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Engineer's Guide

*SMART TRAC<sup>TM</sup> Genius  
PCIM Card*

MagneTek, Inc. - Drives & Systems Division



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# Important Safety and Warranty Information

## Warnings, Cautions and Notes



### **WARNING**

A statement of conditions which **MUST BE OBSERVED** to prevent personal injury or death.



### **WARNING - ESD**

A statement of conditions which must be observed to prevent damage to components due to ESD (ElectroStatic Discharge) and to prevent personal injury or death.



### **CAUTION**

A statement of conditions which must be observed to prevent undesired equipment faults, Smart Trac AC1 system degradation and damage to equipment.

### **IMPORTANT**

A statement of conditions which should be observed during Smart Trac AC DeviceNet setup or operation to ensure dependable service.

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**NOTE:** Notes indicate information that is in addition to a discussion of the topic in adjoining text. Alternatively, it may limit or restrict the paragraph(s) that follow(s) to specific models or conditions.

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**TIP -** Tips indicate information that should make a procedure easier or more efficient.

## General Safety Precautions - Warnings

Important safety information follows. Please *read and understand* all precautions listed below before proceeding with the specification, installation, set-up or operation of your Smart Trac AC1. Failure to follow any of the following precautions may result in personal injury or death, or damage to the equipment.



### **WARNING - ESD**

The Control Printed Circuit Board (PCB) employs CMOS Integrated Circuits that are easily damaged by static electricity. Use proper ElectroStatic Discharge (ESD) procedures when handling the Control PCB. See Smart Trac AC1 Technical Manual for details. Failure to comply may result in damage to equipment and/or personal injury.

## Important Warranty Information.

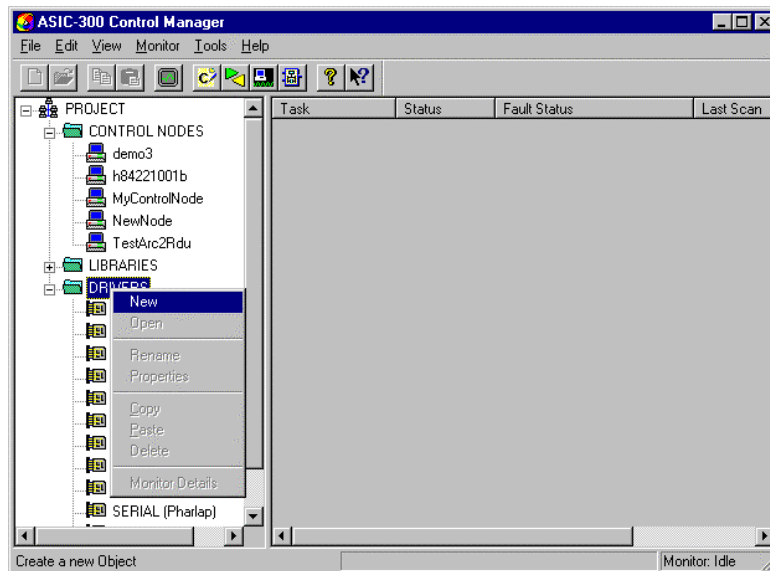
Do not modify your Smart Trac AC1, its components, or any of the procedures contained in the technical documentation supplied by MagneTek. Any modification of this product by the user is not the responsibility of MagneTek and will void the warranty.

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# Genius PCIM Driver Installation

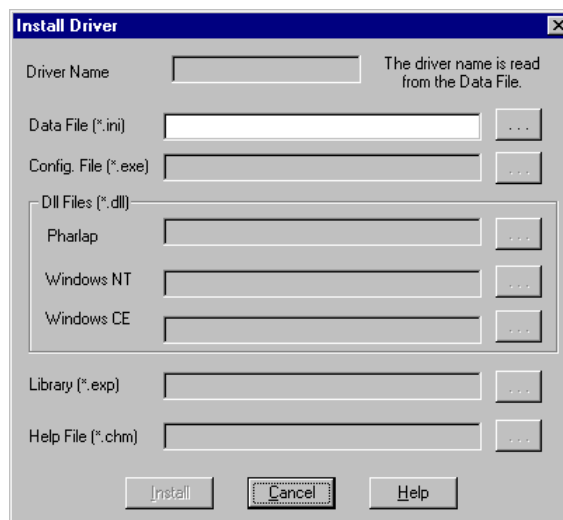
## Installing the Smart Trac Genius PCIM Driver

1. Click **START, PROGRAMS, MAG-300, CONTROL MANAGER**. The Control Manager software loads.
2. Expand the **Project** folder tree and right click the **Drivers** folder. A selection box appears with **New...** highlighted.



*Figure 1. The New Device Driver Selection box.*

3. Click the New selection box. The **Install Driver** dialog box appears.

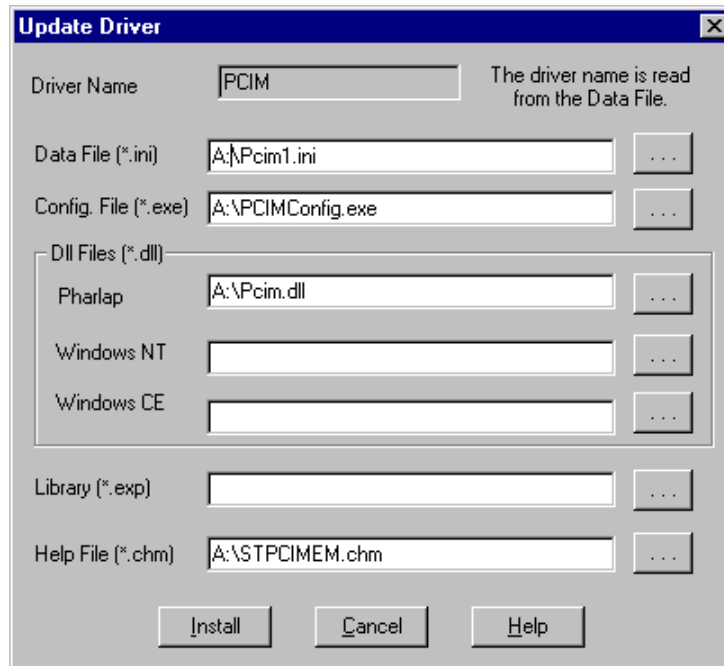


*Figure 2. I/O Driver Install dialog box.*

To view driver .dll files, you must select **View All Files** in **Windows NT Explorer**. If you have **Windows NT** without **IE4.0** installed: from **Explorer**, click **View**, **Options**, click **View** tab. In **Hidden Files**, click **Show all files** If you have **IE4.0** installed: from **Explorer**, click **View**, **Folder Options**, click the **View** tab. In **Advanced Settings**, click **Show All Files** in the **Hidden files** folder.

4. Click the small box containing three dots (...) to the far right of the **Data File (\*.ini)** box. This allows you to browse for the initialization file on your system (generally the driver will be installed from your CD\_ROM). For our example, we assume the file is on a floppy in the A: drive. Find the file **PCIM1.ini** and **OPEN** it. Two more boxes, for entry of **Config.exe** and **Help.exe**, become active.
5. Click the small box containing three dots (...) to the far right of the **Config (\*.exe)** box. Browse for the **PCIMConfig.EXE** file. Press **TAB** or **ENTER**. More boxes will become active.
6. Click the small box containing three dots (...) to the far right of the **Dll files (\*.dll)**, **Pharlap** box. Browse for the **PCIM.dll** file. Press **TAB** or **ENTER**.
7. Click the small box containing three dots (...) to the far right of the **Help (\*.chm)** box. Browse for the **STPCIMEM.chm** file. Press **TAB** or **ENTER**. The screen should look like the following (if installing from the A:\ drive).





*Figure 3* The completed example Genius PCIM Driver Install screen

8. Click **INSTALL**. When finished, you are returned to Control Manager. The driver name should appear in its own folder within the **Drivers** folder.
9. The Genius PCIM card library is ready for use.

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# PCIM Driver Addressing

## PCIM Card Overview

A PCIM (PC Interface Module) Card is used to establish a connection between a PC and a Genius I/O System. There are two types of PCIM Cards: Single and Dual Port. Each port on a PCIM Card is used to communicate on a given Genius I/O bus. Each Genius I/O bus can support up to 30 I/O Blocks.

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**Note:** If you have a Dual Port PCIM card, you must configure an interface card for each port.

**Note:** Refer to **Interface Card Operations** help for information on creating an interface card.

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## PCIM Card Physical Addresses

When a PCIM interface card is created, physical addresses are defined that can be assigned symbol names and used in programs. These addresses are described in the following tables.

### Card Level Physical Addresses

The following physical addresses are created for each PCIM Interface Card configuration. Typically, this information is needed only for diagnostic purposes.

Field	Description
BoardOK	This BOOL will be TRUE when no modules are faulted. If any modules are faulted, this BOOL will become FALSE.
BusErrCnt	Number of bus communication errors.
BusScanTime	Number of milliseconds per scan of the Genius bus.
Cfg Mismatch	This BOOL will be TRUE if the modules actually attached to the bus do not match the blocks set up in the configuration.

Field	Description
HHMPresent	Hand-held monitor present.
HrtBt	Card healthy.
HWStatus	Used for troubleshooting, should be 0.
ModuleFound	Module(s) found that were not in the configuration.
ModuleMissing	Module(s) missing that are in the configuration.
RevNo	Firmware revision.

## Block Physical Addresses

There is a group of physical addresses for each block. They are preceded by Addr00 through Addr31

Field	Description
BroadcastCtrlDataLen	Bytes of input data.
Cfg	1 = input; 2 = output; 3 = both.
DirectedCtrlDataLen	Bytes of output data.
Model	Block ID code.
OutputsDisabled	Outputs are disabled for this block (e.g., by the hand-held monitor).
Present	Block is present.
Status	Indicates if driver is successfully communicating with the block.

## Global Physical Addresses

There is a group of physical addresses for each device for which global data has been enabled. They are preceded by Addr00 through Addr31

Field	Description
GlobalWord00 through GlobalWord31	Global data words are inputs for devices that are not the current device address. For the current device, the global data words are outputs.

## I/O Physical Addresses

There is a group of physical addresses for each I/O configured. They are preceded by their respective bus address (Addr00 through Addr31). The group of physical addresses created is dependent on the I/O module; refer to the module's documentation for more information.

## PCIM Card Definition

The PCIM Card Definition dialog is used to define the configuration of the PCIM Card's hardware and the I/O Blocks on the connected Genius I/O bus(es). The following figure shows an example of the PCIM Card Definition dialog box. Refer to the following table for field descriptions.

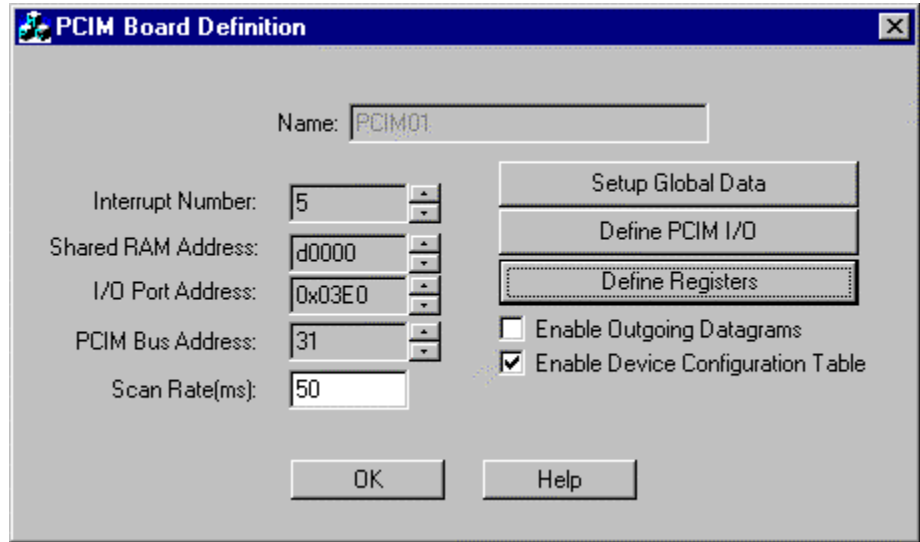


Figure 4. PCIM Board Definition dialog box.

Field	Description
Name	The Name is used to describe the Card in the I/O Point locations in the rest of the software. This field is displayed but cannot be edited in this dialog box. It is assigned when the interface card is created.
Network Number	The user must select an arbitrary network number between 1 and 9. The PCIM I/O driver cannot support more than 9 I/O buses. Each network number in a configuration MUST be unique. The network number is used to link the desired physical I/O bus to the logical port defined through this Dialog.
Interrupt Number	<p>The PCIM I/O Driver uses the interrupt specified in this field to handle fault reporting and configuration change notification for the I/O scanner. The value specified here must match the value specified for the card.</p> <p>Any I/O Block or circuit faults will be reported by an interrupt from the PCIM Card within one I/O scan period. A fault will cause an executing program to ESTOP. A configured I/O Block going off-line is also considered to be a fault.</p>
Shared RAM Address	The shared RAM Address field specifies the location of the 16K buffer used to communicate with the specified port on the PCIM Card. Only legal values are presented for selection. Each location must be unique in a configuration, two ports cannot share the same RAM buffer.

Field	Description
	<p>The entire Shared RAM Address Space must not be used by any other device on the PC. Conflicts can occur and prevent the PCIM Card from working correctly. The value specified here must match the value specified by the dipswitch settings on the Single Port Card or in the Configuration Program for the Dual Port Card.</p>
I/O Port Address	<p>This field specifies the starting location of the 4 bytes used to configure and control the port. The second two bytes are the bytes which are specified by the dipswitches on the Dual port card (e.g. a value of 0x222 would be mapped to 0x220).</p> <p>The I/O Port Address must match the value specified by the dipswitches for the Single Port Card and be 2 less than the value specified by the dipswitches in the Dual Port Card.</p>
PCIM Bus Address	<p>This field specifies the serial bus address for this port.</p>
Setup Global Data Button	<p>This button allows the user to setup global data for the port.</p>
Define PCIM I/O Button	<p>The Define PCIM I/O Button evokes the Genius Bus Address Definition Dialog. This Dialog is used to specify the devices on the Genius I/O bus.</p>
Define Registers	<p>Defines registers to which symbol names can be assigned.</p>
Enable Device Configuration Table	<p>If checked, creates the tags listed in the Block Physical Address table.</p>
OK Button	<p>The OK Button will save any changes and terminate the edit session for the configuration.</p>

## Global Data Setup

Global data words allow PCIM devices to communicate with each other. This screen allows the user to configure global data on the Genius bus. Each device on the bus can send up to 128 bytes of global data to each of the other nodes on the bus. In this dialog, check Enable Global Data for each device that will be sending global data to the PCIM, and if the PCIM will be sending global data to other devices, check Enable Global Data for the device matching the PCIM's bus address.

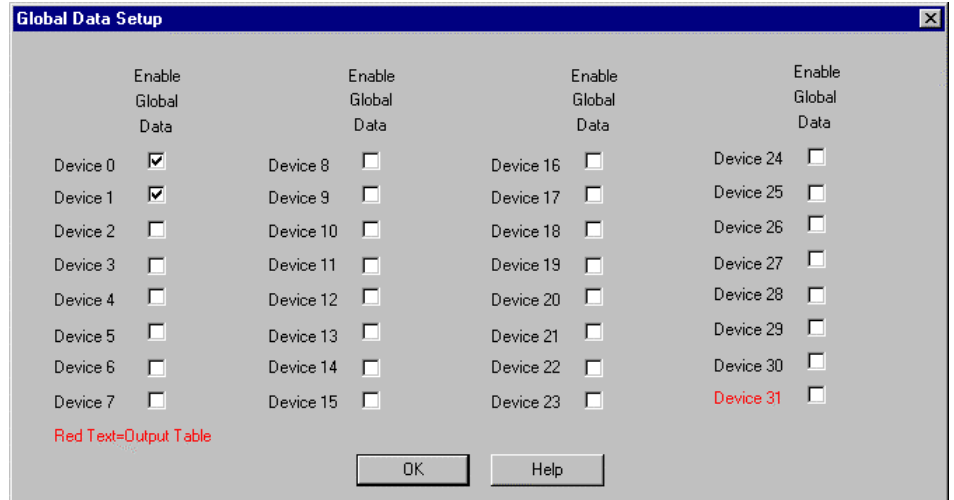


Figure 5. Global Data Setup dialog box.

Field	Description
Enable Global Data	<p>Check appropriate boxes to set up I/O tags to be associated with the global data for the bus address.</p> <p>If the bus address is not this interface card's address, input physical addresses will be created that can be assigned symbol names.</p> <p>If the bus address does correspond to this interface card's address (red text), output physical addresses will be created that can be assigned symbol names.</p>

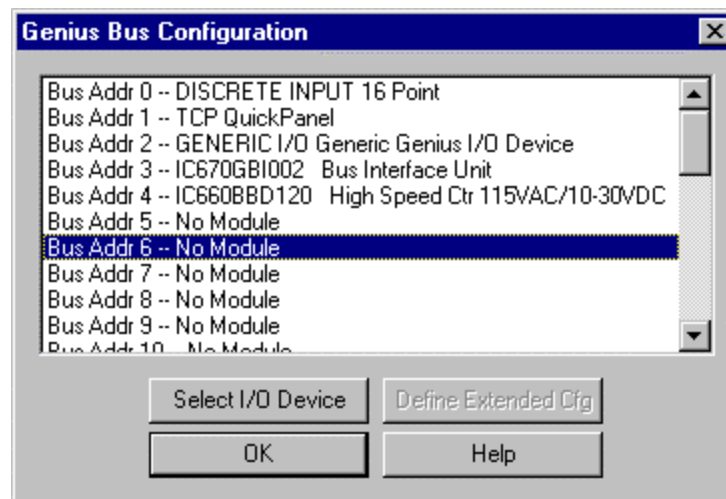




# Software Configuration

## Genius Bus Configuration

The Genius Bus Configuration dialog is used to enter and edit the I/O blocks defined on a Genius I/O bus. Each I/O block is defined in an address location on the Genius I/O bus. The legal addresses range from 0 to 31. The defined blocks are listed in the view scroll region.



*Figure 6. Genius Bus Configuration dialog box.*

Field	Description
Select I/O Device	Use this button to change the type of I/O block at the address currently selected. When pressed a dialog box appears with a list of I/O blocks. Select the desired I/O block from the list. To remove an I/O block from the bus, select the block, press this button, and select No Module as the new block type.
Define Extended Cfg	If the selected I/O device has an extended configuration, selecting this button displays a dialog box to perform the extended configuration.

Field	Description
OK Button	The OK Button will save any changes and return to the previous dialog box.

Refer to Bus Interface Unit for this I/O block's extended configuration.

## Bus Interface Unit

If a Bus Interface Unit has been defined in the Genius bus configuration, it has an extended configuration.

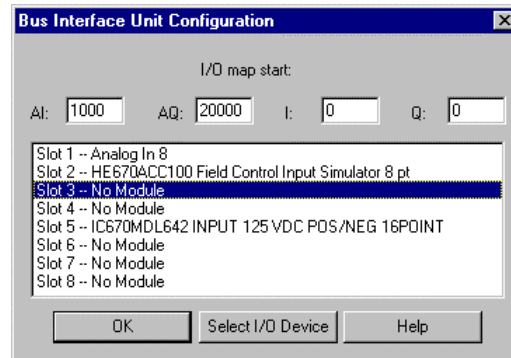


Figure 7. Edit Interfact Unit Configuration dialog box.

Field	Description
I/O Map Start	These values must match the values assigned in the BIU using the Hand-Held Monitor.
Select I/O Device	Use this button to change the type of module at the slot currently selected. When pressed a dialog box appears with a list of I/O modules. Select the desired I/O module from the list. To remove an I/O block from the bus, select the block, press this button, and select No Module as the new block type.

### Select Module Type

When the *Select I/O Device* button is selected from the *Bus Interface Unit Configuration*, the following dialog box appears. Select the module type from the list box, then enter the appropriate I/O map address field.

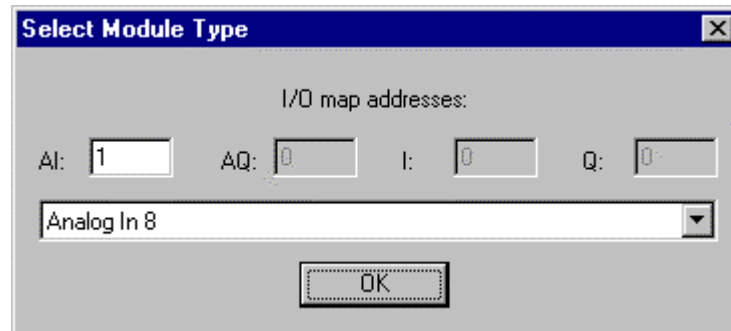


Figure 8. Select Module Type dialog box.

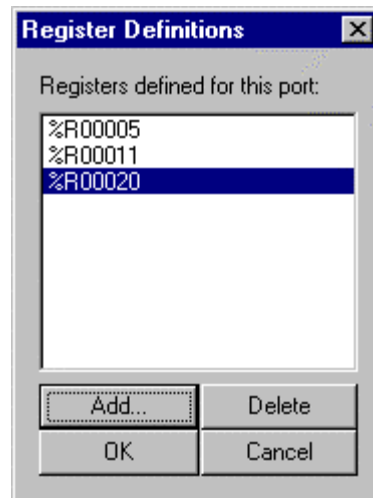
Field	Description
I/O map addresses	Depending on the I/O module selected, one or more of these fields are enabled. These values must match the values in the block (as assigned using the Hand-Held Monitor).

## Register Definitions

Registers can be defined that can respond to unsolicited messages (via datagrams). These registers are accessed by PLC address (e.g., %R00005). After defining a register, it appears in the physical address space for the interface card in the Symbol Manager. A symbol name can then be assigned to the register.

### To define registers

Choose *Define Registers* from the *PCIM Board Definition* dialog box. The *Register Definitions* dialog box appears in which registers can be defined.



*Figure 9.* The Register Definitions dialog box.

Field	Description
Add	Adds register.
Delete	Deletes the selected register.
OK	Accepts changes.
Cancel	Cancels changes.



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# Troubleshooting the Genius PCIM Card

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# Glossary of Terms

**datagrams**

Unacknowledged packets of information set over a network as individual packets without regard to previous or subsequent packets. Transmissions in which sections of a message are transmitted in scattered order and the correct order is re-established by the receiving workstation.





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