Bus Controller Operation

The Bus Controller handles all data transfer between the PLC and the devices on its bus In order to do this, the Bus Controller must interface two completely separate and asynchronous activities

A   The *FIP bus scan*, a cycle of communications between the devices on a bus (including the Bus Controller itself)

B   The *CPU sweep*, the cycle of actions that includes communications between the CPU and the Bus Controller

The Bus Controller manages data transfer between the bus and the CPU by maintaining two separate on-board RAM memories One interfaces with the bus and the other interfaces with the CPU The Bus Controller automatically transfers data between these two memories, making data available to the bus or to the CPU when it is needed

The FIP Bus Scan

A FIP bus scan (also referred to as a macro-cycle) consists of a fixed set of operations that are repeated as long as the RUN LED of the FIP Bus Controller is ON The length of the macro-cycle, once configured never varies Therefore, the bus scan is fixed

During the bus scan, the FIP Bus Controller:

- Requests all produced data from all devices to be broadcast on the FIP network, at the predefined period
- Independently tests the presence of any remote devices (optional)

- Allows the broadcast of any aperiodic I/O data by any 3rd Party device but only for the maximum time configured (optional)
- Allows the transmission of any messages by any device but only for the maximum time configured (optional)
- Receives a diagnostic message from each IC6** device

Diagnostics

FIP devices on the bus will automatically report faults, alarms and certain other predefined conditions to the PLC

The Bus Controller stores any diagnostic messages it receives They are read automatically by the IC697 CPU Faults can then be displayed in the fault table using the Windows programming software and cleared from the programmer Detailed information on faults on the FIP bus can be found in Chapter 7 of the *FIP Bus Controller User's Manual*

In addition to the built-in diagnostics capabilities of FIP devices, the Windows programming software application program can make use of additional diagnostics mechanisms provided by the IC697 PLC

- System Status References that have been defined for FIP use
- Fault and No Fault contacts that can be used to detect fault and lack of fault conditions
- Alarm contacts that can be used to indicate when an analog value has reached an assigned alarm limit

Table 4   Applicable Manuals

Reference	Title
1	FIP Bus Controller User's Manual
2	FIP Remote I/O Scanner User's Manual
3	FIP Bus Interface Unit User's Manual
4	Programmable Controller Installation Manual
5	Programming Software User's Manual
6	Programmable Controller Reference Manual