GE Interlogix

AriCalc

Loop Load Calculator for Addressable/Analogue Addressable Fire Panels

Installation and User Guide

REV 3.11 - April 2004

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1 SCOPE

AriCalc is designed to allow the user to calculate, before commissioning of a GE-Interlogix addressable or analogue addressable fire alarm system, whether all the loops of the fire installation conforms to the specifications as laid down by the manufacturer(s) of the equipment.

Calculations are done based on the specifications of the panels and the devices to be installed, and always allow for the ***WORST CASE*** scenario that may occur during the operating life of the system.

In addition to loop load calculations, the software also allows for the calculation of battery loading so that an estimate of the required battery size can be made to guarantee standby and alarm times as may be required by local regulations.

Calculations may be stored for later processing, or printed as desired. This software is meant for use as a general guide, and calculations may not necessarily be 100% accurate under all conditions of installation.

The package requires the following software platforms:

- Asymetrix ToolBook V4 Runtime: Graphical User Interface (GUI) for visualization
- Microsoft Windows ’95 or better
- Adobe Acrobat Reader

AriCalc is not protected by any means and may be copied and freely distributed.

This manual contains the complete installation and user guide. The software is delivered with a runtime version of ToolBook, and requires no user configuration.

2 PC HARDWARE - SOFTWARE REQUIREMENTS

Any PC that is capable of running Windows ’95 or better is appropriate to host the software. Specifically, an Intel Pentium-based, IBM-compatible PC is required for good performance. The specific recommendations are shown in the table below:

Item	Minimum	Recommended
RAM	32 Mb	64 Mb
Hard disk space	10 Mb	100 Mb
Operating system	Windows ’95	Windows 2000 with Service Pack 3
Printer port	If printing is required locally	If printing is required locally
Processor	Pentium II 266 MHz	Pentium III 500 MHz (or better)
Display adapter	SVGA	SVGA or better
Pointing device	Bus or P/S2 Mouse	Bus or P/S2 Mouse
Communications ports	For the pointing device	For the pointing device

Acrobat Reader is required to view the online manual. This can be obtained by connecting to the Adobe website at http://www.adobe.com

3 INSTALLING ARICALC

The installation procedure from floppy DISK is as follows:

1. Insert DISK 1 into the drive
2. On the 'Start' menu, select 'Run'
3. Type '[drive letter]:\install' in the field provided
4. Follow the instructions on the screen

The installation procedure from hard DISK is as follows:

1. Copy the program files into a temporary sub-directory.
2. On the 'Start' menu, select 'Run'
3. Type '[drive letter]:\[path]\install xxxx' in the field provided. "xxxx" indicates the type of operating system, and should be one of the following:
   Win2000 – for Windows 2000 installations
   Win'9x – for Windows '95 or Windows '98 installations
   WinNT – for Windows NT installations
4. Follow the instructions on the screen

The following processes are performed:

1. A MS-DOS window opens indicating some user information
2. An auto-extracting WinZip file is executed and files will be extracted to 'C:\Program Files\AriCalc' on your hard disk. **DO NOT CHANGE THIS DIRECTORY PATH.**

After this extraction is completed, press any key in the MS-DOS window.

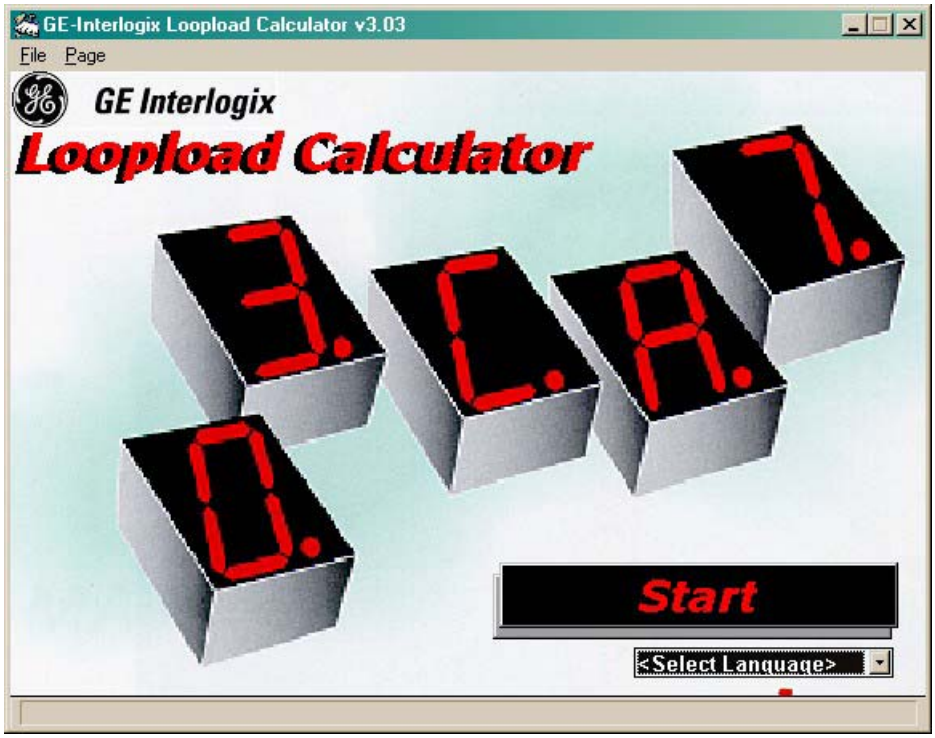
1. The Asymetrix ToolBook Runtime version is installed on your hard disk and registered in your system registry. **ARICALC DOES NOT RUN WITHOUT THIS APPLICATION INSTALLED**.
2. A shortcut link to AriCalc and the AriCalc manual is created in on your desktop as well as in a start-up group called 'GE Interlogix\AriCalc'.
3. Restart you PC if necessary. (This is always recommended after the installation of new software)

4 THE APPLICATION

4.1 Starting the Application

When clicking on the AriCalc icon on your desktop or selecting it from your AriCalc start group, the loop load calculator starts. The following screen appears:

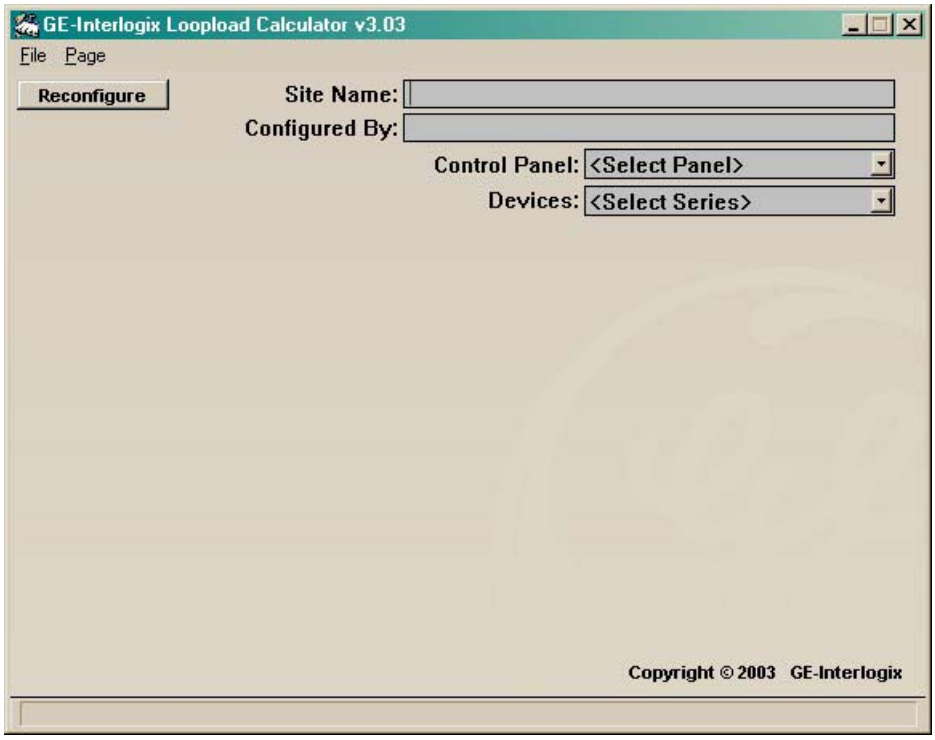
Figure 1: AriCalc Start-up Screen



After selecting the appropriate language configuration from the drop down menu, the application is ready and can be used by clicking on the 'Start' button. If no language is selected, English will automatically be selected as default language.

4.2 Starting Calculations

Figure 2: Initial Configuration Screen



4.2.1 Site Name

Fill in the name of this calculation for record purposes. This field is mandatory.

4.2.2 Configured By

The name of the engineer performing the calculation may be entered here. Once again this is simply used for record purposes. This field is not mandatory.

4.2.3 Control Panel

Which GE-Interlogix fire panel will be used for this installation?

Select the required panel from the drop down list. This selection will allow the required number of loop fields to be displayed for configuration. The selection may be changed at any time if it is found that the configuration of the panel, or the panel itself, for this installation needs to be changed.

4.2.4 Devices

Which GE-Interlogix range of devices will be used for this installation?

Select the required device range from the drop down list. This selection will allow the calculator to configure your system according to the appropriate requirements for the devices selected. The software will not allow incompatible devices to be selected for the type of panel selected in section 4.2.3. If a specific device range is not listed, it would mean that it is not compatible with the selected panel.

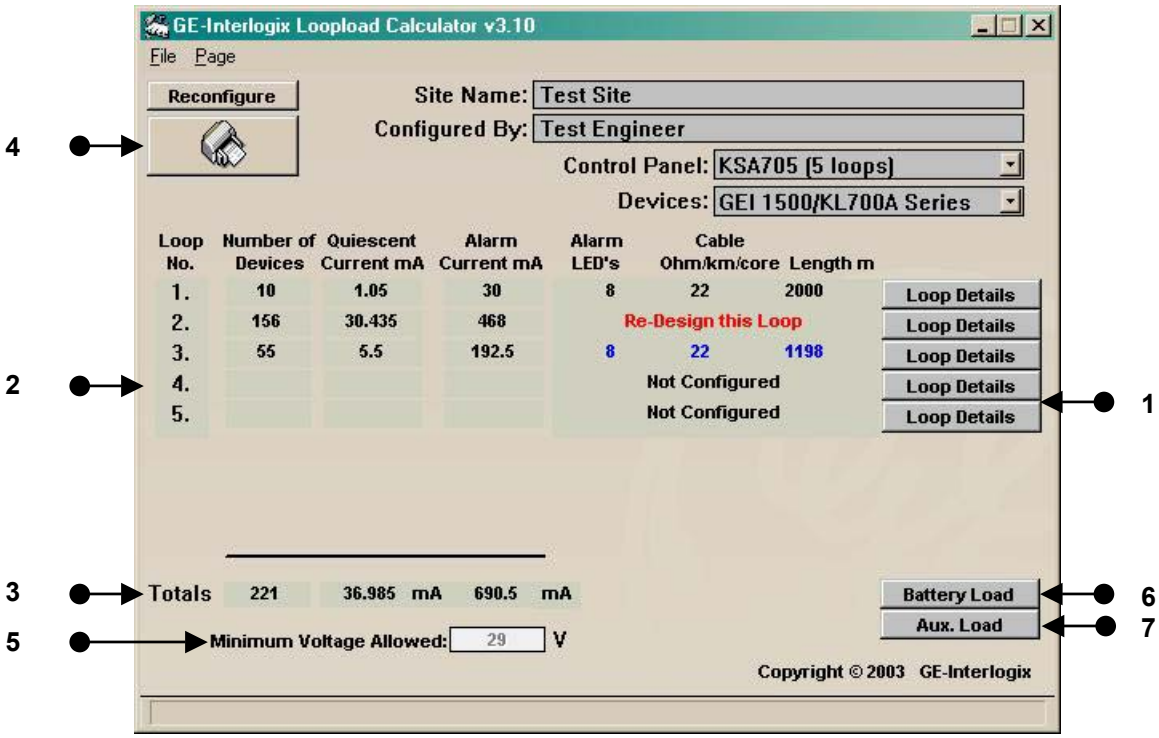
4.2.5 The Re-Configure Button

This button can be used at any time to clear all the site data and start calculations for a new site.

When this button is used, all current site information will be deleted! Any saved information will remain in tact.

4.3 Loop Configuration

Figure 3: Loop Configuration



4.3.1 General

Each loop of the selected panel may be configured individually as explained below.

Every loop is configured by selecting the “Loop Detail” button *(Item **(1)**)* for that loop.

Once these loops are configured, the relevant data for each loop is consolidated and displayed on the main page. The information for each loop is as follows: *(Item **(2)**)* from left to right …

1. The **loop number**
2. The **total number of devices** installed on this loop
3. The **maximum quiescent current** for this configuration in milli-amperes
4. The **maximum alarm current** for this configuration in milli-amperes
5. The number of **configured alarm indications** for this loop
6. The **resistance specification** of the cable used for this loop
7. The **maximum cable length** allowed for the cable run for this loop

An overall total of the number of devices for this site, the maximum quiescent current and the maximum alarm current will be automatically calculated and displayed. (Item ***(3)***) This information will also be passed to the battery load section of the program (Refer to section 6)

When a hardcopy of the site configuration is required, a printout may be made using the 'Print' button. (Item ***(4)***) Once any configuration for the site has been made, the 'Print' button appears below the 'Reconfigure' button. This button allows a printout to be sent to the default system printer. Adjustments to the default printer can also be made via the drop down 'Print' functions in the program. (Refer to section 5.2.2.)

The worst case conditions for the system is calculated based on the minimum loop voltage allowed for normal operation. Normally this value will be set at the cut-off limit of the power supply of the panel used. If the site requirements specify otherwise, then this level may be adjusted (Item ***(5)***). It can however only be adjusted between limits as specified by the manufacturer. The system will not allow operations below the set minimum voltage of the power supply.

To calculate battery load conditions, use the 'battery load' button. (Item ***(6)***)

To check the auxiliary supply loading, use the 'aux. load' button. (Item ***(7)***) Note that this is only available when using Kilsen KL700A or Aritech Dx1500 series detectors.

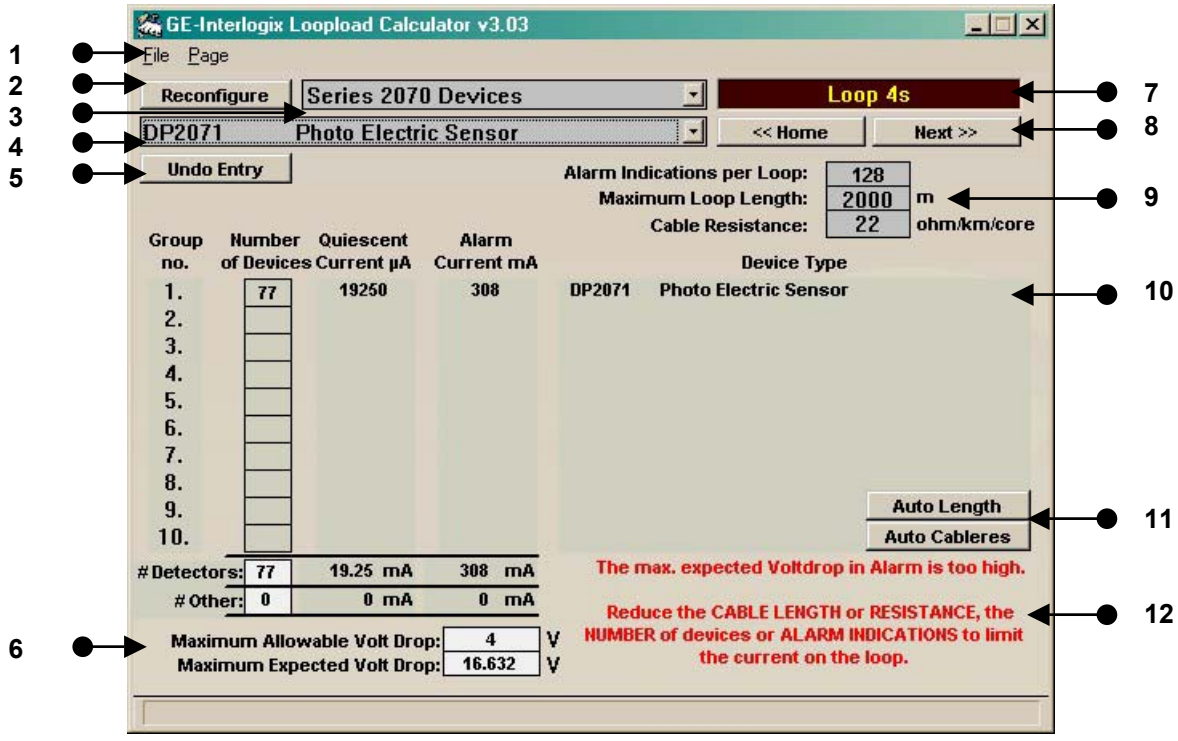
4.3.2 General Indication Guidelines

The following colour parameters will be used for clear indication of the status of every loop's setup:

BLACK	When the loop is un-configured or has no deviations from the standard manufacturers default specifications
RED	When the loop is outside of specified parameters and has to be re-configured
BLUE	When the standard specifications have been altered to allow for correct functioning of the loop. This would mean that some additional care with the installation and/or panel programming would be required on site.

4.4 Loop Configuration

Figure 4: Loop Setup



Every loop configuration page is laid out as follows:

1. Standard drop-down menus for file control and navigation through the program. (Refer to section 5.2)
2. To reconfigure this loop, select the ***Reconfigure*** button. Note that only the configuration for this loop will be lost.
3. Select the ***Device Series*** from the pull down menu. For ease of selection, some device series families have been divided into the various family groups. Family groups may of course be mixed on the same loop, and therefore this dropdown box may be changed at any time.
4. Select the ***Specific Device Type*** in the family from the drop-down menu. This field appears as soon as the series ***(3)*** is selected.
5. The ***Undo Entry*** button removes the last entry listed in ***(10).*** Note that this function may only be used on a loop that does not have prior ***user defined*** devices installed.

✍ ***User defined devices*** *may be used where the program does not have a specific device available in the drop down lists. All specifications of user-defined devices have to be available to the engineer using the program.*

6. These fields indicate the maximum allowable voltage drop, as well as the maximum calculated voltage drop under *worst-case* conditions. These fields are automatically calculated for every loop, and will give the user some indication of where he could adjust the configuration to allow for the installation to function under these conditions should AriCalc indicate a problem.
7. The ***number of this loop*** indicating the loop that is currently being configured
8. Navigation Buttons: These buttons allows a return to the front page (**<<*Home***), or to the next loop (***Next>>***) of this site's configuration.
9. These fields are user configurable depending on the requirement of the installation. These fields indicate the maximum ***cable length***, the ***cable resistance*** specification, as well as the alarm configuration of the panel as it applies to this loop.

✍ *LED limitation must be programmed accordingly in the panel. The '***Alarm indications per loop***" field indicate the maximum number of devices that can be in alarm on this loop at the same time AND have their alarm LED's lit. Refer to the Aritech FP2000/1200/1100 Reference Guide for more details on this function. Calculations from the buttons described in* **(11)** *can update some of these values automatically.*

10. These fields indicate the standard ***configuration information*** for this loop. The number of devices of the indicated type is shown, and the quiescent and alarm currents for the defined quantity are automatically calculated. The number of devices may be changed at any time, unless this was a user-defined type. For the user-defined types, the entire entry must be redone.
11. Assistance for the user: These buttons allow the software to automatically calculate the maximum ***loop length*** or maximum ***cable resistance*** required to ensure that this loop will work correctly with the current configuration device configuration. These values will be calculated and the results inserted in the locations provided in ***(9)***
12. A user interface field indicating the current situation with this loop and the possible actions (if any) that may be performed to correct the situation.

5 SPECIAL CONSIDERATIONS

5.1 User Defined Types

It is possible that the user may not have a required device available from the drop-down menus. The AriCalc software allows for the user to insert the parameters for this device himself. Up to ten different user-defined devices can be configured for every loop. The software has however no means of confirming the values inserted for user types, so it is up to the user to ensure that all values are correct and are in the specified range/scale required by the system.

Please notify your local sales office should these user-defined products be standard products that you believe should be available in the system in the future.

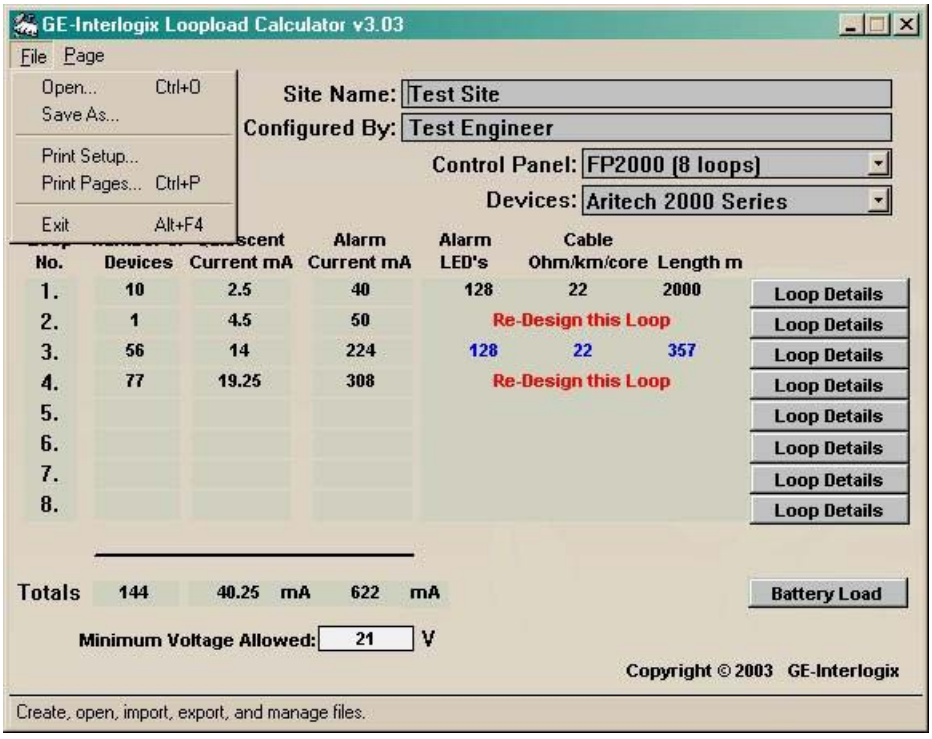
5.2 Drop-Down Menus

Standard drop-down menus are supplied. These can be used for the indicated functions below:

5.2.1 Saving and Retrieving Data

The site data can be saved for later retrieval by using the pull-down menu ‘File’ and selecting ‘Save-As’.

Figure 5: Saving your work



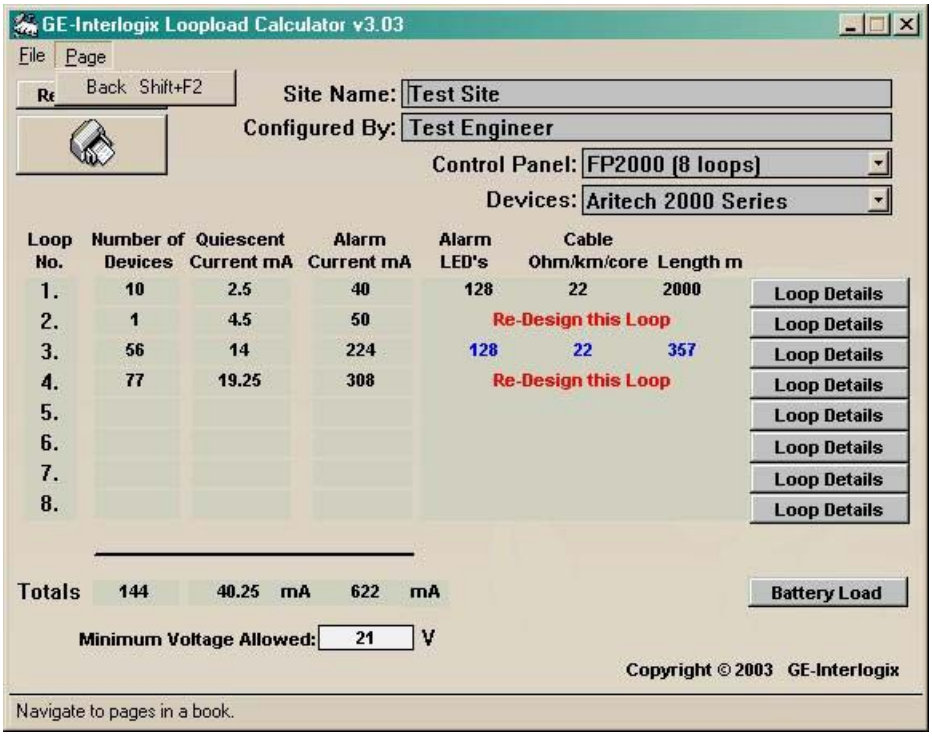
Type in the name of the file (note that long filenames are not supported), keeping the extension (*.tbk) and select the location as usual. By default, all files will be saved in the ‘AriCalc’ directory. The file will be called ‘[your filename].tbk’ and may be retrieved later by using the ‘File’ menu and selecting ‘Open‘ from the drop-down menu.

5.2.2 Printing Data

Your local printer can be configured using the ***'Print Setup'*** option. These functions are similar to the standard Microsoft Windows printer configuration options. Each page, or the entire book, can be sent to the local printer by using the ***'Print Pages'*** option. To avoid possible problems between text and graphics printing on some printers, it is recommended to always use the ***'Print as bitmap'*** option on the ***'Options'*** menu print configuration page. All other options may be experimented with to find the best possible configuration for your specific printing needs. For default printing, the standard ***'Print'*** button may be used on the configuration page of AriCalc. (Refer to section 4.3) This will normally print the correct format and correct pages for the current configuration for the selected instances.

5.2.3 Navigation option

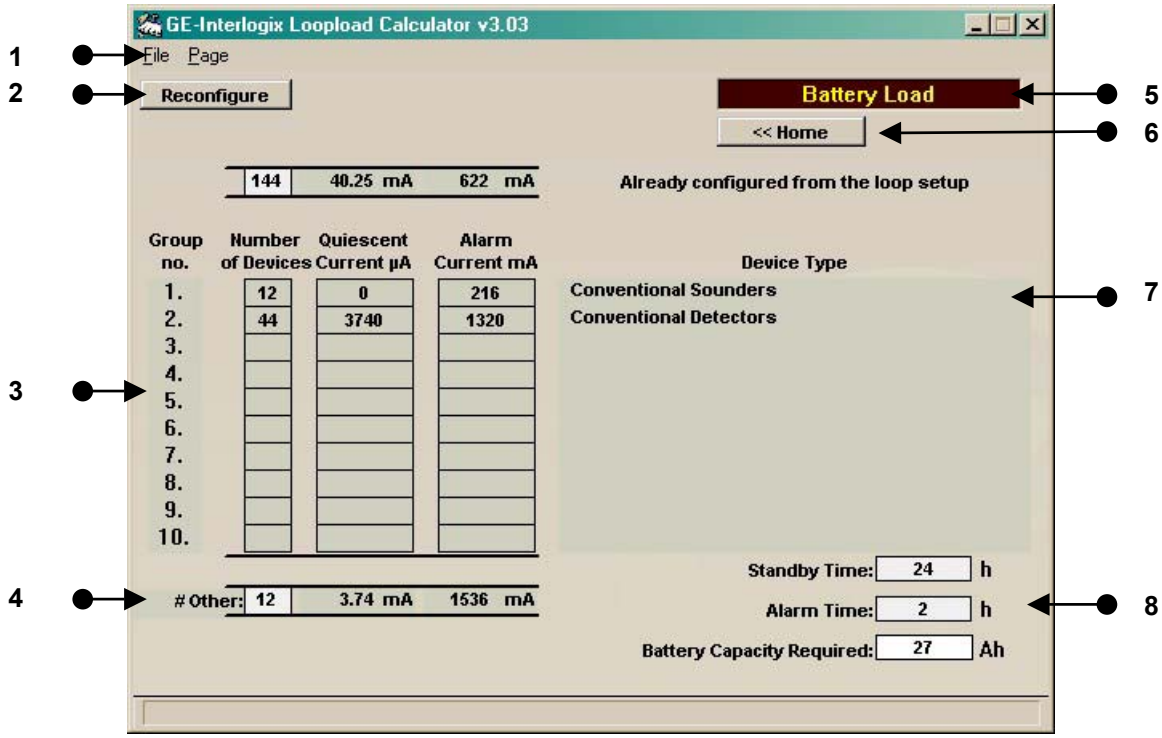
Figure 6: Navigation



One navigation option is provided to allow the return to the previous page. This can be used in conjunction with the 'forward' button provided on the loop configuration screen. (Refer to section 4.4)

6 BATTERY LOAD CALCULATIONS

Figure 7: Battery Load



This page configuration is as follows:

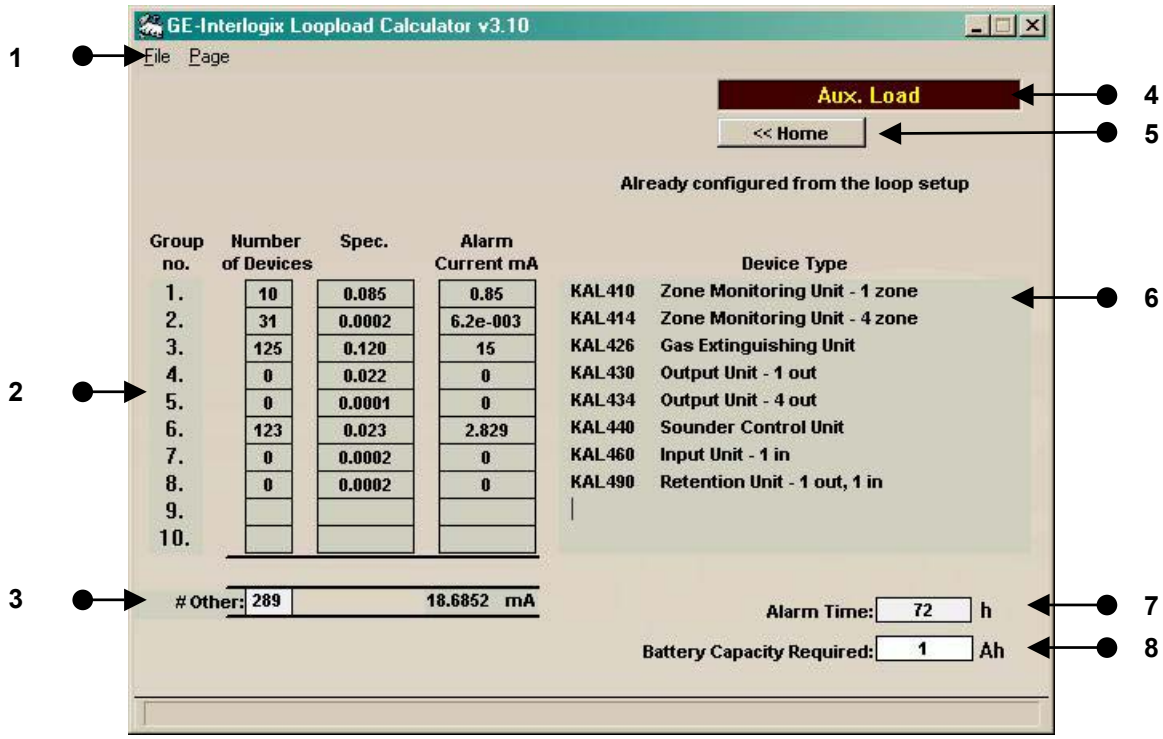
1. Standard drop-down menus for file control and navigation through the program. (Refer to section 5.2)
2. To reconfigure the battery load calculation page, select the ***Reconfigure*** button. Only the configuration for this page will be lost. Standard configuration as done on the loops is maintained. To remove these, the loop configuration has to be removed. (Refer to section 4.2.5 and 4.4)
3. These fields have to be manually configured for the ***number of devices***, the ***quiescent current*** as well as the ***alarm current*** for the specific device.
4. These fields indicate the ***# totals*** for the fields described in ***(3)***. The fields are automatically calculated for the entered devices, and give the user some indication of the loading that will be added to the battery because of these additional devices.
5. The ***name of this page*** indicating where the user is in the configuration of AriCalc.
6. Navigation Button: This button allows the user to return to the front page (***<<Home***).
7. These fields allow for additional descriptions of the entered devices for record purposes.
8. These fields allow the user to enter the required ***Standby Time*** and ***Alarm Time*** that is required for the system on this site.

The calculated battery capacity includes the loop device configurations entered for this site, as well as the manufacturers specified load for the panel. These do not have to be manually entered by the user.

Only auxiliary equipment has to be manually entered in this configuration.

7 AUXILIARY SUPPLY LOAD

Figure 8: Battery Load



This page configuration is as follows:

1. Standard drop-down menus for file control and navigation through the program. (Refer to section 5.2)
2. These fields are automatically configured and updated from the loop setup configuration screens. They indicate the ***number of devices,*** the ***device specification*** as well as the ***alarm current*** calculated for the specific device.
3. These fields indicate the ***totals*** for the fields described in ***(2)***. The fields are automatically calculated for the entered devices, and give the user some indication of the loading that will be added to an auxiliary supply that is used to power these devices externally.

This calculation is made for the auxiliary supply for the addressable devices on the loop only. In some instances external equipment is still connected to the loop devices. In such cases the totals obtained here should still be added to the total power consumption of all additional devices such as conventional detectors, sounders, beacons, warning light etc.

4. The ***name of this page*** indicating where the user is in the configuration of AriCalc.
5. Navigation Button: This button allows the user to return to the front page (***<<Home***).
6. The descriptions of the devices that require external power.
7. This field allows the user to enter the required ***Alarm Time*** for these devices.
8. The required battery rating is automatically calculated.

The calculated battery capacity would need to be added to the battery load calculation manually (section 6) if the auxiliary power is obtained from the panel's own auxiliary supply.