

Metran-650 Communicator

OKP code: 4213



- **Compatibility with HART devices**
- **Explosion-proof version**
 - **Explosion protection type: "intrinsically safe electrical circuit";**
 - **Explosion protection marking: ExiaIICT5 X**
- **Support of 15 devices connected on a single pair of wire**
- **Self-contained power supply: rechargeable pack or replaceable alkaline batteries**
- **Russian or English User's interface**
- **Communicator is not a measuring device**

Metran-650 Communicator is a portable device designed for information readout, remote adjustment and smart field devices configuration (Metran-100, 3051, 1151, 2088 pressure transmitters, Metran-280 temperature transmitters, Metran-360 flow meters, etc.), which support HART-protocol.

Main Communicator Advantages:

- Configuration of any HART devices from any point of current circuit;
- Access to all device parameters;
- Device diagnostics
- Getting information about the device (device number, number per project, etc.)

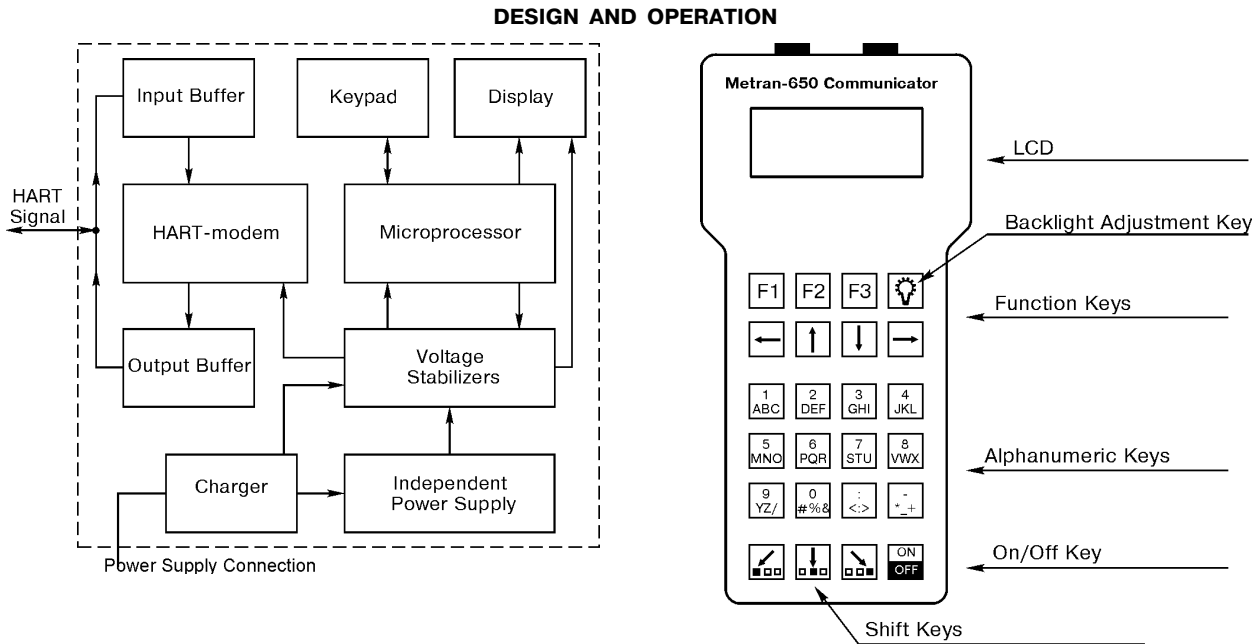


Fig.1. Communicator Diagram.

Communicator (its structure is given in Fig. 1) consists of the following parts:

- Microprocessor;
- HART-modem with output and input buffers;
- LCD;
- Keypad;
- Charger;
- Independent power supply;
- Voltage stabilizers.

The main part of the communicator is a microprocessor, which:

- processes information from smart transmitters;
- controls operation modes of all other components;
- monitors the status of independent power supply.

Commands entering and communicator operation modes control are performed with the help of the membrane keypad. Communicator operation mode and transmitter parameters are displayed on the LCD (a four-line by twenty-character display).

Input signal of HART protocol is given to the input buffer, which represents a differential amplifier with single amplification factor. Then the signal goes through the filter to HART-modem that converts frequency-modulated signal into a digital one, processed by the microprocessor.

Output signal is also formed by HART-modem, converting microprocessor digital signal into frequency-modulated one, coming to the input buffer.

The Communicator is supplied by the independent power supply which is located in a separate housing compartment. Voltage stabilizers create the required level for component part supply. Communicator controller is powered permanently and switches to low consumption mode when the Communicator is OFF.

Metran-650 Communicator supports the following devices:

- Metran-100 Smart Pressure Transmitter;
- 3051 Smart Pressure Transmitter;
- Metran-280 Smart Temperature Transmitter;

Fig.2. Communicator Appearance

- Metran-360 Coriolis Flow Meter and Micro Motion Flow Meters with MVD1700 and RTF9739 Converters.

These devices are serviced by full range of universal, common practice and device-specific commands and are controlled by individual operation algorithms of the communicator.

All other HART-compatible devices are serviced by the communicator per communicator algorithm for arbitrary transmitter control. In this case, Metran-650 Communicator performs universal and common practice commands of HART devices.

During the year of 2005, complete operation support for 2088, 1151, 3051S, 248, 644, 3144P and Metran-350 devices will be added into Communicator memory.

Information from specification of HART communication protocol:

"Universal commands provide both product compatibility of different manufacturers and access to general information identical for all field devices regardless of their characteristics: process variables, current output and per cent of range, measurement units and other information such as manufacturer, device type, etc. The basic rule of HART-protocol is that all HART-compatible devices must recognize and support all universal commands.

Common practice commands provide access to functions implemented by many field devices. These commands are not obligatory. They include such operations as range change, selection of measurement units and damping value, self-test performing, DAC trimming. Usually HART device supports 12-15 common practice commands.

Device-specific commands provide access to the unique device characteristics. These commands are not standard and assigned by a manufacturer. For example, they include device sensor calibration and additional parameter readout (climatic type, sensor material, etc.)".

Visual presentation of Metran-650 Communicator capabilities is given in Fig. 3 as algorithm of operation at controlling an arbitrary HART device.

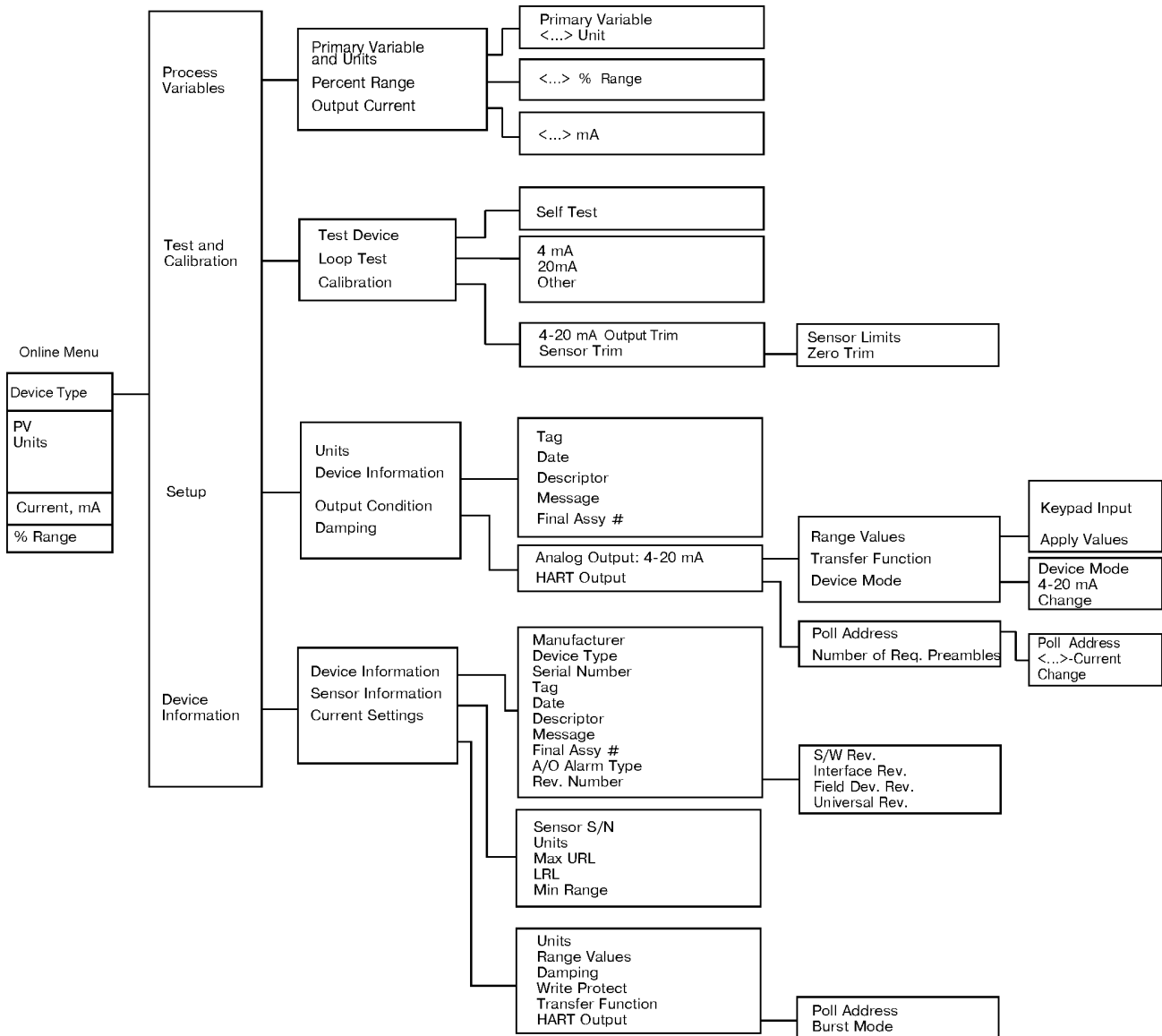


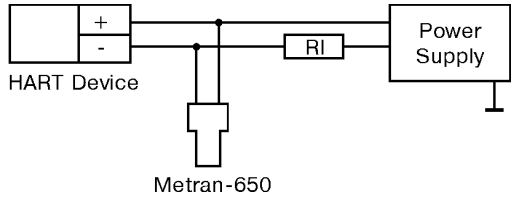
Fig.3. Menu Tree of Metran-650 Communicator Operation when Controlling Arbitrary HART Device.

BASIC SPECIFICATIONS AND PARAMETERS

- The Communicator issues and receives HART signals according to the requirements of physical layer specification HCF SPEC-54 for Secondary Master.
- Frequency range:
 - transferring "0": 2178 to 2222 Hz;
 - transferring "1": 1188 to 1212 Hz.
- Input resistance of the Communicator at signal receiving: 5 kOhm min.
- Input voltage of "4-20 mA" circuit dc, max: 24 V for intrinsically safe circuit, and 50 V for traditional circuit.
- Output resistance of the Communicator: 100 Ohm max.
- Communicator detects HART-signal on 250 Ohm load at amplitude over 120 mV and does not respond to HART-signal at less than 80 mV amplitude.
- Communicator stability:
 - to climatic effects: corresponds to B3 group per GOST 12997; but for operation at ambient temperature from 5 to 50°C and relative humidity of 95% at 35°C;
 - to atmospheric pressure: P1 group per GOST 12997;
 - to mechanical effects: L3 vibration-proof version per GOST 12997.
- Dust and water tightness: IP54 per GOST 14254.
- Overall dimensions: 110x230x70 mm.
- Weight: max 0.5 kg.

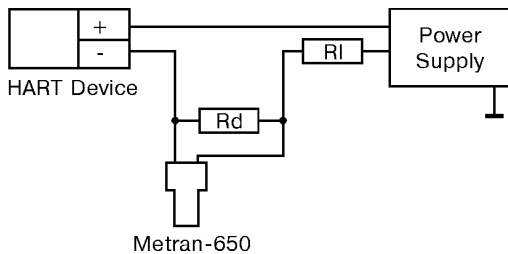
METRAN-650 COMMUNICATOR WIRING DIAGRAMS

To provide correct communicator operation, circuit resistance should be 250 Ohm minimum. Communicator does not measure circuit current directly.



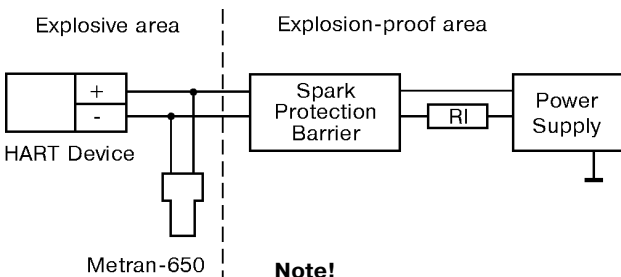
RI - load resistance (Fig.4-6).

Fig.4. Communicator Connection at RI 250 up to 1100 Ohm.



Rd - additional load resistor: 250 Ohm (from delivery set).

Fig.5. Communicator Connection at RI less than 250 Ohm.



Note!
It is strictly prohibited to connect external power unit or open the battery compartment cover, or work without antistatic case in hazardous areas.

Fig.6. Communicator Connection in Hazardous Area.

ENERGY CONSUMPTION

The Communicator can function from one of two power supplies:

- Independent power supply (rechargeable batteries pack or changeable alkaline batteries);
- External power unit included into delivery set.

The Communicator is supplied with rechargeable batteries pack. External power supply is used to charge it. Maximum output voltage of battery at complete charging is 8V.

Accumulator pack capacity is min 600 mA/hour.

Time of continuous operation of completely charged battery pack is 60 hours under normal operation conditions.

Four alkaline AA batteries x 1.5 V each can be set in a battery compartment of communicator housing.

It is prohibited to connect the external power unit when installing alkaline batteries.

Communicator provides for:

- Measurement of supply voltage and indication of results on LCD;
- Automatic supply voltage control and displaying of discharged status of an independent power supply;
- Battery pack charging and simultaneous operation at connection of the external power unit from delivery set (for operation in safe area only).

RELIABILITY

Average service life: 12 years minimum.
Mean time between failures: 20000 hours minimum.

WARRANTY

Warranty period: 18 months from the date of commissioning.

DELIVERY SET

- | | |
|-------------------------------------|--------|
| 1. Communicator | 1 unit |
| 2. Product Data Sheet | 1 copy |
| 3. Operation Manual | 1 copy |
| 4. Additional Load Resistor 250 Ohm | 1 unit |
| 5. External Power Supply 12 V | 1 unit |
| 6. Cable with Clips | 1 set |
| 7. Case | 1 unit |
| 8. Leather Casing | 1 unit |

ORDERING INFORMATION

Metran-650 - Ex - TU4213-032-12580824-2001		
1	2	3

1. Communicator type.
2. Explosion-proof version.
3. Specification.