

Flashlink®



USER MANUAL

GYDA-SC-M

GYDA System Controller for flashlink and ConQuer

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Revision history

The latest version is always available in pdf-format on our web site:
<http://www.network-electronics.com/>

Current revision of this document is the uppermost in the table below.

Revision	Replaces	Date	Change Description
1	0	05.06.03 AR	Added info regarding home tab & password protection
0	B	14.05.03 RS	Initial revision
B	A	14.04.03 RS	Added new info on GYDA web interface
A		09.03.03 RS	Preliminary version

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1. General

The GYDA System Controller is an advanced control and monitoring card for the flashlink and ConQuer system. The card occupies a single slot in a flashlink or ConQuer frame and can control and monitor up to 8 flashlink frames, each with up to 10 flashlink modules, a total of 79 modules.

The controller connects to a standard 10BaseT twisted pair Ethernet with TCP/IP protocol. The user uses a standard web browser to configure and monitor the flashlink system (i.e. no special software is needed on the PC, any PC with a web browser will do). All relevant manuals are also available via the web interface in adobe PDF format.

For users with large heterogeneous systems, the controller supports SNMP (Simple Network Management Protocol), a generic TCP/IP based protocol for management of a wide variety of devices. The controller software is located on a removable compact flash card (the same card type frequently used on digital cam-eras), and can be easily upgraded by copying new files to the flash card. New software can be downloaded from our web site.

The controller module has four GPI inputs and a GPI open collector output.

The output is a “catch all” error output. The inputs are general purpose, intended for monitoring external equipment like battery backup systems, climate control and power supplies. Note that all flashlink and ConQuer power supplies have GPI outputs, which can be used as inputs to the controller.

2. Connecting GYDA to your local area network.

Follow this guide to quickly install your GYDA controller to an Ethernet network.

This quick guide assumes that you already have a computer connected to your LAN and have TCP/IP running on that computer. If you are unfamiliar with TCP/IP, it could be a good help to have assistance from your system administrator while doing this.

2.1 Ethernet connection

The GYDA System Controller has a 10Base-T connection on RJ-45. This can be connected to your local area network devices like a switch or a hub with unshielded twisted pair cable of type cat 3 or higher. To access the GYDA System Controller directly from a laptop PC you can use a crossover cable.

2.2 Assigning an IP-address to GYDA

Step 1:

Get an IP address for your unit. Your network administrator normally assigns this. Remember that the IP address must be unique on your LAN. If you use the same IP address as another device or machine on your network, you will cause network problems for you and other users of the LAN. Please make sure that you use a unique IP address.

Write down the IP address here:

The IP Address for the controller is:

Step 2:

Write down the controller MAC address (also called an "Ethernet address" or a "hardware address") on the controller card. This is printed below the Compact Flash Card on the GYDA controller, or on a printed sticker on the backside of the controller.

A typical MAC address looks like: "00-01-C0-00-21-35"

A MAC address can contain the numbers (0-9) and the letters A to F. Note that the MAC Address can't contain the letter O, only the number 0 (zero).

Write down the MAC address here:

The MAC Address for the controller is:

Step 3:

Find a machine on the network that has Windows NT/95/98/W2K/XP or Unix (Linux) installed. Start a command shell (DOS prompt) and type in (You may have to be logged in as "Administrator" on your machine if you run Windows NT, or "root" on Unix):

```
arp -s <ip_address> <mac_address> [ENTER]
ping -t <ip_address> [ENTER] (the -t option is only used on Windows)
```

The mac address separator is '-' (dash) under Windows and ':' (colon) under Unix or Linux.
Let the ping command run...

Example, setting IP address to 10.10.10.199

```
arp -s 10.10.10.199 00-01-C0-00-21-35
ping -t 10.10.10.199
```

Step 4:

Connect the controller to the network, and turn the unit on. Wait until the unit has booted (typ. 30 sec). You should see that the ping command is starting to get replies, similar to the sequence below:

```
64 bytes from 10.10.10.199: icmp_seq=0 ttl=255 time=1.205 msec
64 bytes from 10.10.10.199: icmp_seq=1 ttl=255 time=1.048 msec
```

...

Press Control-C to stop the ping command.

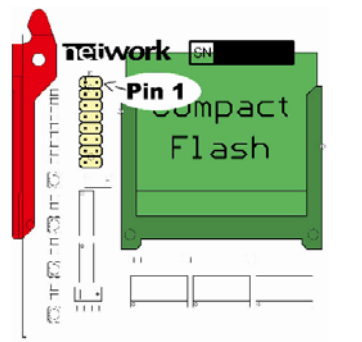
Step 5:

Start your web browser. Type in the URL: http://ip_address/ (e.g. <http://10.10.10.199/>), and you should see the GYDA start page. Go to the CONFIG tab, log in (just press [ENTER] at the password prompt, the factory default password is empty) and select "STATIC IP ADDRESS", and set the IP address, and other relevant parameters and select "Change IP settings". Then select "Restart system". You will loose the connection with the controller for ~30 sec, while the unit is restarting with the static IP settings.

Step 6

Congratulations, you have now successfully connected the GYDA controller to your LAN.

2.3 Jumper settings

	Position	Function
	Pin 1 (or no jumpers at all)	Boot the system according to parameters stored on the flash card
	Pin 2	Force ping boot, this is useful if you need to change the IP address, and you can't reach the board on its old IP address.
	Pin 3	Not used
	Pin 4	Use the static IP address stored on the board
	Pin 5-Pin 8	Not used, leave unconnected

3. Specifications

SYSTEM

Type: Intel 80486 compatible
CPU: 100 MHz
Memory: 32MB
Operating System: Linux ver. 2.2.x

ETHERNET PORT

Type: 10BaseT, IEEE802.3, full duplex capable
Connector: RJ-45, 100 W, UTP cable, EIA/TIA category 3 or better

WEB INTERFACE

- HTTP version 1.1, HTML ver 4.01 Compatible with all major browsers

SNMP INTERFACE

- SNMP ver 1.0 over UDP over IP, following SMI version 2.0 according to relevant RFC's
- User defined community string
- User defined traps

TCP/IP STACK

Version: V4
Static IP address selection: Yes, by editing a configuration file on the compact flash card

SERIAL PORTS

- 1 x RS422 or RS485 internal to the flashlink frame, available on the power supply backplane
- 1 x RS422/RS485 to external equipment
- 1 x RS232 to external equipment

NUMBER OF CARDS MONITORED

- 79 cards maximum

GPI INPUTS

No. of ports: 4
Pull-up resistors: Internal 4.7kOhm resistor connected to +5V
Trigger voltage: 2.5 V $\pm$ 0.5 V

GPI OUTPUTS

No. of outputs: 1
Max voltage: 50V
Max current: 0.25A

4. Connector module

4.1 Mounting the connector module.

This section only applies if the module is not purchased pre-mounted in a frame.

The details of how the connector module is mounted, is found in the user manual for the frame FR-2RU-10-2.

This manual is also available from our web site: <http://www.network-electronics.com/>

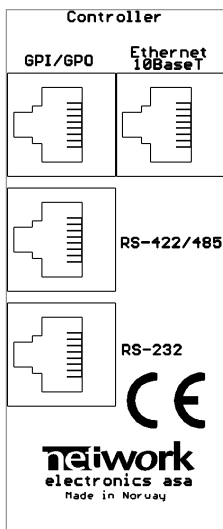


Figure 1: GYDA connector module

4.2 Communication protocol

The communication protocol is found in the user manual for the frame – FR-2RU-10-2-F/-C.

5. Monitoring several frames

Figure 2 shows the power connections of the frame as well as the RS-422 connections and the DIP-switches for address setting of the frame.

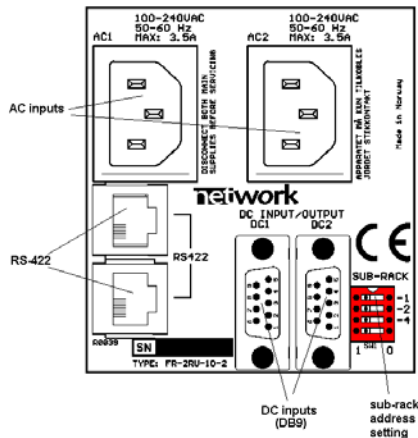


Figure 2: Connector module for the power module.

5.1 Addressing

Each card has a unique identifier called card position, which is assigned (through hardware pinning) automatically when a card is inserted into a frame. The card positions are numbered from 1 to 10 from a user point of view. From a protocol (or software) point of view, the cards are addressed 0-9, but the user should always see positions 1-10 in menus, etc. Each frame (if you use more than one) should have a unique frame id, numbered 0-7 (user and protocol/software wise).

5.1.1 Address setting on each frame

Each frame can be assigned an address through the DIP-switches on the rear. Maximum 8 frame addresses are available.

If you have more than 8 frames together, you need several GYDA[®]-SC-M Rack System Controller cards.

!! In order to ensure proper operation of the system, it is important that no frames controlled by the same GYDA[®]-SC-M Rack System Controller card have the same address set. Reset the frame after reconfiguring the frame system. The last frame must be terminated with a 110Ω resistor.

The setting of the address of a frame is as follows:

Address:

0 means switch to the right

1 means switch to the left

Address	4	2	1
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

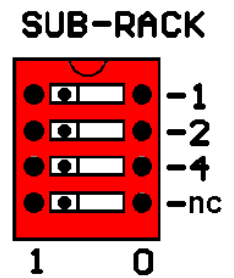


Fig. 3 DIP-switch

The GYDA-SC Rack System Controller automatically detects the position of the cards within each frame.

5.2 Interconnection of frames

Several frames can be interconnected through the RS-422 ports as shown in figure 2.

One GYDA[®]-SC-M controller can control maximum 8 frames.

You start with the frame containing the GYDA[®]-SC-M Rack System Controller, and use 1 RS-422 port to loop through to the next.

The cable to use is a one-to-one cable of cat 3 or better.

The last frame connected must be terminated with 110Ω in order to ensure proper operation, this is the TP45 plug that is enclosed.

The other port of the rack containing the GYDA[®]-SC Rack System Controller must be left open, and cannot be connected to other frames.

Figure 4 shows an example of how to connect 8 frames together as seen from the rear end.

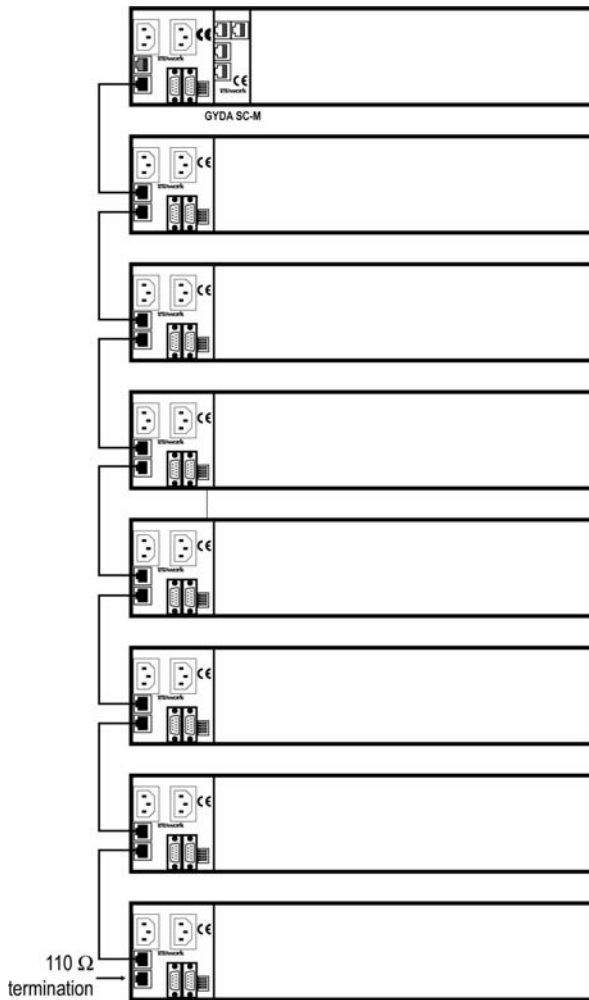


Figure 4: Example of control of 8 frames with GYDA-SC-M.

6. GYDA Status Monitoring and external alarms

6.1 GPI Inputs and Outputs

GPI INPUTS

No. of ports:	4
Pull-up resistors:	Internal 4.7kOhm resistor connected to +5V
Trigger voltage:	2.5 V $\pm$ 0.5 V

GPI OUTPUTS

No. of outputs:	1
Max voltage:	50V
Max current:	0.25A

The output can be used for wiring up alarms for third party control systems. The GPI outputs are open collector outputs, sinking to ground when an alarm is triggered. The GPI connector is shown in figure 5.

The GPI output will be active, if one or more alarms are active in the system.

This means that each GYDA System Controller can monitor the status of e.g. 4 different power supplies. To monitor more than 4 external devices, these must be hardwired together as AND logic.

GYDA-SC-M GPI pinning:

Signal	Name	Pin #	Mode
GPI 1	External alarm 1	Pin 1	Input
GPI 2	External alarm 2	Pin 2	Input
GPI 3	External alarm 3	Pin 3	Input
GPI 4	External alarm 4	Pin 4	Input
Status	General error status for the system.	Pin 5	Open Collector
	Not used	Pin 6	
+5V	+5V pin	Pin 7	+5V
Ground	0 volt pin	Pin 8	0V

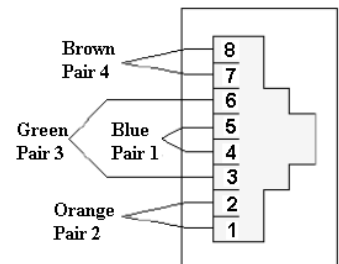


Figure 5: GPI Outlet

6.2 Front Panel- Module Status Monitoring

The status of the module can be easily monitored visually by the LEDs at the front of the module. The LEDs are visible through the front panel as shown in figure 6 on the next page.

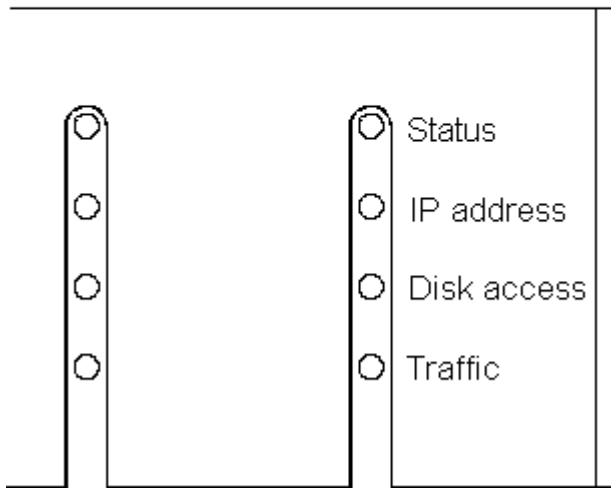


Figure 6: The LEDs of GYDA-SC-M (text not printed on the front panel)

The GYDA-SC-M has 4 LEDs each showing a status corresponding to the GPI pinning. The position of the different LEDs is shown in figure 6.

Diode \ state	Red LED	Green LED	No light
Status	Module is faulty (*)	Module is OK Module power is OK	Module has no power
IP address	No IP-address assigned (*)	IP-address assigned	
Disk access		Accessing disk (**)	Not accessing disk
Traffic indicator		Traffic on Ethernet port	No traffic on Ethernet port

(*) During power-up the LED will be red for a short time.

(**) The green LED will flash for about 30 seconds during the boot process of the GYDA-SC-M.

7. GYDA web interface

7.1 General

GYDA System Controller can control and monitor up to 79 modules, a total of 8 frames. Each frame must be configured with a unique frame address, set by DIP switches at the rear of the frame, as described in the user manual for the flashlink/ConQuer frame, FR-2RU-10-2-F/-C. Interconnection of several frames is also described in the user manual for the frame itself.

There are six different + one optional views in the GYDA System Controller web interface. Each has its own menu-tab at the top, and will be highlighted when selected.

- HOME (Optional, see section 7.3)
- SYSTEM (An overview of the system connected to GYDA)
- ALARMS (All alarms within the system.)
- LOG (All events after power up of the GYDA System Controller)
- CONFIG (TCP/IP and SNMP Configuration Settings)
- MANUALS (All user manuals in PDF-format)
- ABOUT



Figure 7: The menu-tabs of the GYDA web interface

The GYDA-SC-M has two different pages for each module (found under the tab "System").



Module Information Page



Module Configuration Page



Open user manual

Figure 8: The icons for the different views in the "System" menu.

Each of the different modules in the flashlink and the modular ConQuer range has a dedicated icon, which will appear in the corresponding position of the frame.

GYDA

Figure 9: The icon for the GYDA System Controller.

In figure 10 we see the web interface with the information view of the GYDA System Controller. To the left we see the detection and indication of the 1-8 frames that are connected to the system. In this case frame 0 is selected of the 3 frames that are connected to GYDA. On the frame itself, we see the indication of the active card as a grey frame on the red front. By clicking the different positions or icons of the frame, the different card modules can be controlled.

7.2 GYDA web interface – screen navigation

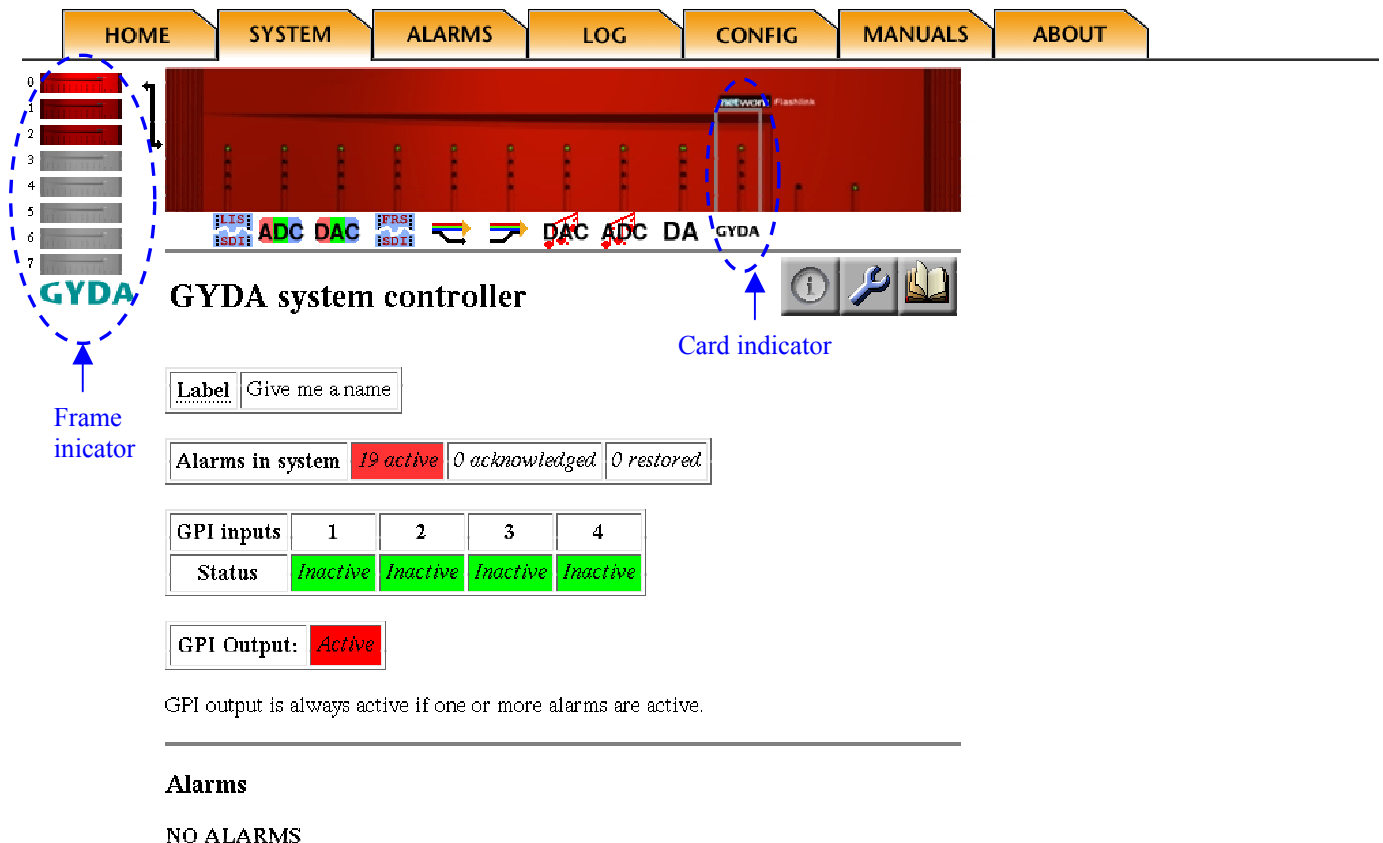


Figure 10: Information view of the GYDA System Controller.

In figure 10, we can get a summary of the alarms in the system. Each alarm can be in one of three different states:

- Active (Red colour. An alarm is present in the system, and is not acknowledged)
- Acknowledged (Yellow colour. A present alarm that has been acknowledged).
As soon as the condition that set the alarm no longer exist, the alarm will disappear from the list.
- Restored (Green colour. The condition that set the alarm does no longer exist. The alarm must be acknowledged in order to disappear from the list).

Below is the status for the GPI inputs of the GYDA System Controller. The can be either active (triggered by an external device) or inactive.

The GPI output can also be in one of two states the GPI output is a catch all GPI output. If one or more alarms are active in the system, the GPI output will be *active*, whereas if all alarms are either acknowledged, restored or there are no alarms in the system, it will be *inactive*.

The CONFIG screen of the GYDA System Controller has settings for how GYDA shall work.

- *Search for new cards*
Useful if the system configuration changes frequently.

This setting means that all 79 possible addresses are polled each time in order to search for new modules.

- *Collect info from known cards*

Default setting, this setting is useful if the system doesn't change frequently.

This setting will poll the status of known cards and one new empty slot at a time. New cards will be detected at a rate determined by the number of cards in the system, the more empty slots the longer it will take to detect new modules. On the other hand, all cards are now polled once per second so changes on the known modules will be reported much faster than before.

Single scan of empty slots

Will scan all empty slots for new modules. Setting is only available when the 'Collect info from known cards' is chosen. Useful to speed up the detection of new modules. Will not affect the scanning mode of GYDA.

7.3 Home tab

Generic webserver for static html can now be enabled from the CONFIG page, under "General setup". This will change the graphics on the tab-menu (might need a forced reload of the browser to see it properly). This homepage can also be set as start page if this is needed.

Home tab

- ☒ Enable homepage tab ☐ Disable homepage tab
☒ Use homepage tab as startpage ☐ Use system tab as startpage

Change Reset

Figure 11. Home tab configuration



Figure 12. Home tab enabled

The static pages can be put on the CF (Compact flash) card in the directory called "home". To access the "home" directory, you need to remove the flashcard from the GYDA module and put it into a PCMCIA/USB adapter for CF. The file structure of the CF is shown in figure 13.

NOTE! Make sure that you don't modify files outside the "home" directory; this may STOP GYDA from working.



Make sure **URLs** are relative, or reference files on other **WEB** servers. References to **c:\\xxxxx** or similar will not work.

Figure 13. File structure of the CF

7.4 Password protection

The built-in password protection uses the htpasswd mechanism of the Apache web-server. In the default setup, GYDA allows anonymous /open access to the card information. Two extra levels of protection (observer and operator) can be enabled for situations where anonymous access to the system, alarm and log tabs are not wanted.

To enable “Strict password protection”, go to the CONFIG tab, select User and access administration.

User and access administration

Existing users					
Username	Access group			Edit	Delete
	observer	operator	administrator		
admin	No	No	Yes	Edit	
user	Yes	Yes	No	Edit	Delete
guest	Yes	No	No	Edit	Delete

Add user						
Username	Password	Access groups			Add	Cancel
		☐ observer	☐ operator	☐ administrator	Add	Cancel

Figure 14. Default setup of User and access administration.

The three access levels are defined as follows:

- **Observer:** Read only account, can't acknowledge alarms and re-configure modules.
- **Operator:** has access to acknowledging alarms and re-configuring modules.
- **Administrator:** access to the CONFIG tab.

The levels are not inclusive, so a normal user account needs both observer and operator access. The default admin account does not have observer and operator access for security reasons. There is no limit to the number of users.

In factory setting, all passwords are: *password* with user names as shown in figure 14. Remember to change the admin password to prevent abuse of GYDA.

8. GYDA – Simple Network Management Protocol interface

GYDA can be used as an SNMP agent. This means that all the flashlink and the ConQuer modules can be configured and monitored through a higher level third-party management system.

8.1 SNMP setup

Setup is done through the web interface of GYDA (described in chapter 7). This is found under the CONFIG tab.

The following parameters must be set:

- sysContact (Contact person and contact details for the service person)
- sysLocation (Where is the system located)
- SNMP community (Password to access the GYDA SNMP agent.)*
- SNMP trap destination (IP-address of the SNMP manager)
- SNMP trap community (Password to access the SNMP manager)*

* Corresponding community setup must be done at the SNMP manager.

8.2 Audible alarms

Using SNMP is the easiest way to implement audible alarms from GYDA to the operator's computer. All alarms will generate SNMP traps that are fed to the operator's computer as configured in chapter 8.1.

9. GYDA software upgrade

GYDA System Controller shall automatically detect all modules that are part of the flashlink or the modular ConQuer product ranges. As the product ranges are expanded with additional modules, a new release of the GYDA software is made in order to detect and monitor the new modules.

This section describes how to upgrade the software on your GYDA System Controller by downloading the new software version from our WEB page. You can either follow the procedure below in order to replace the software on the compact flash card on the controller itself, or you can upload the new software version to another compact flash card and replace the card on the controller with the new one.

9.1 Tools needed

- Laptop or standalone PC with PCMCIA interface
- PCMCIA adapter
- Undisker software (can be downloaded here: <http://www.undisker.com/>)

9.2 Procedure

- Access the GYDA from a web browser, go into the CONFIG page and write down or print all network & SNMP (only needed if SNMP is in use) settings.
- Create 2 new folders on your desktop, e.g. "GYDA_new" and "old_GYDA".
- Download the latest GYDA software version from:
<ftp://ftp.network-electronics.com/flashlink/GYDA/>
This is a compressed zip file archive containing a complete disk image of the latest GYDA software release.
- Extract this zip file into the "GYDA_new" folder.
- Remove the compact flash card from the GYDA module and insert it into the PCMCIA adapter.
- Put the PCMCIA adapter into your computer.
- Start the program Undisker

Creating a back up of the old GYDA software:

- Click on "Image" on the command line, select "Capture Floppy/ Removable" from the pull down menu.
- Select the letter that indicates your PCMCIA station.
- Type in the filename, i.e. "old_GYDA". Make sure that the format is Generic Disk Image (IMG) in the "Save as type" dialog box.
- Save the file in the folder, which you named "old_GYDA" on your desktop.

Upload new GYDA software to the compact flash card:

- Click on "File" on the command line, select open and open the "GYDA_new" folder on your desktop containing the new version of the GYDA software.
- Mark the "GYDA_x.xx" [latest version] and select "Open". The whole disk image for the new GYDA software will then appear on your screen.

- Click on “Image” on the command line, select “Write to Floppy/Removable” from the pull down menu and select the letter that indicates your PCMCIA station. The upload of the new disk image starts.
It will take several minutes to download the new GYDA software release into the compact flash card.
- Put the compact flash card back into your GYDA board and insert it in the flashlink frame where it was installed.
- Since new ones have replaced all the old configuration files, you will have to reconfigure the GYDA in order to restore the Ethernet connection. See “GYDA Quick Start Guide” for details.
- Access the GYDA from a WEB browser; enter the 'Config' page and type in the entire old network & SNMP (only needed if SNMP is in use) settings.
- The GYDA System Controller is now operating with the new software release.

Declaration of conformity with CE

This apparatus meets the requirements of EN 55103-1 (November 1996) with regard to emissions, and EN 55103-2 (November 1996) with regard to immunity; it thereby complies with the Electromagnetic Compatibility Directive 89/336/EEC.

General environmental requirements for flashlink and ConQuer equipment

1. The equipment will meet the guaranteed performance specification under the following environmental conditions:
 - Operating room temperature range 0°C to 50°C
 - Operating relative humidity range up to 90% (non-condensing)

2. The equipment will operate without damage under the following environmental conditions:
 - Temperature range -10°C to 55°C
 - Relative humidity range up to 95% (non-condensing)

3. Electromagnetic compatibility conditions:
 - Emissions EN 55103-1 (Directive 89/336/EEC)
 - Immunity EN 55103-2 (Directive 89/336/EEC)