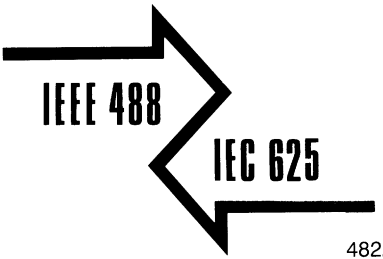

PM2232

PROGRAMMING CARD

PASCAL - LANGUAGE

GPIB IO DRIVERS

4822 872 80036

880102

STATEMENT SYNTAX

error:= function *(variable ,....., variable)*

TERMS

<adp> = adapternumber (adapternumber on PC)

<addr> = The device address preceded by the adapternumber (e.g. 722) or a logical instrument name or only an adapternumber (e.g. 7). If only an adapternumber is specified there is no device address.

<error> = errornumber, returned as a result of a function call.

FUNCTION ioabort (*adp* : INTEGER) : INTEGER;

Aborts all activity on the GPIB-bus.

FUNCTION ioclear (*addr* : INTEGER) : INTEGER;
or
FUNCTION ioclear (*adp* : INTEGER) : INTEGER;

Sets one or all devices to a known state.

FUNCTION iocontrol (*adp* : INTEGER;
**   *condition* : INTEGER;**
**   *status* : INTEGER) : INTEGER;**

Addresses or unaddresses the interface as a talker or listener, or to set the interface's bus address.

<*condition*>	<*status*>	Description
5	1	address the adapter as talker
	0	unaddress the adapter as talker
6	1	address the adapter as listener
	0	unaddress the adapter as listener
7	0 .. 30	set the GPIB address of the adapter as specified in variable "status".

FUNCTION ioenter (*addr* : INTEGER;
**   VAR *number* : REAL) : INTEGER;**

Reads a single number from a particular device.

<*number*> = The address of a variable in which the returned value is stored.

FUNCTION ioentera (*addr* : INTEGER;
**   VAR *data* : realarray;**
**   VAR *amount* : INTEGER) : INTEGER;**

Reads a sequence of numbers from a device and stores it into an array.

<*data*> = An array of reals into which the read data are placed.

<*amount*> = The address of the variable which specifies the maximum number of elements to be read. After execution of the function, the actual number of returned numbers is assigned to the variable <*amount*>.

FUNCTION ioenterf (*addr* : INTEGER;
**   VAR *file_spec* : STRING) : INTEGER;**

Reads data from a particular instrument, then writes it to the file whose name is specified in <*file_spec*>.

<*file_spec*> = A user defined string in which the file name is specified. Up to 128 characters can be used to specify the drive, path and file name.

FUNCTION ioenters (*addr* : INTEGER;
VAR *info_string* : STRING;
VAR *amount* : INTEGER) : INTEGER;

Reads data from a device and assigns it to a character array.

<*info_string*> = A string variable into which the returned data is placed.

<*amount*> = A variable in which the maximum number of characters to be read is stored. After execution of the function, the actual number of returned numbers is assigned to the variable <*amount*>.

FUNCTION ioeoi (*adp* : INTEGER;
***condition* : INTEGER) : INTEGER;**

Enables or disables the End-message for the enter- and output-functions.

<*condition*>	Description
0	The End-message is disabled.
1	The End-message is enabled.

FUNCTION ioeol (*adp* : INTEGER;
VAR *eol_string* : STRING;
***length* : INTEGER) : INTEGER;**

This function establishes an End Of Line string. The EOL string is always sent after an output-function.

<*eol_string*> = A user defined string in which the EOL characters are stored.

<*length*> = Specifies the number of characters sent in the EOL string.

FUNCTION iogetterm (*adp* : INTEGER;
VAR *reason* : INTEGER) : INTEGER;

Determines the reason(s) for which the last IOenter function terminated.

<*reason*> (bitvalue)	Reason for termination
0	Reason is none of the next reasons (e.g. timeout).
1	ioenter : a correct number was received ioentera : the specified number of elements was received ioenters : the specified number of characters was received
2	match character received (ioenters only)
4	the End-message was received

FUNCTION iogts (*adp* : INTEGER) : INTEGER;

Causes the GPIB adapter to go from the active controller state to the standby state. It also monitors the data transfer on the bus until the End-message occurs.

FUNCTION ioinit (*adp* : INTEGER;
_____ *system_control* : INTEGER) : INTEGER;

Initialises the GPIB functions (IFC/REN).

<*system_control*>	Description
1	system controller
0	non system controller

Default values are set for:

- end of line string EOL (ioeol)	default LF
- ioenters match character (iomatch)	default LF
- iomatch flag (iomatch, enabled)	default 1
- IO termination on EOI (ioeoi)	default 1
- GPIB timeout (iotimeout)	default 0
- the GPIB address of the adapter	default 30

FUNCTION iollockout (*adp* : INTEGER) : INTEGER;

This function executes a Local Lock Out.

FUNCTION iolocal (*adp* : INTEGER) : INTEGER;
or
FUNCTION iolocal (*addr* : INTEGER) : INTEGER;

Sets a particular device (addr) or all (adp) devices in the local state.

FUNCTION iomatch (*adp* : INTEGER;
_____ *matchchar* : CHAR;
_____ *condition* : INTEGER) : INTEGER;

Establishes a single character upon which an **ioenters** operation will terminate. It also enables or disables termination on this character.

<*matchchar*> = A char variable specifying the character on which an **ioenters** procedure wil terminate.

<*condition*>	Description
<> 0	enables termination on the match character
= 0	disables termination on the match character

FUNCTION iooutput (*addr* : INTEGER;
_____ *number* : REAL) : INTEGER;

Outputs a single number to a particular device (addr).

<*number*> = A variable containing the number to be output.

FUNCTION iooutputa (*addr* : INTEGER;
_____ VAR *data* : realarray;
_____ *maximum* : INTEGER) : INTEGER;

Outputs an array of numeric values to a particular device.

<*data*> = An array containing the data to be output. By specifing an element, data is output from that elements onwards.

<*maximum*> = Specifying the number of elements of the array to be output.

FUNCTION iooutputf (*addr* : INTEGER;
_____ VAR *file_spec* : STRING) : INTEGER;

Reads the contents of the file specified and writes it to the instrument specified by address.

<*file_spec*> = A user defined string in which the file name is specified. Up to 128 characters can be used to specify the drive, path and file name.

FUNCTION iooutputs (*addr* : INTEGER;
VAR *info_string* : STRING;
VAR *length* : INTEGER) : INTEGER;

Outputs a string (array of characters) to a particular device.

<***info_string***> = A string which contains the information to be output.

<***length***> = The number of characters to be sent.

FUNCTION ioremote (*adp* : INTEGER) : INTEGER;

Sets the REN-line; a device will go to remote when it is addressed as listener.

FUNCTION ioremote (*addr* : INTEGER) : INTEGER;

Sets a device (addr) in the remote state.

FUNCTION ioreset (*adp* : INTEGER) : INTEGER;

Initialises the GPIB functions.

FUNCTION iorsv (*adp* : INTEGER;
response **: INTEGER) : INTEGER;**

Non-controller application. Specifies the statusbyte that is output as a response to a serial poll of the adapter with the possibility issue a service request.

<***response***> = Decimal value of the GPIB status byte which will be output as a response to a serial poll.

FUNCTION iosend (*adp* : INTEGER;
VAR *message* : STRING;
length **: INTEGER) : INTEGER;**

Sends user defined interface messages (ATN=1), specified in array, via the adapter.

<***message***> = A string variable in which the interface message is stored.

<***length***> = Specifying the number of characters to be sent.

FUNCTION iospoll (*addr* : INTEGER;
VAR *response* : INTEGER) : INTEGER;

Conducts a serial poll.

<response> = A variable in which the decimal value of the status byte is stored.

FUNCTION iostatus (*adp* : INTEGER;
***request* : INTEGER;**
VAR *status* : INTEGER) : INTEGER;

Returns the status of a particular adapter condition.

<request>	*<status>*
0	remote state
1	SRQ line
2	not used
3	system controller
4	controller in charge
5	addressed as talker
6	addressed as listener
7	bus address
8	not used
9	The End-message is received when the adapter is previously set in the standby state with the iogts function.

<status> = A user defined variable in which the status of the requested adapter is stored.

- for request 0-6 and 8 : status: 1=true 0=false
- for request 7 : the GPIB address of the adapter

FUNCTION iotimeout (*adp* : INTEGER;
VAR *timeout* : REAL) : INTEGER;

Sets the adapter timeout period in seconds.

<timeout> = A variable in which the requested timeout is stored. After execution the actual timeout is returned.

FUNCTION iotrigger (*addr* : INTEGER) : INTEGER;
or
FUNCTION iotrigger (*adp* : INTEGER) : INTEGER;

Triggers a particular (addr) or a group of devices (adp).

FUNCTION iowait (*adp* : INTEGER;
**   *event* : INTEGER;**
**   VAR *status* : INTEGER) : INTEGER;**

This function delays processing until it is terminated by a specified event, or until a timeout occurs.

<***event***>	event to wait for
0	adapter is in the remote state
1	SRQ line is true
2	not used
3	adapter is system controller
4	adapter is controller in charge
5	adapter is addressed as talker
6	adapter is addressed as listener
7	GPIB address of the adapter
8	not used
9	The End-message is received when the adapter is previously set in the standby state with the iogts function.

<***status***> = A variable in which the status is stored whether the **iowait** function was terminated.

- status = 1 = event occured
- status = 0 = timeout occured, but no event

GPIB IO ERROR MESSAGES

Nr.:	Meaning:
1	Unknown error
2	Invalid adapter number or device address
3	Value out of range
4	Timeout
5	Adapter must be controller in charge
6	No meaning
7	Invalid number
8	Improper addressing

REMARK: In case of a non-existing error number the following text is printed by the procedure **errstr (number, message) :**

illegal error number!

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