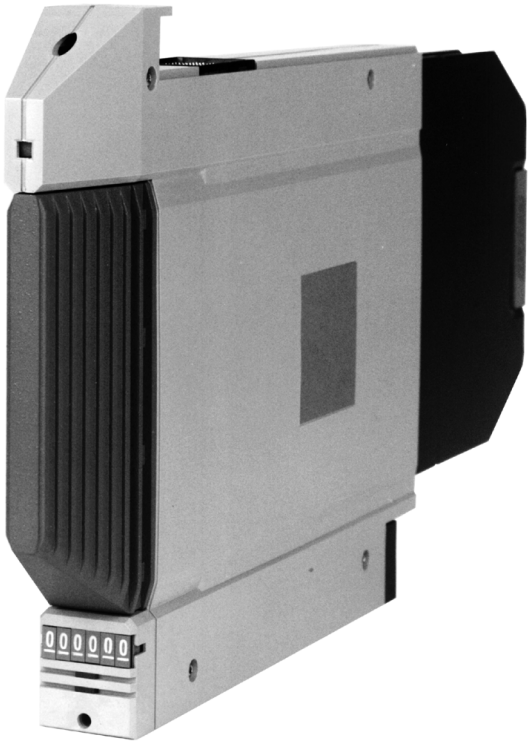
FOXBORO®

PSS 21H-7E2 B3

I/A Series® Hardware
Information Network Interface 15



The Information Network Interface 15 (INI15) is a station on the I/A Series System network that provides for connection of non-I/A Series computers (hosts) to the I/A Series network via a standard X.25 data link. The INI15 also enables an I/A Series System node with an INI15 to connect to another I/A Series node with an INI15 via a standard X.25 data link. It has an RS-232-C compatible serial synchronous port configured as Data Terminal Equipment (DTE). Any host that supports an appropriate physical port and the X.25 protocol can be connected to the INI15 directly {15 m (50 ft.) maximum} or through a synchronous modem set.

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Product Specifications

The INI15 provides the facility for hosts or other INI15 processors to obtain data from, or provide data to, I/A Series System via the following transfer services:

Host File Transfer Service – Has ability to read from files on I/A Series Application Processors, or to write to files on Application Processors.

Host Variable Access Service – Has ability to read from or write to the global system wide database of process variables and shared variables that exists in the I/A Series System.

Host Virtual Terminal Service – Has ability to access the Application Processors' VENIX and INFORMIX software from a terminal on the host as if the terminal were connected to the standard I/A Series Communication Processor.

INI15 Variable Access Service – Has the ability to provide Object Manager support of change driven and Get/Set variable access methods.

INI15 Process-to-Process Communications – Has the ability to enable client/server modeled applications programs (i.e., running in their respective Application Processors), to pass through data packets to each other via a standard X.25 data link.

SESSION ESTABLISHMENT

Application programs in the host computer or on another I/A Series node establish a communication channel with the INI15 through the host's X.25 software, or I/A Series INI15 X.25 software, by establishing a “virtual circuit.” A virtual circuit can support a single class of data transfer service as noted above. Up to eight X.25 virtual circuits can be simultaneously established with the INI15 by one or more application programs in the host(s). Up to 16 X.25 virtual circuits can likewise be simultaneously established by the INI15 with remote INIs.

The INI15 transmits and accepts data values in the format in which I/A Series Systems uses them. The host is responsible for conversion of the data into the proper format for its own use or for transfer to the INI15. One virtual circuit is permanently allocated to Get/Set operations, if required, with each remote INI.

HOST FILE TRANSFER SERVICE

File Transfer Service allows the host to initiate reading or writing of VENIX files with an I/A Series Application Processor. The following file transaction (request/response) messages are available to accomplish this access:

- Create/delete a file
- Link/unlink a file
- Open/close a file
- Read from/write to a file
- Set the file access pointer
- Change directory

These messages are based on the VENIX calls that are used to accomplish the corresponding file access in a UNIX based system.

HOST VARIABLE ACCESS SERVICE

Variable Access Service provides the foreign host computer access to the global variables that are defined in the I/A Series System.

The Variable Access Service has two modes of operation, consistent with the Object Manager services used in all I/A Series stations. In both cases the host program identifies the variables by their unique I/A Series names.

- The first mode is Get/Set access for one time read/write of any I/A Series variable.
- The second mode of access is change driven access. In this mode the INI15 receives updates from the I/A source stations as the values of the variables change, and saves the new values within itself. This mode is used when the host requires repeated access to the variables rather than one time access as with Get/Set access. The host program can then read and/or write these variables, or be notified when they change.

The message format for the variable access transactions is similar to the Object Manager calls that perform the same function within I/A Series stations. The transaction messages, consisting of a request and response, that are supported are defined by the following:

Change Driven Access Service

- Open a list of I/A Series variables by name for change driven access.
- Read a subset or the entire list of change driven variables.
- Write to a subset or to the entire list of change driven variables.
- Open a list with the notification option. (Note that responses to this request are sent to the foreign host computer whenever a change exceeding a delta in one of the opened variables occurs. This continues until the list is closed.)
- Close the list of variables.

Get/Set Operation

- Get an I/A Series variable by its unique name.
- Set an I/A Series variable by its unique name.
- Add a variable name to the import list so that Get/Set can operate more efficiently.
- Delete a variable name from the import list.

The “notification” feature can be utilized by the host if the host is able to accept a message initiated by the INI15 (that is sent over the previously established virtual call). This message notifies the host process of a change in the set of variables, and provides the latest values of the set of variables.

If the physical connection or virtual call between the INI15 and the host process is broken, the INI15 will delete any previously established list of connected variables. The host can re-establish the virtual call and the list of connected variables after the physical connection is re-established.

HOST VIRTUAL TERMINAL SERVICE

The Virtual Terminal Service allows the host to connect to an I/A Series Application Processor and emulate a terminal. It is expected that the host will allow one of its connected terminals to be used as a “virtual terminal” to the I/A Series Application Processor.

The Virtual Terminal Service accepts requests from a foreign host computer for the following:

- Establishing a session with an I/A Series Application Processor. The Application Processor is specified by its logical name (letterbug).
- Logging into the chosen Application Processor. (The terminal will operate as a terminal on VENIX. The user will respond to the standard VENIX “LOGIN” and “PASSWORD” requests to get into VENIX.)
- Using VENIX features. After login, the terminal is connected through that user's account to VENIX and can issue any of the VENIX commands available to that user account.
- Terminating a session with an I/A Series Application Processor.

In “login” and “VENIX user” modes, the INI15 will pass through all virtual terminal characters unaltered, except as required to terminate the session. The foreign host computer is responsible for all necessary conversion of terminal codes so that they are acceptable to the Application Processor.

INI15 VARIABLE ACCESS SERVICE

Variable Access Service provides the other stations (e.g., Workstation Processors) on an I/A Series node, access to remote objects.

The Variable Access Service has two operating modes that are consistent with Object Manager services used in all I/A Series stations. In both cases the variables are identified by their unique I/A Series names, which include a two-character Network Segment ID (i.e., the first two characters of the unique I/A Series object name).

- The Get/Set access is utilized for one time access read/write of any I/A Series variable that complies with the aforementioned naming conventions.
- The change driven access receives and/or sends object updates to the I/A Series station that has requested the updates.

DIAGNOSTICS

The INI15 utilizes three types of diagnostics to detect and/or isolate faults:

- Power-up self-checks
- Run-time and watchdog timer checks
- Off-line diagnostics

Power-up self-checks are self-initiated when power is applied to the INI15. These checks perform sequential tests on the various processor functional elements. Red and green indicators at the front of the processor module reflect the successful (or non-successful) completion of the startup sequence.

The run-time and watchdog timer checks provide continuous monitoring of INI15 function during normal system operations. The operator is informed of a malfunction by means of printed or displayed system messages.

Off-line diagnostics are invoked via the System Management Display Handler for the purpose of performing selected embedded tests and checks on the INI15. Using the off-line diagnostics, the operator can isolate and/or confirm a suspected fault in the processor.

OPTIONAL SOFTWARE

Remote Alarm Forwarding consists of two distinct products that operate in an Application Processor 20– Remote Alarm Message Dispatcher and Remote Alarm Message Server. These packages use INI15 facilities to perform the following functions:

1. Send process and system alarm messages from other remotely located I/A Series systems.
2. Receive process and system alarm messages from other remotely located I/A Series systems.

Remote Alarm Message Dispatcher sends alarm messages to other I/A Series systems through an INI15. The INI15 communicates with remotely located INI15 modules using wide area communications services. Remote Alarm Message Server processes the messages sent by remotely located I/A Series systems. These messages are printed or displayed on I/A Series devices located at the receiving I/A Series system.

Any wide-area media, such as broadband systems, microwave, satellite, leased line, T1, fractional T1, and narrowband radio, may be used to provide communication between connected I/A Series systems. Foxboro does not provide communication carrier services. Consult with carrier suppliers for services, cost, and equipment required for wide-area communication.

HARDWARE PLATFORM

Refer to PSS 21H-7D3 B3 and PSS 21H-7D3 B4 for the hardware specifications of the Communications Processor 15 hardware platform.

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