Loop-de-loop User Manual

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BOND YING
X2258

FOR INTERNAL USE ONLY

CONTENT

1.0 GENERAL INFORMATION

The Loop-de-loop is designed to solve the drawback of HP-IL which becomes unoperational when a device on the loop is dead or removed or powered down. Therefore the Loop-de-loop is used as a loop gateway or buffer to have the better isolation between the loops.

The Loop-de-loop should be able to link all HP-IL loops, present and future. There should not be any extra care to get two loops communicating other than the standard I/O commands.

The only restriction on communicating bewteen two HP-IL devices using Loop-de-loop is that there must be a controller on each loop. This requirement is under consideration to be taken away. Any input is welcomed.

2.0 INSTALLATION

The Loop-de-loop is powered by the 41C recharger. There are three connectors, the recharger and two HP-IL receptacal. ALL it has to do is to plug the rechanger, and the HP-IL connectors in, it would be ready to go. (In the case of first power up it may be necessary to hit the reset button once.) There is no different between the two HP-IL loops functionally. But since LED indicators are fixed to the corresponding loop by the hardware, so there may be a need for knowing which loop is which. Other than that they work alike.

3.0 DEVICE CAPACITY

The Loop-de-loop works like a HP-IL interface device. It only allows data going through. It conforms to the HP-IL protocol standard. It has a 2k bytes ram inside dynamically allocated to the two FIFO buffers in 256 bytes block.

3.1 ADDRESSING

The Loop-de-loop supports all addressing modes in the HP-IL standard, namly single byte address, two bytes extended address and two bytes multiple address. All these address assigning and addressing are well defined by the HP-IL standard and Loop-de-loop is conformed to the protocol.

3.2 BUFFER DESCRIPTION

There are a total of 2200 bytes spacing in the Loop-de-loop. This buffer space is separated into two 76 bytes overflow buffer and two dynamically allocated queues. The 2048 bytes memory space is divided into 8x256 bytes blocks so as it requires, a block of 256 bytes is given, or taken away. But there is at least a mininum of one block input memory space in either side, so including the overflow buffer there is a total of 332 bytes buffer mininum before the loop will hang. Also there will be a maxinum of 1868 bytes buffer.

3.3 INDICATOR AND KEY

There are five LEDs and one key. The key is for reset as it labelled. The left most LED is the power light and the remaining four are used for buffer status indicators, two for each buffer. The two indicators are 1) recieved buffer not empty and 2) recieved buffer full. And they are labelled as so. The left side two next to the power light is for the loop next to the recharger input at black panel, and the right side LEDs are for the loop at the front panel right under the top label.

3.4 SERVICE REQUEST

There are three kinds of service request polling in HP-IL, and the Loop-de-loop surports all of them; namly 1) serial poll, 2) parallel poll and 3) asynchronus poll.

The service request generated by the Loop-de-loop can be disabled by the hardware switch. Once it is disabled, the Loop-de-loop will not generate any service request, and it will run a little bit faster so it may speed up the data transfer if the Loop-de-loop is the

slowest device in the loop.

Once the service request is enabled there is no more options to define at which status the Loop-de-loop will not send service request. There are three situation the Loop-de-loop will request service; one when transmit buffer empty, two when transmit buffer full and three when recieved buffer not empty. The transmit buffer full situation means that data bytes are being put into the 76 76 bytes wide overflow buffer, so the loop can still be operational until the overflow buffer is full. If EON is used no data will be put into the overflow buffer and no service request will be generated by transmit buffer full situation.

3.5 DEVICE STATUS AND IDENTITY

There are two device status bytes for the Loop-de-loop. The first byte is the HP-IL system status byte and the Loop-de-loop only used three states; they are 1) ready to send data (A2H or E2H), 2) ready to recieve data (A1H or E1H), and 3) not ready (A3h or E3H).

The second status byte is the device dependent status byte, and the Loop-de-loop is used to indicate its buffers status. Each bit for different state, they are: bit 0 for transmit empty, bit 1 for transmit buffer full, bit 2 internally used for block full, bit 4 recieved buffer not empty and bit 5 recieved buffer full. Bit 3,6,7 are not used.

The device identity for the Loop-de-loop is "HP82000crlf" (ten bytes in ASCII) and the accessory ID is "44H" (1byte).

4.0 APPENDIX

4.1 APPENDIX A: HP-IL commands supported by Loop-de-loop

1) nul --- null command
2) sdc --- select device clear
3) ppd --- parallel poll disable
4) ppex -- parallel poll enable
5) dcl --- device clear
6) ppu --- parallel poll unconfiguirated
7) eln --- enable listener nrd
8) ear --- enable asynchronous request
9) ladx -- listener address
10) tadx -- talker address
11) sadx -- secondary address
12) unt --- untalker
13) unl --- unlisten
14) ifc --- interface clear
15) aau --- autoaddress unconfiguirated
16) rfc --- ready for command
17) eto --- end of transmition, ok
18) ete --- end of transmition, erorr
19) nrd --- not ready for data
20) sda --- send data
21) sst --- send status
22) sdi --- send device ID
23) sai --- send accessory ID
24) aadx -- autoaddress simple
25) aepx -- auto extended address, primary
26) aesx -- auto extended address, secondary
27) ampx -- auto extended address, multiple

4.1 APPENDIX B: SERVICE REQUEST ENABLED SWITCH

There is four switches on the dip switch.
Switch 1 and 2 are for service request enable.
Where switch 1 is for back panel loop, and switch 2 for front panel loop. When they are on service request is enabled.