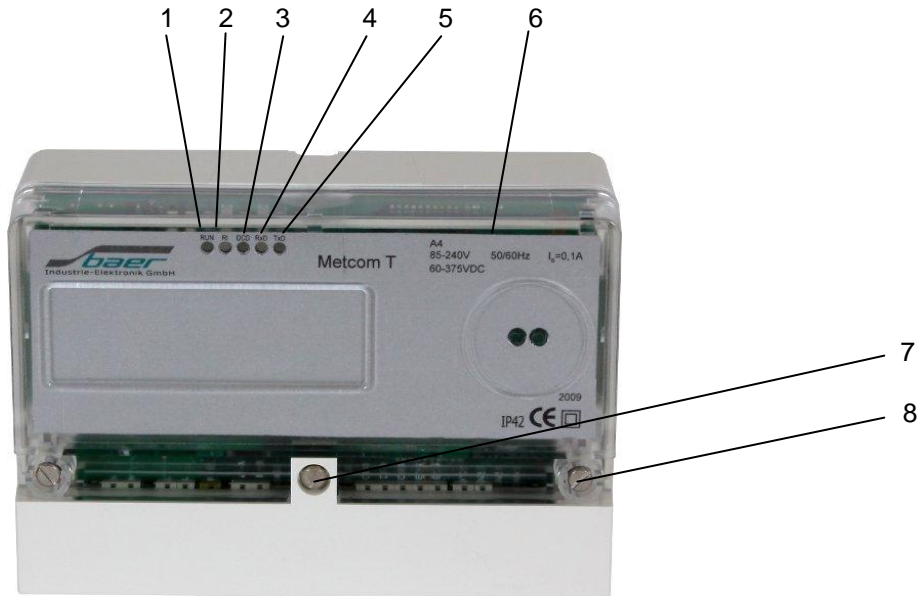


Universal communications device Metcom T E..



- | | | | |
|---|------------------------------|---|-----------------------------|
| 1 | RUN-LED for power on | 5 | TxD-LED: Transmit Data |
| 2 | RI-LED: Ring Indication | 6 | Technical Data |
| 3 | DCD-LED: Data Carrier Detect | 7 | Sealed device cover screw |
| 4 | RxD-LED: Receive Data | 8 | Sealed terminal cover screw |

Figure 1: Display and control panel Metcom T E..

1 General

The universal communications device Metcom T E.. is supposed for remote inquiry of measurement data of any kind, especially however for telecounting applications.

2 Requirements

The universal communications device Metcom T E.. can be used in any 10 Mbit-TP Ethernet. For the Metcom T E.. communication modules produced by internationally renowned companies are used. These companies update their software packages regularly and add or change features. The software releases are continuously checked by the development department, but no responsibility for this software releases can be take over except of warranty granted by the module producer.

3 Montages and connections (see chapter 9 Terminal Assignment)

The device Metcom T X.. is equipped with a built-in, low-loss switched power supply, which enables it to operate on a wide-range AC or DC supply voltage:

- AC: 85 V - 240 V or DC: 60 V - 375 V

The installation must be done in a way, that even in the case of cable break no dangerous voltages are applied to touchable parts of the device including the antenna. This can be accomplished e.g. by using cable ties and appropriate shortening of the cables.

Attention:

- Wrong connection made with Metcom T E.. may destroy the device.
- Therefore attention has to be taken, that
 - only the clamps shown in the terminal assignment diagram are connected.
 - devices with the same type designation may have different designations for the clamps. Please connect the device as shown in the delivered circuit diagram (in terminal cover).
 - the device must be supplied with the voltage given on the nameplate only.
- Open the device in voltage free state only!
- Capacitors inside may be loaded to dangerous voltage even after the device is disconnected from mains. Be careful when touching parts inside!
- The RTS/CTS jumper must be set if a bus interface (e.g. 20mA/CS, M-Bus, RS485) or a three wired RS232 (GND, TxD, RxD) is used (see Figure 4: Terminal assignment).

4 Installation Hints

Delivered devices are either programmed according to order or with standard parameters if nothing was specified. Before installation the Metcom can be configured for the given application using a PC and a parametering adapter (see chapter 7 Programming the device).

5 Display and control panel (Figure 1) – differently according to appliance-implementation

Pos.	Function
1	RUN-LED for power on and logoff / logon blinks by logoff
2	RI-LED: Ring Indication lights, when the modem rings
3	DCD-LED: Data Carrier Detect lights, when the modem has built a data link to remote station
4	RxD-LED: Receive Data lights, when data is transferred from modem to target device
5	TxD-LED: Transmit Data lights, when data is transferred from target device to modem
6	Technical Data
7	Sealed device cover screw
8	Sealed terminal cover screw

6 Interface

The interface for connecting the target device can be specified by plugging the appropriate interface module. The following module types are available now:

- 1st Interface: RS232 (uses signals RxD, TxD, CTS, RTS, GND): terminal – standard or RJ45 - option
- 2nd Interface (terminal):
20mA/CS (current loop) active (supplies current) for max. 6 to 8 meters
or 20mA/CS (current loop) passive
or M-Bus interface module, active (can supply 25 slaves/meter max.)
or RS485 (2 wires)

Only one of multiple built-in interfaces (optional) can be active at the same time. The others serve in this case for level conversion.

Communication is possible with many standard protocols, like SCTM, LSV1, DLMS, IEC1107, IEC60870, Modbus (transparent reading) etc.

7 Programming the device

Before installing the modem it has to be programmed in order to meet the demands. The baud rate and data format for connecting to the target device and the transmission mode and transmission rates must be adjusted. On delivery the following default parameters are active (if not differently mentioned, see terminal cover):

ATS0=1	This parameter setting determines the number of rings (here 1) before automatic answering
AT&D0	This parameter determines how the modem responds when circuit DTR is changed from ON to OFF during data mode. With setting 0 the modem ignores DTR
AT&K0	No data flow control
ATE0	No local echo
ATQ0 V0	Result is presented as number
AT#PORT=1234	Standard port number = 1234; change only via a terminal program

If you want to change this parameters, you need a PC with parameterization software (e.g. UniModSet) or terminal software (e.g. Windows HyperTerminal etc.). Moreover experiences with the Hayes AT modem command set are very recommended. To establish connection between PC and modem you have to use a converter („converter box“) in order to adapt the interfaces. Alternatively you can use a parametering adapter, which can be plugged into the RJ45 interface from Metcom T E (RS232). This adapter can be ordered as accessory:

1. First insert the RJ45 plug of the parametering adapter to the Modem as shown in the picture.
2. Then connect the 9 pole plug (RS232) to the PC.
3. Turn on the PC and start the parameterization software

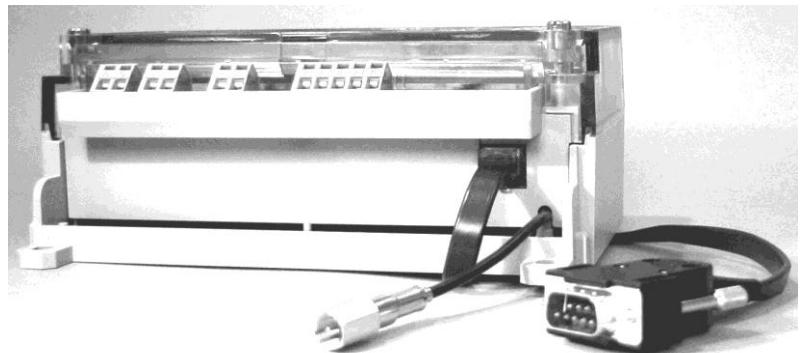


Figure 2: Connection between parametering adapter and Metcom T E..

7.1 Programming with the software UniModSet

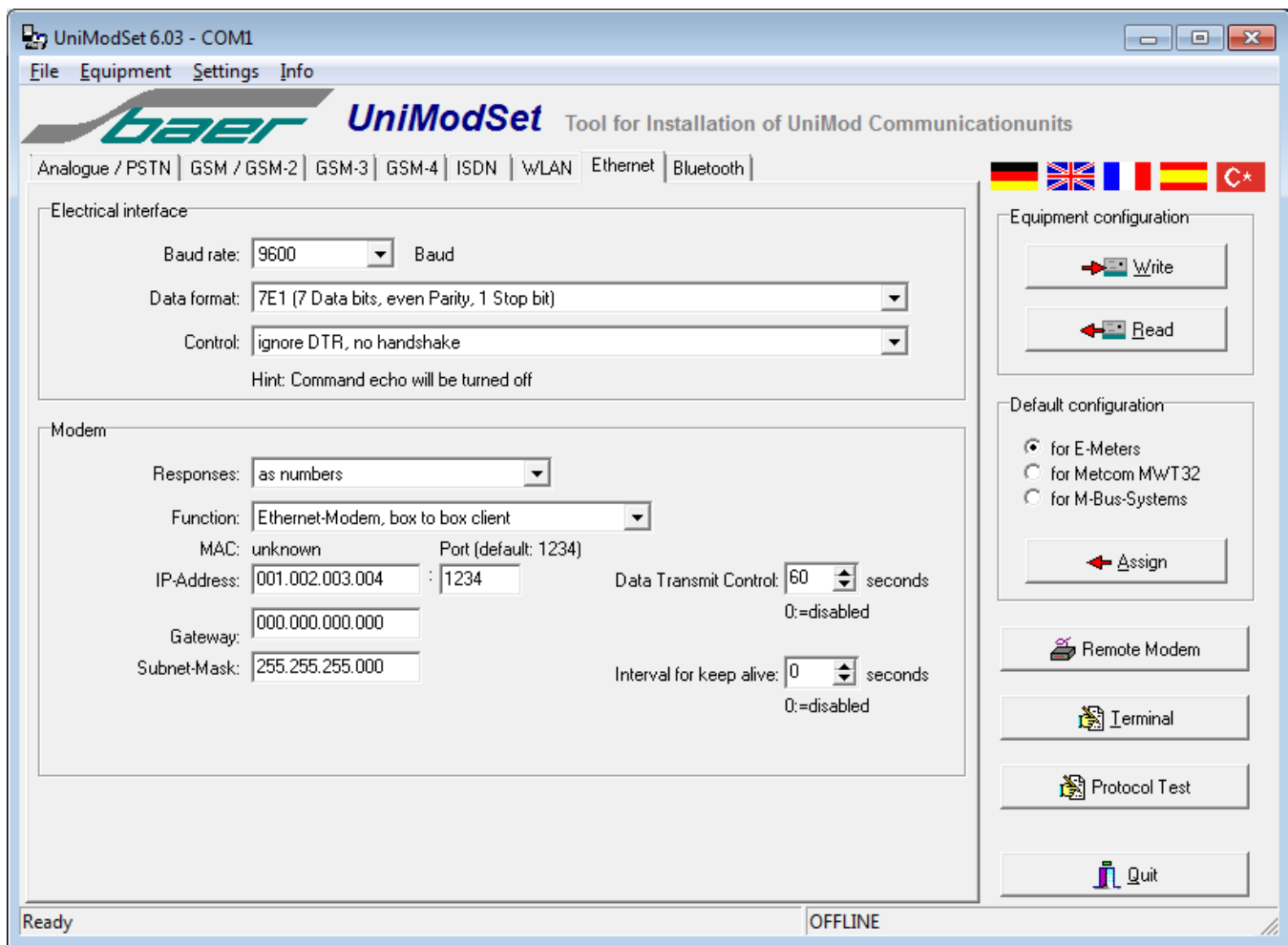


Figure 3: Parameterization software UniModSet

After program start select the tab labelled Ethernet. Then choose one of the standard configurations (for E-Meters, Metcom MWT32 or M-Bus-Systems) or assign the following parameters manually:

- Baud rate, e.g.: 9600 Baud
- Data format, e.g.: 7E1
- Control, e.g.: ignore DTR, no handshake
- Responses, e.g.: as numbers
- Function: box to box client
- IP-Address (and port number)
- Gateway
- Subnet-Mask
- Data Transmit Control and Keep Alive

Then select in menu „Settings - Interface“ the serial port (e.g. COM1) and send („→write“) the chosen device configuration to Metcom T E.. Additionally you can receive („←read“) the configuration from a connected Metcom T E.. In menu „File“ you can save („File save as...“) the actual configuration or load („File load“) an older. Further it is possible to set the Ethernet (LAN) parameter.

Experienced users can alter the device configuration with the internal terminal program using AT commands.

7.2 Programming with the terminal software

First you have to set your terminal program to the fixed, local data rate and data format of the Metcom T E.. (default values: 9600 Baud, 7,E,1). Use one of the AT commands (e.g. ATSO?, ATI, AT&V) in order to check whether the modem answers. If you see the answer on the screen, the interface is working correctly.

Note: Simply typing AT does not result in an answer, because the modem can by default programmed not to send messages and echoes (parameters ATQ1 and ATE0).

Following some examples of AT commands (the answers depend upon the respective firmware version):

Request	Answer	Description
at&v	ACTIVE PROFILE: E0 Q0 V1 *S6 &C1 &D0 &K0 &L0 &O0 &S0 *Y0 T S0=001 S3=013 S4=010 S5=008 #DTC=000 *U1 (7E1) ... OK	Inquires current configuration
ati	ETHERNET OK	Requests product information
at&f	OK	Set all parameters to factory defaults.
ats0=n	OK	This parameter setting determines the number of rings (0 to 255) before automatic answering. e.g.: ats0=1 (Modem answers after first ring) Attention: ats0=0 disables automatic answering!
at#dtc=n	OK	Line check: Data Transmit Control (n=0: off, n>0: check after n*10 sec.)
at#keep=n	OK	ETHERNET-Line check (n=0: off, n>0: check after 3*n*10 sec.)
at#port=nnn	OK	Set a new port number (between 1 and 65535); Standard: 1234
ats0?	1 OK	Returns the number of rings before automatic answering
at#ip=123.123.123	OK	Set a new IP-Address
atd<IP-Address>:<Port>	CONNECT	Dial (dialling string) The modem lifts up and dials in accordance with the dialling string given by the atd command, e.g.: atd192.168.1.220:1234
+++	OK	Disconnect After the escape sequence +++ the modem hangs up.
ate0	OK	This disables the modem to send echoes of characters received from PC during command state
atv0	0	Result is presented as number (atv1: as text)
atq1	No answer	This parameter setting disables transmission of result codes to the PC. Information text transmitted in response is not affected by this setting
at&w	No answer because of atq1	Saves the current parameter setting in the user-defined profile. This settings are active after every resumption of power supply!

Attention: At the end of every programming the settings have to be saved permanently using the at&w command. This ensures that the parameters are restored after power failure.

7.3 Dial

The modem lifts up and dials in accordance with the dialling string given by the ATD command, e.g.:
ATD001.002.003.004:1234
(1234:=port number)

7.4 Disconnect

After the escape sequence +++ the modem hangs up.

7.5 Data Transmit Control

Data transmit control is a firmware integrated feature for supervising the online data transfer. The feature prevents the modem from staying online infinitely, even if no data are transferred at all.

An arbitrary time span from 10 to 2550 seconds (by 10 seconds steps) can be programmed. DTC is disabled if the time is set to 0 (default value). If the value is not 0, the time counter starts running immediately after the connection is established. As soon as it is run out the modem is reset, which causes it to hang up.

The time counter is reset by every transmitted or received character. That means, the modem holds the line for <n> seconds after the last transmitted or received byte, where <n> is the setting of DTC.

7.6 Keep Alive

Keep alive is a firmware integrated feature for supervising the TCP-IP network line. The feature prevents the modem from staying online infinitely, even if the LAN network don't work.

An arbitrary time span from 10 to 2550 seconds (by 10 seconds steps) can be programmed. Keep alive is disabled if the time is set to 0 (default value). If the value is not 0, the keep alive probes will be send every x seconds. As soon as it is run out the modem is reset, which causes it to hang up.

7.7 Telnet access

For purposes of service it is possible to access an Metcom T E.. via the Telnet tool, which is delivered with Windows. You can start it using the "Execute" button in the Start menu, or by entering "telnet" in a DOS box. Help is offered by typing "help" at telnet's command prompt.

Procedure:

- Open connection ("open <Metcom T E.. IP address>")
- Read current modem settings using AT commands (e.g. AT&V). Please note that the "AT" part is already printed, only the following command specifier must be entered.
- The command ATZ resets the modem.

Starting with version „ETHERNET V3“ (can be queried using ATI command) access must be enabled by entering username and password. Default values are "insys"/"insys". In this version the modem-reset must be requested using AT#RESET, the ATZ command is functionless.

8 Technical Data

Housing:	Wall-mounted housing	
Degree of protection:	IP42 (IEC)	
Weight	0,6 kg	
Temperature range:	Conditions of storage and transport:	-40°C to +90°C
	Operating conditions:	-40°C to +85°C
Dimensions:	W = 171,6 mm H = 117 mm D = 66 mm	
Protection class:	2	
Supply voltage:	AC: 85 V – 265 V DC: 60 V – 375 V	
Power consumption:	4 VA max.	(depends upon supply voltage, kind of interface module and operating status of transmission unit)
Interfaces:	Fix: RS232 (supports signals RxD, TxD, RTS, CTS, GND, DTR, DCD, DSR) Pluggable modules; available are: - 20mA/CS (current loop) active, (can supply 6 to 8 meters max.) - 20mA/CS (current loop) passive - M-BUS active (can supply 25 slaves/meters max.) - RS485 (2 wires)	
Display:	LED's: RUN, RI, DCD, RxD, TxD	
Transmission rate remote modem to Metcom:	10 Mbits/s (IEEE802.3)	
Ethernet connection:	10 Base-T	
Protocols:	ARP, ICMP, TCP/IP, UDP/IP	
Transmission rate Metcom to connected device:	300 to 19200 Baud	
Transmission mode:	7E1, 8N1, 8E1, ...	
Software-Interface:	Hayes Standard-AT	
Extent of delivery:	- Metcom T E.. including interface module as ordered - Operation manual	
Accessories:	- Adapter for parametering - RJ45 connector - Additional interface modules - Software UniModSet	

9 Terminal Assignment

When connecting the delivered circuit diagram or the diagram in the terminal cover must be obeyed! The abbreviations in the circuit diagram are explained in the legend.

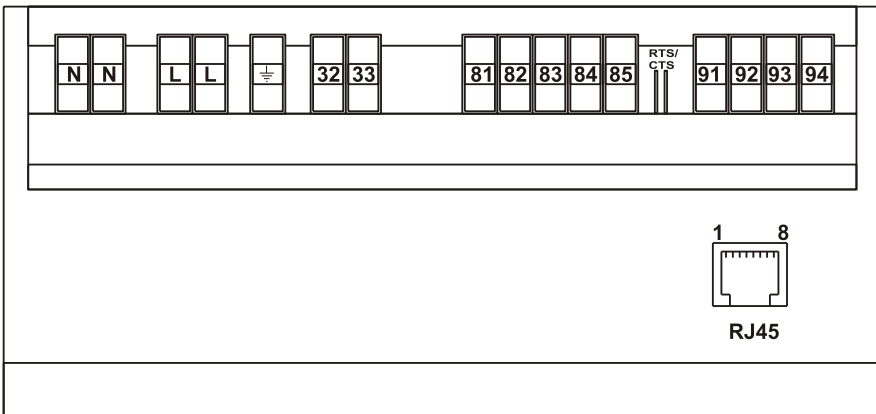


Figure 4: Terminal assignment

Legend:

N	Neutral
L	Phase
⏏	PE

32	Additional feature: 20mA-Interface active (-)	Variant: Metcom T E2
33	Additional feature: 20mA-Interface active (+)	
or		
32	Additional feature: 20mA-Interface passive (+)	Metcom T E3
33	Additional feature: 20mA-Interface passive (-)	
or		
32	Additional feature: M-BUS-Interface active	Metcom T E4
33	Additional feature: M-BUS-Interface active	
or		
32	Additional feature: RS485-Interface (A)	Metcom T E6
33	Additional feature: RS485-Interface (B)	
81	RS232-Interface GND	
82	RS232-Interface TxD	
83	RS232-Interface RxD	
84	RS232-Interface RTS	
85	RS232-Interface CTS	

The RTS/CTS jumper can be set if a bus interface (e.g. 20mA, M-Bus, RS485) or a three wired RS232 (GND, TxD, RxD) is used.

RJ45 plug:

1	RS232-Interface RxD
2	RS232-Interface DSR
3	RS232-Interface CTS
4	RS232-Interface TxD
5	RS232-Interface DCD
6	RS232-Interface RTS
7	RS232-Interface DTR
8	RS232-Interface GND
91	Ethernet, RX+ (RJ45 pin 3, colour: green-white)
92	Ethernet, TX + (RJ45 pin 1, colour: red-white)
93	Ethernet, RX- (RJ45 pin 6, colour: green)
94	Ethernet, TX- (RJ45 pin 2, colour: red)

Note: Cable colours may be different.

10 Dimensions

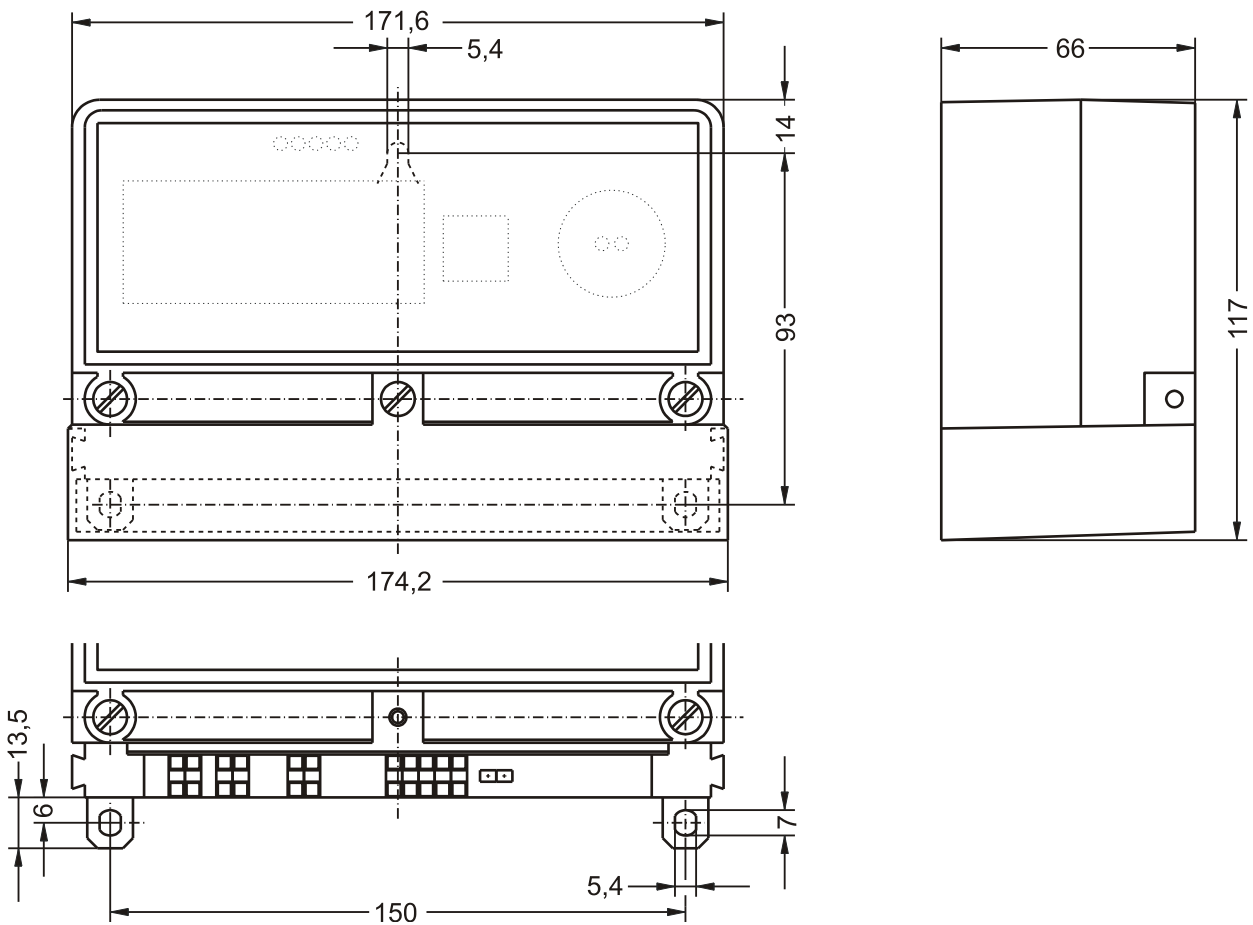


Figure 5: Dimensions of Metcom T E..

