DU35K/FDM/ND

Frequency Deviation Display with Ethernet Interface

Instruction Manual

Sipronika

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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 display.

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 local 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 with 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/FDM/ND digital display is designed for displaying frequency and its deviation in 50/60 Hz power line networks. It can work only in connection with a device, which can measure and provide frequency deviation data – e.g. Lantime server with built-in FDM511 module.

The display has a 10/100Mbit Ethernet port, through which the frequency deviation data are obtained. The display operation settings are maintained with the push-buttons on the back side of the housing. IP settings can be set also remotely, by using an additional software – Message Editor.

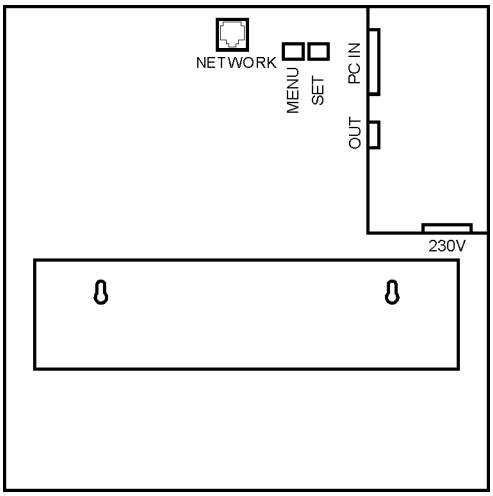


Fig. 1: Rear panel of the device

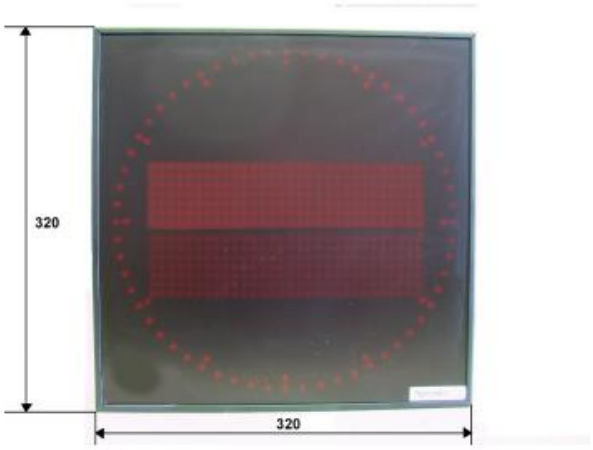
On the display's rear panel there are various connectors and two push-buttons:

NETWORK	Network connector, type RJ45 for Ethernet 10Base-T/100Base-TX. Serves also as a PoE input (PoE version only).
OUT	Output – RS232 port, used only for maintenance purposes, connector DB9F
MENU, SET	Push-buttons for executing the following display settings: brightness, mode, network settings…
230 V	IEC inlet for the mains connection
PC IN	Auxiliary input – RS232, only for maintenance purposes, connector DB25F

3. MOUNTING AND CONNECTION OF DU35K/FDM

3.1 Mounting

Standard version of DU35K/FDM/ND 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 display's operation

DU35K/FDM/ND must be connected to Ethernet (10/100 Mbit) network, via RJ-45 connector, which is located at rear of the casing and is labelled with a sign NETWORK. With an enclosed cable the display is connected to the mains voltage. A PoE (Power over Ethernet) version of the display can be powered either by a PoE+ enabled switch or a midspan injector.

The display does not have a special power on switch, therefore is starts functioning immediately (in a few seconds) after the power has been provided.

Some seconds after the device has been connected with the mains, an introduction message appears. With the first usage, display's IP address, the sub-network mask and the default gateway has to be set using the two keys at the 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 DHCP server – the DHCP client should be switched on in the menu (this is also the default setting).

The display receives FDM strings from the Lantime server. In order to work with the DU35K/FDM/ND it should be configured properly. You can find more details in the documentation of the Lantime, e.g. https://www.meinberg.de/download/docs/manuals/english/ltos_6-24.pdf, page 136, chapter FDM Configuration "New Receiver".
The display uses TCP port 10001 for communication with the Lantime server.

When the communication is established and FDM string from server is received, the displays will show any three of five available values: frequency, frequency deviation, reference time, power line time and the time deviation. Content of each line can be chosen in the menu using push-buttons.

4. SETTINGS, THE USE OF THE PUSH-BUTTONS "MENU" AND "SET"

The push-buttons labelled MENU and SET on the rear panel can be used to set the brightness, display's IP address, subnetwork mask, default gateway, content of each line, timeout period and behaviour in case of communication timeout. The display saves all the settings in its non-volatile memory. They will be used also 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

BRIGHTNESS
In this submenu, you can select the display's brightness. The levels 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.

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 the DHCP client is switched on, then menus »subnet mask« and »default gateway« can only be inspected but not changed.

MODE
Here you can choose content for each of the three display’s line. As usually, you can choose between values by a longer press of the SET key.

Possible values:
- TD – time deviation, +/- SS.mmm
- F – power line frequency, FF.xxx
- FD – frequency deviation, +/-FF.xxx
- REF – reference time, HH:MM:SS
- PLT – power line time, HH:MM:SS
- BLK – line will remain blank

UPDATE TIMEOUT
If FDM strings are not available for some reason, a timeout will appear. Here you can set timeout period in seconds. If it’s set to 0, timeout event won’t occur and the last known values will be shown.

TIMEOUT ALARM
In case of data communication timeout event (after the time set in previous submenu), the display can either blink the last values or clear display. In this submenu you choose between both options.

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

It is possible to set the network settings also remotely through a computer network with the use of **Message Editor** Software. The software operates on personal computers with Windows OS. With Message Editor it is possible also to perform display's firmware updates.

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 the displays 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: either manually or automatically (recommended).

Manually, a display is added by clicking on "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. With the displays that do not have a network connection (using only the serial port) you should leave this field empty.

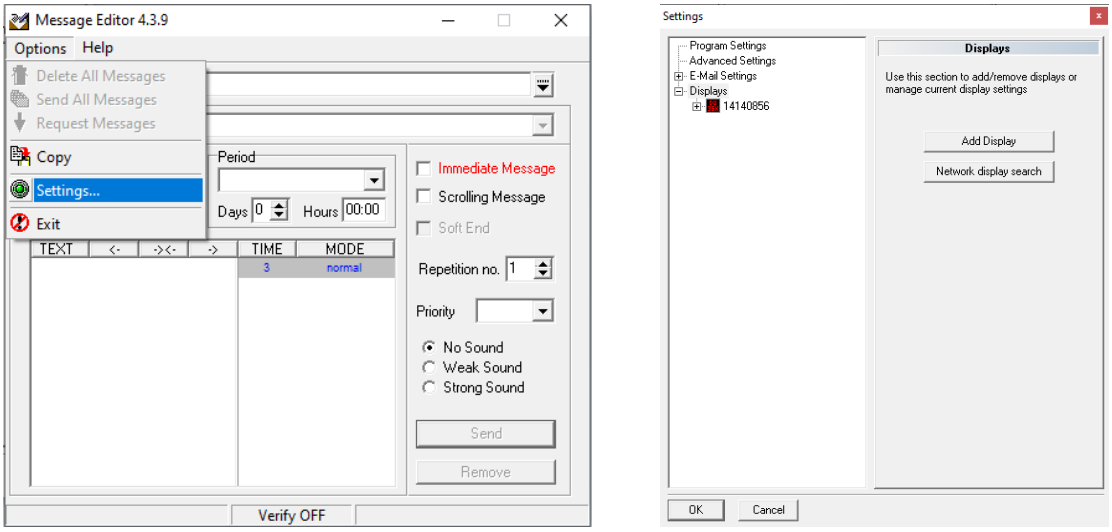


Fig. 2: Menu "Settings"

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.

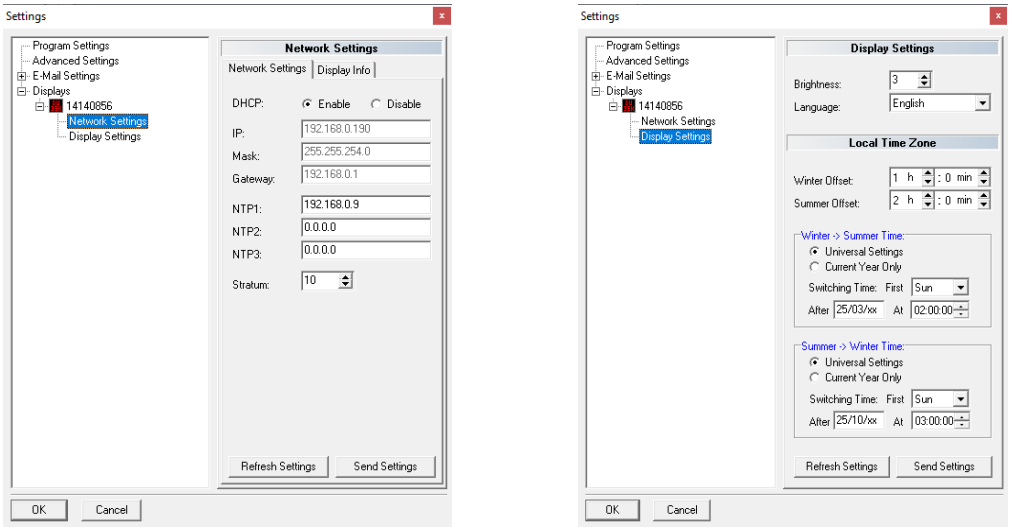


Fig. 3: Network settings and Display settings

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 the device’s 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 you click on the device’s name on the list, two submenus appear. In the submenu »Network Settings« the display network settings are listed. If needed, you can also change them. All current settings can be retrieved by clicking on »Refresh settings«.

The fields NTP1, NTP2, NTP3 and Stratum are not relevant in case of the DU35K/FDM/ND.

By clicking on »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.

In the »Display Settings« submenu, it’s possible to change display’s brightness. Higher number means higher brightness. Other parameters (time zone, etc.) are not relevant in case of the DU35K/FDM/ND!

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, non-described submenus of the program are used for managing other models of displays and clocks. In case of the DU35K/FDM/ND display they are meaningless.

6. CONNECTORS DESCRIPTION

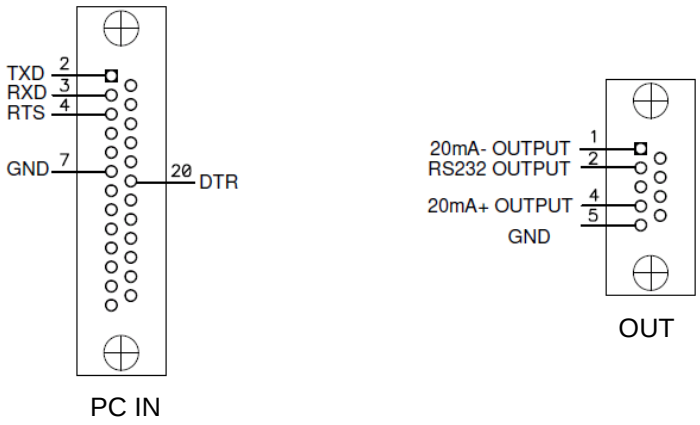


Fig. 4: Connector pin assignment. At the DU35K/FDM/ND they are used only for servicing purposes.

Apart from the network connector RJ-45 and IEC inlet for the mains connection there are two additional D-SUB connectors on the rear panel. One of them is labelled with “OUT” and the other with “PC IN”. Both are used 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
Port:	10001
Protocol:	TCP
FDM string:	Standard FDM string
Power supply:	100 - 240 VAC / 47-63 Hz Power over Ethernet version: PoE+ (IEEE 802.3at), 48 V DC
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