CTRIO WORKBENCH, I/O MAP

CHAPTER
7

In This Chapter...

I/O Map Dialog

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The **I/O Map** dialog panel is used to allocate base controller memory to be used with CTRIO(2) modules. Each module will require unique memory ranges for exchanging data with the base controller. All of the *Direct*LOGIC ladder examples use the "2 ranges" mode with the Input Map starting at V2000 and the Output Map starting at V2030.

The I/O Map dialog is accessible from the main Workbench dialog. On the main Workbench dialog, click the button labeled **I/O Map**.
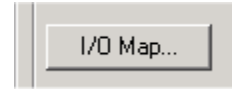
I/O Map...

The I/O Map dialog shows the controller I/O memory used by the CTRIO(2) module, divided into three groups: Input Functions, Output Functions and System Functions. Just below the Map Display Mode field, you will see tabs labeled Input Functions, Output Functions and System Functions.

Click on the **Input Functions** tab or **Output Functions** tab to display the CTRIO(2) module's assigned input or output functions (quad counter, pulse catch, pulse out, discrete out, etc.). For each input and/or output function assigned, the I/O Map dialog displays the **Input Data** (**CTRIO > Controller**) addresses and **Output Data** (**Controller > CTRIO**) addresses based on the Map Display Mode and the starting I/O addresses specified (See Chapter 10 for the memory map addresses and offset address tables).

Click on the **System Functions** tab to display the System Functions addressing. The command bits are used when reading from and writing to the CTRIO(2)'s internal registers. The other bits can be used to monitor the status of each individual I/O point on the module.
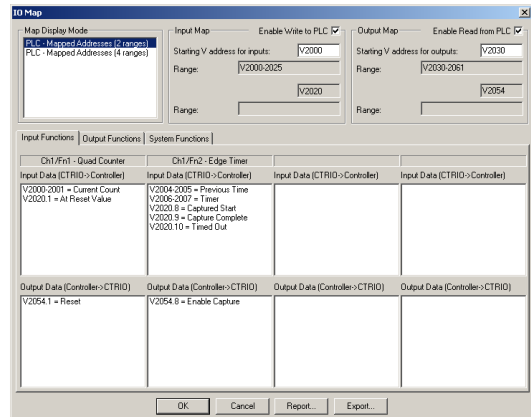
I/O Map with DirectLOGIC PLC (2 ranges mode)

NOTE: *Do not use "2 ranges" mode with a D2-240 CPU.*

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When using the CTRIO(2) module with a *Direct*LOGIC PLC in "2 ranges" mode, enter the starting V memory location for the inputs and outputs in the appropriate fields at the top of the I/O Map dialog. In the I/O Map dialog shown here, note that the Input, Output and Systems Functions addresses shown are in word and bit-of-word formats. Thus, word and bit-of-word addressing will need to be used in the ladder logic program to address the CTRIO(2)'s control and status words/bits.
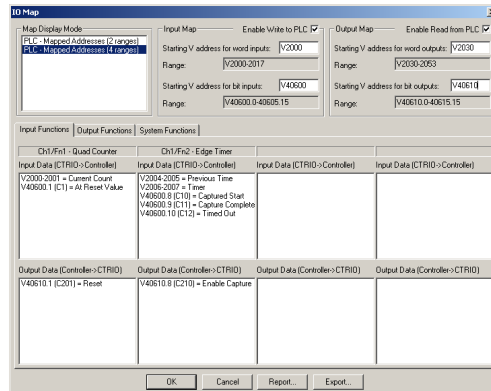
I/O Map with DirectLOGIC PLC (4 ranges mode)

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When using the CTRIO(2) module with a *Direct*LOGIC PLC in "4 ranges" mode, enter the starting V-memory location for the *word* inputs and outputs and the starting V-memory location for the *bit* inputs and outputs. Control relays (V40600 range) would usually be used for bit control.

In the I/O Map dialog below, note that Input, Output and Systems Functions addresses shown are in word and Control Relay formats. Thus, word and Control Relay addressing will need to be used in the ladder logic program to address the CTRIO(2) control and status words/bits. Remember that the CTRIO(2) module will consume the address ranges listed in all four range fields.

I/O Map with *Direct*LOGIC PLC with CTRIO(2) in ERM/EBC Network

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When using the CTRIO(2) module with a *Direct*LOGIC PLC in an ERM/EBC network, first configure the ERM network using the ERM Workbench utility. Then, from ERM Workbench, enter the CTRIO(2) module Starting input and output V-Map addresses into CTRIO Workbench I/O Map starting V-memory location for the *bit* inputs and outputs.

NOTE: *If there is an 8-pt. discrete I/O module preceding the CTRIO module in the EBC base, enter the appropriate starting V-memory bit I/O address in CTRIO Workbench with a V40xxx.8 address as shown in the I/O Map example below (bottom right). This corrects the word offset created by the 8-pt. discrete I/O module. In the example below, note that V40416 Hi(**8-15**) is the starting ERM Workbench CTRIO input V-Map location due to the 8-pt. discrete input module preceding the CTRIO module.*

I/O Map with EBC/WinPLC

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When using the CTRIO(2) module in an EBC/WinPLC system (non PLC system), the addressing will be shown as Native EBC/WinPLC addresses or if using Think&Do, the addressing can be shown as Native Think&Do addresses. Just click on the desired mode in the **Map Display Mode** field. The 8-pt module offset described in the note above does not apply to EBC/WinPLC or EBC/Think&Do systems.

# I/O Map with an H2-PBC or T1H-PBC * Profibus DP Controller

When using the CTRIO(2) module with an H2-PBC or T1H-PBC native Profibus addressing will be displayed in the I/O Map as shown below.
For the T1H-PBC, the first two output bytes of memory are automatically reserved for the Hot Swap base-rescan feature. The H2-PBC does not support the Hot Swap feature.

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H2-PBC I/O Map
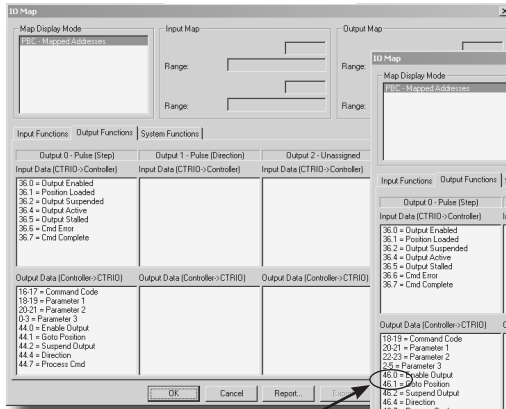
**T1H-PBC I/O Map (see note below)**
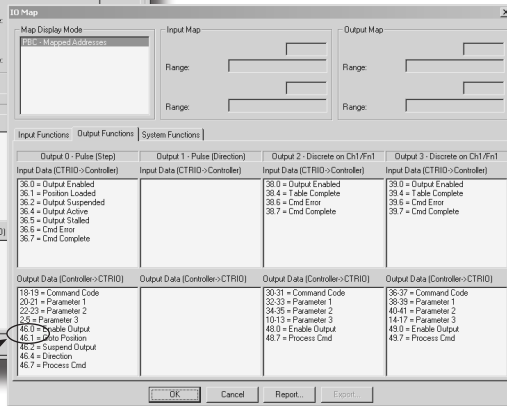
Note that output bytes 0-1 are reserved for the Hot Swap base rescan feature.

Creating an Offline File for H2-CTRIO(2)/T1H-CTRIO Module

For the T1H-PBC, enter a 2 byte Output Offset to accommodate memory used by the Hot Swap base-rescan feature. This does not apply to an H2-PBC system. The example shown below assumes the T1H-CTRIO module is the first module in the system.
The CTRIO(2) modules consume 44 bytes of input memory and 52 bytes of output memory. The maximum amount of I/O memory per H2/T1H-PBC station is 244 input bytes and 242 output bytes. You may need to refer to the Profibus User Manuals (H2-PBC-M / T1H-PBC-M) for information on bytes used by discrete and/or analog I/O modules in order to determine the appropriate Starting input and output byte offset addresses for the CTRIO(2) module.

For the T1H-PBC, enter a 2 byte Output Offset to accommodate memory used by the Hot Swap base-rescan feature.
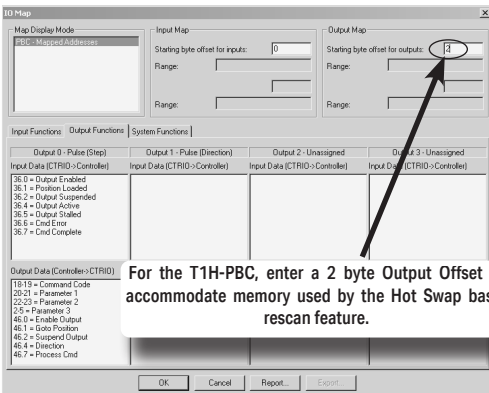
*NOTE: T1H-PBC is obsolete as of 08/20. No replacement available.*

Printing a Memory Map Report

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You can print an I/O Memory Map Report from the I/O Map dialog or save as a (.txt) file. Click on the **Report** button located near the bottom of the I/O Map dialog to display the **Memory Map Report** dialog.

The addresses listed in the Memory Map Report are a combination of the Input Functions, Output Functions and Systems Functions addresses shown in the I/O Map dialog. It is very convenient to have a printed list of the CPU/controller I/O memory used by the CTRIO(2) module while writing the control program.
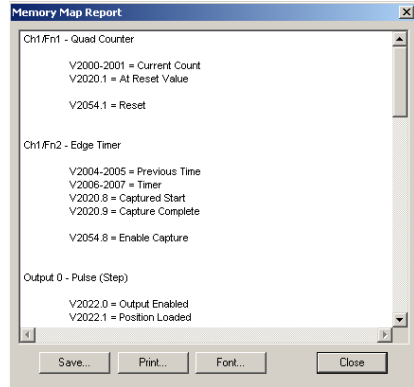
Exporting to *Direct*SOFT

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You can export a (.csv) file containing addressing and nicknames used in the I/O Map dialog. Click on the **Export** button located near the bottom of the I/O Map dialog to display the **Export to *Direct*SOFT** dialog shown below on the left.

The (.csv) file (shown below on right) contains a combination of the Input Functions, Output Functions and Systems Functions addressing and nicknames shown in the I/O Map dialog. This file can be imported into your *Direct*SOFT ladder logic program (*Direct*SOFT>File>Import>Element Documentation).

If you have more than one CTRIO(2) module in a system and intend to create a (.csv) file for more than one module, use the Add Prefix or Add Suffix option to distinguish one module nickname from the others. For example, add prefix or suffix "S1" to identify the CTRIO(2) module nicknames in slot 1.