iSMA-B-AAC20

User Manual

iSMA Time Services

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1 Introduction

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

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

1.1 Revision history

Rev	Date	Description
1.0	28.08.2015	First edition
1.1	05.02.2018	NTPClient support DNS (kit version 1.2.28.102 and above)

2 Installing iSMA NTPClient kit

To install Sedona NTPClient kit, import the kit to the WorkPlace software first (possibly as a part of the various kits package in a zip file). To do so, use an application from the Tools menu -> Sedona Installer.

After successful import of the files, upload the files to your device using the Kit Manager Application from Sedona Tools package.

WARNING! Before programming Sedona NTPClient, please check if you use the latest kit version. The latest kit is available on GC5 support web site: www.support.gc5.pl
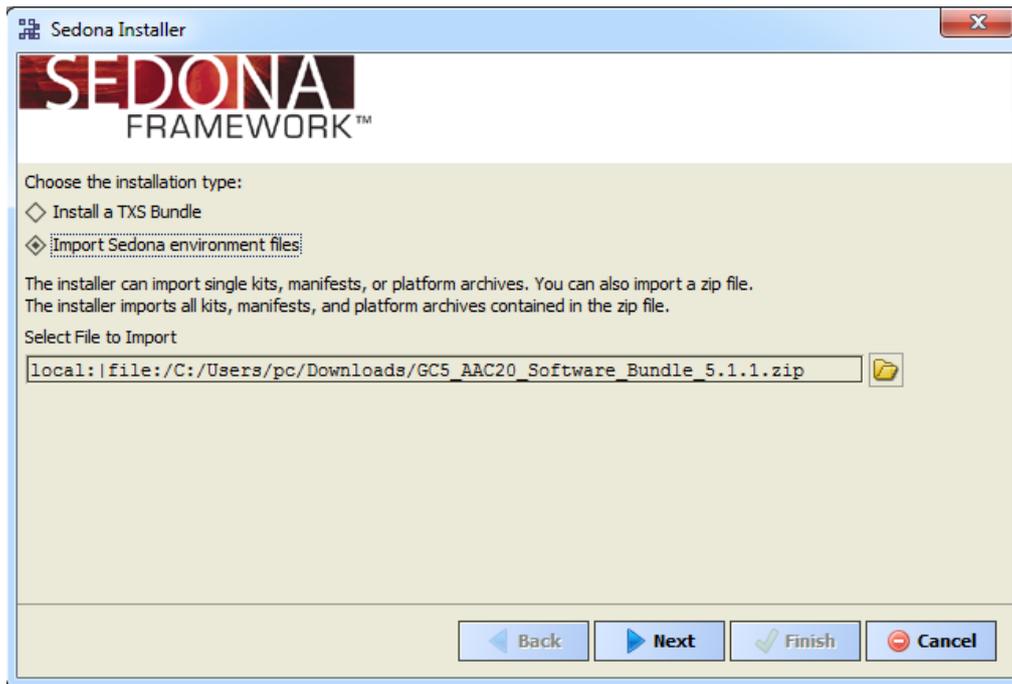
Figure 1 - Sedona Installer

2.1 Install iSMA_NTPClient kit on the AAC20 device

After successful import of all packages, upload the files to your device using the Kit Manager Application from Sedona Tools.

To install selected kit:

Step 1: Open WorkPlace, expand Sedona Application, then Sedona Tools and then double clicking choose Kit Manager;

Step 2: In the Kit Manager, you can manage your kits on the Sedona device;

Step 3: Select NTPClient kit, then you can click Next, Finish and Restart Device;

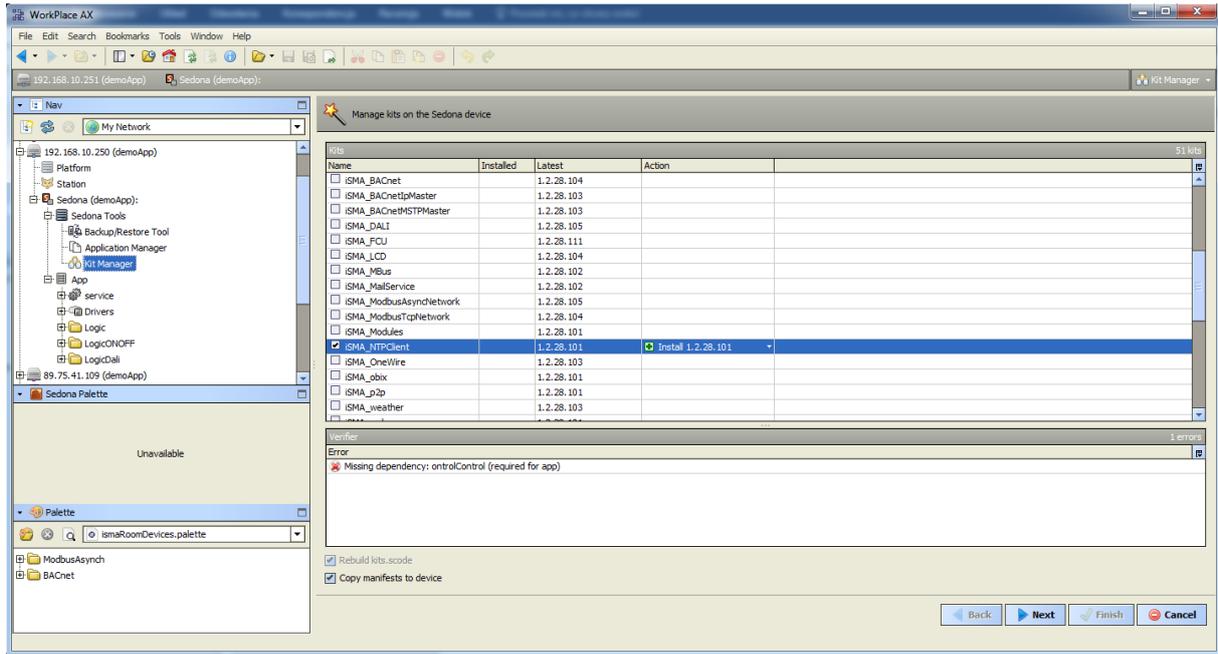Step 4: Your component has been installed successfully.

Figure 2 - Kit Manager installing NTPClient kit

2.2 Remove iSMA_NTPClient kit from the AAC20 device

To remove selected kit:

Step 1: Remove all kits components from application;

Step 2: Open Work Place, expand Sedona Application, then Sedona Tools and then double clicking choose Kit Manager;

Step 3: In the Kit Manager, you can manage your kits on Sedona device;

Step 4: Uncheck NTPClient kit, then you can click Next, Finish and Close;

Step 5: Your component has been uninstalled successfully.

3 NTPClient service

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

NTP Client Service has to be placed under App/Services in Sedona hierarchy tree.
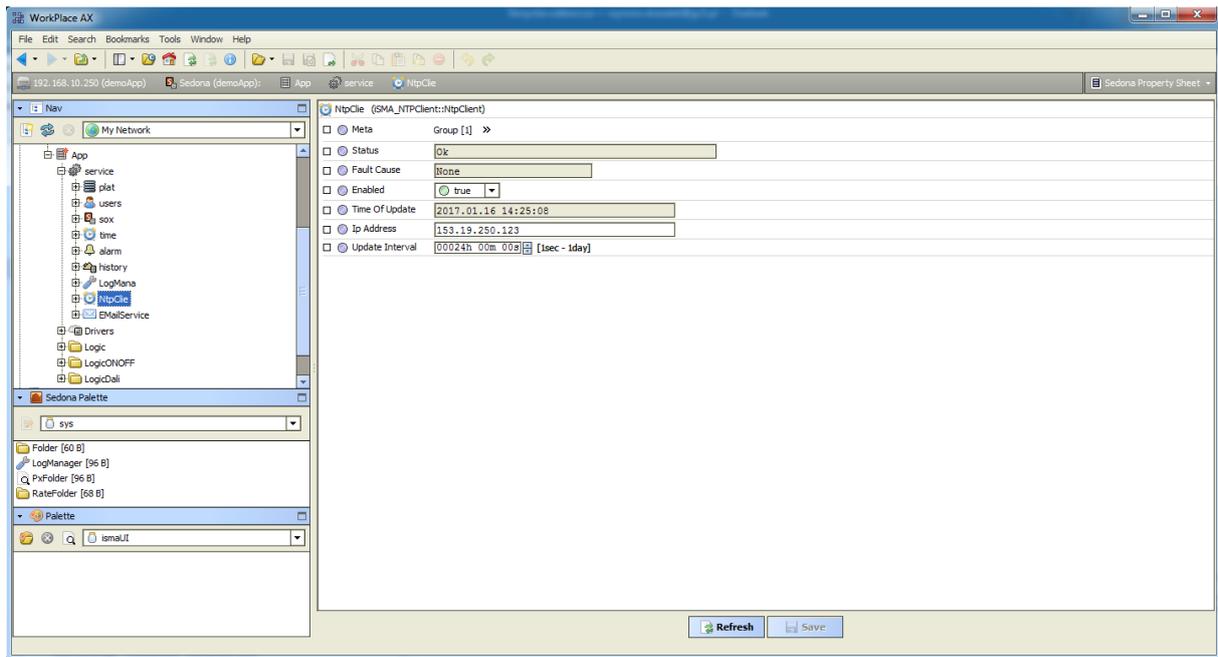
Figure 3 - NTPClient component Property Sheet view

The NTPClient Service has the following slots:

- Status – Service status, available status:

    - OK – Service is working properly,

    - Fault – Service is disabled (Slot "Enable" is marked as false)

- Fault Cause – Fault cause description, the possible faults recognized in the component:

    - Sending Query Failed,

    - No Response From Server,

    - UDP Socket Failed to Open,

    - Wrong IP Address,

    - Wrong Response From Server

- Enabled – Switches to ON/OFF NTPClient service

- Time Of Update – Date and time of last update from NTP server

- IP Address – The IP address or server domain name of NTP Server

- Update Interval – time synchronization frequency; the time value entered in this slot determines how often the time value is being read from NTP Server and written as an actual system clock of the device.

4   Date Time Service

Date Time Service is responsible for system time configuration in AAC20 device.

The Service includes Current Time, which is actually UTC (Coordinated Universal Time) value and Desired Time, which is the sum of the UTC and UTC Offset.

$$\text{Desired Time} = \text{UTC value} + \text{UTC Offset}$$

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

1. Using System Offset – desired time zone is the same as it is set in the PC's clock
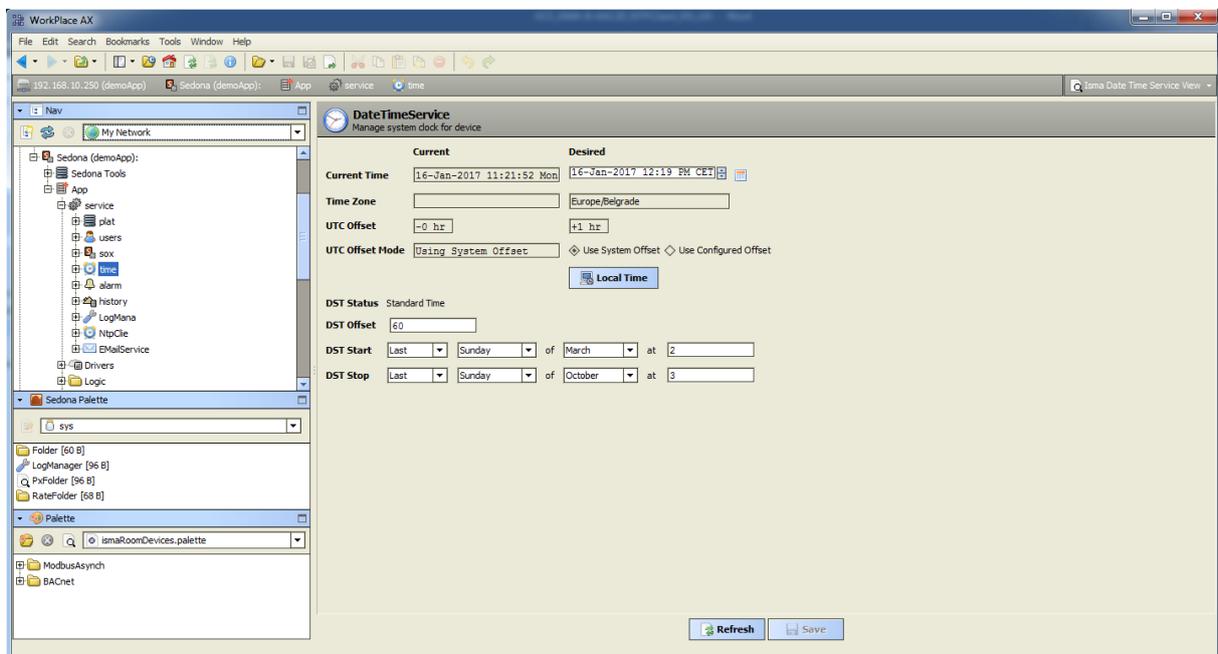2. Using Configured Offset – desired time zone is selected manually by the user

Figure 4 – iSMA DateTime Service view

Date Time Service allows also to change the system clock automatically together with the Global Daylight Saving Time changing date.

Exact date range of DST is defined by the user in **DST Start** and **DST Stop** slots.

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

The DST function in the DateTime Service has the following slots:

- Daylight Saving Time Offset
- DST Start Week – selection of the week for DST starting date
- DST Start Day – selection of the day for DST starting date
- DST Start Month – selection of the month for DST starting date
- DST Start Hour – value represents the hour part of RTC in which DST starts
- DST Stop Week – selection of the week for DST ending date
- DST Stop Day – selection of the day for DST ending date
- DST Stop Month – selection of the month for DST ending date
- DST Stop Hour – value represents the hour part of RTC in which DST stops
- DST Status – the actual status of DST:
  - Standard Time (DST inactive)
  - Summer Time (DST active)

5   Time Configuration Modbus registers in AAC20 device

5.1   DST Offset (40209)

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

5.2   Year (40210)

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

5.3   Month (40211)

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

5.4   Day (40212)

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

5.5   Hours (40213)

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

5.6   Minutes (40214)

The register stores the minutes section in the real-time clock (RTC) in AAC20 device.

5.7   Seconds (40215)

The register stores the seconds section in the real-time clock (RTC) in AAC20 device.

5.8   RTC Command (40216)

Particular value of this register determines the RTC behaviour. The possible register values with assign actions are shown in the table below:

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

Table 1 – RTC Clock Command register values

5.8.1 Read mode (value 0)

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

5.8.2 Write mode (value 1)

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

5.8.3 Write to device command (value 2)

When this mode is selected, the register values corresponding to 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 RTC perform the following steps:

1. Set Value = 1 (Write mode) in **RTC Command** register
2. Enter new values in appropriate registers (from 40209 to 40215)_
3. Set Value = 2 (Write to device mode) in **RTC Command** register; its value changes automatically to 0 (Read mode).