4110/4120

3PPI INTERFACE
ADDENDUM FOR VERSION 8

Please Check for
CHANGE INFORMATION
at the Rear of This Manual

MANUAL REVISION STATUS

PRODUCT: 4110/4120 Option 10 3PPI Interface

This manual supports the following versions of this product: Firmware Version 8 and up

REV DATE	DESCRIPTION
OCT 1985	Original Issue
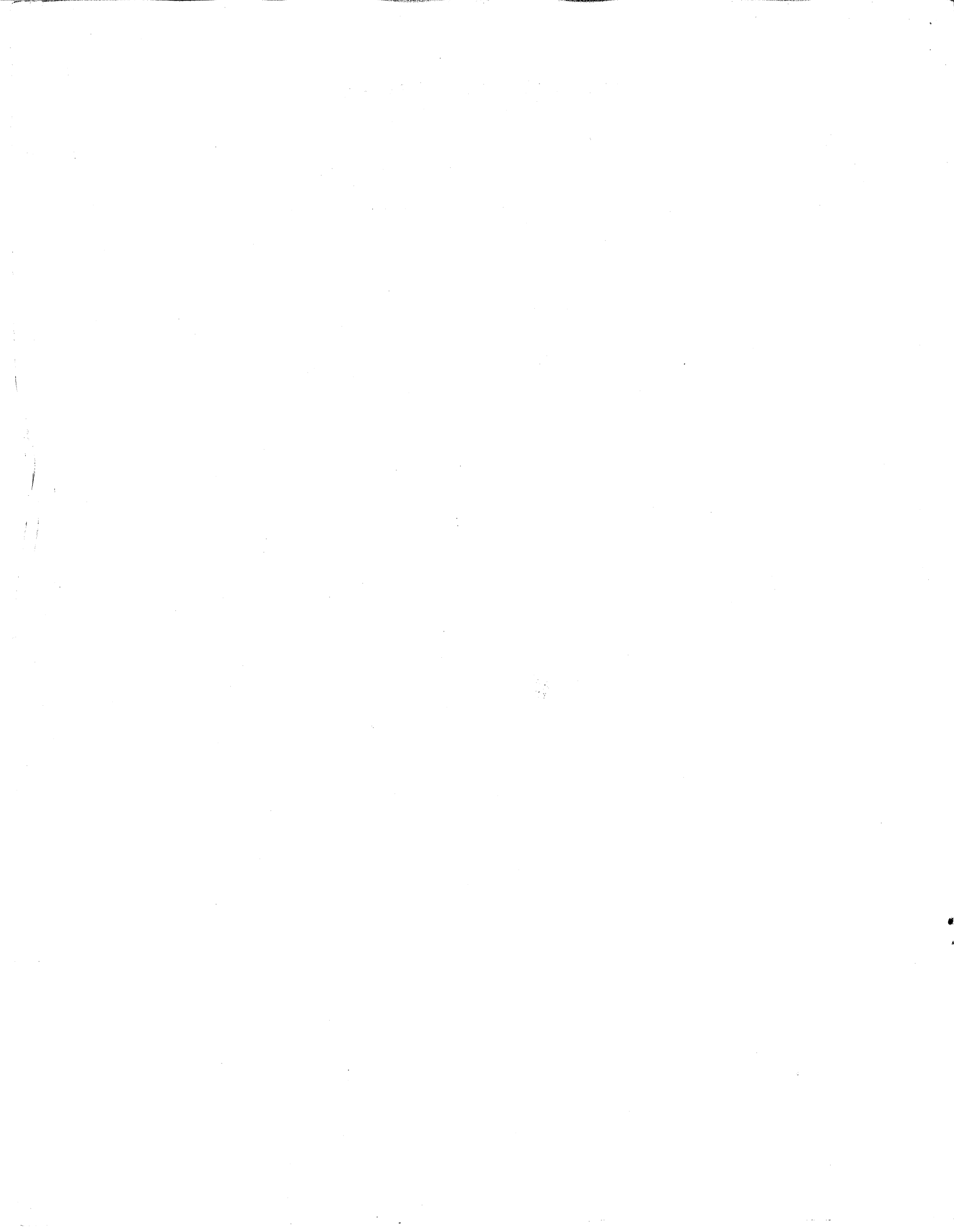
INTRODUCTION

Option 10 firmware Version 8 adds a 4510A driver to the Option 10 3PPI interface. This driver allows connection of a 4510A Color Graphic Rasterizer to a 3 Peripheral Port Interface. The 4510A accepts 4100-style graphics commands and drives a color copier.

This addendum documents the new, changed, and incompatible commands that are effected by the new driver. It should be used in conjunction with the operators manual, the *4110/4120 Series Command Reference Manual* , and the *4110/4120 Series Host Programmers Manual* accompanying your terminal.

FIRMWARE VERSION 8 CHANGES

Firmware Version 8 does not change any of the Version 7 drivers. Enhancements in Version 8 include:

- 4510A device assignment to any of the peripheral ports with the PORT-ASSIGN command.
- Five new commands are added to support 4510A.
- SEG: –6 is added to the SAVE command so that all segments visible in all views can be saved.

THE 4510 DRIVER

When the 4510 driver is assigned to a peripheral port, graphics area copies are initiated with the PLOT or SAVE commands. Copies from another source are initiated with the COPY or SPOOL commands. You may also send directory information to the 4510A with the DIRECTORY command; however, Tektronix cautions you about using this command for this reason:

The DIRECTORY command issues a C_R as the text line terminator and the 4510A, by default, does not add a L_F when it receives a C_R. Therefore, all directory text will be printed as a single line, unless the 4510A is first set to C_R implies L_F.

4110/4120 SERIES FEATURES NOT SUPPORTED

The following 4110/4120 Series features are not supported by either the 4510A or the Version 8 firmware:

- 3D
- Non-retained segments with PLOT and SAVE
- Dialog areas
- Pixel operations
- Background indices
- Segment writing modes AND, OR, and XOR
- Panel fill modes
- Multiple surfaces (surface priority is ignored and the Super Surface color map cannot be sent because you cannot inquire the Super Surface color map)
- Grey levels
- User defined fill patterns (the 4510A emulates 4107/4109 dithered fill patterns 50 through 174)
- Alpha text is converted to string precision graphtext and is then subject to transforms

DATA PASSED TO 4510A

The following is a list of the data passed to the 4510A with each COPY, SPOOL, SAVE, DIR, or PLOT command:

> LOAD (EcJL)
> SET-QUEUE-SIZE (EcNQ)
> SET-DEVICE-ASPECT-RATIO (EcQJ) —
>   set aspect ratio to 5:4
> PAGE (EcFF)
> SET-COLOR-COPIER-REPAINT) (EcQT)
> SET-IMAGE-ORIENTATION (EcQO)
> SET-COLOR-MODE (EcTM) —
>   sets RGB, opaque, normal operation
> SET-SURFACE-COLOR-MAP (EcTG)
> SET-VIEW-ATTRIBUTES (EcRA)
> loop__another__view__in__stream:
>   EcUX, EcRA, EcRV, EcRW
>   from the file stream if at start
>   SET-NUMBER-OF-COPIES (EcQN)
>   PAGE (EcFF)
>   SET-BORDER-VISIBILITY (EcRE) —
>   data from last EcRE in file stream
>   > > > > > > > data stream until EcRA then
>   loop__another__view__in stream
>   HARDCOPY (EcKH0) or (EcKH2) depending
>   on PINVERSION parameter

This data changes 4510A settings. If you do not want 4510A settings changed to the current terminal settings for these commands, use the PPORT driver instead of the 4510 driver. For example, if you issue the command COPY HO: TO P0:, the 4510A color map will be changed to the current terminal color map which may or may not be the color map included in the file on HO:. Unexpected results are likely.

Segment definitions are sent without modification; however, the following commands are ignored by the 4510A:

> SET-SEGMENT-WRITING-MODE
> SET-SEGMENT-HIGHLIGHTING
> SET-SEGMENT-DETECTABILITY
> SET-SEGMENT-DISPLAY-PRIORITY
> SET-SEGMENT-CLASS
> SET-BACKGROUND-INDICES
> SET-PANEL-FILLING-MODE
> SET-PICK-ID

The CALL-SEGMENT and SET-SEGMENT-SCALE-ROTATION commands are also not recognized by the 4510A and are not sent when SAVE SEG –4, SAVE SEG –6, or PLOT commands are issued.

NEW AND MODIFIED COMMANDS

The two existing 4110/4120 Series commands modified by firmware Version 8 are:

- PORT-ASSIGN
- SAVE

The five new commands added by firmware Version 8 are:

- SET-PORT-BLACK-WHITE-INVERSION
- SET-PORT-COLOR-COPIER-REPAINT
- SET-PORT-IMAGE-ORIENTATION
- SET-PORT-NUMBER-OF-COPIES
- SET-PORT-QUEUE-SIZE

These commands are described in the following paragraphs. Only the changes are described for the two modified commands. The commands are described alphabetically.

PORT-ASSIGN Command

Another *protocol-identifier* (**4510**) has been added to this command to allow interface to the 4510. The new parameter is described in Table 1.

Host Syntax

^EcPA   device:*port*   string:*protocol-identifier*

Setup Syntax

PASSIGN ^SP   *port*   *protocol-identifier*

PARAMETERS

protocol-identifier
   A string specifying the protocol being assigned to the peripheral port. Valid values are:

   PPORT
   4510
   4643
   4662
   4662/MP
   4662/NT
   4663
   4663/NT
   4663/NB
   4957
   4957/S
   4958
   4958/S
   KANA
   DMA (4111 P0: only)

Table 1

THE 4510A PERIPHERAL PORT PROTOCOL IDENTIFIER

Protocol Identifier	Meaning
4510A	(4510A Rasterizer). Assigns a protocol for data output to the 4510A Rasterizer.

SAVE Command

The argument –6 is added to *item-number* parameter when used with *item-type* **SEG**.

Host Syntax

^EcJV   string:*item-type*   int:*item-number*
        string: *separator*   device:*destination*

Setup Syntax

SAVE ^SP   *item-type*   *item-number*
        TO   *destination*

PARAMETERS

item-number
   The macro or segment or number of pixels to be saved. Valid values depend on *item-type*:

   for MAC, all values valid for DEFINE-MACRO (-1 means all)
   for SEG, –6, –4, –3, –1, and 1 to 32767
   for RAS and RUN, –2 to 32767

DESCRIPTION

Segment –6 means "all segments visible in all views" analogous to and in the same order as RENEW-VIEW *all*. Segment –6 can be thought of as multiple PLOT commands within one save sequence. For segment number –4 and –6, all calls to segments are expanded into their primitives; all other *item-numbers* only save the calls, not the called segment.

For each view saved, the following commands are sent to the destination device:

● For segment –4 and –6 WINDOW and VIEWPORT commands, specifying the current view's window and viewport.

SET-PORT-BLACK-WHITE-INVERSION Command

This is a new command that selects how pure black and pure white are printed when using the 4510 driver.

Host Syntax

^{E}cPJ   string:*port*   int:*image-polarity*

Setup Syntax

PINVERSION ^{S}p   *port   image-polarity*

PARAMETERS

port
Specifies the RS-232 peripheral port to which an image polarity is being assigned. Valid ports are:

P0:
P1:
P2: (4115/4120 Series only)

image-polarity

0   **NEGATIVE**; reverse black and white
1   **POSITIVE**; don't reverse black and white

DESCRIPTION

This command instructs the 4510A Color Graphic Rasterizer to reverse the black and white colors when processing hard copies. The *image-polarity* parameter determines whether an image's blacks and whites are reversed.

The port that you specify in this command must have the 4150 device protocol assigned to it (PORT-ASSIGN command); otherwise, the command parameters are ignored.

DEFAULTS

port
as shipped — none
on power-up — remembered
if omitted — error PJ11

image-polarity
as shipped — 0
on power-up — remembered
if omitted — 0

ERRORS

PJ11 (Level 2):   Invalid Port Specifier.
PJ12 (Level 3):   Out of memory while parsing.
PJ21 (Level 2):   Invalid Image-Polarity.

REFERENCES

PLOT Command
PORT-ASSIGN Command
SAVE Command

INQUIRY COMMAND

REPORT-PORT-STATUS command

SET-PORT-COLOR-COPIER-REPAINT Command

This new command allows multiple passes on a 4692 copier without changing media and is intended to be used with transparent media. It is used only with the 4510 driver.

Host Syntax

^E_cPT   string: *port*   int:*repaint-count*

Setup Syntax

PREPAINT ^S_P *port* *repaint-count*

PARAMETERS

port
    Specifies the RS-232 peripheral port to which a repaint count is being assigned. Valid ports are:

    P0:
    P1:
    P2: (4115/4120 Series only)

repaint-count (0 to 4).
    Specifies the number of times the image is transferred to the copier (0 has the same effect as 1).

DESCRIPTION

This command specifies how many print passes are made by the 4692 Color Copier via the 4510A Color Graphic Rasterizer. Painting the image several times concentrates ink more heavily on the copy. This is useful for preparing transparencies because it results in brighter colors.

The time required to make a copy will be multiplied by the number of image passes used. For the fastest copy time, use a repaint count of 1. The setting has no time effect on the terminal unless more copies are transmitted after the rasterizer queue is full.

This command has no effect on copies made to the 4691 or 4695.

DEFAULTS

port
    as shipped — none
    on power-up — remembered
    if omitted — error PT11

repaint-count
    as shipped — 1
    on power-up — remembered
    if omitted — 1

ERRORS

PT11 (Level 2):   Invalid port.
PT12 (Level 3):   Out of memory while parsing.
PT21 (Level 2):   Invalid repaint-count.

REFERENCES

PLOT Command
PORT-ASSIGN Command
SAVE Command

INQUIRY COMMAND

REPORT-PORT-STATUS command

SET-PORT-IMAGE-ORIENTATION Command

This new command determines where the long axis of the image will be on the copy media. It is used only with the 4510 driver.

Host Syntax

^E_c**PO**   int:*port*   int:*orientation*

Setup Syntax

PORIENT ^S_P *port*   *orientation*

PARAMETERS

port
Specifies the RS-232 peripheral port to which an orientation is being assigned. Valid ports are:

P0:
P1:
P2: (4115/4120 Series only)

orientation (0 to 3)
Selects the orientation of the hardcopy image with respect to the hardcopy media. Setup mode parameters are **HORIZONTAL**, **VBOTTOM**, **VCENTER**, and **VTOP**.

0	**HORIZONTAL:** long axis of image on long axis of media
1	**VBOTTOM:** long axis of image on short axis of media, at bottom
2	**VCENTER:** long axis of image on short axis of media, centered
3	**VTOP:** long axis of image on short axis of media, at top

DESCRIPTION

The SET-PORT-IMAGE-ORIENTATION command sets the orientation of the hardcopy image with respect to the hardcopy media (the paper or transparency on the hardcopy machine) on the copier connected to the rasterizer.

DEFAULTS

port
   as shipped — none
   on power-up — remembered
   if omitted — error PO11

orientation
   as shipped — 0
   on power-up — remembered
   if omitted — 0

ERRORS

PO11 (Level 2):   Invalid Port Specifier.
PO12 (Level 3):   Out of memory while parsing.
PO21 (Level 2):   Invalid orientation.

REFERENCES

PLOT Command
PORT-ASSIGN Command
SAVE Command

INQUIRY COMMAND

REPORT-PORT-STATUS command

SET-PORT-NUMBER-OF-COPIES Command

This new command allows multiple copies of the same image without retransmitting data. It is used only with the 4510 driver.

Host Syntax

^E_c**PN**　int:*port*　int:*number-of-copies*

Setup Syntax

HCCOPIES ^S_P　*port number-of-copies*

PARAMETERS

port
Specifies the RS-232 peripheral port to which a number of copies is being assigned. Valid ports are:

P0:
P1:
P2: (4115/4120 Series only)

number-of-copies (0 to 64)
Selects the number of copies that are produced when a color hardcopy operation is invoked (0 has the same effect as 1).

DESCRIPTION

The SET-PORT-NUMBER-OF-COPIES command sets the number of copies that the rasterizer will make at the end of a PLOT command.

DEFAULTS

port
as shipped — none
on power-up — remembered
if omitted — error PN11

number-of-copies
as shipped — 0
on power-up — 0
if omitted — 0

ERRORS

PN11 (Level 2):　Invalid Port Specifier.
PN12 (Level 3):　Out of memory while parsing.
PN21 (Level 2):　Invalid Number-Of-Copies.

REFERENCES

PLOT Command
PORT-ASSIGN Command
SAVE Command

INQUIRY COMMAND

REPORT-PORT-STATUS command

SET-PORT-QUEUE-SIZE Command

This command allows the size of the 4510A communication queue when the 4510 driver is selected.

Host Syntax

^E_CPS   int:*port*   int:*queue-size*

Setup Syntax

PQUEUE ^S_P *port queue-size*

PARAMETERS

port
    Specifies the RS-232 peripheral port to which a queue size is being assigned. Valid ports are:

    P0:
    P1:
    P2: (4115/4120 Series only)

queue-size (0 to $2^{31}-1$)
    Number of bytes reserved for the 4510A's communications input queue. (The 4510A will not lower the queue below 1000).

DESCRIPTION

This command selects the number of bytes the 4510A will set aside from its memory for the communications input queue storage area.

This can be used to queue multiple PLOTs in the 4510A, without holding up the terminal until each copy is completed.

DEFAULTS

port
    as shipped — none
    on power-up — remembered
    if omitted — error PS11

queue-size
    as shipped — 0
    on power-up — 1000
    if omitted — 0

ERRORS

PS11 (Level 2):   Invalid Port Specifier.
PS12 (Level 3):   Out of memory while parsing.
PS21 (Level 2):   Invalid queue-size.

REFERENCES

PLOT Command
PORT-ASSIGN Command
SAVE Command

INQUIRY COMMAND

REPORT-PORT-STATUS command