iSMA-B-AAC20

User Manual

LCD Display
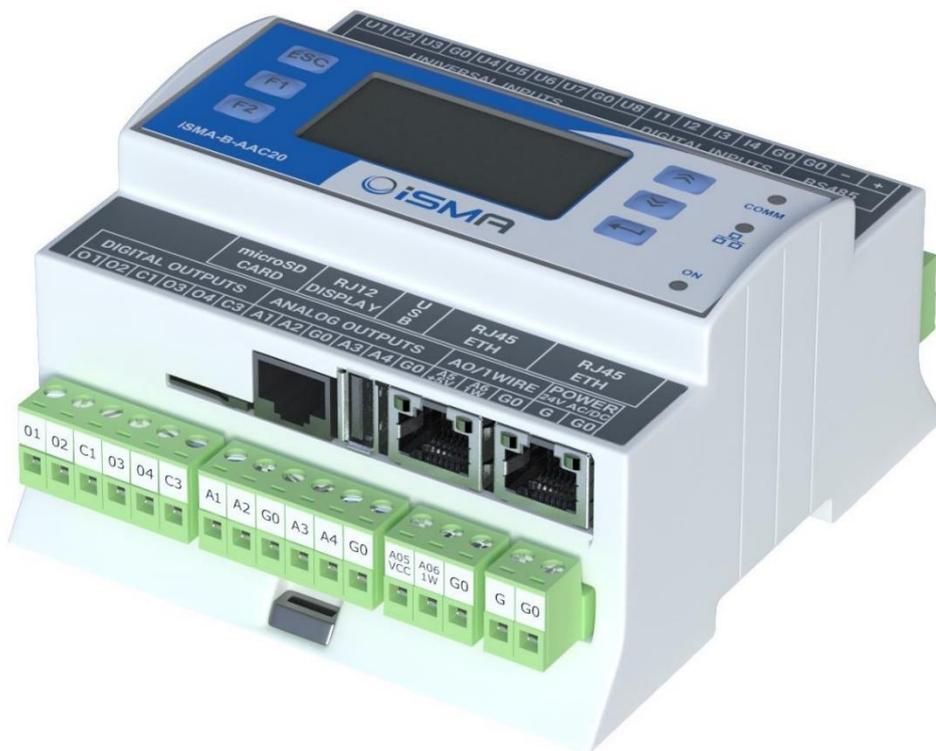
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1   Introduction

1.1 Revision history

Rev	Date	Description
1.1	28.08.2015	• First edition
1.2	20.04.2017	• Buzzer switch off • Lexicon supported

Table 1 Revision history

2   Sedona LCD display

The display can be used as an operating panel to display and manage the algorithm of the iSMA-B-AAC20 controller, or to view and manage system settings.

The built-in display is a monochrome display with backlighting. It can display up to 20 characters per line and up to 7 rows on one screen. You can display up to 16 lines in a single screen and scrolling with up/down arrows (one line at a time) or with the keys F1/F2 (scrolling entire screens).

Note: The display supports only the basic ASCII characters.

There are 6 dedicated keys to/for operate the display:
- Esc - exit key,
- Enter - select, move the cursor to the right,
- Arrow up - add/subtract, menu navigation,
- Arrow down - add/subtract, menu navigation,
- F1- function key,
- F2 - function key.

2.1 LCD system menu

The iSMA-B-AAC20 controller with the display has an option to log in to the system menu without necessity adding any additional components to the Sedona environment. Log in/log out system menu process:
- Press and hold the F1 key (displays "Enter Password"),
- Use the arrow keys (the change of the digital value by 1) and move through the coming fields (using the Enter key), enter the password for the system (a 4 digit number, 1000 is a

default),

- Approve the input password by pressing and holding the Enter key,
- Cancelling the login process and exiting from the system menu – press and hold the Esc key.

The system menu consists the following components:

- Info - Provides information about your device and hardware resources,
- Local IO - Contains information about the current values of input/output of the physical devices and their configuration options,
- Network Config - Changes the IP address of the device and port and address of the Modbus TCP/IP protocol,
- Change password - Changes the password to log into the system menu and to the web site (editing the Slot Device Password in the Plat component),
- Reboot - Restarts the device (required when you change the IP address).

3   Installing the Sedona LCD kit

The LCD display of the iSMA-B-AAC20 controller is operated by using the components of iSMA_LCD kit. To install the iSMA_LCD kit, import the kit to the WorkPlace software (possibly as part of the package of various kits in a zip file). To do this, 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 the Sedona Tools package.

WARNING! Before programming LCD Display, please check if you are using the latest kit version. The latest kits are available on GC5 support website www.support.gc5.pl
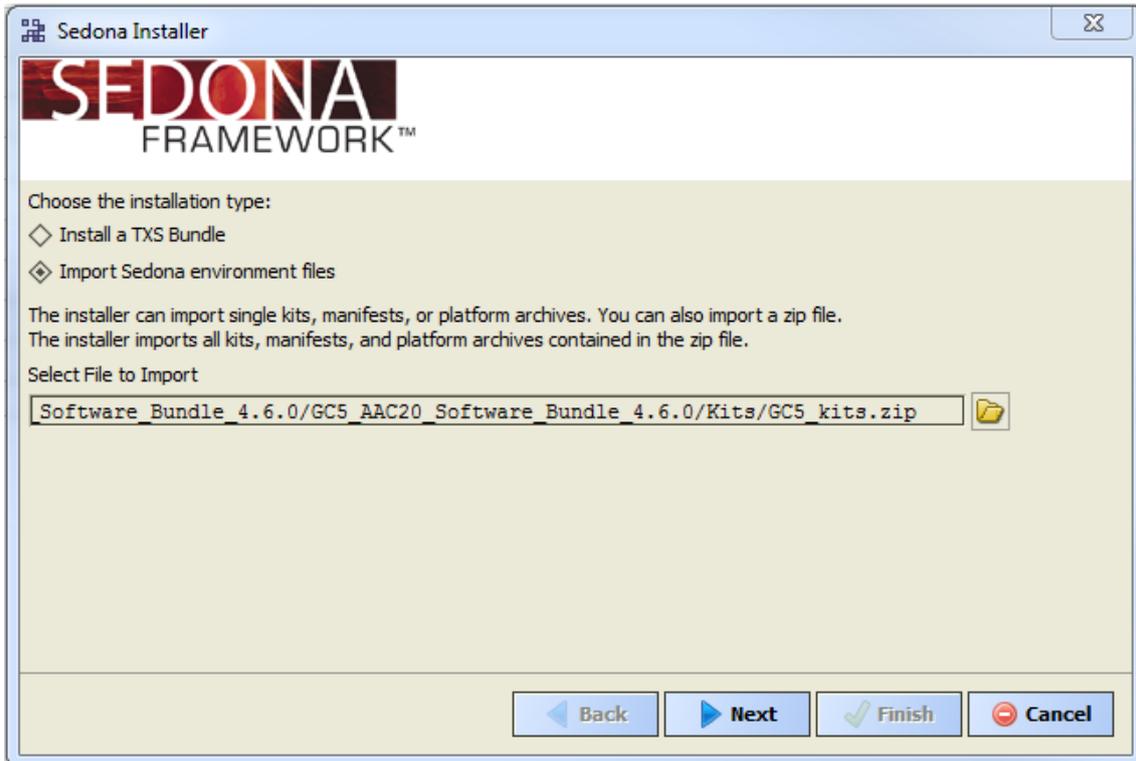
Figure 1 – Sedona Installer property sheet view

4   Sedona LCD components

The iSMA_LCD kit is a set of elements used to support the display.

It consists the following components:

- Display - The main component handling the LCD display,
- Folder Line - Component of the folder for grouping display components,
- Text Lines - Component of static text,
- Numeric Line - Component of the Numeric – type variable (float),
- Bool Line – The Boolean variable component,
- Int Line – The Integer variable component,
- MultiState Line - The Integer variable with labels component,
- Next Page - Component of the next page,
- BooleanSchedule Line – Component of the Boolean Schedule editor,
- NumericSchedule Line – Component of the Numeric Schedule editor.

1.1.   Display component

The Display component is the core component for LCD. The Component should be placed under Drivers folder. All components working with the display must be placed under the Display component.
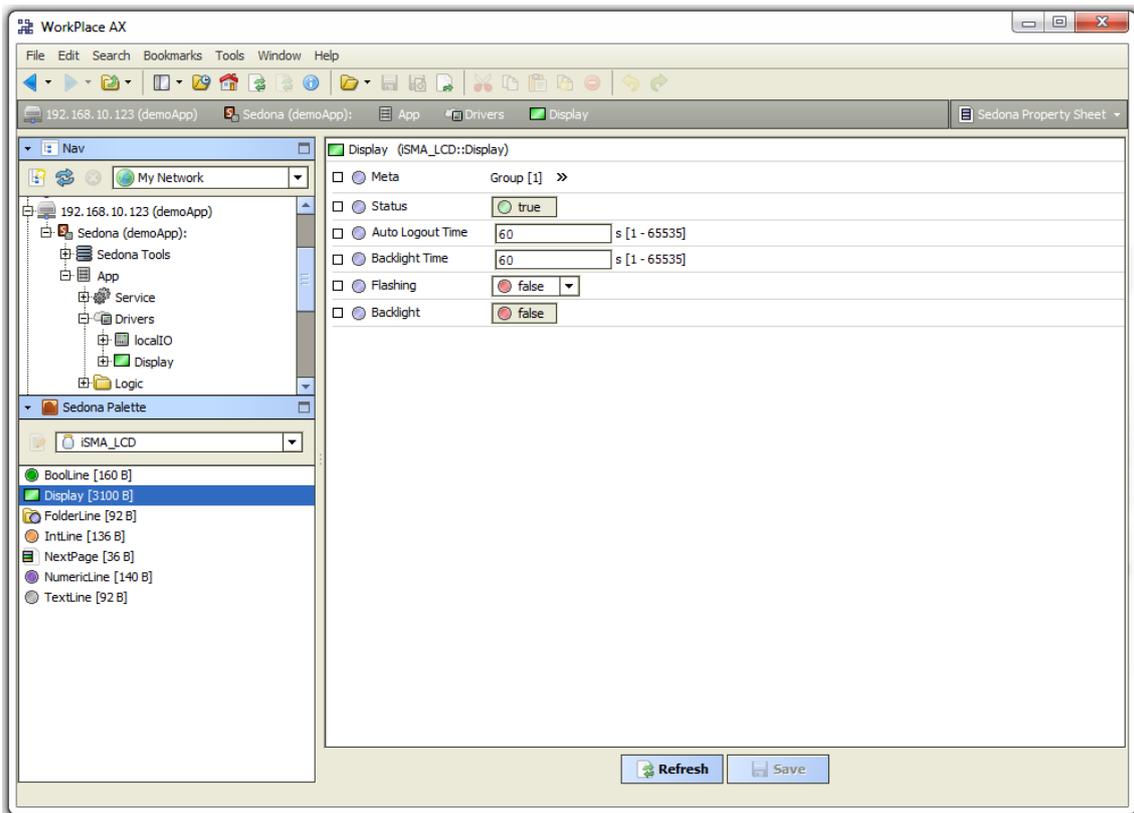
Figure 2 - Display component property sheet view

The component has the following slots:

- Status - The current status of the LCD display,
- Auto Logout Time - The time after which the user will be logged out and switched to LCD's default user status (default value 60s),
- Backlight Time - The time of the backlight (default value 60s),
- Buzzer Enable – Enable/Disable built-in buzzer (in default active),
- Flashing - Activating the flashing of the display backlight,
- Backlight - Status of the backlight.

The backlight slot can be used as a manual use feedback. Each time when LCD button is pressed, the backlight is switch on and slot change value to true. The status of this slot can be saved as alarm event or in history log using the NVBooleanWritable component.

4.1 Folder Line component

The Folder Line component is used to group the viewed items. Adding it to the Sedona application, it appears on the display in the form of a text with the symbol >> on the right side of the screen. To enter the folder, please use Enter key, to go back to the parent folder, please use Esc key. Using the Folder Line component, ordered structures can be built-in a tree menu, where the Display component is the main element. User's current location is displayed in the form of a path at the top of the screen.
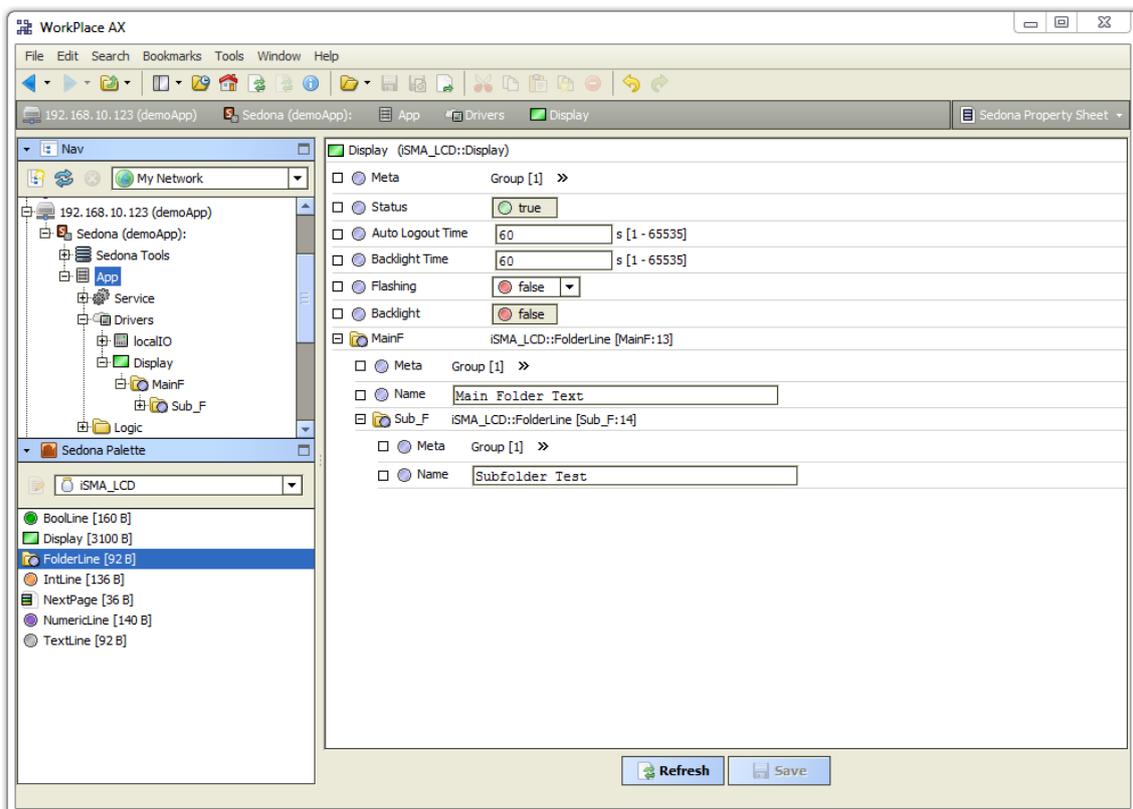
Figure 3 - Folder line component property sheet view

4.2 Text Line component

The Text Line is a component of the static text display on the LCD screen. You can input up to 20 characters (ASCII base table). When user add a component to the application, slot Text takes automatically name of the component that can be changed any time by entering your own text.
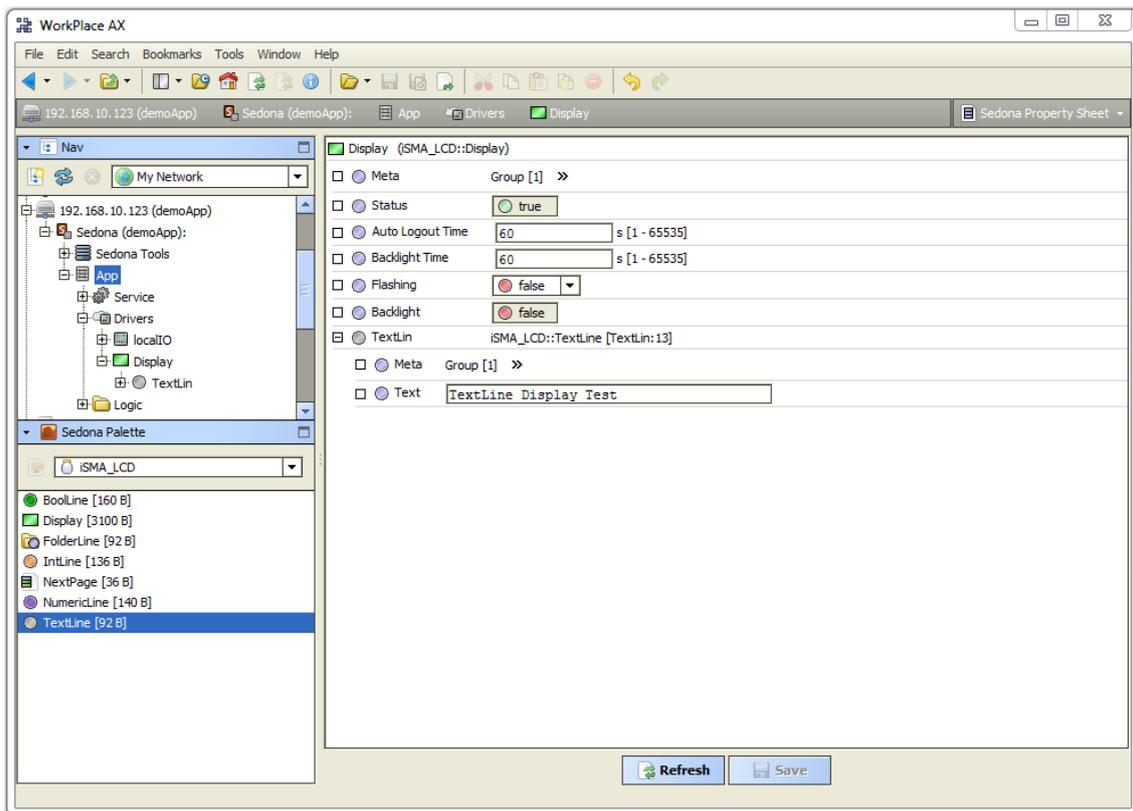
Figure 4 - Text line component property sheet view

4.3 Numeric Line component

The Numeric Line component is used to display and edit the Numeric (float) variables. The displayed value of the IN slot may be preceded by a description on the left side (Prefix) e.g. the name as well as on the right (Suffix) e.g. the units.

In order to edit the variables, we recommend to use the NVNumericWritable components. To edit value of the Numeric Line component, please select 'true' in the Editable slot, and provide the user with write access to the component. The writing process is performed by the "reverse following the link" to the connected component and displaying its activity. There is possibility to change the value by selecting the 'set' action. To do this, use the arrow up/down keys - add/subtract the value of the step. The step field value can be inputted in the application and changed by using keys F1, F2 (this multiplying or dividing the step value by 10).
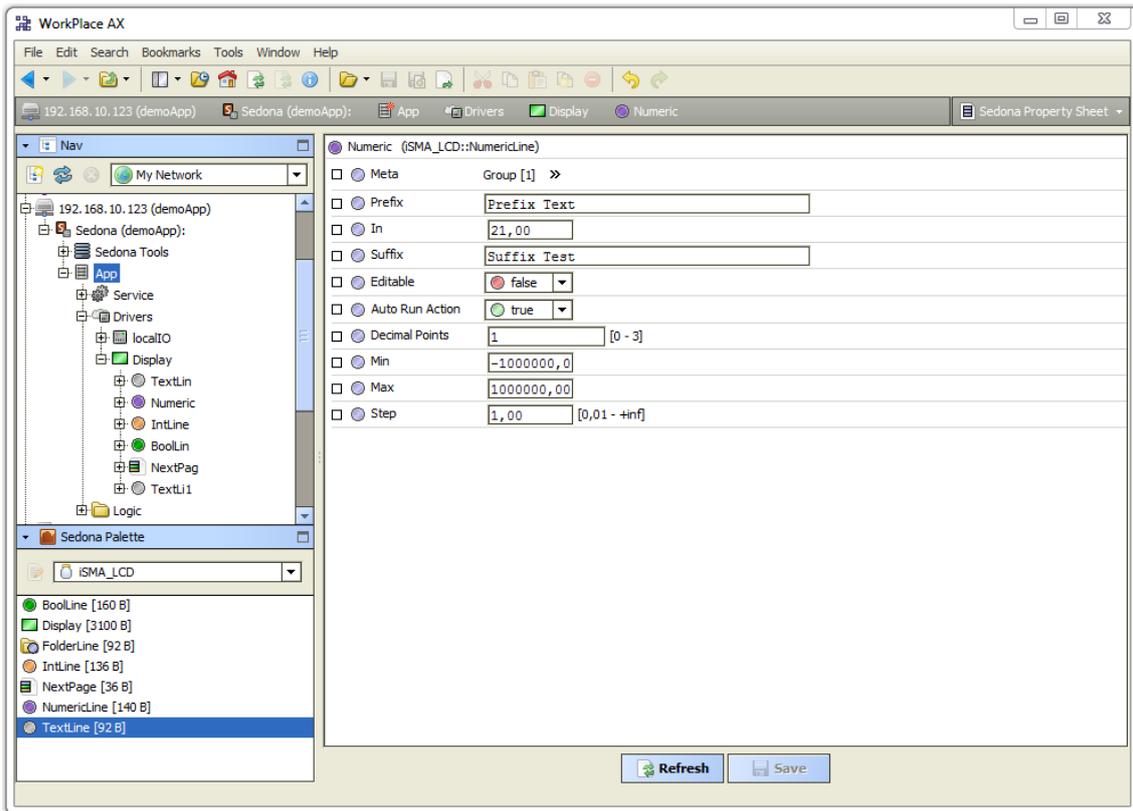
Figure 5 - Numeric line component property sheet view

The component has the following configuration slots:

- Prefix - Static text is displayed before the Numerical value (left aligned),
- In – The Numerical value,
- Suffix - Static text is displayed after the Numerical value (right aligned),
- Editable - Switch on/off for variable edit,
- Auto Run Action - Automatically go to editing set action, without action selection (only for components which support 1 action),
- Decimal Points - Displays the number of decimal places,
- Min - Minimum value of the variable can be set,
- Max - Maximum value of the variable can be set,
- Step – Single change value in editing.

4.4 Bool Line component

The Bool Line component is used to display and edit the Boolean variables (true/false). The component offers the option to input different text that will appear separately for the true and the false values. The displayed text may be preceded by a description on the left side (Prefix) e.g. the name as well as on the right (Suffix) e.g. the units.

In order to edit the variables, we recommend to use the NVBooleanWritable. To edit value of the Bool Line component, please select 'true' in the Editable slot, and provide the user with write access to the component. The writing process is performed by the "reverse following the link" to the connected component and displaying its activity. There is possibility to change the value by selecting the 'set' action. To do this, use the up/down arrow keys to switch between the values of true/false.
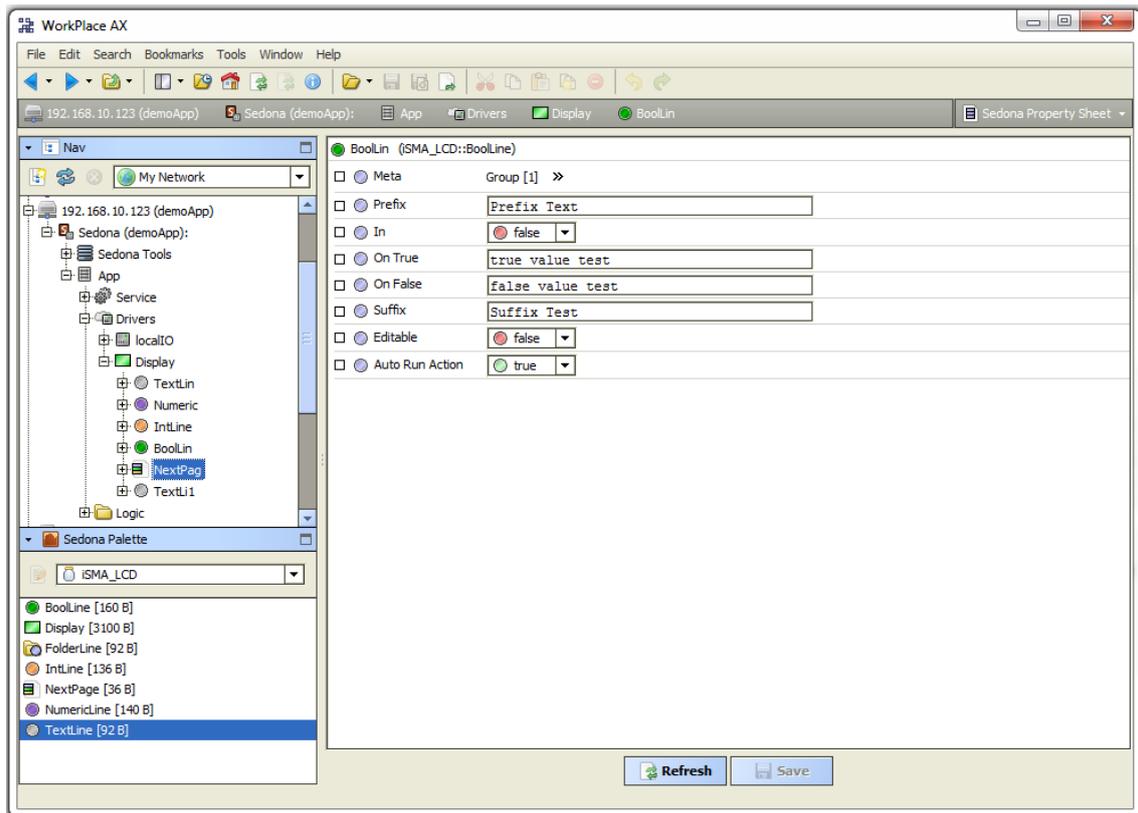
Figure 6 – Bool Line component property sheet view

The component has the following configuration slots:

- Prefix - Static text displayed before the text of the IN slot (left aligned),
- In - Input Slot,
- On True - Text is displayed when the In slot's value is 'true',
- On False - Text is displayed when the In slot's value is 'false',
- Suffix - Static text is displayed after the text of the IN slot (left aligned),
- Editable - Switch on/off for variable edit,
- Auto Run Action - Automatically go to editing set action, without action selection (only for components which support 1 action).

4.5 Int Line component

The Int Line component is used to display and edit the Integer variables (integers). The In slot value may be preceded by a description on the left side (Prefix) e.g. the name, as well as on the right (Suffix) e.g. the units.

In order to edit the variables, we recommend to use the NVIntegerWritable components. To edit value of the Int Line component, please select 'true' in the Editable slot, and provide the user with write access to the component. The writing process is performed by the "reverse following the link" to the connected component and displaying its activity. There is possibility to change the value by selecting the 'set' action. To do this, use the up/down arrow keys - add/subtract the value of the step. The step field value can be inputted in the application and changed by using keys F1, F2 (this multiplying or dividing the step value by 10).
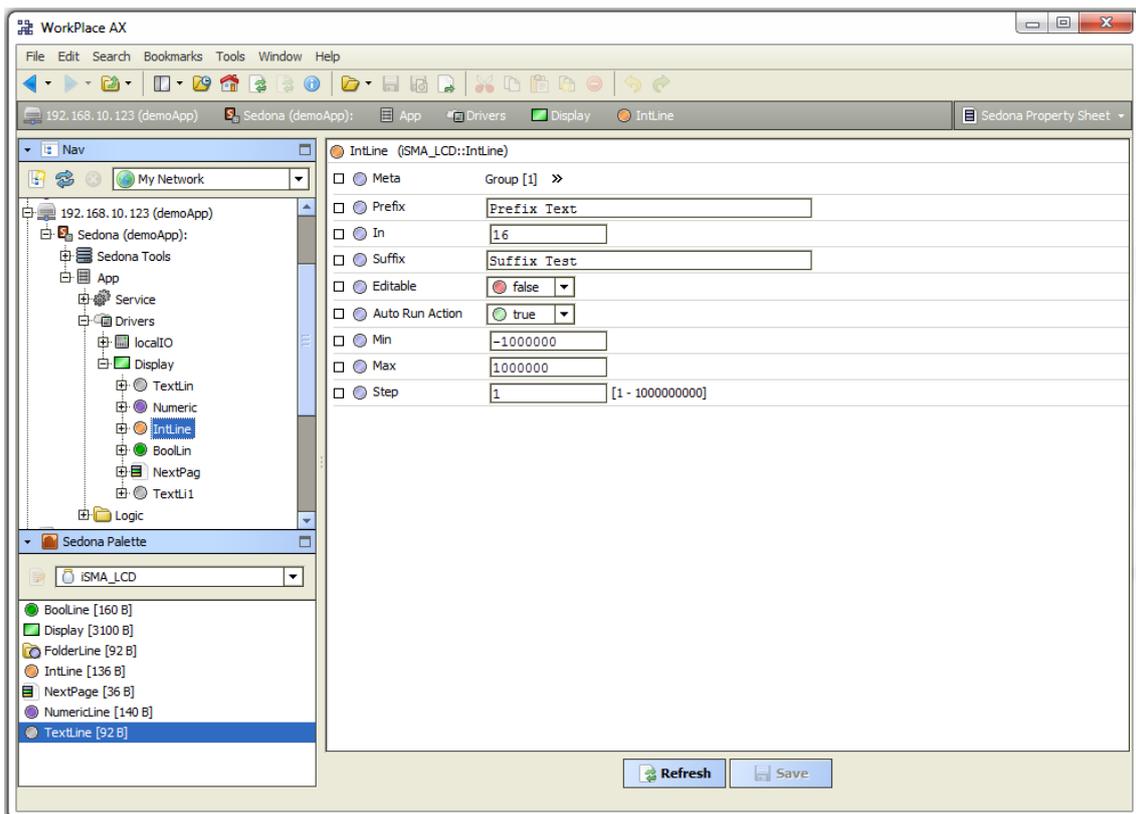
Figure 7 – Int Line component property sheet view

The component has the following configuration slots:

- Prefix - Static text is displayed before the Numerical value (left aligned),
- In - The Numerical value,
- Suffix - Static text is displayed after the Numerical value (right aligned),
- Editable - Switch on/off for variable edit,
- Auto Run Action - Automatically go to editing set action, without action selection (only for components which support 1 action),
- Min - Minimum value of the variable can be set,
- Max - Maximum value of the variable can be set,
- Step – Single change value in editing.

4.6 MultiState Line

The MultiState Line component is used to display and edit the Integer variables with labels. The labels assigned to values can be imported to the MultiState Lane component from iSMA_platAAC20 NVMultiStateWritable component. The labels may be preceded by a description on the left side (Prefix) e.g. the name, as well as on the right (Suffix) e.g. the units.

To edit value (choose label) of the MultiState Line component, please select 'true' in the Editable slot, and provide the user with write access to the component. The writing process is performed by the "reverse following the link" to the connected component and displaying its activity. There is possibility to change the value (label) by selecting the 'set' action. To do this, use the up/down arrow keys.
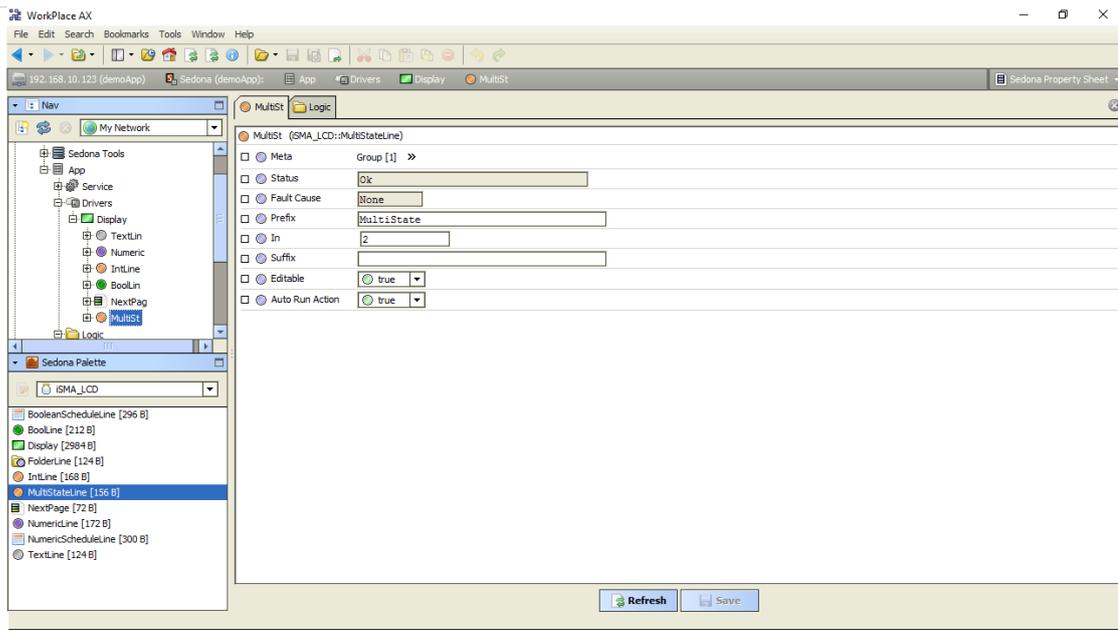
Figure 8 -MultiState Line component property sheet view

The component has the following configuration slots:

- Prefix - Static text is displayed before the Numerical value (left aligned),
- In - The Numerical value,
- Suffix - Static text is displayed after the Numerical value (right aligned),
- Editable - Switch on/off for variable edit,
- Auto Run Action - Automatically go to editing set action, without action selection (only for components which support 1 action).

4.7 LCD Schedule lines

The users can edit schedules added in Sedona application from iSMA_controlApi kit from firmware version 5.0 and above. To make schedules editable, first add the schedule component to application, then add corresponding schedule component line under LCD display and make connection link between them. Each schedule can have up to 8 events per one day.

Null and nan values

If event has null or nan value means that schedule will take Default Output value.

For example: user wants to set up the Numeric Schedule the following day events:

Start	End	Value
00.00	07.00	16
07.00	13.00	18
13.00	14.00	16
14.00	16.00	21
16.00	00.00	16

It is recommended to do the following settings:

- Schedule Default Value – 16,
- Ev1 – Time 07.00, value 18 (Start first event),
- Ev2 – Time 13.00, value nan (Finish first event and go default value),
- Ev3 – Time 14.00, value 21 (Start second event),
- Ev4 – Time 16, value nan (Finish second event and go default value).

4.7.1 Boolean Schedule Line

The BooleanSchedule Line component is used to display and edit the Boolean schedule. The displayed text may be preceded by a description on the left side (Prefix) e.g. the name as well as on the right (Suffix) e.g. the units.

To make schedule line working, the component input must be connected to schedule component used in application output (from iSMA_controlApi kit) and Editable slot set to true. The writing process is performed by the "reverse following the link" to the connected component and displaying its activity.
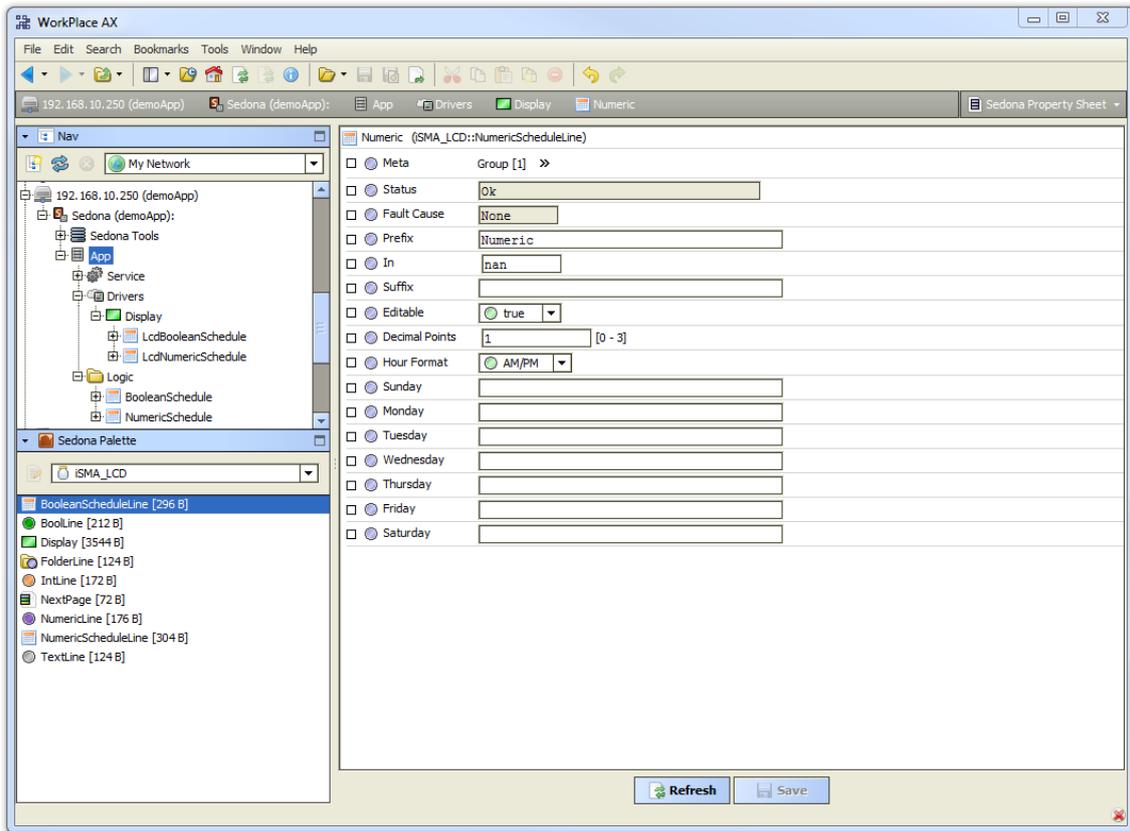
Figure 9 - Boolean schedule line component property sheet view

The component has the following configuration slots:

- Prefix - Static text is displayed before the Numerical value (left aligned),
- In – Schedule current output value,
- Suffix - Static text is displayed after the Numerical value (right aligned),
- Editable - Switch on/off for edit,
- Hour format - Change display hour format 24h or AM/PM,
- Slots from Sunday to Saturday – In this slots user can define days names (matched to current country names). If slot is empty, display will take English day name.

4.7.2 Numeric Schedule Line

The NumericSchedule Line component is used to display and edit numeric schedule. The displayed text may be preceded by a description on the left side (Prefix) e.g. the name as well as on the right (Suffix) e.g. the units.

To make schedule line working, the component input must be connected to schedule component used in application output (from iSMA_controlApi kit) and Editable slot set to true.

The writing process is performed by the "reverse following the link" to the connected component and displaying its activity.
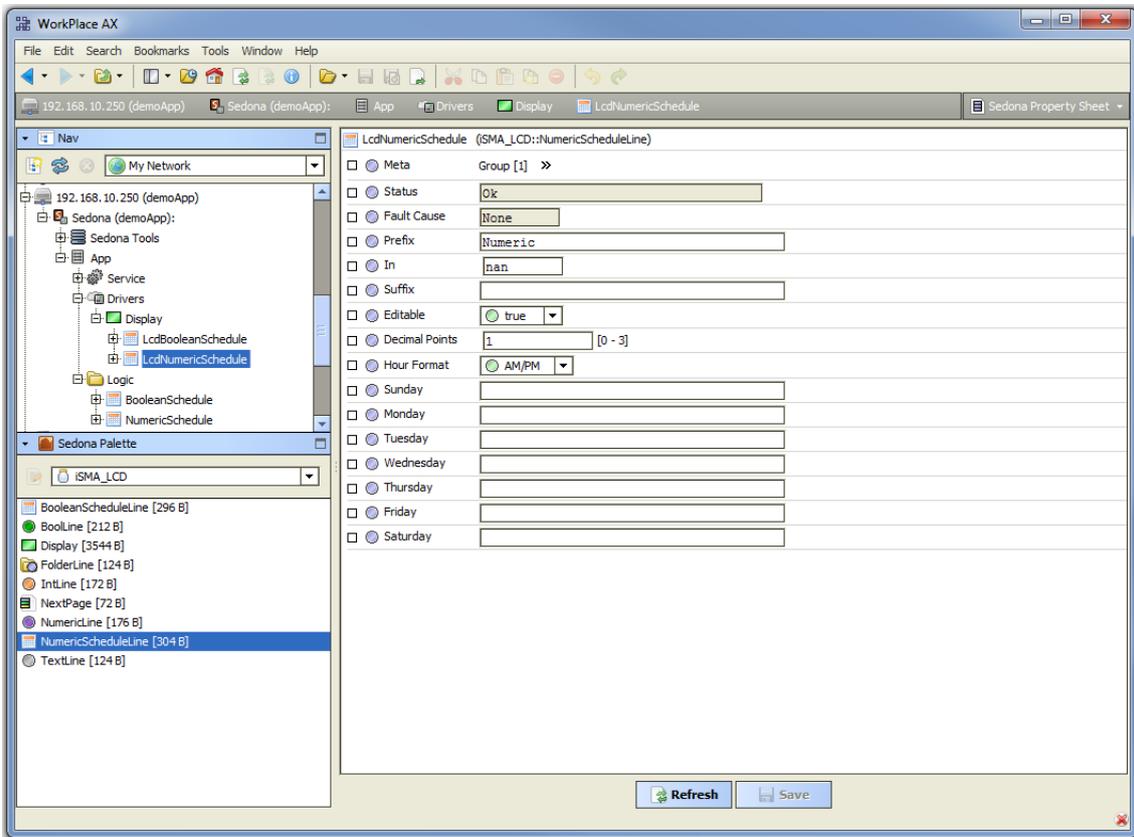
Figure 10 - Numeric schedule component property sheet view

The component has the following configuration slots:

- Prefix - Static text is displayed before the Numerical value (left aligned),
- In – Schedule current output value,
- Suffix - Static text is displayed after the Numerical value (right aligned),
- Editable - Switch on/off for edit,
- Decimal Points - Displays the number of decimal places,
- Hour format – Changes the display hour format 24h or AM/PM,
- Slots from Sunday to Saturday – In this slots user can define days names (matched to current country names). If slot is empty, display will take English day name.

4.7.3 Editing Schedules from LCD display

To display and edit schedule by display schedule line, the component must have editable slot set to true and logged-in user must have read and write access right.

First screen of the schedule line shows week days which user can enter and do the following actions:

- Ev1 – Ev8 – Edit schedule events time and value,
- Copy from other day – Copy all events time and value from other day,
- Clean day – Clear all events in chosen day.

After entering event edit screen, user can move between values using enter button, to edit value use up and down arrows to confirm and save press and hold enter button.

In the numeric schedule it is possible to change step value (divide or multiply step by 10) using F1 and F2 keys.

WARNING! To set or remove null or nan value, please press and hold F2 key .

Going to the next page (after Saturday) you can enter configuration page.

The configuration page has the following slots:

- Def value – Edit schedule output default value,
- Hour format – Change display hour format 24h or AM/PM,
- Decimal Points (only numeric) – Displays the number of decimal places,
- Clean weekly schedule – Clear all events in schedule.

4.8 Next page

The Next page component is a component that allows to insert blank lines till the end of the screen. It ensures order and clean lines, and increases the readability of the displayed lines. Using the Next page component, switching between screens (set of 7 lines) is performed by using arrows (line by line), or by whole screen - F1 and F2 keys.

4.9 Reordering

Items on the display are arranged in the chronological order in which they were added. To change the displayed order, use the "Reorder" function. To do this, go to the "Wire Sheet" view of the component in which the displayed items are located (Display main component or the Folder Line components). There, a right-click on an empty space on the screen, will be a list of

all the components of the given page in the order they are displayed on the LCD. To change the order of the lines, select the component you want to move and change its position on the list using the buttons on the right side of the window.
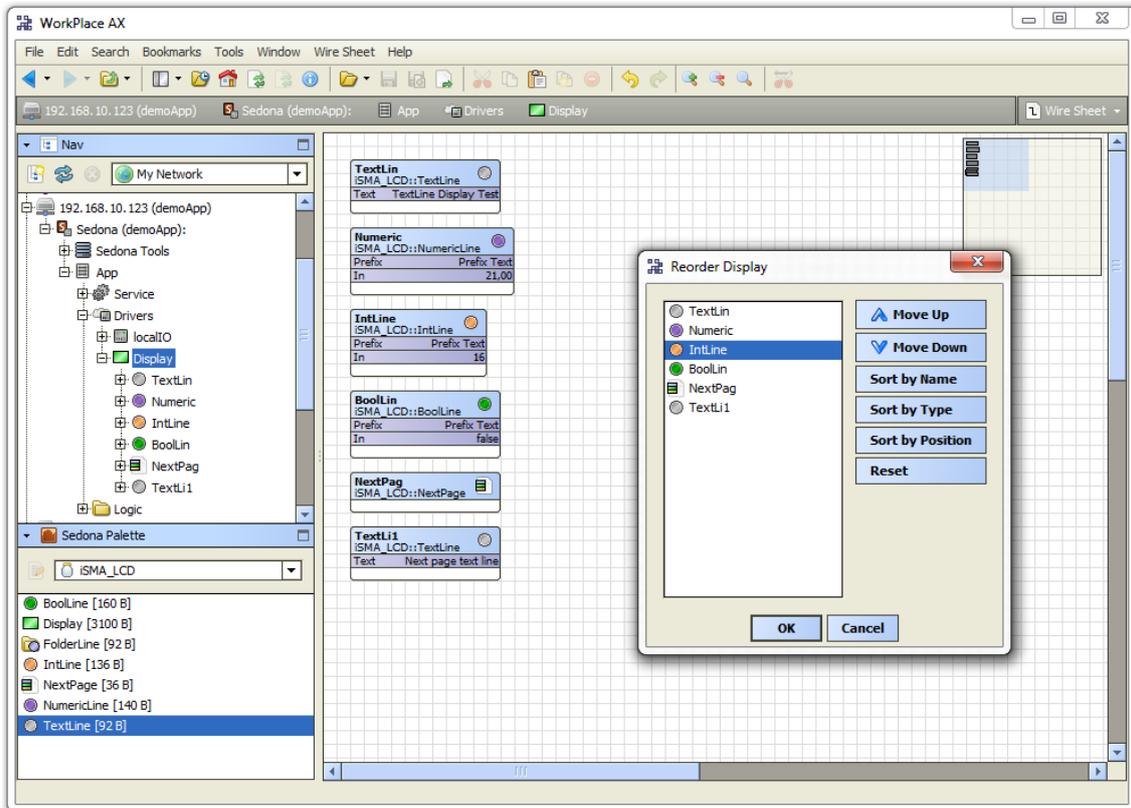
Figure 11 - Reordering window property sheet view

4.10 LCD menu translate (Lexicon)

Since firmware version 5.2 and kit version 1.2.28.106 there is option to translate system menu to other language then English default. The translation is based on txt file. The file must have name structure "translation.txt".
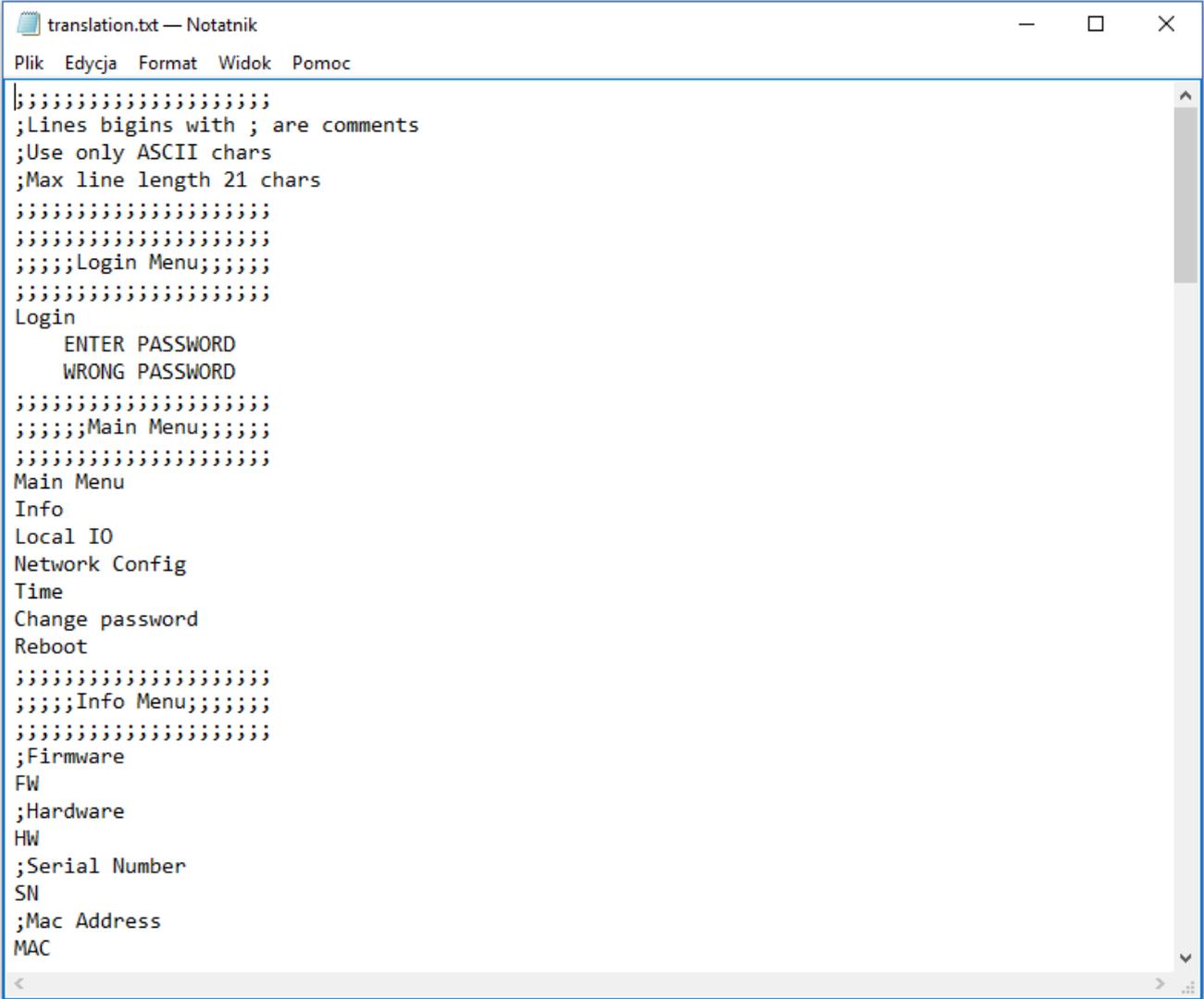
Figure 12 English Lexicon file

To translate or to have users name, in lexicon file replace English word by user words. The lines started by semicolon " ; " defined user comments and does not take part in translation.

WARNING! There is limitation to basic ASCII characters, please do not use specific language characters. The words order is important, please do not delate or change rows order. Keep original lexicon file structure.

The lexicon file is added to iSMA-B-AAC20 controller software bundle with all other files. It is recommended to do the translation based on file from Software Bundle. During the translation the row order and file name (translation.txt,) is crucial, do not change it. The lexicon file should be sent to device by Sedona Updater software. If user want to correct file in controller, the next sending will override previous lexicon file.

5   Sedona users in LCD display

The LCD Display uses the Sedona users, from Sedona application user service. These user's accounts can be used to login to the LCD display and display or edit values according to their access right. All LCD components can be assigned up to 4 groups and each user has defined access right to these groups. The minimum access right to display line is read, user without read permission cannot display lines. The users with read and write access can display and edit values from lines.

5.1 User service

The User service is a service responsible for user's management. It allows to add and remove users and specify access to components. Each application component in Sedona has a Meta slot that allows to assign it to one or more groups. Sedona has 4 predefined groups.
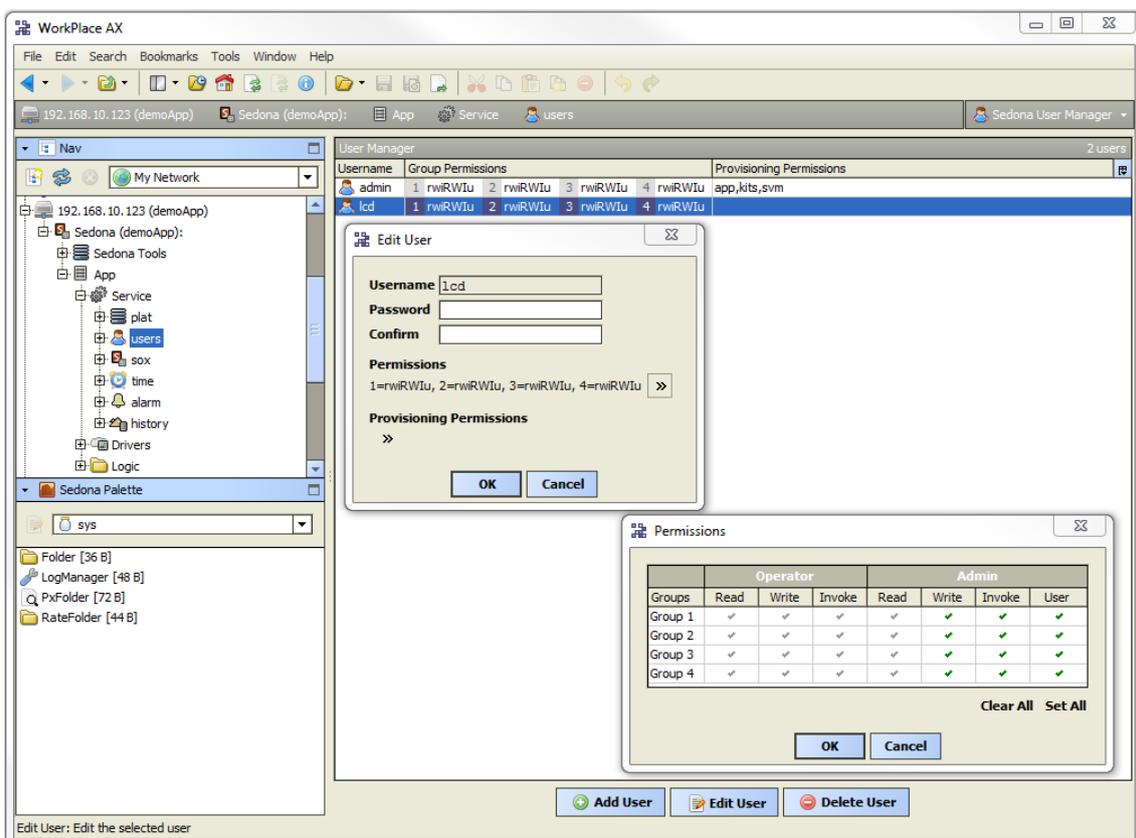
Figure 13 *User service component property sheet view*

The users can have the following type of permissions:

- Operator Read – Read components, read values of operator properties,

- Operator Write – Change values of operator properties,
- Operator Invoke – Invoke operator actions,
- Admin Read – Read values of properties, read links, generate components links,
- Admin Write – Change values properties, add components, sort components, rename components, generate links to the components, delete links to the components,
- Admin Invoke – Invoke admin actions of the components,
- Admin User – User management (read, write, edit, delete).

Provisioning Permissions:

- Can provision app – can read/write app.sab file,
- Can provision app – can read/write kits.scode file,
- Can provision app – can read/write SVM files.

5.2 User LCD login / switching between users

By default, the display logs on to the Sedona system using a LCD user. To switch to another user (who has different access rights to application components), hold the F2 key - you will see a list of users of the users' service. Use the up/down arrows to select the desired user and then confirm by hitting Enter.

5.3 Using user permission to build LCD menu

Building the display structure is closely related to the user rights to the components of the LCD. Each component in the Sedona Environment is assigned to at least one of 4 groups, and each user has the rights for each group. User access rights to groups are defined in the User Service.

If you want a user to be able to display a component, assign the user to the group of this component with the access level not lower than 'Read'.

If you want a user to be able to edit value of the component, assign the user to the group of this component with the 'reading' rights (component must be displayed), and also with the 'writing' rights', to make and store the changes.

Accordingly assigning components to the groups and giving users access rights, you can build a single menu for many users where users will have access to items of your selection.