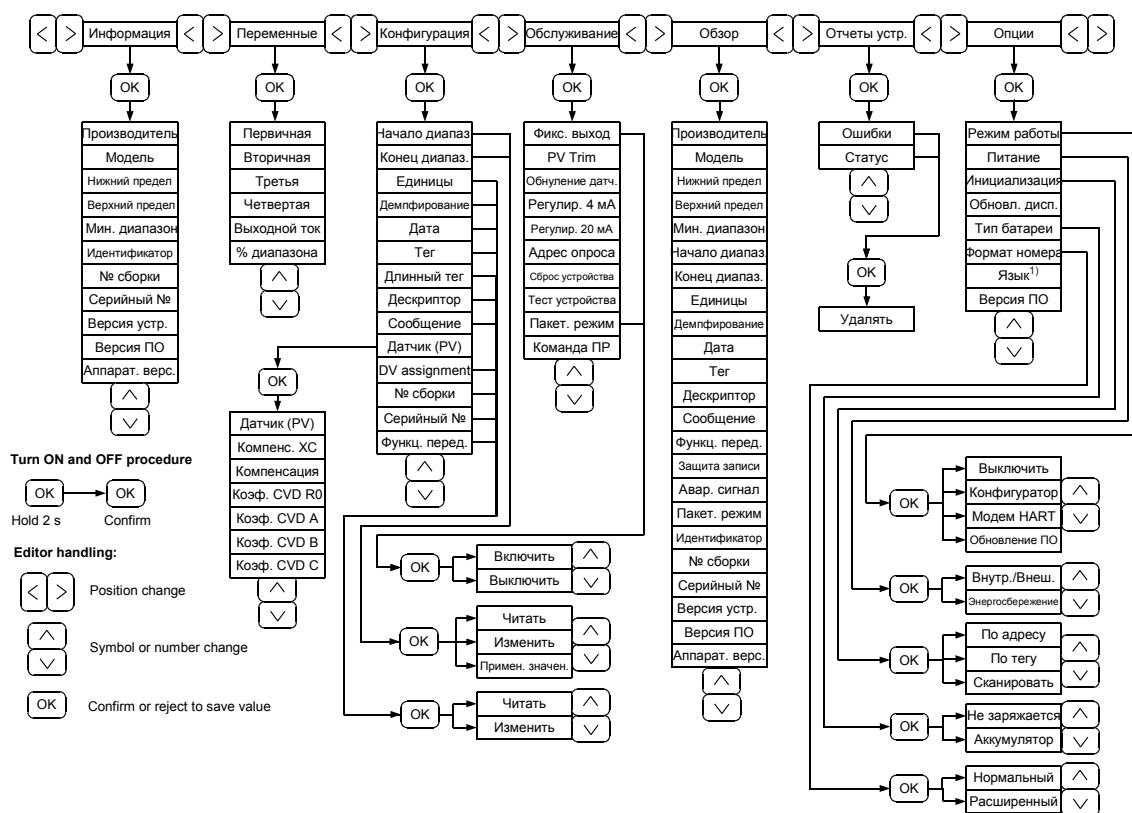
¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.

Menu structure in HART modem mode

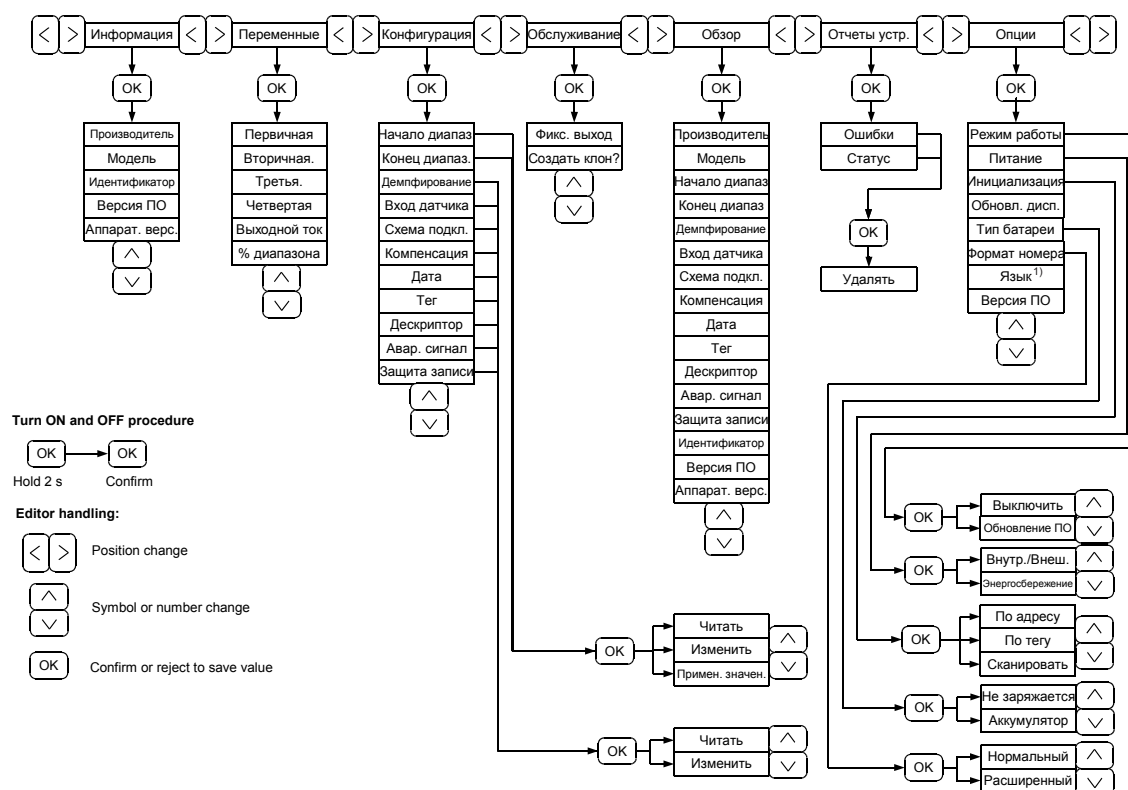


4.2.4 Menu structure - RU

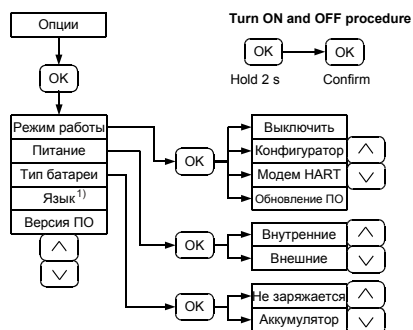
Menu structure in Configurator mode with HART device connected (generic temperature family)

¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.

Menu structure in Configurator mode with LHP device connected



Menu structure in HART modem mode



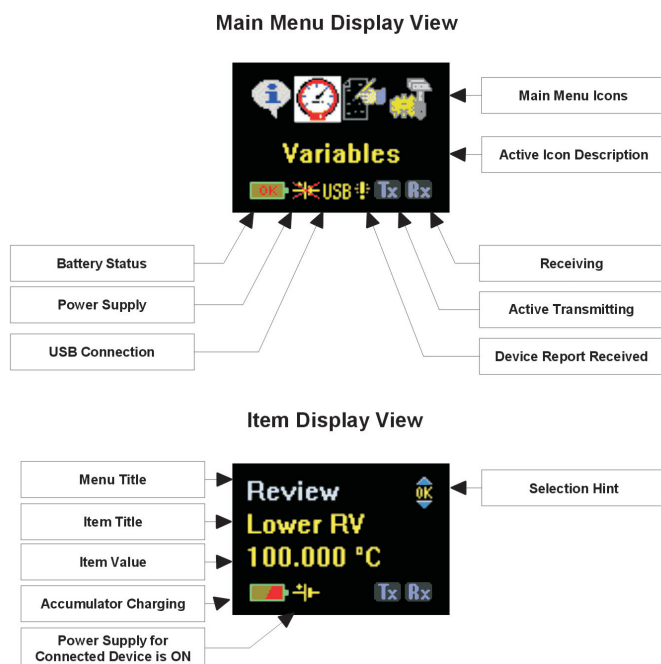
¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.

4.2.5 Menu control

In the menu you can scroll by using directional pushbuttons; the pushbutton OK is used for confirmation or entry to the following level; the left arrow button is used for exit. The right arrow button is used for displaying long character chains.

The HARTConf configurator can work in two operating modes - Configurator and HART Modem. The operating mode is chosen in the menu „Selection“ in the item „Operating mode“.

In the Configurator mode, the USB interface is used for recharging only. In the HART Modem operating mode, one can communicate with the connected instruments only when the USB interface is connected to the PC by means of suitable communication software (not included in the HARTConf delivery).



4.2.6 Menu items

Information

A set of parameters identifying the connected instrument.

Variables

Reading and showing momentary values of max. four input quantities (measured or calculated), output current, and percentage of the range. By pressing the OK button during the display, the size of the figure displayed is doubled.

Configuration

Menu for changing parameters of connected instrument.

* Configuration | Lower RV | Enter Value

* Configuration | Upper RV | Enter Value

This selection enable to change a preset range by entering a value. The value editor makes it possible to enter any positive or negative number. The up and down arrows keys set a number value or the decimal point position. The right or left arrows keys change the momentary set position. One can leave the editor mode just by pressing the OK push button. A set value is stored only when confirmed by the user. A change in the range is not carried out when it is outside the maximum range limits, when the instrument is in the setting protection mode, or when the connected instrument does not support this command.

* Configuration | Lower RV | Apply Value

* Configuration | Upper RV | Apply Value

This selection enables one to set the beginning or end of the range to the momentary input value. When the input quantity is connected to the input of the instrument and stabilised, carry out the „Apply Value“ command and acknowledge the assuring question. A change in the range is not carried out when it is outside the maximum range limits, when the instrument is in the setting protection mode, or when the connected instrument does not support this command.

Service

Menu of service functions.

Warning! These functions are intended for advanced users only because they can cause a permanent change in parameters or adversely affect the calibration of the connected instrument.

* Service | Fixed Output

It carries out output current loop test by the selected current. After the current value is set and confirmed, the output of connected instrument is adjusted to the required value.

Caution! A control loop, as the case may be, must be switched to manual operation in advance!

* Service | Sensor Zeroing

It carries out a sensor zero trimming to the momentary input value. This adjustment is used particularly in differential pressure sensors after their installation. This zero setting eliminates an error caused by the sensor position, static pressure, etc. The zero setting is not performed in case the input value is outside maximum limits for zero setting, the instrument is in the setting protection mode or when the connected instrument does not support this command.

Caution! The zero setting of an absolute pressure sensor can result in permanent damage to the instrument adjustment!

* Service | Trim DAC Zero

* Service | Trim DAC Gain

The configurator trims the start and gain of the D/A converter for the conversion of the digital value of the output current to real output current. Accurate performance of this operation requires measuring the output current with at least 0.01% accuracy.

* Service | Polling Addr.

To each HART instrument is assigned an address within the 0 - 15 range. The standard factory setting is 0. Addresses 1 - 15 are used in the Multi-Drop mode, which results in the output current setting at 4 mA. After a change in address, one must adjust the mode of connection initialisation in the menu Options | Initialization.

* Service | Device reset

It shall RESET the processor of the connected instrument. Execution of this command does not change any configuration parameter, and temporary functions are cancelled. In principle, it is equivalent to the disconnection of supply voltage of the connected instrument with its subsequent reconnection.

* Service | Device test

It shall carry out a software test of the instrument. The test result is available in the form of error reports. In case no error reports show up, the test has identified no defects. The configurator does not provide more detailed results of the test.

* Service | Burst

This command switches on a burst mode. In this mode, the instrument continuously sends out a command set in "Service | Burst Cmd" without being asked to. In the burst mode, one

can obtain digitally measured data max. three times a second (in case function 1 Read The First Variable is being sent out). Nevertheless, access to other parameters is slower.

* Service | Burst Cmd

This command sets a function whose response will be regularly automatically sent out after entering the burst mode. In case the instrument supports this mode, only a limited set of commands can be used. In most cases, only commands 1 and 3 are supported.

Options

Menu of the control of configurator function setting.

* Options | Oper. Mode | Configurator

* Options | Oper. Mode | HART Modem

Switching between basic operating modes of the configurator.

* Options | Power Supply | Int./Ext. | Internal

* Options | Power Supply | Int./Ext. | External

Selection of the power supply mode of the connected instrument. Selection "Internal" will result in the introduction of supply voltage to the configurator terminals.



Caution! Never switch internal supply voltage when the instrument is supplied externally from the loop!

* Options | Power Supply | Battery Saver

This selection switches on the battery saving mode during internal supply of the instrument. The supply is switched on for the time of communication only. Then the saving mode significantly extends the battery operating period.

* Options | Initialization | by Poll. Addr

* Options | Initialization | by Tag

Communication is initialised either by the address or by the Tag item value.

* Options | Initialization | by Poll. Addr. | Scan

Scanning all addresses from 0 to 15.

* Options | Disp. Refresh

Interval for refreshing variable quantities. Minimum value is 1 s.

* Options | Battery Type

Selection of battery type. A primary cell means a battery that must not be recharged.

* Options | Number Format | Normal

* Options | Number Format | Extended

Selection of numerical format. An extended format enable to introduce numbers in exponential form.

Note: Menu structure can be different after connecting other HART or LHP devices. These devices have defined specific items in menu. More detailed description can be found in the documentation of specific device.

4.3 Error messages

The configurator saves up to 10 error messages or warnings that were sent to it from the connected instrument. Some errors have more possible meanings, according to the type of the instrument and desired activity. The list of error messages together with the possible explanations:

Invalid selection - incorrect combination of parameters

Too large - the value is too big

Too small - the value is too small

Too few data - too few data received

Specific error - the meaning of the error depends on the type of the transmitter

In write protect - the transmitter is protected against entry

Access restricted - Insufficient authorisation for access

Incorrect code of range units

Not implemented - the command is not supported!

Device is busy - the instrument is busy!

Warning #8

Update failure
Set nearest value
Update in process

Error #9

Lower range value too high
Input quantity too high
Not in proper current mode
Incorrect module code
Incorrect flange type
Selected totalizer cannot be reset
Incorrect units of level height
Frequency too high
Density too high

Error #10

Lower range value too low
Input quantity too low
Multidrop not supported
Incorrect range code
Incorrect material code
Frequency too low
Density too low
Incorrect address
Incorrect body code
Incorrect volume unit
Incorrect density unit
Incorrect code of automatic temperature compensation

Error #11

Upper range value too high
In multidrop mode
Incorrect sensor code
Incorrect sensor material code
Incorrect code
Flow too high
Access denied

Error #12

Upper range value too low
Incorrect characterisation
Incorrect number of wires
Incorrect format
Density too low
Flow too low
Incorrect unit code
Incorrect command

Error #13

Both range values out of limits
Sensor type and range not entered
Incorrect number of bytes
Incorrect code

Error #14

Span too small
Out of sensor limits - range changed

Error #15

Incorrect analogue output number code
Incorrect level value

Communication errors

Parity error - error of parity bite
Overrun error - receiving error
Frameing error - error of stop bite
Checksum error - error of control sum
Rx buffer overflow - overflow of receiving buffer

Status messages

The configurator saves up to 10 status messages send to it by the connected instrument.

Field device malfunction

- incorrectly connected or faulty sensor

Configuration changed

- some parameter was changed since last deletion of attribute

Cold start

- first command since instrument switch on

More status available**Analogue output current fixed**

- forced output current does not match with measured value

Analogue output saturated

- analogous output is at the beginning or end of the range

Variable (not primary) out of limits

- the variable is out of maximum range limits

Primary variable out of limits

- the primary variable is out of maximum range limits

4.4. Operation and maintenance

In case the instrument is installed correctly, the operator can read setting and measured values using a communicator. He may change setting of the instrument only if a sudden change of the output current cannot cause any failure of the technological equipment or regulation (switch the possible regulator to manual control)!



Attention! The internal power supply may be switched on only if the connected instrument is not supplied from other power source!

The instrument does not need any maintenance.

5. Product specifications**5.1 Technical specifications****Supply voltage:**

battery 9 V (6LR61, 6F22) or accumulator 8.4 V USB

Ambient temperature:

-20 to +50 °C

Housing:

IP40, connectors IP00

Humidity:

0 to 80 % r.v.

Connection of the HART cable:

BNC connector, negative pole of voltage for a transmitter is on the connector jacket

Dimensions:

112.5 x 65 x 32 mm

Material of case:

Black ABS

Weight:

85 g without battery

Working position:

Arbitrary

HART / LHP interface**Communication protocol:**

HARTConf HART, rev.5, LHP
LHPConf LHP

Transmitter supply voltage:

min. 12 V_{ss} / 22 mA, switch-on / switch-off / energy saving mode

USB interface**USB standard:**

USB 1.1

Max. power demand from USB interface:

With transmitter supply:

140 mA

Without transmitter supply:

30 mA

Battery charging:

100 mA

5.2 Supplementary parameters**Electric strength of insulation between the HART / LHP interface and USB interface:**

1000 VAC / 1 min. (test)

Typical times of operation in different working modes:

Operated from the accumulator with permanent transmitter supply:

2 hours

Operated from a primary battery with permanent transmitter supply:

4 hours

Operated from the rechargeable battery without transmitter supply:

8 hours

Operated from a primary battery without transmitter supply:

15 hours

Operated from an USB port:

unlimited

Charging time of rechargeable battery through an USB port:

10 hours

Indication of battery charge:

Continuous, with a battery charge symbol on the display

Indication of transmitter supplying switch on:

Symbol of a battery on the display

Electromagnetic compatibility:

Emissions and resistance acc. to EN 61326-1 (industrial environment)

6. Standards and marking**6.1 Standards****Electromagnetic compatibility:**

Emission and resistance according to EN 61326-1 (industrial environment)

The transmitter is designed and made in compliance with following standard:

EN 61010-1

6.2 Marking and type tag information**Standard version:**

HARTConf, LHPConf

S/No:

Czech Republic

type number

serial number

country of origin



www.jsp.cz

logo JSP, s.r.o.

website address

7. Ordering information

7.1 Ordering table

Type	Description
• LHPConf	Field handheld configurator for transmitters with LHP communication, function of transmitter supply
• HARTConf	HART-USB modem and field handheld configurator for transmitters with HART and LHP communication, function of transmitter supply, supplied from USB or accumulator, charged from USB
Code	Language ¹⁾
• CZ	Czech
• EN	English
• DE	German
• RU	Russian
Code	Optional accessories (only for HARTConf)
• HARTWinConf	PC configuration software HARTWinConf (CZ+EN) (WIN XP/Vista/7/8/10)
Example of order: LHPConf ED	

• ... Ex stock version

¹⁾ ... The language can be changed using the HCfwUpdate software, which is freely available for download at www.jsp.cz.



JSP Industrial Controls

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Your Supplier: