

MVI71 Backplane Data Transfer

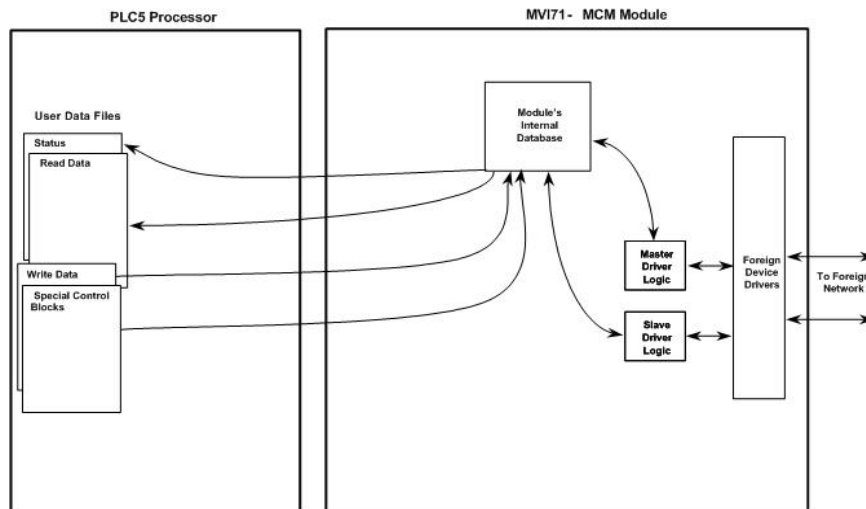
The MVI71-ADM module communicates directly over the backplane. Data is paged between the module and the PLC processor across the backplane using the module's input and output images or directly to the processor using the side-connect interface (requires a side-connect adapter). The update frequency of the images is determined by the scheduled scan rate defined by the user for the module and the communication load on the module. Typical updates are in the range of 2 to 10 milliseconds.

This bi-directional transference of data is accomplished by the module filling in data in the module's input image to send to the processor. Data in the input image is placed in the Controller Tags in the processor by the ladder logic. The input image for the module is set to 64 words. This large data area permits fast throughput of data between the module and the processor.

The processor inserts data to the module's output image to transfer to the module. The module's program extracts the data and places it in the module's internal database. The output image for the module is set to 64 words. This large data area permits fast throughput of data from the processor to the module.

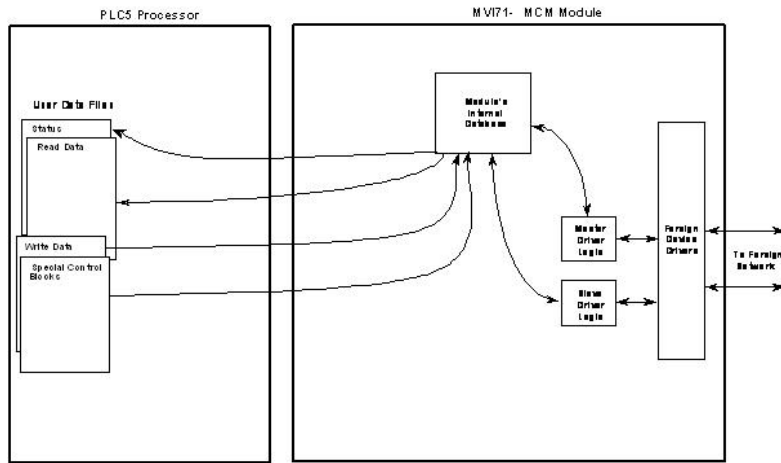
The following illustration shows the data transfer method used to move data between the PLC processor, the MVI71-ADM module and the foreign device.

Block Transfer



The following illustration shows the data transfer operations used when using the side-connect interface (requires the side-connect adapter):

Side-Connect



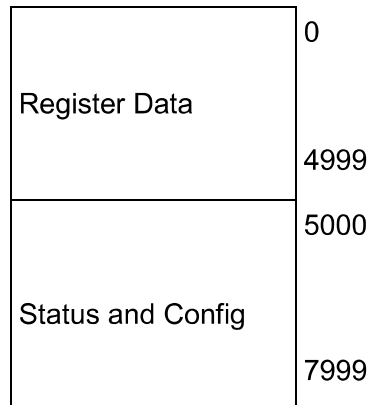
When the side connect interface is used, data is transferred directly between the processor and the module. The module's program interfaces directly to the set of user data files established in the PLC to pass all data between the two devices. No ladder logic is required for data transfer, only the establishment of the data files.

All data transferred between the module and the processor over the backplane is through the input and output images. Ladder logic must be written in the PLC processor to interface the input and output image data with data defined in the Controller Tags. All data used by the module is stored in its internal database.

Module's Internal Database Structure

5000 registers for user data

3000 words of configuration and status data



Data contained in this database is paged through the input and output images by coordination of the PLC ladder logic and the MVI71-ADM module's program. Up to 60 words of data can be transferred from the module to the processor at a time. Up to 60 words of data can be transferred from the processor to the module. Each image has a defined structure depending on the data content and the function of the data transfer.

Normal Data Transfer

Normal data transfer includes the paging of the user data found in the module's internal database in registers 0 to 4999 and the status data. These data are transferred through read (input image) and write (output image) blocks. The structure and function of each block is discussed in the following topics.

Block Request from the Processor to the Module

These blocks of data transfer information from the PLC processor to the module. The following table describes the structure of the output image.

Offset	Description	Length
0	Write Block ID	1
1 to 60	Write Data	60
61 to 63	Spare	3

The Write Block ID is an index value used to determine the location in the module's database where the data will be placed. Each transfer can move up to 60 words (block offsets 1 to 60) of data.

Block Response from the Module to the Processor

These blocks of data transfer information from the module to the PLC processor. The following table describes the structure of the input image.

Offset	Description	Length
0	Read Block ID	1
1	Write Block ID	1
2 to 61	Read Data	60
62 to 63	Spare	2

The Read Block ID is an index value used to determine the location of where the data will be placed in the PLC processor user data table. Each transfer can move up to 60 words (block offsets 2 to 61) of data.

The Write Block ID associated with the block requests data from the PLC processor. Under normal program operation, the module sequentially sends read blocks and requests write blocks. For example, if the application uses three read and two write blocks, the sequence will be as follows:

R1W1→R2W2→R3W1→R1W2→R2W1→R3W2→R1W1→

This sequence will continue until interrupted by other write block numbers sent by the controller or by a command request from a node on the foreign network or operator control through the module's Configuration/Debug port.

If the ladder logic does not send a BTW instruction to the module quickly enough, it is possible for the MVI71-ADM module to send a new BTR instruction requesting the same write block ID.

6.4 MVI71 Ladder Logic

The ladder files included are:

File Name	Description
MVI71ADM_BT.RSP	RSLogix5 Sample Program (For Backplane Interface)
MVI71ADM_SC.RSP	RSLogix5 Sample Program (For Side-connect Interface)

Note: The ladder files for the various hardware platforms are provided with the ADM module. They are also available on the ProSoft Technology web site at www.prosoft-technology.com.

6.4.1 Sample Ladder Logic

Ladder logic is required for application of the MVI71-ADM module when using the block transfer interface. Ladder logic is only required when using the side-connect interface to perform special functions. Tasks that must be handled by the ladder logic are module configuration, data transfer, and special block handling. This section discusses each aspect of the ladder logic as required by the module. The sections that follow describe the simple ladder logic example provided for each interface.

Block Transfer Interface

When the block transfer interface is used, ladder logic is required to transfer all data between the module and the processor.

Main Routine

The Main program file is used to jump to the routine that processes the BTR and BTW functions for the interface. Ladder logic to accomplish this task is shown below:



- CompactLogix

MVI46

MVI46 is sold by ProSoft Technology under the MVI46-ADM product name.

MVI56

MVI56 is sold by ProSoft Technology under the MVI56-ADM product name.

MVI69

MVI69 is sold by ProSoft Technology under the MVI69-ADM product name.

MVI71

MVI71 is sold by ProSoft Technology under the MVI71-ADM product name.

MVI94

MVI94 and MVI94AV are the same modules. The MVI94AV is now sold by ProSoft Technology under the MVI94-ADM product name

O

Originator

A client that establishes a connection path to a target.

Output Image

Table of output data sent to nodes on the network.

P

Producer

A source of data.

PTO

Pulse Train Output

PTQ Suite

The PTQ suite consists of line products for Schneider Electronics platforms:
Quantum (ProTalk)

S

Scanner

A DeviceNet node that scans nodes on the network to update outputs and inputs.

Side-connect

Refers to the electronic interface or connector on the side of the PLC-5, to which modules connect directly through the PLC using a connector that provides a fast communication path between the - module and the PLC-5.