

DS-16

16 Channel Rack System Using DS1-SPL Cards Operation Manual

***Digital Video Motion Detector
DS-16***



DigiSpecTM

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INTRODUCTION:

Congratulations on your purchase of the DigiSpec DS-16 Digital Video Motion Detector. You are now the owner of one of the most innovative, precise and reliable video motion detectors available today. DigiSpec would like to personally thank you for your purchase and would like to provide you with additional information on this remarkable unit. The DS-16 utilizes a new technology developed by DigiSpec - Quantivision. This development divides a video image into over 262,144 pixels and analyses it 30 times per second, to assure instantaneous motion detection. By utilizing pipeline processing, the DS-16 handles millions of calculations per second, which greatly decreases the decision time and increases reliability.

Traditionally, motion detection has been used for surveillance and security applications. Special features such as the Black-out and Trace mode, as well as the Delta Effect allow security personnel to quickly ascertain and respond to suspect motion. These features and many more are just small examples of the innovation built into the product. This unit is perfect for indoor/outdoor, low light and difficult applications. Regardless of the job, the DS-16 can handle it.

The flexibility of this unit has been proven in a variety of environments. Machine vision systems have been developed within the industrial marketplace. The DS-Series has also been utilized to assist in ground breaking research in the Medical arena. The extreme sensitivity of this product allows very precise analysis of any video image. By utilizing the unit's RS-232 port and a personal computer, motion can be studied and plotted over time or output to a paper chart recorder to facilitate motion signature analysis. The limit of the DS-16 is limited only to the creativity of the user.

Regardless of your application the DS will open up numerous possibilities for you. This ground breaking technology is representative of our corporate commitment to incorporate Quality, Value and Innovation in every product we manufacture. We are and will continue to be **The Leader in Digital Video Motion Detection Technology.**

CONNECTING THE VIDEO:

TYPES OF CAMERAS:

PRECAUTIONS: The DS-16 functions best with high-quality video cameras. Cameras must be securely locked down so the picture is stable and jitter free. If the picture jitters or the Video Motion Detector's (VMD) character display jitters, the VMD may false trigger. If the camera has any sync or phase adjustments, try adjusting these.

To select the right camera for your application (ie. indoor, outdoor, low light, no light), you should consider the advantages and disadvantages of each type.

TUBE TYPE: The DS-16 operates well with all high quality tube type cameras. A tube type camera may be preferable in environments with a lot of fluorescent light. Tube type cameras should primarily be used in indoor applications.

CCD: High quality CCD cameras will work well with the DS-16. The higher the resolution, the more precise the motion detection. CCD cameras work equally well in both indoor and outdoor environments. It is recommended that B&W CCD cameras be used in outdoor applications due to their increased resolution. B&W low light level CCD cameras should be used in low light conditions. CCD cameras are sensitive to Infrared (IR) light and can be used for night vision with the aid of an Infrared Illuminator.

IR: Infrared cameras should be used for no light applications or very sensitive night vision applications. IR cameras are better equipped for night vision than CCD cameras.

CABLE:

DESCRIPTION: It is important that you use the proper cable type and installation procedures when installing the cameras and your VMD. Make sure you use standard RG-59U coaxial cable for video transmission.

When installing, make sure that you do not run the cable near any power lines for they may cause interference in video transmission. If you are cabling between floors or long distances, use conduit to protect the cable from noise. Proper protection of the video cable from external power interference,

weather, and water is important to insure a clear transmission of video signal and reliable motion detection.

Grounding problems between the various components of a video system may cause noise or hum bars to appear in the video image. This must be eliminated by properly grounding all equipment to an earth ground and making sure all shields are intact in all video coaxial cables. Grounding problems will effect the reliability of motion detection.

LIGHTING & ENVIRONMENTAL CONDITIONS:

Unless a camera is in a controlled environment, fluctuations in conditions will occur. The DS-16 provides flexibility to configure the Video Motion Detector for two separate sets of conditions.

DAY/NIGHT: The DS-16 works in both day and night environments. But, each may require different configurations. The DS-16 provides two sets of settings that can be programmed by the user. One group of settings can be used for day settings and the other for night settings or for whatever other conditions the user wishes to set them for. Night settings require higher sensitivity, lower trigger levels, and shorter tracking times, making the DS-16 more sensitive to motion. The Day/Night mode may be toggled from day to night by giving a relay closure to ground on the Day/Night input - J3 -. See page 7,9,18 for more information.

FLORESCENT LIGHTING: Gradual or sudden lighting changes, video noise, intermittence or glitches in video lines, or power surges can be ignored by the DS-16. To compensate for such occurrences a balance must be reached in the configuration of the motion criteria. Fluorescent light may result in high-speed flickering when a solid state CCD camera (rather than a tube type) is used. To remedy this, try different lights or use a tube-type camera.

VIDEO INPUT/OUTPUT:

The video input and output are located on the rear of the unit (see Figure 1). The video input connects to the video source via the left BNC connector. The video output connects to a display, recording device, switcher or other equipment via the right BNC connector. Both the input and output are 1 Vpp into 75 ohms unbalanced EIA standard RS-170A/NTSC video format or CCIR/PAL video format.

CONNECTING THE ALARMS:



FIGURE 1.

ALARM INPUTS:

The DS-16 comes equipped with 4 female DB 25 pin connectors. One for alarm inputs, three for alarm outputs, and one male DB-25 is for RS-232 control.

There are 16 alarm inputs, one for each channel, and one Day/Night input. The alarm inputs are alarm outputs from external devices sending the alarm signal to the DS-16. These alarm inputs could be an alarm signal from a PIR device, magnetic contact on a door, a window foil etc. The alarm inputs are configured as normally open. The dedicated alarm inputs are located on J4, the fourth DB connector, and the Day/Night input is located on J3, the third DB connector (see above diagram).

DAY/NIGHT:

The Day/Night input externally switches settings from day settings to night settings when it receives a closure to ground. Otherwise, if left open, day settings will be effective. An external photocell could also be used to switch from day to night settings or switch at a certain time of day via the internal programmable timer of each channel. Settings can also be switched with the DS-16's Day/Night key, but, if the external Day/Night input is connected to ground, it overrides the Day/Night key. In order for the external input to operate properly, the unit must first be set in Day mode with the Day/ Night key.

The following diagram and table shows the DB 25 pin connector pin assignments for the DS-16 alarm inputs:

DS-16 J4 DB25F-ALARM INPUTS

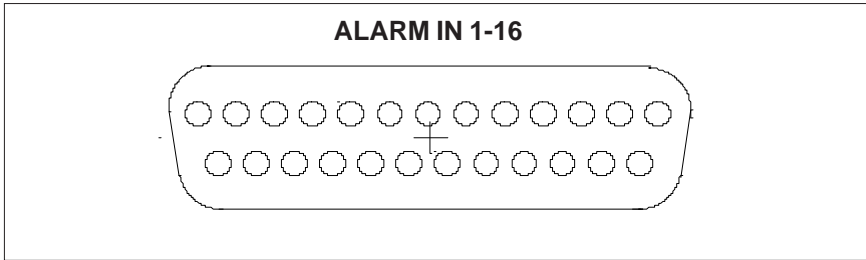


FIGURE 2.

PIN #	DB25F (J4)
1	ALMIN-8
2	ALMIN-9
3	GROUND
4	ALMIN-10
5	ALMIN-11
6	GROUND
7	ALMIN-12
8	ALMIN-13
9	GROUND
10	ALMIN-14
11	ALMIN-15
12	GROUND
13	ALMIN-16
14	ALMIN-7
15	GROUND
16	ALMIN-6
17	ALMIN-5
18	GROUND
19	ALMIN-4
20	ALMIN-3
21	GROUND
22	ALMIN-2
23	ALMIN-1
24	GROUND
25	GROUND

TABLE 1.

ALARM OUTPUTS:

The DS-16 has 16 dedicated alarm outputs, one for each channel (camera), and one universal alarm. All the alarm outputs are for use with external devices. The alarm outputs from the DS-16 are inputs to other devices. The 16 camera alarm outputs could be used as the alarm inputs to an external matrix switcher or multiplexer. These 16 alarm outputs could also be used to turn on lights, buzzers, or any other electronic devices you see fit to turn on in an alarming situation. The alarm outputs are true "Form C" and can be utilized as both Normally Open and Normally Closed .

There are three conditions where an alarm will be produced by the DS-16. The first condition is if a motion alarm occurs. The second condition is if the VMD receives an alarm from an external device as an alarm input. The third condition is if there is a video loss alarm. Only channels with enabled relay outputs will be capable of outputting alarms.

UNIVERSAL ALARM: The DS-16 also has a universal alarm output. An alarm will be output on the universal alarm if any alarming condition exists on any channel. This alarm output could be used in conjunction with a time lapse or event recorder to activate real time recording of the alarmed location. The Universal Alarm is located on J3, the third DB connector.

RS-232:

The DS-16 has an RS-232 DB25 male interface for system configuration that can be used in conjunction with an IBM compatible PC.

The following diagram and table shows the DB25 female pin connector pin assignments for the DS-16 alarm outputs:

DS-16 DB25F-ALARM OUTPUTS

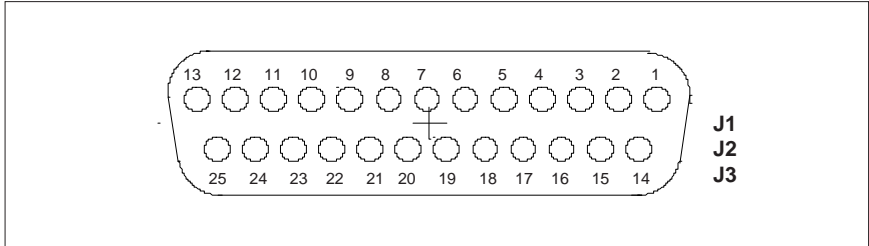


FIGURE 3.

PIN #	DB25F (J1)	D25F (J2)	DB25F (J3)
1	GROUND	GROUND	GROUND
2	N/O-14	N/O-8	N/O-2
3	COMMON-14	COMMON-8	COMMON-2
4	N/C-14	N/C-8	N/C-2
5	GROUND	GROUND	GROUND
6	N/O-15	N/O-9	N/O-3
7	COMMON-15	COMMON-9	COMMON-3
8	N/C-15	N/C-9	N/C-3
9	GROUND	GROUND	GROUND
10	N/O-16	N/O-10	N/O-4
11	COMMON-16	COMMON-10	COMMON-4
12	N/C-16	N/C-10	N/C-4
13	GROUND	GROUND	GROUND
14	N/C-13	N/C-7	N/C-1
15	COMMON-13	COMMON-7	COMMON-1
16	N/O-13	N/O-7	N/O-1
17	GROUND	GROUND	GROUND
18	N/C-12	N/C-6	N/C-UL
19	COMMON-12	COMMON-6	COMMON-UL
20	N/O-12	N/O-6	N/O-UL
21	GROUND	GROUND	GROUND
22	N/C-11	N/C-5	DNINP
23	COMMON-11	COMMON-5	GROUND
24	N/O-11	N/O-5	GROUND
25	GROUND	GROUND	GROUND

TABLE 2.

CONNECTING THE POWER:

RATINGS:

The minimum power requirements of the DS-16 are 100 - 240 VAC , 50/60 Hz Input and 5V DC @ 6 A or 30 Watts Output for both NTSC or PAL configurations. The unit will come configured for NTSC or PAL depending on which was purchased and cannot be configured by the user.

POWER SUPPLY:

An external UL/CSA approved universal power supply is provided with the DS-16. The 5VDC regulated at 4A is supplied via this power supply to the entire rack and all cards installed. This will accomodate a fully loaded rack however when a rack is not fully loaded a lower rated supply may be used.

PRECAUTIONS:

DO NOT ATTEMPT TO FIELD UPGRADE WITH POWER ON! The 5VDC INPUT IS NOT REVERSE VOLTAGE PROTECTED. IN THE EVENT THE USER REVERSES THE VOLTAGE, PERMANENT DAMAGE MAY OCCUR TO THE ENTIRE DS-16 AND ALL VMD CHANNELS INSIDE.

MANUAL OPERATION:

DS-16 FRONT PANEL:



FIGURE 4.

There are eight buttons on the front panel of the DS-16 which are used for programming and selecting options for each channel. Each of the four buttons on the top row has an LED above the switch that indicates its activity. The red LED on the Program button indicates that the DS-16 is in program mode. The yellow LED on the Select button also indicates that the unit is in program mode and that a channel has been selected. The red LED on the Alarm button indicates that alarms are enabled or disabled. The green LED on the Day/Night button indicates that the unit is in day mode when lit. The bottom row of four buttons with the directional arrows are used to move around the on screen prompts when configuring the system, i.e. to set up zone pattern configuration and change the value of the prompts.

The most common way of operating and configuring the DS-16 is from the front panel. Each channel has its own sensitivity, zone pattern, video, and alarm configurations. The DS-16 can also be programmed and controlled from a PC via RS-232 using DigiSpec's SETUP software.

DS-16 BUTTON DESCRIPTION:

PROGRAM BUTTON: The PROGRAM key is used to manually program the DS-16. Press the program key to start programming. The red PROGRAM LED will be lit. When you have completed programming, press the PROGRAM key to return to normal, and, the PROGRAM LED will turn off.

At any time during programming You may press the PROGRAM key to exit programming. All the settings that were programmed, will be saved to memory.

SELECT BUTTON: The SELECT key is used to page through the prompt screens. The yellow LED on the SELECT key will be lit during the programming cycle and will flash during the last prompt.

ALARM BUTTON: The Alarm key has five functions:

- a) It cancels all alarms if held for four seconds or longer. This also clears all trace memories and audio memory.

- b) It cancels the most recent alarm when pressed momentarily. It will cancel alarms one at a time initiating with the most recent alarm when multiple alarms exist. This also clears audio and trace memories on this channel.

- c) The red LED on the ALARM key will flash whenever any alarm has been triggered and will go off when the ALARM key is pressed.

- d) It enables and disables the unit to produce alarms. Push the alarm button once to enable the the unit to output alarms. The LED on the alarm button will be solid. If an alarm occurs on a channel the LED will flash. Push the alarm button a second time; the LED will be off and the alarm outputs will be disabled. The alarm button operates on all channels and will operate on alarm functions for the entire unit. To enable or disable individual alarms, use the Relay Hold feature.

- e) It will also toggle zones on and off during the zone pattern set-up.

DAY-NIGHT BUTTON: The DAY-NIGHT key is used to manually toggle between day and night settings. At any time during programming or normal operation, press this key to toggle. The green LED will be lit for day and be off for night. During programming "d" or "n" will be displayed in the bottom right-hand corner of the screen for confirmation.

ARROW BUTTONS: The four ARROW keys are used during programming to set variables and to move a cursor.

During programming, the ARROW UP and ARROW DOWN keys are generally used to select a prompt within a prompt page. The ARROW LEFT and ARROW RIGHT keys are then used to set that prompt, either increasing or decreasing a value, or sequencing through the possible settings for that prompt. The ARROW keys also move the cursor in that direction during the zone pattern set-up.

ARMING AND DISARMING:

To ARM and DISARM the VMD, press the ALARM button. The red LED will be lit if the unit is armed and off if the unit is disarmed. The unit must be armed to detect motion and produce alarms. When armed and subsequently alarmed, it will sound a buzzer sound and output an alarm in the form of a relay closure or open for the duration programmed in the Relay Hold time. To show the user that an alarm has occurred, the ALARM LED will flash and remain flashing. To clear this ALARM MEMORY feature, simply press the Alarm button. The unit will remain ARMED.

LED'S:

The DS-16 front panel is equipped with sixty four active LED's, four per channel. Each one has a particular function and alerts the user of the condition of the channel in question.



The LED's allow the user to readily determine the condition of each channel easing trouble-shooting. The following table shows the LED mode and the corresponding state or condition of the channel:

LED MODES

MODE	CONDITION
TOP RED ON SOLID TOP RED OFF TOP RED FLASHING	ALARM ENABLED ALARM DISABLED ALARM TRIGGERED
YELLOW ON SOLID	CHANNEL BEING SET UP
GREEN ON SOLID	CHANNEL ACTIVE
BOTTOM RED ON	RELAY ACTIVATED RELAY DEACTIVE
NO LED'S ON	SYSTEM FAILURE

Table 3

The last mode, where the green LED is flashing, is probably the most important. It notifies the user that something is wrong with the channel. It could be as simple as not having a camera physically connected, or, it could be something more serious like a bad channel. Trouble shooting problems will be further discussed in the trouble shooting section.

SELECTING A CHANNEL:

- 1) Press the PROGRAM key to start programming the DS-16 manually. This will light the red LED on the PROGRAM key. The yellow SET-UP LED will light on channel-1 or the last channel that was set.
- 2) Press the LEFT ARROW or RIGHT ARROW keys to select a channel. The yellow setup Led will be lit on the corresponding channel.
- 3) When the channel is selected, press the SELECT key. The green LED on the SELECT key will light. The selected channel then goes into set-up mode, and any alarm condition on that channel is cancelled.

VIEWING ON-SCREEN PROMPTS:

To view the on-screen prompts for a specific channel, a monitor must be connected to the video output of that channel. Each channel output will only display the prompts for that channel. If you are using a matrix switcher or sequential switcher with the DS-16, manually select the channel you wish to configure on the switcher first. Then select the channel on the DS-16 unit.

OPERATING REMOTELY VIA RS-232:

The DS-16 can be configured and operated remotely using the included PC based Setup software. This DSVM software sends system configurations via RS-232 to the unit.

PROGRAMMING THE DS-1SPL CARDS:

The DS1-SPL VMD cards have the same programming features as the DS1-PL standalone Digital Video Motion Detector. Refer to the included manual or download from www.digispec.com website.

PROGRAMMING AREA PATTERN:

When you select the programming of the definable areas you may move the cursor to anywhere on the screen via direction buttons. Pressing "Program" toggles between area selection or deselection. If the "Alarm" button is pressed then current mode of the cursor will change the next selection automatically. You can still change the current mode by pressing the "Program" button and toggle the mode. This allows for quick selection /or deselection of definable area.

EXPANDING THE SYSTEM:

The DS-16 Video Motion Detector is a flexible and expandable unit. Up to 128 DS1-SPL cards (Address 0-127) can be networked together in any number of racks.

SINGLE UNIT EXPANSION:

PLUG IN CARDS: The base DS-16 system comes with the DS-16 chassis with integrated controller. Modular Plug-In DS1-SPL Cards are available containing one channel of motion detection on each. Each unit can take a maximum of 16 cards, making a single unit system expandable up to 16 channels of motion detection.

Each card has to have a unique address setting which is programmable only via the On-screen programming mode while in the DS-16 Rack. If for some reason two cards have the same address then both will be accessed simultaneously disabling programming of either channel. This is prohibited and if occurs then you must refer to **“How to Change Address”** and **Figure 7**. If only two cards have the same address then just remove one of the duplicate address cards and program the remaining card with the proper address. For ease of operation the channels must be in sequential address from 0-15 for Rack 1, 16-31 for Rack 2 and so on.

MULTIPLE UNIT EXPANSION:

NETWORKING: As many as 8 DS-16 units can be networked together in a ring (version 5.05 or higher). The network must be operated with a PC, which must initiate and terminate the ring. The DS-Series uses standard RS-232C communications. Information sent from the PC host (i.e.. setup configurations) travels around the network and is passed through each unit. The unit for which a command is intended will read the command and others will ignore it. Each channel must be assigned a unique channel address. For the user to access a channel, the specific channel must be addressed. **Figure 6** is an example of a network ring.

NETWORK FAILURE: The network is simple in nature. If there is a problem, check to see if one of these conditions are present.

- 1) The PC host fails
- 2) One of the serial links is severed or is disconnected
- 3) One of the serial links is shorted

TYPICAL NETWORK RING ADAPTER

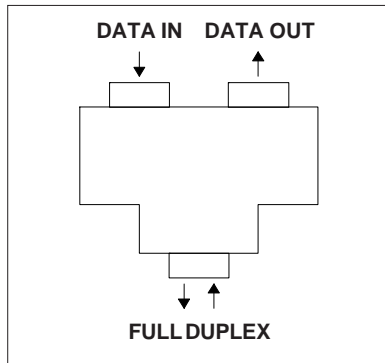


FIGURE 5

NETWORKING MULTIPLE UNITS

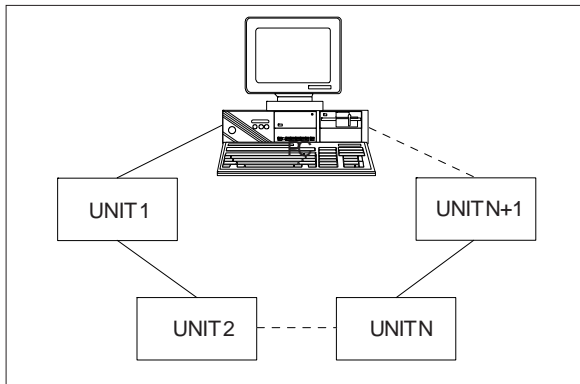


FIGURE 6

HOW TO CHANGE CARD ADDRESS:

To change any address you need to access each card via the DS-16 front key pad only. Ensure RS-232C control is switched off to enable the DS-16 keypad . In case of the RS-232C switch is ON, then use the DSVMD software on a PC to enable the DS-16 Keypad. The DS-16 can be expanded up to 8 Racks or 128 Addresses (0-127) on each DS1-SPL Card. No duplicate addresses are permitted. To change an address, you must pull out all cards in the rack and insert one by one and reprogram or change to the desired address. To open a rack to install or deinstall DS1-SPL Cards please consult **Figure 7**

REMOVE & INSERT CARDS:

To avoid damage to the unit.
Unplug the main power system.

FIGURE 7

1. 8x Screw Removal



2. Expose Front Panel



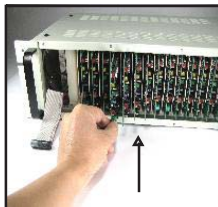
3. Disconnect Ribbon



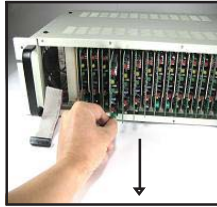
4. Pull In & Out Area



5. Pull In To Insert



6. Pull Out To Remove



7. Connect Ribbon



8. Power Up System



9. Verify Address Sequence



10. 8X Screws Assembly Front Panel



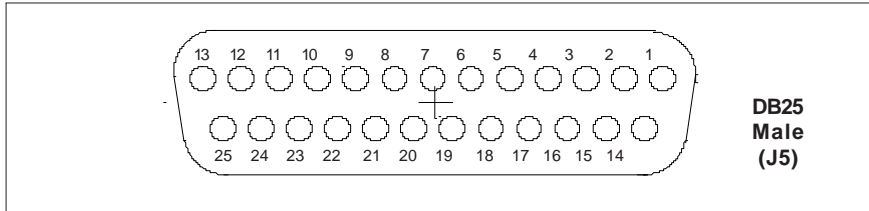
RS-232C PORT:

Each DS-16 comes equipped with an RS-232C serial port using a male 25 pin DB connector. To use this for a network, you must use a network adapter. It has an input and an output so that information may be passed through each unit. The position of the RS-232C port can be seen on the Back Panel Diagram.



RS-232C PORT

RS232 Switch



DB25 Male (J5)

FIGURE 8.

PIN #	DSUB #5		
1	GROUND	15	NOT USED
2	RS-232 IN	16	GROUND
3	RS-232 LOOP OUT	17	RS232 TXD TTL CH16
4	LOOP-A	18	RS232 TXD TTL CH15
5	LOOP-A	19	RS232 TXD TTL CH13
6	RS232T TTL CH14	20	RS232 TXD TTL CH12
7	GROUND	21	RS232 TXD TTL CH10
8	RS232 TXD TTL CH11	22	RS232 TXD TTL CH8
9	RS232 TXD TTL CH9	23	RS232 TXD TTL CH6
10	RS232 TXD TTL CH7	24	RS232 TXD TTL CH4
11	RS232 TXD TTL CH5	25	RS232 TXD TTL CH2
12	RS232 TXD TTL CH3		
13	RS232 TXD TTL CH1		

TABLE 4.

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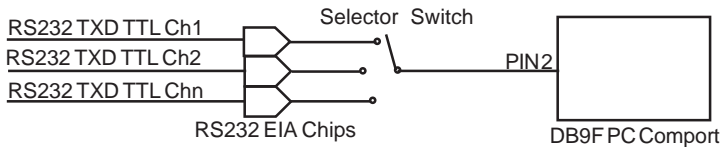
NOTE: When the DS1-SPL Cards is in the DS-16 rack the baud rate can not be change since all are fixed at 4800 baud so the rack back plane can communicate with all channels.

RS232 Cables

DB25F DS16 Rack	DB9F Computer
PIN7 (GND)-----	PIN5 (GND)
PIN2 (RXD)-----	PIN3 (TXD)
PIN4,5 (LOOP-A)-----	PIN4 (DTR)

Important!!!!To enable RS232 need to turn on RS-232 Switch on back panel of DS-16. Do this you will lose front panel keypad control till you have a connection of DS16 link to PC & run DSVMD Software. DSVMD will use DTR to enable front panel keypad.

DS-16 also includes RS232 TXD Outputs TTL Level to access to DS1SPL on each cards This will able to upload setups in any cards into PC.



HARDWARE:

BACKPLANE:

DESCRIPTION: The Backplane provides the interface between the DS-16 video inputs and outputs, the alarm inputs and outputs, and the RS-232C control. It also contains the controller circuitry that reads the setup pushbuttons and relays this information to the selected channel. The slave boards slide into the female header connector sockets on the backplane.

SLAVE BOARD:

DESCRIPTION: The slave board is the part of the DS-16 on which all motion detection is done. Each slave board has one channel of video with a microprocessor to provide motion detection.

CONTROLLER:

DESCRIPTION: The controller integrated on the rear panel provides all supervisory functions and system setups for the DS-16. It controls the front panel buttons, serial communications, common alarms and network addressing.

BREAKOUT CARDS:

ALARM INPUTS/OUTPUTS

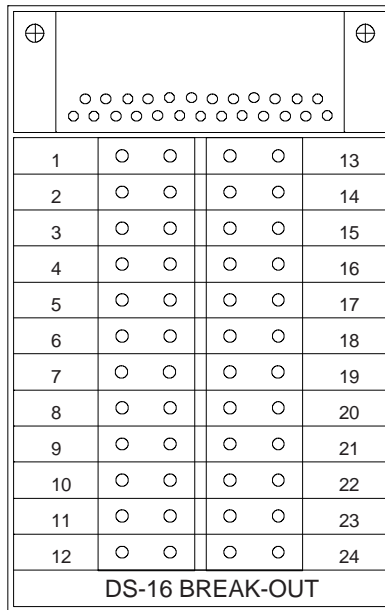


FIGURE 9.

DESCRIPTION: The DS-16 can be fitted with breakout cards, one for alarm inputs and three for alarm outputs. The Alarm Output Breakout Cards includes a connections for a universal alarm common to all channels as well as N/O and N/C channel outputs. The Alarm Input Breakout Card includes a Day/Night input which will toggle the DS-16 between Day and Night modes upon receiving a relay closure. The user must cross the appropriate breakout card pin number to the respective function for that connector.

To install the alarm inputs and outputs on the breakout cards, all one needs is a screwdriver. Insert the screwdriver into the slot on the top part of the connector for the alarm you wish to install. After the screwdriver is inserted into the top slot, insert the alarm lead into the bottom slot. There are two slots per alarm. The common lead may be inserted into either slot. Do the same for each alarm input and output to be installed.

TYPICAL VMD CONFIGURATIONS:

DS-16 WITH ALL INPUTS AND OUTPUTS

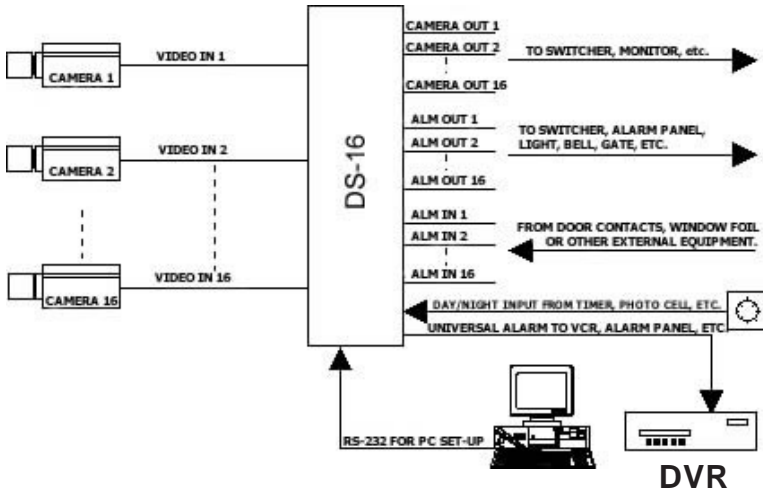


FIGURE 10

DESCRIPTION: Up to 16 cameras may be connected to the DS-16 as video inputs. Each channel has one video output. It is suggested that the DS-16 be the first piece of equipment in line after the cameras. If the VMD receives video processed by other equipment, it may result in false triggering.

Individual alarm inputs and alarm outputs are provided for each channel. The alarm inputs are Normally Open. There is one Normally open Day/Night input which toggles all channels simultaneously between two presets. The alarm outputs can be programmed for either Normally Open or Normally Closed. One Universal or Common alarm output is provided which alarms if an alarm occurs on any channel. An RS-232 port allows the DS-16 to be configured using DigiSpecs Setup Software and an IBM compatible PC.

DS-16 WITH LONG-RANGE VIDEO SIGNAL TRANSMISSION

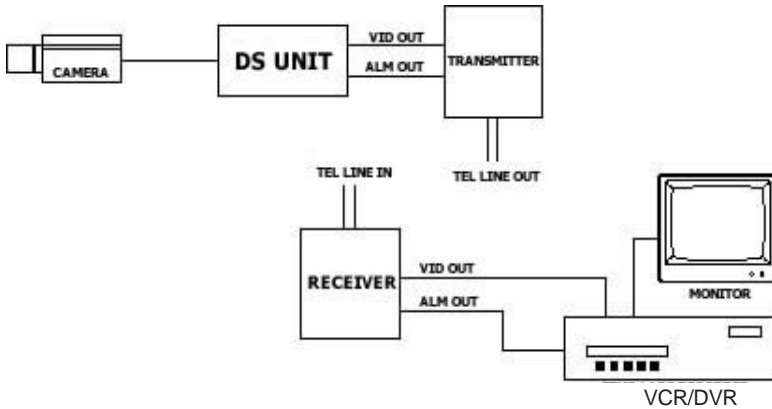


FIGURE 11.

DESCRIPTION: The DS-16 can be used as the triggering mechanism for a long range video signal transmission device. The DS-16 would output an alarm to initiate the transmitter to send an image. A monitor or recorder would be connected to the receiver on receiving end.

DS-16 WITH MATRIX SWITCHER

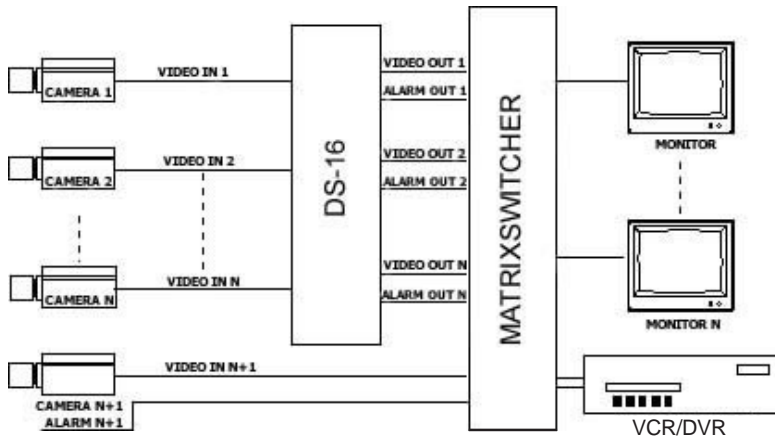


FIGURE 12.

DESCRIPTION: The DS-16 can be used as the triggering mechanism for an external matrix switcher or sequential switcher. The video outputs will feed into the video inputs of the matrix switcher. The alarm outputs of the DS-16 will feed into the respective alarm inputs of the matrix switcher for matrix control. The monitors and recording devices will be connected to the monitor outputs of the matrix switcher.

TROUBLE-SHOOTING GUIDE:

PROBLEM	SYMPTOMS	REMEDY
Duplicate Address	Carrds is activated in the same time via Keypad or RS232 Setup	Remove the lowest channel card which duplicate. change the duplicate one in the rack via DS-16 keypad only. then insert the removed one into the rack. use DS16 keypad to verify address sequentially.
	After install Cards address doesn't sequential	Pull out all cards & insert one and change address do one by one 0-127. do via keypad only.
False Triggering	Small objects falsely triggering alarms	Increase Trigger Level
	Shadows and noise falsely triggering alarms	Decrease Sensitivity Level
	Sudden image changes such as lightning, insects near the camera lens, flashing lights, snow or rain falsely triggering alarms	Increase Tracking
	Motion triggering in unwanted areas of camera image	Turn zones off in those areas of the camera image
	Florescent lighting causing false triggering	Use linelock camera
	Vibration causing false triggering	Mount camera properly or increase tracking
	Objects too large or small	Use proper lens

PROBLEM	SYMPTOMS	REMEDY
Serial Communications	No Serial Communications	Serial link bad disconnected or severed
	Not interfacing with Analyzer Software properly	Set RS-232 Mode to ranged (A Must) and Serial Interval to one per frame
No Output Alarms	Required object not triggering alarms	Decrease Trigger Level
	Insufficient contrast between the required object and its background may not trigger alarms Required object moving into and out of image too quickly may not trigger alarms.	Increase Sensitivity Level Decrease Tracking
	No alarms being triggered or output at all	Set Relay Hold above zero or
		Enable ALARM key
	Motion not triggering in required zones of camera image	Turn zones on in those areas of camera image
No Video Output	Alarms being output opposite of when they should	Change output type from N/O to N/C or vice versa
	Video not looping through the unit	Camera off, bad, or disconnected or Cable bad, severed, or disconnected

DS-16 SPECIFICATIONS:

UNIT SIZE	19"(W) x 5 1/8"(H) x 9 3/4"(D) 3U 48(W) x 13 (H) x 25 cm (D)
UNIT WEIGHT	19 lbs. (8.6 kg)
CHASSIS	Computer Beige finish over steel Desktop/Rack-mountable
VIDEO FORMAT	NTSC/RS-170A or PAL/CCIR 1Vpp, 75 ohm termination
DIGITIZATION	256 gray scale, 8 bits
VIDEO INPUTS	16 BNC
VIDEO LOOPING OUTPUTS	16 BNC
ALARM INPUTS	16 N/O & 1 Day/Night (N/O)
ALARM OUTPUTS	16 Form-C
ALARM OUTPUT TIME	0-99 seconds
RELAY CONTACT RATING	30V DC @ 1A
DETECTION METHOD	Proprietary pipeline processing of full digitized image
DETECTION POINTS	262,144 pixel/field or 512K pixel/frame
AREA PATTERN MATRIX	20 horiz. x 14 vert. (NTSC & PAL)
ZONES	8 Zones
SYS. CONTROL & SETUP	Programmable via front panel w/on-screen prompts or RS-232 with a PC
MICROPROCESSOR	8-bit embedded
OPERATIONAL TEMPERATURE	32F-120F or 0-50C
PIPELINE DEPTH	5 stage
PIPELINE PERFORMANCE	52 MIPS
BACKUP MEMORY	EEPROM (nonvolatile)/ Supercap for T/D
POWER REQUIREMENTS	110 or 220V AC @ 50/60 Hz Input & 5 V DC @ 6 A or 30 Watts DC Output
FACTORY WARRANTY	2 year parts & labor

APPENDIX A

Removal & Installation of the Power Supply

Warning!!! Electrical Shock Ensure you UNPLUG the Main AC Power.

1. 8x Screw Removal



2. Expose Front Panel



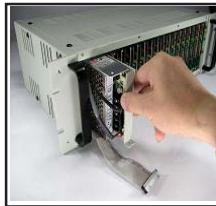
3. Disconnect Ribbon



4. 1x Screw Removal



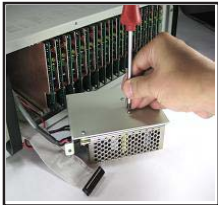
5. Pull Out PSU



6. Disconnect Cables



7. 3x Screw Removal



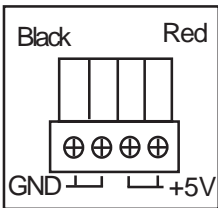
8. Replace New PSU



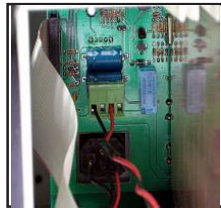
9. Connect Cables



10. Verify Power Cable



11. Connect to Back Panel



12. Insert PSU



13. 1x Screw.



14. Connect Ribbon



15. 8X Screw Front Panel



APPENDIX B

Ethernet LAN Adapter

The Ethernet LAN adapter allows the DS-16 to be operated on any common LAN network. The adapter connects to the DS-16 Serial port. When used in conjunction with the DSVMD Software for Windows you can fully operate and program the DS-16 remotely. Additional features like downloading and saving configurations are also possible. This software also supports direct serial connection to the DS-16 and IP direct programming of the LAN adapter via a PC or laptop.

Additional windows can be opened for simulating the front panel keypad. The data on the LAN is in the UDP format and can coincide with TCP/IP and other LAN based networks simultaneously.

LAN and DS-16 Connections

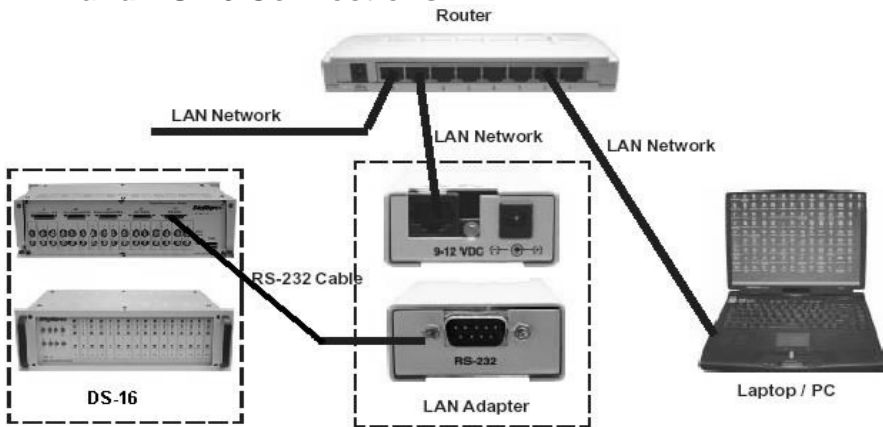


Figure 13: LAN and DS-16 Connections

APPENDIX C - Cable Pinouts

The following cable is for the connection from the DS-16 to the LAN adapter or from a PC to the DS-16 for serial programming.

Note: The DS-16 is only one way communication and can not upload or reply any status to the LAN adapter or PC.

LAN Adapter or PC DB9 Female	DS-16 DB25 Female	LAN Adapter DB9 Female	PC DB9 Female
---------------------------------	----------------------	---------------------------	------------------

2 (RXD) -----	3 (TXD)	2 (RXD) -----	3 (TXD)
3 (TXD) -----	2 (RXD)	3 (TXD) -----	2 (RXD)
4 (DTR) -----	4 (DTR)	5 (GND) -----	5 (GND)
5 (GND) -----	7 (GND)		

Table 5: LAN Adapter or PC to DS-16

Table 6: LAN Adapter to PC

The cable pin out to the left is for direct programming of the LAN adapter via a serial port of a PC or Laptop.

DSVMD Software

Installation

Insert the included CD-ROM in your drive and should open with menu selections. If it does not open then select "Explore" of the CD-ROM and double click on the "Setup.exe" file in the software directory. It will look similar to the following "E:\Software\DSVMD\Setup.exe". When the installation of the software is finished, then run DSVMD software from your Program Menu.

Opening Window

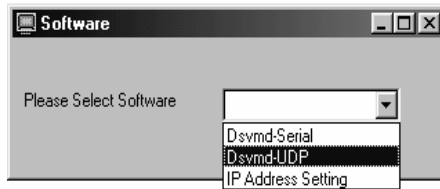


Figure 14: Software Select Window

Select Software

"DSVMD - Serial" - This selection allows you to directly connect to the DS-16 via a serial connection from your PC. The appropriate cable must be connected to a linked up DS-16.

"Dsvmd - UDP" - This selection allows you to connect to the DS-16 via the Ethernet LAN adapter. The proper IP address must be programmed into the LAN adapter. This can be done by the IP Address Setting function below. Then make sure your LAN adapter is connected to the network and connected to the DS-16.

"IP Address Setting" - This selection allows you to directly connect the serial port of the PC to the LAN adapter. You then can program the IP address directly into the LAN adapter. The IP address is stored in non volatile memory so will never be lost.

Serial Connection

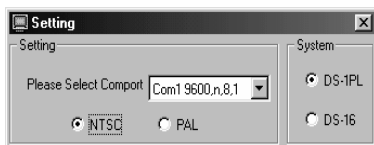


Figure 15: Setting Window

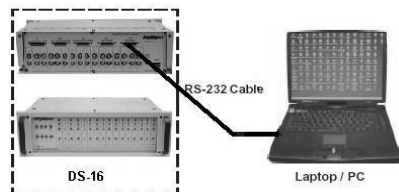


Figure 16: DS-16 to Laptop Serial Connection

Setting;

Format NTSC or PAL - Select the proper format for cameras you are using

System DS1-PL or DS-16 - Select the device you are communicating with

Select Comport - Select the baud rate, parity, and bits of the comport connected to the device. The default setting of the DS1-PL and DS-16 is 4800,n,8,1 so most likely use this first unless you have programmed another baud rate into the DS1-PL. The DS-16 is always 4800,n,8,1 and can not be changed.

Ethernet Connection

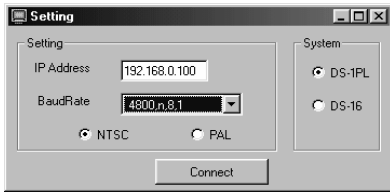


Figure 17: Setting IP/Baud Window

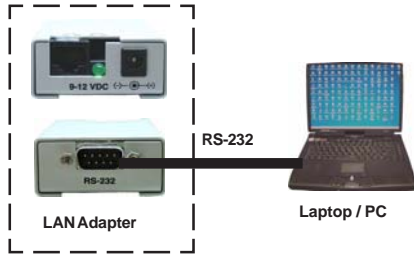


Figure 18: LAN Adpater to Laptop Connection

Setting;

- IP Address** - Set the preprogrammed IP address of the LAN adapter
- Format NTSC or PAL** - Select the proper format for cameras you are using
- System DS1-PL or DS-16** - Select the device you are communicating with
- BaudRate** - Select the baud rate, parity, and bits of the connected device. The default setting of the DS1-PL and DS-16 is 4800,n,8,1 so most likely use this first unless you have programmed another baud rate into the DS1-PL. The DS-16 is always 4800,n,8,1 and can not be changed.

Setup IP Address

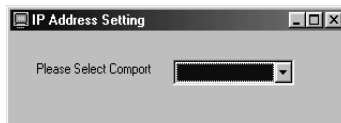


Figure 19: IP Address Setting Comport

Make sure the proper cable is connected from the PC to the LAN adapter. Select the Comport of the PC with baud rate, parity, and bits. The default baud rate of the LAN adapter is 4800,n,8,1 so select that first unless you have previously changed.

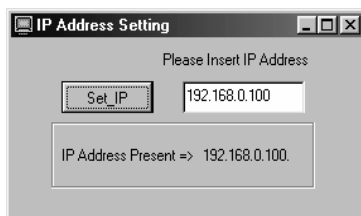


Figure 20: IP Address Setting

APPENDIX D

Type in the IP address you wish the LAN adapter to respond to. The display will show the present IP address programmed into the LAN adapter to show previous setting and to confirm new settings. Check you network IP addresses carefully and make sure you are not duplicating any other IP address on your network or a conflict will occur and cause problems.

Communication Complete

Upon successfully selecting one of the previous connection methods the following Main Menu will appear.

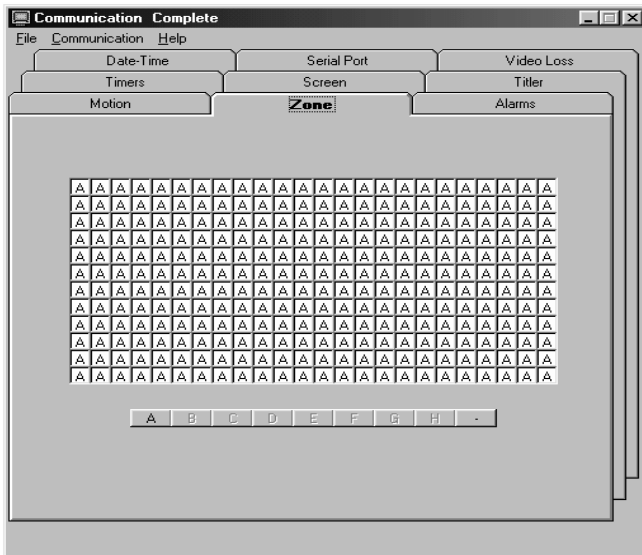


Figure 21: Main Menu

From this Main Menu you will be able to set all the programming features of the DS-16.

“File Tab” - From this tab you can then save them on your PC, or open a previously saved configuration.

“Communications Tab” - From this tab you will be able to open the additional following windows, Keyboard, along with Download settings from PC to the DS1-PL and select the Day or Night Programming menu.

“Help Tab” - From this tab you can open the online “DS-16” Manual for detailed description of each programming option.

For additional information on the DSVMD Software refer to the DSVMD Software Manual on the included CD-ROM.

WARRANTY INFORMATION

DigiSpec offers a limited two year parts and labor warranty on all DS-Series equipment. DigiSpec will repair or replace, at our option, any unit covered by this warranty at no cost to you (excluding shipping charges). This warranty pertains to defects in workmanship or parts in the DS-Series unit, as determined by DigiSpec. This warranty applies to the original end-user purchaser and is applicable from the date of purchase. Service performed after this period will be billed at our standard shop rates.

This warranty does not cover defects that result from abuse, misuse, or negligence, including, but not limited to: (1) improper operation; (2) failure to follow instructions or heed cautions included with this unit; (3) exposure to hazardous environments or submersion; (4) service or modification by an unauthorized party; (5) connection of excessive voltages to the inputs.

The customer is responsible for providing cameras which are compatible with the VMD. DigiSpec cannot be responsible for problems caused by cameras which, in our opinion, do not produce a steady enough output or have non-standard sync.

Contact your local sales agent for warranty service. If it is unavailable through your sales agent, the purchaser should contact the factory for instructions on receiving factory service. DigiSpec does not provide and will not authorize on-site field service. All factory warranty work will require the customer to provide a detailed description of the problem, the original sales agent's name, and a copy of the original sales receipt or invoice.

We will return your DS-Series product at no charge by UPS surface freight. Faster shipment is available, at the purchaser's request, at additional cost. We recommend that you insure the unit(s) for their full value when returning merchandise for repair.

DigiSpec will honor repair or replacement only. This warranty has been drafted to comply with the federal law applicable to electronic products manufactured after July 4, 1975. This warranty gives you specific legal rights which may vary from state to state.

DISCLAIMER OF WARRANTY:

DigiSpec offers no other express warranty written or implied, including warranties of merchantability or fitness for a particular purpose. In no case shall DigiSpec, or any of our agents, be held liable for incidental or consequential damages resulting from the use, failure of, or the compromising of any DS-Series products.

Notes:

Notes:

DigiSpecTM

DigiSpec Inc.

1906 Treble Dr.

Humble, Texas 77338

Tel: 281-540-6665 Fax: 281-540-6972

Email: john@digispecvideomotion.com

Web Site: www.digispecvideomotion.com