



Technical description of pulse input hub

KWI-1

TABLE OF CONTENTS

PAGE

- 1. Purpose of KWI-1 3
- 2. Description of KWI-1 3
 - 2.1. Pulse Inputs 3
 - 2.2. M – Bus network operation 3
- 3. Pulse constants 3
- 4. Output data format 4
- 6. Installing KWI-1 4
- 7. FlatStandard software operation related to KWI-1 5
 - 7.1 Configuring KWI-1 5
 - 7.2. KWI-1 readout 7

1. Purpose of KWI-1

The KWI-1 pulse input hub is a device that enables counting impulses generated by measurement equipment used for measuring various media and equipped with pulse outputs. It is possible to connect 16 devices equipped with pulse outputs. The device has no display, the states of electronic counters can be read through the M-Bus interface, using the FlatStandard software on a PC. The KWI-1 is battery powered, and the installed battery enables continuous uninterrupted operation for 5 years.

2. Description of KWI-1

2.1. Pulse inputs

The hub has 16 pulse inputs for connecting measurement devices. It is permissible to control the hub's pulse input using: potential-less contacts or open collector transistor keys.

2.2. M – Bus network operation

The KWI-1 hub is equipped with an M-Bus interface, making the device suitable for network operation. KWI-1 network configuration enables easy and quick measurement of, for example, utility hot and cold water in multi-family buildings. It is possible to build a network made up of multiple hubs; the maximum number of devices supported by the system for a single network is *250 devices*. Furthermore, it is possible to combine individual M-Bus networks into a larger system.

3. Pulse constants

The hub supports 8 standard pulse constants:

- 1 dm³/pulse
- 2.5 dm³/pulse
- 10 dm³/pulse
- 25 dm³/pulse
- 100 dm³/pulse
- 250 dm³/pulse
- 1,000 dm³/pulse
- 2,500 dm³/pulse

4. Output data format

The output data format, the KWI-1 protocol is compliant with the requirements of the PN-EN 1434 – 2 standard.

5. KWI-1 settings

The device has the ability to modify certain parameters, both before and after installation in the system. Changes can be made using the FlatStandard software. It is possible to configure the following parameters:

- Network address within the range 01_H÷FA_H (the network number is input in the hexadecimal system),
- Pulse constant, individually for each water meter input,
- Initial state of the given pulse input,
- Data transmission speed: 300 b/s, 600 b/s, 1200 b/s, 2400 b/s, 4800 b/s, 9600 b/s, and the method of controlling data transmission parity: none, even parity, odd parity.

The KWI-1 settings mode is active only after opening the case and installing the service jumper. The KWI-1 settings mode is signalled by pulsation of the D2 light (red colour).

6. Installing KWI-1

The diagram below shows the positions of the device's terminals. This is the device view after opening the case lid.

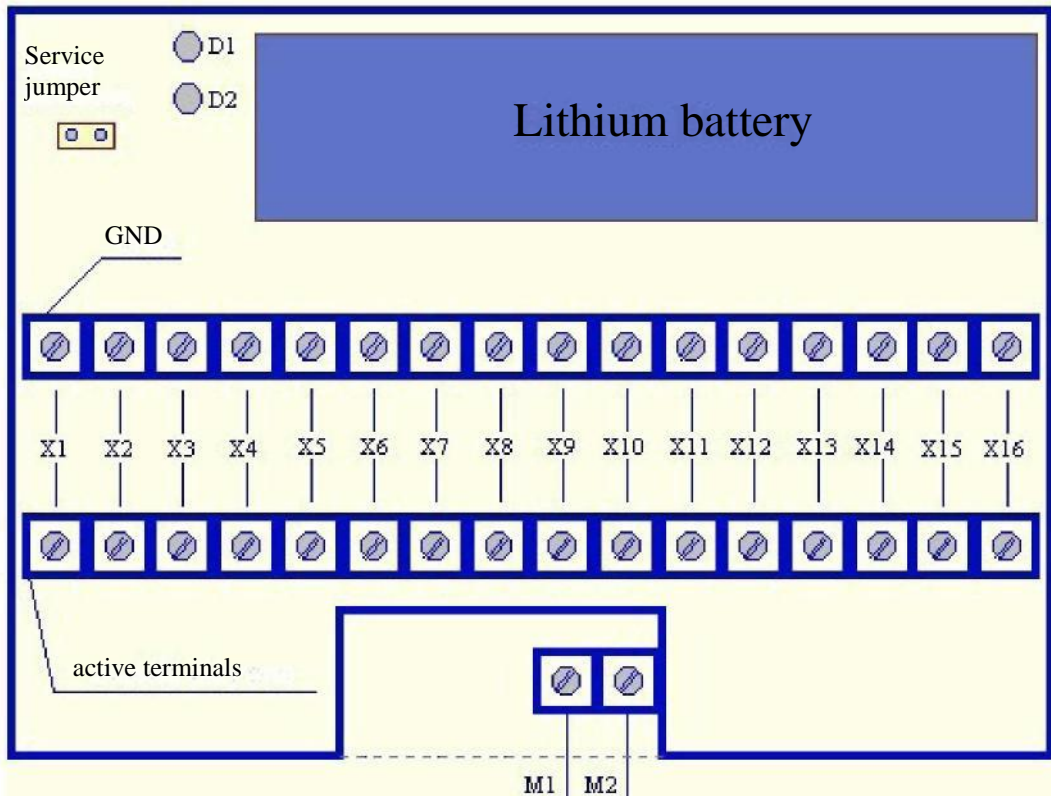


Figure 1: View of hub terminals

The X1÷X16 terminal pairs are used for connecting input pulsers. The top terminals of pulse inputs are connected with the KWI-1 chassis ground, the terminals on the strip above are active terminals. It is important when connecting pulse outputs to the hub.

LED functions:

- D1: green colour, signals that voltage is present on the M-Bus,
- D2: red colour, signals that KWI-1 settings mode is on.

Functions of communication interface terminals:

- M1, M2: M-Bus interface terminals.

Recommended cross-section of connection wires: **up to 1.5 mm²**. Maximum cross-section of connection wires: **2.5 mm²**.

7. FlatStandard software operation related to KWI-1

7.1 Configuring KWI-1

Hub settings can be modified in the 'Hub' tab. In the 'Initial Hub States' section, after selecting the hub's network address, it is possible to configure the initial states of the selected pulse inputs.

In the 'Configuration' section, it is possible to configure the pulse constant for each individual input, to set the hub's network address, transmission speed and parity.

Detailed information about the settings is available in the FlatStandard software help.

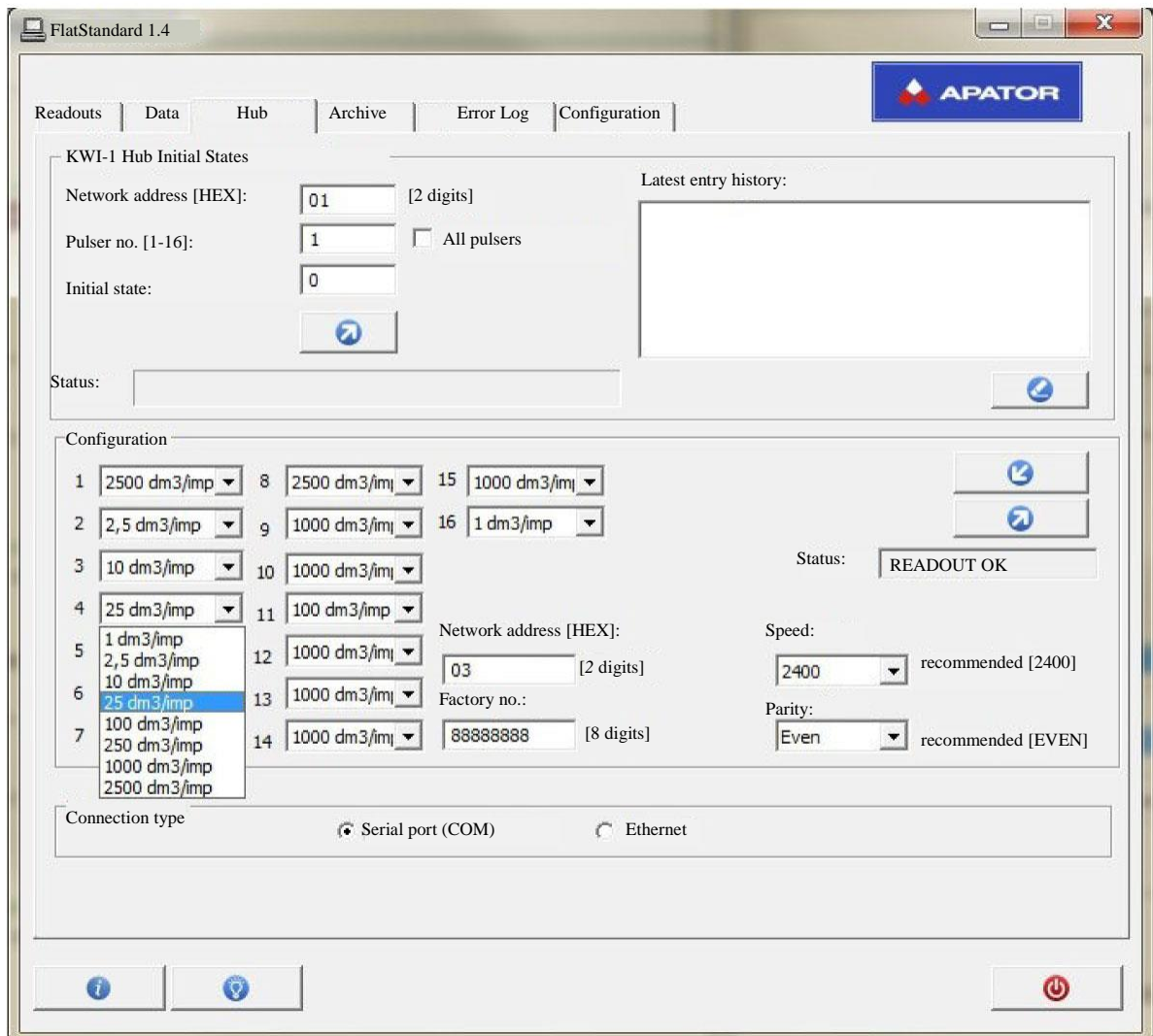


Figure 2: Hub configuration, FlatStandard software

7.2. KWI-1 readout

States of the hub's pulse inputs can be found in the 'Readouts' tab. In order to view the input state, select the hub address from the list. Values for individual pulse inputs will be shown in the 'DATA' section. For the example below, input 4 was active.

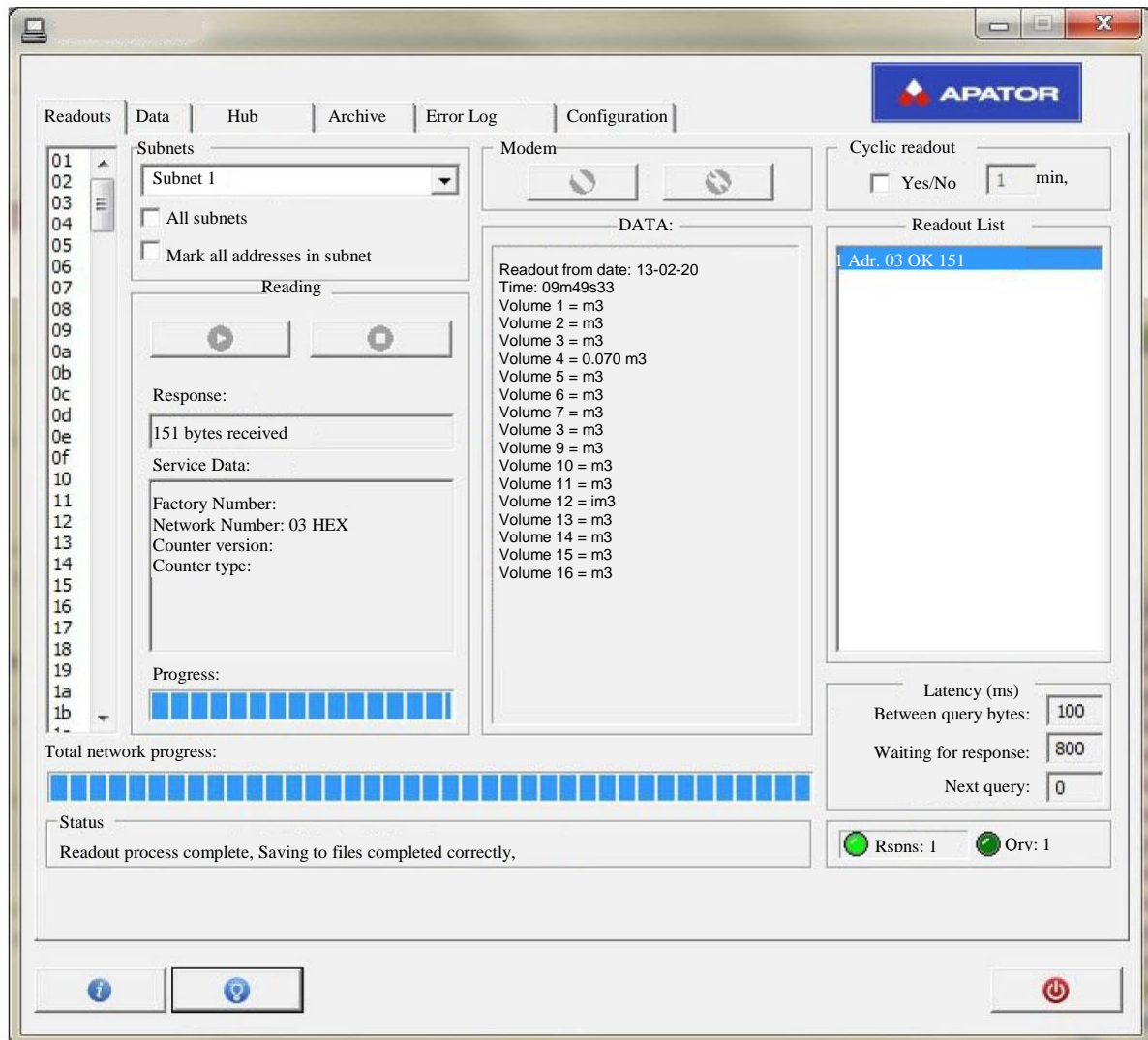


Figure 3: Hub readout, FlatStandard software