DU35K/NET

LED Clock with Ethernet Interface

Instruction Manual

Sipronika

Sipronika d. o. o., Verovškova 64a, 1000 Ljubljana, Slovenija, Tel.: 01/ 421-52-50
E-mail: info@sipronika.si, Internet: http://www.sipronika.si

 DU35K-NET_2.1.eng.doc

Sipronika d.o.o.
Verovškova 64a
1000 Ljubljana

Tel.: 01/4215-250
Internet: http://www.sipronika.si
E-mail: info@sipronika.si

June 2021

DU35K-NET_2.1.eng.doc

CONTENTS

1. IMPORTANT SAFETY INSTRUCTIONS 4
2. INTRODUCTION 5
3. MOUNTING AND CONNECTION OF DU35K/NET 6
3.1 Mounting 6
3.2 Connection and clocks operation 7
4. SETTINGS, THE USE OF THE BUTTONS “MENU” AND “SET” 8
4.1 Menu description 8
5. SETTINGS THROUGH THE NETWORK 11
5.1 General 11
5.2 Installation 11
5.3 A short description of parameter setting 11
6. CONNECTION DESCRIPTION 14
7. TECHNICAL SPECIFICATIONS 15

1. IMPORTANT SAFETY INSTRUCTIONS

WARNING! Read the section that follows very carefully before installing your equipment. It gives the safety instructions to follow during installation.

WARNING! Terminals are **hazardous live** - the external **wiring** connected to these **terminals** requires installation by an **instructed person** or the use of ready-made leads or cords.

The equipment is a class 1 – equipment and must be connected to an earthed outlet (TN Power System).

This device does not have a primary power switch. A power protection system (circuit-breaker or disconnecting switch), that is easy to access must be built into the wiring installation. This device must support the nominal voltage and current values specified on the clock.

After disconnection from the mains, device remains readily operable.

In Europe: to comply with European regulations on the protection of persons and the environment, you must dispose of this equipment in a collection site provided for this purpose (separately from household waste). Contact your reseller, collection site or the competent lcoal authorities for more information.

Modifying or opening the product without the consent of the Customer service department will void the warranty.
All maintenance operation shall be conducted with power shut off, including systems connected on inputs or outputs if any.

The equipment has been evaluated for use in office environment (pollution degree 2) and may be only used in this environment. For use in rooms wiht a higher pollution degree more stringent requirements are applicable.

Apparatus shall not be exposed to dripping or splashing water and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Electrical Hazard – Failure to follow the instructions may result in electric shock and injury to persons.

Danger – risk of damage to equipment if the instructions are not followed.

Sipronika d.o.o. disclaims all responsibility in case of accident or damage caused by an improper use of the product.

2. INTRODUCTION

The DU35K/NET digital clocks is designed for displaying time in the following format: weekday, day, month, hours, minutes and seconds.

The date clock can be connected to a network via **Ethernet 10/100Mbit**, through which the time synchronization with **NTP server** is executed. The clock operation settings are maintained with the push-buttons on the back side of the housing or remotely, by using an additional software – Message Editor.

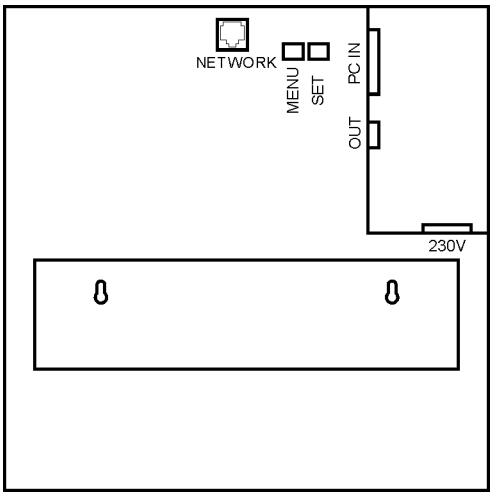


Fig. 1: A view of the clock's rear

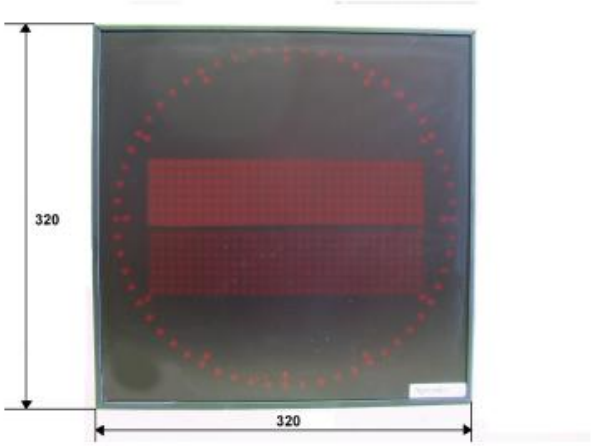
On the clocks rear panel there are various connectors and two push-buttons:

NETWORK	Network connector, type RJ45 for Ethernet 10Base-T/100Base-TX. Serves also as a PoE input (PoE version only).
OUT	Output of the time telegrams – RS-232 and 20 mA current loop, connector DB9F, used only for connection of outside clocks with a serial interface.
MENU, SET	Push-buttons for executing the following display settings: time, brightness, language, timezone, network settings…
230 V	IEC inlet for the mains connection
PC IN	Auxiliary input – only for maintenance purposes, connector DB25F

3. MOUNTING AND CONNECTION OF DU35K/NET

3.1 Mounting

Standard version of DU35K/NET is intended for wall mounting. For this purpose two wall screws on which the clock will be hung, need to be installed. Mounting carrier on the rear panel can be fixed in different positions – this allows adjustment of the clock's tilt.



Front view

Side view

Back view

DU35K and DU35S dimensions

Note: All dimensions in mm

3.2 Connection and clocks operation

DU35K/NET is connected to a computer network Ethernet (10 or 100 Mbit), with RJ45 connector, which is located at rear of the casing and is labelled with a sign NETWORK. With an enclosed cable, the clock is connected to the mains voltage. A PoE (Power over Ethernet) version of the clock can be powered either by a PoE+ enabled switch or a midspan injector.

The clock does not have a special power on switch, therefore is starts functioning immediately (in a few seconds) after the power has been provided. The time is displayed following an introduction message.

Immediately after the device has been connected with the mains, a colon is blinking between hours and minutes, which means that the clock has not yet been synchronized with the NTP server. With the first usage, clock IP address, the sub-network mask, the default gateway and the NTP servers IP address has to be set using the two keys at the clocks rear panel or remotely with the Message Editor program. If there is a DHCP server provided in the network, all the settings can be managed by the server – the DHCP client should be switched on in the menu (this is also the default setting).

When the communication between the clock and the NTP server has been established, the displays will become synchronized and the colon between hours and minutes will stop blinking. The colon indicates the synchronization state:

- blinking colon – the clock has not yet been synchronized
- non-blinking colon – the clock is synchronized.

4. SETTINGS, THE USE OF THE BUTTONS “MENU” AND “SET”

The push-buttons labelled MENU and SET on the rear panel can be used to set the time, language, brightness, time zone, times of transitions from the standard time to the Daylight Saving Time and vice versa, the display's IP address, the subnetwork's mask, the default gateway and the NTP server's IP address. The display saves all the settings in its memory and uses them the next time it is turned on.

The setting is performed according to the following procedure:

- choose the desired setting by pressing the MENU key;
- if you press the SET key, the current value of the setting chosen is displayed; the character/digit than you can change at that time is blinking;
- by pressing the SET key for a longer time, you can change the setting at the blinking place,
- by pressing the SET key for a short time, you are moved to the next place/digit,
- once you are satisfied with the setting, press the MENU key to save the setting,
- if you do not press any key for more than 30 seconds, the display will return to the normal displaying of time; the setting chosen last (with the exception of the brightness) will not be saved.

4.1 Menu description

TIME & DATE
Here you can set the clocks date and time. The time you have set will be adopted when you press the MENU key. If the display is connected with the NTP server, the time received from the server will prevail.

LANGUAGE
In this menu you can choose the language that will be used for displaying the date and the time; the abbreviations of the names of months and days of the week will be displayed in the language you have chosen here.

BRIGHTNESS
Here you can select the display's brightness. The degrees you can choose range from 1 (the lowest brightness) to 3 (the highest brightness).

SERIAL NUMBER
If you press the SET key, the display's serial number is displayed. The number is written also at the display's rear; it can not be altered.

TIME ZONE
Within this menu, you can set the difference between the local time and the UTC. You can set the algebraic sign, the hours and the minutes. The display calculates the local time according to the formula: local time = UTC + the difference. For Central Europe, the difference amounts to +01:00 for the standard time, and +02:00 for the Daylight Saving Time. If you wish to display the UTC time, set both values to +00:00.

WINTER/SUMMER, SUMMER/WINTER
Here you can set the date and the hour of the automatic transition from the standard time to the Daylight Saving Time (Summer Time) and vice versa.
You can set the exact transition moment for the current year, or universally – for several years. In the case of the universal setting, you set a day of the week and a date containing two asterisks ('**') in place of the year. The transition will happen when the chosen day of the week comes for the first time, provided the then date is later than the one set or equal to it.

Example:
In Central Europe, the transition is put into effect on the last Sunday in March, at 02:00:00 AM (local time). The universal (default) setting is: **SUN 25.03.** 02:00:00**.
The transition from the Daylight Saving Time to the standard time is put into effect on the last Sunday in October. The universal (default) setting is: **SUN 25.10.** 03:00:00.**

On the other hand, the settings valid only for the year 2018 are the following:
*** 25.03.18 02:00:00 and *** 28.10.18 03:00:00.
With these settings, next year it will be necessary to set the transition times anew.

IP ADDRESS
SUBNET MASK
DEFAULT GATEWAY
The display's IP address, subnet mask, and default gateway are set in accordance with the data of the existing network to which you intend to connect the display.
A DHCP client is integrated in the display, which can set alone in relation with a DHCP server (if provided in the network) all the proper network settings. The DHCP client is activated if “DHCP: Y” is chosen. If “DHCP: N” is chosen, the client is switched off and all the network settings should be set manually.
If DHCP is switched on, then menus »subnet mask« and »default gateway« can only be inspected but not changed.

NTP SERVER 1, NTP SERVER 2, NTP SERVER 3
Using the SNTP protocol, the display can set its internal clock automatically. For this purpose, it must have access to the NTP time server. In these menus, IP addresses of up to 3 NTP servers can be set. The display is synchronized with the first accessible server. A setting “0.0.0.0” means that the server is not set.

TIME FORMAT
In newer versions it’s possible to display time in various formats. In this menu you can choose between two formats:

- Day of week, day of month, month, hours : minutes : seconds
  Example: MON 12. MAY 10:15:30

- Day of year, day of month, month, hours : minutes : seconds
  Example: 132 12. MAY 10:15:30

EXIT

If you press the SET key, the display returns to the normal displaying of time and messages. If there were changes in settings you'll have to confirm that you really want to apply them. However, if you press the MENU key, the display begins a new circle of settings.

5. SETTINGS THROUGH THE NETWORK

5.1 General

The network and other settings can be managed remotely through a computer network with the use of **Message Editor** Software. The software operates on personal computers with Windows OS. It serves also for message sending to displays, such as a model VP100/20. Therefore, in the technical instructions, both notations “clock” and “display” have been used. The options settings which are available only for clocks, such as a model DU35K / NET are described in details.

5.2 Installation

You can download Message Editor from https://sipronika.si/downloads/. Run medxxxx_setup.exe" setup program. Xxxx is usually replaced by version number.

In the installation program, choose the language and the folder in which you want to install the program, as well as the program group into which the icons will be installed. When the program is being run for the first time, all the default settings are set. The program menus are displayed in the language chosen during the installation.

The program uses TCP protocol on the port number 8000 and UDP on the port numbers 54324 and 54325. The firewall settings should allow the use of these ports. The program might not work properly otherwise.

5.3 A short description of parameter setting

Before the parameter setting begins, the program must first find all clocks that are connected in the network. This is done as follows: menu Options -> Settings -> Displays **(**

Fig. 2).

The user can add clocks and displays using two options: manually or automatically (recommended).

Manually, a display is added by clicking to “Add display”. This option is used in older clock/display versions, which do not support searching the network automatically. Then, the following parameters should be set:

- the display's name – choose any one you like, however, it is obligatory that you enter it (a name is important especially when several displays are connected: it is exactly through their respective names that you have access to individual displays in the network;
- serial number – it is fixed and unchangeable for each display. You can find it in the display's menu or read it at the casing's rear;
- IP Address – the address determined by the existing network; which you have entered in the display. Example: 192.168.0.25.

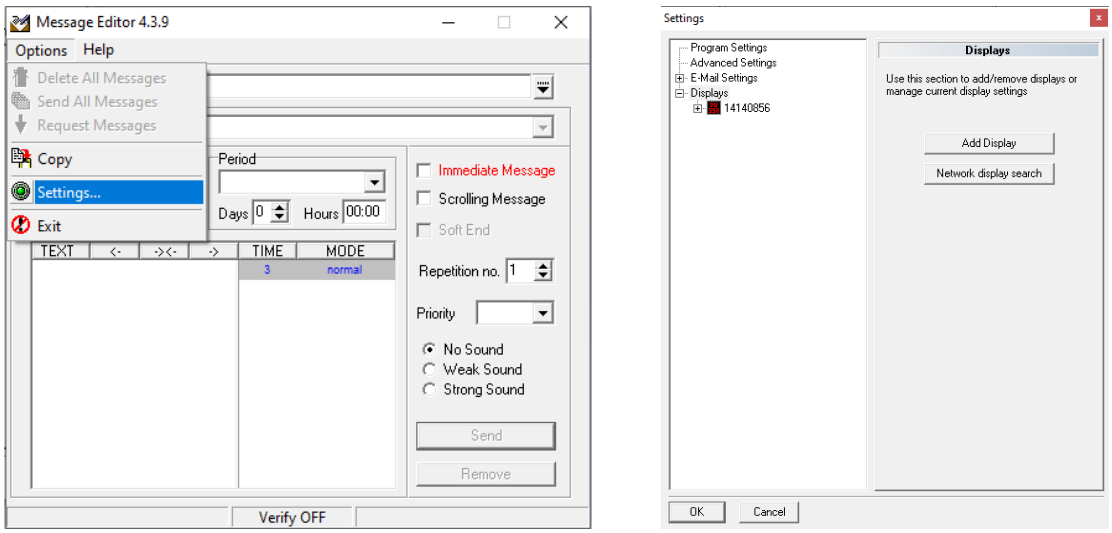


Fig. 2: Menu "Settings"

The program may search clocks/displays in the network automatically. The search is initiated by clicking the “Search Network”. The program reports the number of search results. Newly found devices are added to the list of displays.

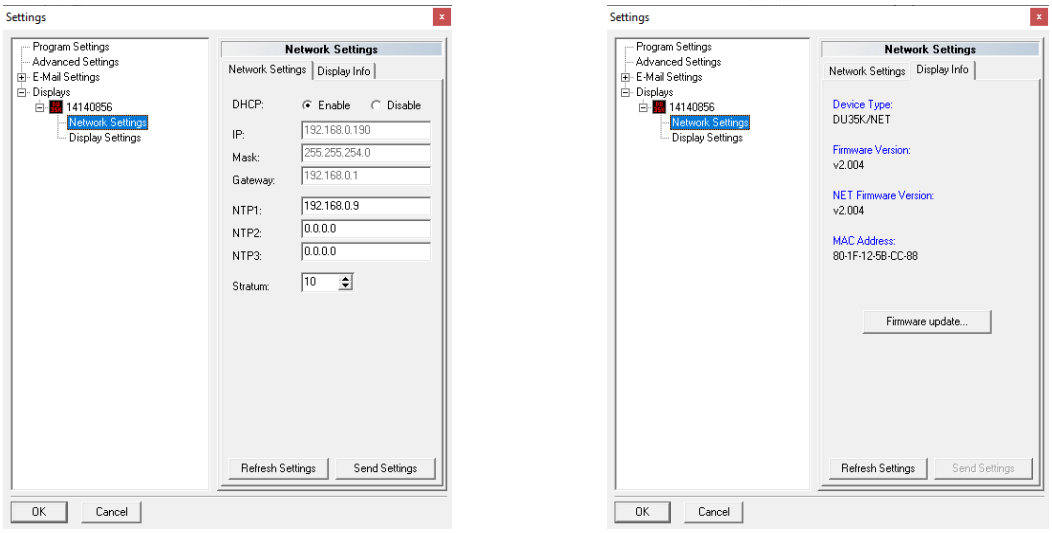


Fig. 3: Network settings and display info

If you click on the devices name on the list of devices, on the right side of its name, its serial number and IP address show up. The name is by default the same to a devices serial number, but it is advisable to change it into a more understandable form, for example “Corridor 1”. Thus the individual devices can be better distinguishable.

If a devices name is double clicked, two submenus appear. In the submenu »Network Settings« the display network settings are listed and edited. All current settings are confirmed by clicking »Refresh settings«. The new settings are inserted into provided fields.

The fields NTP1, NTP2 and NTP3 are provided for IP addresses of the timeservers which will be used for synchronization. It is necessary to insert at least one IP address. The addresses of the timeservers which are not currently used should be set to 0.0.0.0.

A stratum between 1 and 15 can be assigned to each display. The stratum of a NTP server (usually 1 or 2) should be lower than the display’s stratum (default value is 15); otherwise the synchronization can not be established. By clicking »Send settings« the settings are sent to the display.

In the submenu »Display info« the display's type, software version and MAC address of the network interface are listed. There is also a button for firmware update.

By clicking on »Display settings« the following display settings are being provided: Brightness, Language, Daylight Saving and Time Zone.
By clicking on »Send settings« the settings are sent to the display. By clicking »Refresh settings« the current settings are being listed.

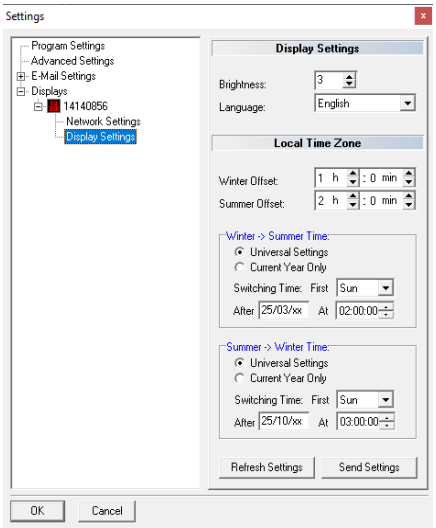


Fig. 4: Display settings

Exit
This command is used to close the program. All the settings and messages remain on the hard disk, and are used on the occasion of the next starting of the program.

Other menus of the program are used for managing displays of type VP100/20 and therefore for the clocks DU35K/NET meaningless.

6. CONNECTION DESCRIPTION

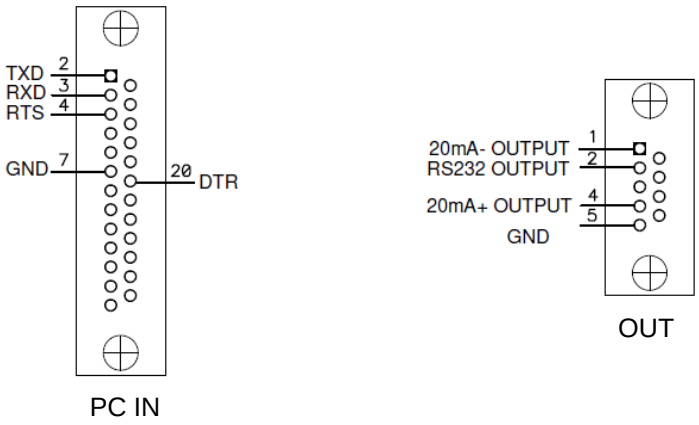


Fig. 5: Connector pin assignment

At the clocks rear panel apart from the network connector RJ45 and IEC inlet for the mains connection additional two connectors are available. One of them is labelled with “OUT” and the other with “PC IN”.

On the connector “OUT”, type DB9F, time telegrams are available at each full second.

The connector “PC IN”, type DB25F, is provided for servicing purposes only.

7. TECHNICAL SPECIFICATIONS

Displaying characteristics:	LED technology, character height 50 mm, dot diameter 5 mm, red colour
Network interface:	10Base-T/100Base-TX Ethernet 10/100Mbit, connector RJ45 Optionally: PoE Input
Serial Output:	RS-232/20 mA (passive/active – selectable by jumpers); Female connector DB9 (label OUT)
Time telegram available at serial output port:	Telegram is transmitted at each full second. It includes data of time, date and status information. Format: 32 ASCII characters <Stx>D:02.07.09;T:4;U:11.45.24;#*S!<Etx> Baud rate: 9600 bps, framing: 7E2
Internal clock:	accuracy $\pm 3\times10^{-6}$ (in the case of autonomous operation); battery powered (after the display has been turned off)
Battery backup:	In case of a power failure, the internal clock runs up to 10 years after the production date
Power supply:	100 - 240 VAC / 47-63 Hz For PoE version: PoE+ enabled switch or Midspan Power Injector that conforms to the IEEE 802.3at standard.
Consumption:	up to 20 W
Fuse:	Internal, built in power supply
Dimensions:	320 mm × 320 mm × 54 mm (not including the mounting carriers)
Weight:	3.9 kg
Protection class:	IP30
Temperature range:	0..50° C