NVISION Device Control Protocol
NP0009–00D

NVISION Device Control Protocol refers to the electrical I/O and data format of messaging used to control, configure, and otherwise communicate with NVISION routing switchers, and related products. The structure of this protocol is maintained throughout the NVISION product line.

Document Conventions

Decimal numbers are expressed with no radix. Hexadecimal numbers are prefixed with a radix of "0x" as in the "C" programming language. When 16 bit values are shown in message formats, they are indicated using two bytes, the most significant of them labeled "high byte" and the least significant of them labeled "low byte". When message data fields' positions are fixed, they are indicated with a numeral, such as "DATA 0". When those positions are variable they are designated "DATA". Data that may repeat are indicated with a curly brace ("}") and the designation "may repeat". Such data shall be repeated as a complete set.

Physical and Data Link Layer

All device connections employ standard 9–pin female connectors using the RS485 or RS232 electrical characteristics. The pinout of these connectors follows.

RS485 (SMPTE 207M Tributary Device)

Pin	NVISION Controlled Device
1	Frame Ground
2	Transmit A-
3	Receive B+
4	Receive Common
5	no connection
6	Transmit Common
7	Transmit B+
8	Receive A-
9	no connection

RS232

Pin	NVISION Controlled Device (DCE)
1	no connection
2	Transmit
3	Receive
4	DTR (tied to DSR, pin 6)
5	Signal Ground
6	DSR (tied to DTR, pin 4)
7	RTS (tied to CTS, pin 8)
8	CTS (tied to RTS, pin 7)
9	no connection

Serial communications baud rates supported include:

9600	Diagnostic ports.
19,200	Special cases
38,400	Control ports
57,600	Special cases only
115,200	Audio mixers and real–time devices

All characters use the same format:

1 Start bit
8 Data bits
1 Stop bit
No Parity bit

RS485 ports support multi–drop operation. All NVISION RS485 drivers tri–state their transmit lines when not otherwise driving them. They begin to actively drive these lines approximately 50 microseconds prior to the transmission of the start bit of the messages' first characters and continue to drive them for approximately 50 microseconds after the transmission of the stop bit of the messages' end of that transmission.

Transport Layer

All NVISION protocol messages use the following format.

STX
DDID
DDAD
SSID
SSAD
COUNT
COMMAND
DATA
CHECKSUM

Where the header characters are defined as:

STX:	Start of transmission (0xFF)
DDID:	Destination device ID
DDAD:	Destination device address
SSID:	Source device ID
SSAD:	Source device address
CNT:	Count of command and data characters, excluding the checksum
CMD:	Device specific command

The DDID/DDAD and SSID/SSAD are swapped in response messages and are interpreted in various ways depending on the addressing mode used.

The header is followed by zero or more DATA characters.

DATA: Command dependant, 0 to 240 characters

The message is terminated with a checksum.

CHKSUM: Modulo 256 sum of all characters except the STX
(1 byte checksum, simple sum, carry ignored.)

NVISION devices conforming to this protocol shall respond to control messages received at their CONTROL ports in 30 milliseconds or less, measured from the end of the stop bits of the messages' last characters to the beginning of the start bits of the responses' first characters. The response time for diagnostic messages received at CONTROL ports is not specified.The response time for any messages received at NVISION DIAGNOSTIC ports is not specified. Except as noted, devices communicating with NVISION CONTROL ports shall wait for the response to a

message or an appropriate amount of time before sending another message.

Device Id Addressing Mode

In Device ID addressing mode, the DDID specifies a device ID that is a function of that device's NVISION model designation. Device ID addressing mode messages intended for mixers, delays and other non–router devices use the DDAD to specify a card address, as configured on individual cards.

NVISION device ID's include:

0x00	reserved
0x01:	NV9301 X/Y Control panel
0x02:	NV9302 32 key source select control panel
0x03:	NV9303 Four Monitor Control Panel
0x04:	NV9304 Special X/Y Mnemonic Broadcast Control Panel
0x08:	NV1308 8 x 8 Router
0x0C:	NV3512 Router
0x1C:	NV3128 Router
0x37:	NV1055 4 channel mixer
0x38:	NV3256 Router
0x3C:	NV1060 AES/Timecode delay
0x3D:	NV1061 AES/Timecode delay
0x3E:	NV1062 AES/Timecode delay (discontinued)
0x3F:	Main Server for Control Panels.
0x40:	NV3064 Router
0x46:	NV9370 Tally Panel
0x5F:	NV9055 Mixer Control panel
0x60:	EN6064 Digital Video Router
0x61	EN6128 Digital Video Router
0x62:	EN6256 Digital Video Router
0x63:	EN7256 AES Router
0xFC:	reserved
0xFD:	reserved
0xFE:	reserved
0xFF:	reserved

Device ID addressing mode messages intended for routers use the DDAD to specify a level, as configured on individual router controllers. Whether an NVISION router responds to Device ID addressing mode is determined by controller card configuration as explained in **Appendix II Router Diagnostic Protocol.**

A source address (SSAD) of 0x00 is defined as the MASTER ADDRESS. A device using the

master address is be permitted to release locks and protects that normally require the address of the device that invoked that locks and protects.

Card Address Addressing Mode

In Card Address addressing mode (DDID = 0xFB), the DDAD specifies a configurable card address in a multi–card system. This addressing mode allows communication with a specific card whose address is known regardless of that card's other characteristics.

Direct Addressing Mode

Direct Addressing mode (DDID = DDAD = 0xFC) is used to directly address diagnostic ports. This addressing mode supports downloading application code and configuration data to device without knowing its specific address.

Volunteer Addressing Mode

Volunteer Addressing mode (DDID = DDAD = 0xFD) is used when a device transmits unsolicited log or error messages via a diagnostic port.

Global Addressing Mode

IMPORTANT NOTE: The use of Global Addressing Mode is strongly discouraged.

In Global Addressing mode (DDID = 0xFE), The DDAD specifies a router level as configured on individual NVISION router controllers. This can be used by a control system for polling and setup purposes, allowing a control system to build a table of connected devices without having to run through all possible ID's. This permits a control system to quickly build a table of active levels and their configurations, but imposes this requirement:

No two devices with the same level and/or address may reside on the same RS485 control line.

General Messages

General Message Summary

Commands

0x01: Device Present Command
0x02: Timestamp Command
0x03: Real Time Clock Command
0x06: Set Controller State Command

0x10: Manufacturer and Product ID Command
0x11: Software Version Command
0x12: System Status Command

Responses

0x04: Acknowledgement (ACK) Response
0x05: Negative Acknowledgement (NAK) Response
0x09: Main Server Present Response
0x0B: Timestamp response
0x0C: Real Time Clock Response

0x71: Log Message
0x7E: ASCII Message

0x80: Error Response
0x81: Sequenced Error Response
0x8F: ASCII Error Message

0x90: Manufacturer and Product ID Response
0x91: Software Version Response
0x92: System Status Response

General Command Messages

1. Device Present Command **0x01**

Requests the presence of a device assigned to a specific level. The Device Present Command is used by control panels and other controlling devices to poll the network to build and maintain tables of connected devices.

Message Format:

STX	0xFF
DDID	0xFE = Global addressing mode
DDAD	Level
SSID	??
SSAD	??
COUNT	0x01
COMMAND	0x01
CHECKSUM	??

Responses:

0x04: ACK, Non–router device is present
0x09: Main server is present
0xD9: Router Status, router device is present
0x80: Error response

No response after 5 msec time–out: device not present

2. Timestamp Command 0x02

Queries and sets the device' current timestamp value.

Query message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x02
COMMAND	0x02
DATA 0	0x00 = upload
CHECKSUM	??

Responses:

0x0B: Timestamp Response
0x80: Error response

Set message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x04
COMMAND	0x02
DATA 0	0x01 = download
DATA 1	Timestamp (high byte)
DATA 2	Timestamp (low byte)
CHECKSUM	??

Responses: none

3. Real Time Clock Command 0x03

Queries and sets the addressed controller's real time clock.

Query message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x02
COMMAND	0x03
DATA 0	0x00 = upload
CHECKSUM	??

Responses:

0x0C: Real Time Clock Response
0x80: Error response

Set message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x09
COMMAND	0x03
DATA 0	0x01 = download
DATA 1	Month
DATA 2	Day
DATA 3	Century
DATA 4	Year
DATA 5	Hour
DATA 6	Minute
DATA 7	Second
CHECKSUM	??

Responses:

0x0C: Date and time response
0x80: Error response

4. Set Device State Command 0x06

Sets the addressed device's state. The data in this command may vary based on the type of device addressed.

For NVISION routers:

A controller in the offline state will not become the active controller. A controller in the standby state is a candidate to become the active controller as governed by the redundant controller changeover rules.

Message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x02
COMMAND	0x06
DATA 0	Controller state: 0x00 = set this controller to the offline state 0x01 = set this controller to the standby state 0x02 = set alternate controller to the offline state
CHECKSUM	??

Responses:

0x04: ACK
0x80: Error response

For other NVISION devices:

This section is TBD.

1. Manufacturer and Product ID Command 0x10

The addressed controller's Manufacturer and Product ID are requested.

Message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x01
COMMAND	0x10
CHECKSUM	??

Responses:

0x90: Manufacturer and Product ID Response
0x80: Error response

2. Software Version Command 0x11

The addressed controller's software versions are requested.

Message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x01
COMMAND	0x11
CHECKSUM	??

Responses:

0x91: Software Version Response
0x80: Error response

3. System Status Command
0x12

The addressed device's system status is requested.

Message format:

STX	0xFF
DDID	Any addressing mode
DDAD	??
SSID	??
SSAD	??
COUNT	0x02 or 0x03
COMMAND	0x12
DATA 0	Status type: 0x00 = General Status (omit DATA 1) 0x01 to 0xFF = Device type specific
DATA 1	Device type specific
CHECKSUM	??

Responses:

0x92: System Status Response
0x80: Error response

For NVISION routers:

Data 0:

Status type:
0x00 = General Status (omit DATA 1)
0x01 = Input Cards Present
0x02 = Crosspoint Cards Present
0x03 = Output Cards Present
0x04 = Input Signal Presence
0x05 = Output Signal Presence

Data 1:

Frame number:

For other NVISION devices:

This section is TBD.

General Response Messages

5. Acknowledgement (ACK) Response 0x04

Messages that require no response data are acknowledged. Acknowledgement indicates that a message has been received with valid format, character count and checksum, and that its command and data characters are valid and within range for the device receiving the message. Any other conditions generate NAK or ERROR responses and no portion of the message's intent is executed. Acknowledgement does not indicate that the message's intent has been executed, as that intent may have been scheduled for execution in the future.

General Acknowledgement message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x01
COMMAND	0x04
CHECKSUM	??

Sequenced Acknowledgement message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x02
COMMAND	0x04
DATA 0	Sequence number
CHECKSUM	??

6. Negative Acknowledgement (NAK) Response 0x05

An erroneous message is negatively acknowledged. This response is used when it is impossible to determine the cause of the error, otherwise the error responses (0x8?) are used to inform the sender of the error and aid in diagnosing the problem.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x01
COMMAND	0x05
CHECKSUM	??

7. Main Server Present Response 0x09

IMPORTANT NOTE: This response shall only be used in special or custom cases. This response is not supported in any other cases.

The Main Server's response to a Device Present Command (0x01). There is no data defined.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x01
COMMAND	0x09
CHECKSUM	??

8. Timestamp Response **0x0B**

The response to a timestamp command.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x03
COMMAND	0x0B
DATA 0	Timestamp (high byte)
DATA 1	Timestamp (low byte)
CHECKSUM	??

9. Real Time Clock Upload Response 0x0C

The response to a Real Time Clock upload command.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x08
COMMAND	0x0C
DATA 0	Month
DATA 1	Day
DATA 2	Century
DATA 3	Year
DATA 4	Hour
DATA 5	Minute
DATA 6	Second
CHECKSUM	??

10. Log Message **0x71**

Various conditions are reported. This message may be transmitted asynchronously when a port's messaging is enabled. The data in this command may vary based on the type of device addressed.

For NVISION routers:

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x71
DATA	Message Code and (optional) Data: 0x50: take message received Level Src Dest ?? ???? ???? 0x51: refresh message received Level Src Dest ?? ???? ???? 0x52: reset occurred 0x53: communications error Port Comm Error ?? ?? ?? 0x54: ..Router Command.. <data>
CHECKSUM	??

For other NVISION devices:

This section is TBD.

11. ASCII Message **0x7E**

An ASCII message of up to 240 characters is transmitted. This message may be transmitted asynchronously via either an RS232 or RS485 port when messaging is enabled.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x7E
DATA	Arbitrary ASCII text
CHECKSUM	??

12. Error Response **0x80**

An error is reported in response to a command.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x02
COMMAND	0x80
DATA 0	Error codes: 0x00 = undefined 0x01 = Invalid Data 0x02 = Device cannot execute command or address is scramble mapped to null 0x03 = Checksum error in message 0x04 = Unknown command 0x05 = Communications port overrun error 0x06 = Count Error. The message byte count does not correspond to the expected count for the command(s) received. 0x07 = Unmapped error. A scrambled source or destination resolves to no physical source or destination. 0x08 = Parity error 0x09 = Command not supported by this device. 0A = Busy (typically the result of a queue overflow)
CHECKSUM	??

13. Error Response to Sequenced Message **0x81**

An error is reported in response to a sequenced command.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x03
COMMAND	0x81
DATA 0	Error Codes: Same as those for 0x80 response
DATA 1	Sequence number
CHECKSUM	??

14. ASCII Error Message 0x8F

An ASCII error message of up to 240 characters is transmitted. This message may be transmitted asynchronously via either an RS232 or RS485 port when messaging is enabled.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x8F
DATA	Arbitrary ASCII text
CHECKSUM	??

4. Manufacturer and Product ID Response **0x90**

Response to a Manufacturer and Product ID command.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	0x03
COMMAND	0x90
DATA 0	Manufacturer ID: 0x00 = NVISION 0xFF = unknown or not defined
DATA 1	Product ID (see Device Addressing above)
CHECKSUM	??

5. Software Version Response 0x91

Response to a Software Version command. A device with multiple processors reports all processors that are responding to the query. A processor that is currently running its boot program shall report only its boot version, and a processor that is currently running its application program shall report both its boot and applications versions. The count is one greater than the number of versions reported times 7.

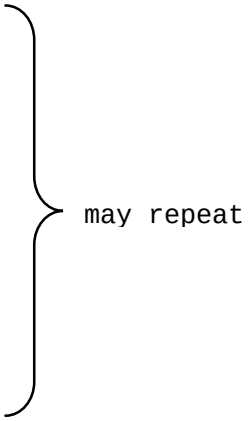
The software part number and version data are derived from the NVISION "SV" part number. For example, a part number of SV0123–456789 would result in:

- DATA 2 equal to 0x00 and DATA 3 equal to 0x7B (123 decimal is equal to 0x007B)
- DATA 4 equal to 0x2D (45 decimal is equal to 0x2D)
- DATA 5 equal to 0x43 (67 decimal is equal to 0x43)
- DATA 6 equal to 0x59 (89 decimal is equal to 0x59)

Other manufacturers are free to define how they choose to format these fields.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	See above
COMMAND	0x91
DATA 0	Processor Id: 0x00 = Single processor devices For other devices, see below
DATA 1	Software Id: 0x00 = Devices with a single set of software.
DATA 2	Software part number (high byte)
DATA 3	Software part number (low byte)
DATA 4	Version MSB
DATA 5	Version MID
DATA 6	Version LSB
CHECKSUM	??



For NVISION routers:

Data 0: Processor Id:
- 0x00 = Diagnostic
- 0x01 = Matrix
- 0x02 = Communications

Data 1: Software Id:
- 0x00 = Boot
- 0x01 = Application

For other NVISION devices:

This section is TBD.

6. System Status Response **0x92**

Response to a system status request.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	See status type details
COMMAND	0x92
DATA 0	Status type: 0x00 = General Status 0x01 to 0xFF = Device type specific
DATA	The number and meaning of this message's data fields vary depending on the status type.
CHECKSUM	??

Message formats for each of the status types follow.

For NVISION routers:

Data 0:

Status type:
0x00 = General Status
0x01 = Input Cards Present
0x02 = Crosspoint Cards Present
0x03 = Output Cards Present
0x04 = Input Signal Presence
0x05 = Output Signal Presence

Status Type 0: General Status

Returns general status.

Message format:

STX	0xFF		
DDID	??		
DDAD	??		
SSID	??		
SSAD	??		
COUNT	0x0A		
COMMAND	0x92		
DATA 0	Status Type: 0x00 = General		
DATA 1	Status Change Flags:		
	Bit 0 – Input Card Presence	0 = Unchanged	1 = Changed
	Bit 1 – Xpnt Card Presence	0 = Unchanged	1 = Changed
	Bit 2 – Output Card Presence	0 = Unchanged	1 = Changed
	Bit 3 – Input Signal Presence	0 = Unchanged	1 = Changed
	Bit 4 – Output Signal Presence	0 = Unchanged	1 = Changed
	Bit 5 – Diagnostic Processor	0 = Not Reset	1 = Reset
	Bit 6 – Matrix Processor	0 = Not Reset	1 = Reset
	Bit 7 – Comm Processor	0 = Not reset	1 = Reset

DATA 2	Reference Inputs Status: The meanings of the Reference Inputs Status field's bits vary depending on the router model and operating mode. For the NV3064 router: Bit 0 – Vertical Reference 2 0 = Fail 1 = OK Bit 1 – Vertical Reference 1 0 = Fail 1 = OK Bit 2 – Vertical Reference Selected 0 = Vref1 1 = Vref2 Bit 3 – 12 MHz clock 0 = Fail 1 = OK Bit 4 – AES Reference 2 0 = Fail 1 = OK Bit 5 – AES Reference 1 0 = Fail 1 = OK Bit 6 – AES Reference Selected 0 = AES1 1 = AES2 Bit 7 – Reserved For the NV3128 and NV3256 routers: Bit 0 – Vertical Reference 2 0 = Fail 1 = OK Bit 1 – Vertical Reference 1 0 = Fail 1 = OK Bit 2 – Vertical Reference Selected 0 = Vref1 1 = Vref2 Bit 3 – Reserved Bit 4 – Reserved Bit 5 – Reserved Bit 6 – Reserved Bit 7 – Reserved For the NV3512 router in synchronous AES mode: Bit 0 – Reserved Bit 1 – Reserved Bit 2 – Reserved Bit 3 – Clock Gen Status 0 = OK 1 = Fail Bit 4 – AES Reference 0 = OK 1 = Fail Bit 5 – Vertical Reference 0 = OK 1 = Fail Bit 6 – Reserved Bit 7 – Reserved

DATA 2 (continued)	For the NV3512 router in asynchronous AES mode: Bit 0 – Reserved Bit 1 – Reserved Bit 2 – Reserved Bit 3 – Reserved Bit 4 – Reserved Bit 5 – Reserved Bit 6 – Video Detect 0 = Fail 1 = OK Bit 7 – Reserved For the Envoy routers: Bit 0 – Vertical Reference 2 0 = Fail 1 = OK Bit 1 – Vertical Reference 1 0 = Fail 1 = OK Bit 2 – Reserved Bit 3 – Reserved Bit 4 – Reserved Bit 5 – Reserved Bit 6 – Reserved Bit 7 – Reserved
DATA 3	Controller Status: Bit 0–1 – State 00 = Active 01 = Standby 10 = Offline 11 = Ineligible Bit 2 – Reserved Bit 3 – Health 0 = Sick 1 = Healthy Bit 4 – Reserved Bit 5 – Other controller's health 0 = Sick 1 = Healthy Bit 6 – Card Slot 0 = Secondary 1 = Primary Bit 7 – Other controller's state 0 = Not Active 1 = Active
DATA 4	Most recently received timestamp (high byte).
DATA 5	Most recently received timestamp (low byte).

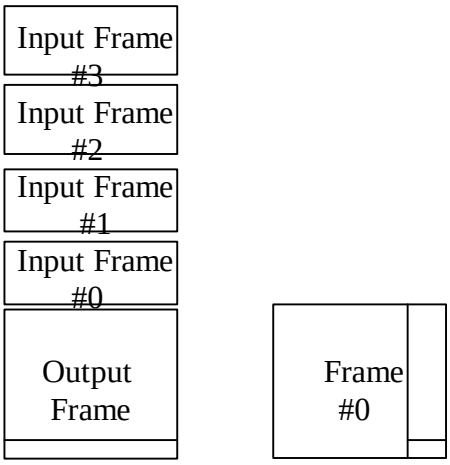
DATA 6	Power Supply Status:		
	For the NV3064, NV3128, and NV3512:		
	Bit 0 – Power Supply 1	0 = Not present	1 = Present
	Bit 1 – Power Supply 2	0 = Not present	1 = Present
	Bit 2 – Reserved		
	Bit 3 – Reserved		
	Bit 4 – Reserved		
	Bit 5 – Reserved		
	Bit 6 – Reserved		
	Bit 7 – Reserved		
	For the NV3256 and EN6128:		
	Bit 0 – Power Supply 1	0 = Not present	1 = Present
	Bit 1 – Power Supply 2	0 = Not present	1 = Present
	Bit 2 – Power Supply 3	0 = Not present	1 = Present
	Bit 3 – Power Supply 4	0 = Not present	1 = Present
	Bit 4 – Reserved		
	Bit 5 – Reserved		
	Bit 6 – Reserved		
	Bit 7 – Reserved		
DATA 7	Auxiliary data 0:		
	For the NV3512:		
	Bit 0 – Reserved		
	Bit 1 – Reserved		
	Bit 2 – Roll Over Power Supply 1	0 = Not present	1 = Present
	Bit 3 – Roll Over Power Supply 2	0 = Not present	1 = Present
	Bit 4 – Roll Over Power Supply 3	0 = Not present	1 = Present
	Bit 5 – Roll Over Power Supply 4	0 = Not present	1 = Present
	Bit 6 – Roll Over Power Supply 5	0 = Not present	1 = Present
	Bit 7 – Roll Over Power Supply 6	0 = Not present	1 = Present

DATA 8	Auxiliary data 1: For the NV3512: Bit 0 – Reserved Bit 1 – Reserved Bit 2 – Roll Under Power Supply 1 0 = Not present 1 = Present Bit 3 – Roll Under Power Supply 2 0 = Not present 1 = Present Bit 4 – Roll Under Power Supply 3 0 = Not present 1 = Present Bit 5 – Roll Under Power Supply 4 0 = Not present 1 = Present Bit 6 – Roll Under Power Supply 5 0 = Not present 1 = Present Bit 7 – Roll Under Power Supply 6 0 = Not present 1 = Present
CHECKSUM	??

Data 4 and 5 contain the value received from the most recently received set Timestamp Command (0x02), rather than the current timestamp value.

The card present and signal present responses are hardware independent so any router can return the number of possible cards or signals present. The NV3512 uses multiple frames while the NV3064, NV3128, and NV3256 use only a single frame. Only responses from an NV3512 router will have more than one response per message due to its use of multiple input frames.

The NV3512 consists of an output frame containing up to 512 outputs plus a number of input frames, each containing up to 128 inputs. The frames are numbered from 0 to N starting with the frame containing the lowest input addresses. The NV3064, NV3128, and NV3256 are all contained in a single frame which is returned as Frame #0 in the diagnostic responses.



NV3512 NV3064, NV3128, and NV3256

In some cases it may not be possible to determine if a card is present or absent. In the case of NV3512 input cards, if no input from a card is routed to an output then the presence of that input card and the corresponding input signals cannot be determined. If an NV3512 output card has been removed it is not possible to determine if the crosspoint cards feeding that output card are present or absent. In these cases the unknown response is used.

The data are sent MSB first following the "# of …" parameter. The LSB is sent last and contains the data for the lowest address card of signal in the frame. The LSB of the data represents the card or signal at the lowest address so the least significant two bits of the last byte received will represent the first card or signal in the frame.

Each 2 bit pair in each Input Card Present characters represent 1 physical input card. The NV3512 has up to 16 input cards per frame. The NV3064 has 32 inputs and 32 outputs on a single card so this card is represented in both the input and output card present response. The NV3128 and NV3256 have 64 ports per I/O card so all 64 are represented in both the input and output card present responses.

Status Type 1: Input Card Presence Status

Returns input card presence data.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x92
DATA 0	Status Type: 0x01 = Input cards present
DATA 1	Frame number
DATA 2	Max number of input cards in specified frame (high byte)
DATA 3	Max number of input cards in specified frame (low byte)
DATA	Packed bit pairs that represent input cards' status: 00 = Unknown 01 = Card present 10 = Card was previously detected as present but is now absent 11 = Possible problem with card
CHECKSUM	??

may repeat

Status Type 2: Crosspoint Card Presence Response

Returns crosspoint card presence data.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x92
DATA 0	Status Type: 0x02 = Crosspoint cards present
DATA 1	Frame number
DATA 2	Max number of crosspoint cards in specified frame (high byte)
DATA 3	Max number of crosspoint cards in specified frame (low byte)
DATA	Crosspoint cards present: Packed bit pairs that represent crosspoint cards' status: 00: Unknown 01: Card present 10: Card was previously detected as present but is now absent 11: Possible problem with card
CHECKSUM	??

Status Type 3: Output Card Presence Response

Returns output card presence data.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x92
DATA 0	Status Type: 0x03 = Output cards present
DATA 1	Frame number
DATA 2	Max number of output cards in specified frame (high byte)
DATA 3	Max number of output cards in specified frame (low byte)
DATA	Output cards present: Packed bit pairs that represent output cards' status: 00: Unknown 01: Card present 10: Card was previously detected as present but is now absent 11: Possible problem with card
CHECKSUM	??

may repeat

Status Type 4: Input Signal Presence Response

Returns input signal presence data.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x92
DATA 0	Status Type: 0x04 = Input signals present
DATA 1	Frame number
DATA 2	Max number of input signals in specified frame (high byte)
DATA 3	Max number of input signals in specified frame (low byte)
DATA	Input signals present: Packed bit pairs that represent input signals' status: 00: Unknown 01: Signal present 10: Signal was previously detected as present but is now absent 11: Possible problem with signal
CHECKSUM	??

may repeat

NOTE: Input signal status is not currently supported on any NVISION routers.

Status Type 5: Output Signal Presence Response

Returns output signal presence data.

Message format:

STX	0xFF
DDID	??
DDAD	??
SSID	??
SSAD	??
COUNT	??
COMMAND	0x92
DATA 0	Status Type: 0x05 = Output signals present
DATA 1	Frame number
DATA 2	Max number of output signals in specified frame (high byte)
DATA 3	Max number of output signals in specified frame (low byte)
DATA	Ouput signals present: Packed bit pairs that represent output signals' status: 00: Unknown 01: Signal present 10: Signal was previously detected as present but is now absent 11: Possible problem with signal
CHECKSUM	??

may repeat

NOTE: Output signal status is currently only supported on the NVISION NV3512 router.

On the NV3512, output signal presence means that a potentially valid signal path exists. The specified output of the specified output card is routed through an operational crosspoint card from an input card that is present in the system.

For other NVISION devices:

This section is TBD.