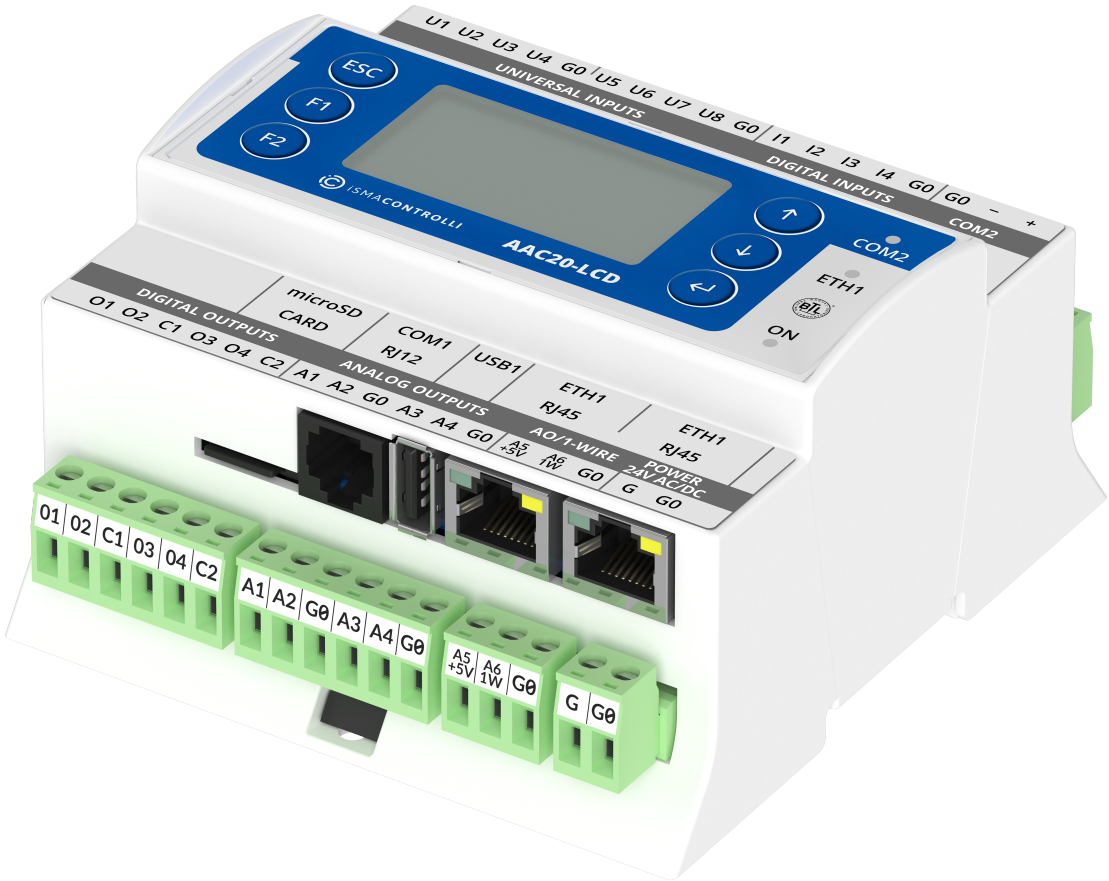
iSMACONTROLLI

iSMA-B-AAC20

User Manual

NTPClient Kit



Powered by sedona FRAMEWORK™

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1 Introduction

This manual contains information about the NTPClient kit in the AAC20 device. The NTPClient kit can be used in all AAC20 hardware versions with firmware 5.1 or higher. It is recommended to update the firmware to the latest version before the installation.

The NTPClient component uses external NTP server, so the AAC20 device has to have access to the Internet to ensure proper operation.

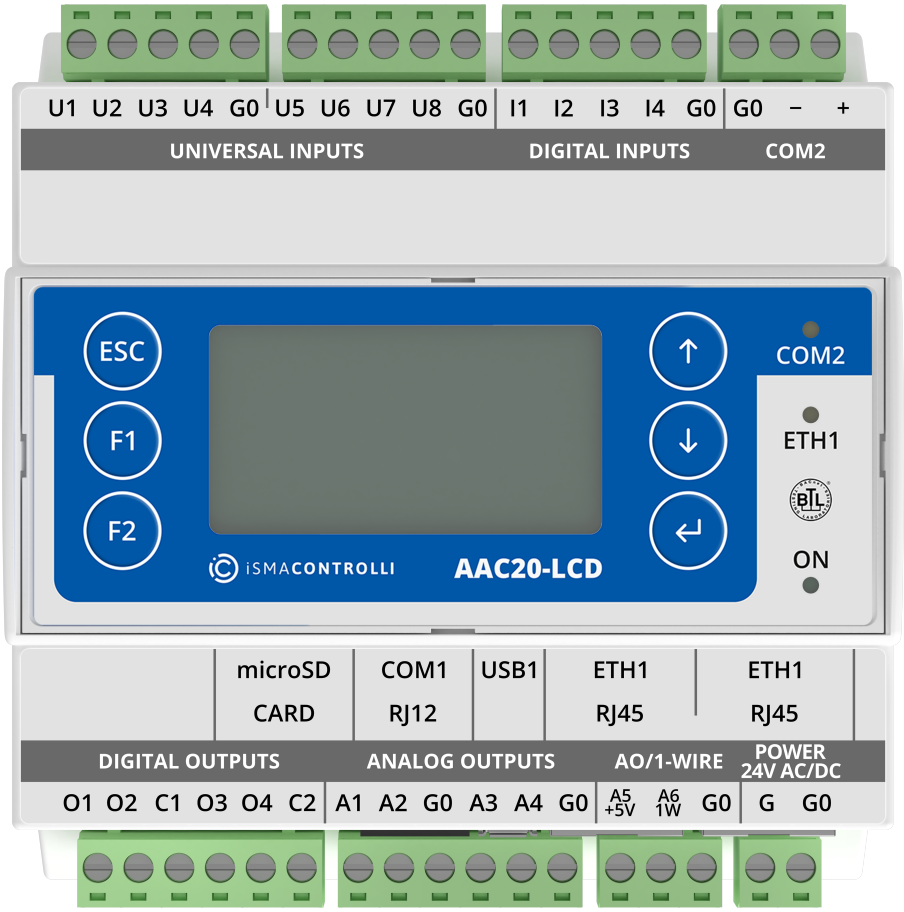

Figure 1. AAC20-LCD controller

1.1 Revision History

Rev.	Date	Description
		Replaced environment of programming from iSMA Tool to iC Tool
1.3	28 Feb 2022	Rebranded
1.2	27 Jan 2020	Replaced environment of programming from Workplace to iSMA Tool
1.1	5 Feb 2018	Company data update
1.0	28 Aug 2015	First edition

Table 1. Revision history

2 Installation of iSMA NTPClient Kit

To install the iSMA NTPClient kit, import the kits to the iSMA Tool software (possibly as part of the package of the various kits in a zip file). To do this, go to Import -> Import Framework Files.

After a successful import of the files, upload the files to your device using the Kit Manager.

WARNING! Before programming the Sedona NTPClient, please check if the latest kit version is used. The latest kit is available on the iSMA CONTROLLI support web site: ismacontrolli.com.

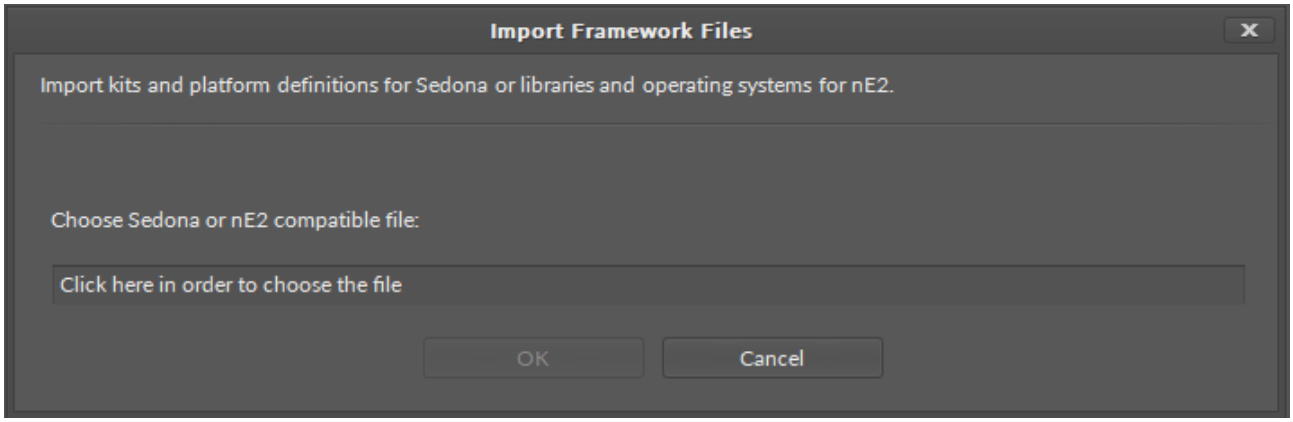

Figure 2. Importing dialog window

2.1 Installing Kit

After a successful import of all packages, upload the files to your device using the Kit Manager application from the Device Managers tab.

To install a selected kit:

Step 1: Open the iC Tool, right click on the device and choose the Kit Manager;

Step 2: The kits on the Sedona device can be managed in the Kit Manager;

Step 3: Select the iSMA NTPClient kit, then click Update;

Step 4: The components are installed successfully.

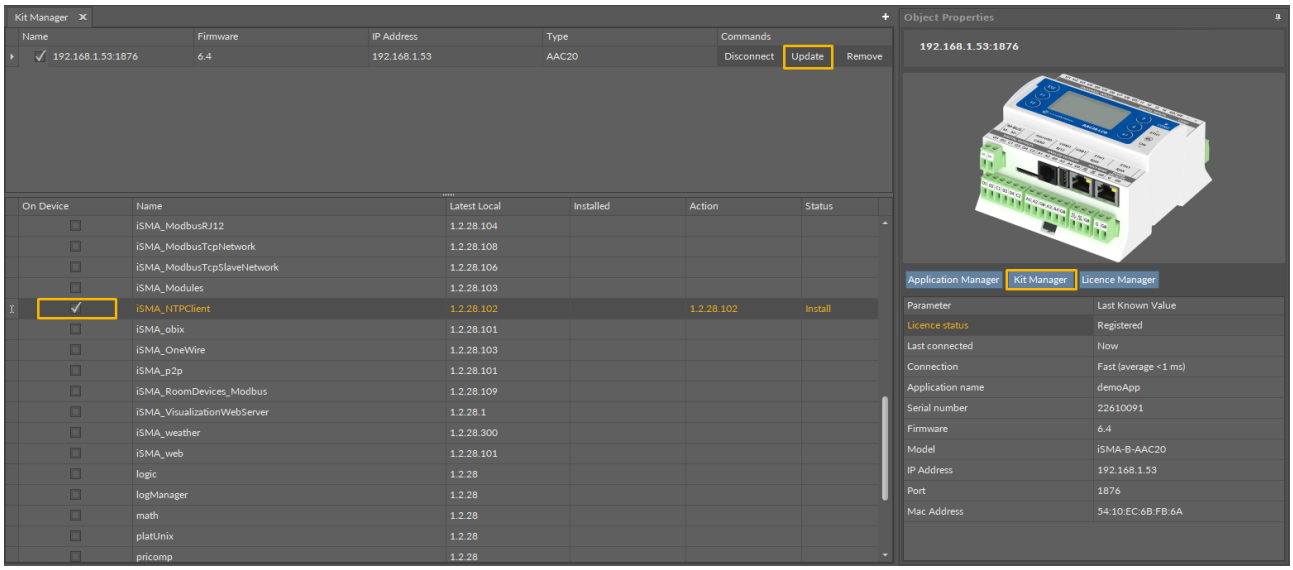

Figure 3. Installing the kit

2.2 Removing Kit

To remove the selected kit:

Step 1: Open the iC Tool, right click on the device and choose the Kit Manager;

Step 2: Uncheck the iSMA NTPClient kit, then click Upgrade;

Step 3: The components are uninstalled successfully.

3 NTPClient

The NTPClient component is responsible for time synchronization service by using an external NTP Server (entering the right IP address or server domain name of an external NTP Server).

For its proper operation, the AAC20 device has to have an Internet connection. Time synchronization frequency is determined by the value entered in the Update Interval slot (24 h by default). The system time of the device is synchronized to the UTC time value stored in NTP Server.

The NTPClient service has to be placed under the App/Services in the Sedona hierarchy tree.

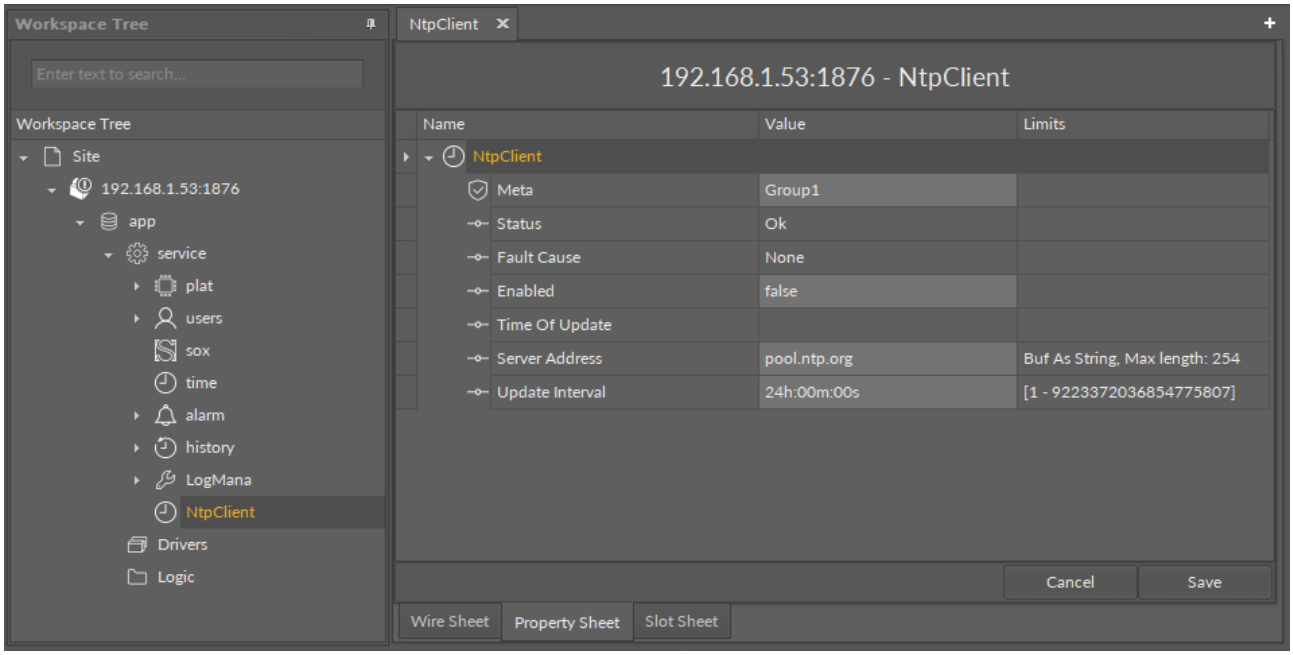

Figure 4. NTPClient component

The NTPClient component has the following slots:

- **Status:** service's current status;
  - Available statuses: OK (service is working properly), Fault (service is disabled, the Enable slot is false);
- **Fault Cause:** fault cause description;
  - Available information: Sending Query Failed, No Response From Server, UDP Socket Failed to Open, Wrong IP Address, Wrong Response From Server;
- **Enabled:** switches on/off the NTPClient service;
- **Time Of Update:** date and time of the last update from the NTP Server;
- **IP Address:** the IP address or server domain name of the NTP Server;
- **Update Interval:** time synchronization frequency; the time value entered in this slot determines how often the time value is being read from the NTP server and written as an actual system clock of the device.

4 DateTimeService

The DateTimeService component is responsible for the system's time configuration in the AAC20 device.

The component includes current time, which is actually the UTC (Coordinated Universal Time) value, and the Desired Time, which is the sum of the UTC and UTC Offset:

Desired Time = UTC value + UTC offset

There are two options to adjust the system clock to the desired time zone:

- Using System Offset: desired time zone is the same as set in the PC's clock;
- Using Configured Offset: desired time zone is selected manually by the user.

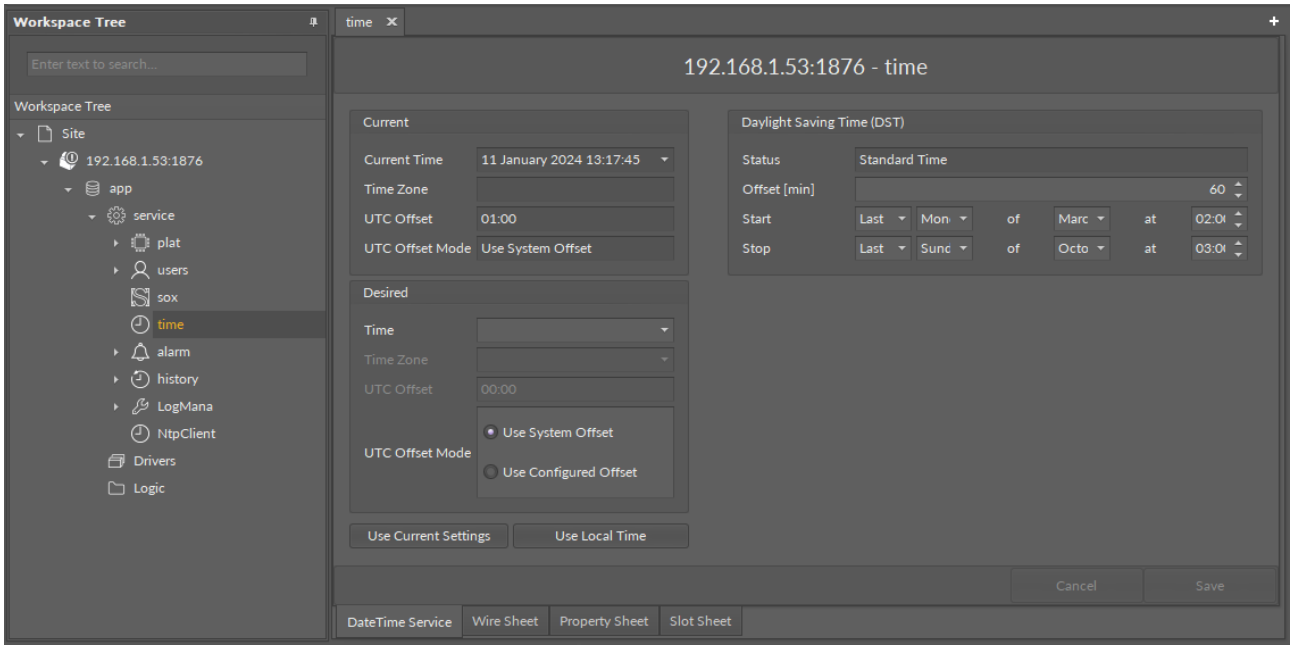

Figure 5. DateTimeService component

The DateTimeService allows also to change the system clock automatically together with the global Daylight Saving Time changing the date.

The exact date range of the DST is defined by the user in the DST Start and DST Stop slots.

The DST Offset slot stores the DST offset value in minutes (by default, 60 minutes), which is the correction to the desired time when the DST is active (current date is in the defined date range of DST).

The DST function in the DateTimeService component has the following slots:

- Daylight Saving Time Offset;
- **DST Start Week:** selection of the week for the DST starting date;
- **DST Start Day:** selection of the day for the DST starting date;
- **DST Start Month:** selection of the month for the DST starting date;
- **DST Start Hour:** setting the RTC hour for the DST starting time;
- **DST Stop Week:** selection of the week for the DST ending date;
- **DST Stop Day:** selection of the day for the DST ending date;
- **DST Stop Month:** selection of the month for the DST ending date;
- **DST Stop Hour:** setting the RTC hour for the DST ending time;;
- **DST Status:** the current status of the DST:

- **Standard Time** (DST inactive),
- **Summer Time** (DST active).

5 Time Configuration Modbus Registers

5.1 DST Offset Register (40209)

The register stores the DST Offset (Daylight Saving Time Offset) in minutes (by default 60 minutes), which is the correction to the desired time (RTC) when the DST is active.

5.2 Year Register (40210)

The register stores the year part of the date in the AAC20 device.

5.3 Month Register (40211)

The register stores the month part of the date in the AAC20 device.

5.4 Day Register (40212)

The register stores the day part of the date in the AAC20 device.

5.5 Hours Register (40213)

The register stores the hour part of the real-time clock (RTC) in the AAC20 device.

5.6 Minutes Register (40214)

The register stores the minute part in the real-time clock (RTC) in the AAC20 device.

5.7 Seconds Register (40215)

The register stores the second part in the real-time clock (RTC) in the AAC20 device.

5.8 RTC Command Register (40216)

Particular values of this register determine the RTC behavior. The possible register values with assigned actions are shown in the table below:

Register Value	Description
0 (default)	Read mode
1	Write mode
2	Write to device

Table 2. RTC Command register values

Read Mode (Value 0)

If the register is in the read mode, date and time registers corresponding to the RTC are in read-only mode (it is not possible to overwrite values).

Write Mode (Value 1)

In this mode, the user has a possibility to overwrite the date and the time registers corresponding to the RTC without the effect on the AAC20 device (new register's value has no influence on the RTC in the AAC20 device).

Write to Device Command (Value 2)

If this mode is selected, the register values corresponding to the RTC, entered by the user, are written down to the AAC20 device. After the writing procedure is done the RTC Command register value gets back to the read mode (value 0).

To change the register values corresponding to the RTC, perform the following steps:

Step 1: Set value to 1 (Write mode) in the RTC Command register;

Step 2: Enter new values in the appropriate registers (from 40209 to 40215);

Step 3: Set value to 2 (Write to device mode) in the RTC Command register; its value changes automatically to 0 (Read mode) once the values from Step 2 are successfully overwritten.