ZETLAB

Simple solutions of complex tasks

INTERFACE CONVERTER ZET 7070

USER MANUAL

LLC "ETMS"

Table of contents

1   Designation and technical specifications

1.1. Designation of interface converters

Interface converters ZET 7070 are intended for connection of measuring networks based on digital transducers with RS-485 interface to PC via USB interface. Throughput capacity of USB interface enables fast transmission of commands and large data volumes.

ZETLAB package includes drivers for ZET 7070 modules. ZETLAB data server automatically detects presence of devices in CAN line, reads the name of the measuring channel, measurement unit, top and bottom threshold of parameters admissible values, processes the data from the measurement channel, and produces a constant synchronized data stream in ZETLAB environment.

ZETLAB data server scans the available addresses of the measuring line. In the case if a new channel is detected, it is automatically connected to the system. Thus, it is possible to conduct maintenance of the measuring line without interrupting its operation, i.e. "hot swap" of the elements is possible.

Interface converter ZET 7070 is equipped with an integrated power supply unit allowing to connect up to 4 digital transducers ZET 70xx (in the case if there is no need to use any active primary transducers). In all other cases, it is possible to use external power supply source with the power rate of at least 150% from the total capacity of the devices connected to the interface converter.

1.2. Operational environment

Depending on the intended use and operational environment, there are two product versions of ZET 7070:
1. Laboratory version – for use of the digital transducers in mild operational environments.
2. Industrial version - for use of the digital transducers in adverse operational environments.

Operational environments conditions of digital transducers are specified in Table 1.1.

Table 1.1 Operational environment of ZET 7070

Parameter	Laboratory version	Industrial version
Ambient air temperature, ºC	5…40	-40…80
Relative air humidity, %	Max. 90[1]	Max. 98[2]
Atmospheric pressure, mmHg	630-800	495-800

---

[1] at the air temperature of 25 ºC without condensation of moisture.
[2] at the air temperature of 35 ºC.

1.3. Technical specifications

Basic technical specifications of interface converter ZET 7070 are specified in table 1.2.

Table 1.2 Technical specifications of ZET 7070

Parameter	Value
Interface converter	RS-485 ↔ USB
Interface of connection to digital transducers	RS-485
Interface of connection to PC	USB 1.1
Maximal number of simultaneously connected transducers	60
Baud rate, bps	4800 9600 14400 19200 38400 57600 115200
Power supply voltage, V	5 (from USB)
Consumed power, W	0,1
Power supply of the connected digital transducers	Inner: 12 V (up to 4 transducers, otherwise it is necessary to use external power supply source)

2   External view and contacts assignment

2.1.   External view of interface converter

Figure 2.1 shows external view of interface converter ZET 7070 (laboratory version). Inside of the interface converter (at its bottom surface), there is a magnet, which allows to mount the transducer at steel surface.

Figure 2.1 External view of the interface converter (laboratory version)

Figure 2.2 shows external view of interface converter ZET 7070 (industrial version).

Figure 2.2 External view of the interface converter (industrial version)

2.2. Interface converter: contacts assignment

Interface converter ZET 7070 (laboratory version) has 4 contacts for the connection of digital transducers, and a USB port for connection of the interface converter to PC.

Figure 2.3 displays contacts assignment of interface converter ZET 7070.

Port for connection to the measuring network

Port for connection to the PC

Figure 2.3 Interface converter ZET 7070: contacts assignment

Table 2.1 displays contacts assignment of interface converters ZET 7070 used for connection to measuring network.

Table 2.1 ZET 7070: contacts assignment for connection of digital transducer

Contact #	Designation	Labelling
1	(9…24) V	Orange
2	RS-485 line «DATA-»	Blue
3	RS-485 line «DATA+»	White-blue
4	GND	White-orange

2.3. Establishing measuring line: connection diagram

In the course of measuring network deployment, the digital transducers with CAN 2.0 interface are connected sequentially. The resulting measuring network based on digital transducers is further connected to the PC with the use of interface converter ZET 7070. Figure 2.4 shows a measuring network based on the use of interface converter ZET 7070.
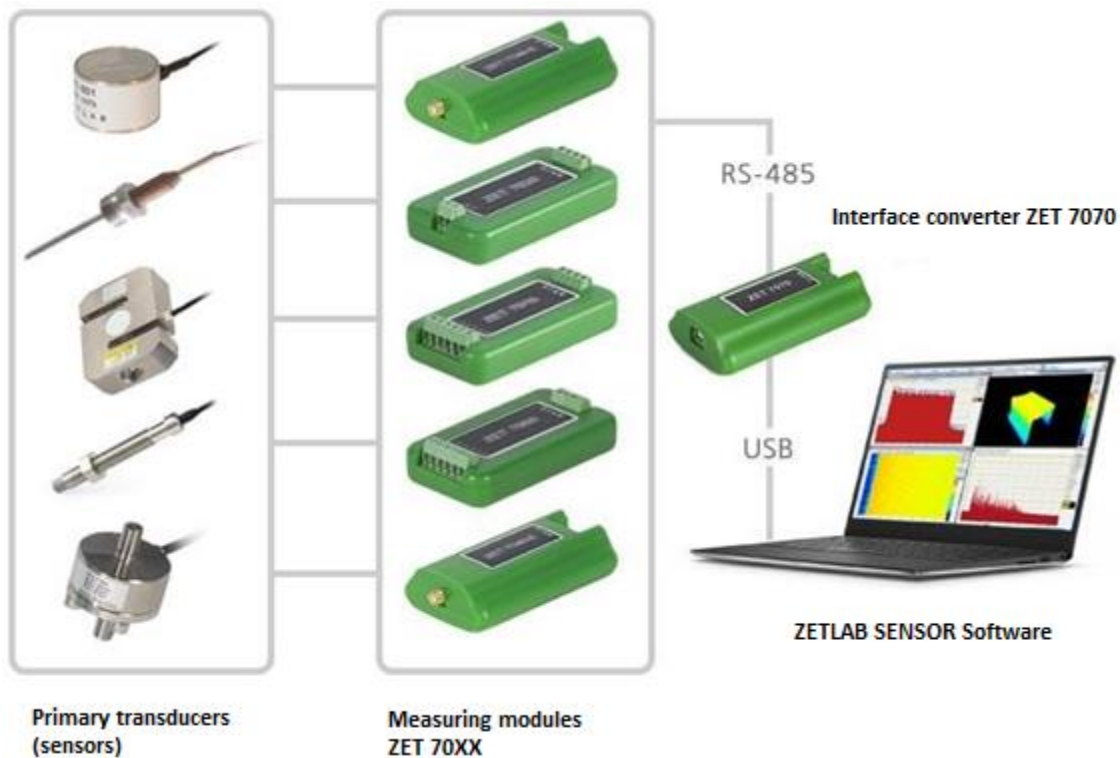
Рис. 2.4 Connection diagram

Note! *The addresses (nodes) of the digital transducers within a measuring network should be different from each other. Identical addresses of the digital transducers within a measuring line negatively affect the validity of digital transducer's data.*

3 Parameters configuration: preparation

3.1. Connection of interface converters

To configure parameters of interface converter ZET 7070, it is necessary to connect it to PC via USB interface.

The PC to be used for parameters configuration of the interface converter should have Windows OS and ZETLAB software installed. It also necessary to connect ZETKEY to the USB port of the PC (the hardware key ZETKEY is included into delivery scope of the interface converter).

3.2. The "Device manager" program

As the interface converter is connected to PC, the OS will automatically install the driver necessary for interaction with the interface converter on software level.

The program "Device manager" available in "Service" section of ZETLAB panel (Figure 3.1) is used for configuration of interface converters.
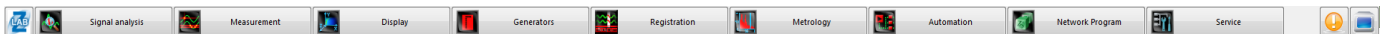

Figure 3.1 ZETLAB panel

The window of "Device manager" program displays an ID of the corresponding interface converter (Figure 3.2).
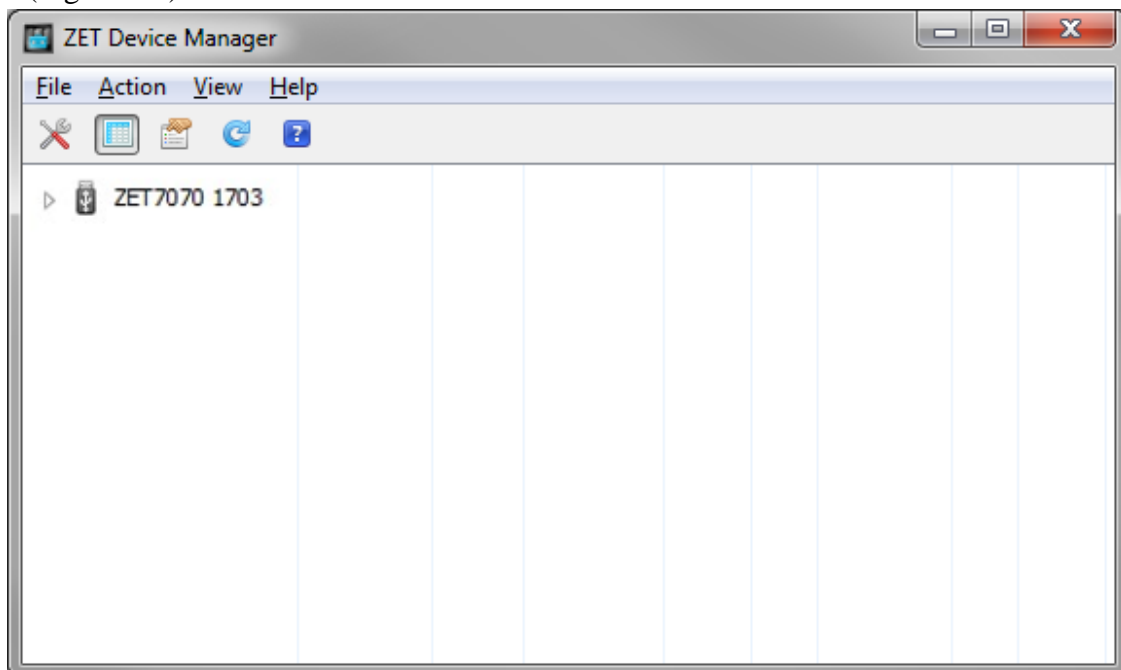

Figure 3.2 ZET 7070 displayed in the program "ZET Device manager"

To see the list of the available devices connected to the interface converter, activate the dropdown list by clicking the ID of ZET 7070 (Figure 3.3).
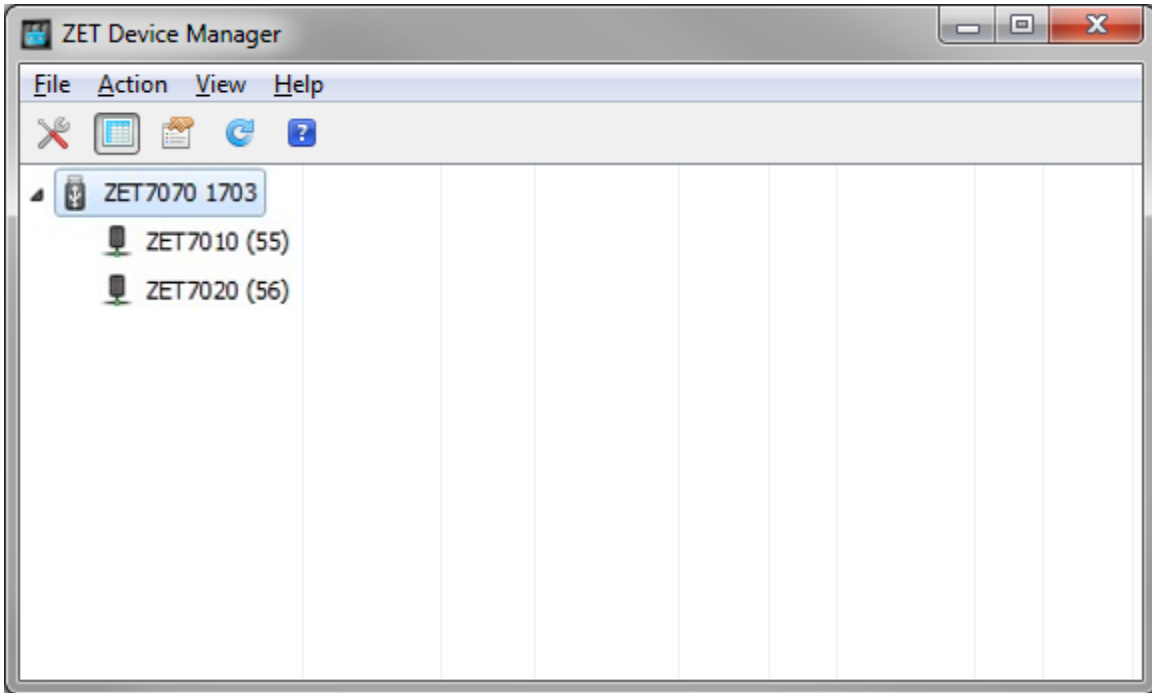

Figure 3.3 List of the devices connected to ZET 7070

The left section of the program interface contains a hierarchy tree of the devices connected to PC. The top hierarchy level is represented by interface converters and the devices, that are connected to the PC directly. The second hierarchy level displays digital transducers connected to a particular interface converter.

When a detailed view mode is selected, the right section of the program interface displays a table specifying the basic parameters of the measuring channels.

To configure parameters of the interface converter, right-click the name of the interface converter and select the "Properties" option (Figure 3.4). (Additional information is available in the document "ZETLAB Software. User manual").
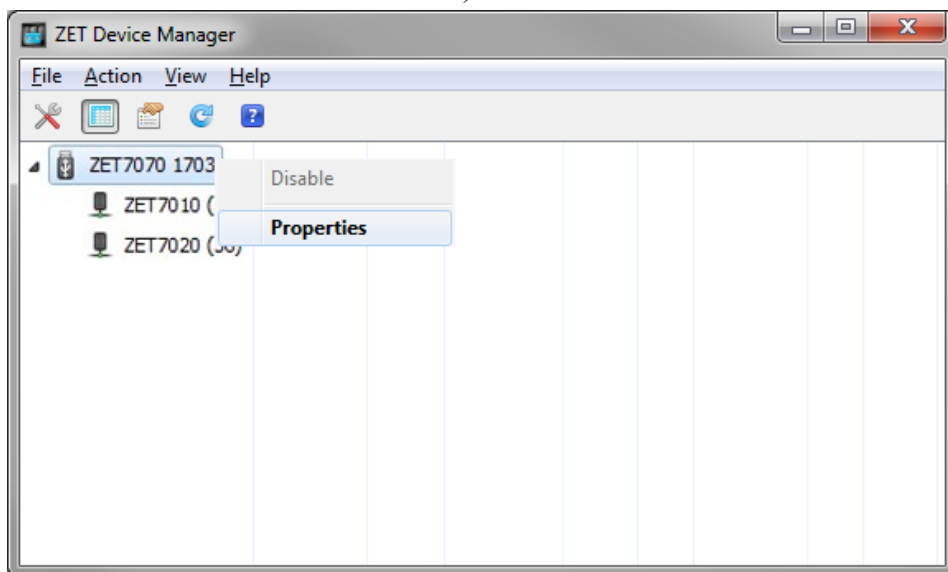

Figure 3.4 "Properties" menu of the interface converter ZET 7070

4   Configuration of interface converters

Note! The Manufacturer reserves the right to change the software version of the digital transducer. The sequence of digital transducer's software updates up to the current version is available in the document "Service work with ZET7xxx.pdf".

4.1.   Configuration of interface converters: "Properties" menu

To start configuration of the interface converter parameters, right-click its name and select the "Properties" option – you will see the tab "General properties".

The "General properties" tab contains information about the type of the digital transducer. Figure 4.1 shows an example of the "General properties" tab.
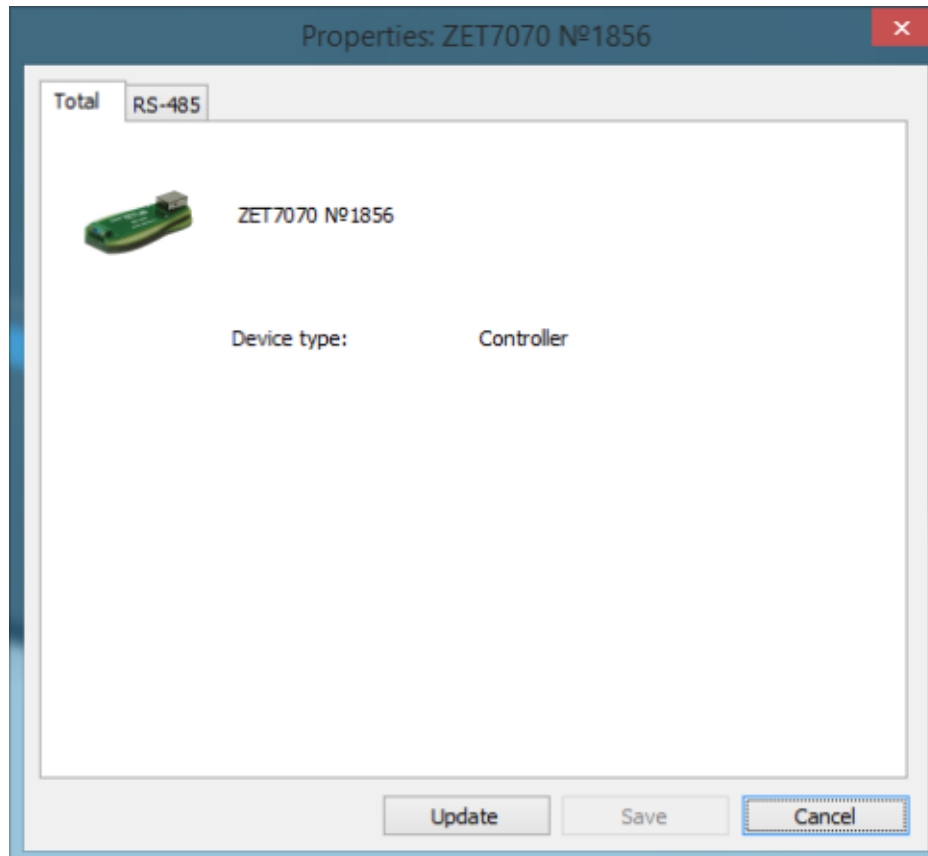

Figure 4.1 "General properties" tab

4.2. Designation and composition of the tabs used for configuration of the interface converters

4.2.1. The tab «RS-485»

The tab «RS-485» contains information of the parameters specified in Table 4.1.

Table 4.1 Parameters of the tab «RS-485»

| Parameter	Possibility of configuration	Admissible values	Description
Bit rate, bps	Yes	4800 9600 14400 19200 38400 57600 115200	Rate of data exchange between measuring digital transducer and interface converter [3].
Parity bit, (0 – none/1-odd)	Yes	0 1	Interface converter and the digital transducers, that are connected to it should have identical value of this parameter[4].
Serial number	–	–	The serial number of the interface converter. The number is assigned by the Manufacturer.

Figure 4.2 shows an example of the tab «RS-485».
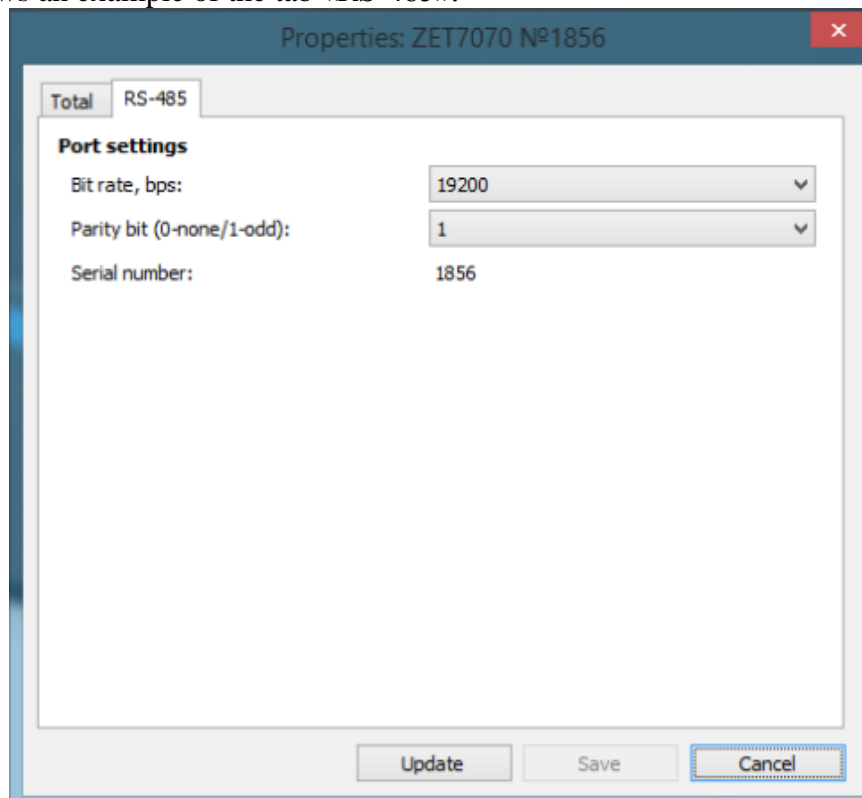
Figure 4.2 The tab «RS-485»

---

[3]The default value of the "Bit rate" parameter is "19200 bps".
[4]The default value of the "Bit rate" parameter is "1".

If it is necessary to measure the bit rate between interface converter and digital transducer (or digital transducers) via RS-485 interface, you can use the following procedure:

- In the case if the bit rate of the digital transducer connected to the interface converter *is known,* then:
    1) Set the required bit rate of the digital transducer;
    2) Set the required bit rate of the interface converter.
- In the case if the bit rate of the digital transducer connected to the interface converter *is not known,* then:
    1) Change the value of interface converter until the ID of the digital transducer is detected (see Figure 3.2);
    2) Set the required bit rate of the digital transducer;
    3) Set the required bit rate of the interface converter.