Installation Manual

Revision 1.29

Additional important information and CAD drawings may be found on www.valcom.com/multipath

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System Overview

Valcom MultiPath™ is a microprocessor based ***MultiPath intercom / communications system***. Although predominately used in K-12 schools, the system often finds applications in retirement homes, parking garages, large office buildings and large manufacturing facilities. This manual, however, is written with academic applications in mind.

The system provides communication between telephones (usually in the school office area) to speakers throughout the school. In this manual, these phones will be referred to as office telephones. The Valcom MultiPath™ can interface with single line telephones or with loop start trunk or FXO ports on the school's telephone system.

Calls may be either from the office telephones to the speakers (via dial up), or from a speaker location to the office telephone (via call button).

This document will primarily focus on system installation. Specifications, features and benefits, and support product information will not be included here. Our intent is to make this installation manual as simple as possible.

Valcom MultiPath™ is comprised of as few as 2 and as many as 16 circuit cards dependant upon system size.

Every Valcom MultiPath™ System must have a V-CPU4 card and at least one V-TCM, XP-TCM12, V-STX or V-URI card. A description of each of these cards is provided on the following pages.

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These circuit cards mount in a card cage and typically connect to each other via a backplane cable.

Connections from these cards to other system components (speakers, call buttons, etc) are made on external 66M150 25 pair split connection blocks.

These blocks connect to the cards by 25 pair telephone cable terminated with a female 25 pair amphenol connector.

The system is powered by external 24 Volt dc power supplies (2 Amps per card).

In this manual, the connection blocks for the individual cards are shown in the individual card description sections of this document.

Common sense guidelines such as wearing a properly configured grounding strap when handling cards, verifying all connections before applying power and removing AC power before servicing the system should always be observed.

General installation guidelines, wiring, power supply requirements /placement, are described in following sections.

Text that is italicized and/or bold indicates important information or describes procedures that should be closely observed.

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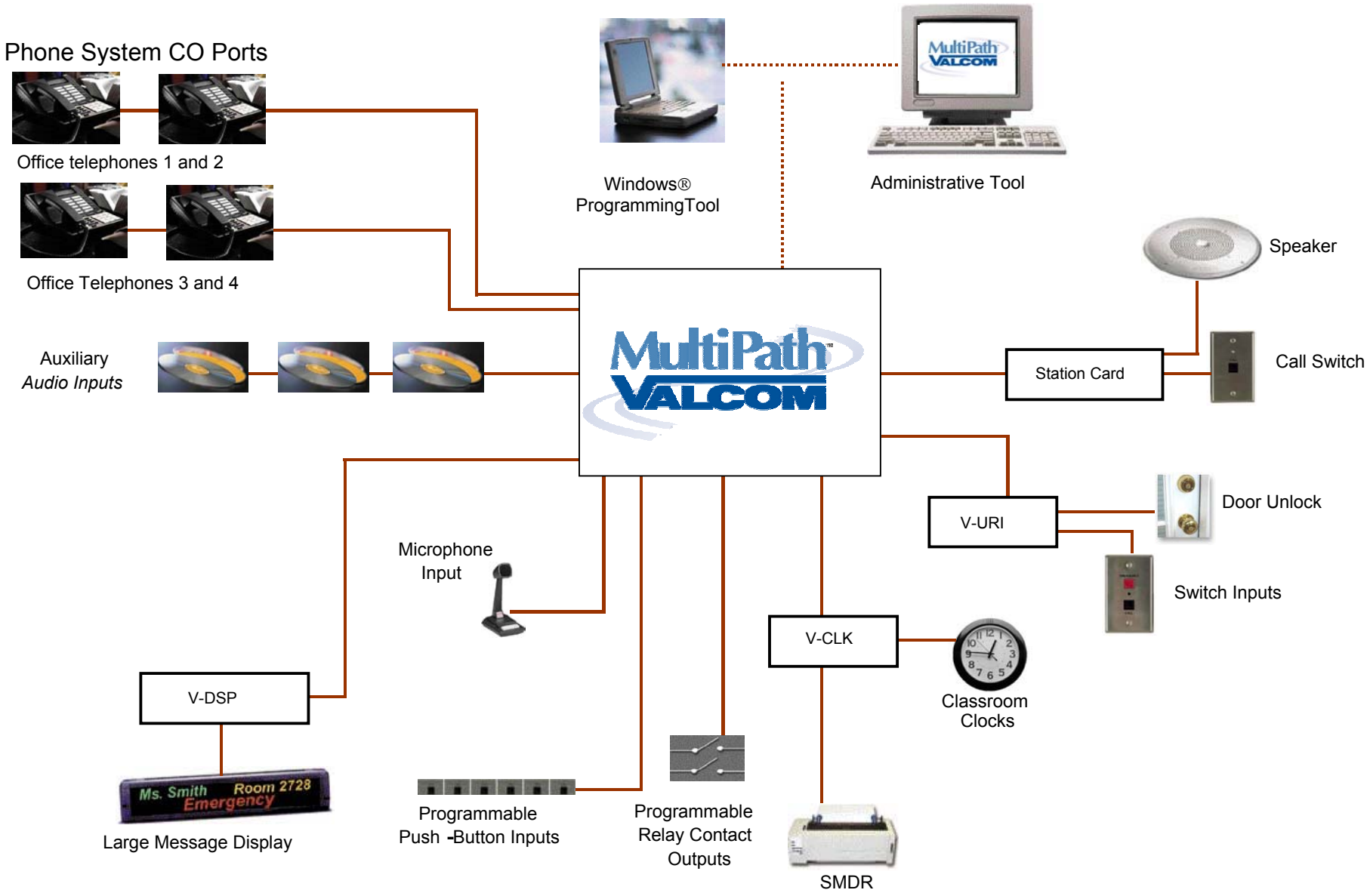

Figure 1b - Valcom MultiPath™ System Block Diagram

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V-CPU4 – CPU Card

The V-CPU4 is the main circuit card in the Valcom MultiPath™ School communications system. It must be installed in order for the system to operate. This card provides for the following connections:

4 Administration ports (where the office telephones or telephone system connect)

A connection socket for a serial card (p/n V-SER)

A connection socket for a ROM card (p/n V-ROM-D)

Up to 15 feature boards (p/n V-TCM, XP-TCM12, V-STX and/or V-URI)

8 relay outputs

6 switch (contact closure) inputs

DB9 serial connection for system programming via a computer

3 auxiliary audio inputs (for music, automated voice messaging)

A microphone input (for general announcements to all zones)

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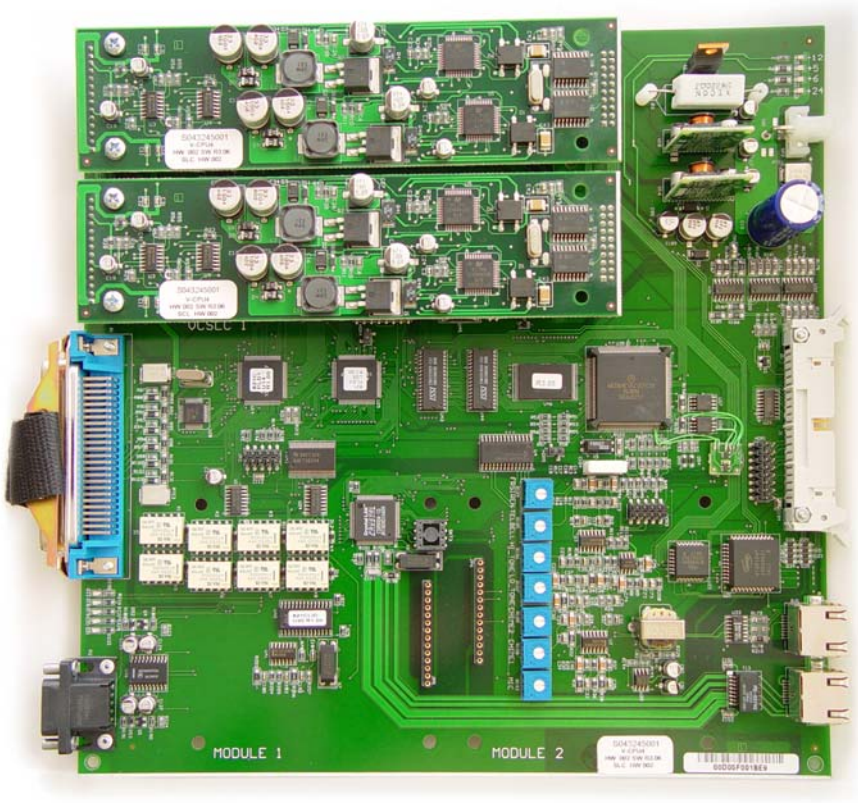
The V-CPU4 does not have an address switch.

Male Amphenol 66 block Connector

DB9 Connector for programming



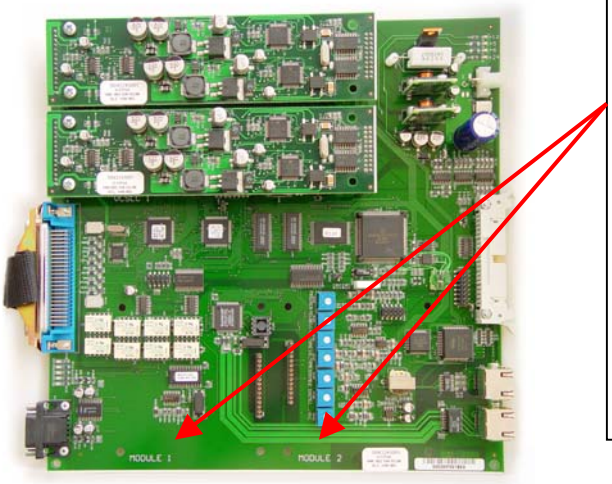
24 VDC 2A Power Connector

Ribbon Cable Connector

Unused RJ45

Ethernet RJ45

Figures 2 & 3 – V-CPU4 Card



The Optional V-SER and V-ROM-D Cards Plug In Here. The slots are interchangeable – either card in either slot. For programming purposes, slot 2 is closest to the backplane connector.

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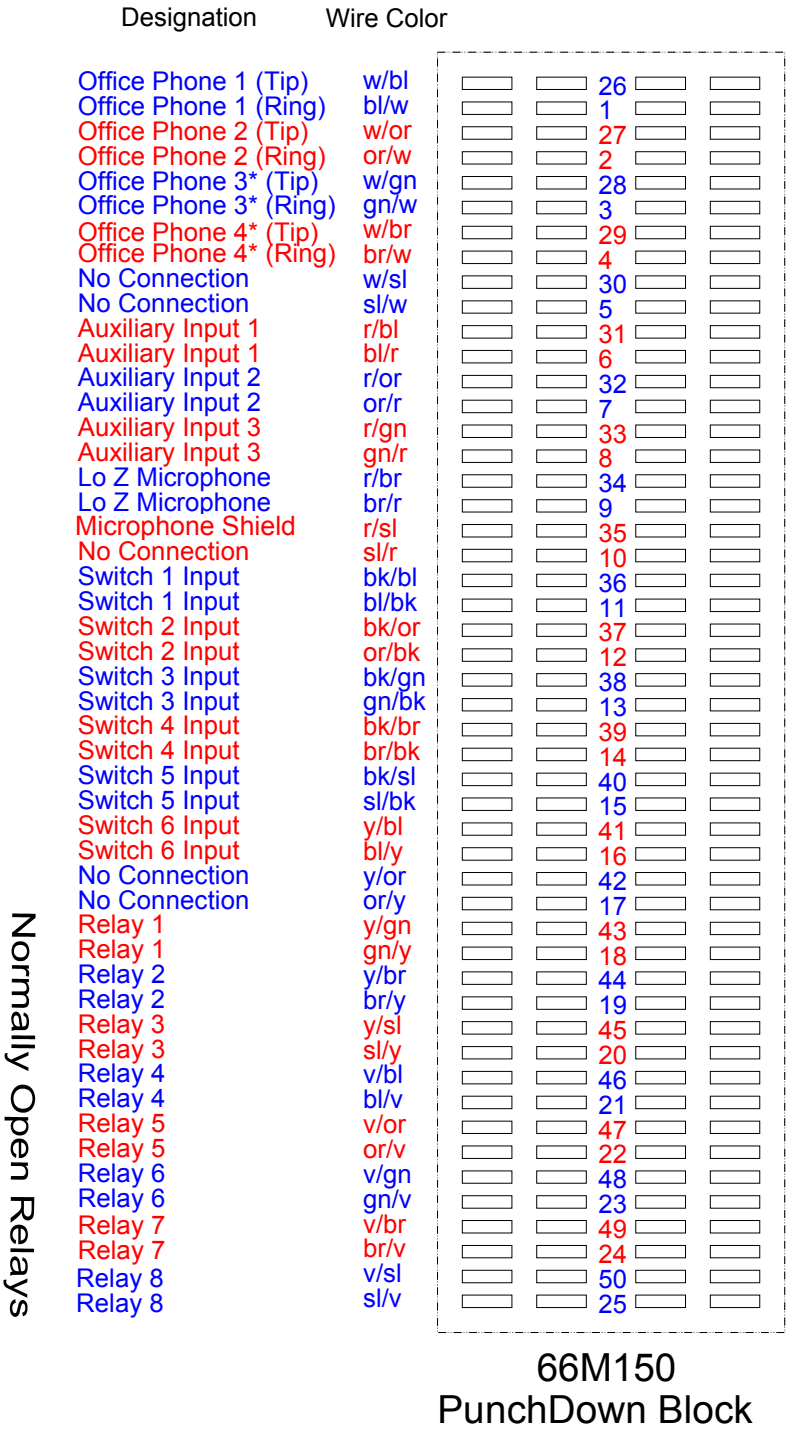

Figure 4 – V-CPU4 66 Block Connections

* Office Phone 3 and 4 use the second V-SLC Telephone Interface Card

The V-CPU4's 25 pair cable must be routed separately from all other system cables

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The first 4 pair on the V-CPU4 P1 connection block provides connection to the school's telephone system. ***Each pair may be connected to either a loop start trunk port (c.o. line port), to a dedicated telephone or to a line position on a multi-line stand-alone telephone.***

The 3 auxiliary inputs are inputs for program material such as background music, automated announcements or any 8 to 600 ohm line level unbalanced audio source.

The lo Z microphone input is obviously included to accommodate a low impedance microphone that may be used for general announcements. If you include a microphone in your system, one of the 6 switch inputs will be used to enable the microphone. This switch input function is available in system programming.

The 6 switch inputs are software programmable to provide such functions as tone activation, reset system time, night ring, activate microphone, force schedule, etc.

The 8 relay outputs are normally open connections that are software programmable to be under manual control, to cycle on and off, to operate following a time schedule/group or to activate following a security, emergency or ADA station calling in to an office phone. ***These relays are intended to operate slave relays of the appropriate contact rating for your intended purpose. These 8 relays are rated for a maximum load of 2 amps @ 30 volts dc.***

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V-TCM – 45-Ohm Talkback Station Card

The V-TCM is the ***45-ohm talkback*** classroom speaker and call button card for the Valcom MultiPath™ School communications system. In talkback applications 45-ohm speakers are superior to 25 volt speakers due to direct voice coil coupling. This card provides for the following:

24 Stations - each station being one of the following:

A. Up to two 45 ohm speakers and a call switch
B. Up to two 45 ohm speaker only
C. up to 40 one way self amplified speakers (with proper attenuation)
D. an audio feed into auxiliary or TEL LINE input on a central amplifier
E. a switch (contact closure only – no speaker) input for special purpose signaling

Communication from any 45-ohm speaker location to the office phones.

The ability to call an office phone by pressing the station call button.

Note: Disconnect system power before adding or removing system cards.

The VC-TCS is a supervising version of the V-TCM used in special applications and provides for speaker line and call button supervision.

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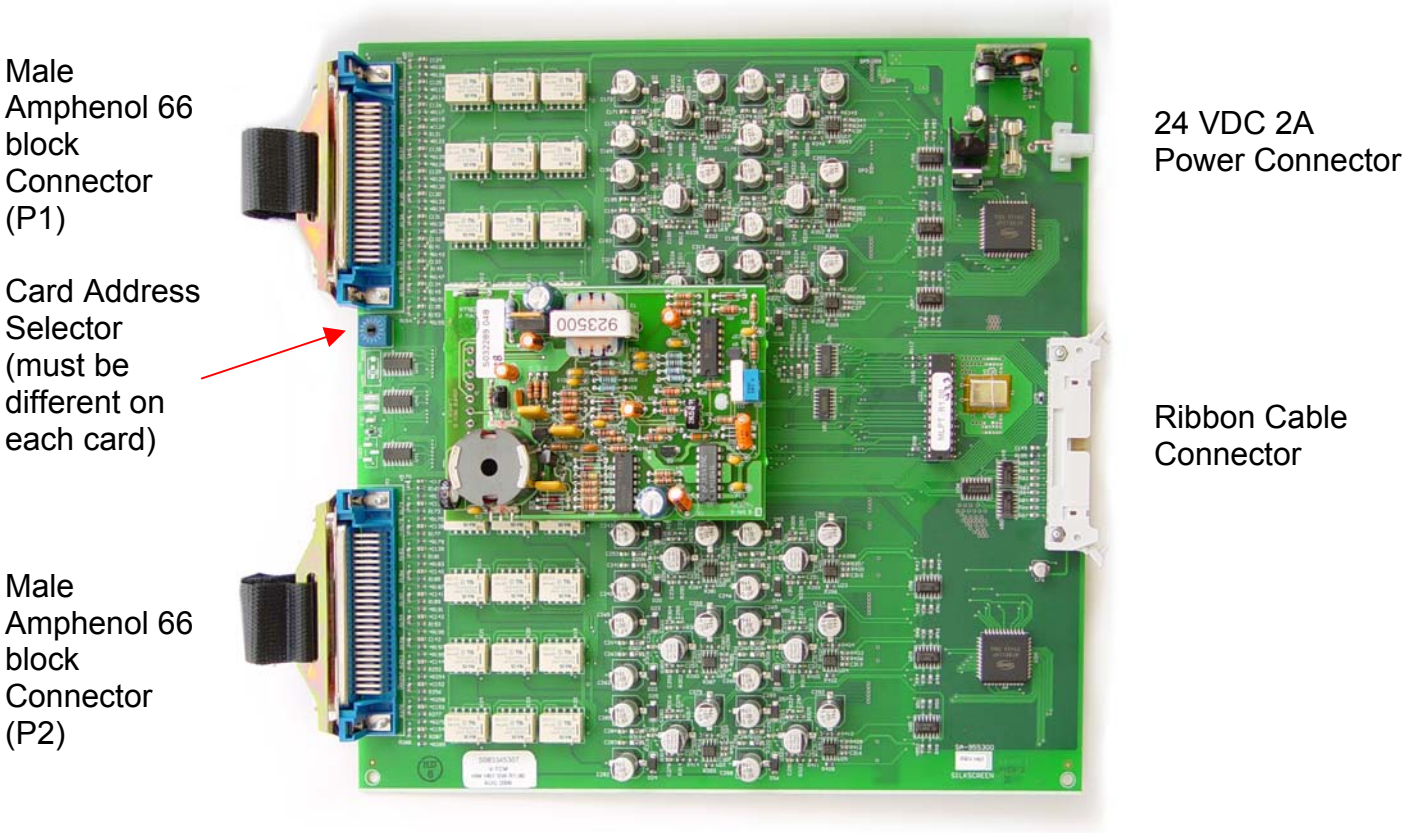

Figure 5 – V-TCM Card

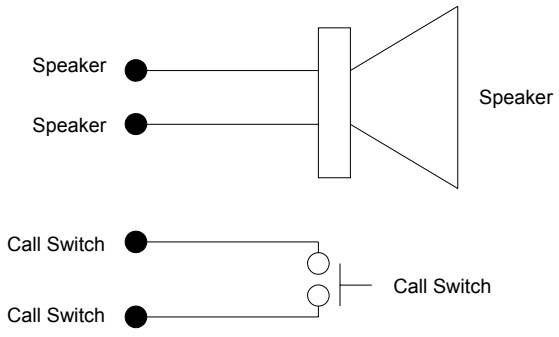

Figure 6 - Typical Classroom Speaker Connections

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P1 Connector

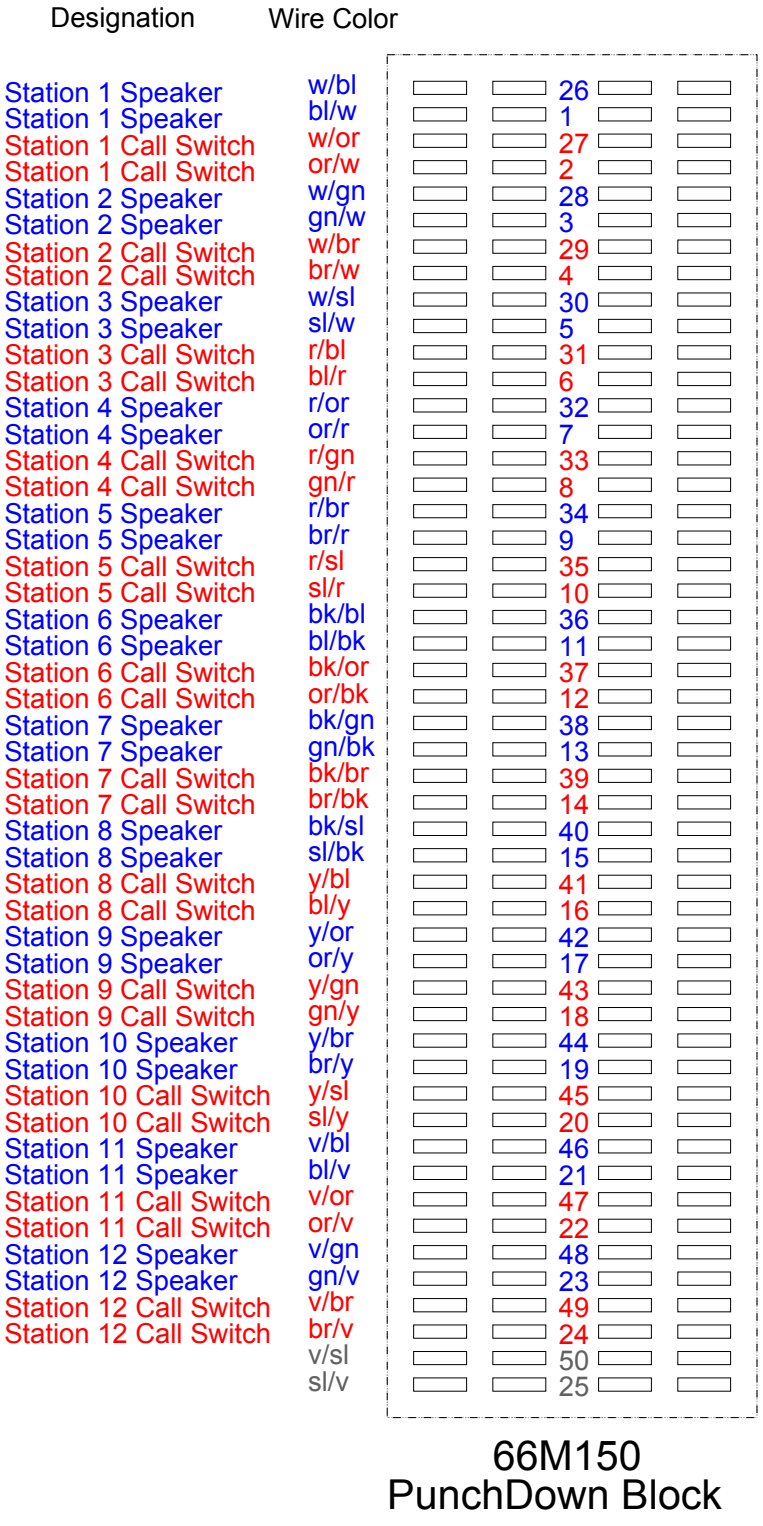

Figure 7a – V-TCM P1 66 Block Connections

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P2 Connector

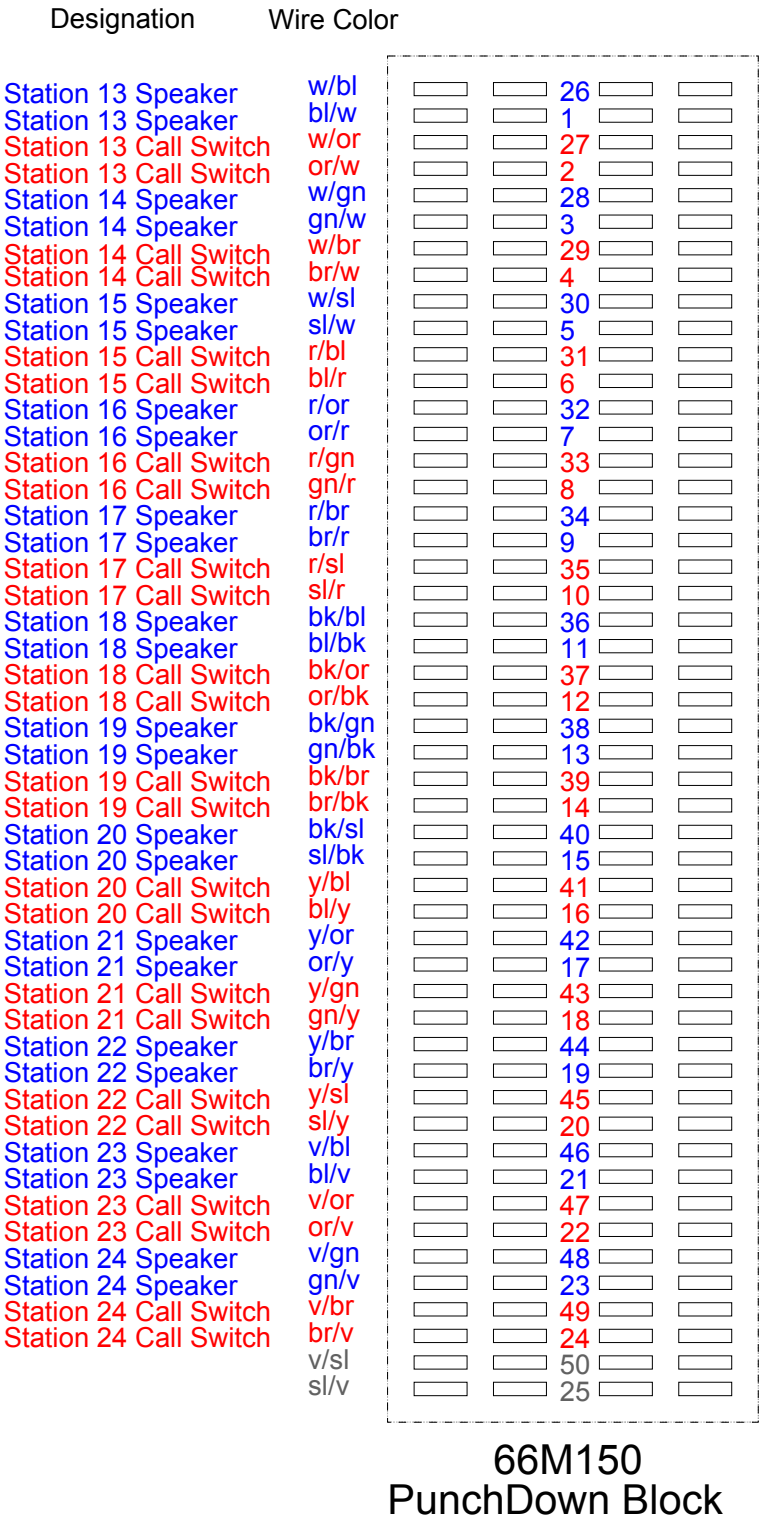

Figure 7b – V-TCM P2 66 Block Connections

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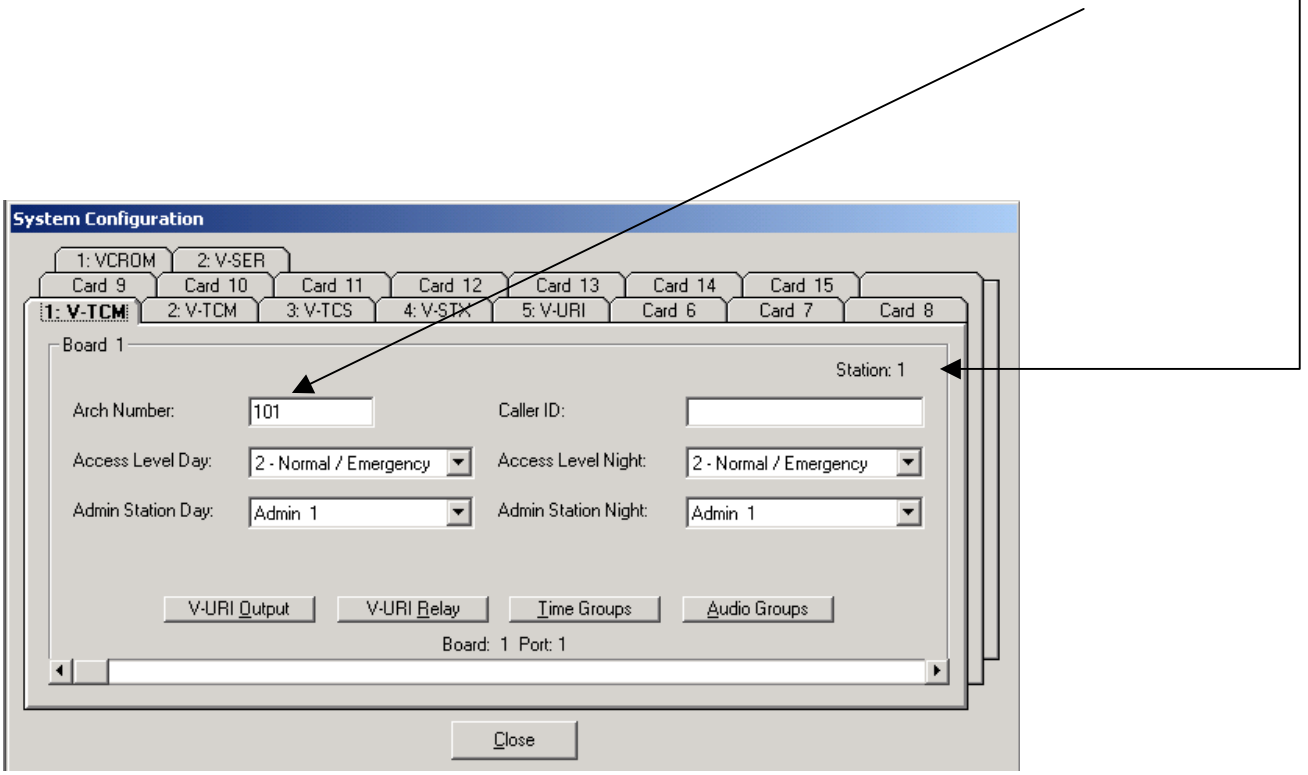
Figure 6 shows typical connections between a classroom speaker and the V-TCM 66 blocks. The station numbering is not necessarily the same as the dial codes for the classroom speakers. These numbers simply indicate the speaker output position on a particular card. The programming tool will refer to these numbers to let you know which speaker output position that you're programming. The classroom speaker dial codes, however, are flexible and may be easily changed here.



The classroom call buttons shown in figure 6 are optional. Without these calls may not be placed to the office phones from the classrooms. Unterminated call button inputs should be programmed for "ignore".

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XP-TCM12 – 12 Port 25 Volt Station Card

The XP-TCM12 is the 25 Volt ***talkback*** classroom speaker and call button card for the Valcom MultiPath™ School communications system. This card provides for the following:

13 Stations – 12 stations being one of the following:

A. a 25.5 Volt speaker (up to1 watt) and a call switch
B. a 25.5 Volt speaker only (up to1 watt)
C. up to 40 one way self amplified speakers (with proper attenuation)
D. a switch (contact closure only – no speaker) input for special purpose signaling

Communication from any 25.5 Volt speaker location to the office phones.

The ability to call an office phone by pressing the station call button.

The thirteenth station being a line level audio feed and is intended for connection to either an amplifier or to a zone of self amplified speakers in order to accomplish common area one-way paging.

A retrofit header board, XP-RFB, is available to replace the 66 blocks and better accommodate existing wiring in most systems.

Note: Disconnect system power before adding or removing system cards.

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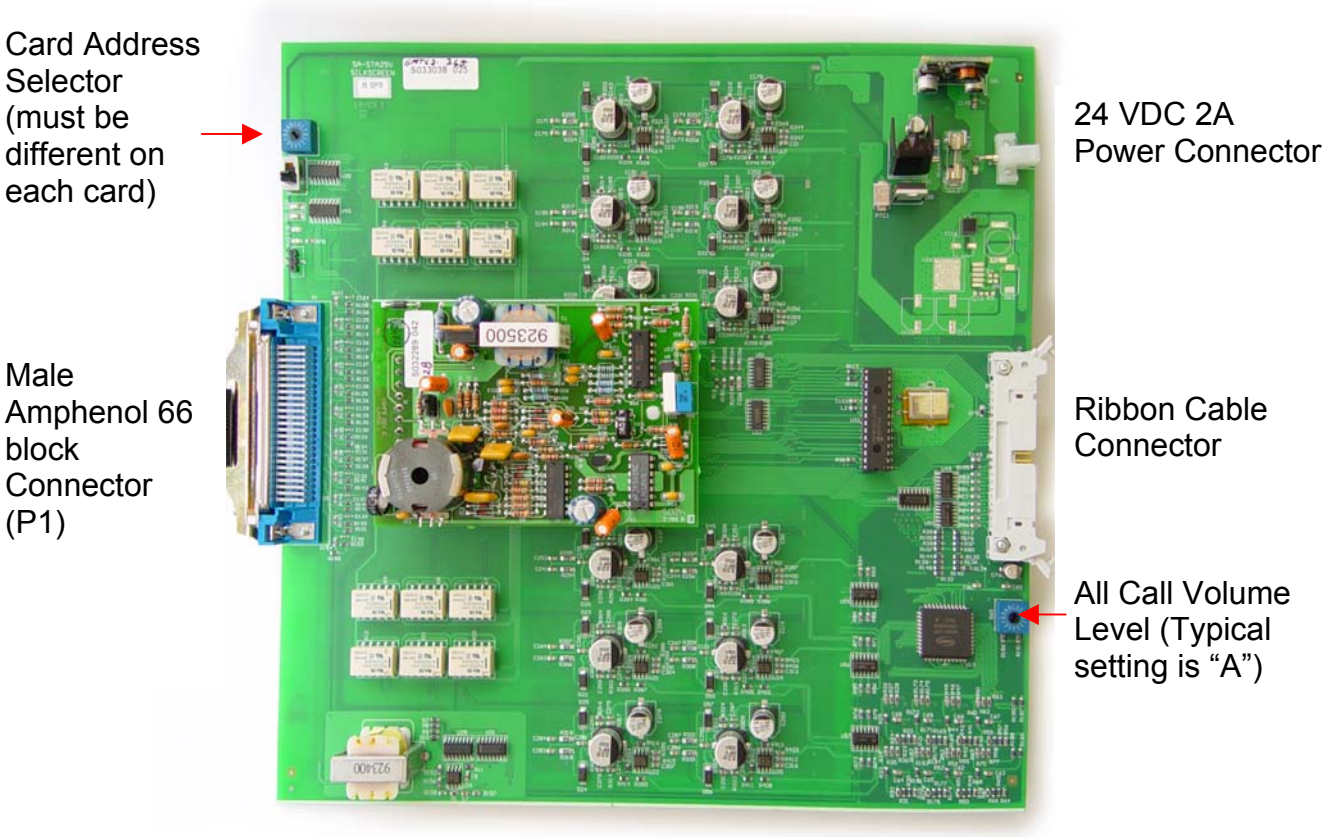

Figure 8 – XP-TCM12 Card

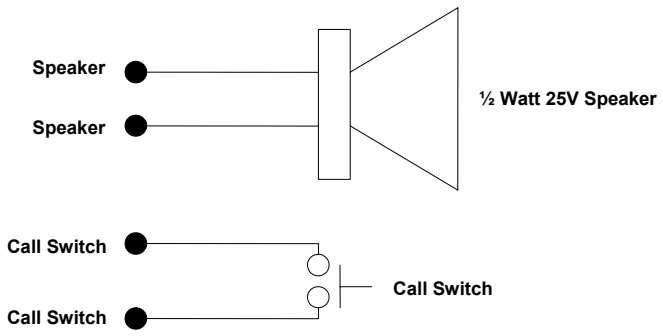

Figure 9 - Typical Classroom Speaker Connections

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P1 Connector

Designation	Wire Color	66M150 Punchdown Block
Station 1 Speaker	w/bl	26
Station 1 Speaker	bl/w	1
Station 1 Call Sw A	w/or	27
Station 1 Call Sw B	or/w	2
Station 2 Speaker	w/gn	28
Station 2 Speaker	gn/w	3
Station 2 Call Sw A	w/br	29
Station 2 Call Sw B	br/w	4
Station 3 Speaker	w/sl	30
Station 3 Speaker	sl/w	5
Station 3 Call Sw A	r/bl	31
Station 3 Call Sw B	bl/r	6
Station 4 Speaker	r/or	32
Station 4 Speaker	or/r	7
Station 4 Call Sw A	r/gn	33
Station 4 Call Sw B	gn/r	8
Station 5 Speaker	r/br	34
Station 5 Speaker	br/r	9
Station 5 Call Sw A	r/sl	35
Station 5 Call Sw B	sl/r	10
Station 6 Speaker	bk/bl	36
Station 6 Speaker	bl/bk	11
Station 6 Call Sw A	bk/or	37
Station 6 Call Sw B	or/bk	12
Station 7 Speaker	bk/gn	38
Station 7 Speaker	gn/bk	13
Station 7 Call Sw A	bk/br	39
Station 7 Call Sw B	br/bk	14
Station 8 Speaker	bk/sl	40
Station 8 Speaker	sl/bk	15
Station 8 Call Sw A	y/bl	41
Station 8 Call Sw B	bl/y	16
Station 9 Speaker	y/or	42
Station 9 Speaker	or/y	17
Station 9 Call Sw A	y/gn	43
Station 9 Call Sw B	gn/y	18
Station 10 Speaker	y/br	44
Station 10 Speaker	br/y	19
Station 10 Call Sw A	y/sl	45
Station 10 Call Sw B	sl/y	20
Station 11 Speaker	v/bl	46
Station 11 Speaker	bl/v	21
Station 11 Call Sw A	v/or	47
Station 11 Call Sw B	or/v	22
Station 12 Speaker	v/gn	48
Station 12 Speaker	gn/v	23
Station 12 Call Sw A	v/br	49
Station 12 Call Sw B	br/v	24
Line Level Out	v/sl	50
Line Level Out	sl/v	25

Figure 10 - XP-TCM12 P1 66 Block Connections

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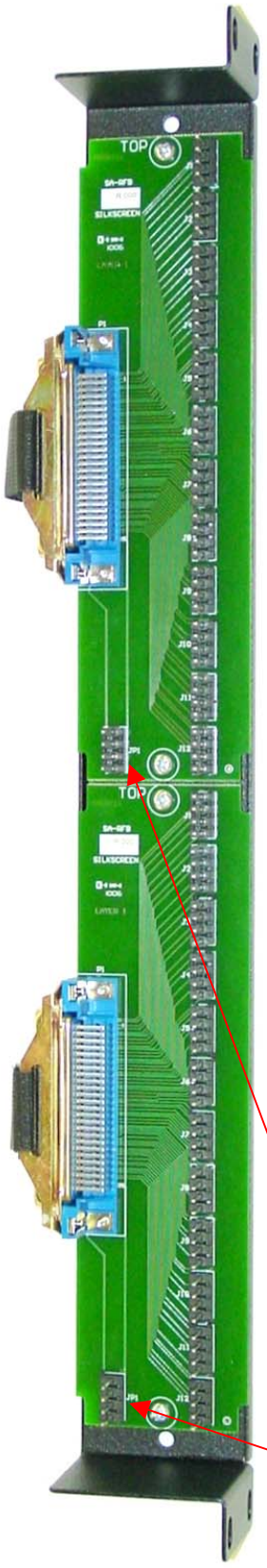

The XP-RFB Retrofit Block for 25 Volt Systems, shown here, is a 1U 19" rack or wall mount interface designed to connect to existing field wiring in most existing 25-volt systems. Headers J1 through J12 sequentially follow the pinout of a standard 66 block.

For retrofit applications using 3 wire cabling, the call switch may optionally be connected in the following manners:

A) between the "B" switch input for the zone and a room speaker tap that is approximately 4 times greater in wattage that the audio tap. For example, if the speaker is tapped at 1 watt, one side of the call switch may be attached to the 4-watt tap, the other side of the call switch may be connected to the zone's "B" switch input.

B) to one side of the speaker line through a 1.5k resistor. For example, one side of the call switch may be connected to either side of the speaker line through a 1.5k resistor with the other side of the call switch may be connected to the zone's "B" switch input.

Additionally, for call switches with a single common - a single "A" switch input may be used as a common for all "B" switch inputs.

A CAD drawing showing all options is available on the web site.

Zone 13 appears on pins 1 and 3 of JP1

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V-STX – One Way Paging Card

The V-STX is the ***one-way*** paging the Valcom MultiPath™ School communications system. This card provides for 24 zones of one way paging with a relay output for each. Each relay operates whenever its associated audio output is accessed (for music, voice or tones). Each output can provide audio to up to 150 Valcom One Way Self Amplified speakers.

Although one-way self-amplified speakers may be connected to V-TCM, XP-TCM12 or V-STX cards, the V-STX outputs are impedance and level matched to provide better drive capability for one-way applications. V-TCM and XP-TCM12 require attenuation prior to connection to one-way speaker systems.

Typically, if your application will feature 10 or more one way self amplified zones, consideration should be given to using the V-STX.

Note: Disconnect system power before adding or removing system cards.

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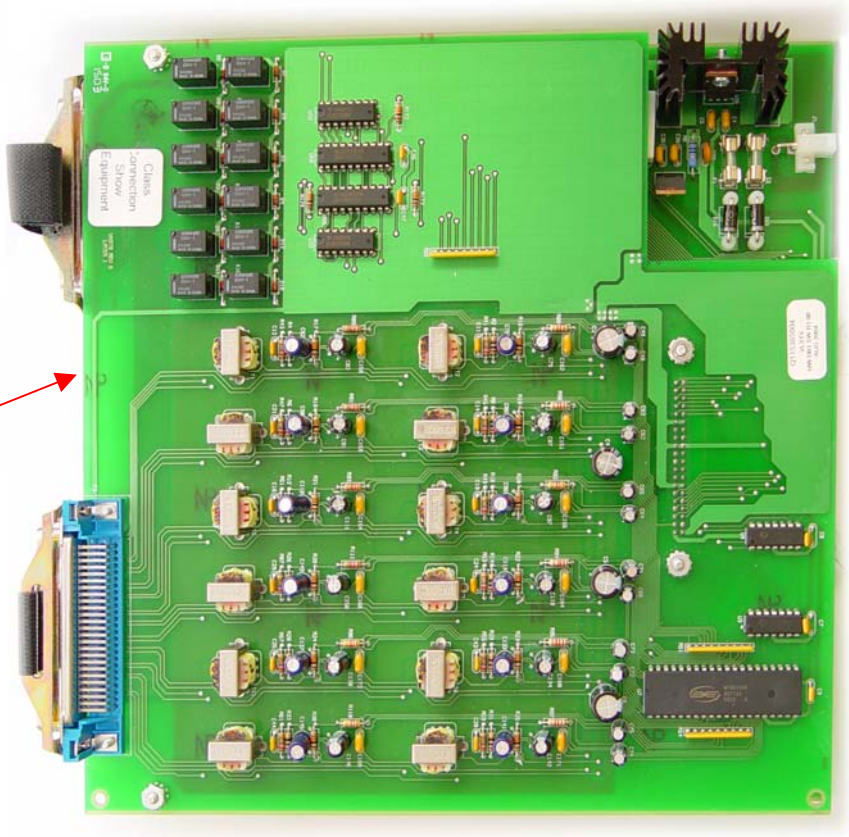

Figure 11 - V-STX Card

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P1 Connector

Designation	Wire Color	66M150 Punchdown Block
Zone 1 Tip	w/bl	26
Zone 1 Ring	bl/w	1
Zone 1 Relay S	w/or	27
Zone 1 Relay M	or/w	2
Zone 2 Tip	w/gn	28
Zone 2 Ring	gn/w	3
Zone 2 Relay S	w/br	29
Zone 2 Relay M	br/w	4
Zone 3 Tip	w/sl	30
Zone 3 Ring	sl/w	5
Zone 3 Relay S	r/bl	31
Zone 3 Relay M	bl/r	6
Zone 4 Tip	r/or	32
Zone 4 Ring	or/r	7
Zone 4 Relay S	r/gn	33
Zone 4 Relay M	gn/r	8
Zone 5 Tip	r/br	34
Zone 5 Ring	br/r	9
Zone 5 Relay S	r/sl	35
Zone 5 Relay M	sl/r	10
Zone 6 Tip	bk/bl	36
Zone 6 Ring	bl/bk	11
Zone 6 Relay S	bk/or	37
Zone 6 Relay M	or/bk	12
Zone 7 Tip	bk/gn	38
Zone 7 Ring	gn/bk	13
Zone 7 Relay S	bk/br	39
Zone 7 Relay M	br/bk	14
Zone 8 Tip	bk/sl	40
Zone 8 Ring	sl/bk	15
Zone 8 Relay S	y/bl	41
Zone 8 Relay M	bl/y	16
Zone 9 Tip	y/or	42
Zone 9 Ring	or/y	17
Zone 9 Relay S	y/gn	43
Zone 9 Relay M	gn/y	18
Zone 10 Tip	y/br	44
Zone 10 Ring	br/y	19
Zone 10 Relay S	y/sl	45
Zone 10 Relay M	sl/y	20
Zone 11 Tip	v/bl	46
Zone 11 Ring	bl/v	21
Zone 11 Relay S	v/or	47
Zone 11 Relay M	or/v	22
Zone 12 Tip	v/gn	48
Zone 12 Ring	gn/v	23
Zone 12 Relay S	v/br	49
Zone 12 Relay M	br/v	24
	v/sl	50
	sl/v	25

Figure 12a – V-STX P1 66 Block Connections

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P2 Connector

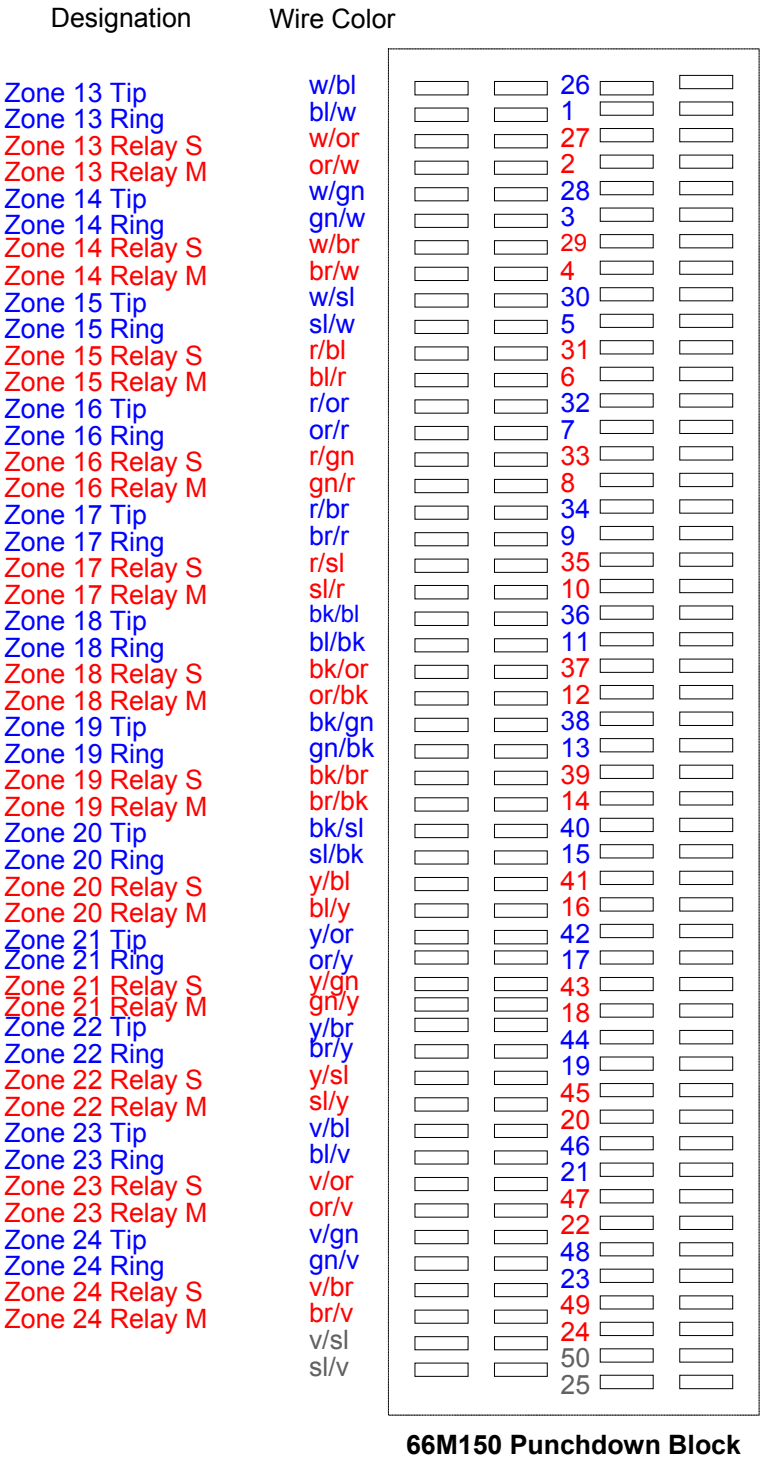

Figure 12b – V-STX P2 66 Block Connections

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V-URI – Universal Relay Interface

The V-URI is a special purpose card for the Valcom MultiPath™ School communications system. You may have up to 5 V-URI cards installed. This card provides for the following:

72 Status LEDs to indicate station status (calling office, busy, etc)

72 switch (contact closure) inputs that are programmable to initiate tones, call a particular classroom, place an emergency call to an office phone, etc.

8 programmable relay outputs that can operate:

A) When a V-URI input is pressed (momentary closure)
B) When a station is connected to the office (steady closure)
C) When a station is connected to the office and the office presses the DTMF # key (single 2 second closure)
D) When turned on or off through time schedules

Figure 14 shows typical LED and switch connections for the V-URI. Dependant upon your application, you may use the switches, the LEDs or both. If numerous V-URI inputs are to be utilized - In order to accommodate numerous common connections, separate split blocks may be used and the LED/Switch commons (V/SL & SL/V) may be bridged to the unused side of each block. This will allow for a “common” for each LED/Switch.

Note: Disconnect system power before adding or removing system cards.

The V-URI is only necessary if your system requires additional switch inputs, relays associated with the stations (door unlock, camera activation, etc) or LED outputs. Most systems will not use a V-URI. If your system will have special requirements then the Product Support Group may suggest using a V-URI.

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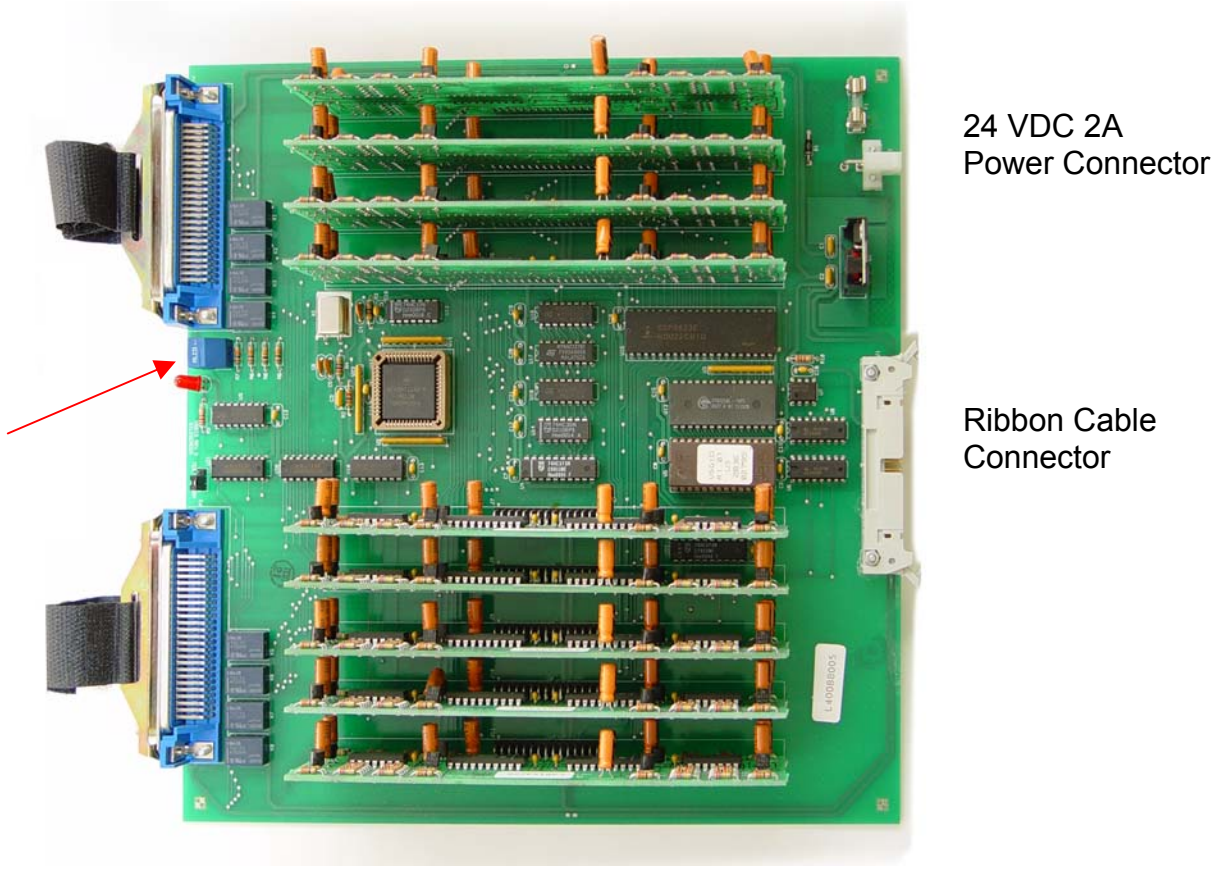

Figure 13 – V-URI Card

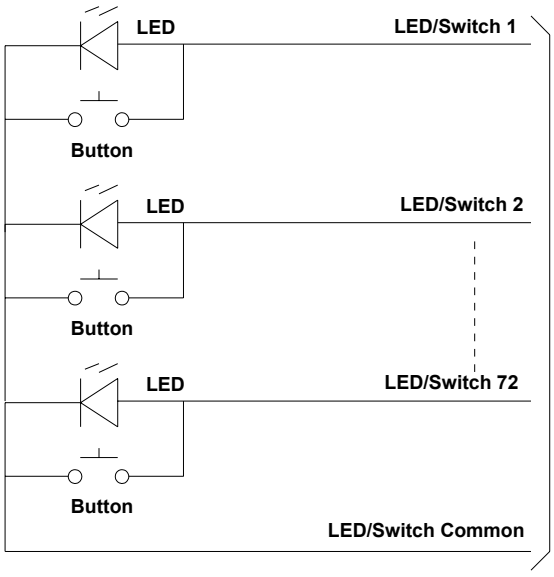

Figure 14 – Typical V-URI LED/Switch Connections

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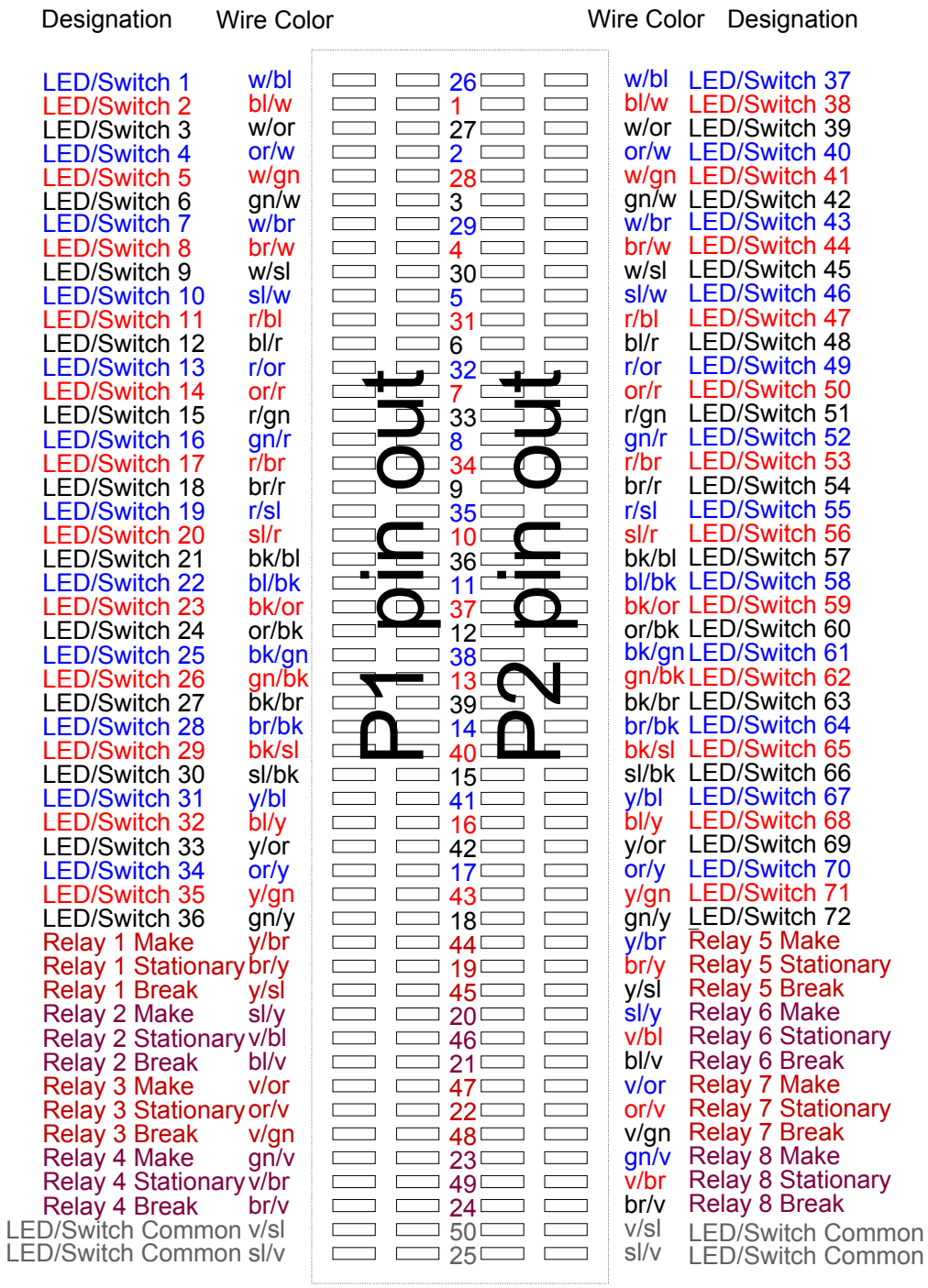

Figure 15 – V-URI 66 Block Connections

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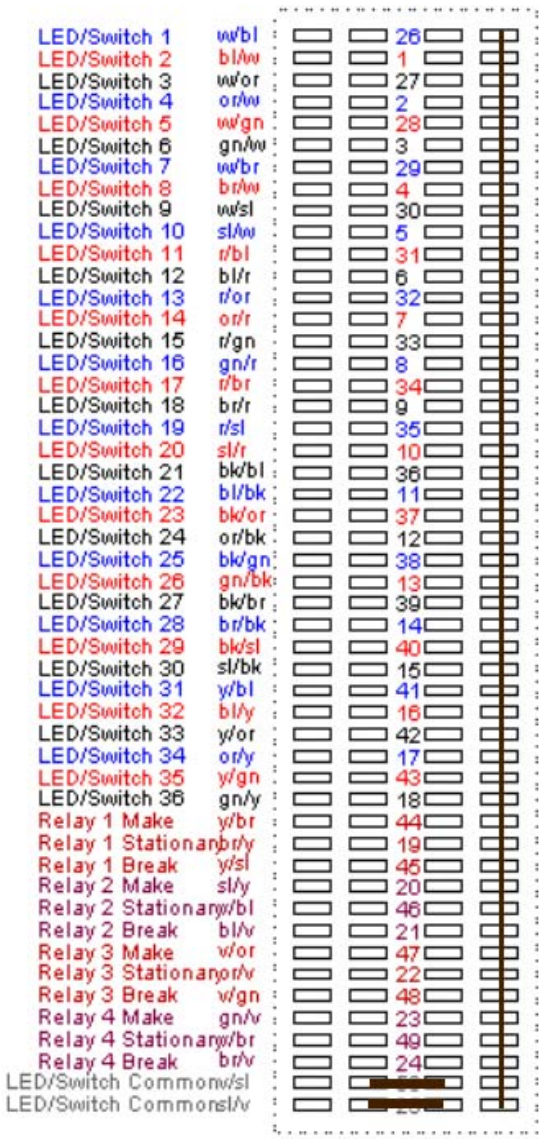

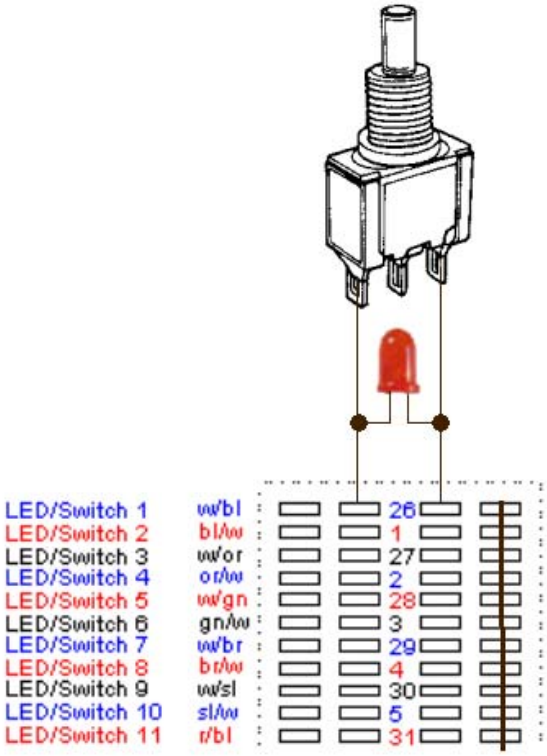

Figure 15a above illustrates a technique of connecting the unused side of a 66M150 Split Block to the LED/Switch commons via 2 bridging clips and a wire strap. Switches and LEDs can then simply connect across the block.

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V-SER – Serial Card

The V-SER plugs directly onto the V-CPU4 card (see page 9). It provides a serial port output for SMDR* reports, and, when used with the V-CIO Clock Relay Board provides the interface to the school's clocks.

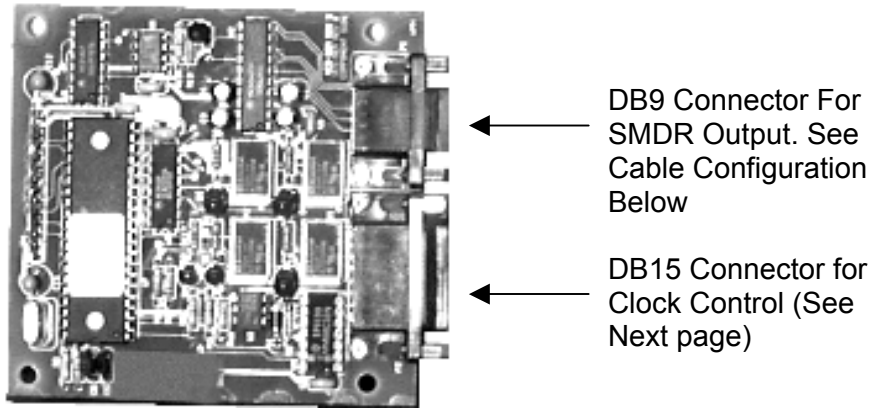

Figure 16 – V-SER Card

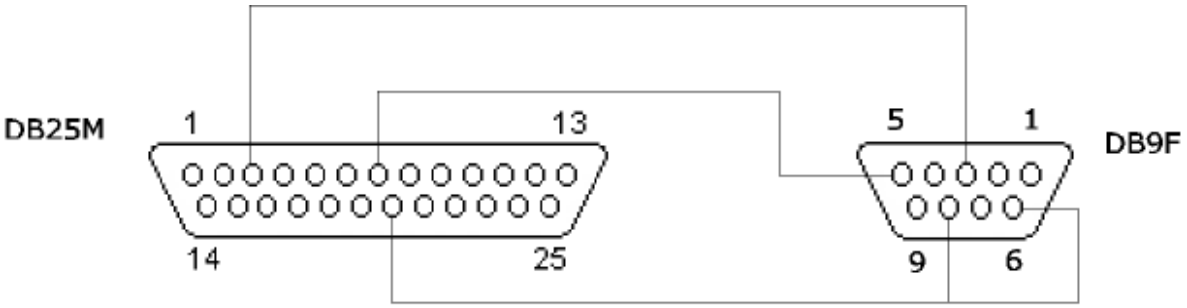

Figure 17 - SDMR Serial Printer Cable Wiring

* SMDR (Station Message Detail Reporting) may be provided by the V-SER or the V-ROM-D.

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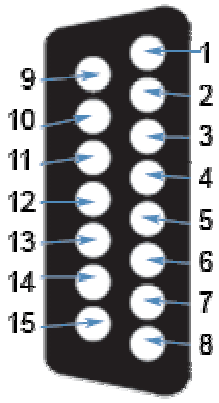
V-SER DB15 Connections for Clock Control		
Pin #	Connects to:	Wire Color
1	Not used at this time	Black
2	Not used at this time	White
3	Digital Out +	Red
4	Digital Out -	Green
5	Not used at this time	Orange
6	Not used at this time	Blue
7	Power Supply + 24 VDC	White/Black
8	V-CIO CKT1	Red Black
9	Power Supply +24VDC	Green/Black
10	V-CIO CKT2	Orange/Black
11	Power Supply +24VDC	Blue/Black
12	V-CIO CKT3	Black/White
13	Power Supply +24VDC	Red/White
14	V-CIO CKT4	Green/White
15	Not used at this time	Blue/White



DB15 Male Connector

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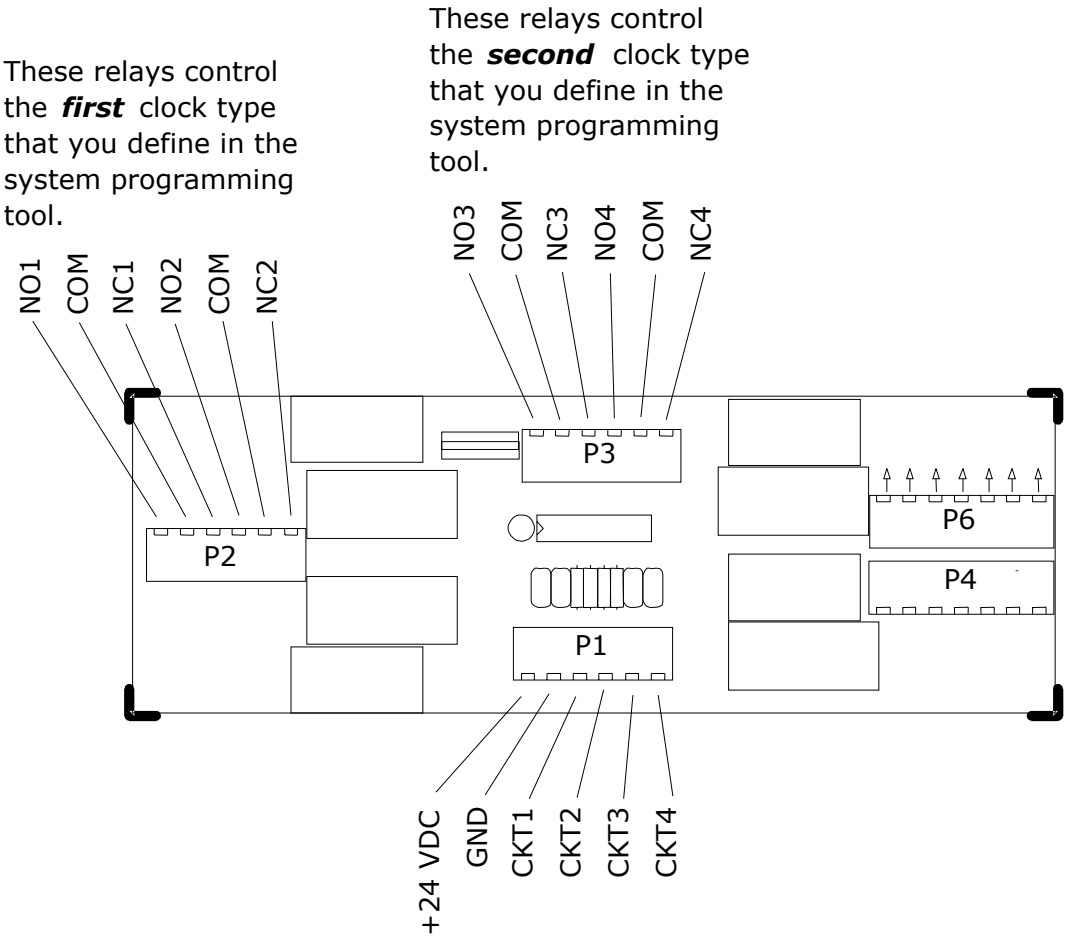
V-CIO – Clock Relay Card (Part of the V-CLK)

The V-CIO Card provides four 10 amp contact relays for driving clocks. It is designed for use with the V-SER Serial Card. The V-CIO card requires a dedicated 24vdc power supply and comes with a mounting plate for use in a 4-gang electrical outlet box.

NOTE: The V-CIO requires a ***dedicated*** 24 Volt DC power supply (provided with V-CIO). The V-CIO may be mounted up to 500 feet away from the V-SER card when the dedicated power supply is located with the V-CIO.



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CLOCKS TYPES CONTROLLED

Type Number	Description	Figure Number
1	Valcom Sync-wired 12-hour	19
1	TED Systems A1000M & D1000	33
2	Simplex/Edwards Sync-wired 24-hour	19
3	Simplex Generator Start (12 Hour & Hourly Correction)	25
4	Simplex/IBM Impulse 3 wire, 58th or 59th Minute	29
4	Simplex Impulse, 2 wire,59th Minute Ref	30
5	Utility Impulse 12VDC or 24VDC (Non-Corrective)	28
6	European Duplex Reverse Polarity (24VDC or 48VDC) (Non-Corrective)	27
7	Honeywell Faraday (1300 series) / Cincinnati (D Synchronous)	19
8	National Time Hourly	19
9	Rauland, National Time, 12 Hour Correction	19
10	Stromberg (Synchronous, 56th Minute Ref, Electronic)	19
11	Simplex, Dual Motor, 45th Minute Ref	21
12	Simplex, Dual Motor, 59th Minute Ref	21
13	Cincinnati D6 (Impulse, 12 Hour Correction)	22
14	Cincinnati D3 (Impulse, 59th Minute Ref)	22
15	Stromberg, Impulse 58th Minute Ref	22
16	Standard Electric Time FMT-Dual Motor Couch C542014 through C452019; C452133 through 452145	20
17	Standard Electric Time, AR2 Impulse, 59th Minute Ref	24
18	Standard Electric Time, AR3A, Impulse, 60th Minute Ref	23
19	Dukane 24A, 24 Hour Correction	26
20	Dukane 240, 24 Hour Correction	19
21	Dukane 240, 12 Hour Correction	19
22	Standard Electric GR Sync 12 Hour Correction	19
23	Simplex 1.8” Digital 12 Hour	31/32
24	Simplex 1.8” Digital 24 Hour	31/32

For Valcom 2-wire Correction refer to the diagram included with the V-VCU or download the diagram from www.valcomclocks.com

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Clock correction connections have been provided by 3rd parties. Due to this fact, Valcom MultiPath™ does not guarantee the accuracy of these connection diagrams.

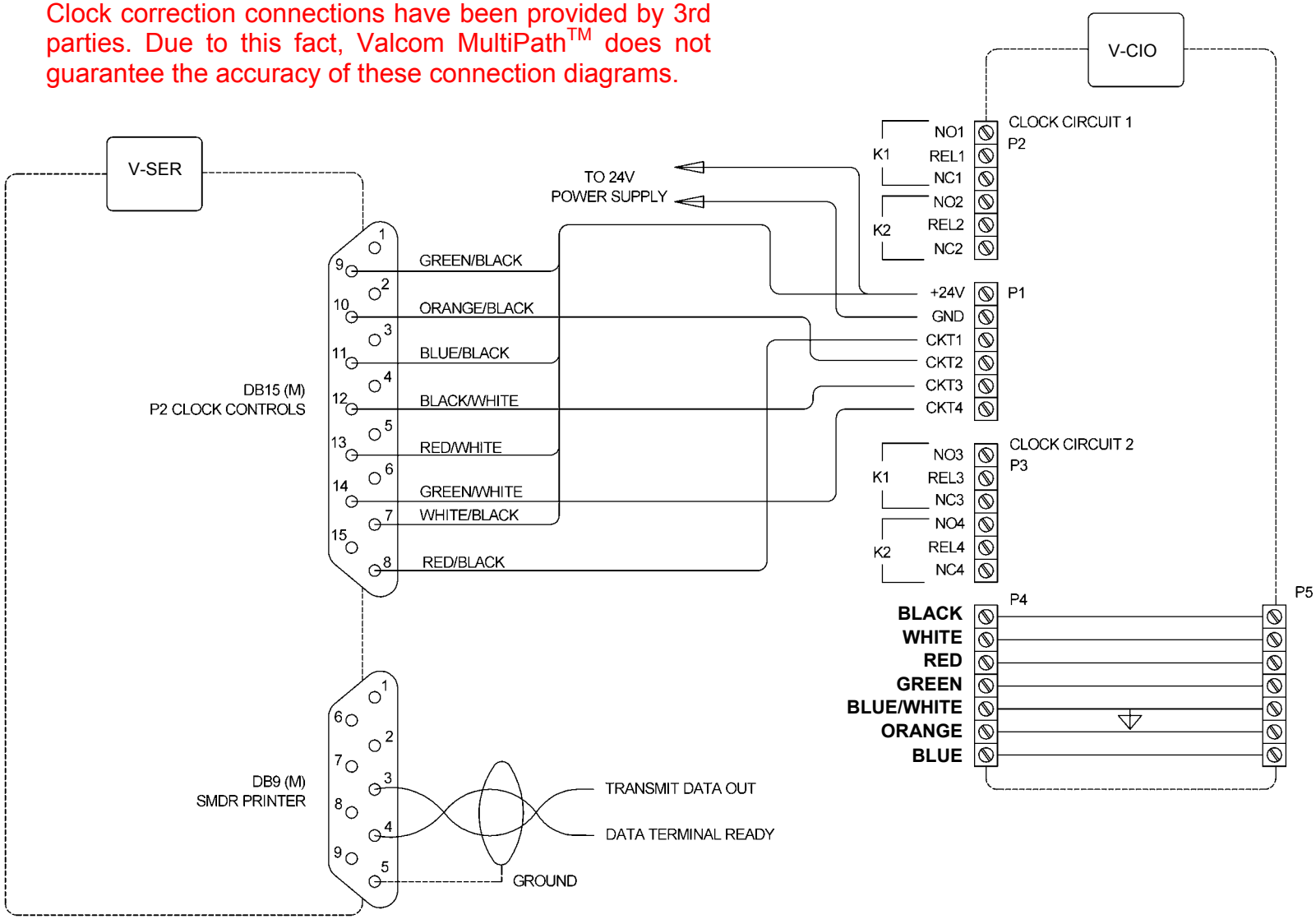

Figure 18 –V-SER to V-CIO Connections *Common to All Clocks*

If your system utilizes VCRCA Remote Card Adapters, refer to the VCRCA manual for alternate wiring instructions.

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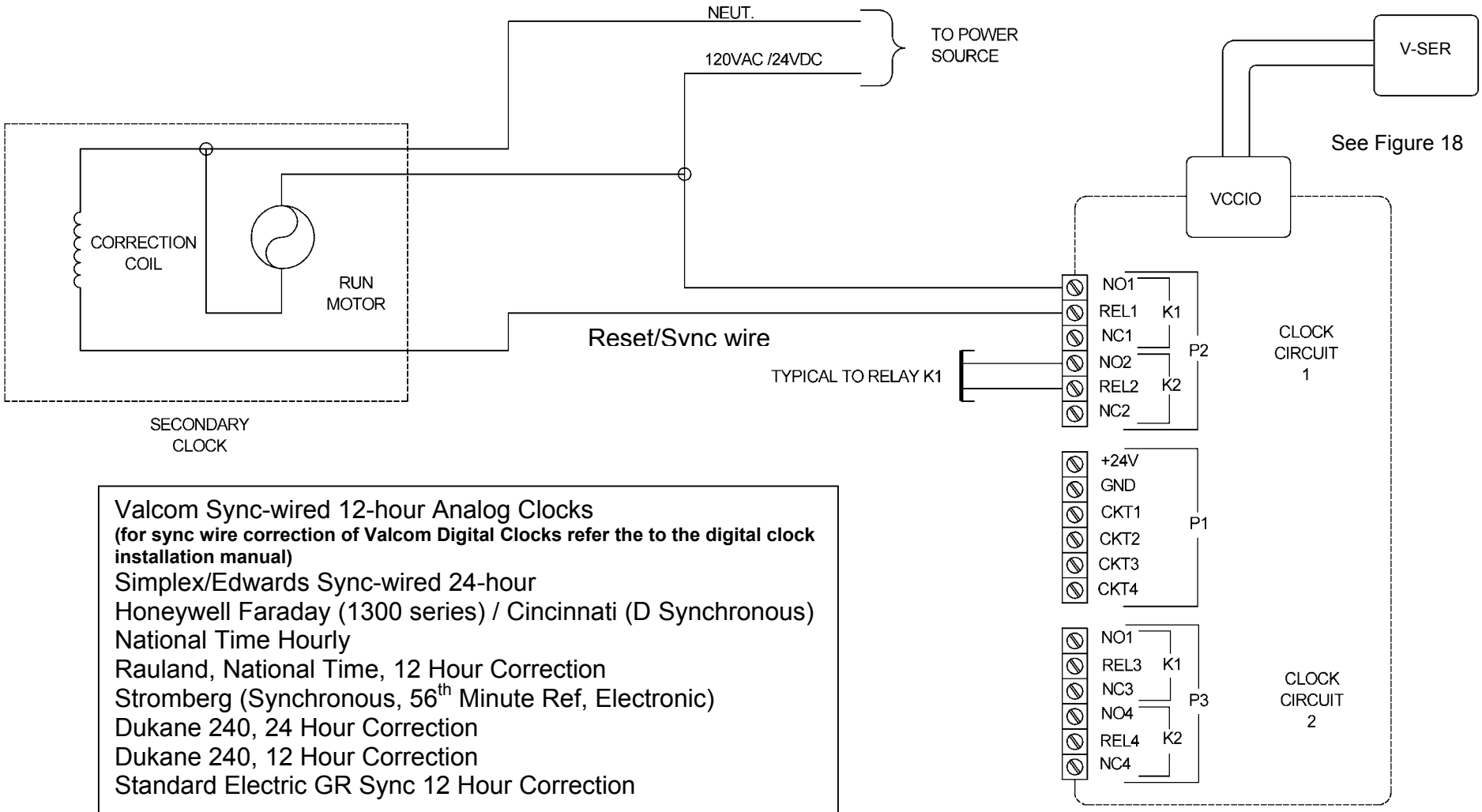

Valcom Sync-wired 12-hour Analog Clocks
(for sync wire correction of Valcom Digital Clocks refer the to the digital clock installation manual)
Simplex/Edwards Sync-wired 24-hour
Honeywell Faraday (1300 series) / Cincinnati (D Synchronous)
National Time Hourly
Rauland, National Time, 12 Hour Correction
Stromberg (Synchronous, 56th Minute Ref, Electronic)
Dukane 240, 24 Hour Correction
Dukane 240, 12 Hour Correction
Standard Electric GR Sync 12 Hour Correction

Figure 19 – Types 1, 2, 7, 8, 9, 10, 20, 21 and 22

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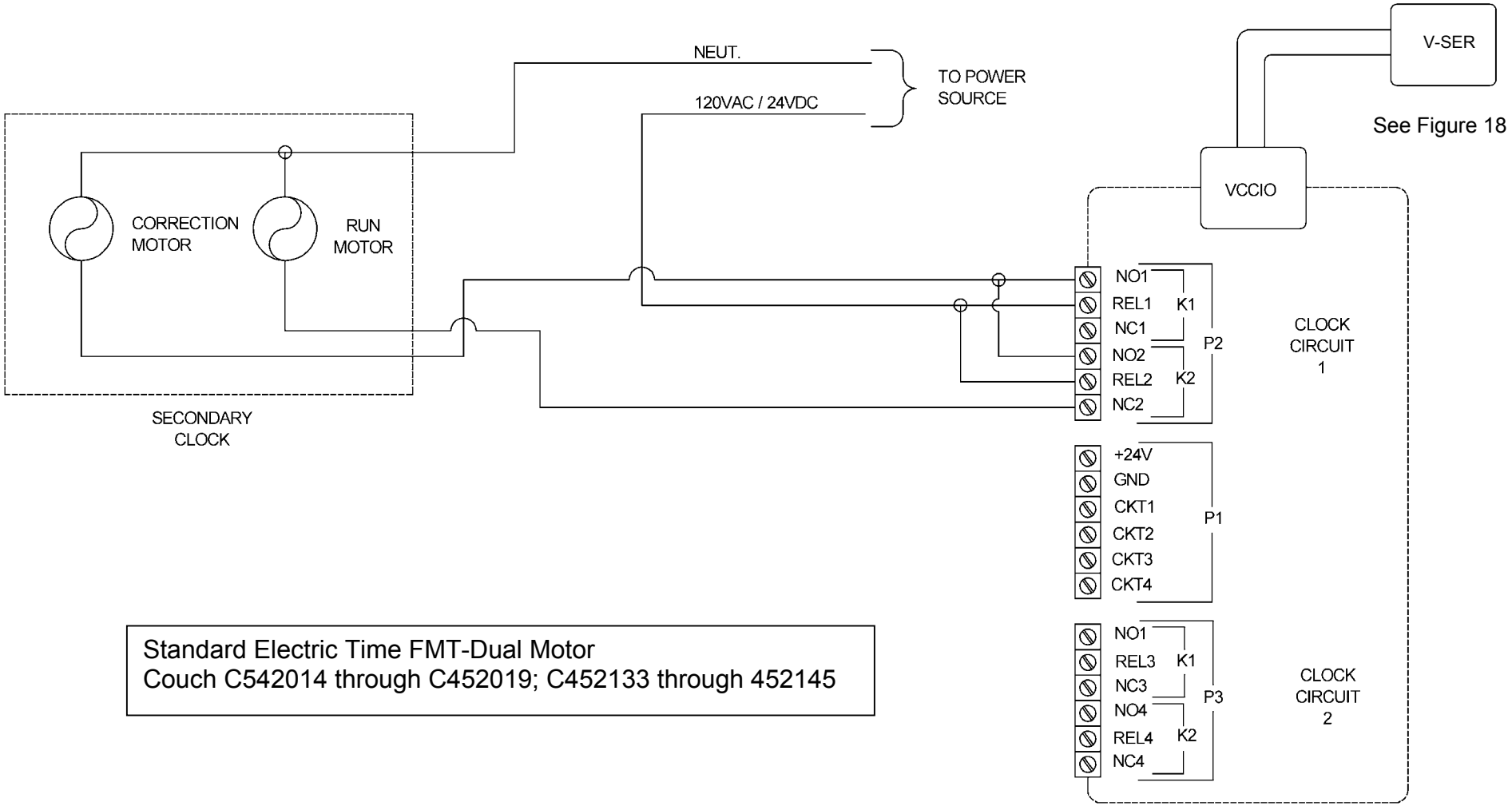

Standard Electric Time FMT-Dual Motor
Couch C542014 through C452019; C452133 through 452145

Figure 20 – Type 16

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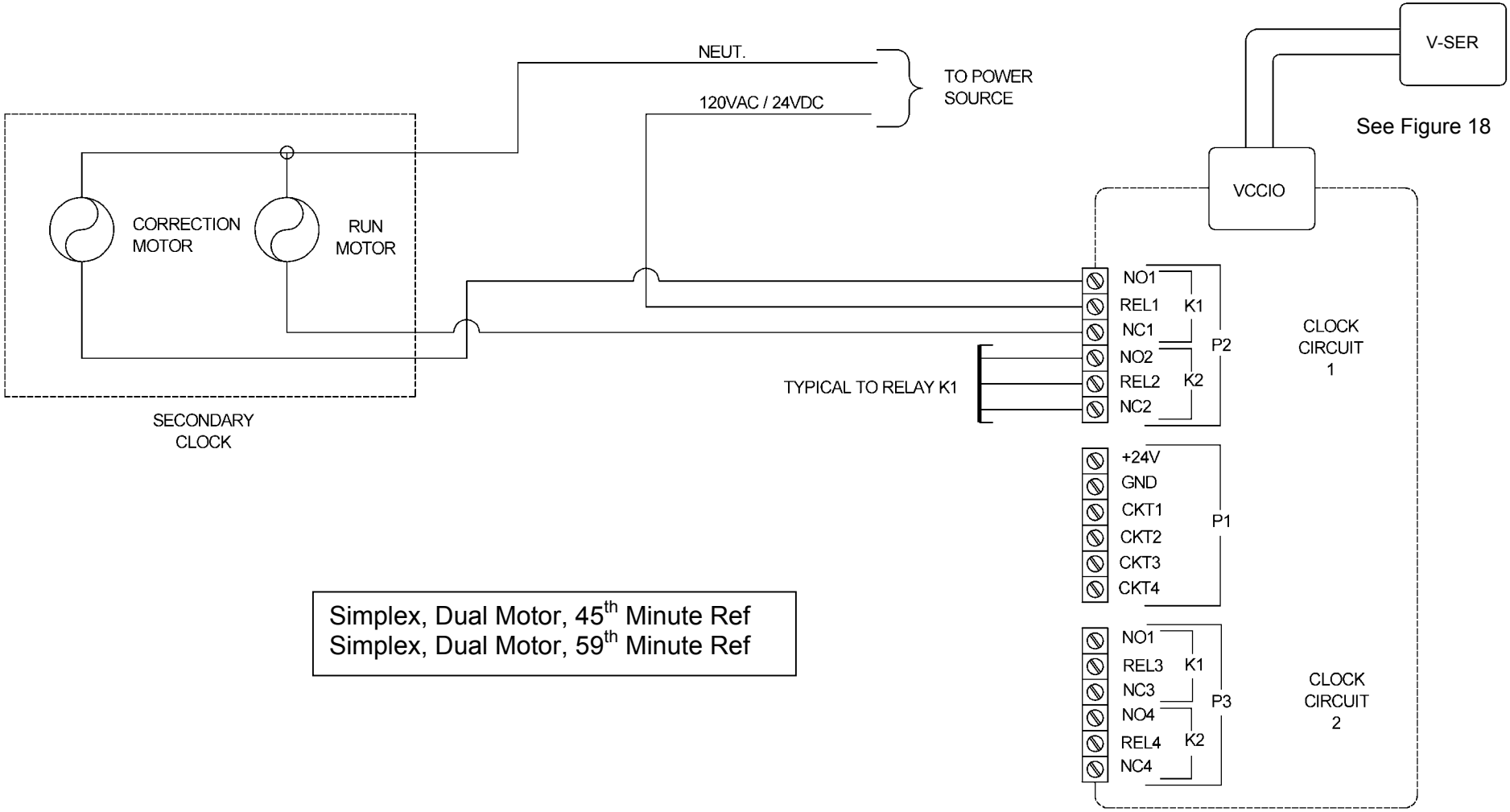

Figure 21 –Types 11 and 12

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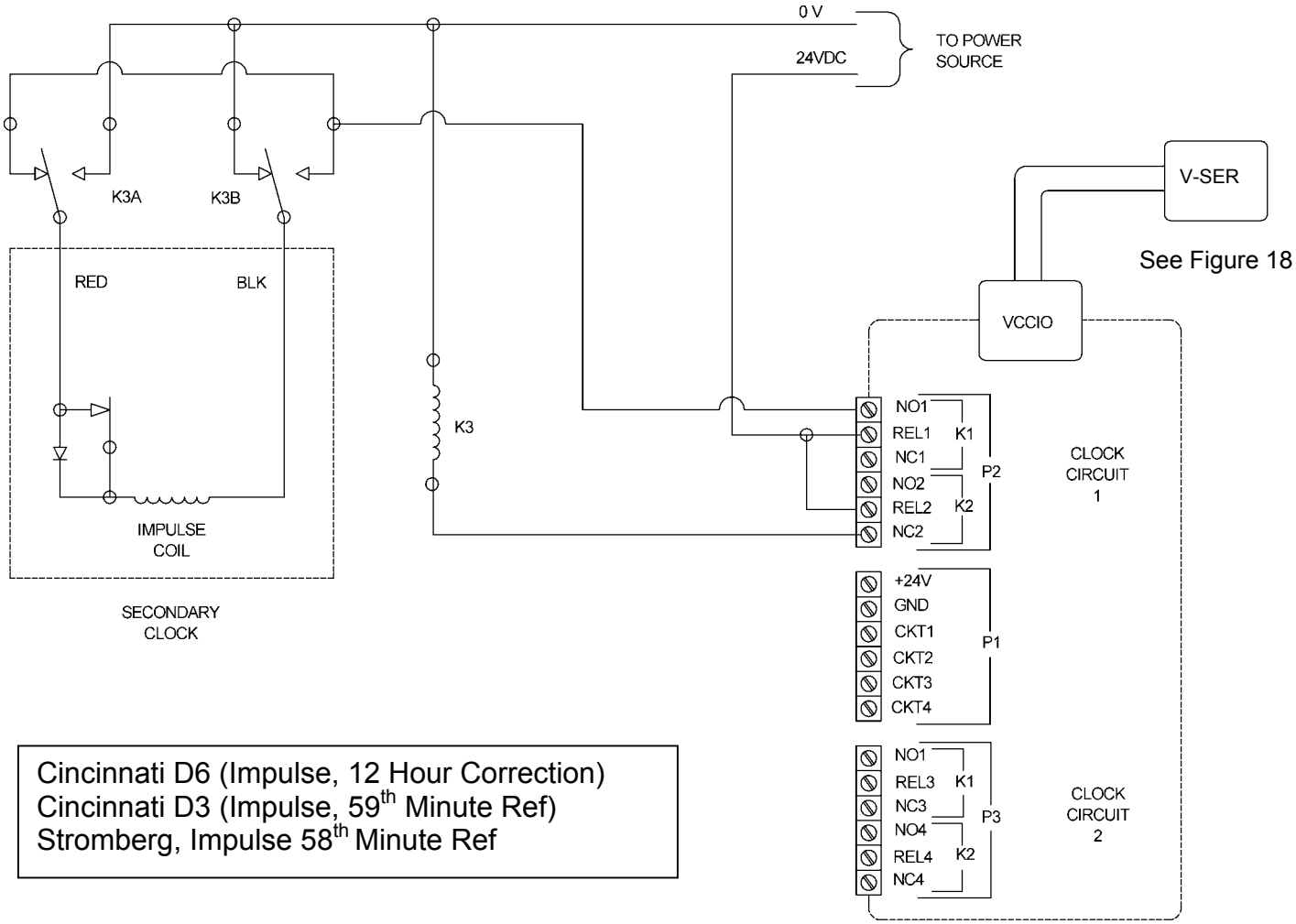

Figure 22 – Types 13, 14 and 15

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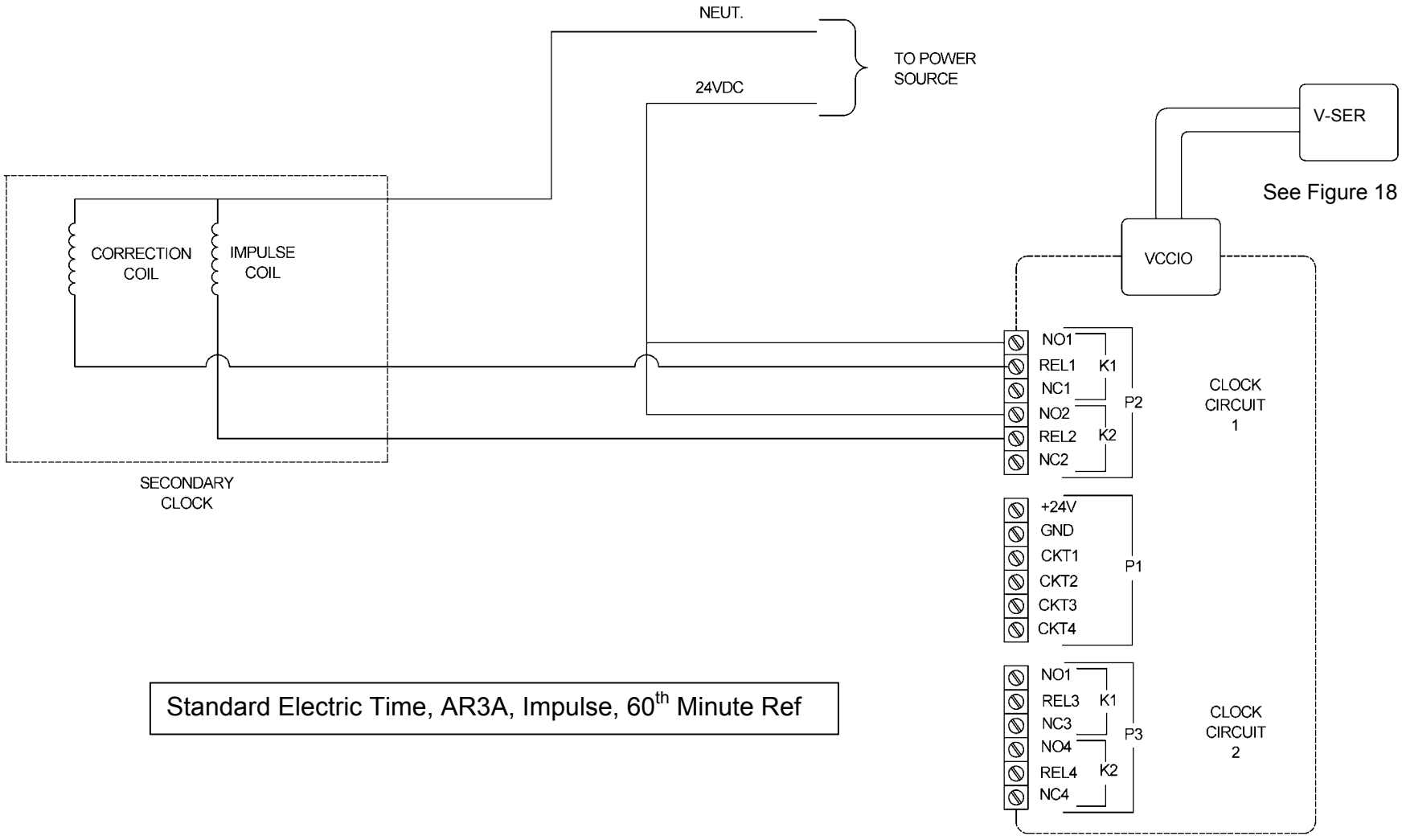

Figure 23 – Type 18

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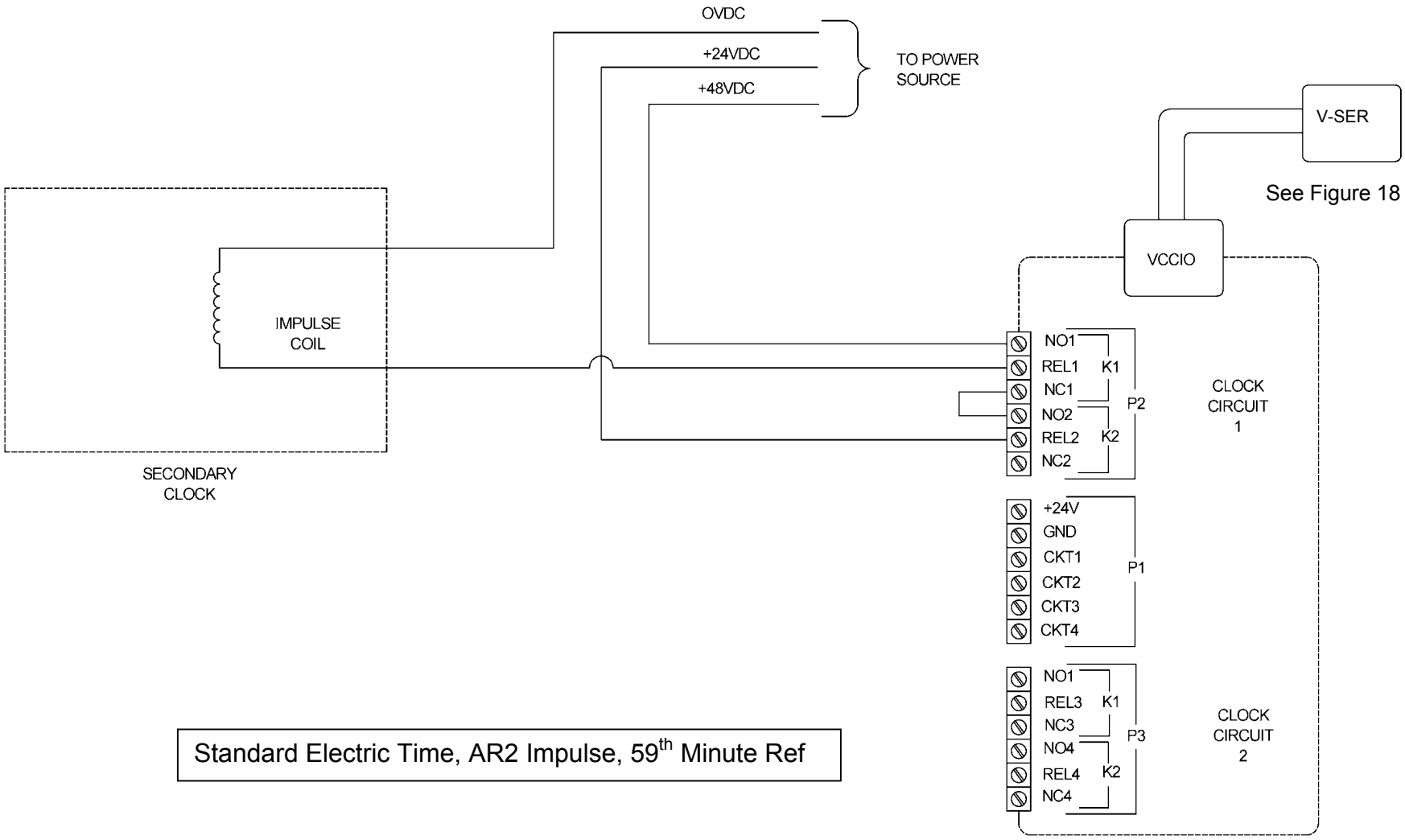

Figure 24 – Type 17

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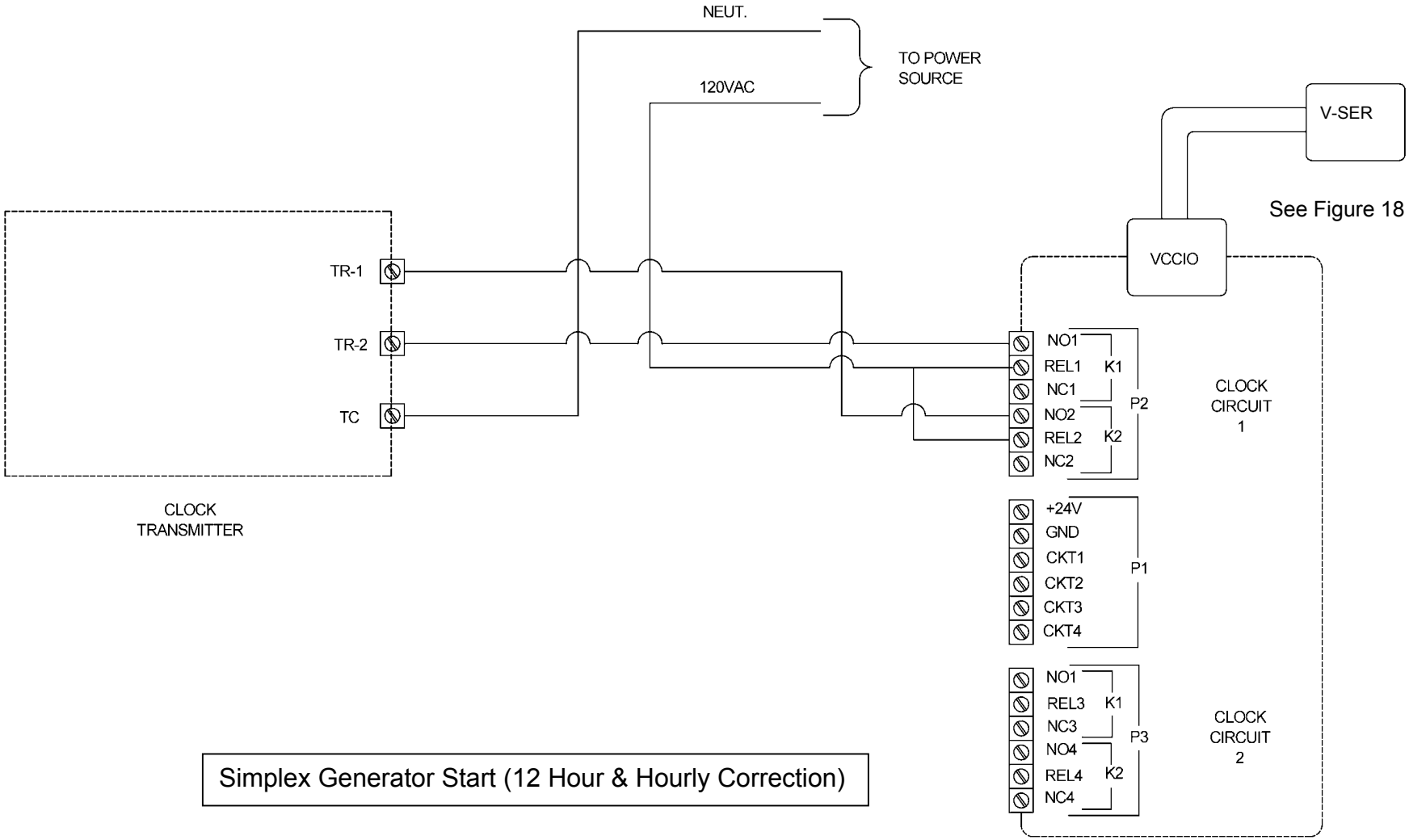

Figure 25 – Type 3

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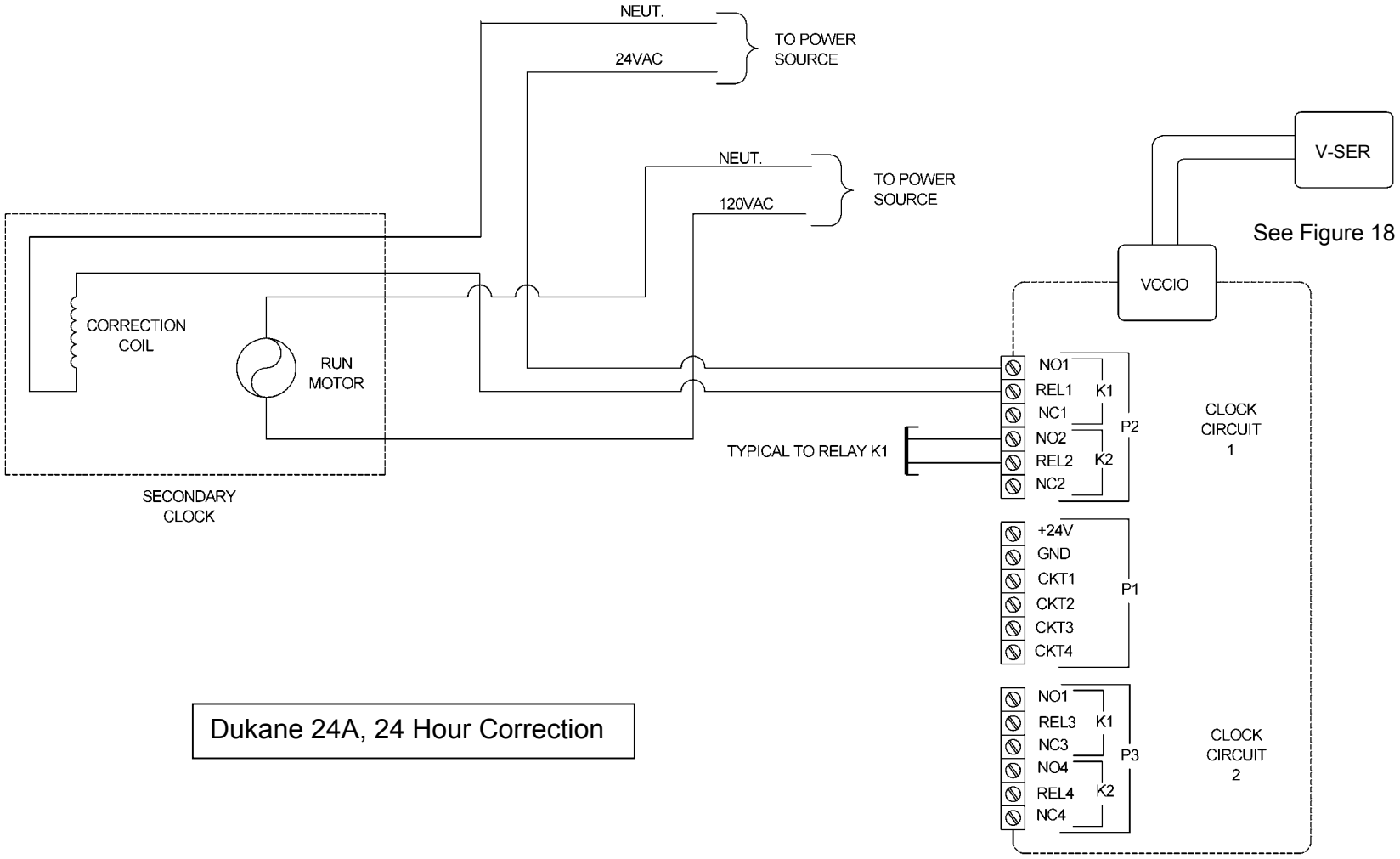

Figure 26 – Type 19

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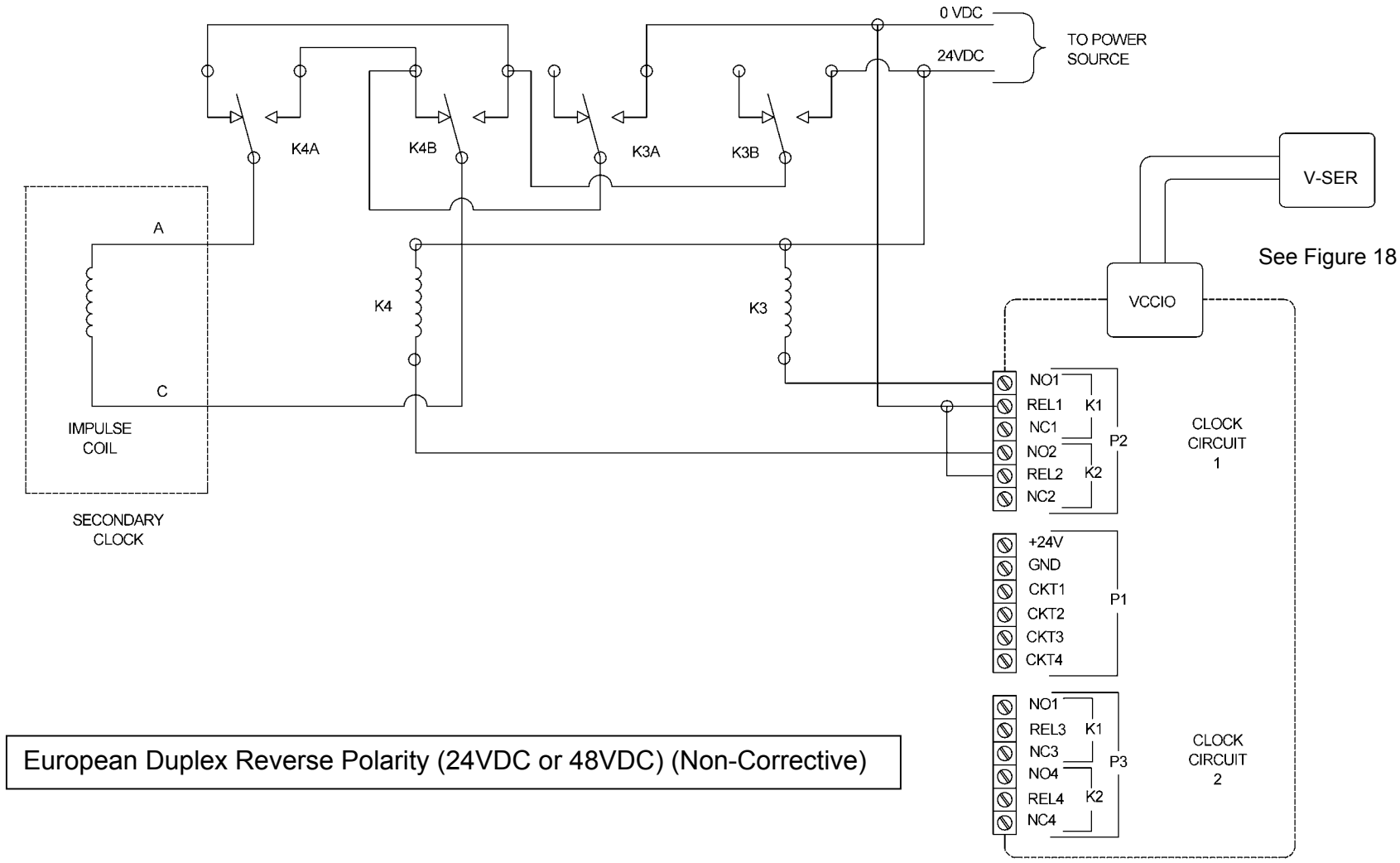

European Duplex Reverse Polarity (24VDC or 48VDC) (Non-Corrective)

Figure 27 – Type 6 (K3 & K4 are 24VDC DPDT Relays)

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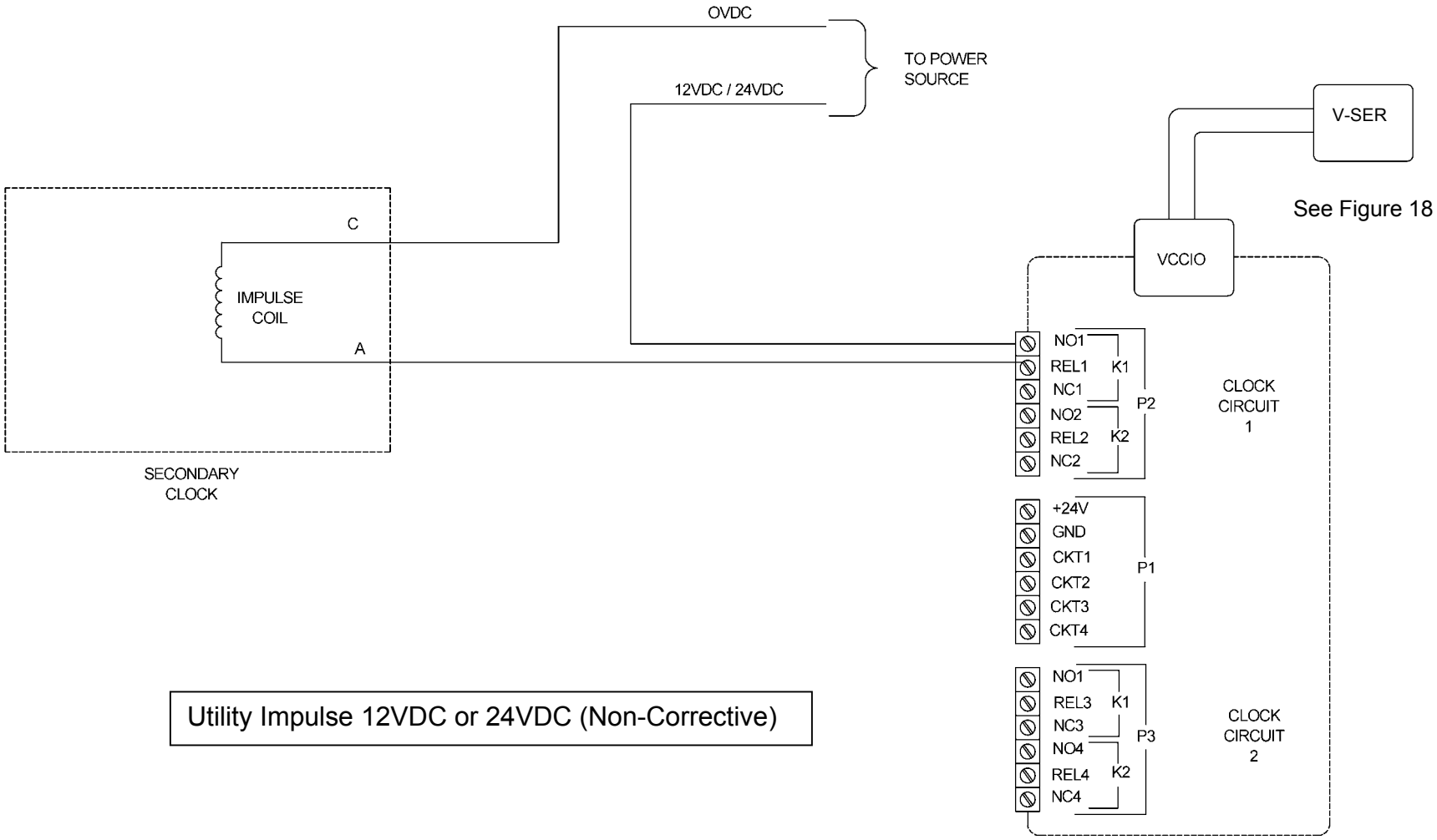

Figure 28 – Type 5

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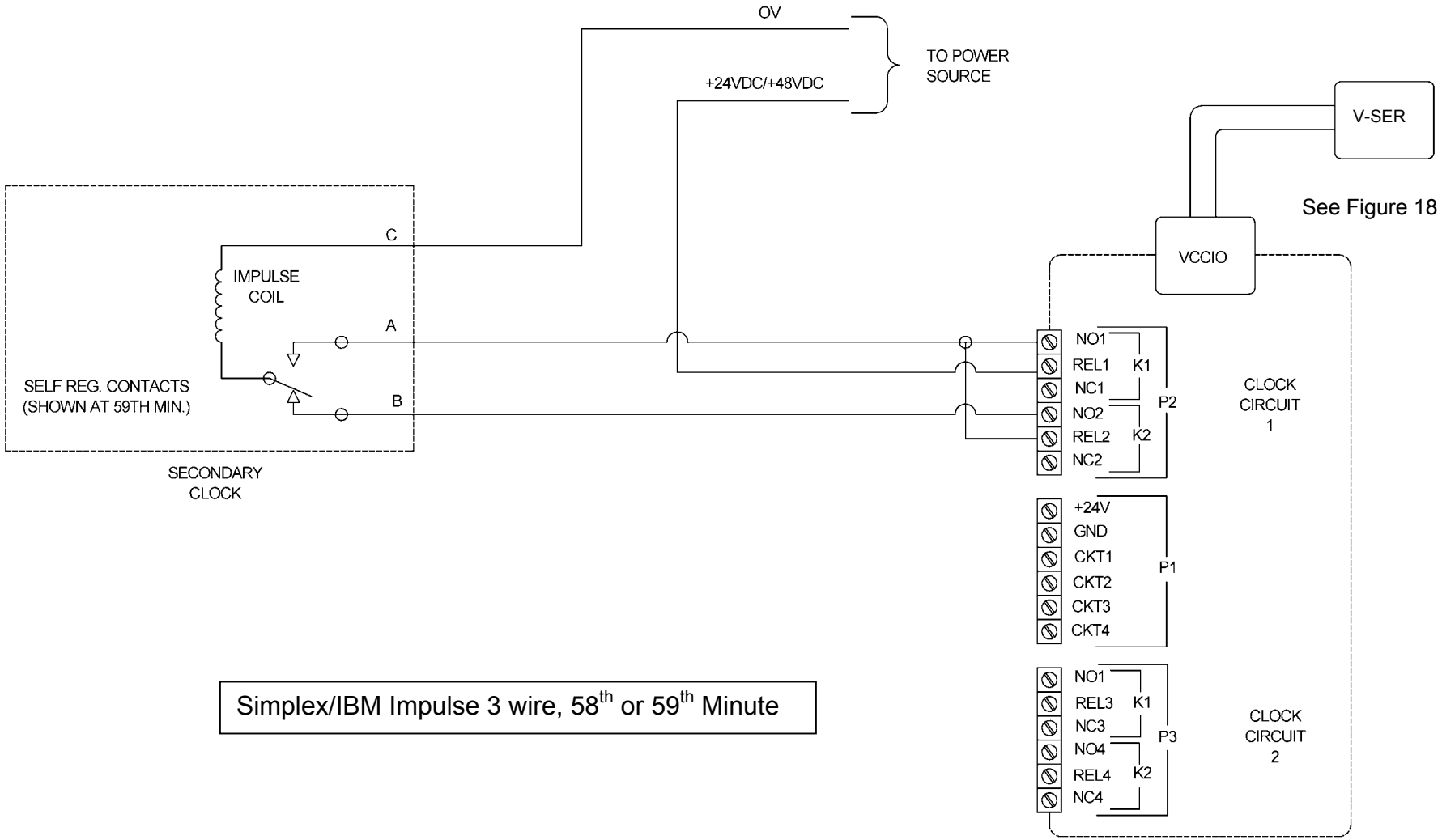

Figure 29 – Type 4 (3 wire)

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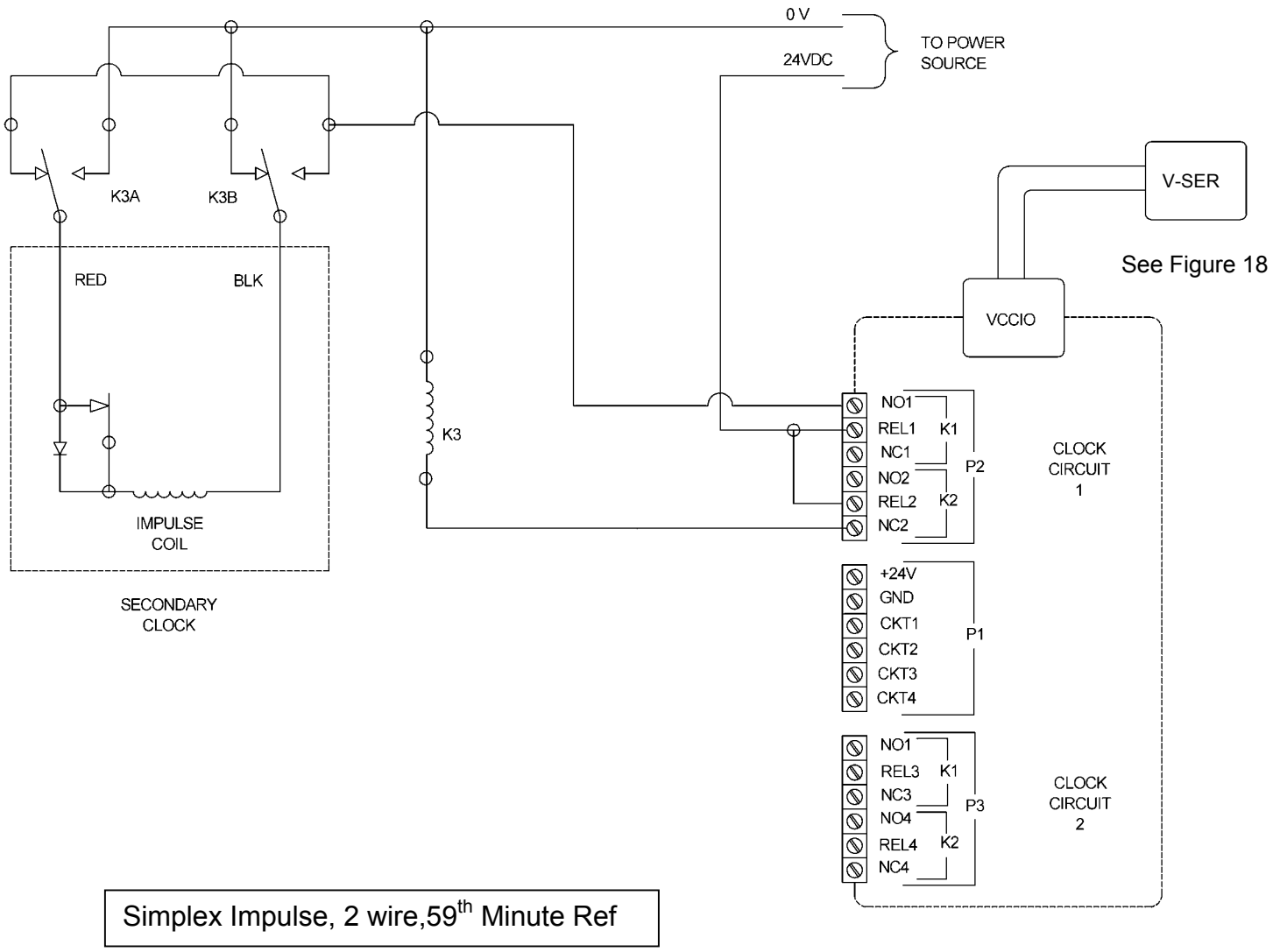

Figure 30 – Type 4 (2 wire)

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		Simplex 6333 Series LED Load Chart					
		14 AWG	16 AWG	18 AWG	20 AWG	22 AWG	24 AWG
Number Of Clocks	2	4960’	3109’	1956’	1250’	781’	481’
	4	2480’	1555’	978’	625’	391’	240’
	6	1653’	1036’	625’	417’	260’	160’
	8	1240’	777’	489’	313’	195’	120’
	10	992’	622’	391’	250’	156’	96’
	12	827’	518’	326’	208’	130’	80’
	14	709’	444’	279’	179’	112’	69’
	16	620’	389’	245’	156’	98’	60’
	18	551’	345’	217’	139’	87’	53’
	20	496’	311’	196’	125’	78’	48’
	22	451’	283’	178’	114’	71’	44’
	24	413’	259’	163’	104’	65’	40’
	26	382’	239’	150’	96’	60’	37’
	28	354’	222’	140’	89’	56’	34’
	30	331’	207’	130’	83’	52’	32’
	32	310’	194’	122’	78’	49’	30’
	34	292’	183’	115’	74’	46’	28’
	36	276’	173’	109’	69’	43’	27’
	38	261’	164’	103’	66’	41’	25’
	40	248’	155’	98’	63’	39’	24’

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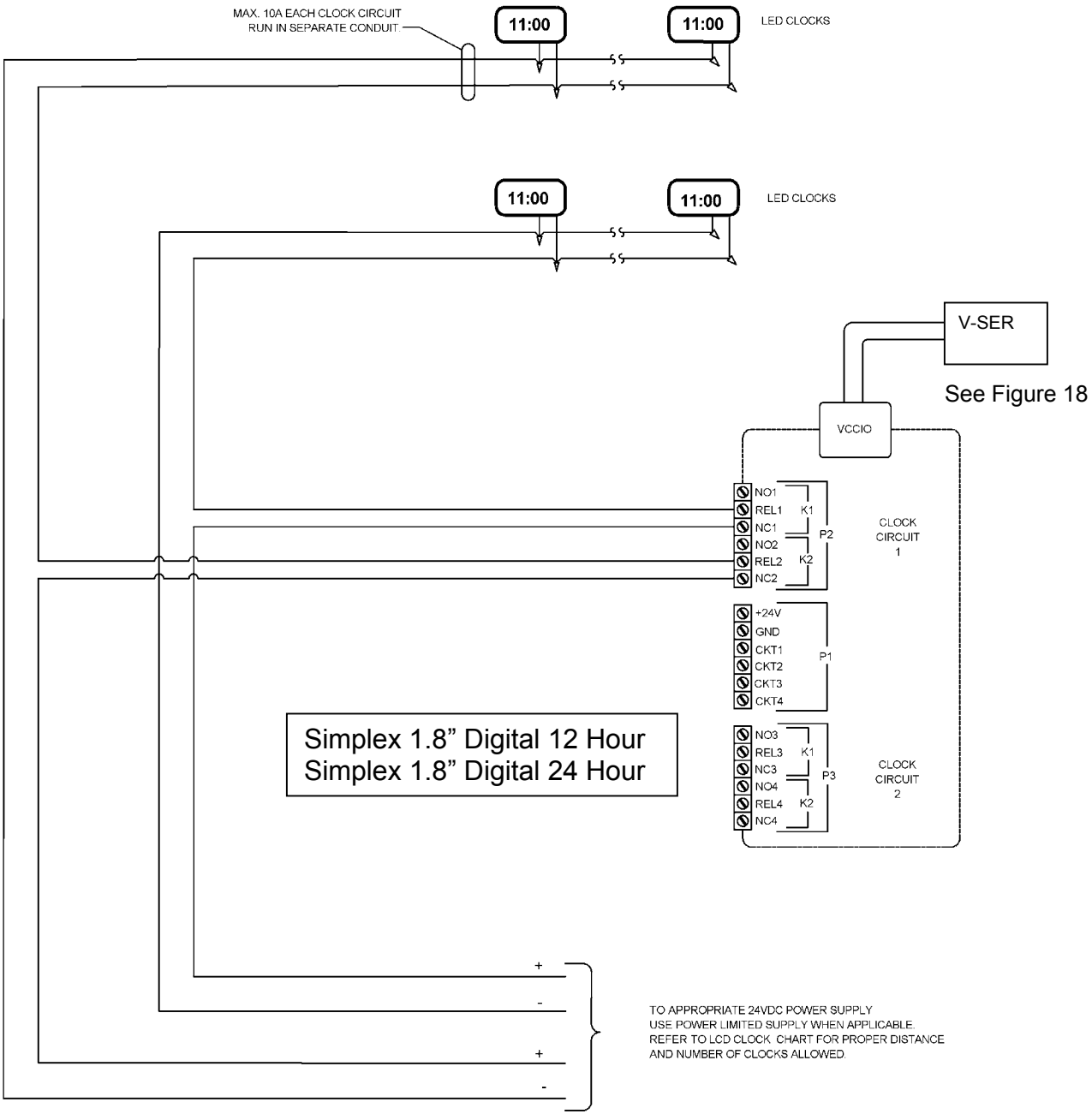

Figure 31 – Types 23 and 24 (Simplex 6333 1.8” Digital)

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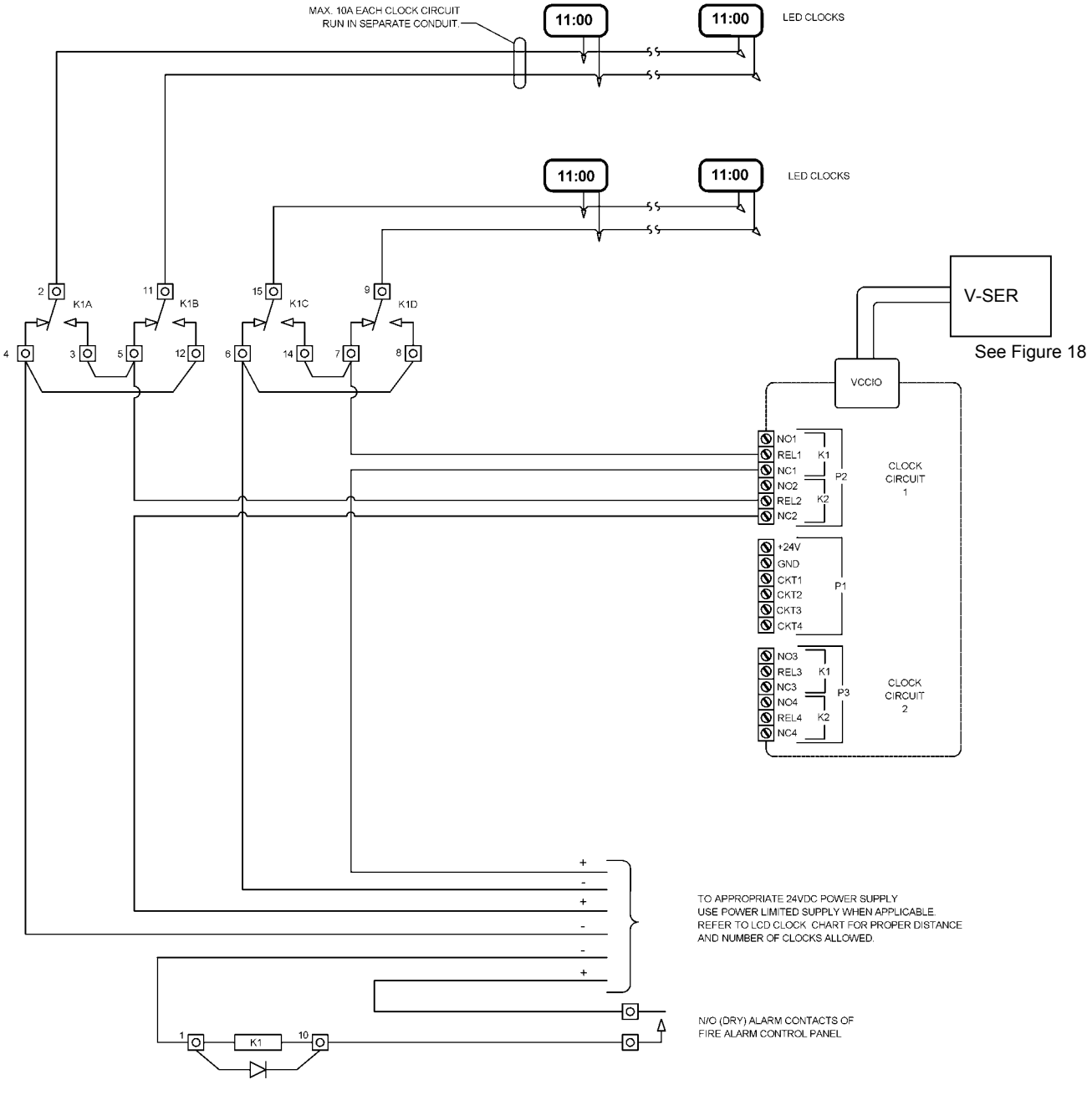

Simplex 1.8” Digital 12 Hour
Simplex 1.8” Digital 24 Hour

Figure 32 – Types 23 and 24 (Simplex 6333 1.8 Digital To Flash “Fire”)

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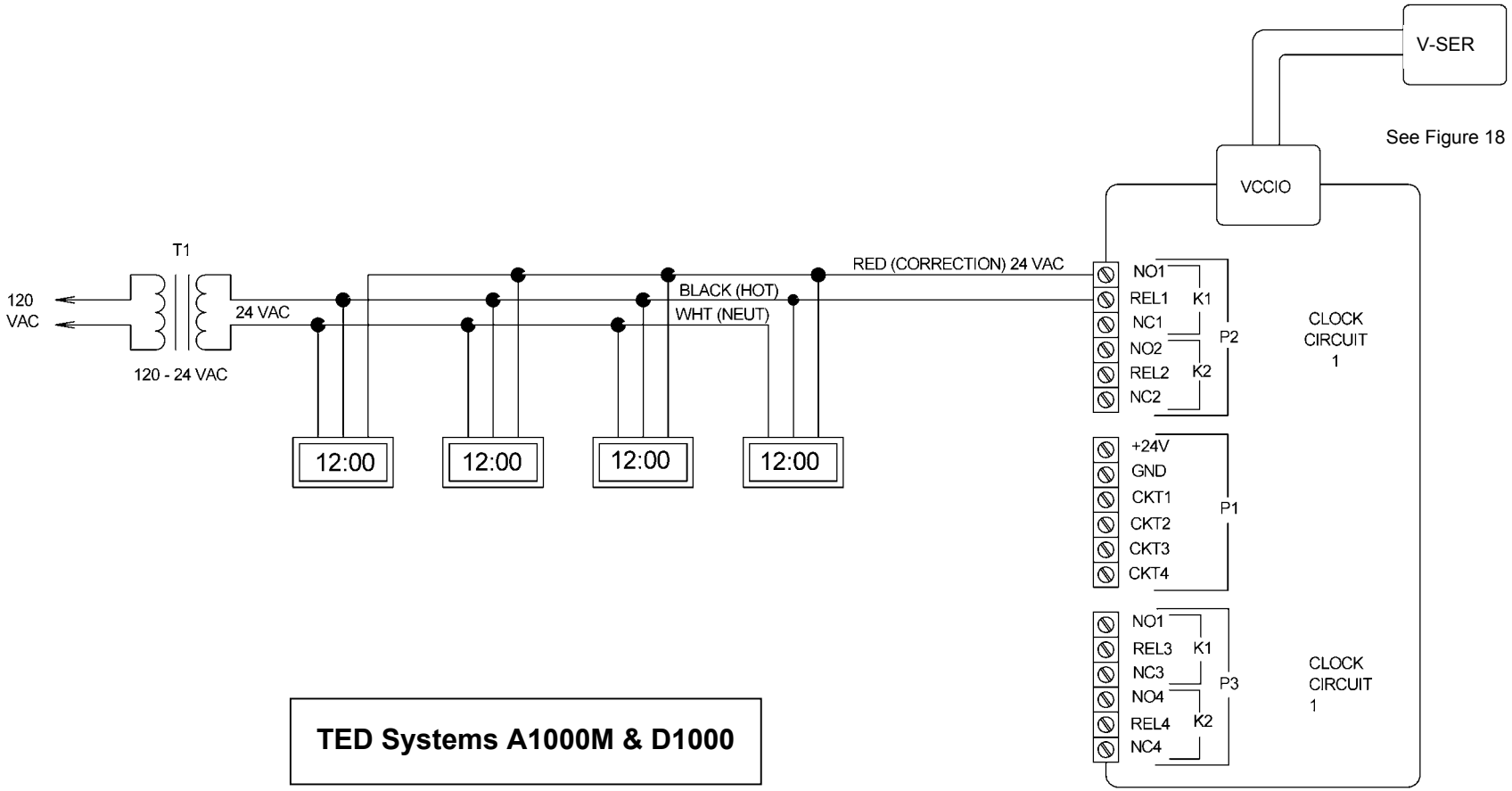

Figure 33 – Type 1 TED Systems A1000M & D1000

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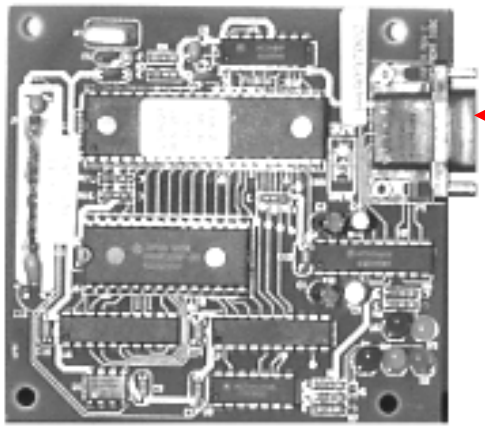
V-ROM-D – Display Driver Card (Part of the V-DSP)

The V-ROM-D plugs directly onto the V-CPU4 card (see page 9). It provides a serial port output for SMDR reports or for driving the Large Admin Display.

The LEDs on the V-ROM-D are for factory diagnostics only.



DB9 Connector For SMDR Output. See cable configuration below

Figure 34 - V-ROM-D Card

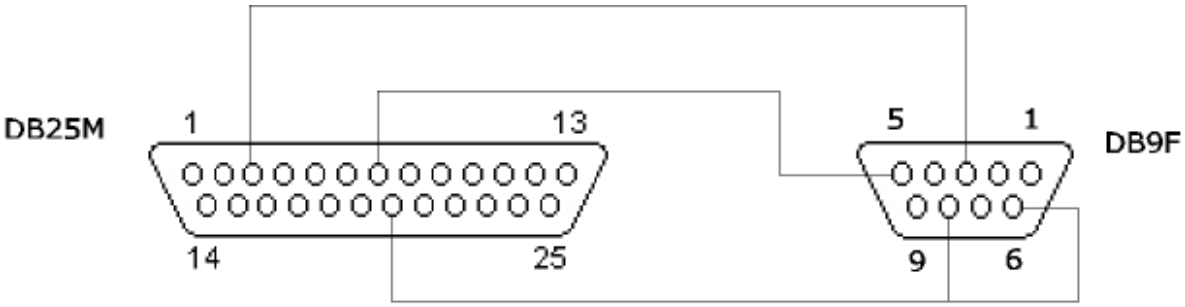


Figure 35 -SMDR Serial Printer Cable Wiring

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V-PDP - Program Distribution Panel

The V-PDP is used to buffer audio signals from radios, cassette players, CD players, etc., before the signal is fed into the Auxiliary Inputs of the V-CPU4 board. The V-PDP permits adjusting the treble, bass, and volume of each source and monitoring the source at the panel. The panel also is equipped with five pushbuttons, which may be programmed for various system functions, and a microphone jack for attaching an external microphone. The rear of panel provides access to the four administration ports and screw terminal connections to the programmable relays on the V-CPU4 board.

The V-PDP is provided with 25 pair cables that allow it to plug directly into the V-CPU4 board. The cables that were originally connected to the V-CPU4 board are then connected to the rear of the V-PDP. The V-PDP is powered via the 25 pair cable to the V-CPU4 board. ***The V-PDP should be mounted in the rack with the Valcom MultiPath head end equipment. If remote mounting is attempted, special consideration must be given to microphone and office telephone port connections. Details, in the form of a drawing, may be found on the web site.***

Important! The 25 pair cable connecting the V-PDP to the V-CPU4 should be isolated from any other building infrastructure, including speaker cabling.

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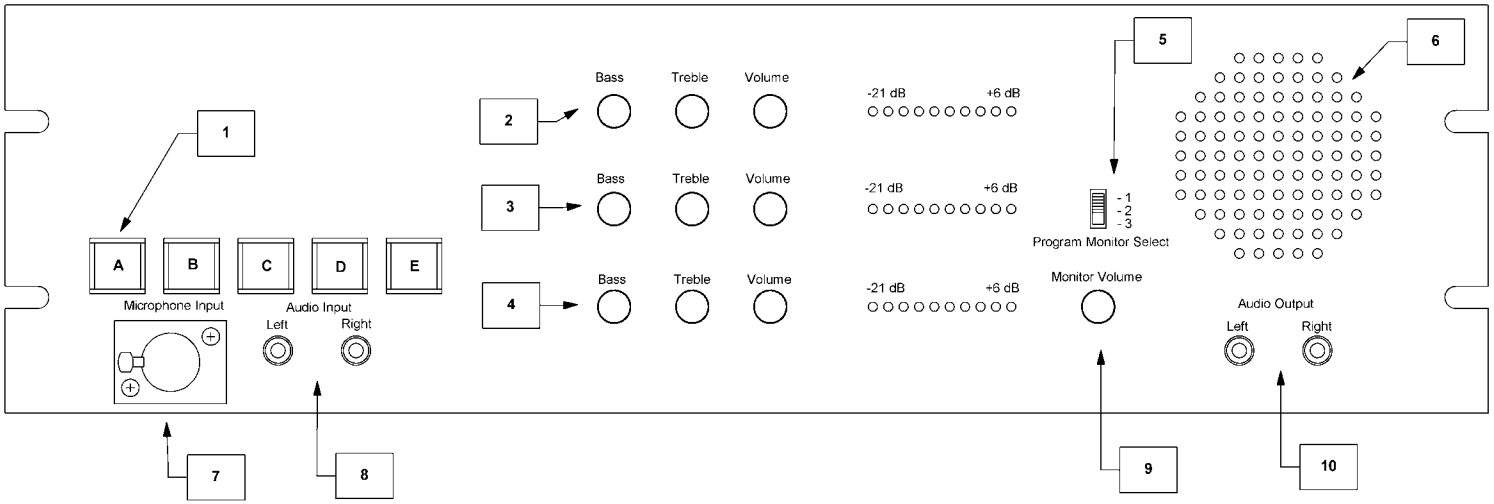

Figure 36 – V-PDP Front View

Controls and Features

1. Manual Emergency Buttons - Default Settings: (Consult Programming Section to change setting). A - FIRE Tone, B - TORNADO Tone, C - EMERGENCY Tone, D - ALL CLEAR Tone, E - MICROPHONE/ALL CALL PAGE Tone
2. Program 1 Source Bass, Treble, And Volume Controls. VU level - Indicated program audio level.
3. Program 2 Source Bass, Treble, And Volume Controls. VU level - Indicated program audio level.
4. Program 3 Source Bass, Treble, And Volume Controls. VU level - Indicated program audio level.
5. Monitor Select Switch - Allow selection of one of the three programs for monitoring purposes.
6. Monitor Speaker provides audio of the selected program (can be changed by moving the selector switch).
7. Microphone Input - Provides mic input for external all call.
8. Audio Input Jacks - Provides facilities to input auxiliary program source.
9. Volume Control for Monitor Speaker - Sets monitor volume for selected program.
10. Audio Output Jacks - Permits connection of external amplifier/monitor.

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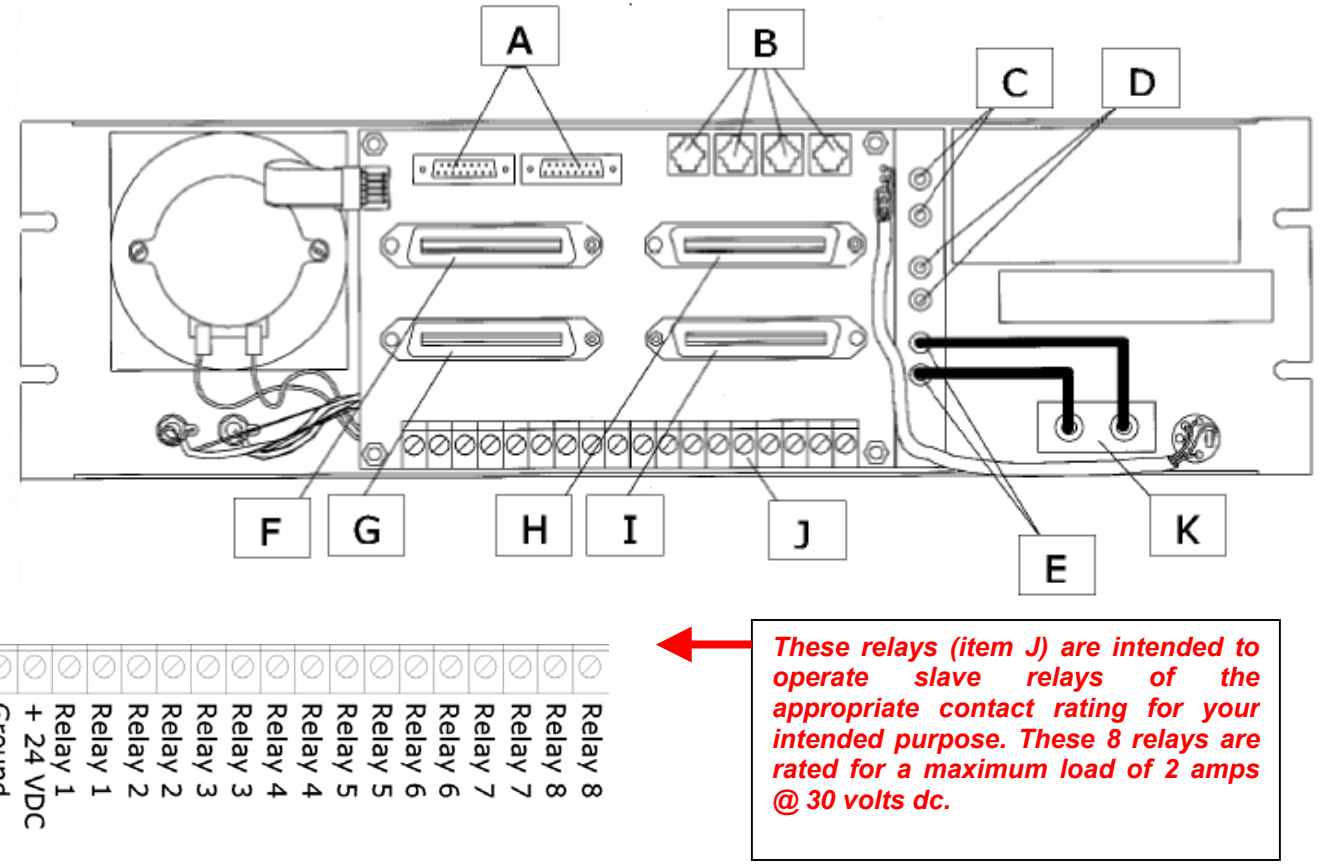

Figure 37 – V-PDP Rear Panel View

A - Not used
B - Office Telephone Ports (1 to 4, left to right)
C - Auxiliary Input #1 (left and right)
D - Auxiliary Input #2 (left and right)
E - Auxiliary Input #3 (left and right)
F- Not used

G - Not used
H – V-CPU4 25 pair cable output to 66 Block
I – V-CPU4 25 pair cable input
J – V-CPU4 Relays and V-PDP power in (see detail)
K - Access to items C, D or E Auxiliary inputs from the front of the V-PDP

A 66 block connected to connector "H" will provide optional access to the V-CPU4's I/Os.

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Installation

Rack Installation

The card rack used for the Valcom MultiPath™ should be located in a clean environmentally controlled location.

The rack should be no less than 3 feet away from any equipment that may generate electro magnetic fields (power supplies, computers, phone systems, electrical panels, etc).

A good solid earth ground must be in close proximity to the rack location.

In the case of wall mount racks, the unit should be securely fastened to a ¾" plywood backboard of adequate size to accommodate the system punch down blocks and power supplies.

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Card Addressing

The V-TCM, XP-TCM12, V-STX and V-URI cards each have a rotary card address selection switch. This switch has 16 possible card address settings, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F. The switch on each card must be set to it's own unique address setting. The suggestions in the following chart should be followed:

Card Cage Slot Number	Switch Setting
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9
11	A
12	B
13	C
14	D
15	E

LOOK!!! Very important!!! If any cards are set with the same address, and power is applied, cards will be damaged!!!

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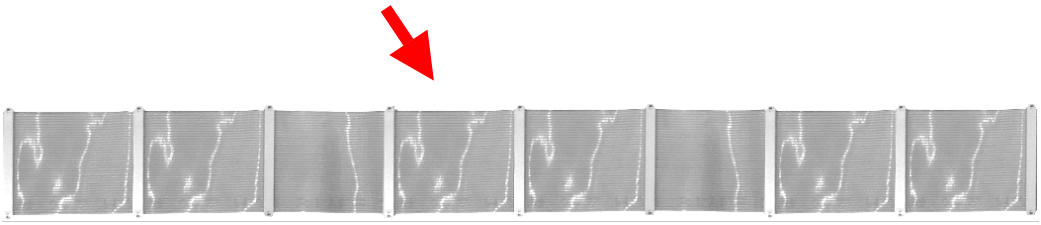
Mount the system power supplies no less than 3 and no more than 8 feet from the card rack(s). ***These power supplies must be plugged in to a dedicated 15A AC circuit.***

Verify that the card address selector switch on each V-TCM, XP-TCM12, V-STX and V-URI is set differently (see page 53).

Install any option boards (V-SER, V-ROM-D) onto the V-CPU4 Card.

Slide the V-CPU4 and any V-URI, V-TCM, XP-TCM12 or V-STX Cards into the rack. Each card will occupy one rack position. Connect the cards together with either a VC40R-4, VC40R-8T, VC40R-9T or VC40R-16T Back Plane Cable (shown here).



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Terminate the backplane (only if greater than 4 position) by attaching a backplane terminator to the end of the cable furthest from the V-CPU4.

If the terminator also attaches to a V-TCM, XP-TCM12, V-STX or V-URI card, be certain that the terminator is properly aligned with the connector on the feature card and is oriented as shown.

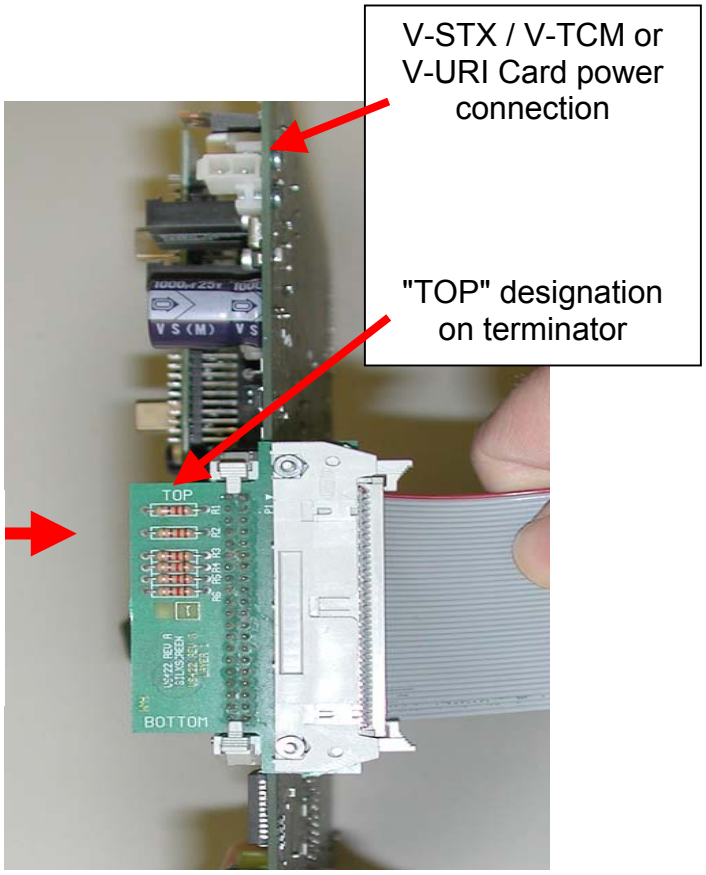

Figure 39 - Backplane Terminator

Backplane Cable p/n	Description
VC40R-4	4 Card Position/ No terminator required
VC40R-8T	8 Position w/ terminator for systems using 2 VCWRK s
VC40R-9T	9 Position w/ terminator
VC40R-16T	16 Position w/ terminator for systems using 2 VCCRK s

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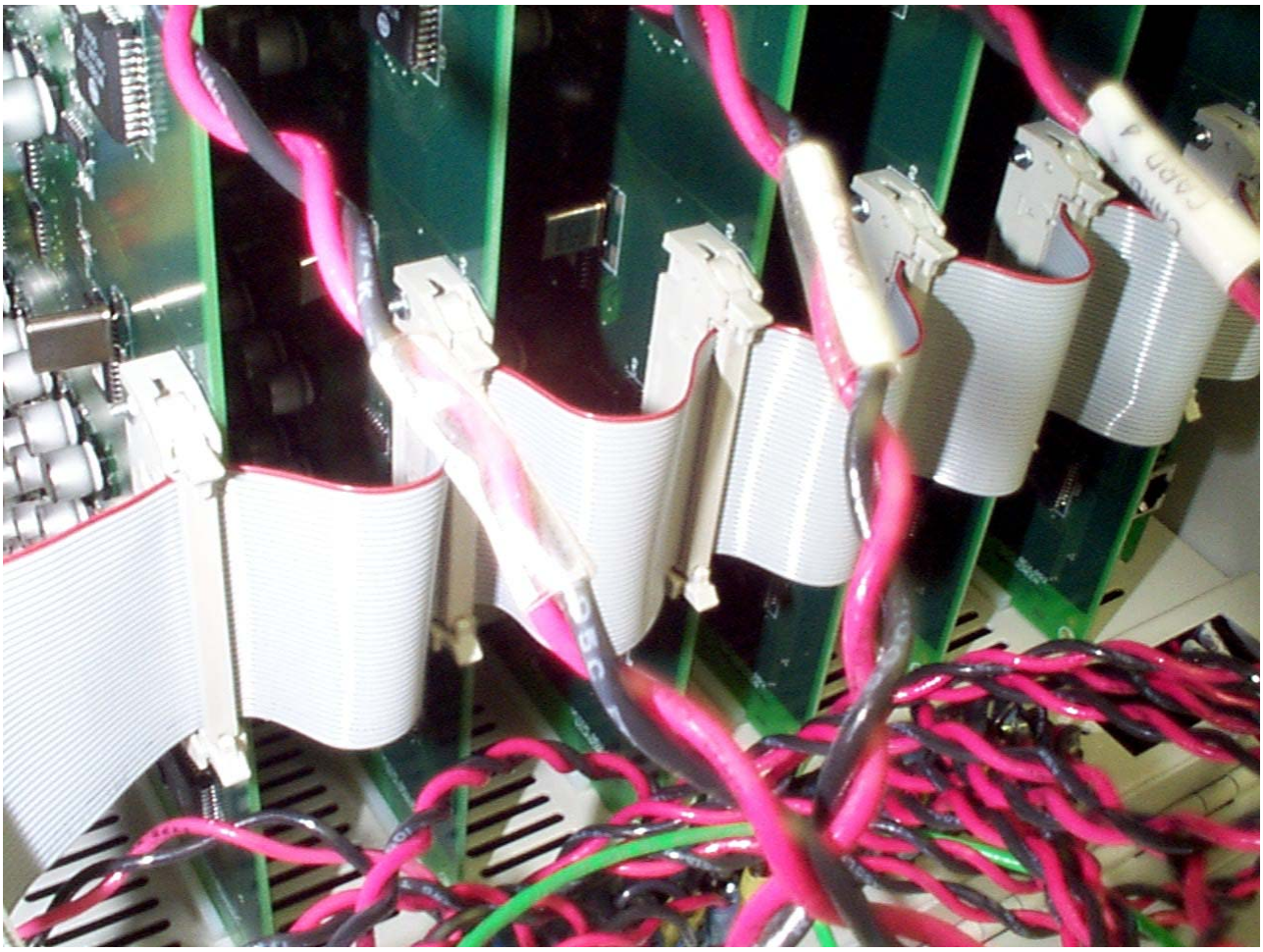

Figure 39 - Backplane connections

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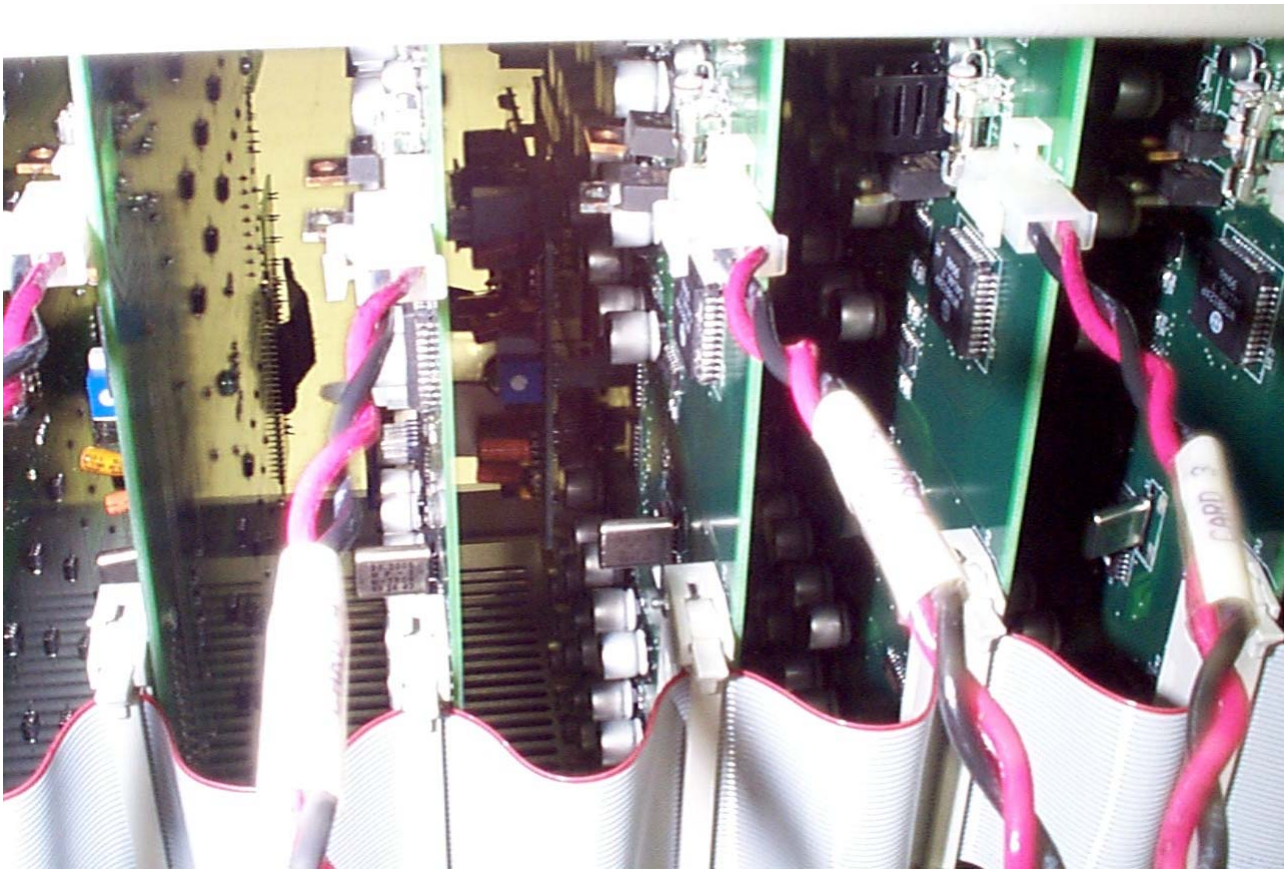

Figure 40 - Power Connections

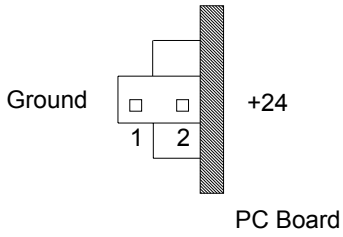

Figure 41 – V-TCM/XP-TCM12/V-STX/V-CPU4/V-URI Power connector orientation

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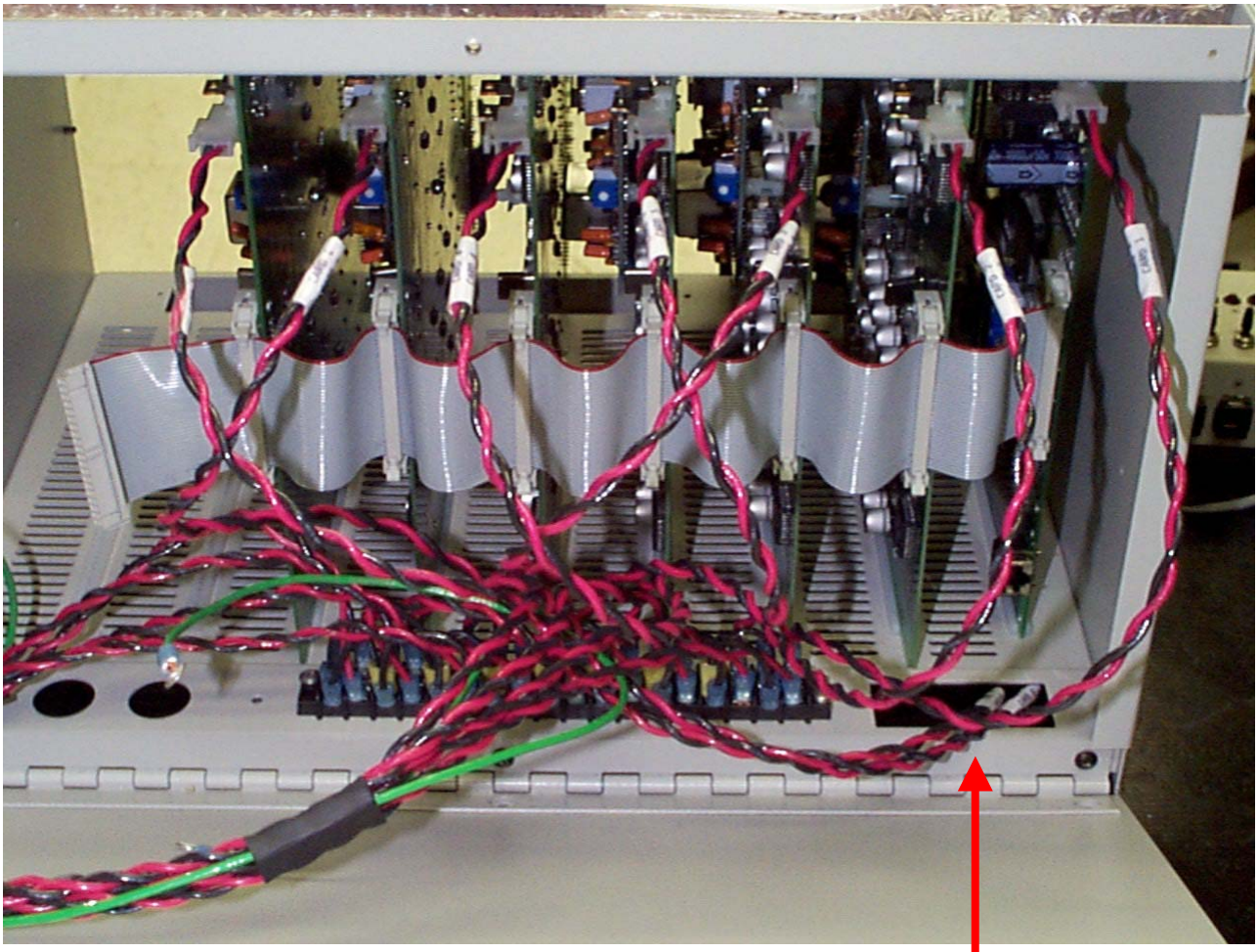

Figure 42 - View of the back of the rack

2 Rack Systems

In the case of systems that will use 2 wall racks or 2 card cages, the 2 racks/cages must be positioned one on top of the other such that the backplane cable can be connected between cabinets. The V-CPU4 will have to be placed in the far right position of the top cabinet.

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In the case of wall mount racks, the backplane cable will pass through the slots located on the right side of the rack covers. In the case of card cage systems, the backplane cable will pass through the rectangular cutouts located next to the power harness (this cutout can be seen in the lower right portion of figure 42). Connect individual power cables to each card but ***do not*** apply power.

Connect a 25 pair telephone cable terminated with a female amphenol connector to the P1 connector of the V-CPU4 and to both P1 and P2 of each V-URI, V-TCM, XP-TCM12 and V-STX Card.

Terminate each 25 pair cable on a 66M150 Split Connection Block. These blocks should be no more that 15 feet from the card rack(s). Note Each V-URI can use a single 66M150 Split Connection Block that is not bridged (see figure 15)

Following the 66 block pin out shown in figure 4, make the appropriate connections from the V-CPU4 66 block to the office phones, any 8 to 600 ohm line level auxiliary audio sources, the system lo Z microphone and any switches that will be used in your application.

Following the 66-block pin out, make the appropriate connections from the V-TCM/XP-TCM12/V-STX blocks to the appropriate connection points on the station 66 blocks. These station blocks must be located in the same area as the system blocks.

Following the 66 block pin out shown in figure 15, make the appropriate connections from the V-URI 66 blocks to any switches and/or LED indicators that will be used in your application (see figure 14).

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Powering the system

24 Volt dc power supplies power the Valcom MultiPath™ System.

Mount the system power supplies between 3 and 8 feet from the card cage.

Using the supplied 16 AWG wiring harness, connect 3 twisted power pairs to each V-C6124P power supply (one pair on each of the V-C6124Ps 3 outputs). The red wire is positive (+) and the black wire is negative (-).

Connect the un-terminated end of a green earth ground wire to the ground screw of each V-C6124P. The terminated ends of each green earth ground wire to the chassis of the rack.

Grounding of the power supplies is critical. The negative output of each of the supplies should be directly connected to the rack chassis, which in turn should be connected to a direct Earth ground. Avoid using electrical system grounds unless you are certain they provide a good, short path to Earth ground.

All power connections extensions should be made using 16 AWG wires that have been tightly twisted together.

The AC outlet(s) that sources the 24 VDC power supplies must be a dedicated 15 amp AC circuit used exclusively for the Valcom MultiPath™ System.

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V-C6124P Power Supply Requirements

Each V-C6124P will power up to 3 of the V-TCM, XP-TCM12, V-STX and V-URI Cards.

Current Requirements

Amperage requirements per card are as shown in the chart to the right:

Card Part Number	Amps required per card
V-CPU4	2
V-TCM, XP-TCM12 or V-STX	2
V-URI	2
V-CIO	1/2

LED Indicators

Upon initial power up, a red LED will illuminate on each of the V-TCM, XP-TCM12, V-STX and V-URI Cards. Under normal conditions these LEDS will only stay on during the power up sequence (on - off – on – cycle). An illuminated red LED on these cards at any other time indicates a card reset. The XP-TCM12 also features a green power LED (D76) which should remain on.

The V-CPU4 Card has 4 LED indicators located just above the 24VDC power connector. These LEDS indicate the status of the

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4 levels of on board regulated voltage (+12V, +5V, +6V and +24V). In normal operation, all of these LEDS should be illuminated. The 5 LEDs above the V-CPU4 DB9 connector are for factory diagnostics:

Wire Length Limit and Type

	66 Blocks	Speakers	Call Switch	Telephones or Telephone System	24 Volt DC Power Supply
V-CPU4	15 Feet			815 Feet	8 Feet
V-TCM/ XP-TCM12	15 Feet	1515 Feet	1515 Feet		8 Feet
V-STX	15 Feet	Varies			8 Feet
V-URI	15 Feet		815 Feet		8 Feet
66 Blocks		1500 Feet	1500 Feet	800 Feet	

24 Volt DC rack connections must be made with a minimum of 16 AWG wire tightly twisted together. A suitable wiring harness is provided with the card rack.

25.5-volt speaker connections should be made with appropriately sized shielded wire. 20 AWG is adequate for 25.5-volt speakers used for talkback. 25.5 volt one way zones will require amplifiers and wire sized for acceptable loss vs. speaker load vs. distance.

All other connections should be made with Cat 3 or higher 24 AWG telephone wire.

The RS232 connection between the V-CPU4 and a PC used for direct connect access should not exceed 50 feet.

Important! The 25 pair cable connecting the V-PDP to the V-CPU4 should be isolated from any other building infrastructure, including speaker cabling.

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Head End Speaker Connections

In order to simplify system maintenance, speaker connections should be cross-connected. See Figure 47.

The actual speaker connections to the V-TCM, XP-TCM12 or V-STX 66 Blocks are shown in figures 7, 10 and 12.

Important Notes

1) Remove system power before making new connections.

2) Check the AC impedance of each speaker line with an impedance meter before cross connecting the speakers to the Valcom MultiPath™ system. The measured impedance should be equal to the speaker impedance plus wire resistance. In any case, speaker lines measuring less than 20 ohms impedance should never be connected to the Valcom MultiPath™ System.

Note - A standard DC resistance meter will not provide accurate AC impedance measurements.

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Talkback speakers (up to 2 per) and call switches should be directly cross-connected to their respective outputs (station one to station one output, etc.).

Common Area One Way Speaker Connections (see diagrams)

One-way self amplified speakers:

V-TCM – Add a V-LPT to the station output. Connect the output of the V-LPT to up to 40 speakers. If more than 40 are required then add Valcom V-1094A preamps to increase capacity to 150 speakers.

XP-TCM12 – For station 1 through 12, add a V-1095 to the station output. Connect the output of the V-1095 to up to 40 speakers. If more than 40 are required then add Valcom V-1094A preamps to increase capacity to 150 speakers/V-1094A. Note that the XP-TCM12 features a line level output on station 13. When connecting this line level output to one-way self-amplified speakers, add Valcom V-1094A preamps to increase capacity to 150 speakers.

V-STX – Connect the station output to up to 150 Valcom One Way Self Amplified Speakers. If more than 150 are required then add Valcom add Valcom V-1094A preamps to increase capacity to 150 speakers.

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One-way self amplified speaker connections to a V-TCM

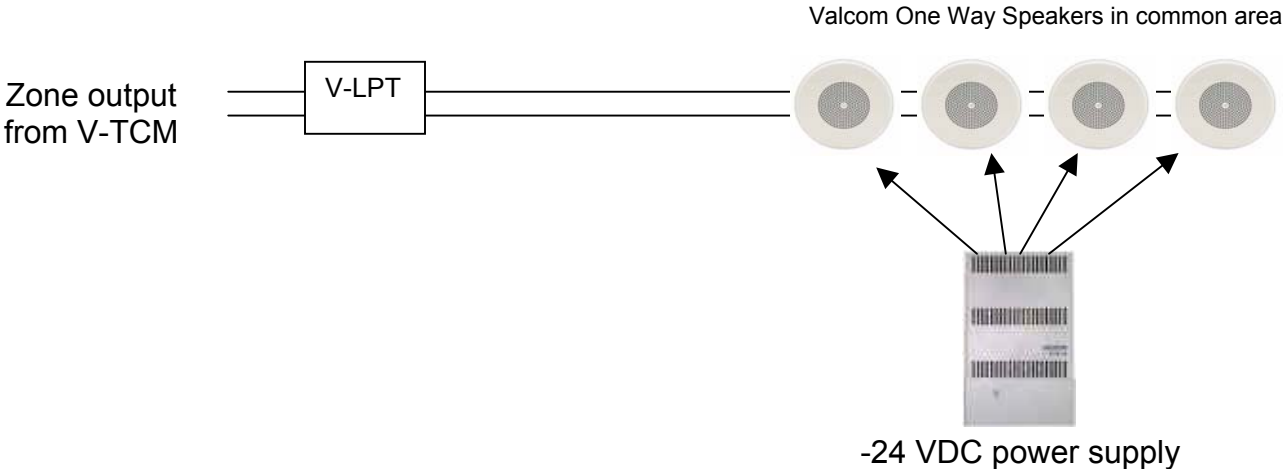

Figure 43a

One-way self amplified speaker connections to a V-STX

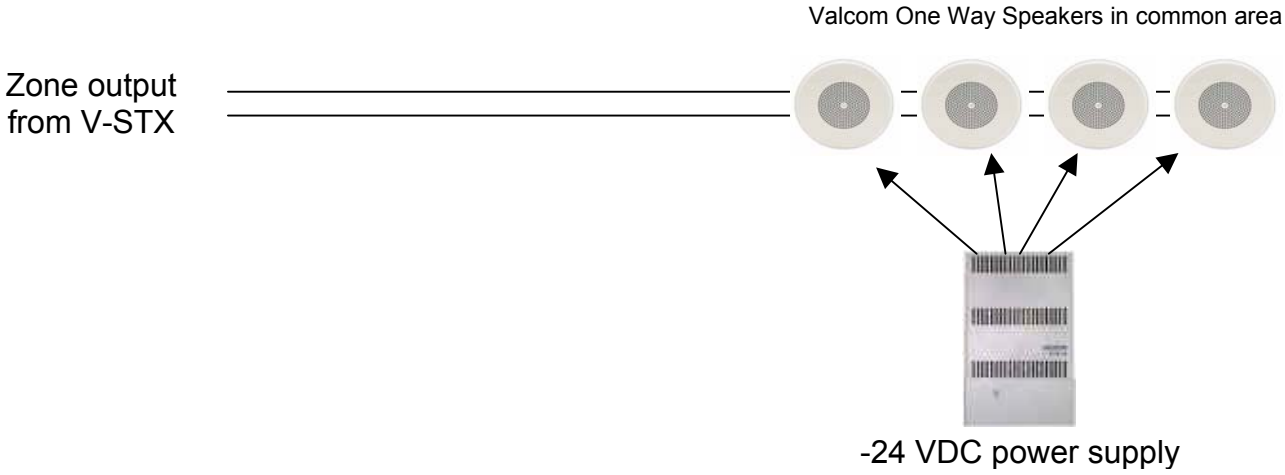

Figure 43b

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One-way self amplified speaker connections to an XP-TCM12

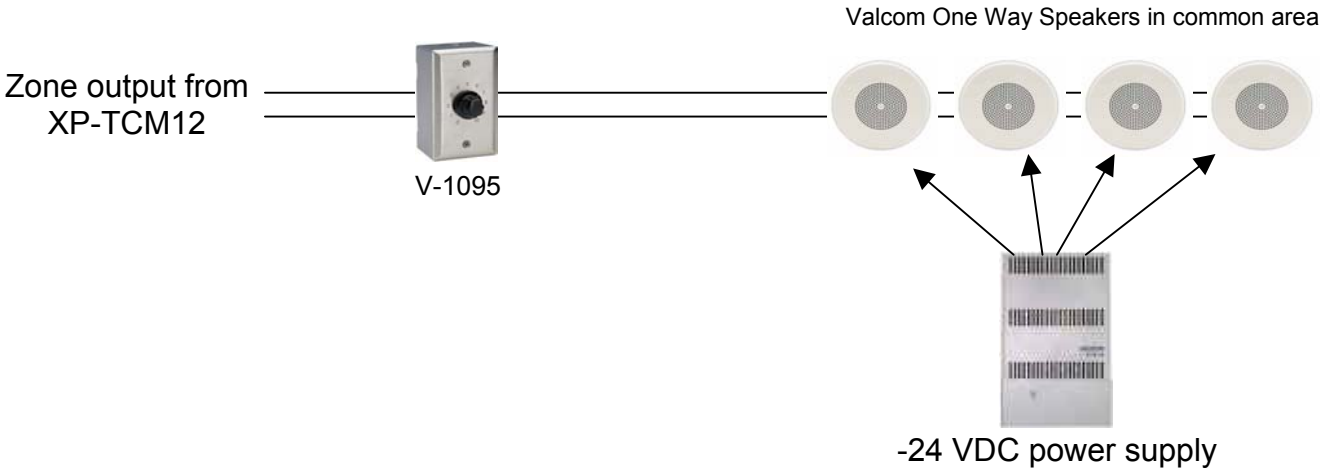

Figure 43c

One-way self amplified speaker connections to **station 13** of an XP-TCM12

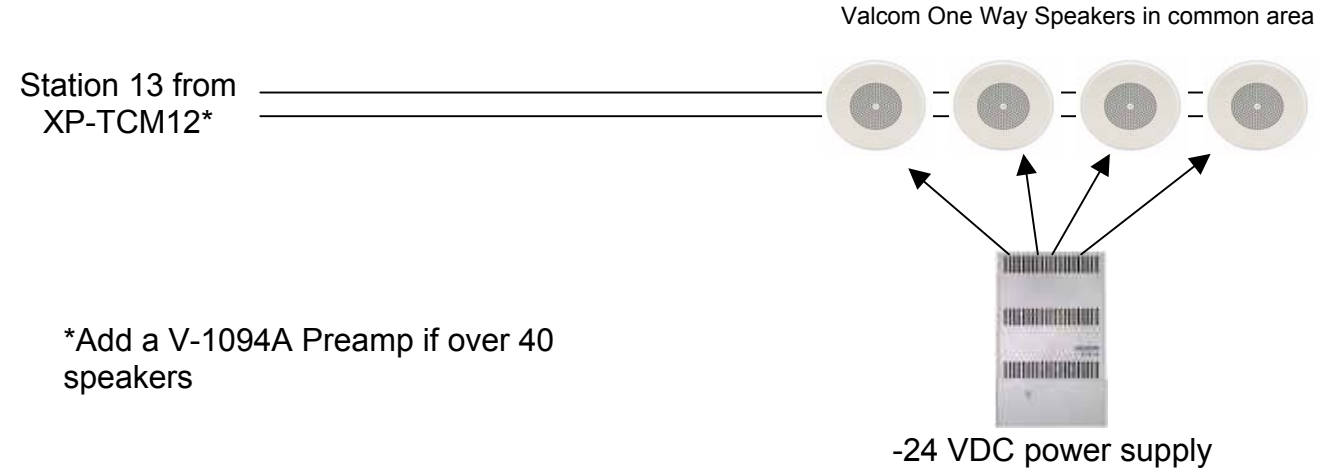

Figure 43d

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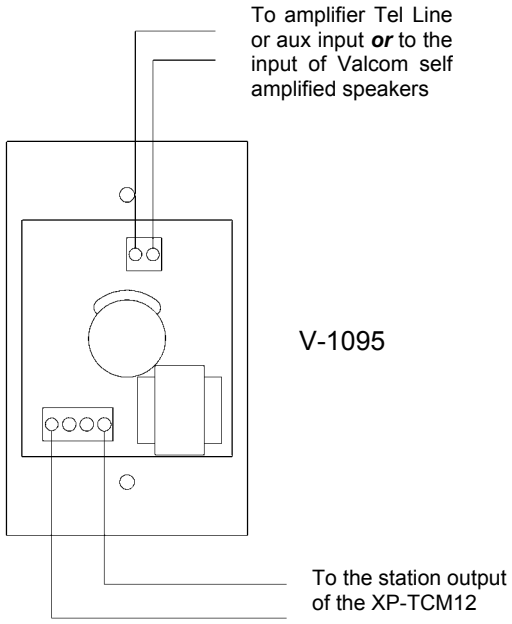
25/70 Volt speakers:



V-TCM or VC-TCS – Connect the station output to a Valcom V-LPT. The output of the V-LPT may then be connected to the line level input of a suitably sized amplifier. The speakers will connect to the appropriate amplifier output.

XP-TCM12 – For stations 1 through 12, connect the station output to a Valcom V-1095. The output of the V-1095 may then be connected to the line level input of a suitably sized amplifier. Station 13 may be directly connected to the line level input of a suitably sized amplifier. The speakers will connect to the appropriate amplifier output

V-STX – The output of the V-STX may be connected to the line level input of a suitably sized amplifier. The speakers will connect to the appropriate amplifier output.

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25-volt one-way speaker connections to a V-TCM/VC-TCS

Figure 44a

25-volt one-way speaker connections to an XP-TCM12

Figure 44b

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25-volt one-way speaker connections to **station 13** of an XP-TCM12

Figure 44c

25-volt one-way speaker connections to a V-STX

Figure 44d

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Classroom Talkback Speaker Connections

Valcom MultiPath™ 45-ohm talkback speakers, with the exception of the VC-9062 Lay-in ceiling speakers and the Flex Horn, each feature maximum volume presets. If a talkback zone is utilizing a V-2972PK call button or no call button at all, the 0 db or "normal" setting will be appropriate for most classroom environments and is a good starting point. If a 45-ohm talkback zone is using a V-2970 or V-2971 call button and the volume control integrated into these call switches will be utilized, then set all speakers to their maximum setting. The VC-9062 Lay-in ceiling speakers and the Flex Horn each have a variable volume control for volume regulation, set this volume control to 1/4 turn for your initial setting.

If your 45-ohm installation includes **V-2970** or **V-2971** call switches in the individual classrooms, the speaker wiring (assuming the call switch and speaker wiring is in the same cable) should be routed through the call switch and then to the speaker. This will allow you to easily make connections to both the call switch and to the integrated volume control found in both the V-2970 and V-2971.

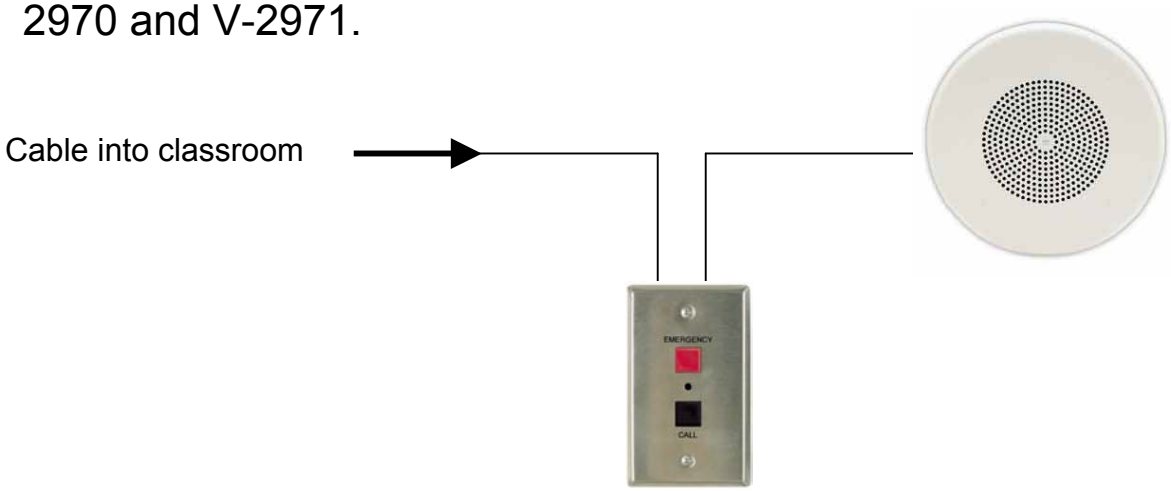

Figure 46

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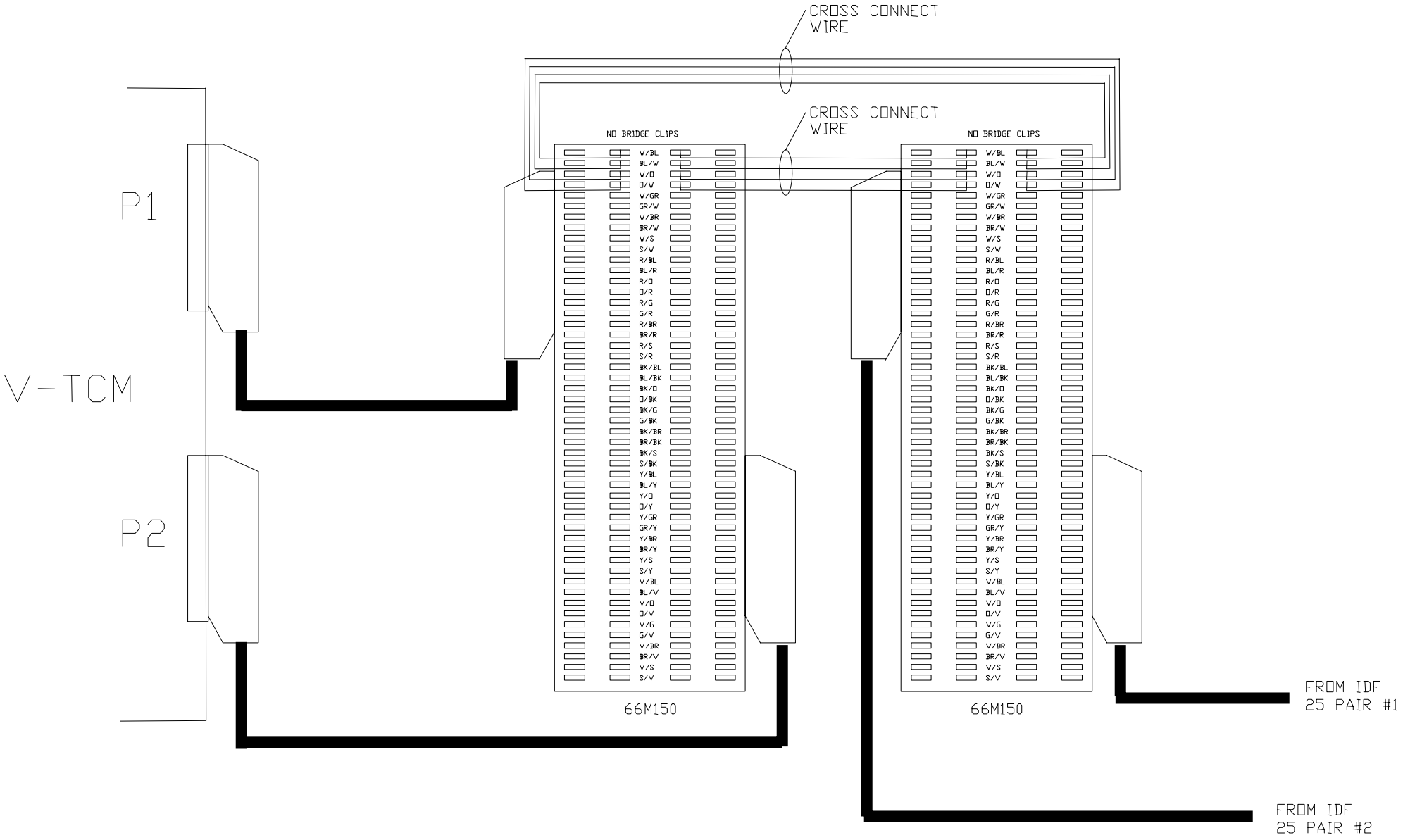

Figure 47 – MDF/RIDF Speaker Connections

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Page Priority

Priority is a very important concept in the *Valcom MultiPath*™ system. Many different audio paths may be active in the system simultaneously. Often a speaker will be requested to be the recipient of more than one audio path at a time. Rather than mix all the audio together, the system assigns each type of call a priority, and only allows the highest currently active priority to be heard. As an example, suppose station 101 is listening to a background music source. When a group call page is originated that includes this speaker the music will turn off at the speaker for the duration of the page. And, if during the page a class change tone becomes active, it will override the group page. When the tone ends the page will automatically reconnect, and when the page ends the music will reconnect.

Detailed priorities, as tested with version 3.10 firmware, are shown on the next page.

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First Active	Second Active	Has Priority	Notes
BGM	ANY	ANY	
ZONE	GROUP	GROUP	
ZONE	AC	AC	
GROUP	AC	AC	
AC	GROUP	AC	
GROUP	ZONE	GROUP	
AC	ZONE	AC	
MIC	TONE (##1##1)	MIC	TONE will not access (BUSY)
TONE (##1##1)	MIC	TONE (##1##1)	MIC will not access
MIC	##5	##5	Dial code Shuts off TONES and MIC
TONE	##5	##5	Dial code Shuts off TONES and MIC
ZONE	MIC	MIC	Last Come First Served
MIC	ZONE	ZONE	Last Come First Served
ZONE	TONE (##1##1)	TONE (##1##1)	Last Come First Served
TONE (##1##1)	ZONE	TONE (##1##1)	Last Come First Served
EGC	EAC	EGC	First Come First Served
EAC	EGC	EAC	First Come First Served
ZONE	EGC	EGC	Emergency overrides normal
ZONE	EAC	EAC	Emergency overrides normal
EGC	ZONE	ZONE	Last Come First Served
EAC	ZONE	ZONE	Last Come First Served
AC	EGC	EGC	Emergency overrides normal
GC	EGC	EGC	Emergency overrides normal
AC	EAC	EAC	Emergency overrides normal
GC	EAC	EAC	Emergency overrides normal
EAC	AC	EAC	Emergency overrides normal
EAC	GC	EAC	Emergency overrides normal
EGC	AC	EGC	Emergency overrides normal
EGC	GC	EGC	Emergency overrides normal
EAC	MIC	EAC	First Come First Served
EAC	TONE (##1##1)	EAC	First Come First Served
EGC	MIC	EGC	First Come First Served
EGC	TONE (##1##1)	EGC	First Come First Served
MIC	EAC	MIC	First Come First Served
MIC	EGC	MIC	First Come First Served
EAC	MIC	EAC	First Come First Served
EGC	MIC	EGC	First Come First Served

BGM = Background Music
AC = All Call
EAC = Emergency All Call
EGC = Emergency Group Call
MIC = Microphone

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System Volume Adjustment

All of the Valcom MultiPath™ system volume controls have been preset at the factory for optimal levels. This section of the manual is provided in case minor field adjustment becomes necessary. The system tones and microphone volume controls (shown right) are located on the V-CPU4 Card.

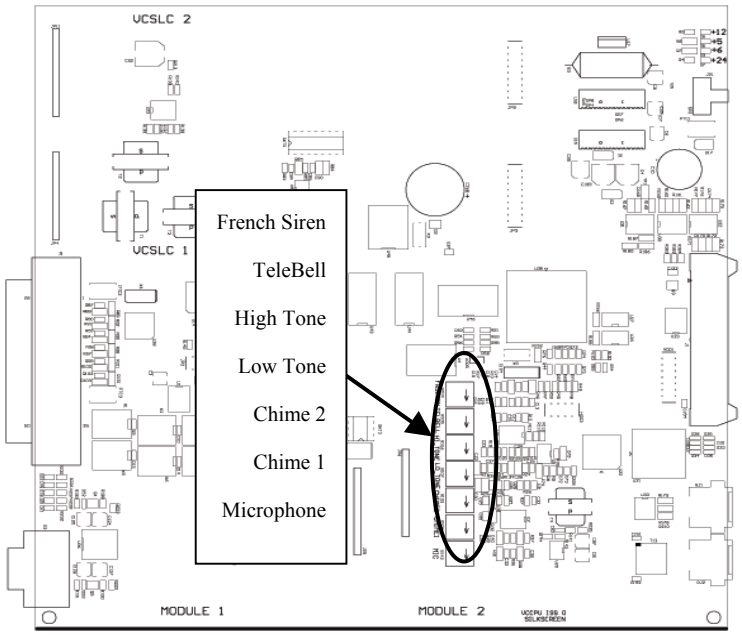

Figure 48 – Volume Controls on the V-CPU4 Card

System Balancing

1) Place a group or all call page to each specific talkback area (zone). Using either the call switch volume control and/or the volume adjustment header (on 45 ohm speakers), adjust each speaker's volume to a suitable level for that room. Measure and record the sound level selected for each room. If utilizing XP-TCM12 25-volt station cards in a retrofit application, all call volume may also be adjusted on a per card basis – initially suggested setting is position “A”.

2) If your system will use aux sources, distribute music from each aux source to one of the rooms used in step one. Adjust the individual aux source volume controls in order to achieve a comparable audio level to that set for group/all call page for that particular room.

3) Distribute music or group/all call page audio to each one-way zone. Adjust each one-way zone for a comfortable listening level. Note that calling one-way zones individually may result in a louder page level in comparison to the all call and group call level.

4) Call one individual classroom per station card and adjust the phone to speaker level on that card (next page) for a comfortable listening level.

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V-TCM/XP-TCM12 Talk/Listen Volume Adjustment

Talk/Listen volume adjustment is accomplished on the handsfree cards, which are center mounted on the individual station cards. Phone to speaker volume is the level of page audio when an individual classroom speaker is called. Speaker to phone volume is the level of audio heard from the speaker during a handsfree reply. If adjustment becomes necessary:

With the speaker location at it's normally anticipated noise level, and without any direct handsfree conversation, adjust the speaker to phone volume (R11 on the handsfree card) so that minimal background noise can be heard in the telephone.

Adjust the phone to speaker volume control (R16 on the handsfree card) for an appropriate page level.

All call and group call volumes are factory preset (not adjustable).

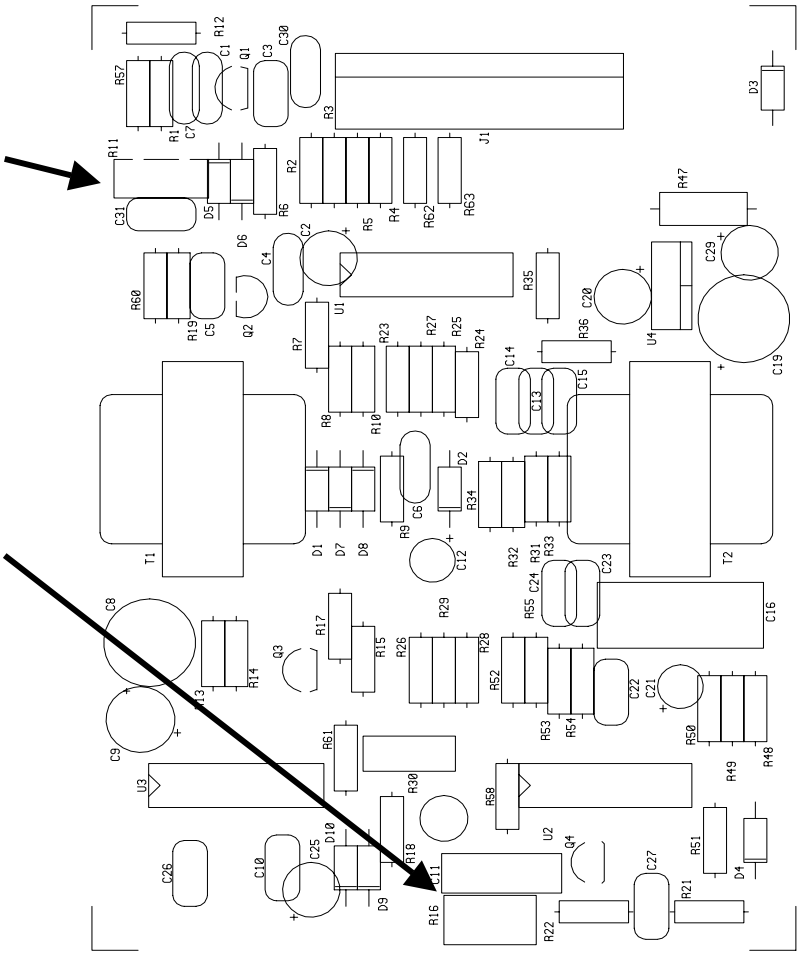

Figure 49 – Volume Controls on the Handsfree Card

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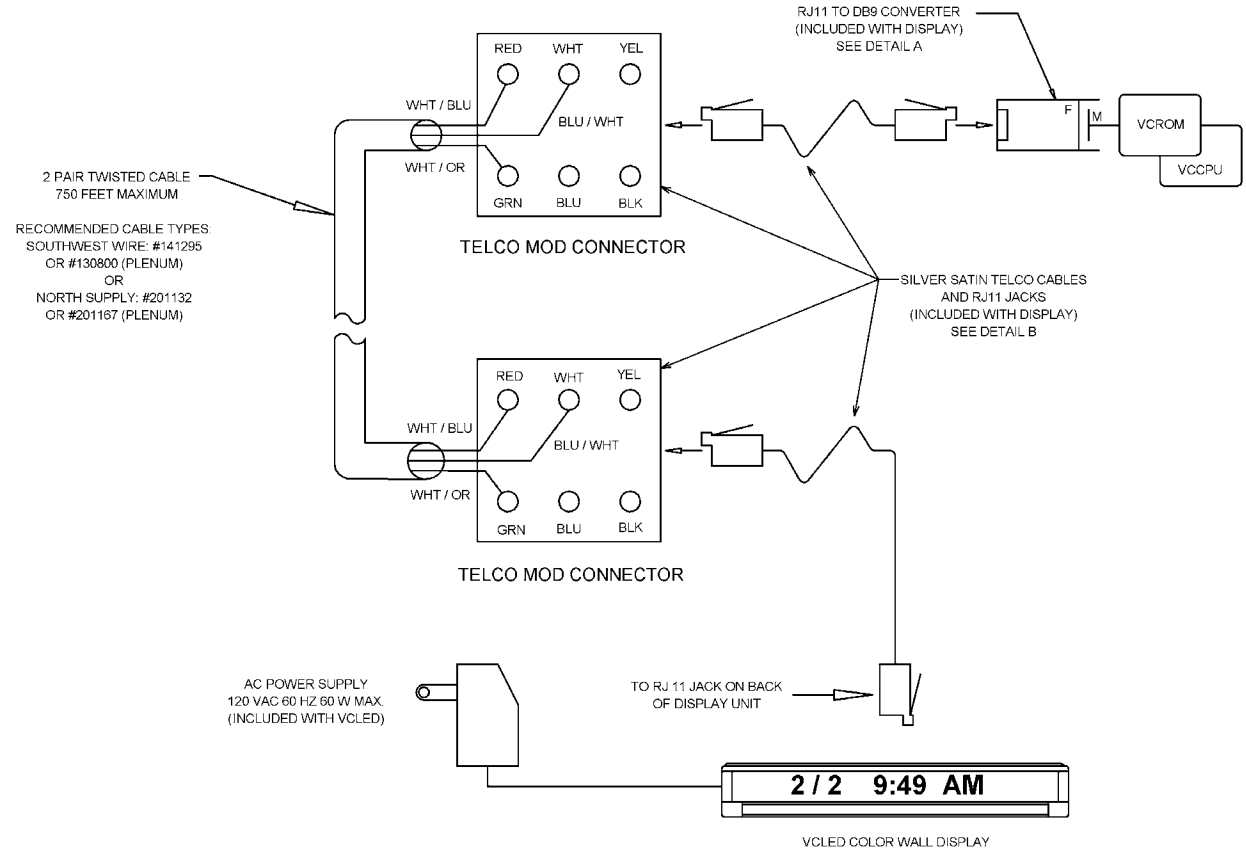
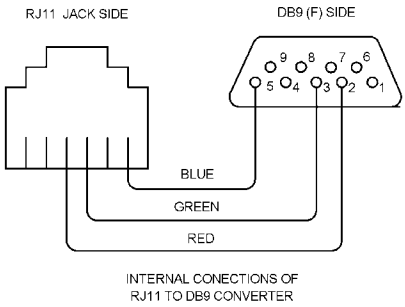
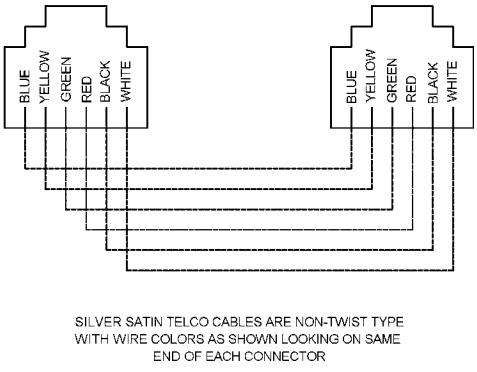
Figure 50 - V-DSP Large Display Kit Connections

DIRECT CONNECTION FROM VCROM TO COLOR WALL DISPLAY







DETAIL A

DETAIL B

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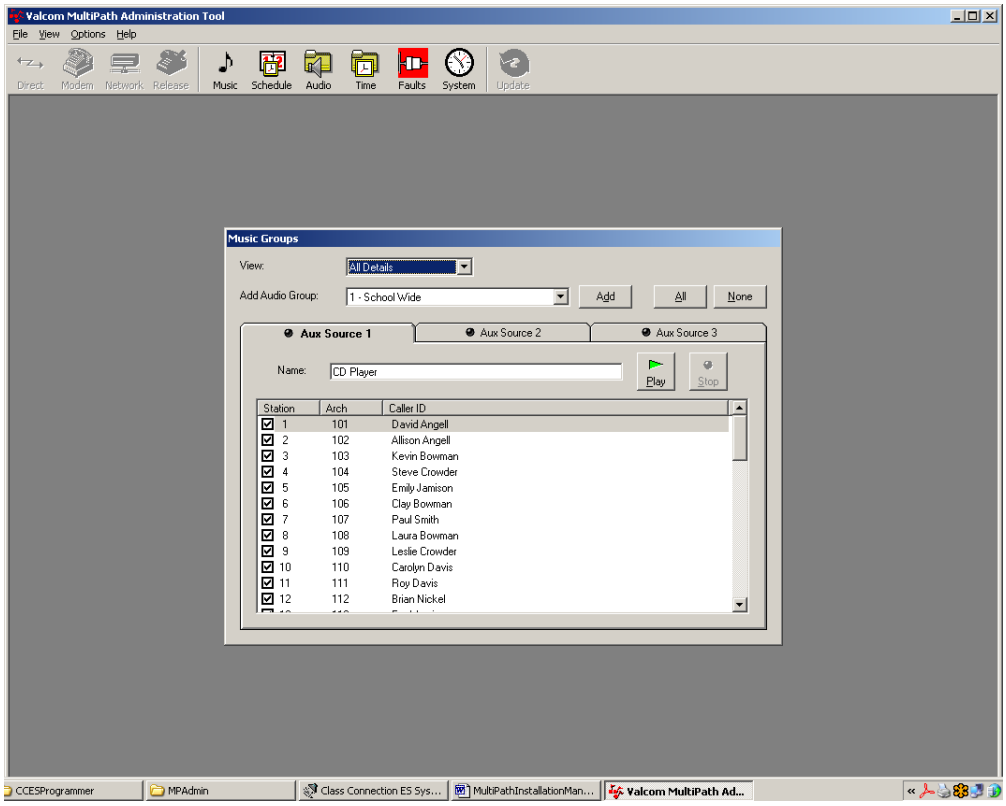
Valcom MultiPath™ Administrative Tool

The Administrative tool is a Windows based administrator's tool that allows school office personnel to manipulate time schedules and time groups, distribute audio from the 3 auxiliary inputs on the V-CPU4 and update the system date and time.

This software requires a computer with Windows XP (or higher) installed. Connection between the PC and the Valcom MultiPath system may be direct (computer's serial port connected (using the supplied programming cable) to the DB9 connector on the V-CPU4 card), or through Ethernet.

Refer to the programming section for programming cable connection details.



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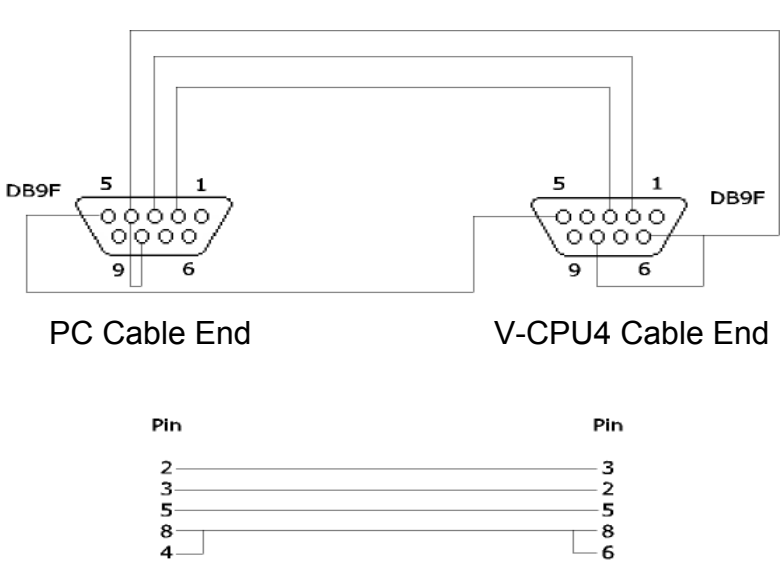
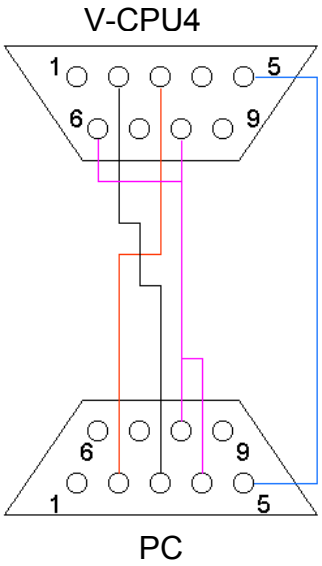
Programming

Valcom MultiPath™ System Programming is done through a P2 333 MHz (minimum) computer that has both Windows XP (or higher) and the programming tool installed.

Connection between the programming PC and the Valcom MultiPath system may be direct (computer's serial port connected (using the supplied programming cable) to the DB9 connector on the V-CPU4 card), or through Ethernet.





Important Notes:

It is very important to update your Valcom MultiPath Programming Tool with every install. Attempting to use a version of the programming tool that is not current may cause future system lockups.

Since end users will be capable of changing schedule programming from the Valcom MultiPath™ Administrative Tool, it is very important to upload the actual system programming data, which will include end user schedules, as a basis for system programming changes.

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Network Programming

Beginning with version 2.10 of the V-CPU4, it is possible to connect via LAN for system programming and administration. Valid V-CPU4s will be labeled with a MAC address barcode. The programming CD included with version 2.1.0 includes an IP Setup utility that is used to set the IP address, Gateway and Subnet mask for your Valcom MultiPath system.

To use the IP setup utility, connect your programming PC to the Valcom MultiPath Network port (RJ45 closest to the board edge).

Connect its Ethernet port to the Valcom MultiPath Ethernet port with a **crossover cable**. Refer to Appendix A for Valcom IP Tool instructions.

Once setup as described above, the IP Setup utility may be used to set the Valcom MultiPath's IP address, Subnet mask and Gateway to the values desired for your application.

After setup, set the programming PC's IP address to the IP address just programmed into the V-CPU4, with the exception of the last digit (make it different).

With your crossover cable still connected, you should now be able to connect to your Valcom MultiPath system via the "communicate by network" option in either the programming or administrative tools. **Note – the requested port number in the Valcom MultiPath Administrative and Programming tools is always 10005.**

If successful, simply replace the crossover cable connected to the Valcom MultiPath V-CPU4 Ethernet port with a network cable from the school's network.

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Install the Valcom MultiPath Administrative Tools on the desired administrator's computer and set up the network address book with the IP address, Subnet Mask and Gateway of your Valcom MultiPath system.

Optionally, the Valcom MultiPath IP Address, Subnet Mask and Gateway may be set up using HyperTerminal (Settings 9600, 8, none, 1, hardware. Adjust ASCII setup to append line feeds).

37+825266 Logs In (825266 is the default system password –adjust as needed. no spaces, do not type the +)

Press return several times – prompt will turn into a – (from a >) when logged in.

All entries must be 4 blocks of 3 digits. Use leading zeros if necessary. If the subnet mask has 255 in a particular group, then the IP address and Gateway addresses must be identical in those groups.

Example Info:

IP address 10.42.0.20 = 010042000020
Subnet mask 255.255.255.0 = 255.255.255.000
Gateway 10.42.0.1 = 010042000001

33+010042000020 Sets IP address to 10.42.0.20 <enter> (no spaces, do not type the +)
34+255255255000 Sets Subnet Mask to 255.255.255.0 <enter> (no spaces, do not type the +)
35+010042000001 Sets Gateway to 10.42.0.1 <enter> (no spaces, do not type the +)

32 Returns current info IP address + Subnet Mask + Gateway
010042000020255255255000010042000001

0201 Logs out

Note – the requested port number in the Valcom MultiPath Admin tool is always 10005.

The default IP address for V-CPU4 is 1.1.1.1

The command "ipconfig" entered at the command prompt returns a computer's current IP address, subnet mask and gateway.

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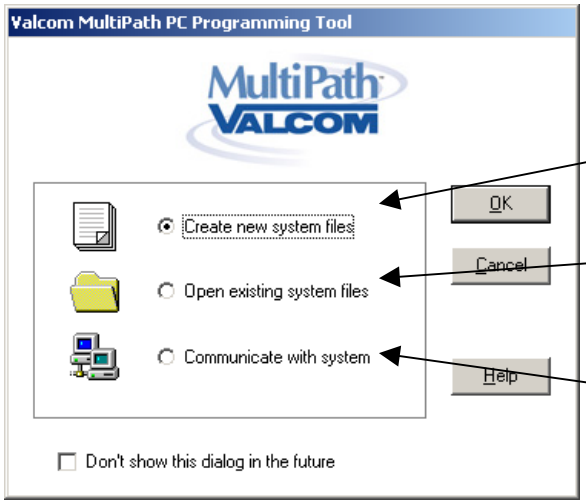
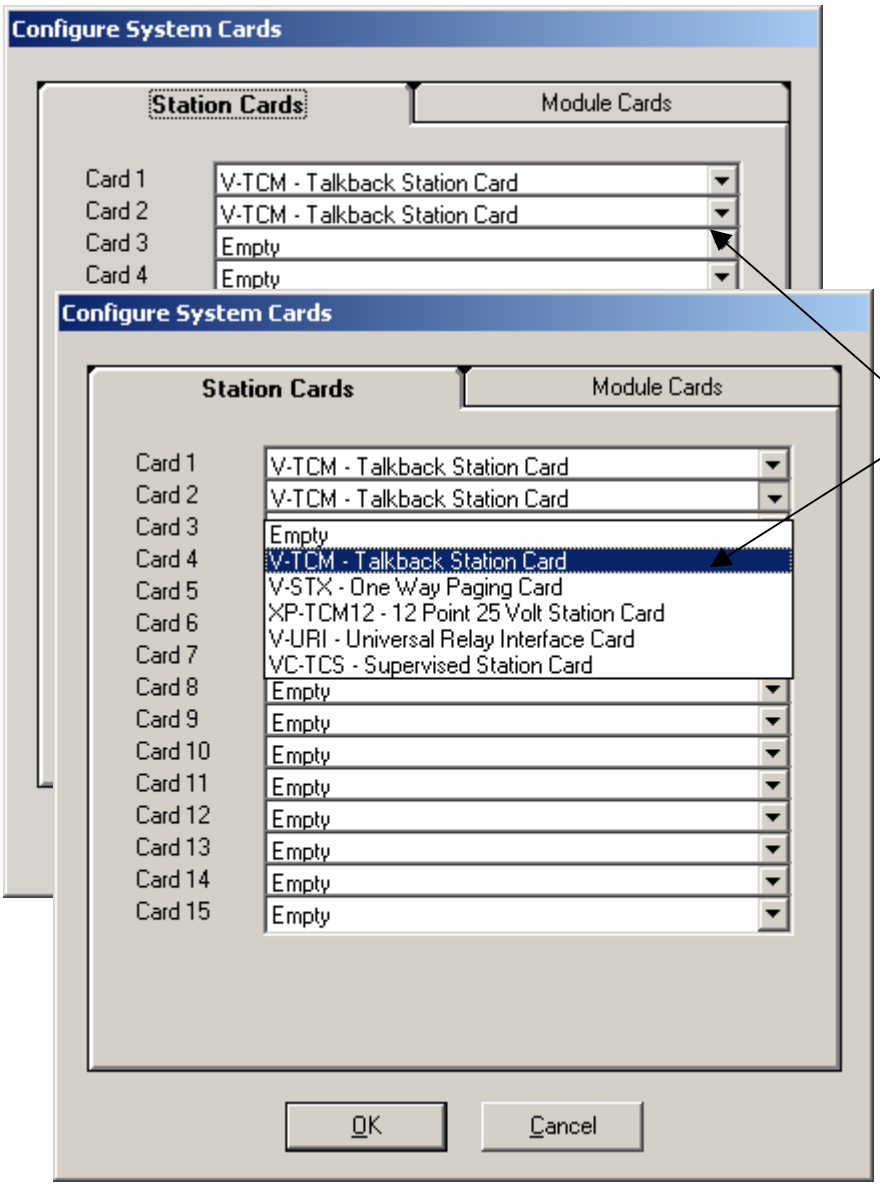


When you invoke the Valcom MultiPath programming tool, the first options that are offered to you are:

Set up a brand new system, or completely start over with an existing system

Open a previously saved file to make a change or to review system programmed options

Connect to the Valcom MultiPath system through the serial port connection. With this option you can upload the Valcom MultiPath's actual programming



In our example, we have chosen to create new system files.

Now the programming tool is asking us what kind of circuit cards we have installed. Since the V-CPU4 card is not an option, this pull down menu offers Station Card Options of an empty slot, a V-TCM or XP-TCM12 Station Card, a VC-TCS Supervised Station Card, a V-STX One Way Paging Card or a V-URI Universal Relay Interface.

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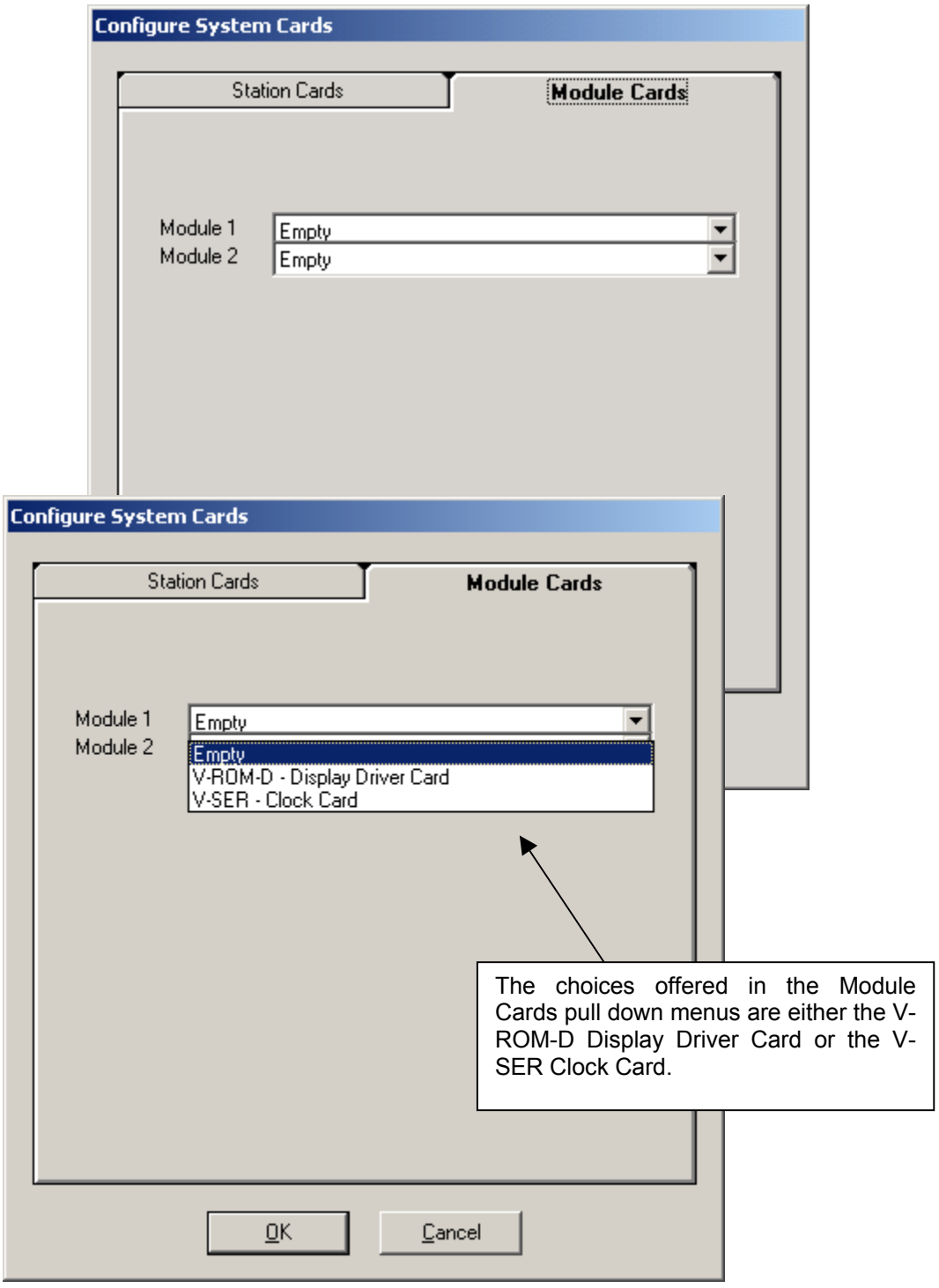

The choices offered in the Module Cards pull down menus are either the V-ROM-D Display Driver Card or the V-SER Clock Card.

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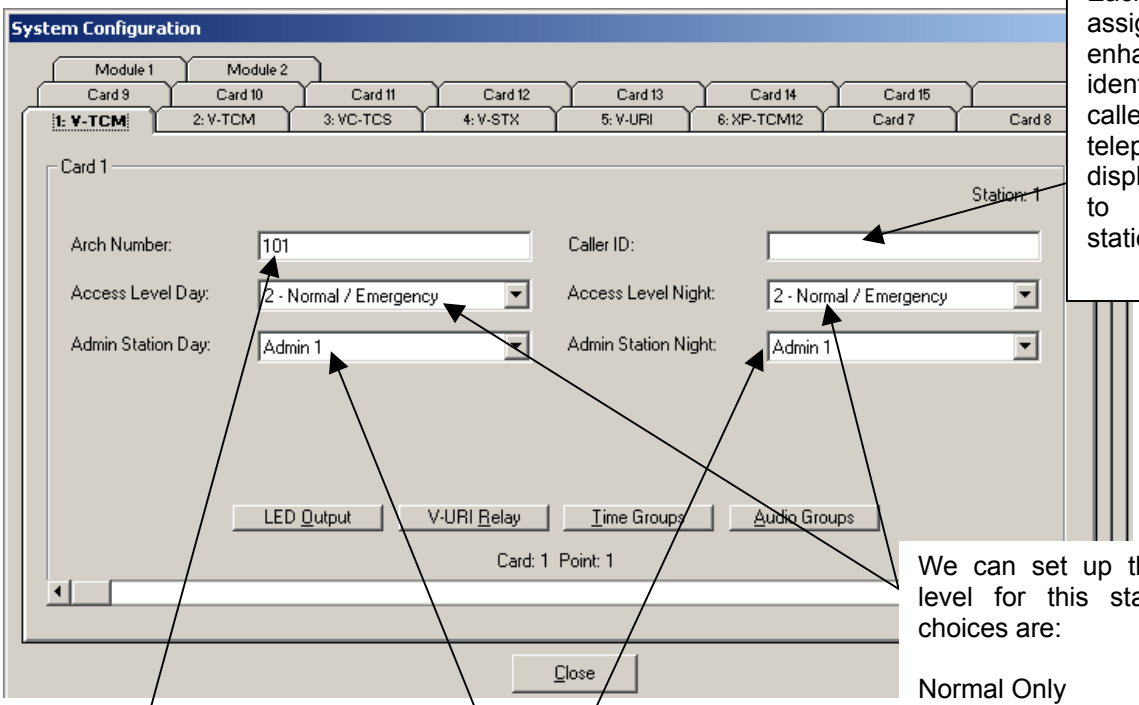
After we have defined the cards in our system, we can start programming system options. V-TCM, XP-TCM12 and VC-TCS programming are identical. The VC-TCS provides an additional check box to enable or disable wiring supervision on a per station basis. V-STX Programming simply excludes Access Level options (the V-STX has no call button option).



Each station may be assigned an enhanced caller ID identifier. Enhanced caller ID office telephones will display this identifier to indicate which station is ringing in.

We can create a new station number so that the station number can match a telephone extension and/or room number (1 to 9999). Assigned number may not conflict – for example, there cannot be a room 10 and a room 101.

You can define which administrative phone this station will call when it's call button is pressed.

This can be different during the day than at night.

We can set up the access level for this station. The choices are:

Normal Only
Security
Normal/Emergency
Urgent/Emergency
Overhead Ring (rings all office phones and over speakers)
Emergency Only
Ignore

This can be different during the day than at night.

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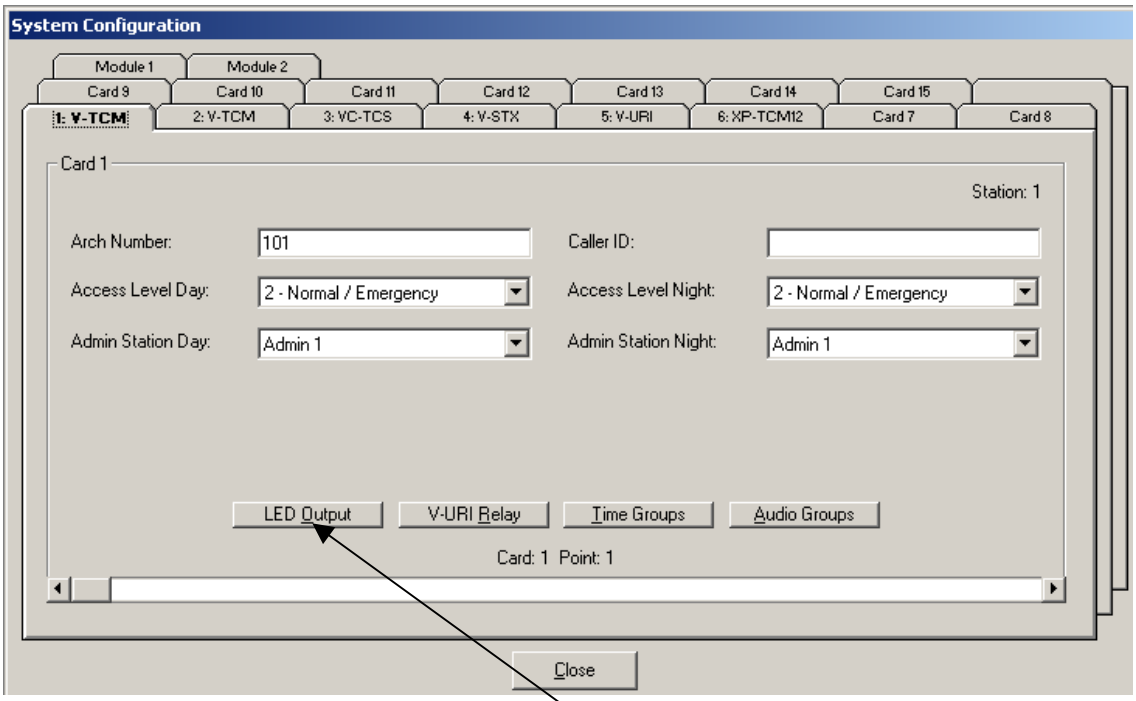

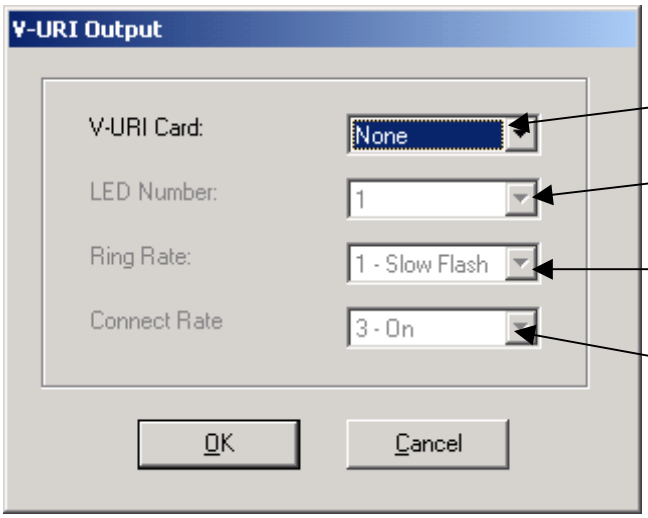

You can assign this particular station to a V-URI Relay Interface card LED.

1) pick which V-URI card

2) pick which of the 72 LED outputs you want to light when this station is in use.

3) Pick the way you want the LED to light when the station is ringing in to the administrative phone.

4) Pick the way you want the LED to light when the station is connected to the administrative phone

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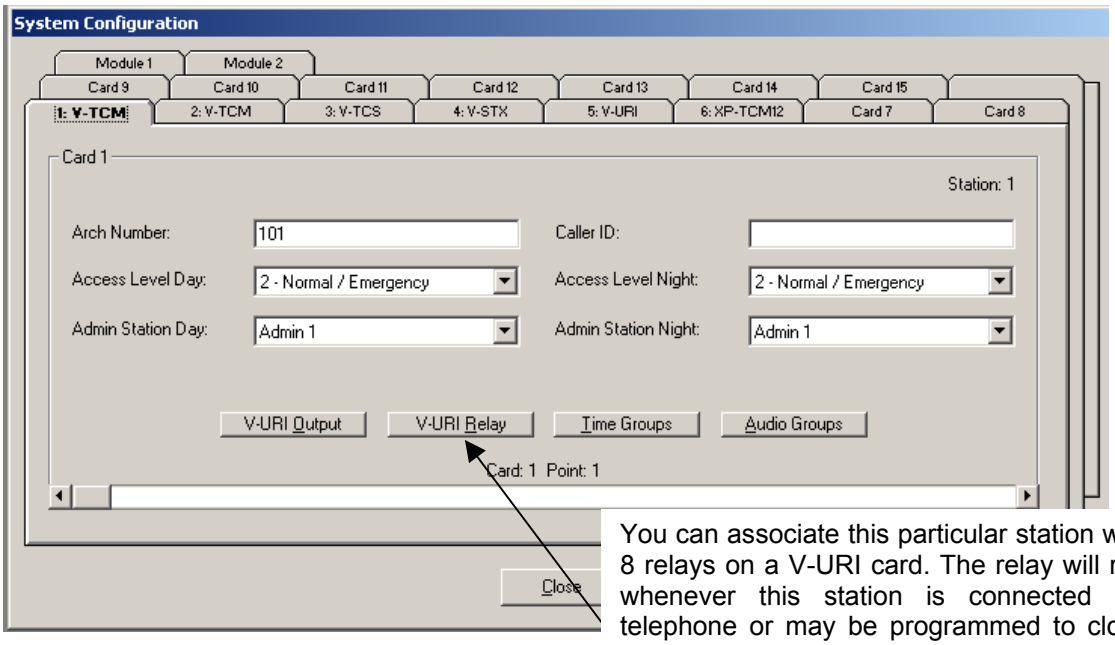
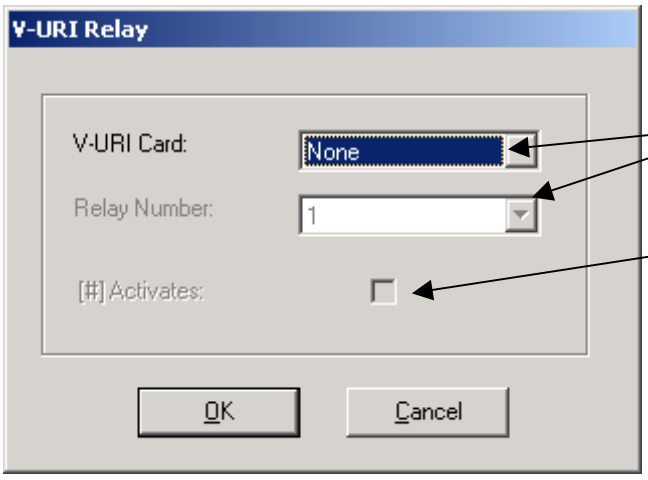


You can associate this particular station with any of the 8 relays on a V-URI card. The relay will remain closed whenever this station is connected to an office telephone or may be programmed to close whenever this station is connected to an office telephone and a DTMF # is pressed.

Note – a station must have a V-URI output assigned in order to utilize a V-URI relay. If necessary and possible, this association is automatically made in the programming tool upon V-URI relay assignment.



Simply select the V-URI Universal Relay card and the relay number.

If you check this box, the relay will only activate when the DTMF # key is pressed during an active phone connection to this station. It will operate for 2 seconds when the # key is pressed.

The office telephone must have level 3 access or higher.

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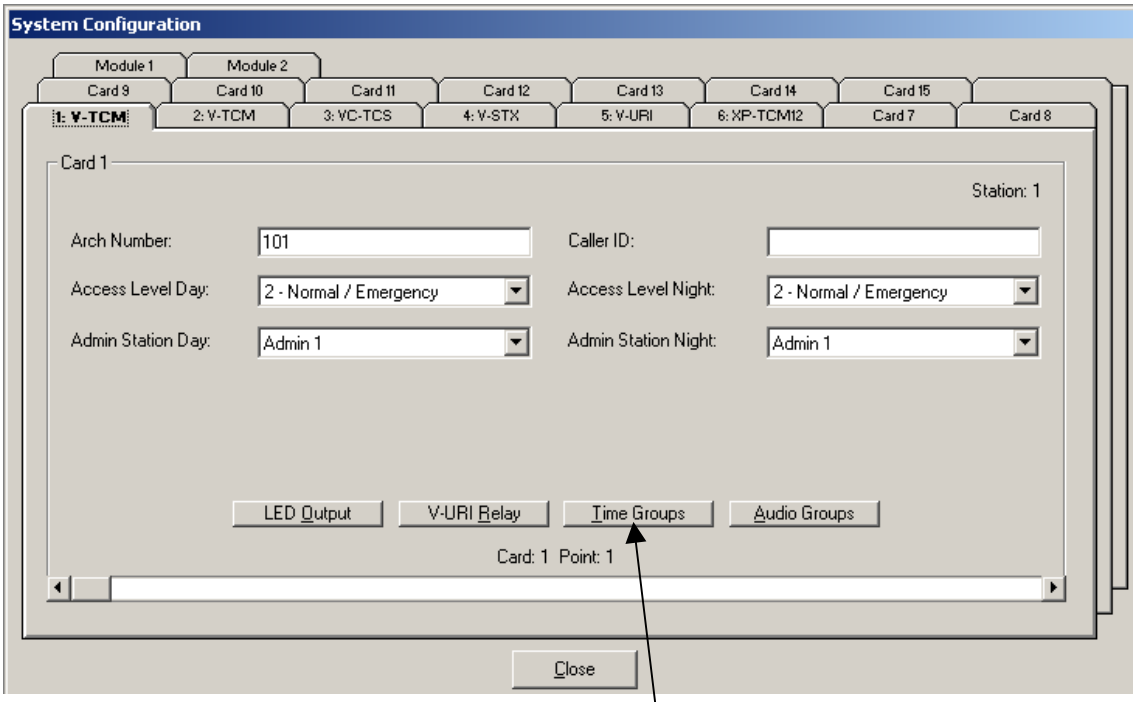

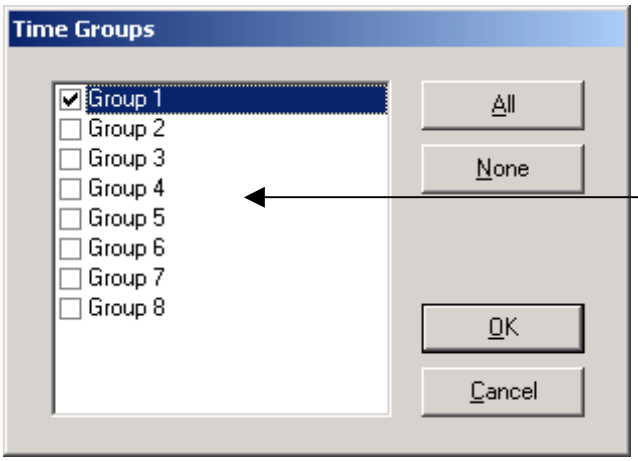

You can define which of the 8 time groups this particular station will be included in. Time group specifics will be set up later. Right now, were just telling the station which time groups we want it to follow.

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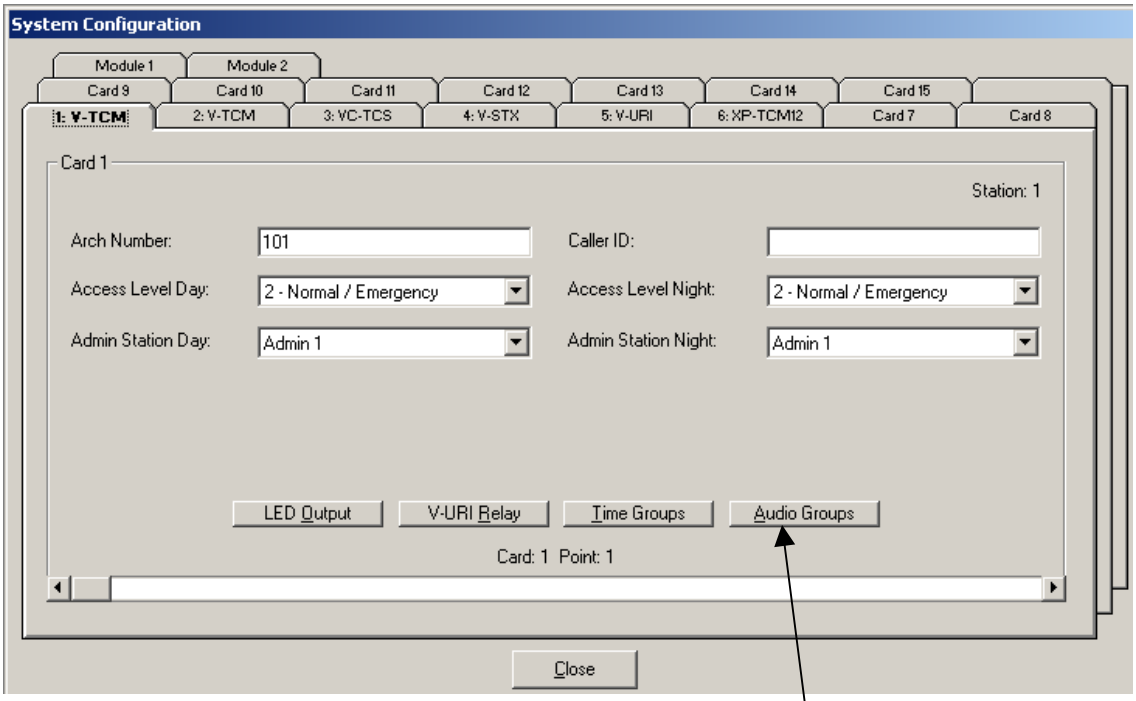

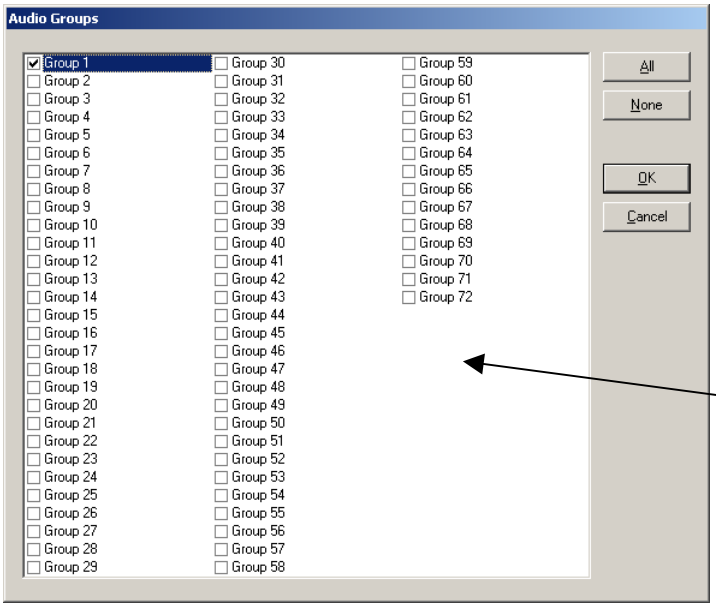

You can define which of the 72 audio groups this particular station will be included in. Audio group specifics will be set up later. Right now, we're just telling the station which audio groups it will belong to.

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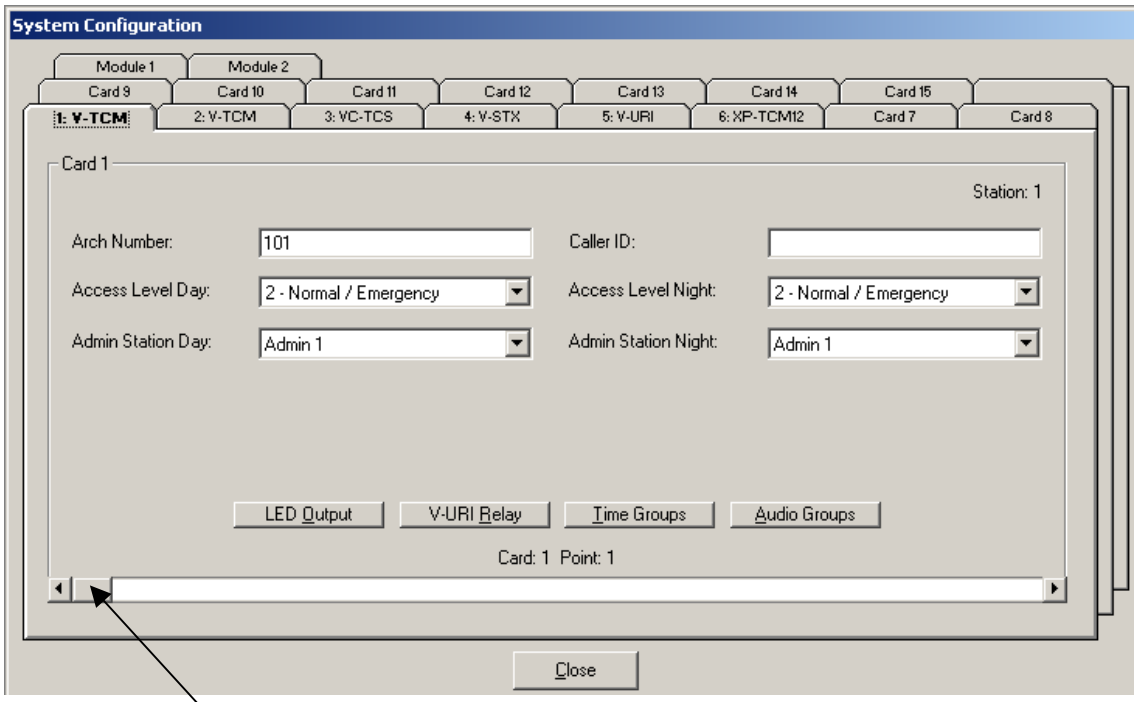

The other 23 stations on this V-TCM card are selected for programming by simply moving this sliding selection bar or using your computer's "page up" / "page down" keys.

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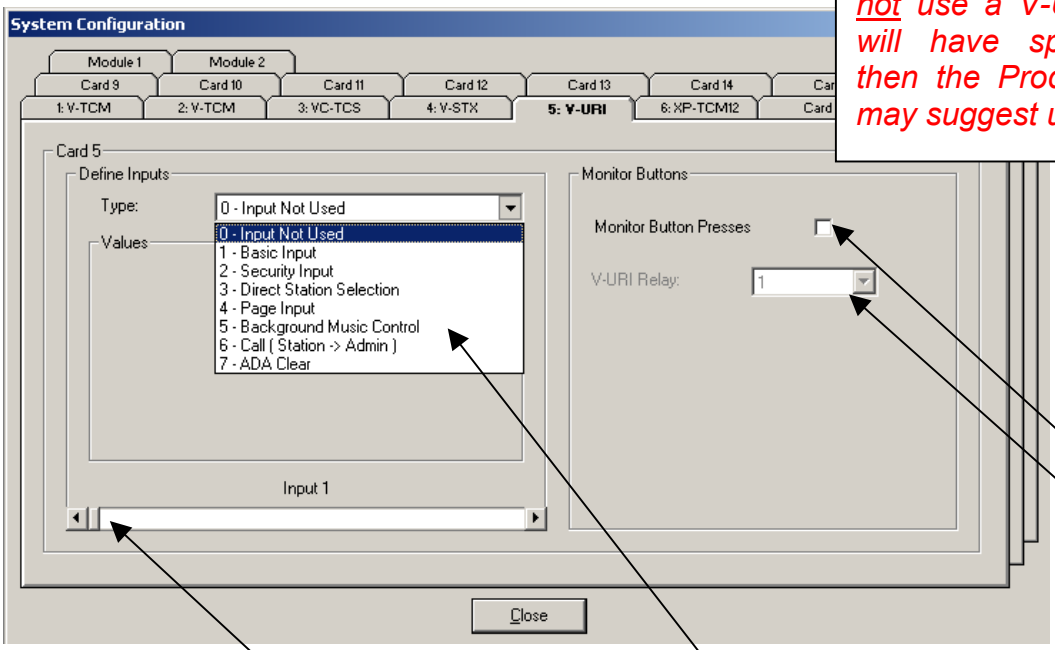
On the V-URI Tab, you can set up the function of each of the 72 switch (contact closure) inputs. In this example we only have one V-URI card – we could have up to 5.

Note – The V-URI is only necessary if your system requires additional switch inputs, relays associated with the stations (door unlock, camera activation, etc) or LED outputs. Most systems will not use a V-URI. If your system will have special requirements then the Product Support Group may suggest using a V-URI.



If you want one of the V-URI's 8 relays to close whenever any input on *this* V-URI is pressed:

a) check this box

b) select a relay

The other 72 inputs on this V-URI card are selected for programming by simply moving this sliding selection bar or using your computer's "page up" / "page down" keys.

There are 21 possible functions in 8 categories (including not used) that may be selected for each of the 72 V-URI inputs. These functions are defined in the help menu.

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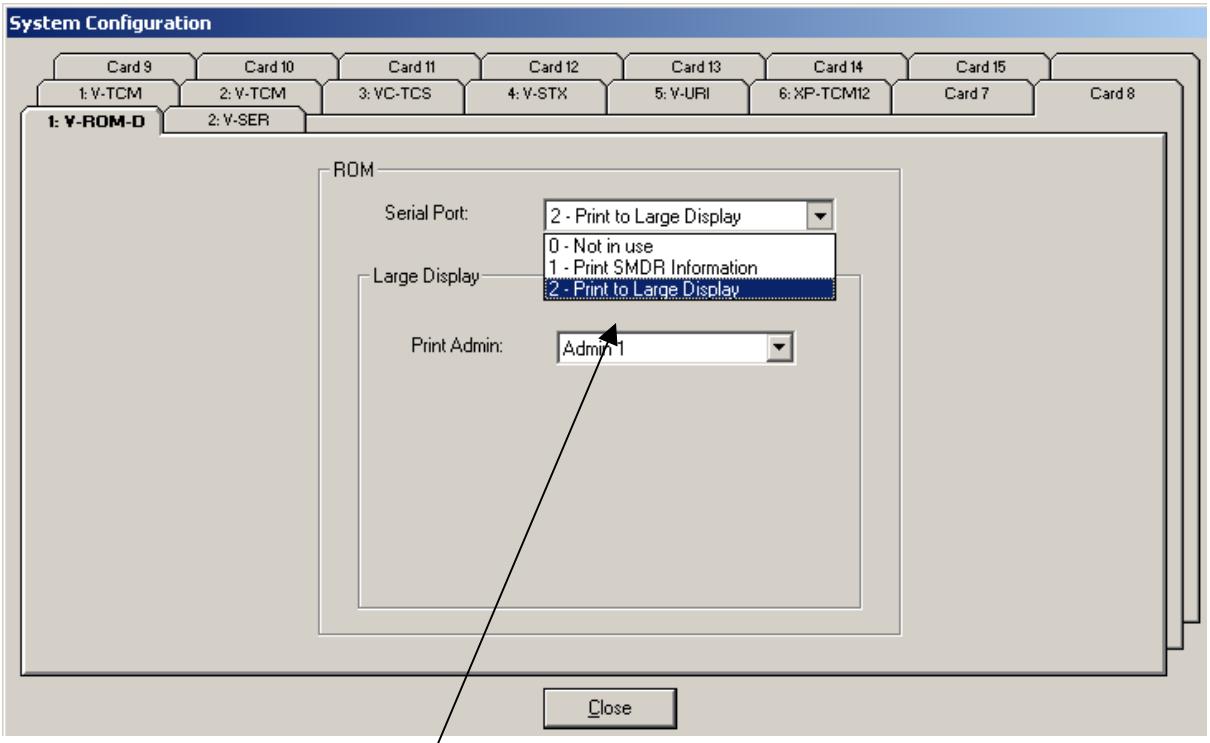

On the V-ROM-D tab you simply define the function of the V-ROM-D's DB9 Serial connector.

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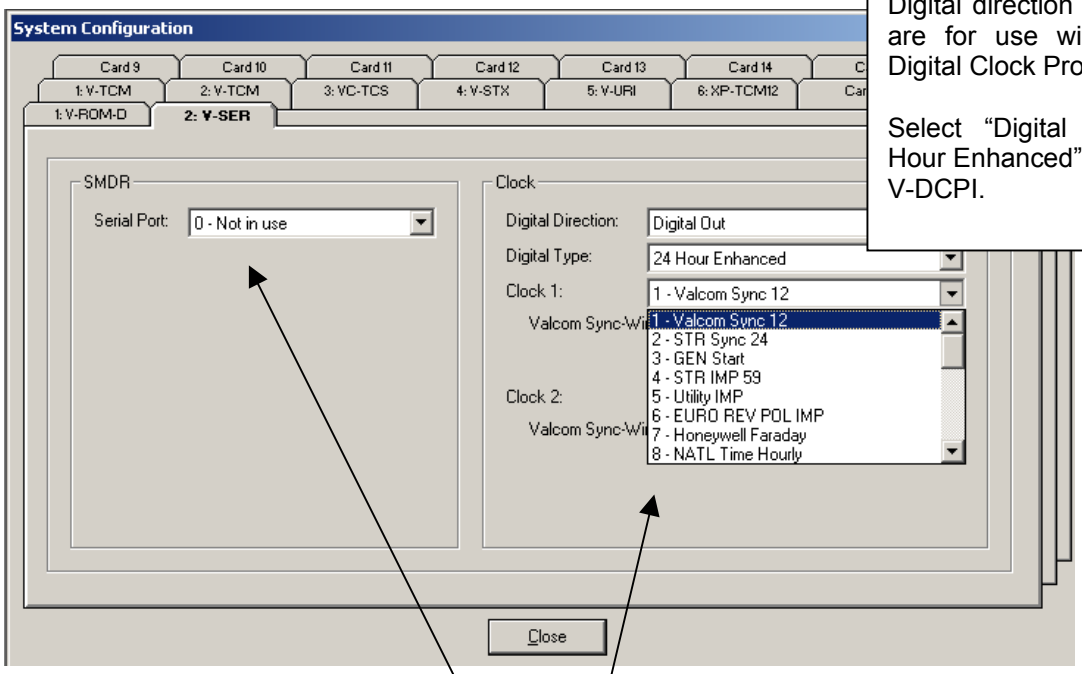

Digital direction and digital type are for use with the V-DCPI Digital Clock Protocol Interface.

Select "Digital Out" and "24 Hour Enhanced" when using the V-DCPI.

On the V-SER tab, you simply select whether or not you want the V-SER's DB9 connector to print SMDR information and what types of clocks you'll be driving (up to 2 types). Refer to the V-SER section of this manual for clock type specifics

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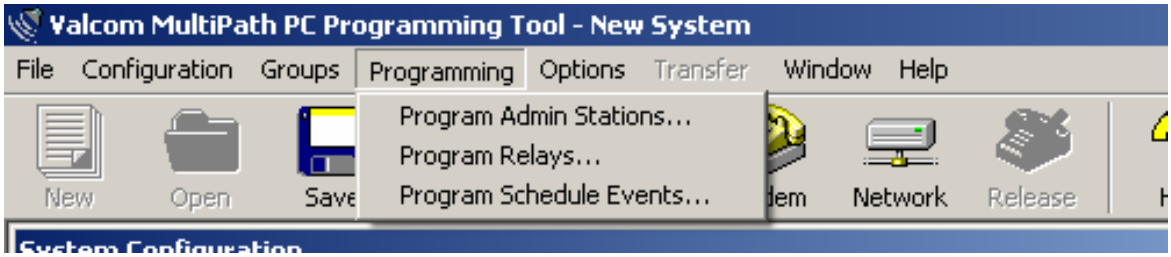
On the programming tools task bar, select “Programming”. From this menu, we can program the office telephones, the way we want the 8 relays on the V-CPU4 to operate and time schedules.

First lets look at programming the office telephones. Select “Program Admin Stations” from the pull down menu.



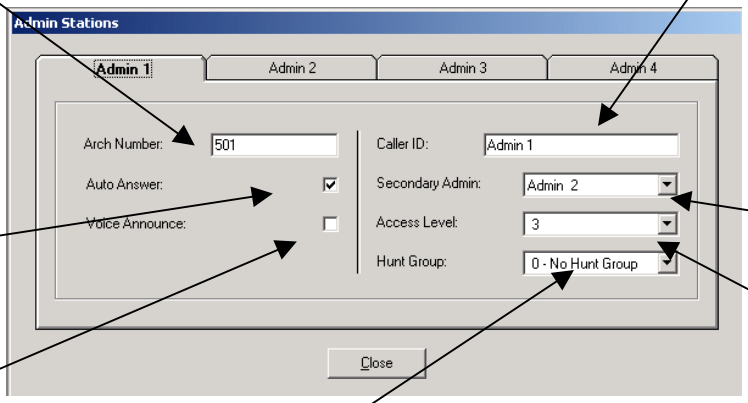
What do you want this office telephone’s dial up number to be when other office telephones are calling?

When this office telephone calls another office telephone, what enhanced caller ID name do you want to display?

Upon answering do you want this office telephone to:

a) Answer whatever call is ringing in, or only allow you to connect by pressing “*”?

b) Announce the calling classrooms station number?



If you option to forward calls from this office telephone, which other office telephone to want the calls to go to?

Will this office telephone have access level 1, 2 or 3?

Which of the 3 hunt groups do you want this office phone to belong to?

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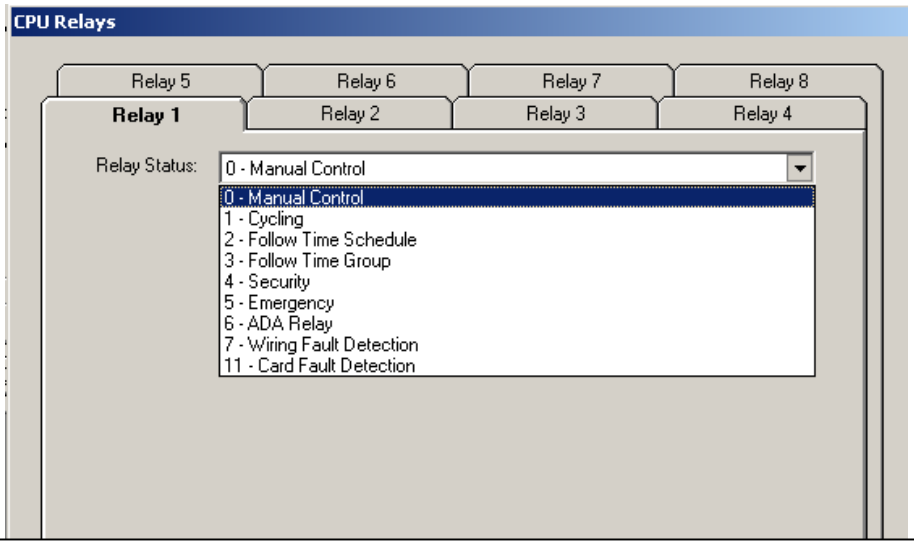
Next let's look at relay programming for the 8 relays on the V-CPU4.



Each of the 8 relays may be programmed for one of the following:

Manual Control – The office phones may active and deactivate the relay by dial codes (this feature is always available).

Cycling – When you select cycling, you are asked what time you want the relay cycling to begin and end and the desired on/off timing (cadence).

Follow Time Schedule – The relay will activate whenever the time schedule that it is following has a scheduled event. When you select this option, the program will ask you which time schedule you want to follow.

Follow Group – The relay will activate whenever the time group (which may be affected by multiple time schedules) that it is following has a scheduled event. When you select this option, the program will ask you which time group you want to follow.

Security – The relay will operate from the time a call button at a "security" station is pressed until the office telephone answers the call.

Emergency – The relay will operate whenever an emergency call to an office telephone is unanswered and escalates to an emergency voice over page announcement.

ADA – The relay will operate from the time a call from an "ADA" station has been answered and released until the ADA call is cleared.

Wiring Fault Detection - The relay will operate whenever a wiring fault is detected on a VC-TCS Supervised Station Card.

Card Fault Detection - The relay will operate if a system card stops communicating with the V-CPU4.

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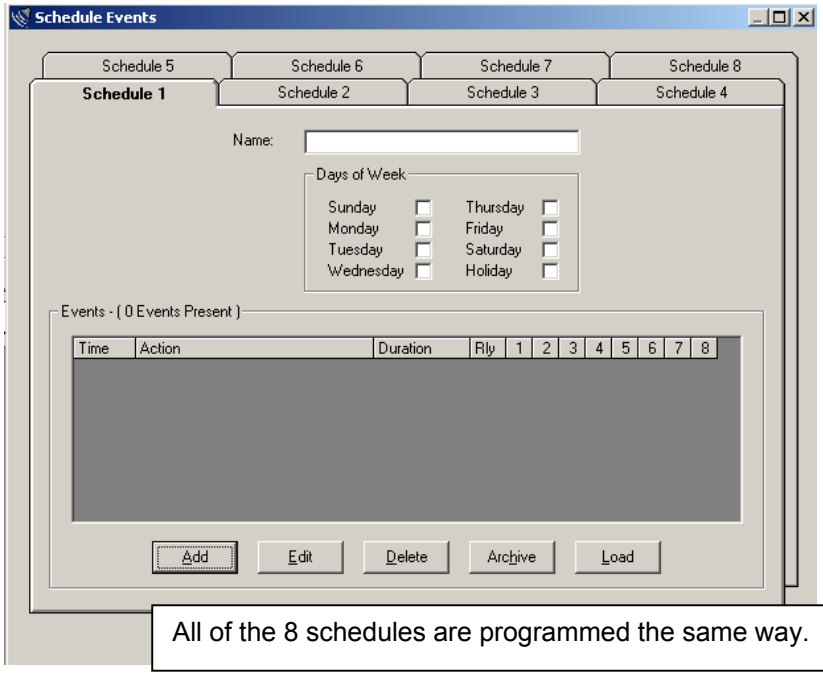
The “Schedule Time Events” menu is where you set up the school’s “bell schedule”. This programming determines what audio or tones will occur at any given time and where those tones will be heard. *Take note that the Programming and Administrative Tools allows an unlimited number of schedules to be saved to and loaded from a disk.*



All of the 8 schedules are programmed the same way.

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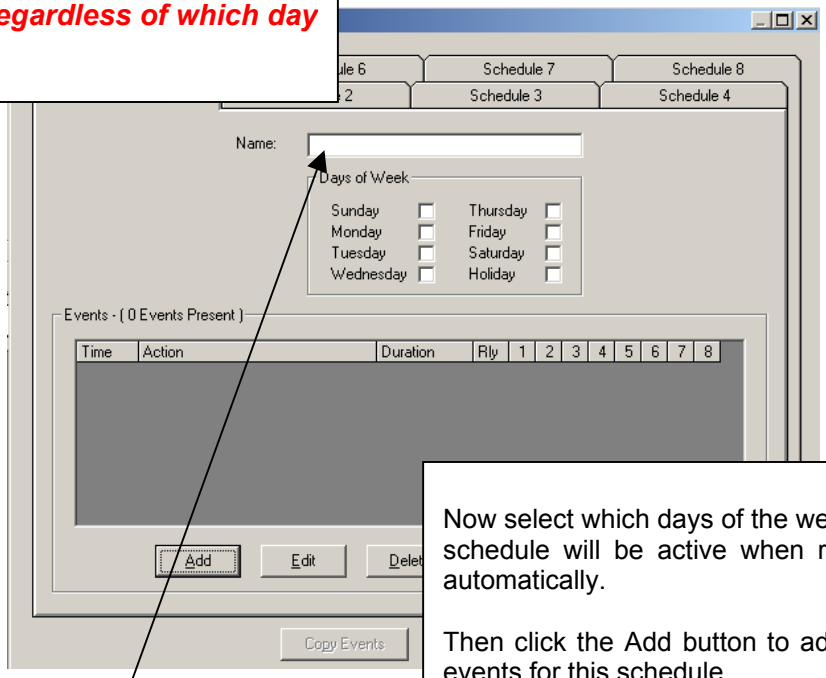
Note – Defining the days of the week that a schedule will run is solely for automatic schedule operation. When you force a schedule it will run regardless of which day of the week it is.



You can name each schedule for easy identification

Now select which days of the week this schedule will be active when running automatically.

Then click the Add button to add your events for this schedule.

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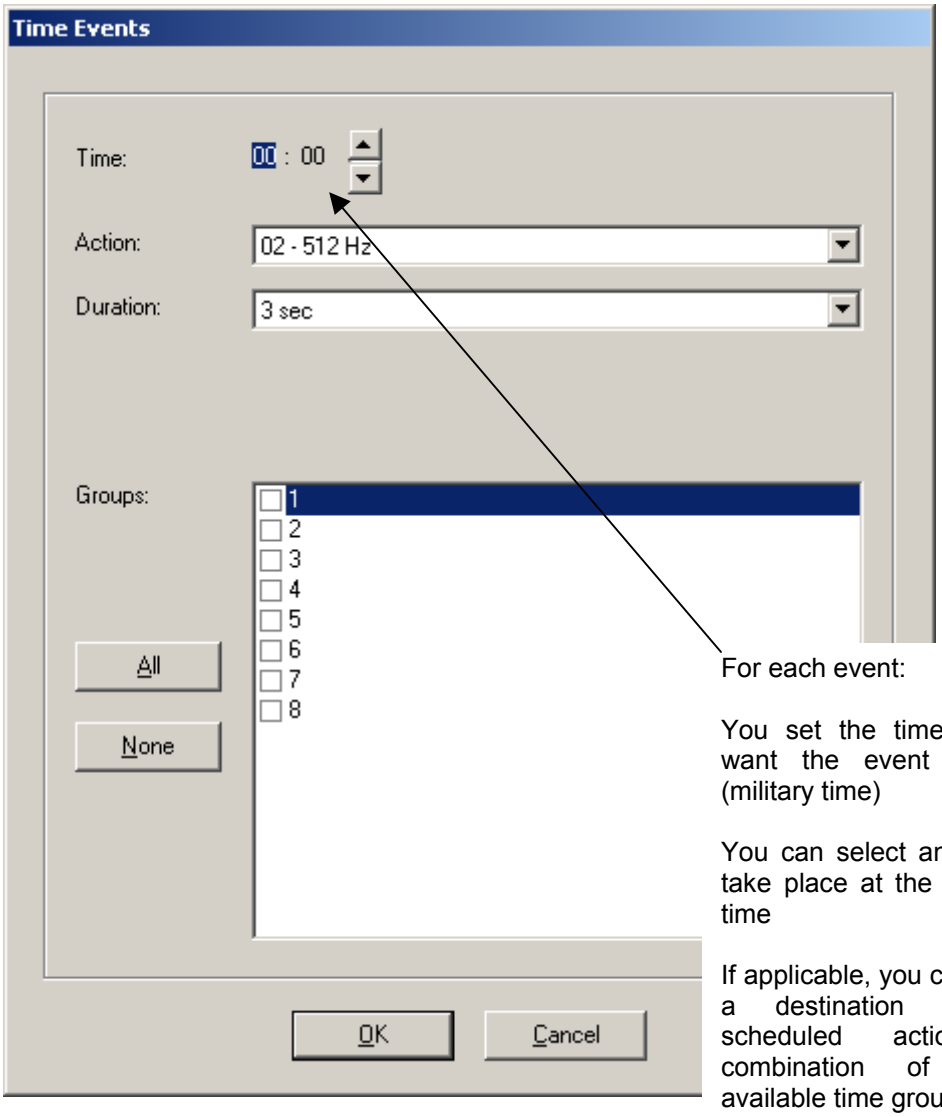

For each event:

You set the time that you want the event to occur (military time)

You can select an action to take place at the scheduled time

If applicable, you can choose a destination for your scheduled action (any combination of the 8 available time groups).

Then click OK

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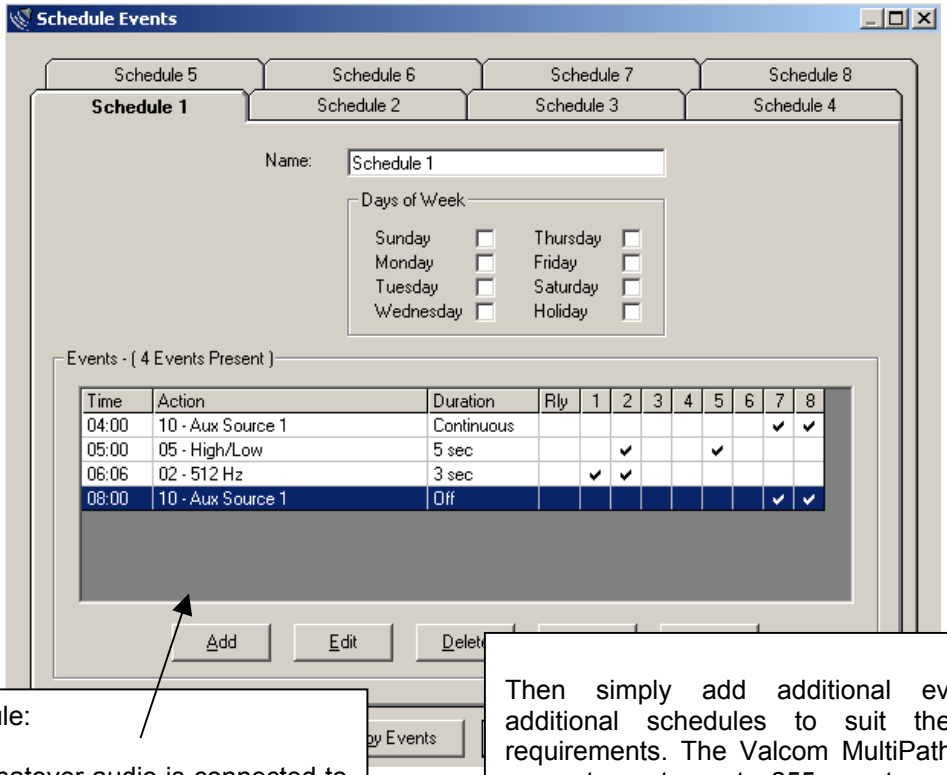

On this schedule:

At 4:00 AM, whatever audio is connected to the aux input number 1 on the V-CPU4 will begin playing in time groups 7 and 8.

At 5:00 AM, a 5 second High/Low tone will be broadcast into time groups 2 and 5.

At 6:06 PM, a 3 second 512 Hz tone will be broadcast into time groups 1 and 2.

At 8:00 AM, Aux 1 will turn off in time groups 7 and 8.

Then simply add additional events and additional schedules to suit the school's requirements. The Valcom MultiPath™ system supports up to up to 255 events per schedule (system maximum of 1024 events).

Schedule Tip - When entering schedules that have identical sections, you can enter the events once and copy them to the second schedule by using the Copy Time Events function!!

Note that if an event is still playing on a schedule when the next event on that schedule occurs, then that 1st event is turned OFF before the new event is turned ON. If 2 Schedules play overlapping events, then the 1st event will be momentarily interrupted by the second event.

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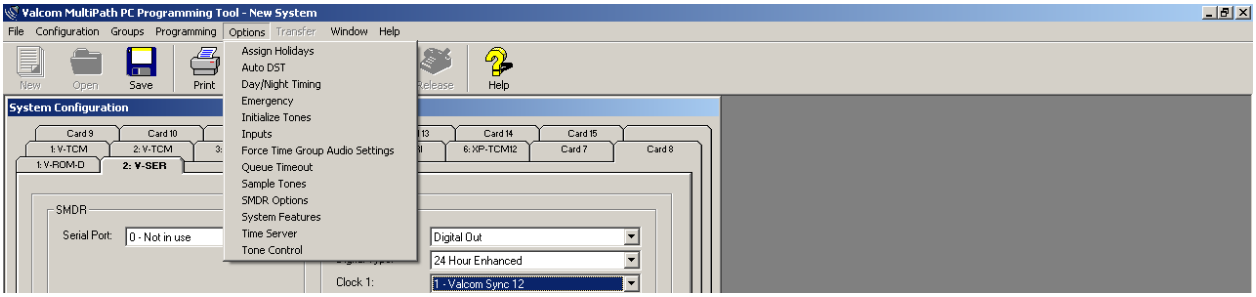

On the programming tool's task bar, select "Options". From this menu, we can:

a) Define up to 15 holidays when the holiday time schedule will be active
b) Manage daylight savings time begins and ends
c) Define when the system enters night mode and day mode (on a per day basis)
d) Set up a secondary emergency Admin telephone for unanswered *emergency* calls and set up an automated voice announcement over one of the audio groups if this secondary emergency Admin telephone does not answer
e) Define what your Tornado, Fire, Night Ring, Time Door and All Clear tones will sound like
f) Define functionality of the 6 switch inputs on the V-CPU4
g) Define audio to be sent to audio groups when forced on via basic inputs
h) Set up a queue timeout so that if a call to an office telephone is unanswered it will simply time out
i) Sample the system tones (via your PC's media player)
j) Set up SMDR over UDP or Multicast to allow viewing on a networked PC (Via the Administrative or Programming Tools) – See next page
k) Set up which aux sources are available for ADMIN Tool Distribution (music distributed via V-URI input may use any aux input regardless of availability)
l) Set up the digit timing of the "voice announce" option
m) Set up an Internet time server connection (Ethernet connection required) – See next page
n) Enable or disable privacy tone, pre-announce tone and confirmation tones

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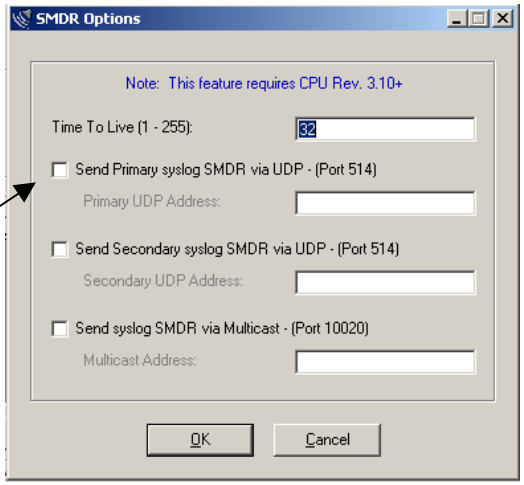
You may broadcast SMDR info to up to 2 PCs on your network or via a multicast to 3+ PCs. The SMDR information may then be viewed via the Programming or Administrative Tools under File/Communications/Network

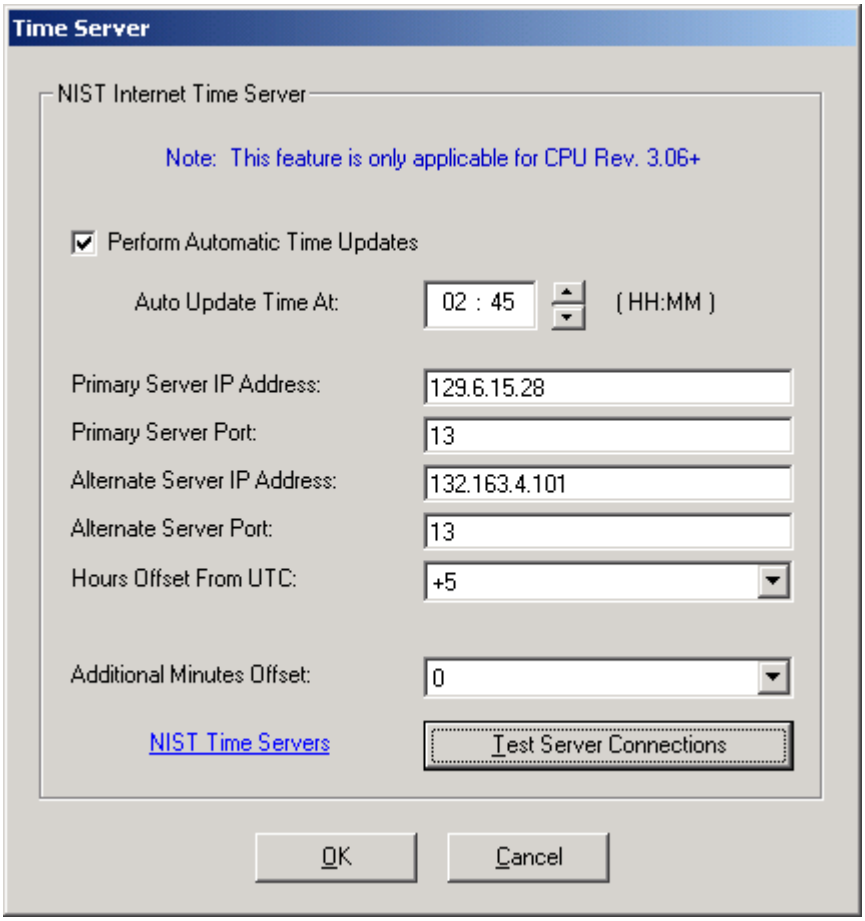


The MultiPath's system time may be updated daily via an Internet timeserver. You may enter both a primary and secondary timeserver of choice.

The MultiPath system uses "Daytime Protocol" when it communicates with a timeserver. NTP is not supported. These NIST servers provide time updates via both NTP and Daytime protocols: http://tf.nist.gov/timefreq/service/time-servers.html

If it is desired to control the MultiPath time from a local source, you can enable the Daytime server on a local PC that gets its time from NTP (most current operating systems include a Daytime Protocol time server).

If the Daylight time data received by MultiPath is identified as being from a non-NIST source, then it is assumed that the date and time received are correct and already adjusted for time zone and DST, regardless of the MultiPath configuration settings.



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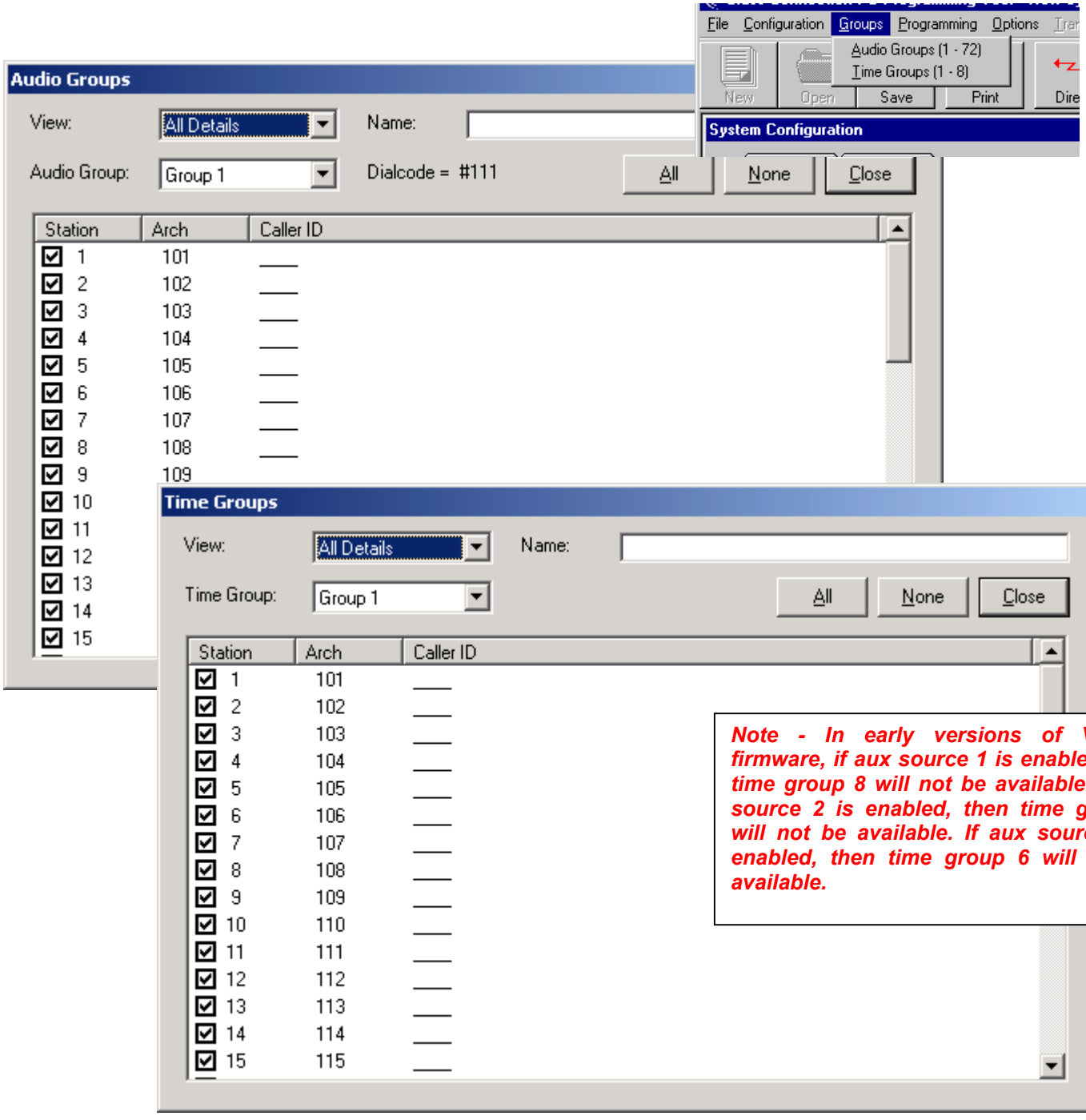
When you click the Groups button on the programming tool's task bar, you can review or change your audio groups and time groups that were set up under station programming.



Note - In early versions of V-CPU4 firmware, if aux source 1 is enabled, then time group 8 will not be available. If aux source 2 is enabled, then time group 7 will not be available. If aux source 3 is enabled, then time group 6 will not be available.

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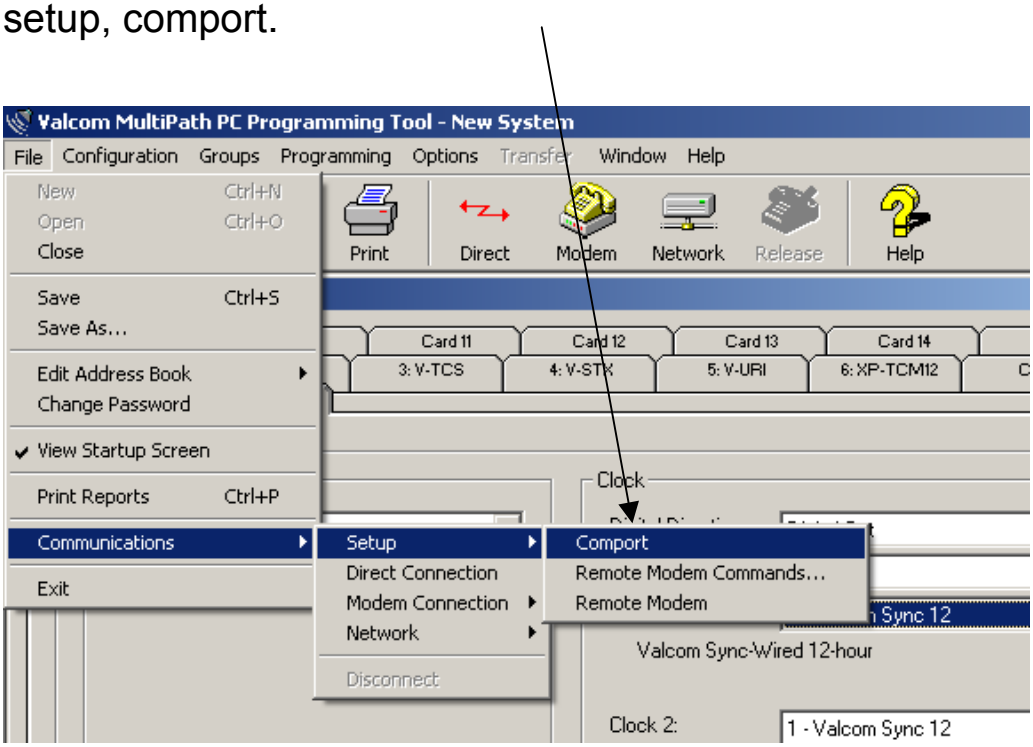
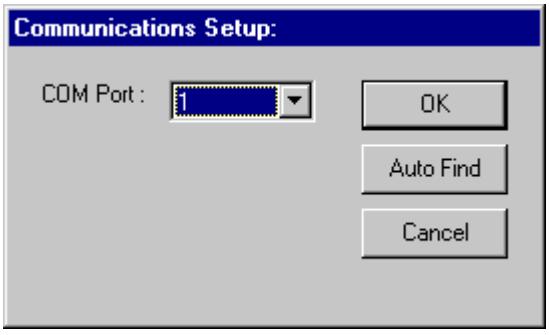
Once you've programmed your system options, it's time to connect to the system. Connect the supplied programming cable from your computer's COM port to the DB9 connector on the V-CPU4 card.

On the programming tool's task bar, select file, communications, setup, comport.



Once you done so, the following screen appears:



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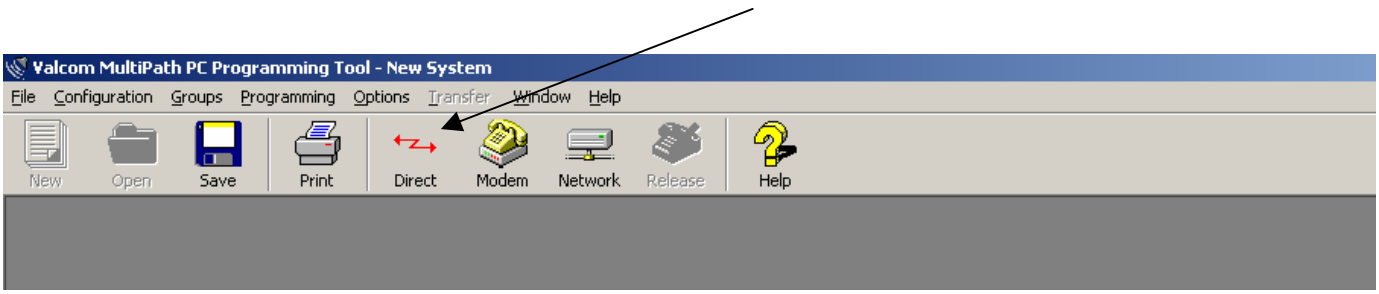
Enter the number of the computer COM port that you're using, or better yet, use the auto find button to identify which COM port is connected to the system.

Once this is completed, click the direct connect button



Enter the system password (**default is 825266**), and a confirmation should appear confirming a successful connection.

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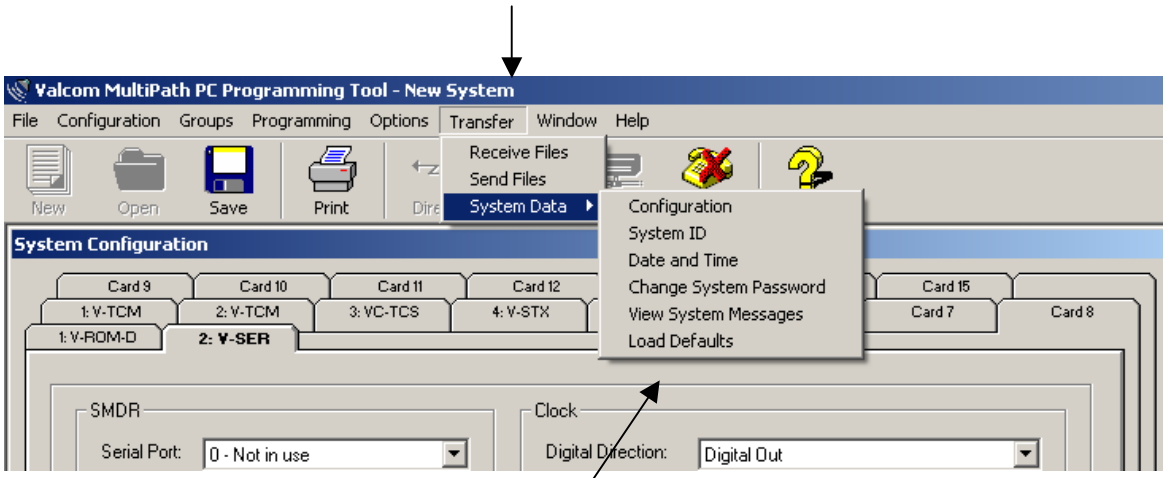
Now click the Transfer button:



Here you can send the programming you've just completed to the system.

Other options while connected to the system include:

Receive the files from the system to see what's actually programmed

Check the actual system configuration to see what cards are installed

Check the V-CPU4's Firmware revision (System ID)

Set system date and time

Change the system password

Review any system error messages

Load system default programming

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Office Phone Ringing	• Off Hook (Answer Call) * Answer Call # System Dial Tone ○ Hook switch Flash - next call in queue			
Phone Idle	• Off Hook (Dial Tone)	Access Levels		
		1	2	3
	#110 All Call Page	X	X	X
	#111..182 Page Groups 1..72 #∗111..182 Emergency Page Groups	X	X X	X X
	#35 Temporary Page Group Architectural number, #, ... Architectural number, #, #	X	X	X
	#36 Page to all "Test" rooms only			X
	#40∗ Enable Automatic Relay Operation #40# Disable Automatic Relay Operation		X X	X X
	#41..48 Control Individual Relays ∗ Operate Relay # Release Relay		X X	X X
	#50∗ Enable Automatic Time Schedule #50# Disable Automatic Time Schedule (will not reset at midnight)		X X	X X
	#51..58 Time Schedule 1..8 ∗ Activate Selected Event List # De-activate Selected Event List		X X	X X
	#61..63 Program Sources 1..3 ∗ ON # OFF Note that aux distribution via V-URI inputs is always available regardless of aux input availability.	X X	X X	X X
	#65..68 Monitor Program Sources 1..3, Microphone If sources are not on via dial code or through the Administrative Software Tool, then the user will receive a busy tone.	X	X	X

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	#81∗ Enable fault detection on detecting stations			X
	#81# Disable fault detection on detecting stations			X
	#82 Architectural number, #, ... Architectural number, #, # Clear individual station fault indication			X
	#83 Clear all fault indications			X
	#71∗ Enable Call Forward after time-out	X	X	X
	#71# Disable Call Forward after time-out	X	X	X
	#72∗ Enable Immediate Call Forward	X	X	X
	#72# Disable Immediate Call Forward	X	X	X
	#73 Call Pickup	X	X	X
	#85 Define test rooms Architectural number, #, ... Architectural number, #, #			X
	#86 Reset individual test rooms to normal operation Architectural number, #, ... Architectural number, #, #			X
	#87 Reset all test rooms to normal operation (automatically resets to normal operation at midnight)			X
	#94XX Impulse Clock Manual Advance (XX = Minutes)	X	X	X
	##0 Emergency All Call		X	X
	##1##1 Distribute Tornado Tone		X	X
	##2##2 Distribute Fire Alarm Tone		X	X
	##3##3 Distribute Emergency Time Tone		X	X
	##4##4 Distribute All Clear Tone		X	X
	##5 Stop Emergency Tones		X	X
	##9∗ Crisis COS Enabled		X	X
	##9# Crisis COS Disabled (Crisis mode automatically resets to disabled at midnight)		X	X
	∗9 Bump Call in Progress			X
	∗8 Join Call in Progress			X
	∗7 Join Queue			X

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SMDR Printer Output

"Print Normal Calls"

CONNECT		a call has been answered
RELEASE		an answered call has been released
PAGE		a page has been originated
TIMED OUT		a call button originated call timed out without being answered
HOLD		Arch [A] has placed it's call on Hold
CONFERENCE		Arch [A] has originated a conference
CONF END		Arch [A] has released, ending the conference
RECON HOLD		Arch [A] re-connected to it's held call
HOLD SWITCH		Arch [A] switched between two held calls
TRANSFER		Arch [A] transferred it's held call
BUMP		Arch [A] used Bump to enter Arch [B]'s call
JOIN		Arch [A] used Join to enter Arch [B]'s call
	Note:	A JOIN will always be followed by a "CONFERENCE" message

"Print System Messages"

SYSMSG	xxx	all system information messages

"Print Emergency Calls"

EMERGENCY	an emergency call has been originated
EMER UPGRD	a normal or urgent call has been upgraded to emergency
EMER VOICE	an emergency call has initiated voice paging
CRISIS ON	entering crisis mode
CRISIS OFF	leaving crisis mode

"Print Security Calls"

SECURITY	a security type call has been originated

SMDR Output Format and Examples (messages print in order of time):

mm/dd/yy	hh:mm:ss	xxxx	yyyy	textstring
07/09/00	11:12:30	501	101	CONNECT
07/09/00	11:12:32	149		EMER VOICE
07/09/00	11:12:42	0000	0000	SYSMSG 000
07/09/00	11:12:45	00CF	009D	SYSMSG 002
07/09/00	12:10:00	501		CRISIS ON
07/09/00	12:15:30	INPT		CRISIS OFF

xxxx, yyyy:
4 characters or spaces each, arch numbers right justified with leading 0's suppressed

textstring: 10 characters, max.

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Detailed Valcom MultiPath System SMDR Information

(as of 6/14/2001)

Port Parameters

DTE configuration (requires null modem to connect to PC)
1200 baud, no parity, 8 data bits, one stop bit (1200, N, 8, 1)

SMDR Output Format

Format of output string (all printable ASCII characters):

mm/dd/yy hh:mm:ss aaaa bbbb ttttttttt<cr><lf>

All fields are fixed length except for the last one, which is terminated with <cr><lf>
Fields are column-delineated
Columns are separated by one or two spaces ($20), but spaces may also appear within fields

Field	Description
mm/dd/yy	date of event
hh:mm:ss	time of event
aaaa	4-character "originator" data field contents dependant on message type (arch numbers right justified with leading 0's suppressed)
bbbb	4-character "destination" data field contents dependant on message type (arch numbers right justified with leading 0's suppressed)
ttttttttt	message type (variable length, up to 10 characters max, left justified)

SMDR Output Examples

mm/dd/yy		*hh:mm:ss*		*aaaa*		*bbbb*		*ttttttttt*
1..8	9	10..17	18, 19	20..23	24	25..28	29, 30	31..40
07/09/99		11:12:30		501		101		CONNECT
07/09/99		11:12:32		149				EMER VOICE
07/09/99		11:12:42		0000		0000		SYSMSG 000
07/09/99		11:12:45		00CF		009D		SYSMSG 002
07/09/99		12:10:00		501				CRISIS ON
07/09/99		12:15:30		INPT				CRISIS OFF

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Station Board (Call Button) Originated Calls

normal call to office phone
answer
release

02/01/01 12:57:40	101 501	CALL	// normal call to office phone
02/01/01 12:58:30	501 101	CONNECT	// answer
02/01/01 12:58:35	501 101	RELEASE	// release

normal call to office phone
time-out

02/01/01 12:58:46	101 501	CALL	// normal call to office phone
02/01/01 12:59:16	101	TIMED OUT	// time-out

emergency call to office phone
answer
release

02/01/01 12:59:29	101 501	CALL	// emergency call to office phone - normal call
02/01/01 12:59:35	101 501	EMERGENCY	// upgrade to emergency
02/01/01 12:59:47	501 101	CONNECT	// answer
02/01/01 12:59:50	501 101	RELEASE	// release

emergency call to office phone
transfer to emergency office phone
transfer to page
answer
release

02/01/01 13:48:40	104 502	CALL	// emergency call to office phone - normal call
02/01/01 13:48:42	104 502	EMERGENCY	// upgrade to emergency
02/01/01 13:49:12	104 501	EMERGENCY	// transfer to emergency office phone
02/01/01 13:49:42	104	EMER VOICE	// transfer to page
02/01/01 13:50:26	501 104	CONNECT	// answer
02/01/01 13:50:30	501 104	RELEASE	// release

security call to office phone
answer
release

02/01/01 14:01:15	113 501	CALL	// security call to office phone - normal call
02/01/01 14:01:15	113 501	SECURITY	// upgrade to security
02/01/01 14:01:36	501 113	CONNECT	// answer
02/01/01 14:01:39	501 113	RELEASE	// release

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ada call to office phone

answer
release
pending
clear

```
02/01/01 14:06:10        114  501      ADA CALL      // ADA call to office phone
02/01/01 14:06:23        501  114      CONNECT       // answer
02/01/01 14:06:27        501  114      RELEASE       // release
02/01/01 14:06:27        114           ADA PEND      // ADA must be cleared at source

02/01/01 14:10:12   114                ADA CLEAR     // clear
```

Calls from Office Phone to Office Phone

office phone call to office phone

answer
release

```
02/01/01 14:19:39        501  502      ADMIN CALL    // office phone call to office phone
02/01/01 14:19:43        501  502      CONNECT       // answer
02/01/01 14:19:46        502  501      RELEASE       // release - org/destination field order is variable
                                                     // office phone that hangs up first is org
```

office phone call to office phone

abandon

```
02/01/01 14:19:56        501  502      ADMIN CALL    // office phone call to office phone
02/01/01 14:19:59        501  502      ABANDON       // abandon
```

office phone call to office phone

answer
hold
reconnect
release

```
02/12/01 11:54:37        501  502      ADMIN CALL    // office phone call to office phone
02/12/01 11:54:40        501  502      CONNECT       // answer
02/12/01 11:55:00        501           HOLD          // hold
02/12/01 11:59:19        501           RECON HOLD    // reconnect
02/12/01 12:00:24        501  502      RELEASE       // release
```


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office phone call to office phone

answer
hold
call to 3rd party
transfer
3rd party answer
release

02/12/01 13:51:17	501 502	ADMIN CALL	// office phone call to office phone
02/12/01 13:51:18	501 502	CONNECT	// answer
02/12/01 13:51:25	501	HOLD	// hold
02/12/01 13:51:33	501 503	ADMIN CALL	// office phone call to 3rd party
02/12/01 13:51:38	501	TRANSFER	// transfer
02/12/01 13:51:38	502 503	ADMIN CALL	// office phone call to 3rd party
02/12/01 13:51:44	502 503	CONNECT	// 3rd party answer
02/12/01 13:51:51	502 503	RELEASE	// release

office phone call to office phone

answer
bump
release

02/12/01 12:14:55	502 503	ADMIN CALL	// office phone call to office phone
02/12/01 12:14:57	502 503	CONNECT	// answer
02/12/01 12:15:13	501 502	BUMP	// bump
02/12/01 12:15:33	501 502	RELEASE	// release

office phone call to office phone

answer
join
release

02/12/01 12:19:28	502 503	ADMIN CALL	// office phone call to office phone
02/12/01 12:19:30	502 503	CONNECT	// answer
02/12/01 12:19:37	501 502	JOIN	// office phone call to 3rd party
02/12/01 12:19:37	501	CONFERENCE	// conference
02/12/01 12:19:56	503	CONF END	// conference end
02/12/01 12:19:59	502 501	RELEASE	// release

office phone call to office phone

answer
join queue
release
answer
release

02/12/01 12:29:13	502 503	ADMIN CALL	// office phone call to office phone
02/12/01 12:29:15	502 503	CONNECT	// answer
02/12/01 12:29:24	501 502	ADMIN CALL	// office phone call to office phone
02/12/01 12:29:34	502 503	RELEASE	// release
02/12/01 12:29:34	501 502	CONNECT	// answer
02/12/01 12:29:49	501 502	RELEASE	// release

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office phone conference call to office phone

answer
hold
call to 3rd party
3rd party answer
conference
conference end
release

02/12/01 12:05:03	501 502	ADMIN CALL	// office phone call to office phone
02/12/01 12:05:17	501 502	CONNECT	// answer
02/12/01 12:05:25	501	HOLD	// hold
02/12/01 12:05:31	501 503	ADMIN CALL	// office phone call to 3rd party
02/12/01 12:05:34	501 503	CONNECT	// 3rd party answer
02/12/01 12:05:40	501	CONFERENCE	// conference
02/12/01 12:05:45	501	CONF END	// conference end
02/12/01 12:06:17	502 503	RELEASE	// release

Office Phone Originated Paging

office phone handsfree call to station

originate
release

02/01/01 14:25:33	501 101	CONNECT	// office phone handsfree call to station -originate
02/01/01 14:25:38	501 101	RELEASE	// release

office phone handsfree call to station - hold

originate
hold
reconnect
release

03/20/01 14:25:33	501 101	CONNECT	// admin handsfree call to station -originate
03/20/01 14:25:38	501	STA HOLD	// hold
03/20/01 14:25:42	501	STA HLD RC	// reconnect
03/20/01 14:25:45	501 101	RELEASE	// release

office phone group page

originate
release

02/01/01 14:28:47	501 1	PAGE	// office phone group page – originate // (destination field= group #)
02/01/01 14:28:50	501 1	PAGE REL	// release

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office phone all-call page

originate

release

02/01/01 14:28:47	501	0	PAGE	// office phone all-call page – originate // (destination field= group #; 0 for all-call)
02/01/01 14:28:50	501	0	PAGE REL	// release

office phone emergency group page

originate

release

02/01/01 14:34:34	501	1	EMER PAGE	// office phone emergency group page - originate // (destination field= group #)
02/01/01 14:34:37	501	1	EMER REL	// release

office phone emergency all-call

originate

release

02/01/01 14:36:33	501	0	EMER PAGE	// office phone emergency all-call - originate // (destination field= group #; 0 for all-call)
02/01/01 14:36:36	501	0	EMER REL	// release

office phone test group page

originate

release

03/01/01 09:25:17	501	TEST	PAGE	// office phone test group page – originate
03/01/01 09:25:21	501	TEST	PAGE REL	// release

office phone temp group page

originate

release

03/01/01 09:30:15	501	102	TEMP ADD	// temp page add station 102
03/01/01 09:30:29	501	110	TEMP ADD	// temp page add station 110
03/01/01 09:30:31	501	TEMP	PAGE	// office phone temp group page – originate
03/01/01 09:30:37	501	TEMP	PAGE REL	// release

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office phone originated schedule on
office phone originated schedule off

```
03/01/01 10:32:13    501   1      SCHED ON     // office phone originated schedule on
                                                // destination field = schedule number
03/01/01 10:32:17    501   1      SCHED OFF    // office phone originated schedule off
```

PC originated schedule on
PC originated schedule off

```
03/01/01 10:32:23    PC    1      SCHED ON     // PC originated schedule on
03/01/01 10:32:28    PC    1      SCHED OFF    // PC originated schedule off
```

input originated schedule on
input originated schedule off

```
03/01/01 10:32:36    INPT  1      SCHED ON     // input originated schedule on
03/01/01 10:32:37    INPT  1      SCHED OFF    // input originated schedule off
```

office phone originated auto schedule on
office phone originated all schedules off

```
03/01/01 10:33:11    501  ALL     SCHED AUTO   // office phone originated auto schedule on
03/01/01 10:33:15    501  ALL     SCHED OFF    // office phone originated all schedules off
```

PC originated auto schedule on

```
03/01/01 10:33:23    PC   ALL     SCHED AUTO   // office phone originated auto schedule on
```

system originated auto schedule on

```
03/01/01 10:33:23    AUTO ALL     SCHED AUTO   // system originated auto schedule on
                                                // (at midnight)
```

system originated schedule off

```
03/01/01 10:33:23    AUTO   1     SCHED END    // system originated schedule off
                                                // (after last event)
```

scheduled event on
scheduled event off

```
03/05/01 08:20:17    102  321     EVENT ON     // scheduled event on
                                                // originator field = stt
                                                // s: schedule number, tt: tone number
                                                // destination field= bitmap of group numbers
                                                // bitmap = 87 65 43 21
                                                // (321 = 0321 = 00 11 10 01)
03/05/01 08:20:20    102  321     EVENT OFF    // scheduled event off
```


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office phone originated fire tone on
office phone originated fire tone off

```
02/12/01 09:13:10       501         FIRE          // office phone originated fire tone
02/12/01 09:13:13       501*        FIRE OFF      // fire tone off
```

input originated fire tone on
input originated fire tone off

```
02/12/01 09:13:33       INPT        FIRE          // input originated fire tone
02/12/01 09:13:34       INPT*       FIRE OFF      // fire tone off
```

office phone originated tornado tone on
office phone originated tornado tone off

```
02/12/01 09:13:10       501         TORNADO       // office phone originated tornado tone
02/12/01 09:13:13       501*        TRNADO OFF    // tornado tone off
```

input originated tornado tone on
input originated tornado tone off

```
02/12/01 09:13:33       INPT        TORNADO       // input originated tornado tone
02/12/01 09:13:34       INPT*       TRNADO OFF    // tornado tone off
```

office phone originated time tone on
office phone originated time tone off

```
02/12/01 09:13:10       501         TIME          // office phone originated time tone
02/12/01 09:13:13       501*        TIME OFF      // time tone off
```

input originated time tone on
input originated time tone off

```
02/12/01 09:13:33       INPT        TIME          // input originated time tone
02/12/01 09:13:34       INPT*       TIME OFF      // time tone off
```

office phone originated all clear tone on
office phone originated all clear tone off

```
02/12/01 09:13:10       501         ALL CLEAR     // office phone originated all clear tone
02/12/01 09:13:13       501*        ALLCLR OFF    // all clear tone off
```

input originated all clear tone on
input originated all clear tone off

```
02/12/01 09:13:33       INPT        ALL CLEAR     // input originated all clear tone
02/12/01 09:13:34       INPT*       ALLCLR OFF    // all clear tone off
```

input originated microphone on
input originated microphone off

```
02/12/01 09:13:33       INPT        MIC ON        // input originated microphone on
02/12/01 09:13:34       INPT        MIC OFF       // microphone off
```


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input originated night ring tone on
input originated night ring tone off

02/12/01 09:13:33	INPT	NIGHT RING	// input originated night ring tone
02/12/01 09:13:34	INPT *	NT RNG OFF	// night ring tone off

input originated door tone on
input originated door tone off

02/12/01 09:13:33	INPT	DOOR	// input originated door tone
02/12/01 09:13:34	INPT *	DOOR OFF	// door tone off

input originated time sync

02/12/01 09:13:33	INPT	TIME SYNC	// input originated time sync (sets time to 02:00:00)

office phone originated crisis mode on
office phone originated crisis mode off

02/01/01 14:45:46	501	CRISIS ON	// office phone originated crisis mode on
02/01/01 14:46:13	501	CRISIS OFF	// office phone originated crisis mode off

input originated crisis mode on
input originated crisis mode off

02/01/01 14:50:32	INPT	CRISIS ON	// input originated crisis mode on
02/01/01 14:50:35	INPT	CRISIS OFF	// input originated crisis mode off

auto crisis mode off

02/02/01 00:00:00	AUTO	CRISIS OFF	// system originated crisis mode off // (at midnight)

input originated night mode on
input originated night mode off

02/01/01 14:50:32	INPT	NIGHT MODE	// input originated night mode on
02/01/01 14:50:35	AUTO	NIGHT OFF	// input originated night mode off

auto night mode on

02/02/01 17:00:00	AUTO	NIGHT MODE	// system originated night mode on // (at programmed end of day)

auto night mode off

02/03/01 08:00:00	AUTO	NIGHT OFF	// system originated night mode off // (at programmed beginning of day)

input originated time group on
input originated time group off

02/01/01 14:50:32	INPT	1	TIMGRP ON	// input originated time group on (dest = time group #)
02/01/01 14:50:35	INPT	1	TIMGRP OFF	// input originated time group off

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input originated holiday mode on
input originated holiday mode off

```
02/01/01 14:50:32    INPT          HOLIDAY ON    // input originated holiday mode on
02/01/01 14:50:35    AUTO          HOLDAY OFF    // input originated holiday mode off
```

auto holiday mode on

```
02/02/01 00:00:00    AUTO          HOLIDAY ON    // system originated holiday mode on
                                                 // (at midnight at beginning of holiday)
```

auto holiday mode off

```
02/03/01 00:00:00    AUTO          HOLDAY OFF    // system originated holiday mode off
                                                 // (at midnight at end of holiday)
```

test mode on
test mode add
test mode delete
test mode off

```
02/12/01 10:11:12    501  101      TEST ON       // test mode on
02/12/01 10:11:14    501  102      TEST ADD      // test mode add
02/12/01 10:11:14    501  110      TEST ADD      // test mode add
02/12/01 10:11:22    501  101      TEST DEL      // test mode delete
02/12/01 10:11:22    501  109      TEST DEL      // test mode delete
02/12/01 10:11:23    501  110      TEST OFF      // test mode off
```

auto test mode off

```
02/13/01 00:00:00    AUTO  101     TEST DEL      // auto test mode delete (at midnight)
02/13/01 00:00:00    AUTO  109     TEST DEL      // auto test mode delete
02/13/01 00:00:00    AUTO  110     TEST OFF      // auto test mode off
```

relay on
relay off

```
03/01/01 10:25:02          1       RELAY ON      // relay on
                                                 //(destination field = relay number)
03/01/01 10:25:11          1       RELAY OFF     // relay off
```

system originated auto relays on

```
02/02/01 00:00:00    AUTO  ALL     FRELAY AUT    // system originated relays to auto
                                                 // (at midnight)
```

relay forced on
relay forced off
relay forced auto

```
03/01/01 10:25:02          1       FRELAY ON     // relay forced on
                                                 // (message: FRELAY = Forced RELAY)
                                                 // (destination field = relay number)
03/01/01 10:25:11          1       FRELAY OFF    // relay forced off
03/01/01 10:25:11          1       FRELAY AUT    // relay forced auto
```


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office phone originated aux on
office phone originated aux off

```
03/10/01 09:18:42    501    1    AUX ON     // office phone originated aux on
                                             // (dest = aux #)
03/10/01 09:18:48    501    1    AUX OFF    // aux off
```

pc originated aux on
pc originated aux off

```
03/05/01 15:08:21    PC     1    AUX ON     // pc originated aux on
                                             // (dest = aux #)
03/05/01 15:08:23    PC     1    AUX OFF    // aux off
```

input originated aux on
input originated aux off

```
03/05/01 15:05:33    INPT   1    AUX ON     // input originated aux on
                                             // (dest = aux #)
03/05/01 15:05:34    INPT   1    AUX OFF    // aux off
```

source monitor on
source monitor off

```
03/05/01 15:10:16                  501
      MON ON                                // source monitor on
                                            // (dest = 1-3 = aux # or 4 = microphone)

03/05/01 15:10:18                  501
      MON OFF                               // source monitor off
```

system update from pc

```
03/05/01 14:07:21    PC     SYS UPDATE     // system has been updated
```

enable wiring fault detection
disable wiring fault detection

```
07/17/02 10:24:21    501    FAULT ENA      // fault detection enabled
07/17/02 10:24:25    501    FAULT DIS      // fault detection disabled
```

wiring fault detected

```
07/17/02 10:24:30          125  WIRE FAULT      // wiring fault detected
```

wiring fault fixed

```
07/17/02 10:24:33          125  FAULT FIX  // wiring fault fixed
```

admin originated wiring fault individual clear

```
07/17/02 10:24:35          501  125  FAULT CLR      // individual fault indicator cleared
```


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admin originated wiring fault clear all

07/17/02 10:24:50 501 ALL FAULT CLR // all fault indicators cleared

pc originated wiring fault individual clear

07/17/02 10:25:51 PC 125 FAULT CLR // individual fault indicator cleared

pc originated wiring fault clear all

07/17/02 10:26:06 PC ALL FAULT CLR // all fault indicators cleared

* If the tone is programmed to have a fixed duration, and the duration expires prior to Input or Dial Code release, then this field will state AUTO.

Valcom MultiPath™ System Messages

System Message #	Description	Data A	Data B
SYSMSG-000	System Reboot	0000	0000
SYSMSG-001	Default Program Reload	0000	0000
SYSMSG-002	Checksum Error	Saved Checksum	Computed Checksum
SYSMSG-003	PIA Setup Incorrect	PIA Number	PIA Port Number
SYSMSG-004	Analog Bus Not Available	0000	0000
SYSMSG-005	Administration Phone Could Not Access DTMF Receiver	0000	0000
SYSMSG-006	Administration Phone Could Not Access DT Generator	0000	0000
SYSMSG-007	Node Request Failed	0000	0000
SYSMSG-008	Board Is No Longer In Service	0000	Board Address
SYSMSG-009	(not used)		
SYSMSG-010	(not used)		
SYSMSG-011	(not used)		
SYSMSG-012	(not used)		
SYSMSG-013	Code in Ram has been Recopied	0000	0000
SYSMSG-014	Address error during getnode	Address	0000
SYSMSG-015	Address error during putnode	Address	0000
SYSMSG-016	Board Returned To Service	Address	Board Address

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ANI Call Routing

Some phone systems offer a feature called ANI (automatic number identification) call routing. ANI call routing uses caller ID information to route calls to specific system telephones. Valcom MultiPath™, uses the following format to distinguish call priority and origin:

000-**200**-0101 (the 200 in the caller ID identifies a **normal** call, 101 is simply the origin's architectural number)
000-**500**-0101 (the 500 in the caller ID identifies an **emergency** call, 101 is simply the origin's architectural number)

ANI programming may be used to route calls based upon the CLID data.

Example 1: A teacher in room 101 presses the call button in their classroom to initiate a normal call-in. The caller ID information will read 000-**200**-0101. ANI may be used to route this call to the administration staff because it is a normal call-in.

Example 2: A teacher in room 101 presses the call button in their classroom to initiate an emergency call-in. The caller ID information will read 000-**500**-0101. ANI may be used to route this call to the administration staff ***and principal*** because it is an emergency call-in.

PIN Codes for outgoing calls

Some phone systems allow users to dial personal or system pin codes to access particular CO lines.

Example: The teacher in a classroom with a phone may not have access to the Valcom MultiPath™ system. However, the principal may be in that classroom and using his pin code, access the paging system to make an announcement.

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Real Time Ringing

Some phone systems will allow real time ringing, which means they look at the time cycle for the ringing and follow that cadence.

Example: When a teacher presses her call-in switch in normal mode, the Valcom MultiPath sends an industry standard ring cadence to the CO port (1 second on, 4 seconds off). The staff knows this is a normal call-in just by listening to the ring cadence.

Example: When a teacher presses her call-in switch in emergency mode, the Valcom MultiPath sends a special ring cadence to the CO port (2 seconds on, 2 seconds off). The staff knows this is an emergency call-in by the new urgent ring cadence.

C.O. Line Access

Valcom MultiPath may have up to 4 ports connected to the phone system. Remember that in Valcom MultiPath programming each port may be assigned a level of access (levels 1, 2 or 3. Each level corresponds to accessibility of a particular feature set.

Example: Valcom MultiPath is connected to C.O. ports 5, 6, 7, and 8.

Valcom MultiPath	*Phone System*	Co Line Access
Level 1 (Admin 1)	Line 5	Administrative Help Staff (access Line 5)
Level 2 (Admin 2)	Line 6	Administrative Secretary (access Line 6)
Level 3 (Admin 3)	Line 7	Administrative Manager (access Line 7)
Level 3 (Admin 4)	Line 8	Principal (access Line 8)

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Distinctive Ringing

Some phone systems have distinctive ringing programming. There may be two options:

1- Distinctive ringing per phone
2- Distinctive ringing per C.O. Line

Suggestion: By programming the phone system for distinctive ringing on the C.O. line ports connected to Valcom MultiPath™, the school staff will be able to discern between outside calls and Valcom MultiPath™ calls.

Speed Dial Programming

Some phone systems offer speed dial capability.

Valcom MultiPath has many dial codes to access the features of the system.

Examples:
##1##1	dial tornado tone
201	access classroom 201
#111	group 1
#41*	control a relay (lock a door)
##9*	crisis mode on
##9#	crisis mode off

Suggestion: Program speed dials under the feature buttons on the telephones to access rooms, control doors, groups and system dial up functions at the touch of a button. Also suggest placing a DSS console beside the main administrative phone so the school can have buttons for every individual classroom, all the relay controls, tones, schedules, etc. This will dramatically improve the ease of use.

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ADA station COS – When a station is designated as an ADA station, calls from that station are always treated as an emergency call. If a V-CPU4 relay is designated as an ADA relay, it will close after the ADA call is answered. This relay will remain closed until an ADA clear is performed via a designated V-URI input. If the LED output associated with the V-URI input being used for a station's ADA clear is programmed for a ring rate of "fast flash" and a connect rate of "slow flash" then the LED output will also provide a steady on function until the ADA call is cleared. All ADA station activity is recorded on system SMDR.

Automatic Time Schedules – System time schedules may run in one of 2 modes of operation. When a schedule or schedules is/are forced on via a basic input, only those schedules will be active. *Schedules forced on via basic input will be on until all basic inputs programmed to force schedules are released after which automatic schedule operation will resume.* When a schedule or schedules is/are forced on via a dial code, or through the Administrative Tool, those schedules will be active in addition to the automatic operation of all of the other schedules. Schedules that are forced on will run regardless of which days of the week are associated with them. When *Automatic Time Schedules* are utilized, schedules will run simultaneously following their weekday and/or holiday assignments. Schedules that are forced on via dial code or through the Administrative Tool return to automatic operation at midnight each day.

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Basic Input – The six switch inputs on the V-CPU4 are considered "basic inputs". V-URI input may also be used as basic inputs. A basic input may be assigned in programming to perform any of the following functions:

Off – No function
Fire – Activate the fire tone system wide
Tornado – Activate the tornado tone system wide
Time – Activate the time tone system wide
All Clear – Activate the all-clear tone system wide
Microphone – Activate the microphone
Night Ring – Activate the night ring tone system wide
Door – Activate the door tone system wide
Set system time – reset system time to 2 a.m.
Crisis Mode – enable crisis mode
Night Mode – enable night mode
Force Audio to Time Group X – send the "force time group audio" selected under "Options" to time group X
Holiday Mode – enable holiday mode (holiday schedules will run)
Force Schedule 1 – Force schedule 1 on (disable all automatic schedules)
Force Schedule 2 – Force schedule 2 on (disable all automatic schedules)
Force Schedule 3 – Force schedule 3 on (disable all automatic schedules)
Force Schedule 4 – Force schedule 4 on (disable all automatic schedules)
Force Schedule 5 – Force schedule 5 on (disable all automatic schedules)
Force Schedule 6 – Force schedule 6 on (disable all automatic schedules)
Force Schedule 7 – Force schedule 7 on (disable all automatic schedules)
Force Schedule 8 – Force schedule 8 on (disable all automatic schedules)
Aux Sources Off – Turn off all aux source distribution via the Admin Tool
Control music distribution to music group 1 (emulates play/stop in Admin Tool)
Control music distribution to music group 2 (emulates play/stop in Admin Tool)
Control music distribution to music group 3 (emulates play/stop in Admin Tool)

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Bump call in progress – When an office telephone with level 3 access calls a station that is busy talking to another office telephone, the level 3 phone can connect to the busy station and disconnect the originally connected office telephone by dialing ∗9.

Confirmation tone – A tone provided to a station speaker indicating that the associated call button has been successfully activated.

Crisis mode – When crisis COS is enabled by dialing ##9∗ or shorting a designated V-URI input, all calls in queue are dropped. Following this purging of queued calls, only emergency calls will be recognized by the system.

Day/Night Mode – The system allows for different operation during the day than at night. The time that the system enters these time sensitive modes is programmable.

Hunt Group – Office telephones may be assigned to one of 3 hunt groups. When a station places a call (via call button) to a busy office telephone, and that office telephone is part of a hunt group, the call will automatically be forwarded to the next available office telephone in that group.

Join call in progress – When an office telephone with level 3 access calls a station that is busy talking to another office telephone, the level 3 phone can connect to the busy station and conference with originally connected office telephone (and the station) by dialing ∗8.

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Join queue – When an office telephone with level 3 access calls an office telephone that is busy on a call *to another office telephone*, the level 3 phone can join the queue of the busy office telephone ∗7.

Loop Start Trunk Port – (C.O. Port) A port on a telephone system that is intended for direct connection to a loop start telephone line.

Office phone access levels – Programmable levels of restriction/access that can be assigned to any of the office telephones. Refer to the following chart for details:

Level 1	Level 2	Level 3
Dial any station	All Level 1 functions	All Level 2 functions
Group page	Emergency all call	Bump conversation
All call page	Manual relay control	Join conversation
Manipulate call-in queue	Manual schedule control	Test Room Commands
Call pickup		
Call forward		
Program sources on/off		

Privacy Tone – A tone that sounds over a handsfree talkback speaker every 15 seconds to discourage eavesdropping.

Pre Announce Tone – A tone that sounds over a speaker indicating that the speaker is now active and an announcement will follow.

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Rack Units – A unit of measure indicating the space occupied by 19” rack mounted equipment. One rack unit is 1 ¾ inches.

Part Number	Rack Units
VCCRK	7
VCPDP	3

Security Call – When call button’s class of service is defined as security, activation of the call button will result in the following:

1) The VCLED will display call information
2) The office telephone will ***not*** ring
3) SMDR will document the call
4) If a V-CPU4 relay is designated as a security relay, it will close when the security call is placed. This relay will remain closed until the designated office telephone answers the call.
5) All ADA station activity is recorded on system SMDR.

System Password – A user definable password that is required to allow connection of the Valcom MultiPath™ Programming Tool or Administrative Tool to the system.

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Time Groups – The Valcom MultiPath™ offers 8 time groups. Any or all of the system stations may be added to any or all of the time groups. These groups are used for the purpose of event distribution (time tones, aux source audio) through the 8 time schedules. ***Note – In early versions of V-CPU4 firmware, if aux source 1 is enabled, then time group 8 will not be available. If aux source 2 is enabled, then time group 7 will not be available. If aux source 3 is enabled, then time group 6 will not be available.***

Test Rooms – The test room feature is intended to minimize page and tone disruptions in rooms where students have been assembled for testing (such as SAT tests). Test rooms may be defined via dial code #85 as a sort of temporary page group. When a station is defined as a test station, it will be excluded from all call and group pages except through dial code #36 which will enable a one way call to all test station speakers, emergency all call or emergency group pages.

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Appendix A – V-CPU4 LAN Programming Setup

V-CPU4 CPU cards that do not have a MAC address barcode label do not support Ethernet connectivity despite the presence of an Ethernet Port.

To prevent causing possible conflicts and network problems, no devices should be connected to any LAN without the knowledge and assistance of the local IT Manager. IP numbers **must** be obtained from the IT Manager.

Install the Valcom IP Tool

1. Insert the Valcom IP Tool CD-ROM into the CD-ROM drive.

2. Use Windows Explorer to view the contents of the CD-ROM, and then double-click the **SETUP.EXE** program.

3. Follow the prompts (typical Windows installation) to install the program.

4. Click **Finish** to complete the installation.

Gather Network Information

The following information is required from the Network Administrator:

- The Class C subnet number
- The default gateway IP address
- The static IP address for the V-CPU4 being added to the network.

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Connect the V-CPU4 to the LAN

It's important to note that the V-CPU4's Ethernet port is a fixed 10 Mbps half duplex port.

Connect the V-CPU4 to the network using a standard RJ45 network cable connected to a network switch, and connect your PC to the same subnet of the network,

Or

Connect directly from your computer to the V-CPU4 with a network **crossover** cable.

Configure the Valcom IP Tool's Subnet Information

1. Start the Valcom IP Tool program.

2. To begin configuring a subnet, click on the Network Tool button on the toolbar. This will bring up the Networks dialog box where the configuration takes place.

3. Click the Add button. This brings up the subnet configuration dialog box.

4. Enter the information for the subnet.

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Program the V-CPU4 Network Parameters

The steps to setting LAN parameters in a new V-CPU4 are:

1. Scan the network using the Valcom IP Tool software

   Click the **Scan** button to find the new V-CPU4 in the local network.

2. Select the V-CPU4

   In the left-hand pane (tree view), select the V-CPU4 device to which you wish to assign the new IP address.

3. Assign the new device an IP address

   In the right-hand pane, type the new IP address into the **IP Address** text box.

4. Name the new device (optional)

   In the right-hand pane, type the new name into the **Name** text box.

5. Update the device

   After the IP address or the name of a device is changed, the device must be updated by clicking the **Update Device** button in the right-hand frame.

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Changing the V-CPU4's IP Number

LAN Connection - Current IP Number or Subnet is Known

1. Plug a PC into the same subnet as the V-CPU4 and give it valid IP and Gateway numbers for the subnet (Note: changing a PC's IP number may require use of your Windows operating system CD).

2. Using the Valcom IP Tool, scan for the V-CPU4.

3. Select the V-CPU4, change its IP number, and update the device.

Serial Connection Option

The Valcom IP Tool, with a serial connection to the V-CPU4, may be used to set or change the system IP number.

1. Connect between PC and V-CPU4 using a Null Modem cable (direct connect)

2. Bring up the Valcom IP Tool

3. Select: "File", "Serial Connection"

   The program will search the COM ports for a V-CPU4

4. Enter the system password

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5. Select the V-CPU4

   In the left-hand pane (tree view), select the V-CPU4 device to which you wish to assign the new IP address.

6. Assign the new device an IP address

   In the right-hand pane, type the new IP address into the **IP Address** text box.

7. Assign the new device a Gateway address

   In the right-hand pane, type the new gateway address into the **Gateway Address** text box.

8. Update the device

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Valcom IP Tool Minimum System Requirements

The Valcom IP Tool has very few requirements in order to run. The system minimums are outlined below.

Hardware
Minimum required to support the Operating System

Operating System
Windows XP or Higher

Network
10 Mbps connection

V-CPU4 LAN Factory Defaults

The factory defaults for the V-CPU4 are:

Network defaults	
IP Address	1.1.1.1

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Appendix B – System Programming Templates

The following pages contain programming templates to aid in organizing the information required to program the Valcom MultiPath™ system. *Please make additional copies as necessary*.

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Station Programming Template

						Call Button - Enter D for Day N for Night							
Station #	Supervised?	Architectural Number	Caller ID	Admin Day	Admin Night	Normal Only	Security	Normal/Emerge ncy	Urgent/Emerge ncy	Overhead Ring	Emergency O...	Ignore	Time Groups
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8
				1 2 3 4	1 2 3 4								1 2 3 4 5 6 7 8

Station Programming for Time Groups Template

Note - In early versions of V-CPU4 firmware, If aux source 1 is enabled, then time group 8 will not be available. If aux source 2 is enabled, then time group 7 will not be available. If aux source 3 is enabled, then time group 6 will not be available.

			Time Groups							
Station #	Architectural Number	Caller ID	Time Group 1	Time Group 2	Time Group 3	Time Group 4	Time Group 5	Time Group 6 *(if available)*	Time Group 7 *(if available)*	Time Group 8 *(If available)*

Station Programming for Audio Groups Template

Station /Arch #	Audio Group																																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

Station /Arch #	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	72	71	72

Time Schedule Programming Template							
Schedule #	**Schedule Name**			**Schedule #**	**Schedule Name**		
Event Time	Tone/Aux Source	Duration	Time Group	Event Time	Tone/Aux Source	Duration	Time Group
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
			1 2 3 4 5 6 7 8				1 2 3 4 5 6 7 8
Schedule Run Days		M T W TH F S S H		**Schedule Run Days**		M T W TH F S S H	

Holiday Programming Template	
Holiday	Date

Number	Architectural #	Caller ID	Secondary Office Telephone	Access Level	Auto Answer	Voice Announce	Hunt Group
1							
2							
3							
4							

Day Night Timing Template		
	Day Mode Start Time	Night Mode Start Time
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Holidays		

Station/V-URI Relay and LED Programming Template

			V-URI Relay			V-URIs Output *R = Ring C = Connect*				
Station #	Architectural Number	Caller ID	V-URI Card	V-URI Relay	# Activates	V-URI Card	V-URI LED Number (1- 72)	Slow Flash	Fast Flash	On
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				
			1 2 3 4 5	1 2 3 4 5 6 7 8		1 2 3 4 5				

V-URI Input Programming Template - URI Card # 1 2 3 4 5

V-URI Input #	Basic Input															Security Input				DSS			Page Input			BGM Control		Call Station to Admin			ADA Clear
	Off	Fire	Tornado	Time	All Clear	Microphone	Night Ring	Door	Set System Time	Crisis Mode	Night Mode	Force Audio (1–8)	Holiday Mode	Force Schedule (1-8	Aux Sources Off	Admin # Day	Admin # Night	Activate relay (Y/N)	Input ID (0000-9999	Admin Day	Admin Night	Arch #	Admin #	Priority (E/N)	Group (1-72)	Aux Source	Arch #	Admin #	Priority (E/N)	Arch #	Arch #

V-CPU4 Relay Programming Template													
Relay #	Cycling					Follow Time Schedule #	Follow Time Group #	Security	Emergency	ADA	Wiring Fault	Card Fault
	Start Time HH:MM:SS	Stop Time HH:MM:SS	Duration On HH:MM:SS	Duration Off HH:MM:SS	Operation Days							
1					H S M T W T F S							
2					H S M T W T F S							
3					H S M T W T F S							
4					H S M T W T F S							
5					H S M T W T F S							
6					H S M T W T F S							
7					H S M T W T F S							
8					H S M T W T F S							