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Title:

RC8000/IFP Main Process
Reference Manual



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RC8410, RC8411, RC8420.

Abstract: Reference Manual for the RC8000/IFP main process. The manual describes the external process which performs all the supervisory functions in connection with the IFP801/IFP802 controller and the Attached Device Processor.

(18 printed pages)

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1. INTRODUCTION.

The IFP process supports the use of the InterFace Processor IFP801 and IFP802.

IFP801 and IFP802 (in the rest called IFP) is used as interface to an INTEL Multibus (c). The actual devices are attached via an Attached Device Processor (in the rest called ADP) on the Multibus. The ADP may be RC8402, RC8410, RC8411 or RC8420 but some operations are only applicaple for RC8420.

The process is similar to the IDA mainprocess, which controls a disc/tape controller. In fact the operations to the IFP process is mainly a subset of the those to the IDA process

Each IFP controller and each device attached to the IFP controller are represented by external processes in RC8000.

With this interface to the IFP main process, it is possible to load the Firmware of the IFP and ADP, and create the connections to the devices on the ADP. The facility is used by the utility program crossload (ref. 3).

2. IFP DEVICES.

The IFP process in RC8000 is used to control the InterFace Processor. Through operations sent to the IFP process it is possible to autoloading the controller from RC8000. The ADP can either be loaded from a floppy disc, if it has a separte loaddevice, or it can be loaded from RC8000. The IFP can only be loaded once after RC8000 is started, whereas the ADP can be loaded several times.

The ADP Firmware consists of several files. When it is loaded from RC8000 the ADP bootloader requests the next file in the answer with the EOF status.

After the IFP and ADP is loaded, logical connections can be created between each device attached to the controller and RC8000 external processes.

When a device has been connected it is possible to initiate operations on the device through messages sent to the external process representing the device.

The kind of the IFP process is 26.

3. OPERATIONS.

The IFP process supports the following operations:

SET TIMEOUT, INPUT, RESET, TAKE AUTOLOAD BLOCK, CONNECT DEVICE, POSITION and DISCONNECT DEVICE.

SET TIMEOUT, INPUT, RESET, TAKE AUTOLOAD BLOCK and POSITION concerns the initialization of the IFP process complex in RC8000 and the autoloading of the IFP controller and the ADP.

CONNECT DEVICE and DISCONNECT DEVICE controls the inclusion and exclusion of IFP devices in the RC8000 monitor.

In the communication with an IFP process the internal process may receive the following results from the 'wait answer' system call:

Result 1: Message accepted, answer contains further status information.

Result 2: Message rejected because of violation of user/reserver requirements.

Result 3: Unintelligible message; illegal operation or mode.

Result 4: Malfunction, IFP controller/ADP troubles.

Result 5: Receiver unknown, the specified IFP process does not exist.

For every operation the meaning of result 2 and 3 are specified.

3.1 Set Timeout

Function:

The timeout time for the IFP-controller is defined. It is expected that the IFP-controller generates a 'state report' for every 'timeout-time' seconds. If the RC8000 has not received a state-report within 'timeout-time +1' seconds, the controller will be reset.

If the specified timeout is zero, no timeout is defined for the controller.

If the timeout exceeds 800 seconds it will be set to 800 seconds.

The internal process must be reserver of the IFP-mainprocess.

Message:

+ 0: 2<12 + 0

+ 2: timeout time (in seconds)

Answer:

+ 0: 0

Errors: Result 2: Internal process is not reserver of the IFP-mainprocess.

Result 3: An illegal timeout time was specified.

3.2 Input

Function:

This operation must have been preceded by a 'position' operation, where the kind of data which is transferred to the RC8000 by the following 'input' operations has been specified (see section 3.6).

The input operation is used to read system-firmware and software from the

diskette attached to a RC8420, and the operation is only applicable if the ADP in question is a RC8420.

The internal process must be reserver of the IFP-mainprocess.

Message:

- + 0: $3 \times 12 + 0$
- + 2: first storage address
- + 4: last storage address

Answer:

- + 0: status
- + 2: number of halfwords transferred
- + 4: number of characters transferred

Status:

- 0 : ok.
- bit 5 : End of file.

Errors: Result 2: The internal process is not reserver of the IFP-mainprocess.

Result 3: First or last storage address outside internal process.

3.3 Reset

Function:

All messages queued up at the devices connected to the IFP con-troller supervised by this IFP mainprocess will be returned with result 4 (receiver malfunction). All connections will be disconnected. The IFP controller is reset, which makes the Firmware start from its initial point.

The internal process must be reserver of the IFP process.

Message:

+ 0: 4<12 + 0

Answer:

+ 0: 0

Errors: Result 2: Internal process is not reserver of the IFP-mainprocess.

3.4 Take Autoload Block

Function:

An autoload block is transmitted to the IFP controller.

It is assumed that all connections have been removed (through use of the 'reset' operation) before the autoload of the IFP-controller takes place, as no description of connections will be left in the controller, when it has been autoloaded.

The internal process must be reserver of the IFP process.

Message:

+ 0: 5<12 + 0

+ 2: first storage address

+ 4: last storage address

Answer:

+ 0: status

+ 2: number of halfwords transferred

+ 4: number of characters transferred

+ 6: irr

+ 8: name of next file

.

+14:

status:

- 0 : ok, get the next block.
- bit 2 : Timeout.
- bit 5 : End of File.
- bit 9 : Error in load.

Error: Result 2: Internal process is not reserver of the IFP process.

Result 3: First or last address is outside the internal process.

In case of an End of File status, the answer holds information about the next file to be loaded. If the name starts with a binary zero the load is complete.

3.5 Connect Device

Function:

Makes a logical connection between an RC8000 external process and a physical device on the ADP controller.

The specified (or a free) RC8000 IFP subprocess is initialized.

The address of the ADP device must be specified

A device must be connected before any operations can be initiated on it.

The internal process or all users of the IFP-mainprocess will be included as user(s) of the IFP subprocess.

The internal process must be user of the IFP process.

Message:

- + 0: 6<12 + mode
- + 2: Device type.
- + 4: Device index.
- + 6: RC8000 device number.
- + 8: Device kind < 12 + device type.

Mode: users < 0

users = 0: Include sender as user of connection

users = 1: Include all users of the IFP-mainprocess as users of the connection

Device type: The device type of the selected device on the ADP.

- 1: CSP-console (Only RC8420)
- 2: IMC port handler
- 3: Mailbox receiver and transmitter
- 4: 3270 input handler
- 5: 3270 output handler
- 6: Mirror (pseudo device for testing purpose)
- 7: Flexible disc handler (Only RC8420)
- 8: Printer handler (Only RC8420)
- 9: Tape streamer (Only RC8420)

Device index: The incarnation number of the device handler. If 255 is specified the first free device handler of the specified type is chosen.

RC8000 device number: The device number to be used for the connection.
If -1 is specified the first free IFP-subprocess is selected and used.

Device kind: The RC8000 device kind is 2 for all devices except the tape streamer, which has kind = 1.

Device type: Irrelevant for IFP devices.

Answer:

- + 0: Status
- + 2: RC8000 device number
- + 4: (IFP device index)
- + 6: 2 < 12 (= kind of ADP device)
- + 8: Incarnation of ADP device

Status:

bit 10-15: Connect-result:

- 0: Ok
- 1: Device troubles (see device status).
- 3: No resources at RC8000.
- 4: No resources at IFP/ADP.

bit 8-9 : Connection-description:

- 0: OK

bit 0-7 : Device status (only valid if connect-result = 1) (bit encoded):

- bit 0: Device unknown
- bit 3: Device selftest fault.
- bit 4: No resources

R8000 device number: Used device number of connection.

Errors: Result 2: The internal process is not user of the IFP-mainprocess.

IFP mainprocess reserved by another process.

Result 3: Illegal RC8000 device number.

Illegal mode.

Illegal device kind or device type.

3.6 Position

Function:

Specifies from which (logical) file the following 'input' operations will receive data. The input medium will be the diskette on the RC8420, and the operation is only applicable if the ADP in question is a RC8420.

A file on the diskette with the name FILENN will be opened, where NN is the filenumber in the position operation (FILE0, FILE1, ..., FILE10, ..., FILE255). The operation can not be sent after a connection is created to the floppy device.

The (default defined) files on a boot-diskette contain:

```

file1: IDA801 firmware
file2: RC8000 bootloader
file3: RC8000 monitor
file6: IFP801 firmware
file7: IFP802 firmware

```

The internal process must be reserver of the IFP-mainprocess.

Message:

```

+ 0: 8<12 + 0
+ 2: 0
+ 4: (logical) filenameumber
+ 6: 0

```

Answer:

```

+ 0: Status

```

Status:

```

0 : ok.
bit 5 : The file does not exist.

```

3.7 Disconnect Device

Function:

Removes the connection between an RC8000 external process representing an IFP device and the corresponding IFP device.

The RC8000 external process is removed.

The internal process must be user of the connection (or there must not be any users of the connection at all).

Message:

+ 0: 10<12 + 0
+ 2: RC8000 device number

RC8000 device number: Device number of the device which is going to be disconnected.

Answer:

+ 0: 0

Errors: Result 2: Internal process is not reserver of the IFP-mainprocess.

Internal is not user of connection or other users of connection.

Result 3: Illegal device number.

Device is not connected to this IFP controller.

Device is not an IFP-device.

APPENDIX.**A. REFERENCES.**

- (1) RC8000/IMC Port Handler, Reference Manual
RCSL No. 991 10631
- (2) RC8000/ADP3270 Input/Output Process, Reference Manual
RCSL No. 991 10630
- (3) RC8000 Attached Device Processor, User's Guide for
RC8410/RC8411 and RC8402
RCSL No. 991 10627
- (4) RC8000 Attached Device Processor, User's Guide for RC8420
RCSL No. 991 10628

B. MESSAGE/ANSWER FORMAT SUMMARY.

<u>Operation</u>	<u>Message</u>	<u>Answer</u>
Set timeout	2<12 + 0 timeout	0
Input	3<12 + 0 first storage address last storage address	status number of halfwords number of characters
Reset	4<12 + 0	0
Take autoloader block	5<12 + 0 first storage address last storage address	status number of halfwords number of characters
Connect device	6<12 + mode device type device index/255 RC8000 dev.no/-1 device kind, device type	status RC8000 device number (IFP-index) device kind ADP incarnation
Position	8<12 + 0 0 (logical) filenumber 0	status
Disconnect device	10<12 + 0 RC8000 device no	0

RETURN LETTER

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