

Software Data Sheet T39 - CHARIN Function**T351 Issue 3 09/89**

Please incorporate the following amendments:-

Page 2 Amend table heading to read:

 'Table 3 Fault Codes and Flags'

Please retain the Errata Sheet with the document for reference.

CHARIN Function

CHARIN T39

DESCRIPTION

For a GEM 80 controller with enhanced printing facilities (such as are provided by the GEM 80/250 series) the CHARIN function enables a string of characters to be read into the user's data tables from the serial input channel of a printer port.

The execution of CHARIN transfers data from the cyclic buffer store provided for the selected printer port to a pre-defined block of data tables.

CHARIN is provided to simplify interfacing to operators using a keyboard and can be used in conjunction with PRINT (T38) and PRITEXT (S38) to provide a powerful set of facilities.

FEATURES

- On-line selection of printer port for input
- Full ASCII/ISO-7 character set
- Input string layout identical to that expected by PRITEXT (S38) and is compatible with GEM 80 video processors

SPECIFICATION

Control language:-

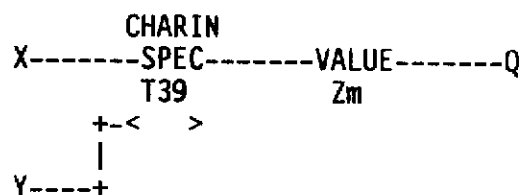


Table 1 Program rung data

Sym	Location	Use	Range
X	Rung input (upper branch)	Max. number of characters to be read in	0 to 127
Y	Rung input (lower branch)	Port from which input is to be taken	0 to 4 0 = no * operation
Q	Rung output	Fault indication	See table 3
Zm	Value location	Start of storage for string	Any write-enable table usable by specials

Table 2 Value data

Location	Data	
	bits 0-7	bits 8-15
Zm	Number of characters transferred	character 1
Zm + 1	character 2	character 3

etc.

Operation:

The printer port can be configured to operate in one of two modes - "Direct" or "Terminal". "Direct Mode" is used when separate printer and serial input devices are employed and "Terminal Mode" is used when a combined input and output device such as a VDU is employed.

In "Direct Mode" characters are transferred to the cyclic buffer at the end of the program scan during which they are received. "Terminal Mode" provides automatic echoing of received characters and deletion of previously entered characters to allow a complete line of input to be created and verified independently of the user program. The contents of the line are transferred to the cyclic buffer when a carriage return is entered. For further details refer to the user information leaflet for the host controller.

The difference as far as CHARIN is concerned is the way that characters are extracted from the cyclic buffer. In "Terminal Mode" mode characters are transferred until

- a) The maximum quantity specified have been read
- b) The cyclic buffer is empty
- c) An end of line marker (@0A) is found in the cyclic buffer (in which case it is also transferred)

In "Direct Mode" only termination conditions a and b above are used.

Table 2 Fault codes and flags

Condition	Rung output Q	
	Numeric Value	States ON
Successful execution (requested number of characters read).	0	None
Successful execution (less than requested number transferred).	512	9
Rung input (port number) outside valid range.	3	0&1 *
Rung input (number of characters to read) outside valid range.	5	0&2 *
Programming error. Invalid Value location. String extends beyond end of data table area.	9	0&3 *
Programming error. Port not configured as a printer.	17	0&4 *
Input buffer empty.	129	0&7 *
Corruption of port's input buffer.	257	0&8 *

* In these conditions the contents of Zm and the following tables are not altered.

APPLICATION NOTES

"Direct Mode" would normally be used to interface to a simple matrix keyboard which might have keys labelled 'STOP', 'GO', 'RAISE', 'LOWER' etc. The user program would normally only attempt to read one character at a time and would then process that operator request before reading the next character.

If it is desired to build up message strings for later output (e.g. entering a customer's name to be printed on an invoice) it is much simpler to use "Terminal Mode" in conjunction with a VDU. The user program could employ PRINT (T38) to output a request for input and then execute CHARIN until bit 0 of the Q output from the special was reset (indicating that data had been read in). The block containing CHARIN should be disabled and the text string transferred to a holding buffer until it was needed for output. The procedure could then be repeated to read in the customer's address and order number (for example). The same rungs as before could be used with a different output message selected for PRINT and a different holding buffer used to store the input.



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