KDE485 GPS-NTP Installation Instructions

Connect 12V or 24V DC (0.5A or higher rated power supply) to the left hand terminal block, pins 11 and 12. Pin 11 is the positive. See the large green side label; these are marked +DC and -DC. Note that the screw terminals are supplied fully screwed-in and need to be unscrewed before wires can be inserted.

Connect the GPS antenna and place it where a signal is likely to be received. A good signal is not required for getting time only and most indoor locations (with windows) will work fine. The initial GPS acquisition may take some minutes, or longer if the signal is particularly weak. The LED indications are

LED 0 - GPS receiver communication (normally flashes at 5Hz)
LED 1 - 2D fix
LED 2 - 3D fix
LED 3 - SBAS satellite being received
LED4 - NTP query processed (illuminated for 100ms)

GPS time is obtained before any of LED 1,2,3 are illuminated.

Connect an Ethernet cable between the KDE485's RJ45 connector and your LAN.

The KDE485 is now an NTP server on the default IP of **192.168.1.200**.

To reconfigure the KDE485, you can use USB or HTTP.

KDE485 Configuration via USB

Connect a USB cable to a PC or laptop. Any operating system that supports a removable FLASH device (i.e. a "USB FLASH stick") should work. Please note that a **slim** micro-USB plug may be needed to avoid mechanical interference with the SMA coaxial connector, otherwise unscrew the SMA plug before connecting USB, to avoid damaging the micro-USB socket.

File Explorer (if Windows) should now show a storage device named "KDE485". In there you will see a file CONFIG.INI. This can be edited with any pure text editor (e.g. NOTEPAD, **not** MS Word etc). Changes in CONFIG.INI are implemented after a KDE485 power cycle.

KDE485 Configuration via HTTP

This requires knowledge of the KDE485's current IP. If unknown, this can be found in the file BOOT.TXT which is accessible via USB - see Configuration via USB above.

With both the KDE485 and the computer connected to the same LAN (e.g. both connected to two ports of an Ethernet switch) point a web browser to the KDE485 IP with

http://192.168.1.200/kde485.html

When you see the login prompt

KDE485 HTTP Server

Username
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Username
```
Password
```
Password
```

Login

login with

username: kde485
password: 12345

Some browsers do not like HTTP; in that case override any certificate etc warnings.

The relevant CONFIG.INI section is

ip_static=192.168.1.200
ip_mask=255.255.255.0
ip_gateway=192.168.1.1
ip_dns_server=8.8.8.8

The subnet (192.168.1.xxx above) must match that of your LAN.
The device fixed IP (192.168.1.200 above) is the IP on which the KDE485 NTP server operates.
The other values are not normally used for the NTP server application.

It is possible to use a direct-cable computer-KDE485 Ethernet connection but this is more complicated and requires the computer to be configured (under Network Adapter Settings, IPV4) to the correct subnet and an IP on that subnet which differs from the KDE485's IP.

Startup

The KDE485 NTP server will not return data until it has received valid GPS time **and** the seconds value has passed through 00. So even if it has received GPS time immediately, there may be a 60 second delay.

The KDE485 is capable of obtaining time from an NTP server on the internet, and serve that instead if GPS time is lost after it was previously received. Details can be found in the Reference Manual. Often this is not desired, or external internet access is firewalled, in which case set

ntp_server=0.0.0.0

Debugging

The KDE485 can output debug information on a virtual COM port via USB. To enable this, edit CONFIG.INI with

debug_usb=1

and power cycle the KDE485. Set up a terminal program (e.g. TERATERM) on the COM port provided by the KDE485. To discover the port number, under Windows, use Control Panel / System / Device Manager / Ports (COM & LPT) and it appears under STMicroelectronics Virtual COM port.

Firmware Update

Normally this is not needed but you can upgrade a KDE485 to the latest firmware by downloading this file

https://www.kksystems.com/customer_area/factory0.zip

Extract factory0.dat from the zipfile, place it into the KDE485's USB drive, and power cycle the KDE485. After a few minutes it reboots. The configuration (config.ini) is not affected.

Support

Please do not hesitate to contact us if you require any assistance. The full KDE485 Reference Manual can be downloaded from: https://www.kksystems.com/customer_area/kde485-ref-manual.pdf

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