



IMP6000

M-Bus Level Converter
to RS232, USB Ethernet

User Guide

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Introduction

- Connects up to 250 M-Bus 1U devices via various PC interfaces (1U loads 1,5 mA)
- PC interfaces RS232, USB, Ethernet (on order)
- Supply voltage 20 up to 35 V AC or DC
- Insulated power vs M-Bus and all interfaces
- Insulation voltage 500 V DC
- ST Technics M-bus Explorer Ten software for setup and control (available separately)

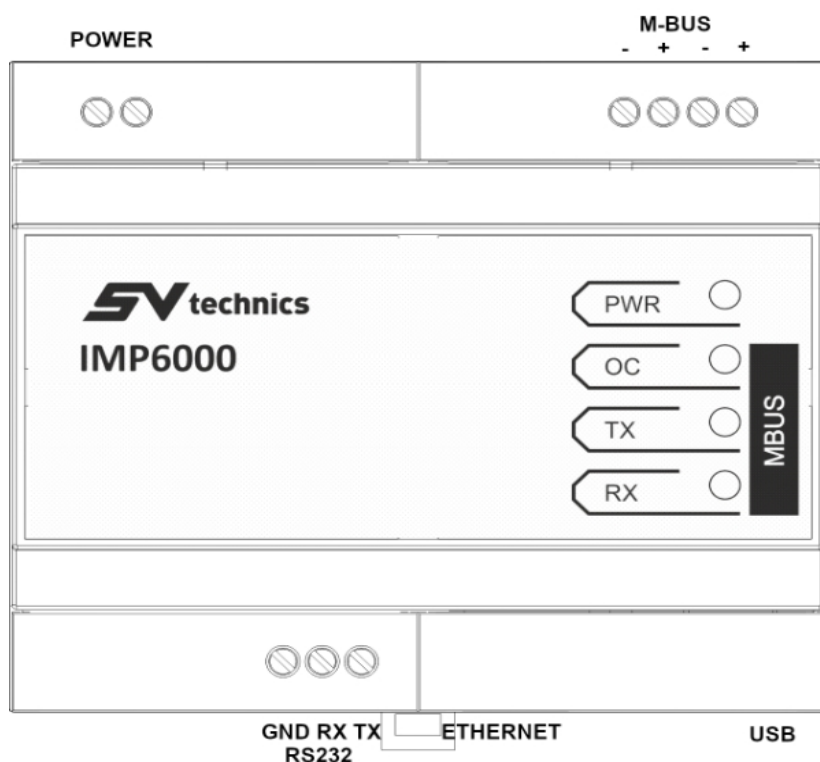
Highlights

The level converter IMP6000 is an interface between M-bus meters and reader systems. You can connect to application software via RS232, USB or Ethernet. M-Bus output is capable of connecting up to 250 1U devices depending on IMP6000 version. IMP6000 conforms to the EN 13757-3 standard. Data from connected devices can be read by standard SND_NKE and REQ_UD2 commands or SV Technics M-Bus Explorer Ten application for user friendly M-Bus reading.

Drawings

Connect 20 up to 35 V AC or DC to IMP6000 power terminals. Connect appropriate PC interface and your IMP6000 is ready to go.

The connection terminals and indicator LEDs can be found in next figure:



LEDs:

PWR – Power – green

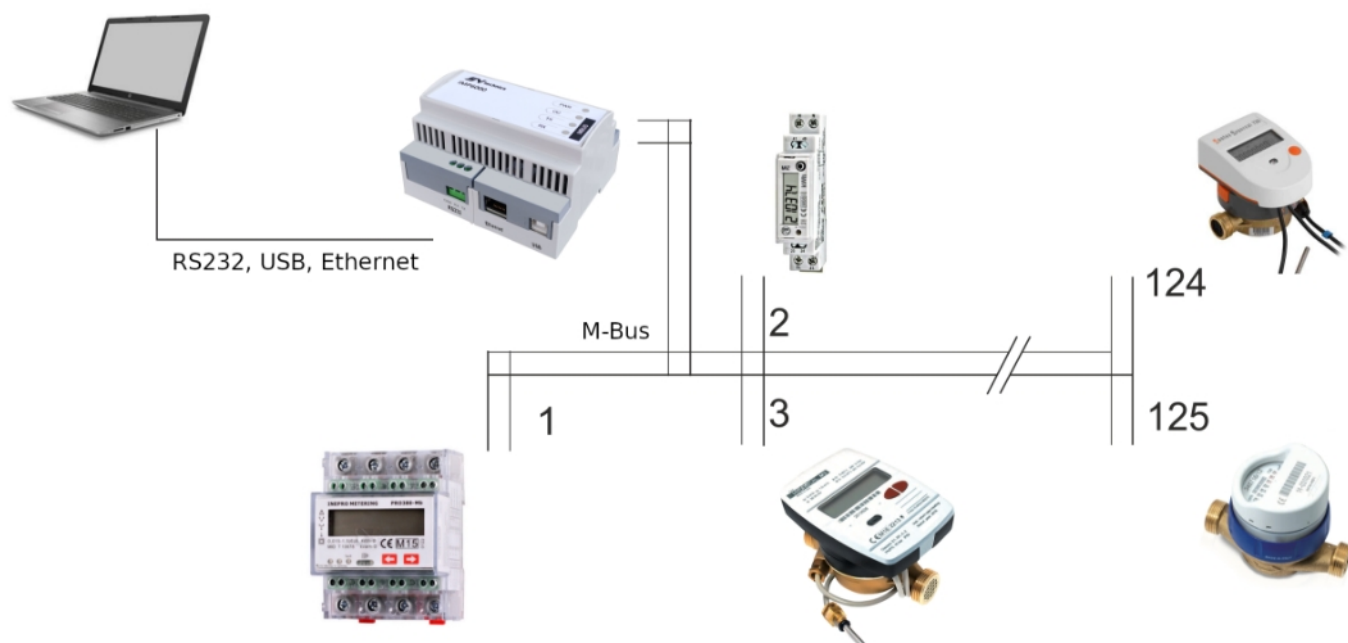
OC - M-Bus overcurrent – red

TX - M-Bus transmission – yellow

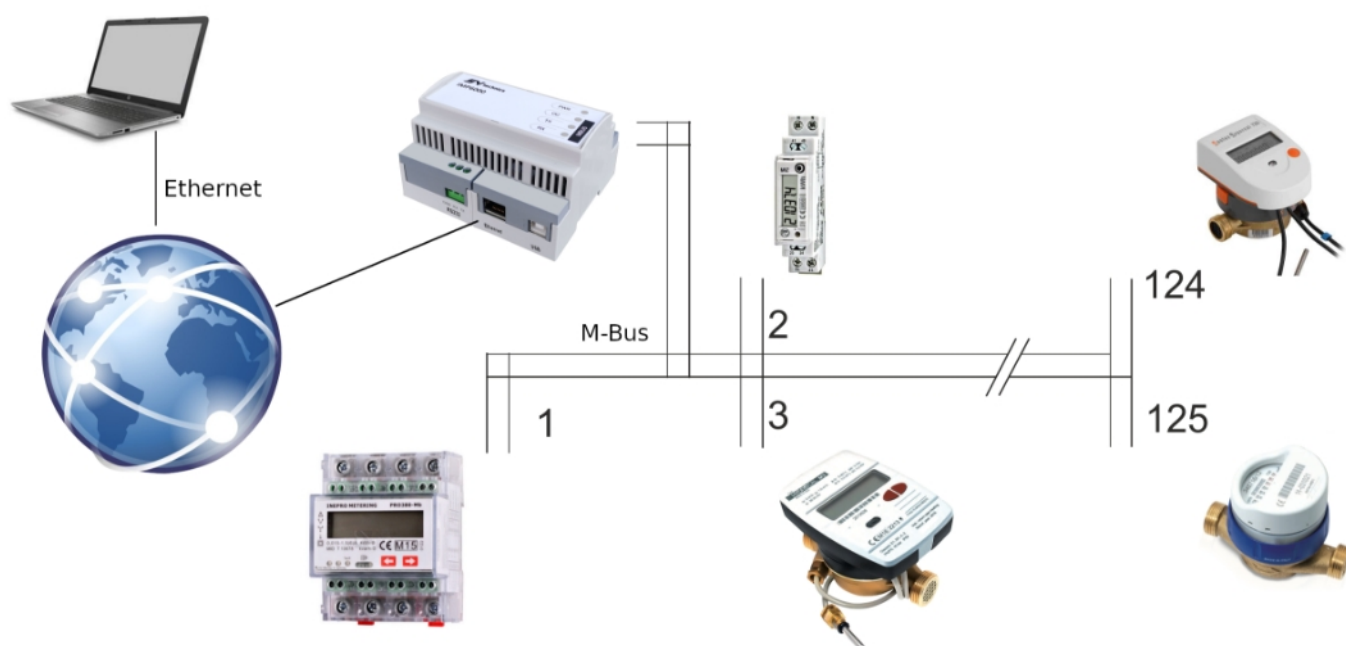
RX - M-Bus reception – yellow

Possibilities of Data Reading via Individual Interfaces

Local Data Reading



Remote Reading via Internet



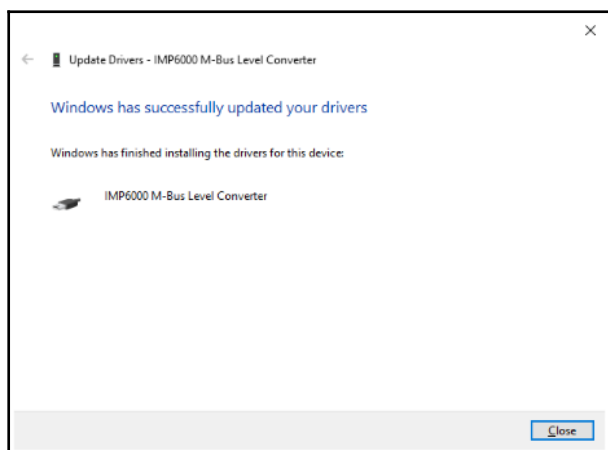
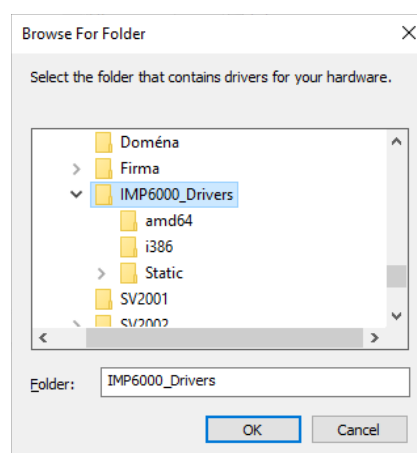
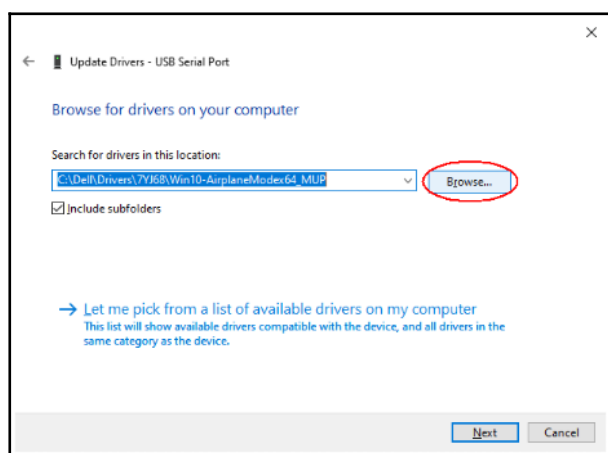
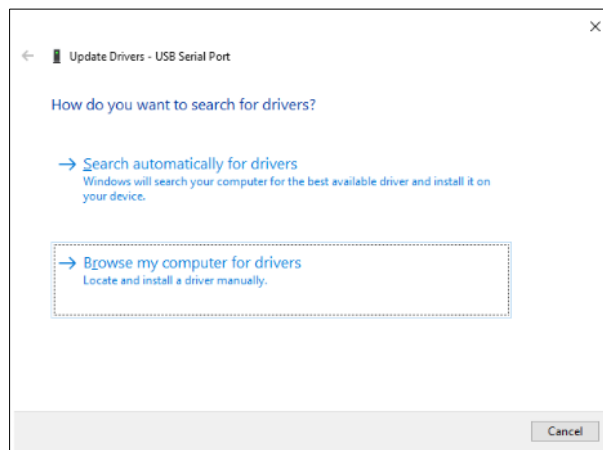
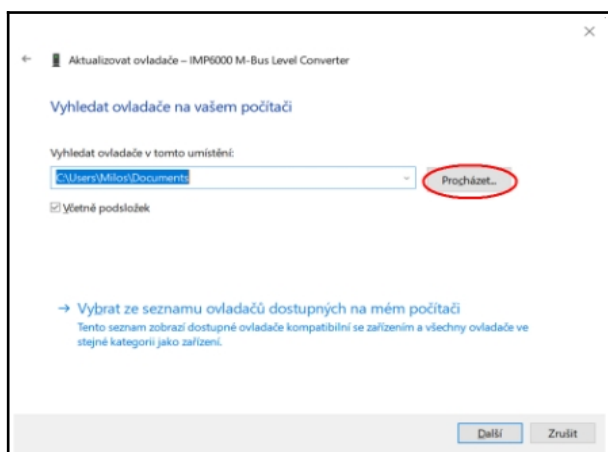
USB Driver Installation

Download the [drivers](#) from the web site www.svtechnics.cz

Connect IMP6000 to PC USB port using USB A/B cable. You will see a new not recognized USB device in Device Manager.

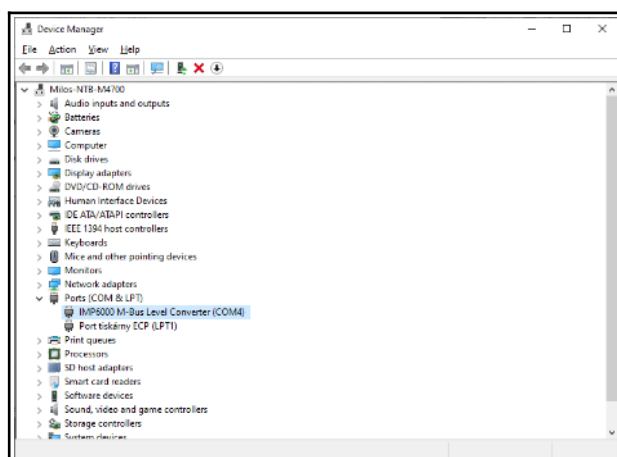
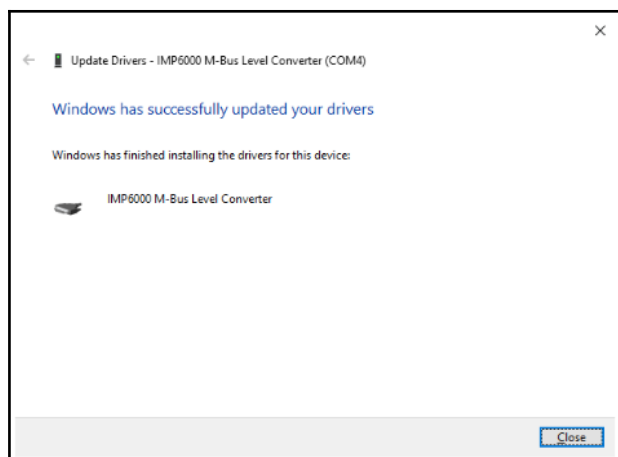
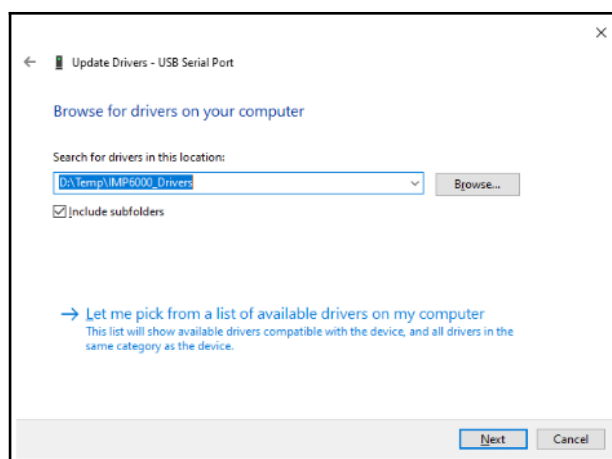
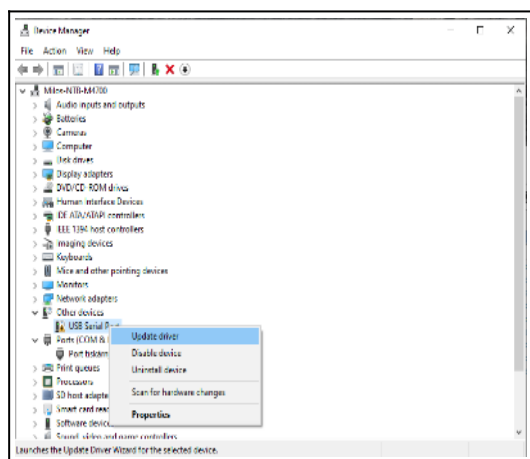
Step 1: Install IMP6000 USB controller:

Right click on this item. Choose Update driver from mouse context menu and follow the next step



Step 2: Serial port driver installation:

Select Other devices >USB Serial Port and choose Update driver on right mouse pop-up menu. Follow the same procedure as in step 1:



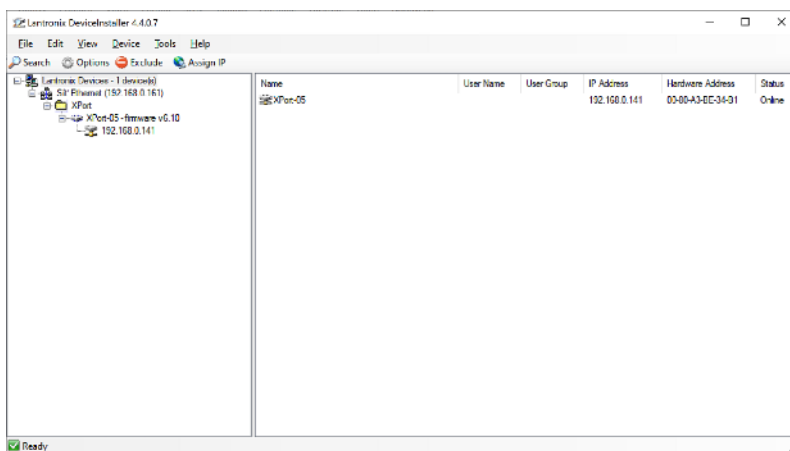
Ethernet module configuration

Connect the converter to your local network, install the software [Lantronix Device Installer](#) and [CPR Manager](#). The converter automatically obtains the ip address and subnet mask from your dhcp server. If you do not use a DHCP server, you can set the IP address manually with Lantronix Device Installer (Assign IP).

Lantronix Device Installer

Install the Lantronix Device Installer software on your PC. The software is used to configure the Ethernet module of the IMP6000 converter.

After starting the program, use the F5 hotkey or the Device / Search menu to search for available converters. Now you know the IP address of your converter and you can set it via a web browser at this address.



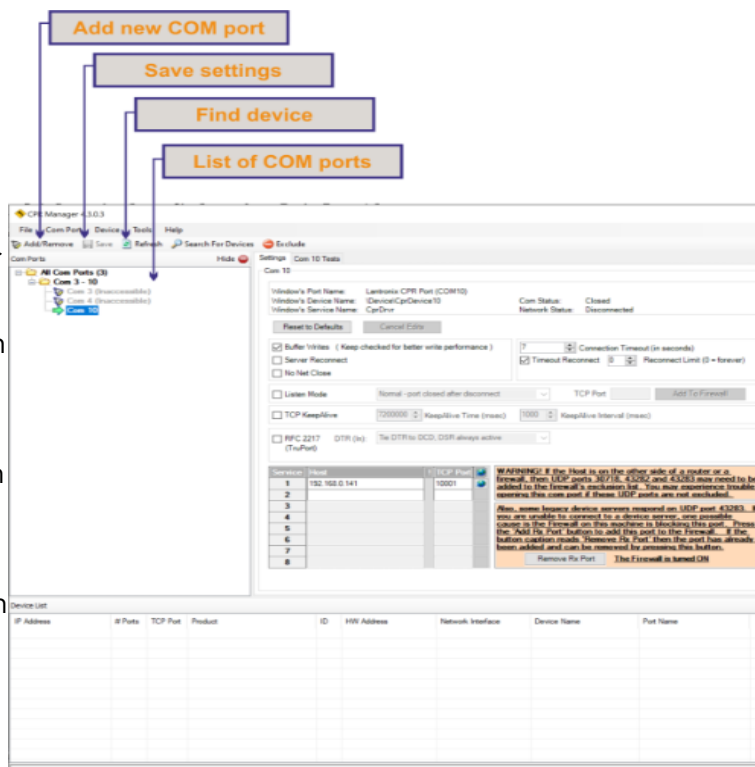
Lantronix CPR Manager

The next step is to create a virtual COM port for communication with the converter. Install Lantronix CPR Manager software on your PC.

The virtual serial port window is shown in the figure. On the left is a list of COM ports currently available on the system.

In the right part there is the configuration of the selected port ("Settings" tab) or the test of the selected port ("Com Tests" tab). Below is a list of Ethernet devices on the local network that use Lantronix Ethernet chips and modules (the list is updated by clicking the Search for devices button). Use the Add / Remove button to add a serial port, select from the list of free ports.

Stand on the newly created port and double-click on the searched Lantronix device to transfer this device to the created COM port. Click Save to save the changes.



The new serial port can be tested in the Com Tests tab.


The virtual port setup is complete, the port is now visible in Windows Device Manager.

IMP6000 web management

Home

Home page of the converter - see picture below.

Confirm the settings of the individual menus with the OK button, use the "Apply settings" option in the menu to save the set configuration to the converter. Wait about 5 seconds, the converter will restart with the new configuration.



Product Information	
Firmware Version:	V6.10.0.3
Build Date:	29-Dec-2017
Network Settings	
MAC Address:	00-80-A3-BE-34-B1
Network Mode:	Wired
DHCP HostName:	IMP6000
IP Address:	192.168.0.141
Default Gateway:	192.168.0.1
DNS Server:	192.168.0.4
MTU:	1400
Line settings	
Line 1:	RS232, 2400, 8, Even, 1, None.

Network

This part of the menu contains basic network settings, such as IP address, netmask and Ethernet speed.

IP Address

Each device on a computer network must have a unique IP address. This address is used to communicate with the device. The IMP6000 has a default option of automatically obtaining an IP address from a DHCP server.

MAC adress

Unique address listed on the nameplate of the converter and on the ethernet module. It is the unique address of this module. It is six hexadecimal digits separated by dashes - in the format 00-80-A3-xx-xx-xx (xx are unique numbers listed on the label).

IP configuration

The IP address of the converter can be assigned automatically (Obtain IP address automatically) or manually (Use manual IP configuration).

After changing the IP address configuration, it will be necessary to connect to the converter at the new address.

Automatic IP address assignment can use one of the following methods: DHCP, AutoIP, BOOTP.

These setting items apply to manually assigning an IP address:

IP Address - sets the IP address of the IMP6000 converter, it is an address that uniquely identifies the module in the network to which it is connected.

Network mask - set the network mask (range of IP addresses used within the network segment) in which the converter is located.

Default gateway - the IP address of the gateway is the IP address of the computer that mediates the converter's connection with other (superior) networks, or connection to the Internet.

Ethernet configuration

Here you set the speed and method of communication over the Ethernet network. The default setting is automatic detection of the speed and method of communication - "Auto Negotiate" is selected. With manual setting, the speed (10 or 100 Mbps) and communication method (Full duplex or Half duplex) can be fixed.

Server

In the Server section, you set the advanced functions of the server part of the converter.

Telnet Password

Password for connection via Telnet or via WEB interface. Maximum length 4 characters (letters and / or digits). The Enhanced Password option allows you to enter a password longer than 4 characters. New password: Enter a new password in the Telnet Password field and, for authentication, in the Retype Password field.

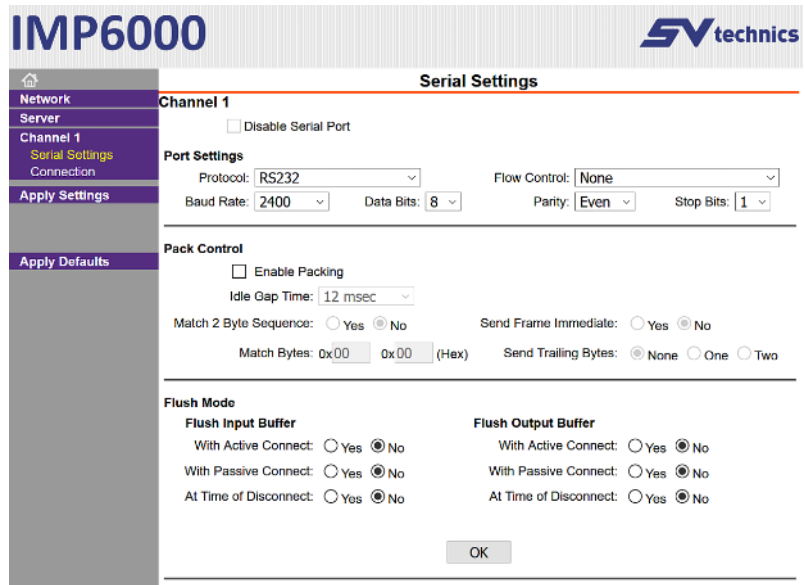
To cancel the password: Clear the contents of the Telnet Password and Retype Password fields.

ATTENTION, the forgotten password can only be removed by service intervention at the SV Technics manufacturer.

Serial Settings

In this section, the speed, byte length, parity, number of stop bits and data flow control on the serial line are set.

For the correct function of the converter, set the RS232 Protocol, Flow Control None, the required baud rate, Baud Rate, Data Bits 8, Parity Even, Stop Bits 1.



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Serial Settings

Channel 1

☐ Disable Serial Port

Port Settings

Protocol: RS232 Flow Control: None

Baud Rate: 2400 Data Bits: 8 Parity: Even Stop Bits: 1

Parity Control

☐ Enable Packing

Idle Gap Time: 12 msec

Match 2 Byte Sequence: ☐ Yes ☒ No Send Frame Immediate: ☐ Yes ☒ No

Match Bytes: 0x00 0x00 (Hex) Send Trailing Bytes: ☒ None ☐ One ☐ Two

Flush Mode

Flush Input Buffer

With Active Connect: ☐ Yes ☒ No

With Passive Connect: ☐ Yes ☒ No

At Time of Disconnect: ☐ Yes ☒ No

Flush Output Buffer

With Active Connect: ☐ Yes ☒ No

With Passive Connect: ☐ Yes ☒ No

At Time of Disconnect: ☐ Yes ☒ No

OK

Connection

In the Connection Settings menu, after selecting the TCP protocol, the settings will be available, see picture:



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Connection Settings

Channel 1

Connect Protocol: TCP

Connect Mode

Passive Connection:

Accept Incoming: Yes

Password Required: ☐ Yes ☒ No

Password:

Modem Escape Sequence Pass Through: ☒ Yes ☐ No

Active Connection:

Active Connect: None

Start Character: 0x0D (in Hex)

Modem Mode: None

Show IP Address After RING: ☒ Yes ☐ No

Endpoint Configuration:

Local Port: 10001 Remote Port: 0

☐ Auto increment Local Port for active connect Remote Host: 0.0.0.0

Common Options:

Telnet Com Port Contr: Disable Connect Response: None

Terminal Name: Use Hostlist: ☐ Yes ☒ No LED: Blink

Disconnect Mode

On Mdm_Ctrl_In Drop: ☐ Yes ☒ No

Check EOT(Ctrl-D): ☐ Yes ☒ No

Hard Disconnect: ☒ Yes ☐ No

Inactivity Timeout: 0 : 0 (mins : secs)

OK

Passive Connection

This option activates the server mode - the converter is passively waiting for a connection from Ethernet. A password may be required when connecting if "Password Required: Yes" is selected. Enter the required password in the Password field.

Active Connection

This option puts the converter in client mode - the converter actively connects to the set remote server (server set below in the Endpoint Configuration item). None: Client mode is not active.

With Any Character: Establish a connection when any character arrives on the serial line.

With Active Mdm Ctrl In: Establish connection in Modem mode 8.

With Start Character: Establish a connection when a specific character arrives on the serial line. Enter the character next to Start Character.

Manual Connection: Attempts to connect to a remote IP address if a connection command arrives on the serial line in the following form: C [IP address] / [port]

Example of a command that comes over a serial line to establish a connection with IP 192.168.1.105 to port 4567: C192.168.1.105 / 4567

For example, if the network mask limits the range of IP addresses to only 8 bits (type C mask - 255.255.255.0), the following string is sufficient as a command to connect to the above IP: C105 / 4567

Autostart: When turned on, it will immediately try to connect to the remote IP address listed below for Endpoint Configuration.

Endpoint Configuration

The remote server to which GNOME connects is set up here. The IP address is set in the Remote Host field, the remote port number is in the Remote port field.

In the Local Port field is the port number of the converter from which the connection will be established.

Disconnect mode

Inactivity Timeout

If this option is selected and an Ethernet connection is established and does not communicate in either direction for the set time, the connection will be terminated. Enter the time in the format "mm:ss" (minutes:seconds).

Ethernet Module

The Ethernet module is fitted to order. The configuration of the Ethernet module is described in a separate document IMP6000 Ethernet Module Guide.

Warning:

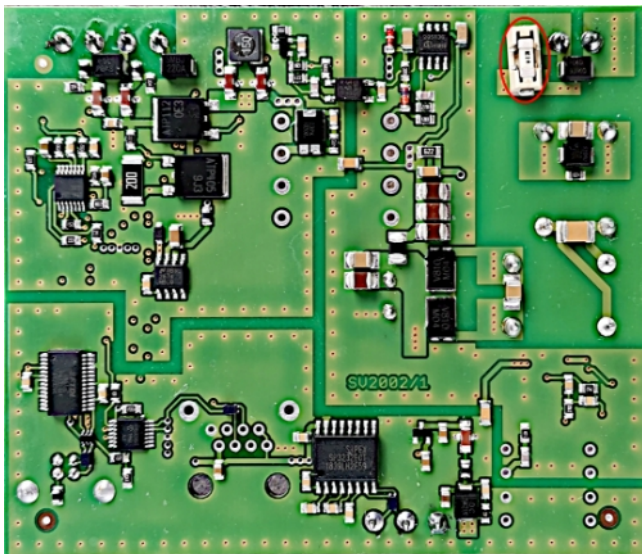
The Ethernet interface is Class A compliant for emissions. In an indoor environment, this product may cause radio interference.

However, exceeding the limits for class B is negligible and outside the frequency of home appliances, so that there is no high-frequency interference in the indoor environment.

IMP6000 Maintenance

The IMP6000 requires no maintenance. If the power LED is off, check the fuse located on the bottom of the circuit board. The fuse is accessible after removing the bottom cover of the box. Use a 2A fast SMD fuse 2410 size as a replacement if necessary. For example:

Manufacturer	Part no:
Bel Fuse	0679L2000-05
Siba	157000.2.



Ordering Specifications

IMP6000S	up to 125 M-Bus devices, RS232, USB
IMP6000L	up to 250 M-Bus devices, RS232, USB
IMP6000SE	up to 125 M-Bus devices, RS232, USB, Ethernet
IMP6000LE	up to 250 M-Bus devices, RS232, USB, Ethernet

Safety Instructions

Do not use power source with a higher voltage than specified in the technical parameters. This could overload the unit and cause a fire.

Disposal



- The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic waste
- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Technical Specifications

Electrical Connections	
Terminal block for supply voltage, RS232, M-Bus port	Screw terminal 0-4 mm ²
USB port	type B
Ethernet port	RJ45
Supply voltage	20 up to 35V AC, 50/60Hz, 20 up to 35V DC
Power consumption (max)	<15W for solution with Ethernet, S type <25W for solution with Ethernet, L type
Power/M-Bus, Power/PC interfaces, M-Bus/PC interfaces insulation voltage	500V DC
Environmental Specifications	
Operating temperature	-20°C up to +55°C
Operating humidity	5% up to 90% Rh non-condensing
Usage environment	Indoors
Storage temperature	-40 °C to +85 °C
M-Bus Output	
Type S	Up to 125 1U devices
Type L	Up to 250 1U devices
Baudrate	300 up to 9600 bps, no setting required for RS232. Must be set for Ethernet.
Recommended cable	J-Y(St)Y 1x2x0,8 (conductor diameter)
Mechanics	
Casing material	Polycarbonate
Protection class	IP 30
Dimensions (w x h x d)	106.3 x 90,5 x 62 mm
Mounting	DIN rail 35mm (EN 60715)
Weight	200g
Approvals	
EMC	EN 55032 ed. 2:2017, class B RS232 and USB, class A Ethernet
	EN 55024 ed. 2:2011 + A1:2016 level 2
M-Bus interface	EN 13757-2:2018