

Adept SetNetGo Software Quick Start Guide



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Chapter 1: Introduction

This guide gives an overview of the use of Adept SetNetGo software, used to configure Adept mobile robots and the Motivity Core. These include the following:

- Adept MT400 robot
- Adept Motivity Core

The Adept MT400 robot and Motivity Core mobility controller come with SetNetGo software installed.

1.1 Software Overview

The Adept mobile robots and the Motivity Core come with the following software (listed from lowest- to highest-level):

μARCS

μARCS firmware runs on the microcontroller, and handles the low-level details of mobility. The controller handles the closed-loop motor controls and reports the robot's odometry (X, Y, and heading) and other conditions to ARAM for use in the high-level localization and navigation calculations.

μARCScf, COREcf

μARCScf and COREcf are PC-based applications used with the MT400 robot and Motivity Core, respectively, to configure various μARCS parameters in the robot's or Core's flash. They can also be used to upgrade the version of μARCS.

SetNetGo

SetNetGo is a secure web server (https) running on the robot or Core and accessed through the maintenance Ethernet port or, optionally when enabled, wirelessly by an offboard web browser over the network. SetNetGo is used to configure the onboard systems, such as the Ethernet and I/O ports, to configure the startup options and features of ARAM, and to perform systems diagnostics, such as examining and retrieving log files.

ARAM

ARAM runs on the robot's or Motivity Core's single-board computer (SBC). It performs all the high-level, autonomous robotics functions, including obstacle avoidance, path planning, localization, navigation, I/O, Ethernet communications, and external monitoring and control with the MobileEyes and MobilePlanner applications.

MobilePlanner

The MobilePlanner software is used to make the maps needed for your robot to perform autonomous mobile activities in its operating space.

MobileEyes

The MobileEyes software is used to monitor the activities of one or more robots, to have them perform mobile tasks in the mapped space, and to configure their operating parameters.

1.2 How to Get Help

Refer to the How to Get Help Resource Guide (Adept P/N 00961-00700) for details on getting assistance with your Adept software and hardware. Additionally, you can access information sources on Adept's corporate web site:

<http://www.adept.com>

For details on getting assistance with your Adept software or hardware, you can access the following information sources on the Adept corporate website:

- For contact information: <http://www.adept.com/contact/americas>
- For product support information: <http://www.adept.com/support/service-and-support/main>
- For user discussions, support, and programming examples: <http://www.adept.com/forum/>
- For further information about Adept Technology, Inc.: <http://www.adept.com>

1.3 Safety

Read the applicable user's guide before using the equipment.



CAUTION: The instructions for installation, operation, and maintenance given in the user's manual must be strictly observed.

Safety Requirements for Additional Equipment

If the robot or other equipment is to be used in an EU or EEA member country, all accessories used with the equipment must comply with the safety requirements in the European Machine Directive 89/392/EEC (and subsequent amendments) and related harmonized European, international, and national standards. For robot systems, these include: EN 775/ISO 10218, sections 5,6; EN 292-2; and EN 60204.

Qualification of Personnel

This guide assumes that all personnel have attended an Adept training course and have a working knowledge of the system. The user must provide the necessary additional training for all personnel who will be working with the system.



WARNING: Any person who programs, teaches, operates, maintains, or repairs an Adept robot system must be trained and must demonstrate the competence to safely perform the assigned task.

Chapter 2: PC Setup

This chapter covers the setup of your PC in preparation for configuring your robot or Core parameters with the SetNetGo software.

2.1 Tasks

- Set your PC's IP address
- Connect your PC to the robot or Motivity Core maintenance Ethernet port
- Launch a web browser to access SetNetGo

2.2 User's PC Requirements

- 586-class or later PC with Microsoft Windows[®], Linux[™], or Mac OS X[®]
- Ethernet port
- 100 megabytes of available hard-disk storage

2.3 Setting your PC's IP Address

The robot's and Core's maintenance Ethernet port is always enabled, and permanently set to IP address 1.2.3.4, with a netmask of 255.255.255.0, for direct, wired access to the onboard systems. Manually set your computer's Ethernet to an IP address of 1.2.3.x, where x is any number, 1 through 254, except 4, and with a netmask of 255.255.255.0. No special DNS or gateway settings are needed.

Windows

Start the Network Connections:Local Area Connection dialog for the selected Ethernet port:

(Windows) **Start > Settings > Network Connections > Local Area Connection**

Select Properties, and, from its dialog, scroll to and double-click the Internet Protocol (TCP/IP) option. In the Internet Protocol (TCP/IP) Properties dialog, click both 'Use the following...' associated radio buttons to enable them, and then type in the IP and netmask values.

Linux

Logged in as a superuser from a console window, use, for example:

```
ifconfig eth0 1.2.3.100 netmask 255.255.255.0
```

2.4 Connecting the PC to the Robot/Motivity Core

The Adept mobile robot or Motivity Core must be connected to your PC for setup and configuration.

- Connect a standard, pass-through CAT5 Ethernet cable from your computer's Ethernet port to the Adept maintenance Ethernet port.
- In place of the pass-through cable, you can also use a cross-over Ethernet cable with a network hub or switch.

2.5 Accessing SetNetGo

The SetNetGo software is an HTTPS server. It is accessed, using a web browser, through the Adept hardware's maintenance Ethernet port. If you are hard-wired to that port, and your IP address is correctly set, no username or password are needed.

The steps for connecting to SetNetGo are covered in the next section.



Figure 2-1. SetNetGo's Initial Screen

Chapter 3: Robot and Motivity Core Configuration

This chapter provides an overview of how to configure your Adept robot or Motivity Core with the SetNetGo software.

3.1 Connecting to SetNetGo

To access SetNetGo, start a web browser, such as Firefox or Internet Explorer, on your computer and connect to the URL: `https://1.2.3.4`, which is the Adept robot or Motivity Core maintenance Ethernet address. This connection uses no username or password.



Figure 3-1. Connect with SetNetGo from a Web Browser

NOTE: SetNetGo will display a certificate error (because the hardware isn't attached to the Internet), which you can ignore.

3.2 Configuration Parameters

Use SetNetGo to configure your hardware's Ethernet settings, enable or disable various features, configure I/O ports, and download logs and other information for tracking and debugging.

The parameters that specify the physical aspects of a robot, such as width and length, are set using parameter files, which are outside the scope of this guide.

NOTE: In many of the following screens, there are multiple sub-screens on which you can set parameters. This occurs, for example, if you are setting values for several different pins. You must click Apply after changing any values and before switching to another sub-screen, or those values will not be saved.

For example, in the following figure, if you don't click Apply before selecting another Pin Number, changes to the settings for Pin Number 1 will not be saved.

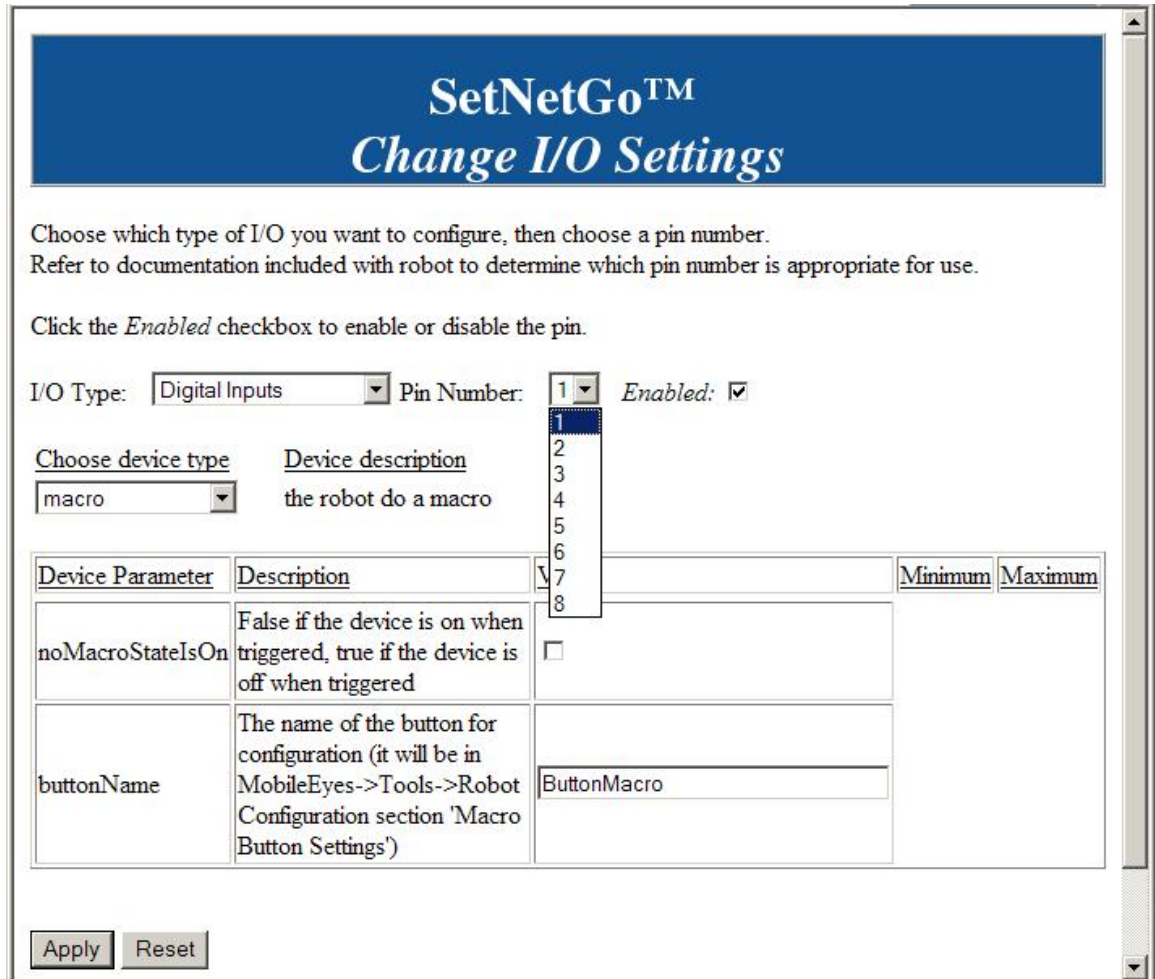


Figure 3-2. I/O Settings, Showing Pin Number

3.3 Status

The Status screen gives you access to various logs and other information. These are generally more for troubleshooting than for getting the robot up and running, so they are not covered in this guide.

3.4 Networking

NOTE: Changing the network never disrupts or disables the wired maintenance Ethernet connection on IP 1.2.3.4.

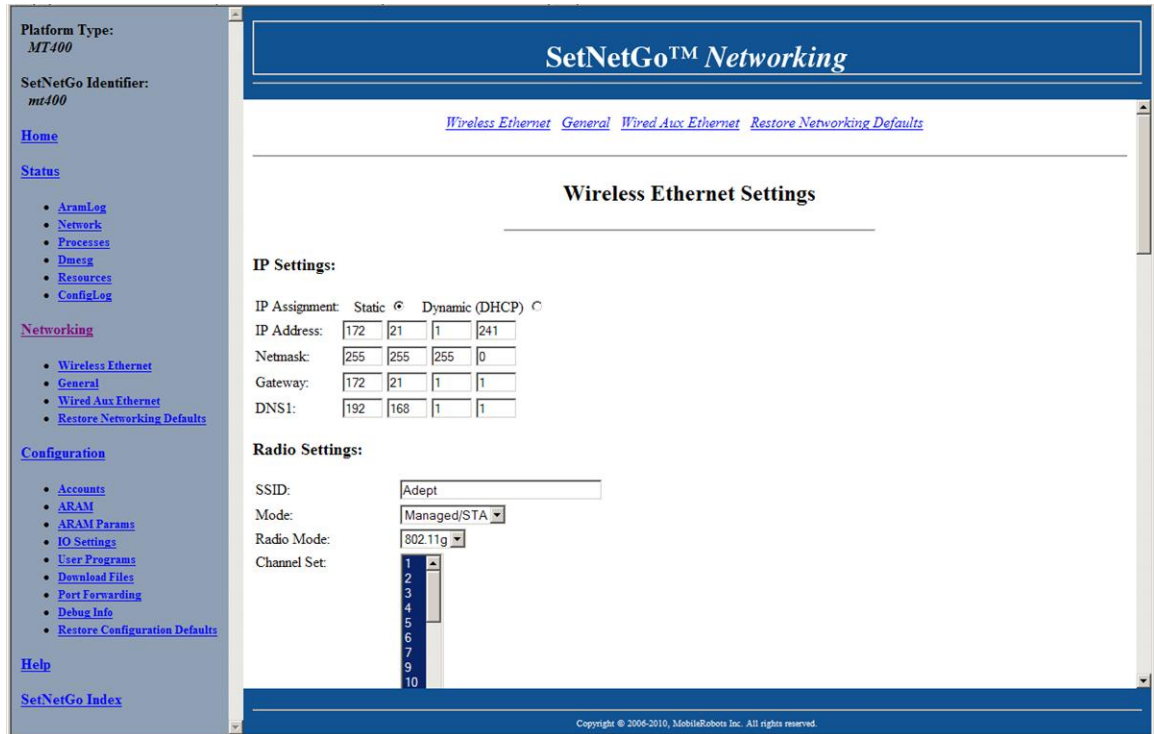


Figure 3-3. SetNetGo Networking Screen

Wireless Ethernet

Settings for the 802.11 interface, if equipped with one.

IP Settings

IP settings include Static/Dynamic Assignment, IP Address, Netmask, Gateway, and DNS1.

Radio Settings

Radio Settings include SSID, Radio Mode (802.11a, b, g, or Auto), Channel Set, and Roaming.

Roaming settings control how much scanning the robot does as it travels. Aggressive will do more scanning, which might be needed in a "noisy" environment. This parameter can be set to normal, light, or aggressive. Use normal as a starting point.

RSSI Roam Threshold - This should be left at the default value of 0, unless directed otherwise by Adept support personnel.

Security Settings

Security settings include enabling encryption, specifying authentication, WEP settings (WEP Key Number, Wep KEYS), WPA-PSK, and EAP information (identity and password).

General

Robot Identifier - Name used to identify the robot via SetNetGo. When set, this is also used for the wireless nickname and the identifier for the central server.

NTP Client - Enable or disable the use of the Network Time Protocol. The time is updated every 60 minutes.

NTP Server Address - The IP address of the server to use.

Timezone - Used for scheduling across different time zones.

Enabling SetNetGo - SetNetGo is always enabled on the 1.2.3.4 Ethernet address. It can also be enabled or disabled, for security purposes, for the wired Ethernet and wireless Ethernet interfaces. By default, only the 1.2.3.4 address is enabled for new robots and Motivity Cores.

SetNetGo Password / Confirm Password - This is the password that will be used to access SetNetGo via the wired Ethernet or wireless Ethernet interfaces. Setting the password enables it.

Time and Date - The time and date can be set manually. Use the format displayed in the entry fields.

Wired Aux Ethernet

This setting is outside the scope of this guide.

NOTE: This option does not apply to the Motivity Core.

Restore Networking Defaults

This option restores all of the Networking and General settings to the factory defaults.

NOTE: The Motivity Core does not come with defaults.

3.5 Configuration

Accounts

Use Accounts to add, remove, and modify accounts used to connect to MobileEyes and MobilePlanner. The use of the accounts is controlled by the enableAccounts ARAM parameter.

Consider creating password-protected user Accounts under the Configuration section in the SetNetGo TOC. Note that you will have to enable the enableAccounts parameter of ARAM and Apply that change in order to set up usernames and passwords. Also note that whenever you Apply an ARAM option, ARAM, as well as any user programs, will be stopped and restarted in order to effect your changes.

User accounts are for client connections to ARAM, such as through MobileEyes and MobilePlanner, and not with SetNetGo. Change SetNetGo's admin password under the General section of the Networking page.

With user accounts you can restrict what particular users can do through MobileEyes and MobilePlanner. Use the View/Modify Permissions page from the Accounts page.

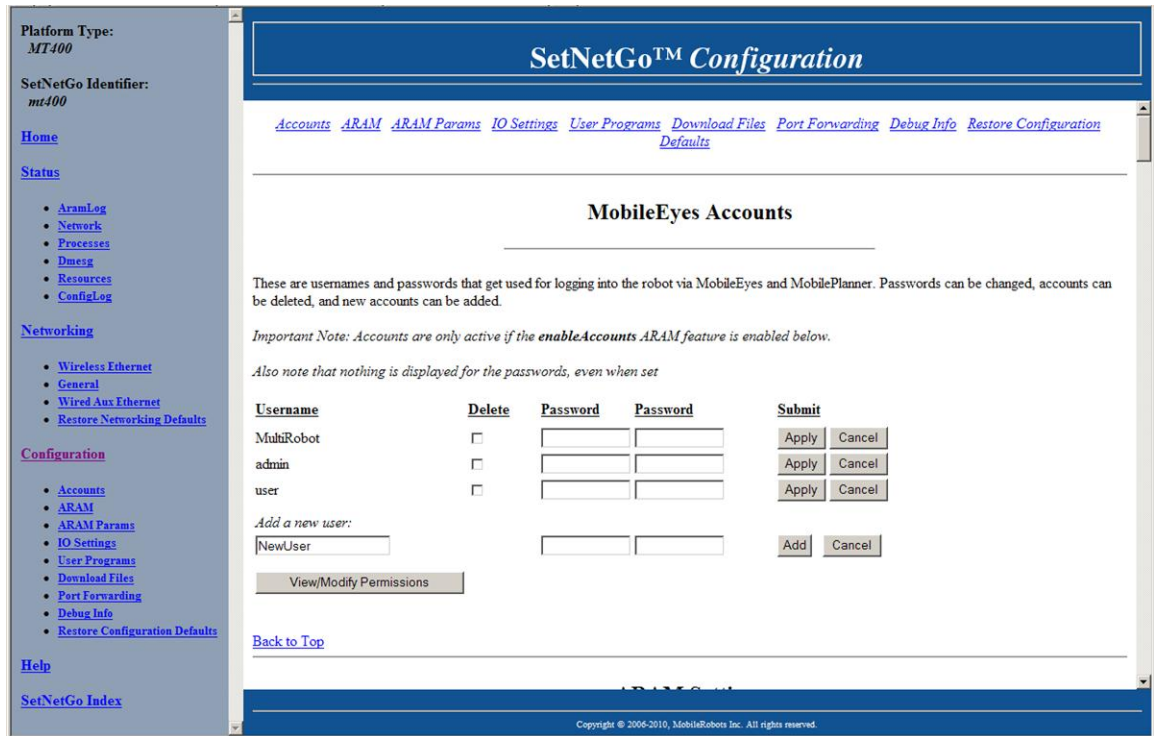


Figure 3-4. SetNetGo Configuration Screen

ARAM

Available ARAM Features

This section controls the various ARAM features that can be enabled and disabled.

The features range from enabling debug mode to enabling triangle driving features. All of the features are dependent on the version of ARAM installed.

Change account info for Central Server

This lets you change the username and password that the robot will use when making a connection to the Fleet Appliance (aka Central Server). This feature is off by default, but can be turned on by checking the Central Server checkbox.

Update ARAM version

You can check the version of ARAM that is installed, and upload a new version of the ARAM software to be installed.

Stop/Start ARAM

ARAM will be started and stopped automatically as changes are made. This section can be used to manually force a start or stop of the software.

ARAM Crash Recovery

If enabled, ARAM Crash Recovery will restart the ARAM binary any time that it is found to have stopped. This is useful in the unlikely event that the system runs out of memory, or some other error occurs and stops the ARAM process.

ARAM Parameters

Update Robot Parameters File

Parameter files are outside the scope of this guide.

I/O Settings

Configured Digital Inputs, Configured Digital Outputs

These two sections control the availability and names of the digital input and output pins, as well as the analog and powerboard-switched output settings.

These should only be changed by advanced users. They can be configured to use existing device drivers, such as heat-sensing or water-detection, or can be set up as generic named pins. Not all robots have the ability to use any or all of these features.

User Programs

User Programs are outside the scope of this guide. They apply only to the MT400, not to the Motivity Core.

Download Files

This zips and downloads all of the files that are stored in the home, data, and log directories. This includes raw map scans, final map files, and data files that were generated by the robot.

Port Forwarding

NOTE: Ethernet port-forwarding applies only to MT400 robots, not to the Motivity Core. Serial port-forwarding applies to both.

This section controls the serial and TCP port-forwarding to be set up on the robots.

Port-forwarding is forwarding from a TCP port on the wireless interface and is redirected to a TCP port on an IP address that is accessible via the wired Ethernet interface. The interface needs to be set to accessory mode for this to work.

The two serial ports can be forwarded from a TCP port on the wireless Ethernet interface.

Debug Info

This option will download a file that contains debugging information for Adept Support when responding to a request for technical support. Send this along with all requests for support.

Restore Configuration Defaults

This option will restore all setting on this page back to the original factory defaults.



CAUTION: This will reset MobileEyes/MobilePlanner accounts settings, I/O Settings, ARAM features settings, and more.

3.6 Help

This lists help text.

3.7 Index

This lists all topic headings.



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