3500 Excelerate!™

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Chapter 1 – 3500 Excelerate!™

General

NOTE

3500 Excelerate! is an extremely potent tool intended for use by power users only.

The control system software (e.g. Win3500Plus) allows certain system functions to be restricted on a user-by-user basis.

3500 Excelerate! bypasses these restrictions allowing users full, unrestricted access to all system controller functions.

The security implications of this should be thoroughly understood before granting user access to 3500 Excelerate!

3500 Excelerate! is a standard Microsoft® Excel workbook containing a number of predefined worksheets and a custom toolbar. Each of the worksheets in the workbook are used to define or configure some part of the 3500Plus system controller operating parameters. The data entered into the worksheets is the same information that is entered into Win3500Plus, but is presented in manner that allows the use of some of Excel's features such as the grid type display, cut and paste, data sorting, etc. This method of data display and manipulation can increase productivity when creating or modifying a 3500Plus configuration, however it does require that the user have a good knowledge of the interaction of configuration items. 3500 Excelerate! will do data validation when a configuration is saved or downloaded to the 3500 controller or a validation can be forced with the Validate button on the toolbar. Data is only validated in the cases just described and is not validated as it is entered into the worksheet cells.

Remember that all names and index characters are required to be uppercase. It is up to the user to turn on "Caps Lock" or whatever happens to be your preference to ensure that only uppercase characters are used.

NOTE

Do not delete any of the worksheets in the workbook.

Do not delete any columns or rearrange any columns in worksheets that have column headings (each row is a record in the table).

Do not delete any rows or rearrange any rows in worksheets that have row headings (each column or group of columns is a list).

Column widths and row heights may be adjusted to your viewing preference.

Toolbar Command Descriptions

Load File

Opens a file open dialog to allow loading a configuration text file into the workbook. These files should typically have a .txt or .dat file extension, and can be generated from Win3500Plus by using the "Database convert to ASCII file…" option of the Import/Export Functions submenu found under the Diagnostics menu heading.

Save File

Opens a file save dialog to allow saving the workbook to a configuration text file. These files should typically have a .txt or .dat file extension and can be imported into Win3500Plus by using the "Import ASCII file to PC…" option of the Import/Export Functions submenu found under the Diagnostics menu heading.

Validate Sheet Data

Runs the data validation tests on the data in the worksheets. The test will display a message box stating the problem encountered. Before clearing the message box, the offending worksheet name can be seen on the status bar at the bottom of Excel's main window. After clearing the message box, the error should be corrected and validation should be run again. Continue this process until all errors are cleared.

Clear Sheets

Erases all configuration data in all worksheets of the workbook.

Upload File

Uploads configuration data directly from the 3500Plus controller. This is basically the same as "Load File" except that the file comes directly from the controller. This mode requires a serial port from the PC running 3500 Excelererate! be connected to one of the serial ports on the 3500Plus controller.

Download File

Downloads configuration data directly to the 3500Plus controller. This is basically the same as "Save File" except that the file goes directly to the controller. This mode requires a serial port from the PC running 3500 Excelerate! be connected to one of the serial ports on the 3500Plus controller.

CommPort Setup

Allows the selection of the PC communications port to be connected to the 3500Plus controller, and the baud rate at which they will communicate.

CPU Link Test

Tests the communications path to the 3500Plus controller. Results of the test are displayed in a message box. Functionally equivalent to the "CPU Link Test" in the Diagnostics menu item of the Win3500Plus software.

Timesaving Features

A few features have been added to the workbook in an effort to simplify some of the more tedious tasks.

Automatic Category/Index Entry

As source, destination, or reentry names are added to the “Source”, “Destination”, and “Reentry” worksheets, the names are tested for validity. If names are determined to be valid Category/Index names, then they are automatically broken into category and index and added to the appropriate list if not already there.

AutoNumber

On all worksheets in the workbook, one can automatically copy and increment a number in a column. Select a group of cells in a column with the number to be incremented as the top cell in the selection and right click within the selected area to enable popup menu.

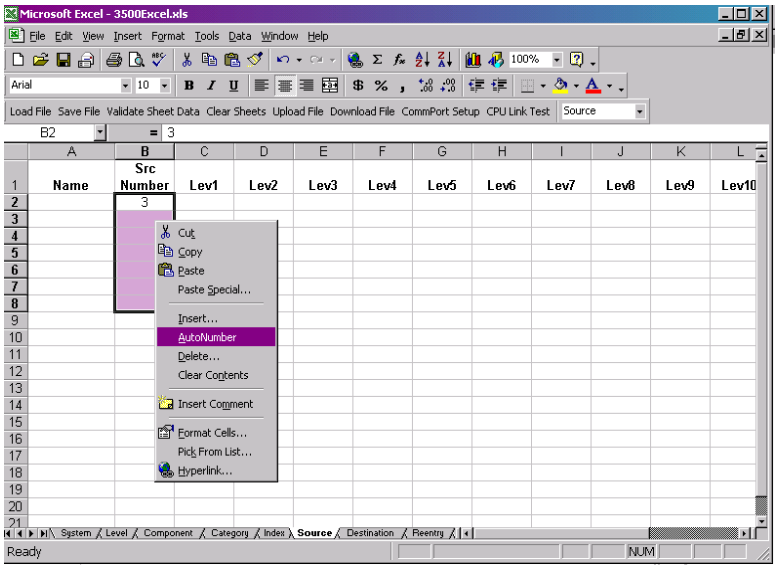


Figure 1. AutoNumber Step 1

Select "AutoNumber" from the popup menu and you should see the results shown below.

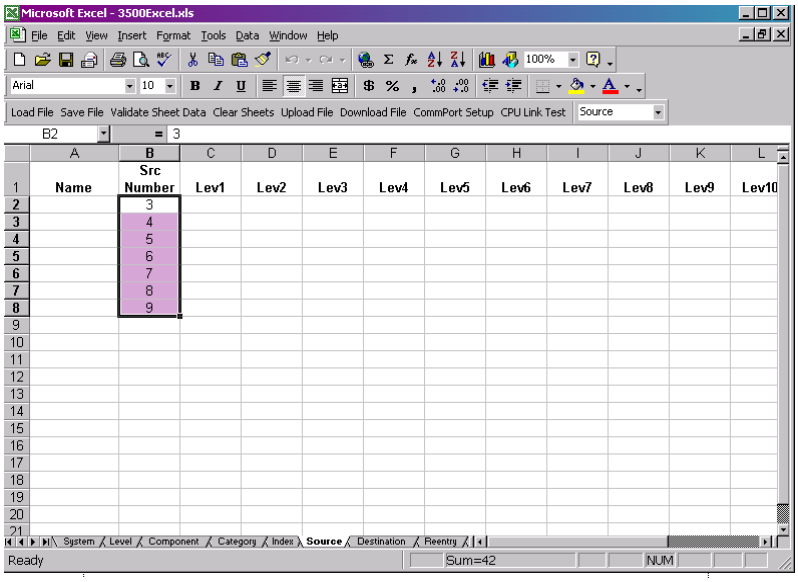


Figure 2. AutoNumber Step 2

Copy & Increment

On the “Source”, “Destination”, and “Reentry” worksheets, one can automatically copy and increment a category-index name in a column. Select a group of cells with the name to be incremented as the top left cell in the selection and right click within the selected area to enable popup menu. The selected area may contain more than one column in which case, any numeric values along the top row of the selected area will be copied and incremented also.

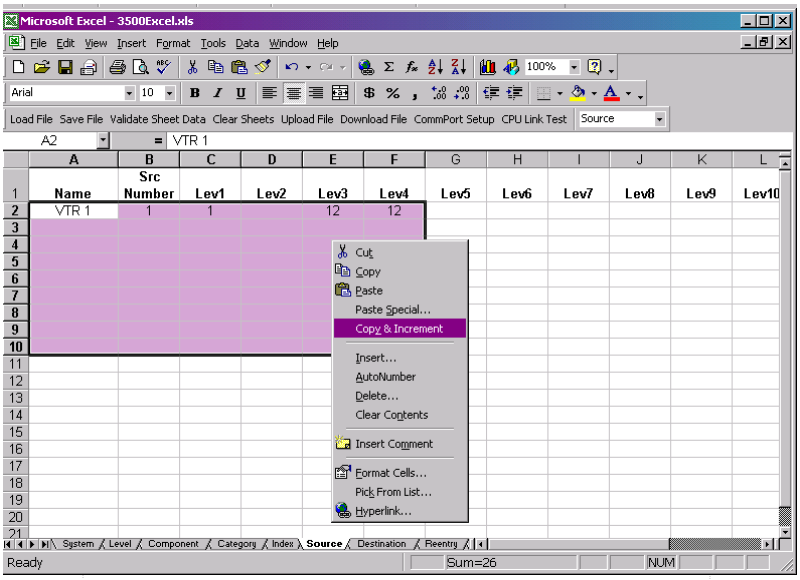


Figure 3. Copy & Increment - Step 1

Select “Copy & Increment” from the popup menu and you should see the results shown below.

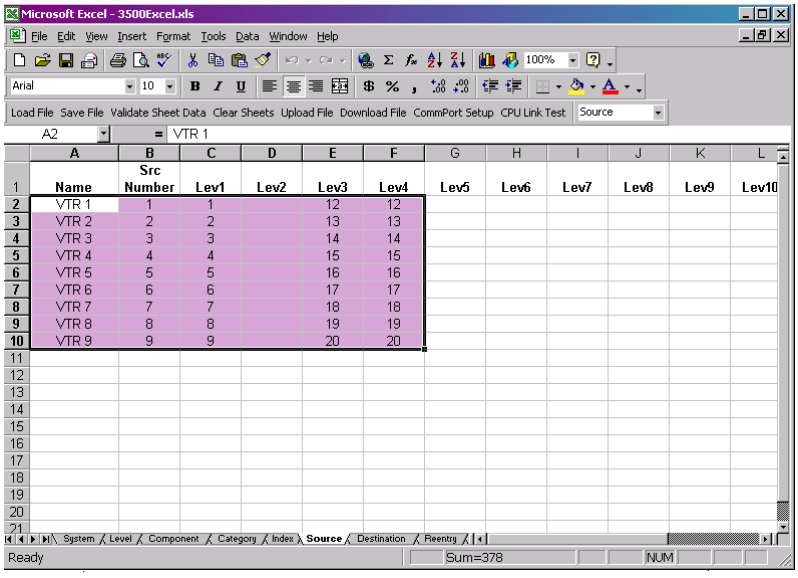


Figure 4. Copy & Increment - Step 2

Panel Type

There are six control panel worksheets in the workbook. Each control panel worksheet is only valid for certain types of control panels based on the type of configuration information required for each panel. In an effort to make it easier to remember which control panels are defined on which worksheet, a combo box was added to the popup menu to allow selection of the control panel type. On the “Pan-Type1”, “Pan-Type2”, “Pan-Type3”, “Pan-Type4”, and “Pan-Type5” worksheets only (“Pan-Type6” is for Stat panels), one may right click in the next available “Panel Type” cell and select the panel type from the combo box in the popup menu. This action copies the selected panel type into the cell.

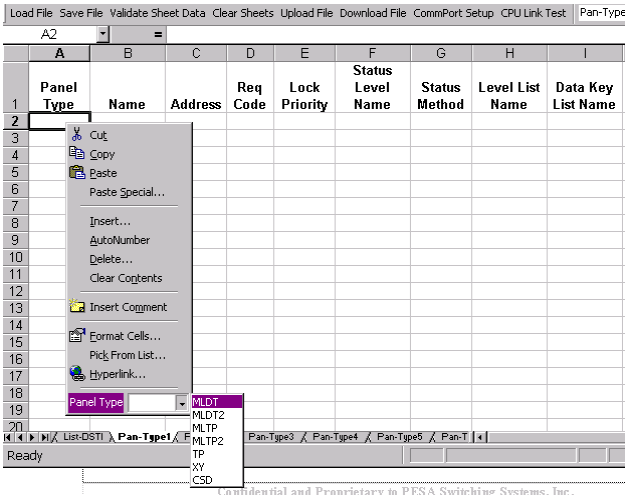


Figure 5. Panel Type

Goto List

On the “Pan-Type1”, “Pan-Type2”, “Pan-Type3”, “Pan-Type4”, and “Pan-Type5” worksheets, one may right click the name of one of the key lists defined for that panel and click on “Goto List” in the popup menu and be automatically moved to the appropriate list worksheet.

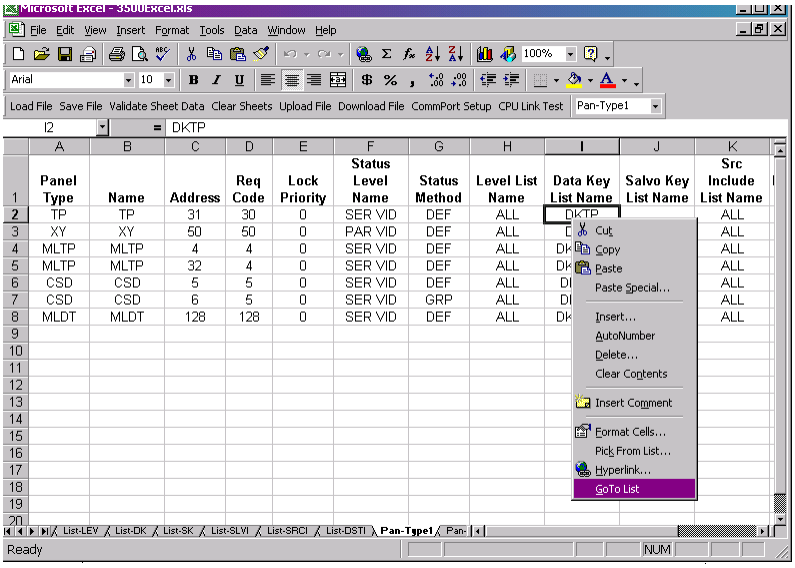


Figure 6. GoTo List

Chapter 2 – 3500Plus

Hierarchy of 3500Plus Configuration

The data in the 3500Plus controller is hierarchical in nature. Configurable items may be defined in terms of other configurable items that are higher in the hierarchy. A configurable item may not be defined in terms of items that are at the same hierarchical level or lower. This guarantees that configuration data bases do not have cyclical references in them.

The present 3500Plus configuration item hierarchy is:

- System Parameters
- Levels
- Components
- Categories, Indices
- Sources, Destinations, Reentries
- Tielines
- Tieline Source Additions
- Sync Reference Names
- Sync Reference Definitions
- Source/Destination Blocks
- Salvo Groups
- Salvo Entries
- Panel Lists
- Panels
- Soft Keys
- CPU Link Protocols
- Serial Port

NOTE

Since physical outputs can be assigned to only one destination/tieline per component, a special case has been added to make it illegal to define components after destinations or tielines have been defined.

Predefined Items

The following are configuration items that always exist within the controller configuration, i.e. these are never deleted from the data base and as such cannot be redefined. Attempts to redefine these items will produce errors.

These items are not sent in the response to a configuration query command.

The list of predefined configuration items is as follows:

- Index '0' – This index has special display properties and is always defined.
- Level List named 'ALL' – Contains a reference to all levels defined in a configuration. It is automatically updated in response to any configuration changes.
- Source Include List named 'ALL' – Contains a reference to all sources (source groups and reentries) defined in a configuration. It is automatically updated in response to any configuration changes.
- Destination Include List named 'ALL' – Contains a reference to all destinations (destination groups and reentries) defined in a configuration. It is automatically updated in response to any configuration changes.
- Salvo Include List named 'ALL' – Contains a reference to all salvos defined in a configuration. It is automatically updated in response to any configuration changes.
- CPU link Protocol 'PROTCL1E' – The default protocol to allow external configuration access to the controller. The protocol is set for PESA checksum and carriage return/linefeed terminator.
- CPU Link port address 1 is defined to be a PROTCL1E type CPU link port to guarantee access to the 3500Plus from the Win3500Plus application. This port is configured for 9600 baud and 2 stop bits. The port may have some reconfiguration but only the <port name> and <requester code> parameters may be changed. Port address 1's default lock priority is set to 0 and requester code is set to 1024.

Panel Types

The following are valid panel types allowed on the 3500Plus controller along with the field that represents the panel type:

Table 1. Remote Control Panel Types

Panel Type	Field Entry
RCP-128X	128X
RCP-241	241
RCP-48X	48X
RCP-64X	64X
RCP-CSD	CSD
RCP-LCXY	LCXY
RCP-MB2	MB2
RCP-MLDT	MLDT
RCP-MLDT2	MLDT2
RCP-MLTP	MLTP
RCP-MLTP2	MLTP2
RCP-MP32	MP32
RCP-PVPG	PVPG
RCP-STAT1	STAT
RCP-STAT2	STAT
RCP-TP	TP
RCP-XY	XY

Naming Rules

Names used in the configuration follow a set of conventions that specify their construction. The following specifies how names are constructed.

All names must:

- Consist of alpha-numeric (uppercase only) or space characters.
- Start with an uppercase alpha character.
- Must not end in a space (extra spaces are removed from the name).

In addition, the following are required per name:

Standard Names

Standard names can be from 1-8 characters in length.

Category Names

Category names can be from 1-6 characters in length. These may consist of alpha-numeric values. No spaces may be embedded in a category.

Category/Index Names

Category/Index names are 1-8 characters in length and must be able to be constructed by appending a combination of up to 2 indices onto a category name. Indices are distinct single character elements chosen from the set of alpha-numeric characters.

Category Index Name = <Category><Left Index><Right Index>

For names built from categories less than 6 characters in length, there must be a space separating indices from the category.

For names built from categories 6 characters in length and with the left index not equal to “0”, both indices are appended directly onto the category with no space separation.

For names built from categories 6 characters in length and with the left index equal to “0”, the right index is appended onto the category with a space separation.

If the left and right index values are “0”, the category/index name is displayed as the category name alone, e.g. VTR, 0, 0 would be displayed as “VTR”.

If the left index is “0” and the right index is a non-“0” value, only the right index name appears in the name, e.g. VTR,0,7 would be displayed as “VTR 7”.

If the right index is “0” and the left index is a non-“0” value, both the left and the right index name appears in the name, e.g. VTR,7,0 would be displayed as “VTR 70”.

Chapter 3 – Configuration Item Definitions

In the following descriptions, some information will be shown in the following format:

Ex: <System Parameter Name>,<System Parameter Value>

Ex: <Name>,<Number>, <# of inputs>,<# of outputs>[,<Properties>,...]

The data between the angle brackets (<,>) usually corresponds to column headings or row headings in the worksheets in which that data is defined. The square brackets around a set of angle brackets typically implies that the data for that field is optional and does not need to be supplied.

System Parameters

Worksheet: System

These are controller wide parameters that may affect the operation of a number of different controller resources.

<System Parameter Name>,<System Parameter Value>

System parameters for 3500Plus operation available are:

CHOPRATE - 1-255 fields per switch.

CFGID - Configuration ID. The value is a 0-32 character string that identifies the configuration. No commas are allowed in the character string. The format of the CFGID string is not defined within this document.

NOTE

The validity of each value field is dependent upon the particular parameter.

Level

Worksheet: Level

Levels of control are the base element that the user can access. The level defines signals to their lowest level of use such as video, audio, or time code. For example, a signal such as RGB video would reside on one control level.

<Name>,<Number>, <# of inputs>,<# of outputs>[,<Properties>,...]

Level # indicates where the level is mapped to for panel breakaway operation.

Properties specify those properties pertaining to the particular level

- C – Level can be placed into Chop

Rules:

Level Name must be unique and meet the general name criteria set forth in “Naming Rules” on page 11.

Level Number must be unique, within the value 1-16, and consecutive (Level 3 can exist if and only if Level 2 and Level 1 exist as well).

# of inputs must be 1-576

# of outputs must be 1-576

Properties are optional. Lack of a property definition indicates that the property does not hold.

Component

Worksheet: Component

A component identifies a physical X-Y block of physical crosspoints in which all the inputs and all the outputs are contiguous. Any component input can be connected to any of the component outputs by activating a single crosspoint. Components are used to assign physical inputs and outputs to levels of control. For example, an RGB video level would consist of three components.

Components can reside in any physical matrix space without regard to the location of other defined components.

<Name>, <Level Name>, <Input Offset>, <Output Offset>, <type>, [<type info>]

The type field will allow for the definition of unique component type attributes. These attributes would be defined after the type field. Presently valid types are:

- RM5, <strobe #> – Strobe is a number from 1-5
- PRC, <strobe #> – Strobe is a number from 1-62
- TGR, <strobe #> – Strobe is a number from 1-62
- XTN, <strobe #> – Strobe is a number from 1-62

Rules:

Component Name must be unique and meet the general name criteria set forth in “Naming Rules” on page 11.

Level Name must match preexisting level.

# of input offset must be 0-255 for type RM5, 0-4094 for type PRC, TGR, and XTN

# of output offset must be 0-255 for type RM5, 0-4094 for type PRC, TGR, and XTN

Type must be selected from the list of valid router types. The type info required is dependent upon the particular router type. It must be present as defined for each type.

There are a maximum of 32 components in a system.

Since physical outputs can be assigned to only one destination/tieline per component, a special case has been added to make it illegal to define components after destinations or tielines have been defined.

Category

Worksheet: Category

Category is a multiple character sequence (1-6 characters) that is used to build system names. Along with indices, it provides a means of quickly building names to allow a user to access sources, destinations, and reentries.

<Name>

Rules:

The category name must meet the category naming rules.

The category name must be unique, i.e. does not already exist.

There are a maximum of 254 category names allowed.

Index

Worksheet: Index

<Name>

Index is a one character value (uppercase) that is used to build system names. Indices are appended onto categories to construct these names.

Rules:

The Index name must be a single alpha-numeric character excluding the letter '0' ('0' is always pre-defined within the controller).

The Index name must be unique.

There are a maximum of 15 user definable index names allowed (16 including the predefined index name of '0').

Source

Worksheet: Source

A source is a grouping of level inputs that logically represent a complex signal incoming to the router. Sources may have one input per level defined. It is not required that each level have an input defined. A level's input may be shared among any number of source groups.

For example, a source group may consist of video, audio, and time code signals that represent a signal coming from a studio.

<Name>, <Source Number>, [<Input #>], [<Input #>], …

Rules:

Source Name is unique among sources and reentries. The source must meet naming requirements for category/index type names.

Source Number is unique among sources and reentries. There is no required ordering specifying which Source Number may be used as long as no other source or reentry is using it. This allows for gaps to be present between assigned source numbers as well as an intermixing of source groups and reentries. However, it is suggested that these gaps be minimized.

The ordering of input numbers is implied by the level ordering. The first input # refers to level 1, the second input number refers to level 2, etc. If a source is not defined on a particular level, that level's definition is left blank, e.g. SRC 1, 1, 1, , 1 is defined on levels 1 and 3 but not level 2.

There may only be inputs specified for the number of levels that exist in the configuration, e.g. a four level system will not accept a definition with five levels of inputs specified.

Sources definitions with fewer levels defined than there are configured levels will have the added levels defined with no inputs on those levels, e.g. a source with three levels defined on a four level system will be defined with no input assigned to level 4.

All inputs specifications must be numeric with the number in range for the given level.

There are a maximum of 600 sources for a 3500Plus.

Destinations

Worksheet: Destination

A destination is a grouping of level outputs that are used to logically represent a complex signal leaving the router. Destinations may have one output per level defined. It is not required that each level have an output defined. A level's output may be assigned to only one destination group at any one time. A destination may not use an output that has been assigned to a tieline.

For example, a destination group may consist of video, audio, and time code signals that represent a signal going to an edit booth.

<Name>, <Destination Number>,[<Output #>], [<Output #>], …

Rules:

Destination Name is unique among destinations and reentries. The destination must meet naming requirements for category/index type names.

Destination Number is unique among destinations and reentries. There is no required ordering specifying which Destination Number may be used as long as no other destination group or reentry is using it. This allows for gaps to be present between assigned destination numbers as well as an intermixing of destination groups and reentries. However, it is suggested that these gaps be minimized.

The ordering of output numbers is implied by the level ordering. The first output # refers to level 1, the second output number refers to level 2, etc. If a destination is not defined on a particular level, that level's definition is left blank, e.g. DST 1, 1, 1, , 1 is defined on levels 1 and 3 but not level 2.

There may only be outputs specified for the number of levels that exist in the configuration, e.g. a four level system will not accept a definitions with five levels of outputs specified.

Destination definitions with fewer levels defined than there are configured levels will have the added levels defined with no outputs on those levels, e.g. a destination with three levels defined on a four level system will be defined with no output assigned to level 4.

All outputs specifications must be numeric with the number in range for the given level. The output number on a level may not be used by any other destination group or tieline.

All physical outputs assigned to a destination cannot be referenced by any other destination or tieline. Once a physical output is assigned to a destination or tieline, it cannot be used by any other destination or tieline. This applies to the case where component outputs overlap and the same output is available across multiple levels.

There are a maximum of 600 destinations for a 3500Plus.

Reentry

Worksheet: Reentry

Reentries are virtual connections within the router that allow a single source group to be routed to many destinations in a single action. A reentry appears to the user as both a source and destination. The user connects a reentry to multiple destinations using the reentry as a source. The user then can connect a source to the reentry using the reentry as a destination. This causes the source to be connected to all destinations previously assigned to the reentry.

<Name>,<Source Number>,<Destination Number>

Rules:

Reentry Names are unique among sources, destinations and reentries. The reentry must meet naming requirements for category/index type names.

Source Number and Destination Number do not have to be the same per reentry.

Source Number is a unique among sources and reentries. There is no required ordering specifying which Source Number may be used as long as no other source group or reentry is using it. This allows for gaps to be present between assigned source numbers as well as an intermixing of source groups and reentries. However, it is suggested that these gaps be minimized.

Destination Number is a unique among destinations and reentries. There is no required ordering specifying which Destination Number may be used as long as no other destination group or reentry is using it. This allows for gaps to be present between assigned destination numbers as well as an intermixing of destination groups and reentries. However, it is suggested that these gaps be minimized.

There are a maximum of 8 reentries.

Tielines

Worksheet: Tielines

A tieline is a linkage between levels of control. Its use allows for an input on one level to be available to connect to outputs on another level.

<Name>, <Output Level Name>,<Output #>,<Input Level Name>,<Input #>

Rules:

Tieline Name is unique among tielines. The tieline must meet standard naming requirements.

Output Level name is the name of an already configured level that will drive the signal into the tieline.

The output specification must be numeric with the number in range for the given level. The output number on the output level may not be used by any other destination group or tieline.

All physical outputs assigned to a tieline cannot be referenced by any other destination or tieline. Once a physical output is assigned to a destination or tieline, it cannot be used by any other destination or tieline. This applies to the case where component outputs overlap and the same output is available across multiple levels.

Input Level name is the name of an already configured level into which the tieline drives its signal.

The input specification must be numeric with the number in range for the given level. The input number on the input level may not be used by any other tie line.

Input level and Output level may be the same level. However, the tieline will not be used in any switches in this circumstance.

There are a maximum of 64 tielines.

Tieline Source Definitions

Worksheet: Tieline Src Def

Tieline Source definitions add a tieline input connection to a previously existing source group. This transforms existing sources into tieline enabled sources.

<source name>, <defined source level name>, <tieline connected level name>, <tieline connected level input #>

Where:

Source name is the name of an already defined source.

Defined source level is the name of a preexisting level on which the specified source is not already defined.

Tieline connected level is the level from which the source signal is gathered. A tieline must already be in existence that takes a signal from the tieline connected level to the defined source level.

The input specification must be numeric with the number in range for the given tieline connected level.

Sync Reference Name

Worksheet: Sync Ref Name

Sync reference names are a means of identifying a sync reference. These references are used by the routing matrices to determine at which point in time to switch an output from one input to another.

<Name>, <Sync Number>

Name is a standard format name describing the system reference. Sync reference names must be unique.

Sync Number is valued from 1 to 2. Sync numbers must be unique. If not specified, it is assumed that the sync reference used is #1. If not otherwise named, the name associated with the default sync reference is SYNC1.

Sync Reference Definition

Worksheet: Sync Ref Def

Sync Reference Definitions indicate to the controller on which reference the controller to switch the outputs associated with the given destination group.

<Destination>, [<Level 1 Reference>], [<Level 2 Reference>], …

Destination is the name of the destination for which the list of sync references name is associated.

Level 1 Reference is the sync reference name associated with the output on the specified level. The ordering of sync reference names for the destination is implied by the level ordering. The first sync reference name refers to level 1, the second to level 2, etc. If a level reference is left blank for a given level (i.e. ,,) the default sync reference (whatever name is associated with sync number 1) is implied. If the destination contains sync reference names for only levels 1 and 2 (for example on a 4 level system), levels 3 and 4 are assumed to be the default sync reference. If no SRD is specified for a destination, all levels on the destination are assumed to be switched using the default sync reference.

Source/Destination Block

Worksheet: SrcDst Block

A source/destination block is a controller security feature that prevents a source to destination path from being made in the router.

Source/destination blocks are specified using sources and destinations. This may affect signals in which an input is shared across many sources of which at least one is used in a block.

<Destination Name>,<Source Name>,[<Source Name>], …

Rules:

All destinations and sources specified in the definition must exist.

For instances of shared inputs, it is up to the system user to insure that all source destination combinations accessing the shared input are blocked.

Reentries cannot be specified in block definitions. Blocked paths may not be connected through reentries, e.g. If SRC1 is blocked from DST1, SRC1 switched to RNTRY 1 and RNTRY 1 switched to DST1 will not allow SRC1 to be connected to DST1, i.e. it will be blocked.

A definition may include a block that already exists in the configuration, i.e. a block may be specified twice.

Salvo Group

Worksheet: Salvo Grp

A Salvo group is a grouping of salvo entries. These entries are activated when the salvo group specified is executed by the user.

<Name>,<Number>,<Salvo Type>

Rules:

Salvo Group Names must be unique. The salvo group name must meet standard naming rules.

The salvo group number is used for compatibility with the existing CPU Link Protocol No. 1. The number must not already be in existence and must range from 1-99, A0-A9, B0-B9 and C0-C8.

There are a maximum of 128 salvo groups that can be defined in any one configuration.

The Salvo type must be one of the following:

- SOG – Switch Only Salvo

Salvos Entry

Worksheet: Salvo Entry

Salvo entries are switch specifications used in the execution of salvos. A salvo entry is assigned to a salvo group. When the salvo group is executed, all the salvo entries associated with the group are executed.

There are a maximum of 1024 salvo entries that can be defined in any one configuration.

The salvo entry type must be compatible with the salvo group type (note, however, that the salvo entry type does not have to be identical in name to the salvo group type). The compatibility of group types to entry types is specified in the following table.

Table 2. Compatible Salvo Entry and Salvo Group Types

Salvo Entry Type	Salvo Group Type
SOE - Switch Only Salvo	SOG - Switch Only Salvo

The salvo entry information must meet the rules of the specific salvo entry type.

Switch Only Salvo Entries

<Salvo Group Name>, SOE ,<Destination Name|Reentry Name>, [<Source Name|Reentry Name>] , [<Source Name|Reentry Name>], …

Rules:

The salvo group, destination and sources must already exist.

The entry must specify a valid destination group or reentry.

The entry must specify valid source groups and/or reentries.

There may only be one entry defined with any given destination per salvo group. Other than that, there is no restriction which salvo group an entry may be associated with.

The ordering of sources is implied by the level ordering. The first source refers to level 1, the second source refers to level 2, etc. A level may have no source specified by simply omitting the source name corresponding to that level.

A definition cannot specify more sources than there are configured levels. If fewer sources are configured than there are levels, the remaining levels are specified with no source definition.

At least one configured source must be specified per switch only salvo entry.

Panel List Configuration

Panel Lists are lists of configuration information that user panels refer to set up their operation. Lists may be shared among a number of panels to provide common operation across the panels. A change to a single list causes all panels referring to the list to be updated.

Items in the lists that refer to undefined configuration items may be deleted from the list by the controller.

The list name **ALL** is reserved for internal controller use. Any attempt to define a list named **ALL** will cause an error to be reported. The **ALL** list indicates a list that includes all defined items that may be placed in a list (this does not apply to data key and salvo key lists).

Types of lists include:

Level List

Worksheet: List-LEV

This list specifies the levels of control that may be controlled by a user panel.

<Name>, <Level Name>, [<Level Name>], …

Rules:

The Level list name must be unique for all panels

All level names specified must already be configured.

Data Key List

Worksheet: List-DK

This list provides the mapping of data keys to a set of panels. These keys may be setup to allow for hot takes, change the destination a panel controls, allow the building of a source/destination names through category index, or control level breakaway/status.

Position in the list indicates data key mapping to panel key. These lists may be shared only within a particular panel type.

<Panel Type>, <Name>, [<Data Key #1 Info>] ,[<Data Key #2 Info>], ... [<Data Key #n Info>]

Where Data Key info is:

- Source key – SRC, [<Source Name|Reentry Name >]
- Destination key – DST, [<Destination Name|Reentry Name >]
- Category index key – CAT, [<Category Name>], [<Index Name>]
- Soft source key – SSRC
- Soft destination key – SDST
- Level key – LEV, [<Level Name>]

Data Key Types available for different panel types:

- RCP-241 - 24 keys of type SRC
- RCP-48X - 48 keys of types SRC, DST
- RCP-MB2 - 24 keys: SRC or SSRC for keys 1-8, DST or SDST for keys 9-24
- RCP-MLDT - 72 keys of types SRC, DST, CAT, SSRC, SDST, LEV
- RCP-MLDT2 - 40 keys of types SRC, DST, CAT, SSRC, SDST, LEV

- RCP-MLTP - 24 keys of types SRC, DST, CAT, SSRC, SDST, LEV
- RCP-MLTP2 - 26 keys of types SRC, DST, CAT, SSRC, SDST, LEV
- RCP-MP32 - 134 keys of types SRC, DST, LEV
- RCP-TP - 24 keys of types SRC, DST, CAT, SSRC, SDST
- RCP-XY - 16 keys of types SRC, DST, CAT, SSRC, SDST
- RCP-CSD - 188 keys: SRC, DST, CAT, SSRC, SDST for keys 1-44, DST, SDST for keys 45-188
- RCP-128X - 134 keys of types SRC, DST, LEV
- RCP-64X - 66 keys of types SRC, DST, LEV
- RCP-LCXY – No configurable keys
- RCP-PVPG – 10 keys: SRC, SSRC for keys 1-8, DST for keys 9-10

Rules:

The data key list name must be unique for all panels.

The key assignment is implied within the list. There may only be as many keys specified as belong with the panel type. Only one type of data key is allowed per position.

A key may be left unassigned by leaving a field blank.

Source and Destination keys may be defined without specifically assigning a source or destination group to the key.

Category index keys may be defined without specifying either the category and/or the index.

Level keys may be defined without specifically assigning a level to the key.

If a list has fewer keys specified than there are available keys, the remaining keys are configured as keys without definitions.

Entries may be repeated as many times as desired.

Salvo Key List

Worksheet: List-SK

Salvo key lists provide a mapping of salvos to data keys for a set of panels. While a panel is in the salvo select mode of operation, the user may take a salvo by simply pressing one key that has the appropriate salvo mapping.

<Panel Type>, <Name>, [<Salvo Name>] ,[<Salvo Name>] , …

Number of Salvo Keys per panel type:

- RCP-MLDT – 72 keys
- RCP-CSD – 44 keys
- RCP-MLDT2 – 40 keys
- RCP-MLTP – 24 keys
- RCP-MLTP2 – 26 keys
- RCP-TP – 24 keys
- RCP-XY – 16 keys

Rules:

The salvo key list name must be unique for all panels.

The key assignment is implied within the list. There may only be as many keys specified as belong with the panel type.

A key may be left unassigned by leaving a field blank.

If a list has fewer keys specified than there are available keys, the remaining keys are configured as keys without definitions.

Entries may be repeated as many times as desired.

Salvo Include List

Worksheet: List-SLVI

This list indicates the salvos that are accessible to the panel exclusive of those accessed by a Salvo Key List. They may be accessed by using the prev/next keys or rotary knob.

<Name>, <Salvo Name>, [<Salvo Name>], …

Rules:

The salvo include list name must be unique for all panels.

All salvos specified must already exist in the system.

Source Include List

Worksheet: List-SRCI

This list indicates the sources and reentries that are accessible to a panel exclusive of those accessed by a Data Key List.

<Name>,<Source Name|Reentry Name>, [<Source Name|Reentry Name>], …

Rules:

The source include list name must be unique for all panels.

All source and reentries specified must already exist in the system.

Destination Include List

Worksheet: List-DSTI

This list indicates the destinations and reentries that are accessible to a panel exclusive of those accessed by a Data Key List.

<Name>, <Destination Name|Reentry Name>, [<Destination Name|Reentry Name>], …

Rules:

The destination include list name must be unique for all panels.

All destinations and reentries specified must already exist in the system.

Panel Configuration

Panel configurations configure the remote control panels that are used to control the router. These configurations are segregated by panel type. In the 3500Excel workbook, the panels are defined in one of six worksheets grouped according to the type of configuration information required.

Rules:

Name is an optional field for use by the system administrator. The panel name follows the standard name format. The name of the panel need not be unique.

Address is the 10 bit number (1-1023) that is used to identify the physical panel attached to the panel control bus. This field must be specified and must be unique.

Requester Code is a number (1-65534) that identifies panels that share locks and protects. It is suggested that this number should default to the panel address. This field must be specified.

> **NOTE**
>
> This is the same field as those requester codes specified for CPU links. It is not the controller's responsibility to determine uniqueness between requester codes assigned to panels and CPU links. It is suggested that panel requester codes be assigned from 1-1023 and CPU link requester codes be assigned from 1024 and above.

Lock Priority is a number from 0-255 where 0 is the highest priority and 255 is the lowest priority. This field must be specified.

Status Level name is the name of the level used for primary status of the panel. The level must already exist in the system. This field must be specified.

Status Method is the method used to determine the name placed into a panel's source status display. This field is a maximum of three characters in length and must be specified. Currently defined status methods are:

- DEF – Default Status Level Method
- GRP – Group Status Method

Default Destination is the initial destination controlled by the panel. The destination must already exist in the system. This field is optional and may be omitted.

Panel lists (as specified above) are all optional. If a list is specified, the list must exist within the appropriate "List-xxxx" worksheets. In addition, for lists specifying panel type, the list type must match the panel type being specified.

Control Panels - Type 1

Worksheet: Pan-Type1

Control panel types: MLDT, MLDT2, MLTP, MLTP2, TP, XY, CSD

Type specific information:

<Panel Type>, [<name>], <address>, <requester code>, <lock priority>, <status level name>, <status method>, [<level list name>], [<data key list name>], [<salvo key list name>], [<source include list name>], [<destination include list name>], [<salvo include list name>], [<destination namelreentry name>]

Control Panels - Type 2

Worksheet: Pan-Type2

Control panel types: 128X, 64X, 241, 48X, MP32

Type specific information:

<Panel Type>, [<name>], <address>, <requester code>, <lock priority>, <status level name>, <status method>, [<level list name>],[<data key list name>],[<destination name|reentry name>]

Control Panels - Type 3

Worksheet: Pan-Type3

Control panel types: MB2

Type specific information:

<Panel Type>, [<name>], <address>, <requester code>, <lock priority>, <status level name>, <status method>, [<level list name>], [<data key list name>],[<source include list name>], [<destination include list name>], [<salvo include list name>]

Control Panels - Type 4

Worksheet: Pan-Type4

Control panel types: LCXY

Type specific information:

<Panel Type>, [<name>], <address>, <requester code>, <lock priority>, <status level name>, <status method>, [<level list name>], [<source include list name>], [<destination include list name>], [<destination name|reentry name >]

Control Panels - Type 5

Worksheet: Pan-Type5

Control panel types: PVPG

Type specific information:

<Panel Type>, [<name>], <address>, <requester code>, <lock priority>, <status level name>, <status method>, [<level list name>], [<data key list name>], [<source include list name>]

Control Panels - Type 6

Worksheet: Pan-Type6

Control panel types: STAT

Type specific information:

<Panel Type>, [<name>], <address>, <requester code>, <lock priority>,<display type1 info>, <display type2 info>

In the "Pan-Type6" worksheet, there are four fields available for each display. The fields used will be dependent upon the display type chosen. If a particular field is not appropriate for the display type chosen, then that field should be left blank.

Table 3. Display Types

Custom Message	CST, <L|C|R>,<Message>
Level Name	LEV, <L|C|R>,<Level name>
Destination Name	DST, <L|C|R>,<Destination Name|Reentry name >
Status Display	STS, <L|C|R>,<Destination Name|Reentry name >, <Level name>

Rules:

The display assignment is implied within the definition. There may only be as many displays specified as belong with the panel type. STAT1 and STAT2 panels may both have up to 2 displays configured but the STAT1 panel will ignore the data for the second display.

A display may be left unassigned by leaving the fields corresponding to that display blank. Nothing appears in such displays, i.e. they are blank.

If a definition has fewer displays specified than there are available displays, the remaining displays are configured without definitions, i.e. left blank.

L|C|R is an indication of the justification of the message being displayed. "L" indicates that the message is to be left justified in the display field. "C" indicates that the message is to be center justified in the display field. "R" indicates that the message is to be right justified in the display field. This field must be included in all valid status type definitions.

A custom message may consist of an ASCII string of characters starting and ending with non-space characters. The string may consist of up to 8 printable ASCII characters (including embedded spaces) with the exception of parentheses, asterisks, and commas.

Soft Keys

Worksheet: Soft Keys

Soft keys are panel data key definitions that may be configured by the user of a particular panel. Though their data key position is assigned in the data key list definition, soft keys are unique to the panel they were configured at and are not shared by other panels.

Panel Address is the address of the panel the key is associated with.

Key Number is the numeric representation indicating key location on the panel.

Soft key type is either SSRC (Soft Source) or SDST (Soft Destination).

Type Info (<Source Name|Reentry Name> for SSRC and <Destination Name|Reentry Name> for SDST) is optional and is not required for defining a soft key.

Soft Source Key

<panel address>,<key number>, SSRC, [<Source Name|Reentry Name >],
[<Source Name|Reentry Name >] …

Where a source is specified for each level in the system.

Rules:

The panel address must already be defined in the system.

Sources must be defined in the configuration.

The ordering of sources is implied by the level ordering. The first source refers to level 1, the second source refers to level 2, etc. A level may have no source specified by simply omitting any source name, i.e. place two commas together in the definition.

A definition cannot specify more sources than there are configured levels. If fewer sources are configured than there are levels, the remaining levels are specified with no source definition.

Soft Destination Key

<panel address>,<key number>,SDST, [<Destination Name|Reentry Name >]

Rules:

The panel address must already be defined in the system.

Destinations must be defined in the configuration.

CPU Link Configuration

Worksheet: CPU Link

CPU link configurations configure the 3500Plus controller serial ports used to access the controller to provide control and status. CPU links are configured in two parts: link and port configurations. The link configuration determines the protocol used on the CPU link connection. The port configuration assigns the CPU link to a physical serial port.

The protocol link portion of the CPU links are defined as follows:

<link type>, <link name>[,<link specific information>]

Rules:

<link type> is the type of protocol being used for the given serial port. The following protocols currently exist:

- P1E – Protocol #1 with 3500Plus Extensions
- USP – Unsolicited Status Protocol
- TRK – Truck Link

<link name> is the mandatory name for the link with each name being unique. Standard naming conventions apply to link names. The link name PROTCL1E is reserved and is used by port 1.

<link specific information> refers to the features that are specific to the protocols.

Protocol No. 1 with 3500Plus Extensions (P1E)

P1E, <link name>, [<checksum type>], [<terminator>]

Rules:

<link name> must be unique and meet standard naming standards.

<checksum type> is a verification mechanism to verify that a message has been received without error.

- NONE – No checksum verification for messages.
- PESA – Standard PESA Protocol No. 1 8 bit checksum where the upper and lower nibbles are split and converted to ASCII characters by adding a character ‘0’ to each nibble. This gives the ASCII range ‘0’ to ‘?’ (default).
- HEXA – standard 8 bit checksum where the upper and lower nibbles are split and converted to hex characters (‘0’ - ‘9’ and ‘A’ - ‘F’) to be transmitted across the link.

<terminator> is used to indicate the end of a CPU Link message.

- CR – Carriage return.
- LF – Line feed.
- CL – Carriage return followed by a linefeed (<CR><LF>) (default).

Unsolicited Status Protocol (USP)

USP, <link name>, [<checksum type>], [<terminator>], [<status filter>]

Rules:

<link name> must be unique and meet standard naming standards.

<checksum type> is a verification mechanism to verify that a message has been received without error.

- NONE - No checksum verification for messages.
- PESA - Standard PESA Protocol #1 8 bit checksum where the upper and lower nibbles are split and converted to ASCII characters by adding a character '0' to each nibble. This gives the ASCII range '0' to '?'.
- HEXA – Standard 8 bit checksum where the upper and lower nibbles are split and converted to hex characters ('0' - '9' and 'A' - 'F') to be transmitted across the link (default).

<terminator> is used to indicate the end of a CPU Link message.

- CR - Carriage return.
- LF - Line feed (default).
- CL - Carriage return followed by a linefeed (<CR><LF>).

<status filter> is a filter that provides a means of indicating what information is to be sent as unsolicited status. The status filter consists of a string of alpha-numeric characters that indicate the items to be sent.

- A - All unsolicited items are to be sent (default).
- C - Configuration Changes
- D - Dual Transition Changes
- E - Confidence Errors
- G - User Logon/Logoff
- L - Lock/Protect Changes
- P - Physical Switches
- S - Switch Change Requests
- U - User Account Changes

If All (A) is specified, then all status is sent back regardless of the other filters set in the link's configuration.

Truck Link Protocol (TRK)

TRK, <link name>

Rules:

<link name> must be unique and meet standard naming standards.

Serial Port Configuration

Worksheet: Serial Port

Serial port configuration pertains to how a physical serial port's communications parameters are set and what protocol is to be used on the port. The physical parameters include items such as lock priority, baud rate, and stop bits. Protocol selection allows the user to select protocols such as Protocol #1 or Unsolicited Status Protocol with the serial ports.

[<port name>], <port address>, <requester code>, <lock priority>, [<link name>], [<baud rate>], [<stop bits>] [,port specific information]

Rules:

<port name> is an optional name for the serial port. Standard naming conventions apply.

<port address> is the physical port being defined. This field is mandatory and must be unique. Presently, the only ports that are configurable or partially configurable are 1, 2 and 4 (see below).

<requester code> is a number (1 - 65535) that identifies devices that share locks and protects. This field must be specified.

NOTE

This is the same field as those requester codes specified for panels. It is not the controller's responsibility to determine uniqueness between requester codes assigned to panels and CPU links. It is suggested that panel requester codes be assigned from 1-1023 and CPU link requester codes be assigned from 1024 and above.

<lock priority> is a number from 0 to 255 where 0 is the highest priority and 255 is the lowest priority. This field must be specified.

<link name> is the name of the link protocol that is to be used on the serial port. Failure to specify a link name causes the port to be non-operational.

<baud rate> is the communications rate at which the serial link port operates – 9600 (default) or 38400.

<stop bits> is the number of stop bits to be used on the characters – 1 or 2 (default).

<port specific information> pertains to information that is peculiar to the physical implementation of the port. At present, there are no port specific field attributes.

Though ports 1,2, and 4 are all configurable, the configuration of port 1 is restricted to a subset of the configuration fields. The only fields configurable for Port 1 are the port name and the requester code. The protocol associated with port 1 is fixed to support a specific configuration of the P1E protocol. This port is reserved for the configuration interface and guarantees that the controller will be accessible for configuration changes.

Port 3 is reserved for PRC matrix communications and as such is not configurable.

Note that flow control for ports 1 and 2 is set to hardware RTS/CTS. There is no flow control for port 4.

The Truck Link Protocol (TRK) may only be assigned to Port 4. Neither Port 1 or 2 accept a Truck Link protocol.

Glossary

(Revised: 10-10-00)

AES/EBU

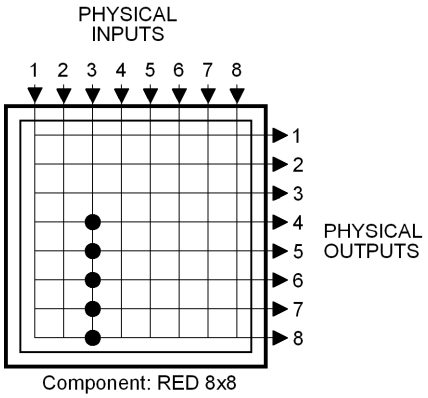
Informal name for a digital audio standard established jointly by the Audio Engineering Society (www.aes.org) and European Broadcasting Union (www.ebu.ch) organizations.

All Call

A diagnostic procedure that causes a single physical input to be switched to a range of physical outputs, for a specified component, with a single command.

Example: Assume the existence of a component RED which spans physical inputs 1 through 8 and physical outputs 1 through 8 on a routing switcher. All call could be used to switch physical input 3 to physical outputs 4 through 8 with a single command.

See also: Diagonal.



ANSI

American National Standards Institute (www.ansi.org).

Baud

The number of signaling elements that occur each second.

At slow speeds, only one bit of information (signaling element) is encoded in each electrical change. The baud, therefore, indicates the number of bits per second that are transmitted.

For example, 300 baud means that 300 bits are transmitted each second (abbreviated 300 bps). Assuming asynchronous communication, which requires 10 bits per character, this translates to 30 characters per second (cps).

For slow rates (below 1,200 baud), you can divide the baud by 10 to see how many characters per second are sent.

At higher speeds, it is possible to encode more than one bit in each electrical change. 4,800 baud may allow 9,600 bits to be sent each second. At high data transfer speeds, therefore, data transmission rates are usually expressed in bits per second (bps) rather than baud. For example, a 9,600 bps modem may operate at only 2,400 baud.

Black Burst

A composite color video signal which has sync, color burst, and black video. It is used to synchronize other video sources to the same sync and color information.

See also: House Sync.

Block

A group of contiguous crosspoints in a routing switcher which form the smallest unit on which confidence is checked.

Because of the nature of the circuits involved, individual crosspoints cannot be checked to see if they are operating correctly. Instead, the control circuitry shared by groups of crosspoints is monitored. These groups of crosspoints, called blocks, vary in size according to product type. Block size for RM5 routing switchers is 8 inputs by 2 outputs and block size for PRC routing switchers is 8 inputs by 8 outputs. If any block gives a confidence error, all crosspoints in that block are assumed to be non-functional.

Block Checking

The continuous, sequential monitoring of confidence for each block in a routing switcher.

Block checking occurs automatically and continuously but can be disabled for troubleshooting purposes.

Blocked Destination

See: Source Block.

Blocked Source

See: Source Block.

Breakaway Switch

A switch where more than one source is switched to a single destination on multiple levels.

Example: Assume the existence of two sources VTR1 and VTR2 which are defined on levels VIDEO and AUDIO, and a destination MON1 which is defined on the same levels. VTR1 is switched to MON1 on the VIDEO level and VTR2 is switched to MON1 on the AUDIO level. The signal reaching MON1 will have the video from VTR1 and the audio from VTR2, and is a breakaway switch.

See also: Follow Switch.

Category

The first portion of a source, destination, or reentry name.

Categories provide an easy means of classifying and grouping switching system devices.

An example of a category is VTR which could be used with the indices 1, 2, and 3 to create the source names VTR 1, VTR 2, and VTR 3.

Category names are one to six characters in length and are constructed using uppercase letters and numbers. The first character must be a letter. Imbedded spaces are not permitted.

Chop

Rapidly switch two different video signals into a monitor or other piece of test equipment. This is done to compare some characteristic of the signals, usually for quality control.

Chop Rate

The parameter used to control the switching rate when chopping two signals. The signal switching rate is determined as follows:

$$\frac{\text{Video Frame Rate (Frames/Second)}}{\text{Chop Rate}} = \text{Signal Switching Rate (Switches/Second)}$$

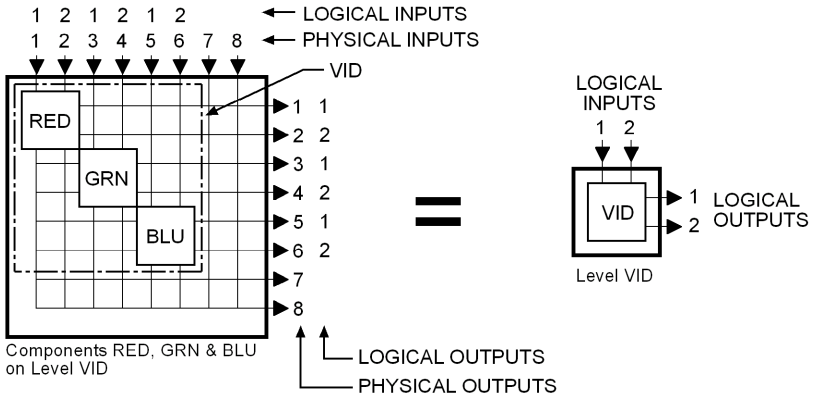
For example, a chop rate of 1 used with NTSC signals (30 Frames/Second) will cause the signals to be switched 30 times per second. A chop rate of 60 used with the same signals will cause them to be switched every two seconds.

Component

The most basic signal element which can be switched by a single crosspoint. For example, in RGB video, “Red”, “Green”, and “Blue” are components; in stereo audio, “Left” and “Right” are components

In Matrix Space, components of like type (“Red” or “Left”) are usually grouped together into rectangular matrices of crosspoints having contiguous inputs and outputs. These matrices are also referred to as components and are grouped together into levels.

The example below shows a 2x2 RGB video level made up of three components, “RED”, “GRN”, and “BLU”.



As a general rule, users control the switching of levels, but component switching is handled automatically by the switching system. In the example above, a user could specify a single logical switch, such as VID Input 1 to VID Output 2. This would result in Win3500Plus taking three physical switches by activating crosspoints (1,2), (3,4) and (5,6).

Component names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Composite Video

A type of video signal which contains luminance, chrominance, blanking, and synchronizing information. NTSC, PAL and SECAM are composite video signals, as opposed to RGB video which is not.

See also: Vertical Sync Signal.

Confidence

A property of a block, that indicates whether or not the circuitry controlling the crosspoints in the block, is functioning correctly.

When block checking determines that a block is not functioning correctly, the block, and all crosspoints contained in it, are said to have confidence errors.

Confidence has no relation to whether or not any crosspoint in the block is active.

Confidence Error

See Confidence.

Configuration

A collection of system definitions that define the environment in which the controller operates.

The files which comprise a configuration are stored on a PC as either .dbf format files or text files. Each configuration requires its own separate subdirectory.

Configuration names may have up to 32 alphanumeric characters.

Configuration Lock

A security measure enabled when a configuration is being uploaded or downloaded.

A configuration lock is used to ensure that only one user at a time may download a configuration to the controller.

Control Panel

See: Panel.

CPU Link

A bi-directional, communications interface on a system controller. A CPU link has two components: a serial port (RS-232 or RS-422), and a communications protocol to govern how the port is used.

Crosspoint

The circuitry and components on a printed circuit board which constitute a single physical switch.

See also: Physical Switch.

Data Key

A user configurable control panel key, whose assigned function is used when the panel is in any mode except Salvo Select Mode.

Many control panels have user configurable keys. Each key can be assigned two functions, one as a data key and one as a salvo key. When the keys are pressed, the data key functions are used except when the panel is in salvo mode.

Data Key List

A named list of the functions assigned to each data key on a panel.

Multiple panels may share a data key list as long as they are the same type of panel. Different panel types may not use the same data key list.

Data key list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Default Destination

The destination for which status will be displayed when power is applied to a panel, or when a new configuration is downloaded to the controller.

Although not mandatory, it is recommended that a default destination be selected for each panel.

Destination

One or more logical outputs (limited to one per level), on one or more levels, which are switched together as a group.

Destination names are constructed using one category followed by 0, 1 or 2 indices. If no index is selected, the default “00” (which is not displayed) will be used.

Destination Block

See: Source Block.

Destination Group

See: Destination.

Destination Include List

A named list of the destinations a specific control panel is authorized to control.

A destination include list may be shared by multiple panels.

The default destination assigned to a panel may be controlled even if it is not on the destination include list.

Destination include list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Destination Number

A number assigned to each destination by the controller and used by CPU Protocol 1.

Destination numbers are also assigned to reentries.

Destination Status

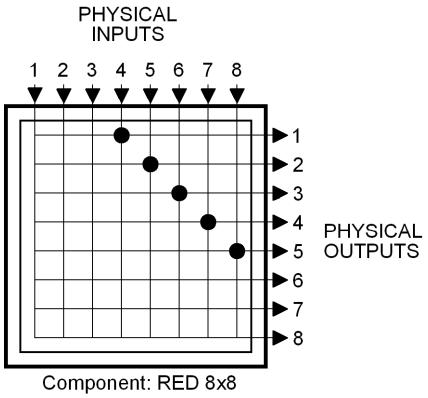
See: Status.

Diagonal

A diagnostic procedure that causes a range of physical inputs to be switched to a range of physical outputs, in a diagonal pattern starting from a specified coordinate and continuing until the either the inputs or outputs are exhausted, for a specified component, with a single command.

Example: Assume the existence of a component RED which spans physical inputs 1 through 8 and physical outputs 1 through 8 on a routing switcher. A diagonal with a starting input of 4 and a starting output of 1 would cause the following physical switches to be taken: (4,1), (5,2), (6,3), (7,4), and (8,5).

See also: All Call.



EIA

Electronic Industries Alliance (www.eia.org).

Follow Switch

A switch where a single source is switched to a single destination on all levels.

Example: Assume the existence of a source VTR1 which is defined on levels VIDEO and AUDIO, and a destination MON1 which is defined on the same levels. VTR1 is switched to MON1 on both the VIDEO level and AUDIO level. The signal reaching MON1 will have the video and audio from the same source, VTR1. This is a follow switch.

This is the most common manner in which switches are taken on a routing switcher.

See also: Breakaway Switch.

House Black

See: House Sync.

House Sync

A composite color video signal which has sync, color burst, and black video. It is used to synchronize other video sources to the same sync and color information.

Index

The last portion of a source, destination, or reentry name.

Indices provide an easy means of differentiating similar switching system devices.

Each source, destination or reentry name may use 0, 1 or 2 indices. If no index is used, “00” is the default but is not displayed. An example of indices are 1, 2, and 3 which could be used with the category VTR to create the destination names VTR 1, VTR 2, VTR 3, VTR 12 and VTR 22.

Indices are one character in length and are constructed using uppercase letters and numbers. The character 0 (zero) is a default index which may not be changed or deleted.

Input Offset

In matrix space, the amount by which the origin of a component on strobe x, is offset from the origin of strobe x, measured along the input axis.

The coordinates of crosspoints in matrix space are determined by the strobe they reside on, and their input and output numbers. They are given in the form (input,output) on strobe x. The origin of a component (a matrix of crosspoints) is designated by the point which falls nearest the origin of its strobe (1,1). In Figure A below, the 3x4 component bounded by coordinates (3,2), (5,2), (5,5), and (3,5) has its origin at (3,2).

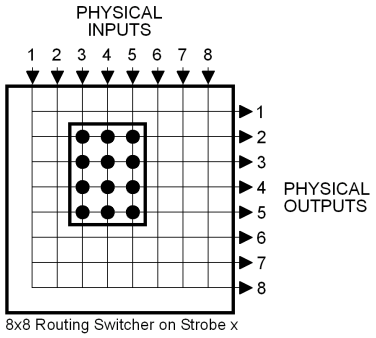


Figure A

Input offset is the amount by which the origin of a component is offset from the origin of its strobe, measured along the input axis. A component whose origin coincides with that of its strobe (1,1) will have an input offset of 0. The component shown in Figure A above, has an input offset of 2.

When multiple routing switchers are assigned to the same strobe, the input and output connectors are renumbered to provide a unique coordinate for each crosspoint. Crosspoint coordinates are then determined in the same manner as above. The component shown in Figure B below, has its origin at (12,7) and an input offset of 11.

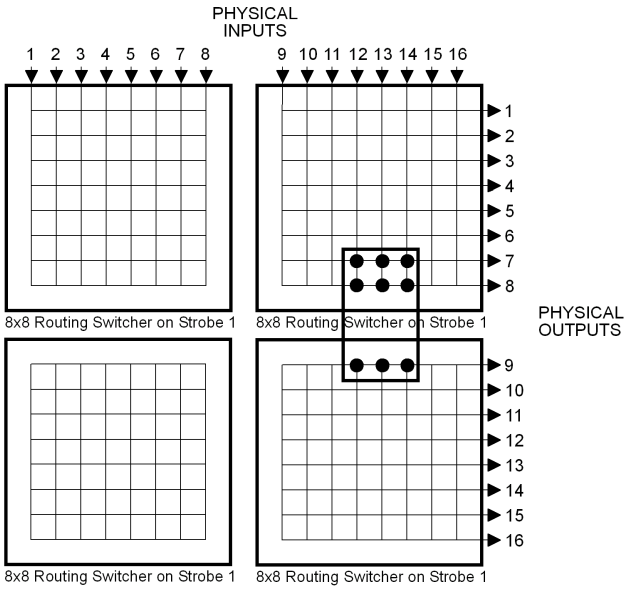


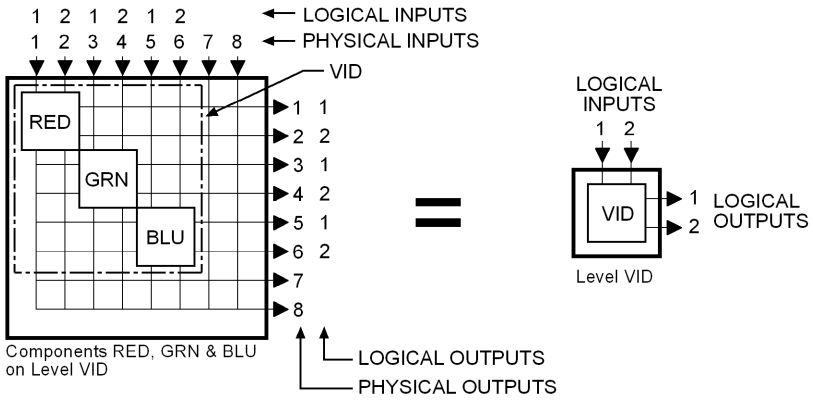
Figure B

Level

A group of related components that are switched together.

A level is sometimes referred to as a level of control and is the basic granularity seen by a user. The components which comprise a level will always be switched together except when performing diagnostic operations.

The example below shows a 2x2 RGB video level made up of three components, “RED”, “GRN”, and “BLU”, all of which are switched together at the same time.



As a general rule, users control the switching of levels, but component switching is handled automatically by the switching system. In the example above, a user could specify a single logical switch, such as VID Input 1 to VID Output 2. This would result in Win3500Plus taking three physical switches by activating crosspoints (1,2), (3,4) and (5,6).

Level names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Level Order

A property assigned to a level which controls the order of display when levels are displayed on a control panel or addressed in CPU link protocols.

Levels of Control List

A named list of the levels a specific control panel is authorized to control.

Multiple panels may share a levels of control list.

Levels of control list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Local Modem

A modem connected to a PC running Win3500Plus.

See also: Remote Modem.

Lock

A property placed on a destination that prevents all panels and ports from taking a switch on that destination, including the panel or port that locked it.

Locks may be cleared by any panel or port that has the same requester code and lock priority as the panel that locked the destination, that has a higher lock priority, or that has a lock priority of 0 (zero).

See also: Lock Priority, Protect.

Lock Priority

A property of panels and ports which allows them to be grouped with other panels or ports for the purpose of establishing lock and protect authority.

The lower the lock priority number, the higher the priority. Panel lock priorities not explicitly defined automatically default to “0” which gives absolute authority to clear any lock or protect on the system.

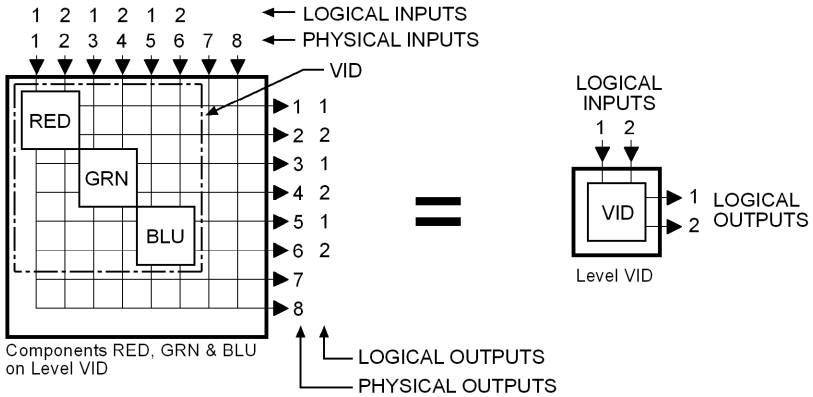
See also: Lock, Protect.

Logical Input

One or more physical inputs which are switched together as a group.

Logical inputs and outputs are switched level-by-level. Since each level may have more than one component, switching a single logical input or output may involve switching more than one physical input or output.

For example, a RGB input signal represents three physical inputs because it is connected to three input connectors on the routing switcher. However, since all three components (R, G, and B) are switched together as a level, it is a single logical input.



Logical inputs are numbered sequentially, level-by-level, beginning with 1. Input numbers are assigned in the same order as the physical inputs to the component(s) of the level. Since a routing switcher may be configured to have more than one level, it may have more than one logical input designated as number 1. However, within each level, every logical input will have a unique number. Logical outputs are numbered in the same manner. Logical input/output numbering is handled automatically by Win3500Plus as components are configured.

See also: Physical Input.

Logical Output

See: Logical Input.

Logical Switch

The Win3500Plus command that switches a logical input to a logical output.

See also: Physical Switch.

Matrix Breakup

The division of a single physical matrix into one or more components.

Matrix breakup allows complex signal types to reside within a single physical matrix. For example, a video matrix is often broken into R, G, and B components.

Matrix breakup is a software function handled by Win3500Plus.

Matrix Space

A three-dimensional mathematical model of the crosspoints in a switching system.

The coordinates of crosspoints in matrix space are given in the form (input,output) on strobe x.

When a switching system is physically made up of only one routing switcher, the crosspoint coordinates are the same as the input and output connector numbers, and the resulting matrix space has only two dimensions. For example, the coordinates of the crosspoint indicated in Figure A is (4,2) on strobe 1.

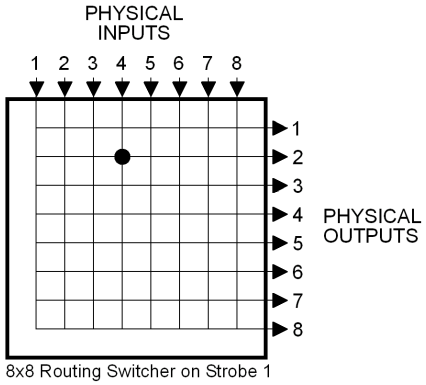


Figure A

Two-dimensional matrix space can also be composed of the crosspoints located in multiple routing switchers. The input and output connectors on the additional routing switchers are renumbered as required to ensure that each crosspoint can be identified by a unique (input,output) coordinate. When switching systems are constructed in this manner, matrix space size is no longer constrained by routing switcher size. The switching system shown in Figure B consists of four 8x8 routing switchers assigned to the same strobe. The coordinates of the indicated crosspoint are (12,14) on strobe 1.

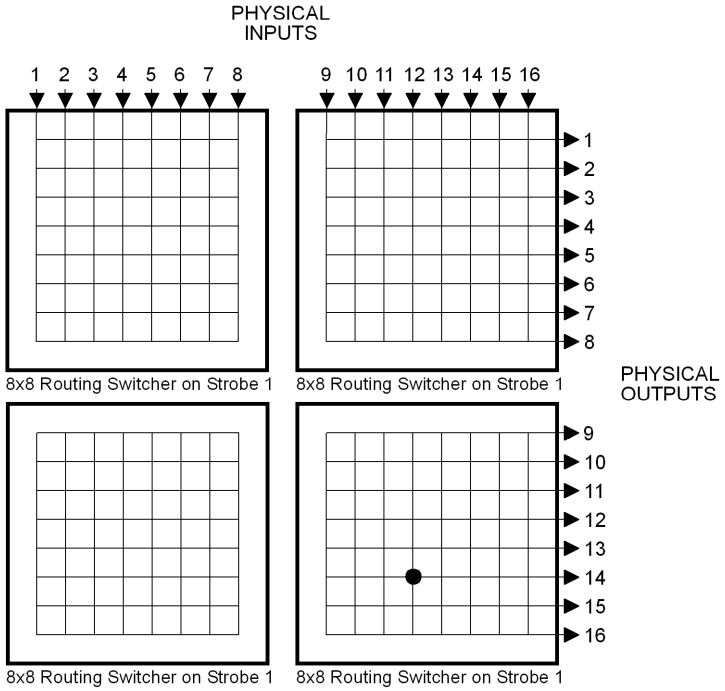


Figure B

Strobe numbers are used to introduce a third dimension into matrix space. Every routing switcher in a switching system is assigned to a strobe. In systems using more than one strobe (and, therefore having three-dimensional matrix space), crosspoint coordinates are given in the form (input,output) on strobe x. In Figure C, the coordinates of the indicated crosspoint in the left routing switcher are (4,2) on strobe 1. The coordinates of the crosspoint on the right are (4,2) on strobe 2.

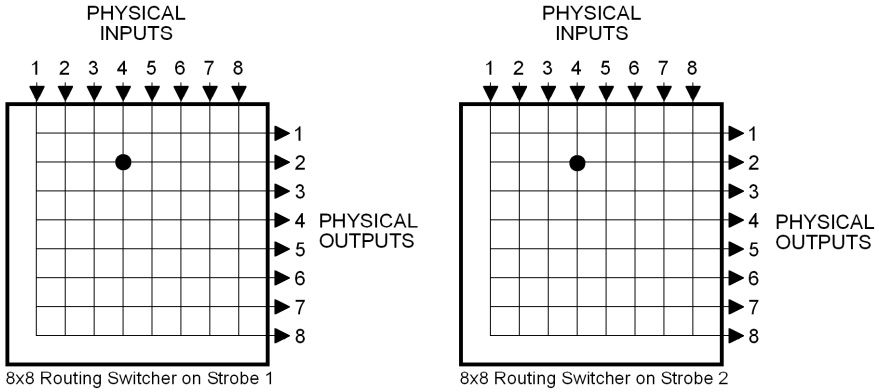


Figure C

NTSC

National Television Standards Committee. The NTSC is responsible for setting television and video standards in the United States (in Europe and the rest of the world, the dominant television standards are PAL and SECAM). The NTSC standard for television defines a composite video signal with a refresh rate of 60 half-frames (interlaced) per second. Each frame contains 525 lines and can contain 16 million different colors.

See also: PAL, SECAM.

Output Offset

In matrix space, the amount by which the origin of a component on strobe x, is offset from the origin of strobe x, measured along the output axis.

The coordinates of crosspoints in matrix space are determined by the strobe they reside on, and their input and output numbers. They are given in the form (input,output) on strobe x. The origin of a component (a matrix of crosspoints) is designated by the point which falls nearest the origin of its Strobe (1,1). In Figure A below, the 3x4 Component bounded by coordinates (3,2), (5,2), (5,5), and (3,5) has its origin at (3,2).

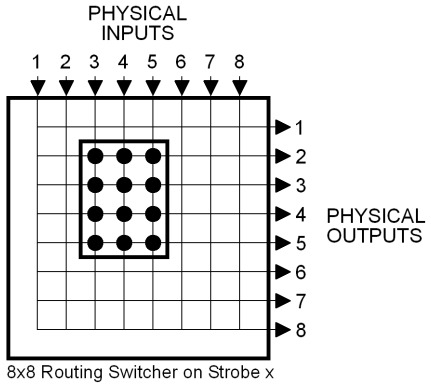


Figure A

Output offset is the amount by which the origin of a component is offset from the origin of its strobe, measured along the output axis. A component whose origin coincides with that of its strobe (1,1) will have an output offset of 0. The component shown in Figure A above, has an output offset of 1.

When multiple routing switchers are assigned to the same strobe, the input and output connectors are renumbered to provide a unique coordinate for each crosspoint. Crosspoint coordinates are then determined in the same manner as above. The component shown in Figure B below, has its origin at (12,7) and an output offset of 6.

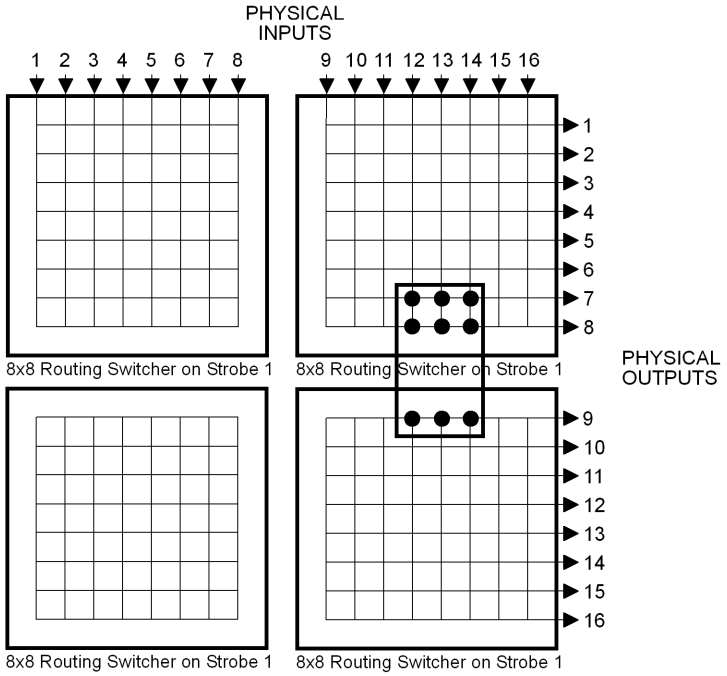


Figure B

PAL

Phase Alternating Line, the dominant television standard in Europe. The United States uses a different standard, NTSC. Whereas NTSC delivers 525 lines of resolution at 60 half-frames per second, PAL delivers 625 lines at 50 half-frames per second.

See also: NTSC, SECAM.

Panel

A user interface, usually mounted in a standard 19” rack, containing alphanumeric displays, push buttons, LEDs, etc. Sometimes referred to as a control panel.

A panel is used to control a switching system by taking switches, obtaining status, etc.

Panel names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Panel Address

A unique identifier, set by DIP switch on every panel, which allows the 3500Plus System Controller to differentiate between panels.

Panel Name

An optional identifier for a control panel.

Individual panels are identified by panel address. Because of this, a panel name is not required when configuring a panel.

Panel names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Password

Each User Account and Configuration may be protected with eight-character, uppercase, alphanumeric passwords.

PC

The Personal Computer on which Win3500Plus is running.

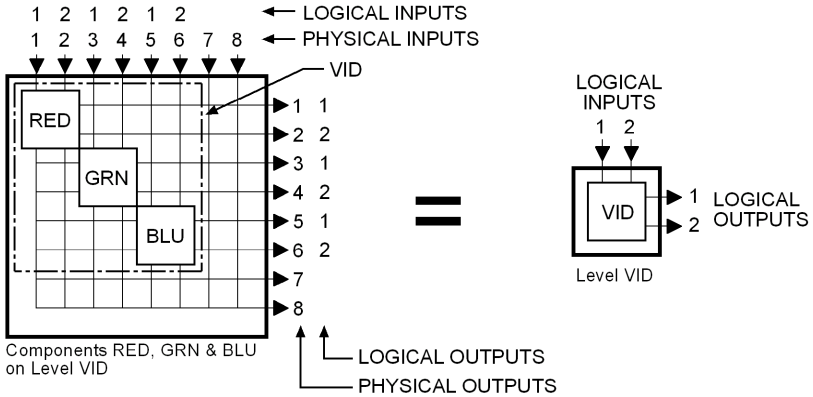
Win3500Plus is designed to operate on any IBM PC compatible personal computer running a Microsoft Windows™ operating system (3.1, 95, 98, or NT).

Physical Input

The electrical signal coming from a device connected to an input connector on a routing switcher.

Physical inputs and outputs are the electrical signals passing through the input and output connectors of a routing switcher. Each connector represents one input or output.

For example, a RGB input signal would represent three physical inputs since it would be connected to three input connectors on the routing switcher.



Physical inputs are numbered sequentially beginning with 1, and have the same number as the corresponding input connector on the routing switcher. This includes connectors which have been renumbered with input offset when multiple routing switchers have a common strobe. Physical outputs are numbered in the same manner.

See also: Logical Input.

Physical Switch

The hardware that switches a physical input to a physical output. Sometimes referred to as a crosspoint.

See also: Logical Switch, Crosspoint.

Physical Output

See: Physical Input.

Port

Any of the serial communications bus interface connectors on the 3500Plus System Controller.

Port names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter. Port names are optional because a port is identified by its address.

PRC Device

A device designed to be compatible with the PESA Routing Control (PRC) protocol.

The Ocelot, Cougar, Jaguar, and Tiger routing switcher families are PRC devices.

See also: RM5 Device.

Protect

A property placed on a destination that prevents all panels and ports from taking a switch on that destination, unless taken from a panel or port that has the same requester code as the panel or port that protected it.

Destination protection may be cleared by any panel or port that has the same requester code and lock priority as the panel or port that protected the destination, that has a higher lock priority, or that has a lock priority of 0 (zero).

See also: Lock, Lock Priority, Requester Code.

Protect Priority

See: Lock Priority.

Protocol

The format to be used when sending data between two devices.

Protocol names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Readback

Information received from a routing switcher reporting which physical input is currently switched to a specified physical output.

To ensure that the configuration in the controller, and the actual state of the physical switches in a routing switcher agree, the routing switcher can be made to read back the status of each physical output. Where the routing switcher reports a different physical input from that expected by the controller, a readback error is declared.

Readback Error

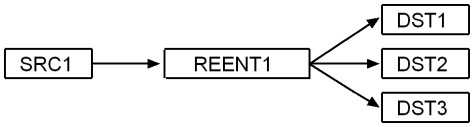
See Readback.

Reentry

An entity which exists as both a source and destination at the same time, whose function is to facilitate switching a single source to multiple destinations, with a single logical switch.

Reentries are virtual entities that exist in the control software only. Their creation and use does not require any physical modification to the switching system hardware.

Example: Assume the existence of source SRC1 and destinations DST1, DST2, and DST3. Reentry REENT1 is created and switched to the three destinations. With a single logical switch, SRC1 can now be switched to REENT1 and the signal will arrive at all three destinations at the same time.



A reentry is assigned both a source number and a destination number.

Reentry names are constructed using one category followed by 0, 1 or 2 indices. If no index is selected, the default “00” (which is not displayed) will be used.

Remote Modem

A modem connected to a 3500Plus System Controller.

The remote modem must be an external type capable of being configured to automatically answer incoming calls. Because the 3500Plus System Controller does not output any modem configuration information, the remote modem must be completely transparent to the controller. The only modems tested by PESA for use as remote modems are the Practical Peripherals PM288MT II and the U.S. Robotics Sportster 28.8 using the following initialization strings:

PM288MT II: AT S0=2 Q1 X4 &C1 &D0 &K3 &S1 &W0 &Y0

Sportster 28.8: AT &F1 S0=2 &H1 &R2 &I0 L2 Q1 &C1 &D0 Y0 &W0

For more information about these modems and their initialization strings, see the Practical Peripherals web site at http://www.practical.com/ or the U.S. Robotics web site at http://www.usr.com/. Before using any other type of modem for the remote modem, please consult with the PESA Customer Service Department.

Once a remote modem has been selected, it must be properly configured before it is connected to a 3500Plus System Controller. This is done by connecting the remote modem to a PC running Win3500Plus, transferring certain data into the remote modem, disconnecting the remote modem from the PC, and then connecting the remote modem to the controller.

See also: Local Modem.

Requester Code

A property of panels and ports which allows them to be grouped with other panels or ports for the purpose of establishing lock and protect authority.

Panel requester codes not explicitly defined automatically default to the panel address.

See also Lock, Lock Priority, Protect.

RM5 Device

A device designed to be compatible with the System 5 (RM5) control protocol.

The RM4000, RM5000 and Lynx routing switcher families are RM5 devices.

See also: PRC Device.

Salvo

A group of predefined logical switches taken in the same vertical interval.

Example: Assume the existence of two sources, CART1 and CART2; and three destinations, MON1, VTR1, and VTR2. All of these sources and destinations are defined on two levels, AUD and VID.

By pressing a single control panel key, the user desires to take the following switches: audio and video from CART1 to MON1; audio from CART2 and video from CART1 to VTR1; and audio and video from CART2 to VTR2.

Destination (Salvo Entry)	Level: AUD	Level: VID
MON1	CART1	CART1
VTR1	CART2	CART1
VTR2	CART2	CART2

Salvo SAL1 is created which will consist of three salvo entries (one salvo entry per destination in the salvo). Each salvo entry is then configured to switch the selected sources on the appropriate levels. Once salvo SAL1 is assigned to a salvo key on the control panel, the user will be able to take all the specified switches with the press of a single key.

All switches in a salvo are taken within the same vertical interval.

Salvo names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Salvo Entry

One or more logical switches assigned to a specific destination that is part of a salvo.

Salvo entry names are the same as the destination they are associated with.

Salvo Include List

A named list of the salvos a specific control panel is authorized to control.

A salvo include list may be shared by multiple panels.

Salvo include list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Salvo Key

A user configurable control panel key, whose assigned function is used when the panel is in salvo select mode.

Many control panels have user configurable keys. Each key can be assigned two functions, one as a data key and one as a salvo key. When the keys are pressed, the data key functions are used except when the panel is in salvo mode.

When a panel is in salvo select mode, a salvo will be executed immediately when the salvo key is pressed.

Salvo Key List

A named list of the functions assigned to each salvo key on a panel.

Multiple panels may share a salvo key list as long as they are the same type of panel. Different panel types may not use the same salvo key list.

Salvo key list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

SECAM

Sequential Couleur Avec Memoire, the line sequential color system used in France, Russia, Eastern Europe and some Middle Eastern countries. Like PAL, SECAM is based on a 50 Hz power system, displaying interlaced lines at 50 fields per second. The color information is transmitted sequentially (R-Y followed by B-Y, etc.) for each line and conveyed by a frequency modulated sub carrier that avoids the distortion arising during NTSC transmission.

See also: NTSC, SECAM.

Serial Port

See: Port.

Shared Input

A logical input which is used by more than one source.

Note that shared outputs are not permitted.

See also: Source Block.

SMPTE

Society of Motion Picture and Television Engineers (www.smpte.org). A professional organization that recommends standards for the television and film industries.

Soft Destination Key

See: Soft Key.

Soft Key

A special type of data key whose assigned function may be changed locally by a panel user.

Win3500Plus is used to designate a data key as either a soft source key or a soft destination key. The assignment of a specific source or destination to the soft key may then be made with either Win3500Plus, or locally at the panel by using Store Mode.

Soft Source Key

See: Soft Key.

Source

One or more logical inputs (limited to one per level), on one or more levels, which are switched together as a group.

Source names are constructed using one category followed by 0, 1 or 2 indices. If no index is selected, the default “00” (which is not displayed) will be used.

Source Block

A means of ensuring that a particular source will not be switched to a specific destination, inadvertently or without adequate permission.

When configuring a switching system, it may be desirable to use source blocking to restrict the switching of certain logical inputs. This may be done while configuring either sources or destinations.

Since a blocked source may contain a logical input that is shared (used by more than one source), care should be taken to ensure that all sources using the logical input are blocked from the destination to be protected.

Source Group

See: Source.

Source Include List

A named list of the sources a specific control panel is authorized to control.

A source include list may be shared by multiple panels.

Source include list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Source Number

A number assigned to each source by the controller and used by CPU Protocol 1.

Source numbers are also assigned to reentries.

Status

A list of all sources on all levels currently switched to a selected destination.

Sometimes also used to refer to the operational state of the control system (lock status, switch status, and panel status).

Status Level

The default level to be used when displaying the status of a destination receiving signals from multiple sources, on a panel in all levels mode (ALL LEVS).

One function of the LCD display on a panel is to show which source is currently switched to a selected destination. This is known as destination status. Although more than one source can be switched to a single destination (limited to one source per level), the status display can only show one source at a time. When the panel is in all levels mode (ALL LEVS), Status Level is used to designate a default level to be used when displaying status. Only the source on this default level will be displayed. On panels which do not have LCD displays, this is indicated by a continuous, bright, pushbutton light.

If one or more other sources are also switched to the destination (on other levels), an octothorp (the “#” symbol) will be appended to the source name. The other source names can be viewed by toggling each level key in turn to show, level-by-level, which source has been switched to the destination. On panels which do not have LCD displays, this is indicated by an alternating bright/dim push button light.

Status Method

One of two possible ways to display status when a panel is in all levels (ALL LEVS) mode and the destination is not defined on the Status Level.

When a panel is in all levels mode (ALL LEVS), the status shown will be the source on the Status Level assigned to that panel. If the destination is not defined on the Status Level, Status Method is used to control the resulting display:

If DEF (Default Method) is selected, NO XXXXX will be displayed where XXXXX is the Status Level assigned to the panel.

If GRP (Group Method) is selected, the controller will examine every level sequentially, starting with the level designated as Level Order 1. The source switched on the first level found where the destination is defined, will be displayed as the destination status.

Stop Bit

In asynchronous communications, a bit that indicates that a byte of data has just been transmitted.

Every byte of data is preceded by a start bit and followed by a stop bit.

Strobe

The third dimension of matrix space.

Every routing switcher in a switching system is assigned a strobe. This is usually accomplished by setting a DIP switch on the back of the routing switcher. Strobes do not have to be unique and, in larger systems, each strobe might be associated with several routing switchers.

In many switching systems, strobes are used to group levels of the same type together. For example, video may be on Strobe 1, audio on Strobe 2, etc.

Sync Reference

A vertical sync signal used to ensure that switching occurs in the vertical interval of a video signal.

Sync Reference names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

See also: Vertical Sync Signal.

System 5 Device

See: RM5 Device.

TIA

Telecommunications Industry Association (www.tiaonline.org).

Tieline

A special type of logical switch that allows a logical input on one level to be switched to a logical output on a different level.

Example 1 - Switch a signal from analog camera ANCAM into an analog-to-digital converter (A/D) and then into digital video tape recorder DIGVTR: (Figure A) Connect a cable between the appropriate output connector of the analog routing switcher and the input of the A/D, and a cable between the output of the A/D and the appropriate input connector on the digital routing switcher. Configure levels ANAVID and DIGVID and tieline TLINE1 to connect them. Configure destination DIGVTR on level DIGVID. Configure source ANCAM on level ANAVID to use tieline TLINE1. ANCAM may now be switched to DIGVTR with a single logical switch even though they are on different levels.

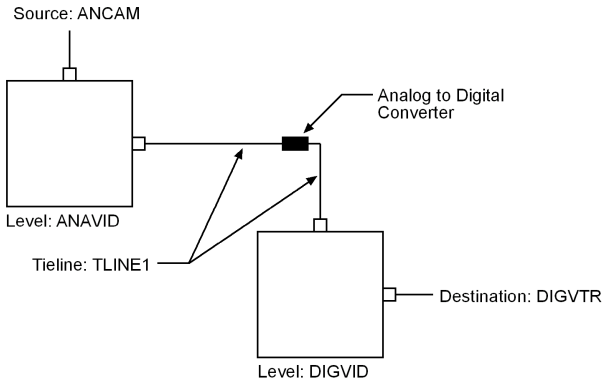


Figure A

Example 2 - Switch a signal from camera CAM1 (connected to a routing switcher in Room A) to video tape recorder VTR1 (connected to a routing switcher in Room B): (Figure B) Connect a cable between the appropriate output connector of the routing switcher in Room A and the appropriate input connector on the routing switcher in Room B. Create levels VIDA and VIDB and configure a tieline connecting the output of VIDA to the input of VIDB. Define source CAM1 on level VIDA and destination VTR1 on level VIDB. CAM1 may now be switched to VTR1 with a single logical switch even though they (and their respective routing switchers) are located in two separate rooms.

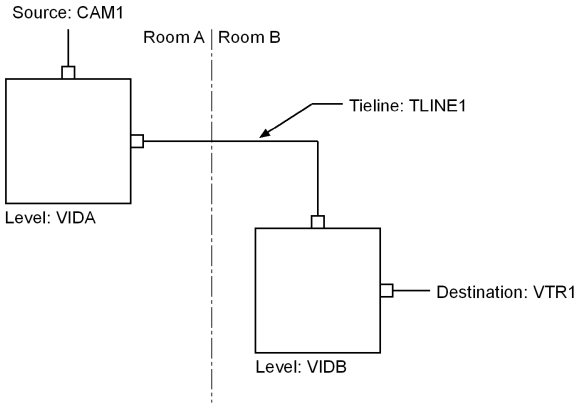


Figure B

Tieline names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

User Account

A set of privileges and an optional user password saved as a user name.

User accounts provide a means of restricting access to certain system functions on a user-by-user basis.

User Name

An eight-character string consisting of uppercase letters, numbers, spaces, and some symbols:

Permitted: ! @ # $ % ^ & * _ + - = [ ] \ : " ; ' < > . ? /

Forbidden: { } | , ( )

User Password

An eight-character string consisting of letters, numbers, and spaces. A User Password may begin with either a number or a letter. Leading spaces are discarded.

Vertical Interval

The portion of the video signal in which image information is absent to allow for the video device to prepare for the next frame of information.

Vertical Sync Signal

A short pulse generated at the beginning of each video timing frame which tells the video monitor when to start a new video timing field. For switching purposes, the vertical sync signal may be derived from house sync.

See also: Sync Reference.

Vertical Trigger

See: Vertical Sync Signal.

Video Timing Field

A package of information that contains information required to complete a full scan across a video monitor. There are two types of video fields denoted as odd and even.

Video Timing Frame

A package of information that contains all the information required to draw an image on a video device. Generally considered with respect to NTSC and PAL signals where the information is transmitted over a fixed time frame. A frame consists of two video timing fields denoted odd and even.

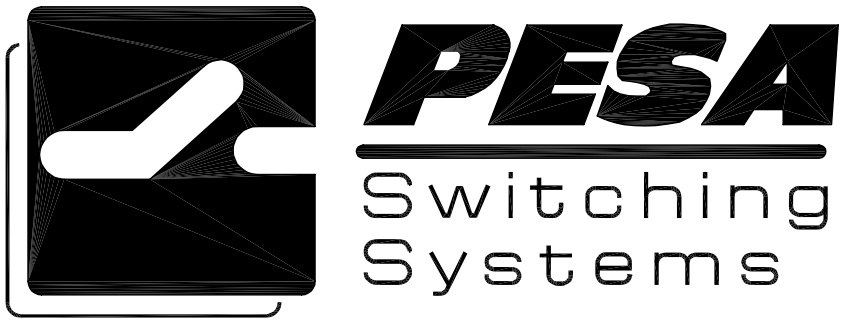
Working Directory

The directory on a PC where Win3500Plus is installed.

If the default settings of the installation program were used, this will be c:\win3500p in 16-bit versions of Windows and c:\program files\win3500p in 32-bit versions of Windows. Configurations may not be saved in the working directory or any subdirectory of the working directory.

Revision History

Rev.	Date	Description	By
A	11-07-00	Initial release per ECO-CE00015.	G. Tarltøn


PESA
Switching
Systems