tyrrell products ltd

niagara4

Gent Fire Alarm Integration for Tridium Niagara 4

Technical Guide

Date 02/10/2024

Revision 1.1

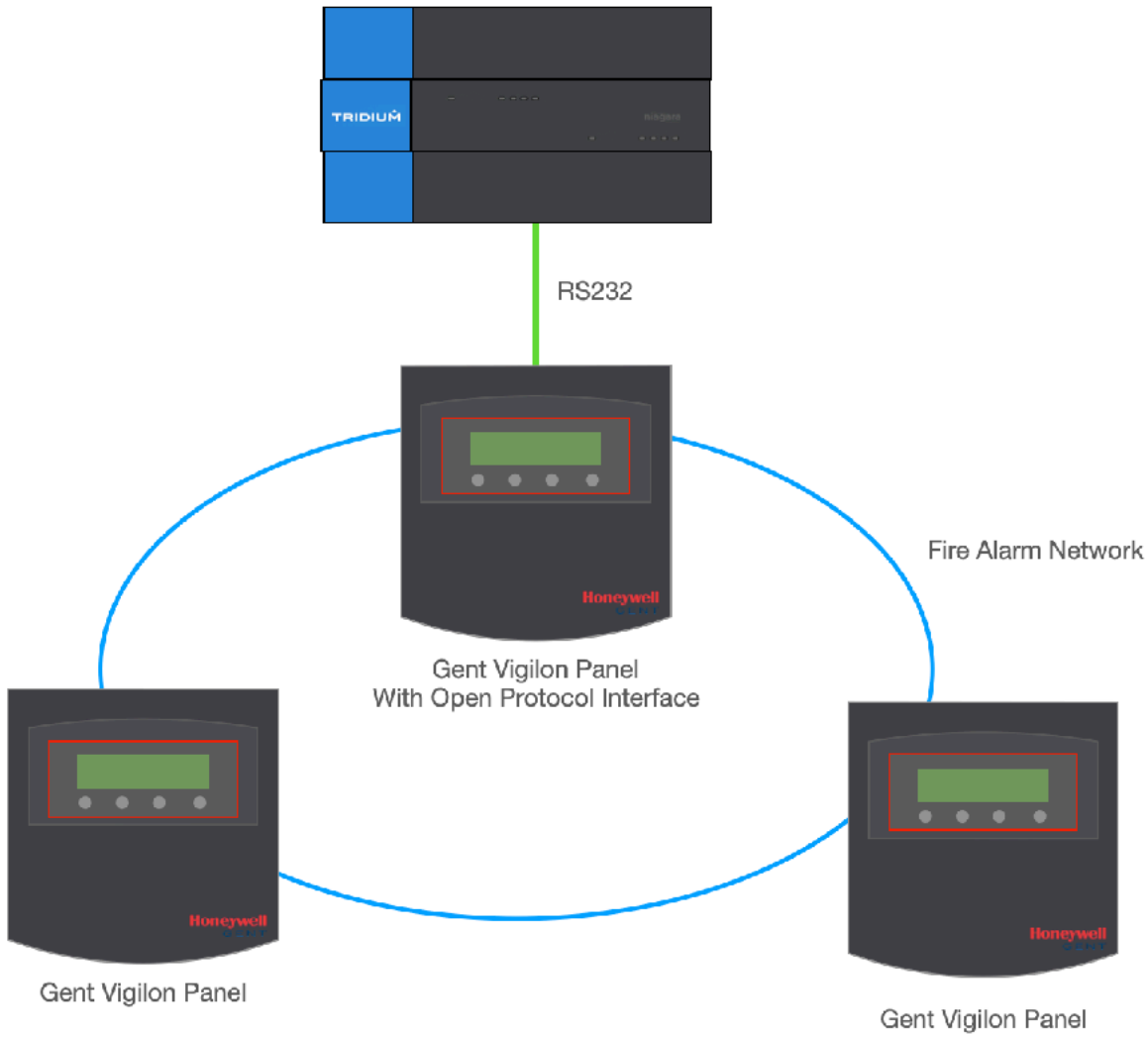
INTRODUCTION

The Gent integration driver is designed to provide an easy integration interface to a Gent fire alarm system. The driver will also work with the equivalent SenTri range of panels.

The driver supports all size installations from a single panel to a multi building-multi panel setups. The driver is licensed on a points basis, a variety of point packs to suit every project are available. A Gent panel fitted with an Open Protocol interface is required to allow the Tridium controller to connect to the fire system.

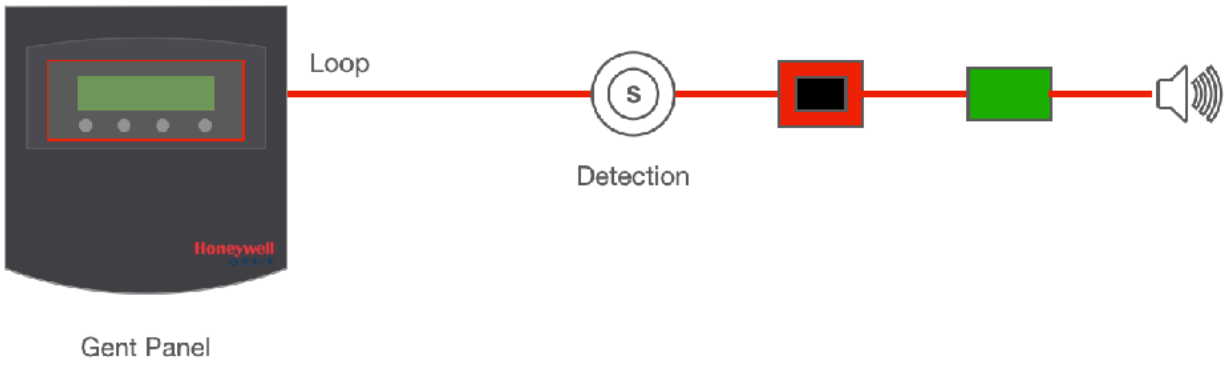
The driver supports a direct RS232 connection from a field level controller such as a JACE or Tyrrell IoT Controller. Connections for a Web Supervisor are possible but require an additional IP-RS232 Device Server. The Device Server can also be used to achieve a remote connection from a field level controller.

The Driver supports the creation of Points for Devices, Zones & Supervisory Inputs.



Gent panels support a feature called Sub Addressing where a device can present multiple channels of information. For example an smoke detector will report a Fault on Sub Channel 0 and a Fire on Sub Channel 4, a Manual Call Point will report a Fire on Sub Channel 6. The Gent points are a parent element for all sub channels. Each point will generate a Gent Channel slot as events occur in real time, allowing a specific sub channel to be directly accessed if required.

Each Gent Point that is added to the the System will consume 1x Point license (both Gent and Tridium Global Capacity).



Whilst the driver is communicating with the fire system it is not a 'polling based' driver, the fire system connection is fully event driven. This means that as an event occurs in real time on the fire panel(s) an event message is reported to the Gent Open Protocol connection. This message is then reported to the Niagara 4 Gent Driver and the associated fire alarm 'point(s)' will be updated to reflect the active state of the system.

If a fire alarm event is reported but no associated Niagara point is present (Device and or Zone) then the driver has an option to automatically create the associated point.

LICENSING & SOFTWARE MAINTENANCE

The Gent driver is licensed based on the number of fire alarm points being used. Points within the Gent Driver are a multifunction point component and can provide multiple items of information. The parent point is always an Enumerated Point, this point then contains multiple slots detailing more specific alarm conditions.

In addition to having a Gent point pack license the target device will need to also have adequate spare Tridium Global Capacity points licenses. Every Gent point will consume 1x Tridium Global Capacity point license.

You will need to provide your Niagara 4 Host ID as part of your driver license purchase.

Once the license has been generated you can re-import your niagara license files from the Platform > License Manager providing you have an internet connection, alternatively you can be emailed a copy of the new license files.

The driver includes a software maintenance feature. Every new purchase of the driver will support the current release of Niagara 4 and the next release of Niagara 4, any subsequent upgrades will require a software maintenance license to be purchased.

As an example the current release of Niagara 4 is N4.14, a new driver purchase will cover you for N4.14 and a future upgrade to N4.15. Any further upgrades, for example to N4.16 or above, will require a software maintenance license to be updated. The software maintenance license would then cover you for the now current release of Niagara 4 and the next future release. You can upgrade from any previous release in a single step with a one off software maintenance purchase (N4.13 > N4.15).

Ensure the target Host License Manager is up to date with a Tyrrell.license and Tyrrell.certifcate containing the required license features.

Any questions or queries in relation to this item should be sent to sales@tyrrellproducts.com

Gent License Packs:

Product Code	Description
	Gent Driver For 100x Fire Alarm Points
	Gent Driver For 250x Fire Alarm Points
	Gent Driver For 500x Fire Alarm Points
	Gent Driver For 1,250x Fire Alarm Points
	Gent Driver For 2,500x Fire Alarm Points
	Gent Driver For 5,000x Fire Alarm Points
	Gent Driver For 10,000x Fire Alarm Points
	Gent Driver Upgrade For 100x Fire Alarm Points
	Gent Driver Upgrade For 250x Fire Alarm Points
	Gent Driver Upgrade For 500x Fire Alarm Points
	Gent Driver SMA - Niagara Version Upgrade

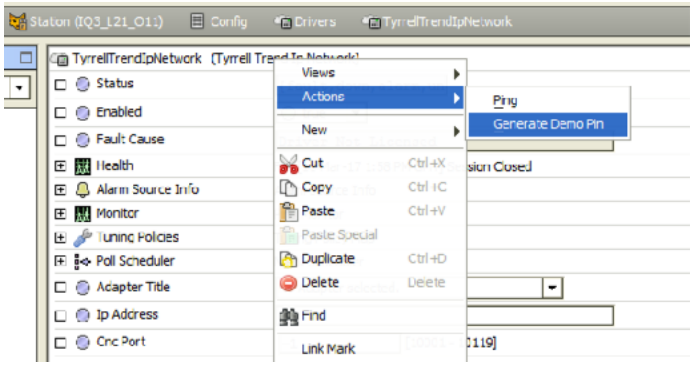
The driver will also consume Tridium Global Capacity points from the Tridium license, if upgrading ensure you have adequate Global Capacity license before ordering.

DEMO MODE

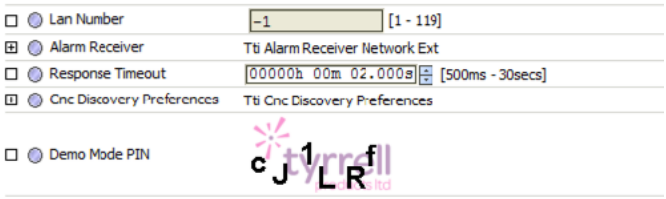
In addition to permanent licenses the driver also supports a two hour demonstration mode.

To activate this mode follow the below steps -

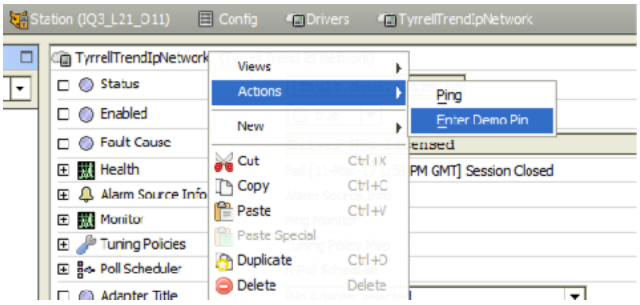
- Insert a new Gent network (see the following section)
- Go into the **AX Property Sheet** of the network
- Right click on the **Driver > Actions > Generate Demo PIN**



- An image will appear at the bottom of the property sheet with a demo PIN



- Right click on the **Driver > Actions > Enter Demo PIN**



- Enter the PIN exactly as it is shown in the image
- When entered correctly a pop up box will appear with instructions.
- Restart the station to complete the activation of the demo mode.
- After two hours the demo mode will expire
- Restart the Station and repeat the above steps to re-activate the demo mode.

DRIVER INSTALLATION

The Gent driver supports Niagara 4.10 and above.

NOTE:
If your installation is running an an older version of the Niagara software then it must be upgraded to meet the above requirements to run this driver.

Any future updates to the Gent driver will be available for the long term maintenance release and above. All other releases will become legacy and unsupported.

Niagara 4 Installation:
You will need the version specific JAR files for your Niagara 4 installation. These can be downloaded from the Customer Portal or alternatively contact the support team (support@tyrrellproducts.com).

To install the driver copy the below JARS to the following directory

- gent-rt.jar
- gent-wb.jar

c:\niagara\niagara 4.x.xx\modules

Once the files have been put into the correct directory close your workbench, and relaunch. Any running Stations on the local machine will have to be re-started to make use of the Gent driver.

The Gent driver is now ready to use in a local station or to commission / update a Niagara controller. To install the driver on a Niagara controller use the Commissioning Wizard on the platform of the target device.

PREREQUISITES & SUPPORT

The Gent driver has several pre-requisites to be aware of before starting.

The driver is compatible with both the Gent Vigilon range and SenTri range of panels. The below information is relevant to both range of panels.

The driver is developed against the Gent 3400 Basic Communication Protocol Specification (SPEC6201.003) Issue 1.13 Dated 10/11/2005.

Gent panels that support the Open Protocol Specification can be integrated:

- Vigilon Compact Panel (EN)
- Vigilon Compact VA Panel (EN)
- Vigilon 4/6 Loop Panels (EN/BS)
- Vigilon Network Nodes
- Vigilon 34000 Panels
- 3404 Control Panel (1-4 loops)
- 2408 Control Panel (1-8 loops)
- 3500 Network Terminal Node

The Gent Open Protocol does not support a 'request all alarms' feature. Upon initial connection the Gent driver will not be able to learn the current fire system status. Each panel should be reset to re-trigger any active events.

The Gent Open Protocol provides support for the following events and actions:

- Device Fire Event for individual devices.
- Global Fire Clear Event for all devices.
  This occurs only when a panel is Silenced & Reset.
- Device Fault Event for individual devices.
- Zone Event Messages
- Loop Fault Event Messages
- Panel Fault Event Messages
- Global Fault Clear Event for all devices.
  This only occurs when all fault condition are clear on a specific Loop or Panel.

  This means that the Gent Driver could show a specific detector point being in 'Fault' but the device in the physical world has actually cleared the fault condition.
- Device Isolation Action
  Command to isolate a detection Device.
- Zone Isolation Action
  Command to isolate a detection Zone.

  The Gent Open Protocol does not report individual Isolation events (isolate or de-isolate). It only reports a Loop Isolation Status. A Global Isolation Clear Event is reported, meaning all devices are now enabled.

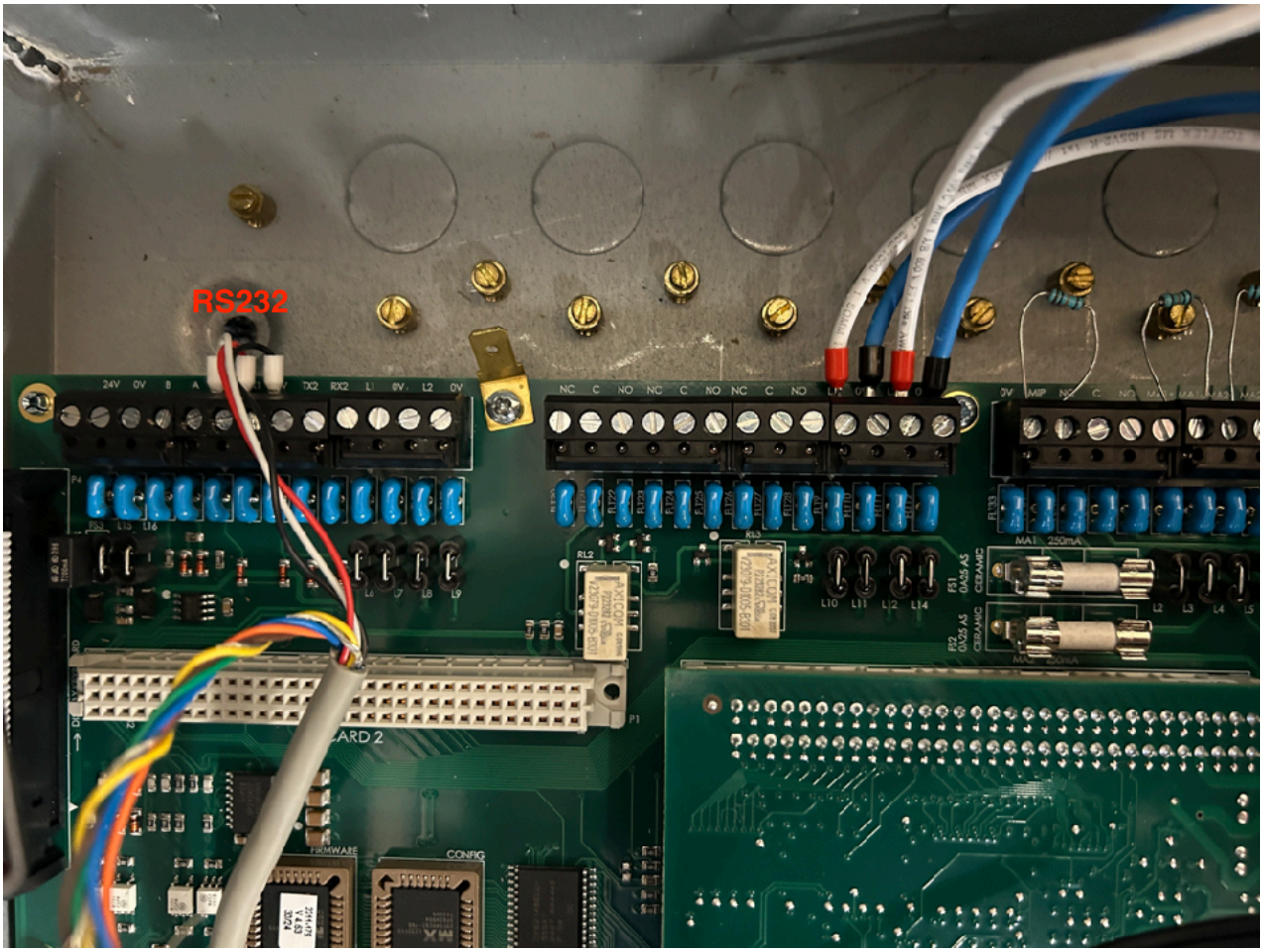
  When a device is isolated via the Gent Driver the associated Device point and Zone point will reflect an isolation status. If an event is received (for example Fault) for a device currently showing isolation the device will update to reflect he most recent event.
- Panel Sounders Action
  Allows a Panels Sounders to be Silenced or Activated.
- Panel Reset Action
  Allows a Panel to be Reset.
  If a fire event is active the panel must be silenced first and then reset.

PANEL COMMUNICATIONS INTERFACE

Vigilon Compact

Vigilon Compact panels have the communications interface onboard.

The RS232 communications interface is located at connector PB6, connections RX1 / TX1 / 0v in the top left corner of the main PCB.



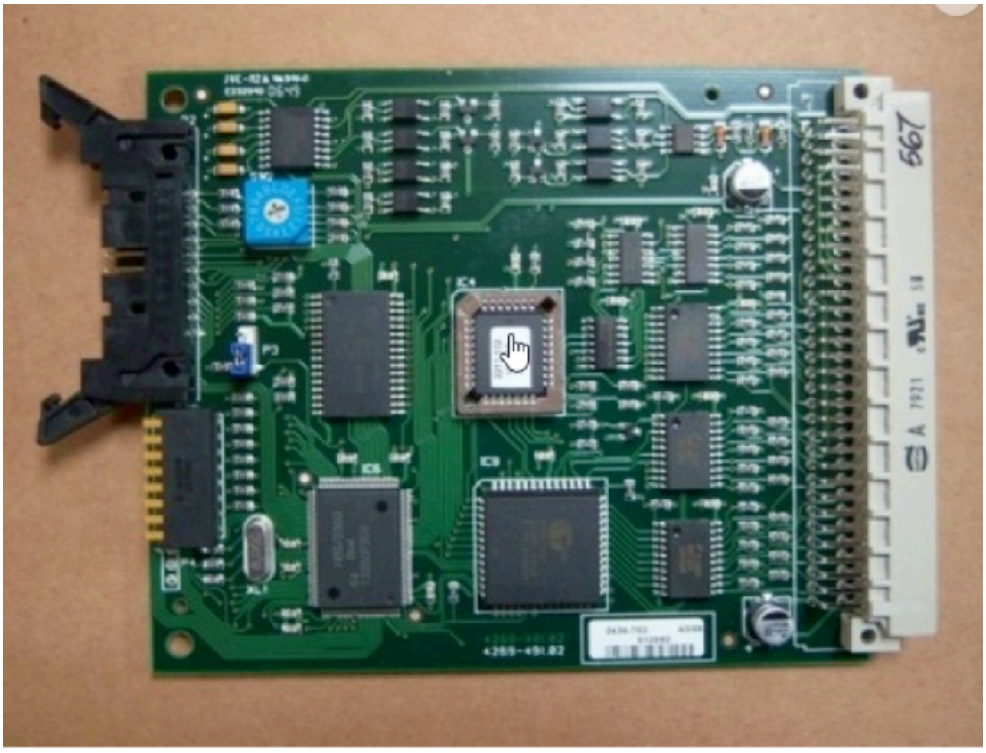
On the panel the communications interface must be configured:

- Press Menu
- Select Test / Eng
- Select Usercode
- Select etc
- Select Config
- Select etc
- Select Comms
- Select Card
- Enter Card 0
- Enter Port 1
- Scroll To **Universal**
- Press Enter
- Select Baud
- Scroll to **19200**
- Press Enter

Vigilon Full Size

Full size panels such as the Vigilon 4/6 Loop panels require an additional IO Card to be fitted. The specific communications interface is the VIG-IOC-DOM.

The I/O card has a 20 Way IDC socket on the end of it and should be installed in Slot 5 of the main panel motherboard.



Set the baud rate to 19200 8E1 via rotary switches. Setting No.3 of the rotary switch.

The RS232 data connection is located at connector Loop 5 on the top right of the main motherboard. Connection (4 - 0v / 6 - RX / 8 - TX)

On the panel the communications interface must be configured:

- Press Menu
- Select Test / Eng
- Select Usercode
- Select etc
- Select Config
- Select etc
- Select Comms
- Select Card
- Enter 15
- Select Baud
- Scroll to **19200**
- Press Enter

RS232 CABLE

The Gent Panel provides a terminal block RS232 connection. The specification of the cable from the Niagara controller is as follows:

JACE8000 / JACE9000:

Tridium Controller RS232 (DB 9F)	Vigilon Compact	Vigilon Full Size
2 (RX)	TX / TX1	Loop 5 - 8 (TX)
3 (TX)	RX / RX1	Loop 5 - 6 (RX)
5 (GND)	0v	Loop 5 - 4 (0v)
	CTS	
	RTS	

eBMS IoT Controller:

eBMS IoT Controller (RS232 Terminal)	Vigilon Compact	Vigilon Full Size
2 (RX)	TX / TX1	Loop 5 - 8 (TX)
1 (TX)	RX / RX1	Loop 5 - 6 (RX)
7 (GND)	0v	Loop 5 - 4 (0v)
	CTS	
	RTS	

The maximum cable length is 15m.
This means the Niagara controller must be installed directly adjacent to the Gent panel fitted with the communications interface.

If a remote interface is required (more than 15m) then use the TCP Driver option, additional hardware will be required for this option.

DRIVER CONFIGURATION

Connect to the Niagara station where you intend to configure the Gent driver.

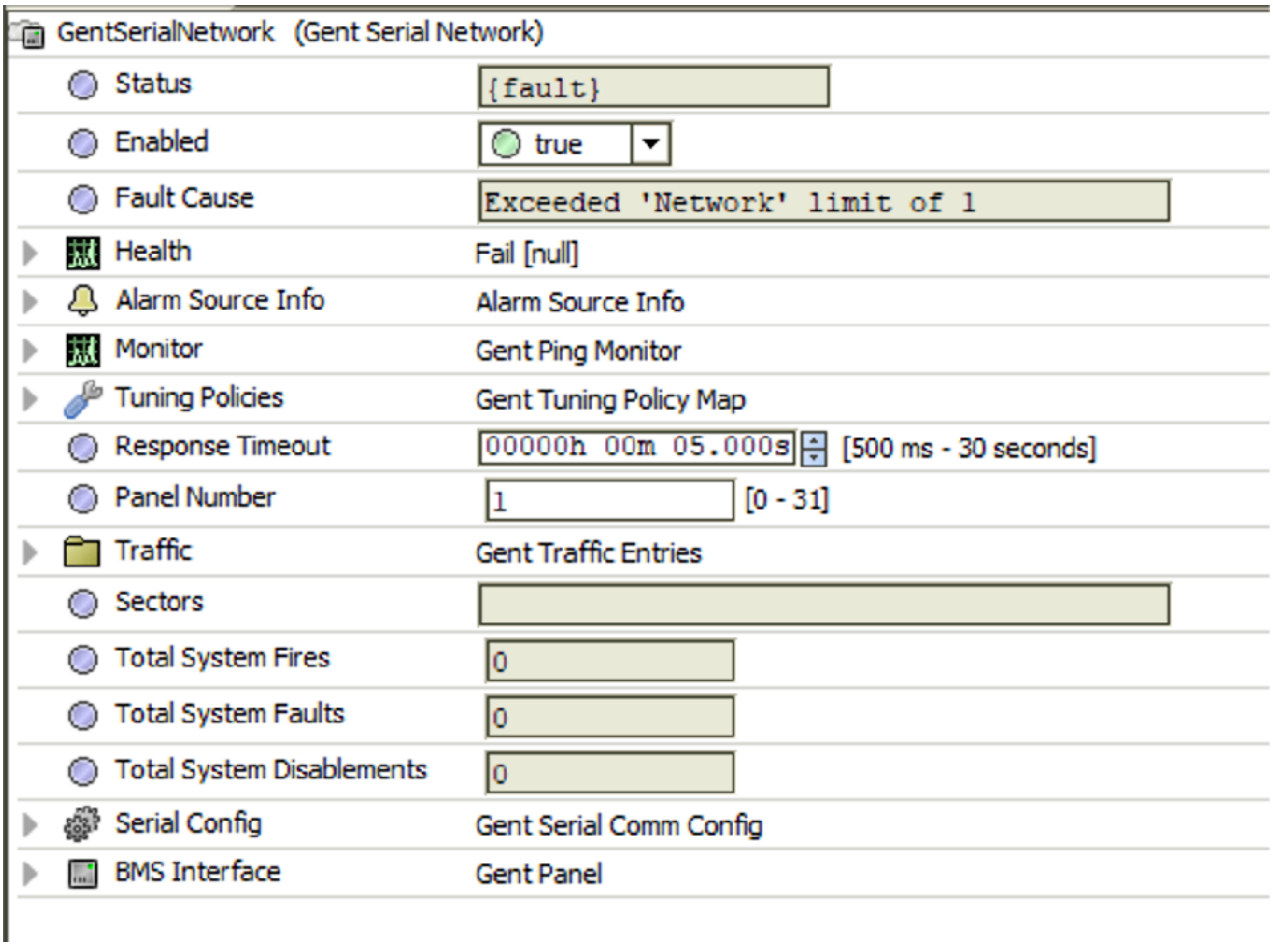
Expand **Config > Drivers** container and add a new **Gent** driver, there will be two choices:

- Gent Serial Network
- Gent TCP Network

Navigate to the **AX Property Sheet** view of the driver to configure based on the type of network selected.

Gent Serial Network

This driver option can only be used on a Niagara controller supporting a RS232 connection and cannot be used on a Web Supervisor.



Detailed settings are on the following page.

PROPERTY	DESCRIPTION
Status	Driver status should always be OK
Enabled	Enable / Disable the Driver
Fault Cause	Details of any configuration issues
Response Timeout	Default 5000ms (5 Seconds)
Panel Number	Address of the locally connected Panel
Serial Config > Port Name	The COM Port Name of the RS232 Serial Port Controller Hardware Platform Specific (COM3 etc)
Serial Config > Baud Rate	Set to 19200 bps to match the panel configuration
Serial Config > Others	8 Data Bits 1 Stop Bit Even Parity

Configure the Serial connection as required and save the property sheet. The serial port configuration will be dependent on the type of Niagara controller that is in use.

JACE8000 / JACE9000

JACE8000 or JACE9000 with 1x RS232 Expansion port (DB9 Male)

COM3 / 19200 bps

IoT Controller

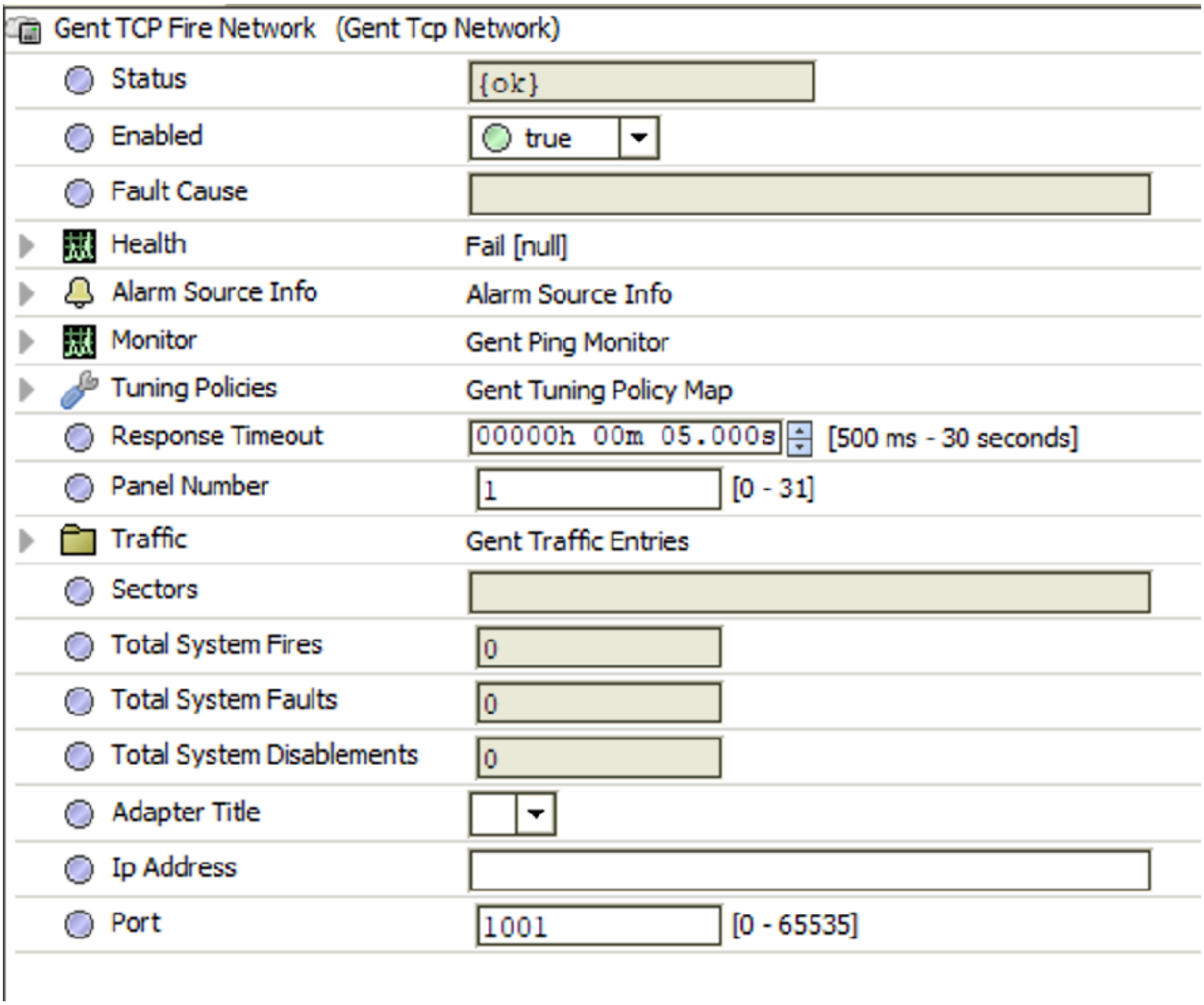
Onboard RS232 connection (Terminal Block)

RS232 / 19200 bps

Gent TCP Network

This option requires additional hardware to be purchased.

This driver option can be used on a Niagara controller that does not have a RS232 interface and can also be used on a Web Supervisor. Web Supervisors must have Global Capacity points licensed.



Detailed settings are on the following page.

PROPERTY	DESCRIPTION
Status	Driver status should always be OK
Enabled	Enable / Disable the Driver
Fault Cause	Details of any configuration issues
Response Timeout	Default 5000ms (5 Seconds)
Panel Number	Address of the locally connected Panel
Adaptor Title	Network Interface Adapter To Use.
IP Address	IP Address Of Target IP Gateway *Config dependent
Port	IP Port Of Target IP Gateway *Config dependent - Default 1001

IP DEVICE SERVER CONFIGURATION

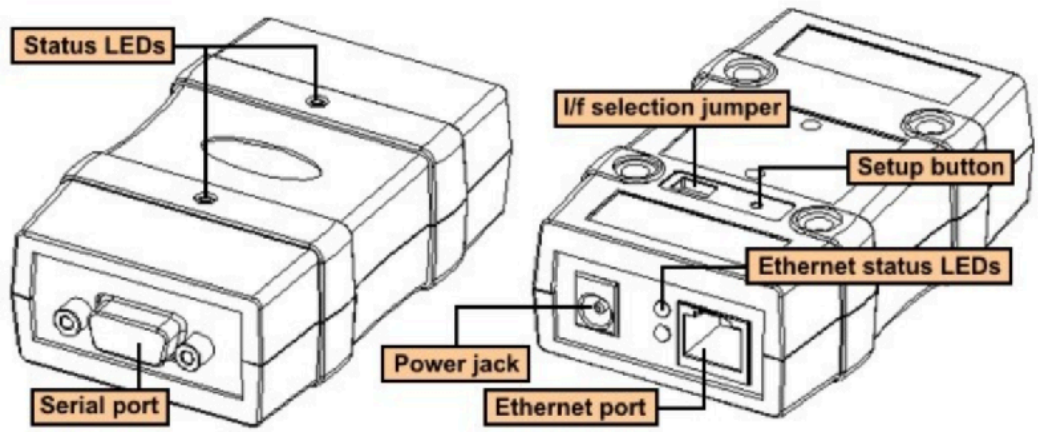
The IP Device Server will need to be configured for the remote connection to the Gent Open Protocol Interface. You will require the following:

- 12v DC Power Supply
- USB - RS232 Converter
- RS232 Null Modem Cable (DB9F - DB9F)
- Device Server Configuration Software

The Device Configuration Software can be downloaded from:

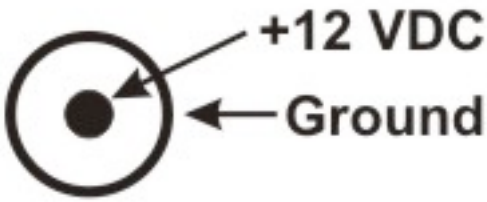
- https://tibbo.com/support/downloads/tdst.html

Device Server

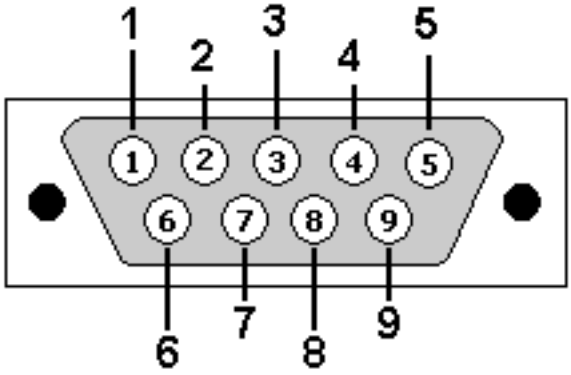


Power:

The Device Server is 12vDC Only, minimum of 500mA.



Serial Port DB9 Pin Out:



	RS232 (full-duplex op.)
#1	*<No connection>*
#2	**RX** (input)
#3	**TX** (output)
#4	*<No connection>*
#5	**Ground**
#6	*<No connection>*
#7	**RTS** (output)
#8	**CTS** (input)
#9	*<No connection>*

The Device Server does not have a fixed IP address and DHCP is not enabled by default. The device can **only** be initially configured via a serial RS232 connection.

Install the Device Server Tool Kit.

Power on the Device Server.
NOTE: 12vDC ONLY.

Connect the Device Server to your laptop via the **USB - RS232** converter and **null modem** cable.

Launch the Tibbo **DS Manager Tool.**

Select the **Serial Access** Tab.

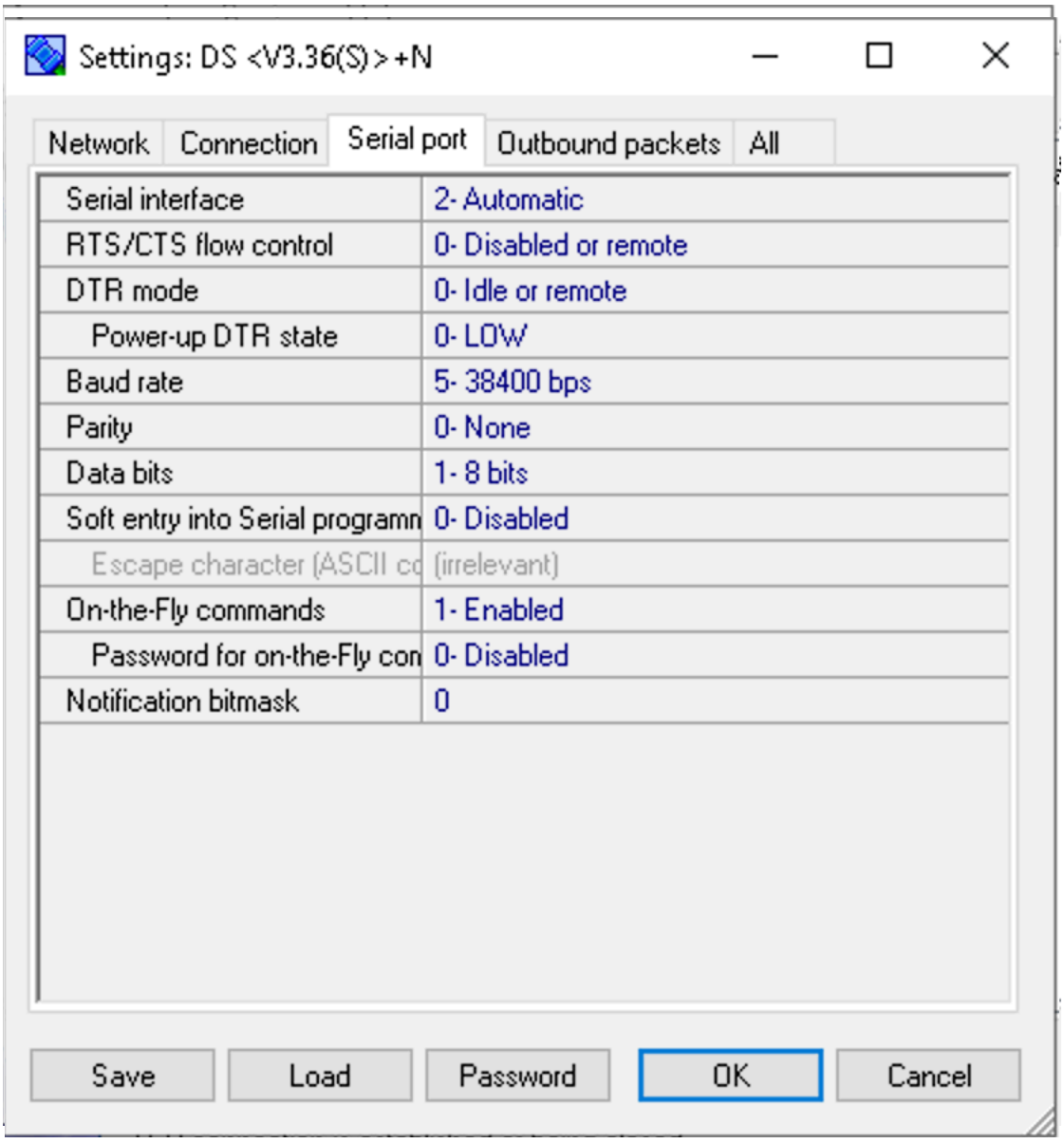
Select the **RS232 COM Port** your PC.

You will then be prompted to press the config button on the Device Server. You will need a sharp tipped implement such as a pencil or paper clip.

The Device will then connect and can be configured with the following settings.

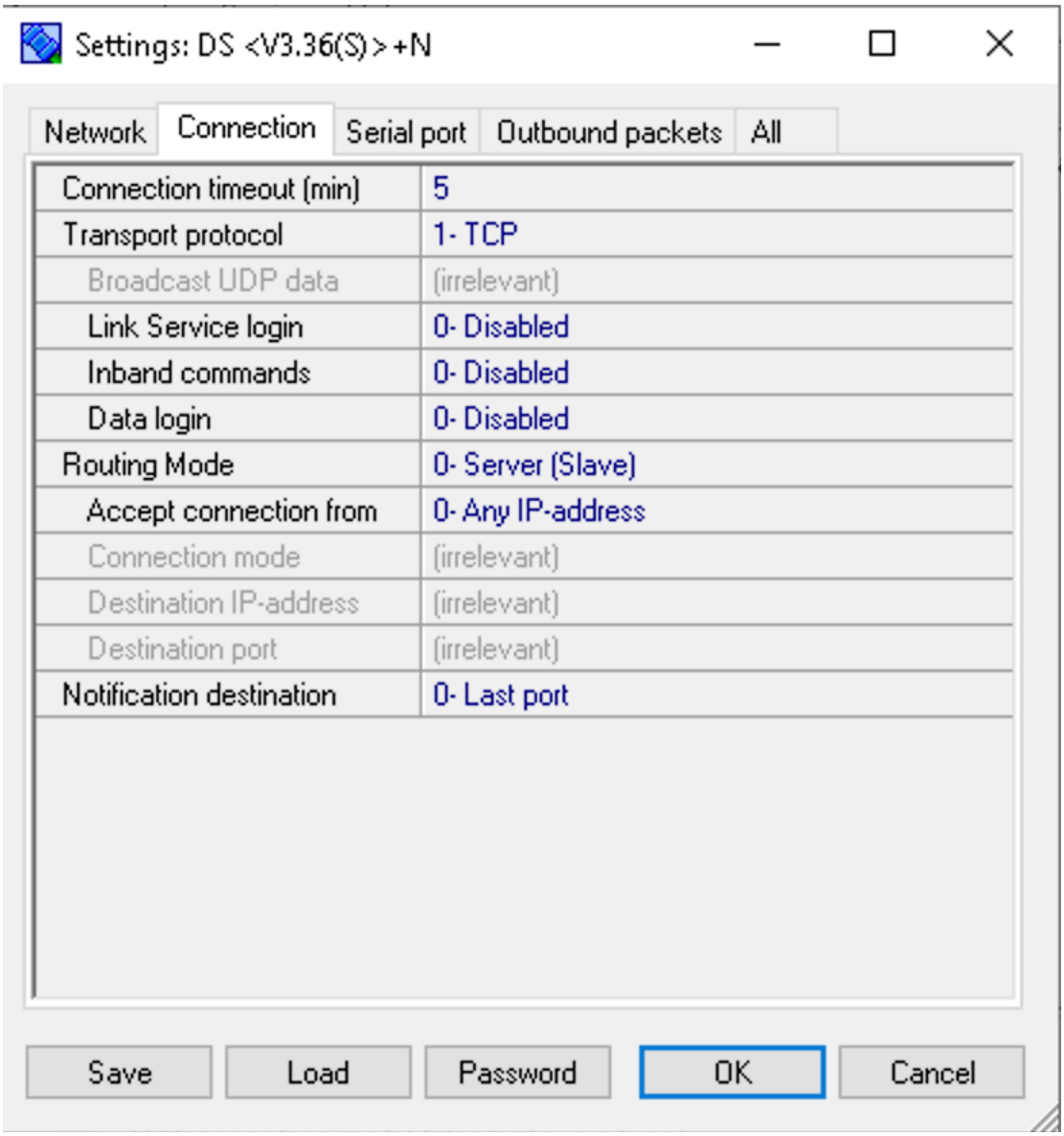
Network Settings Tab

- DHCP - **Disabled**
- IP Address - **Site Specific**
- Subnet Mask - **Site Specific**
- Gateway (If Required) - **Site Specific**
- Port - **1001 (Default)**



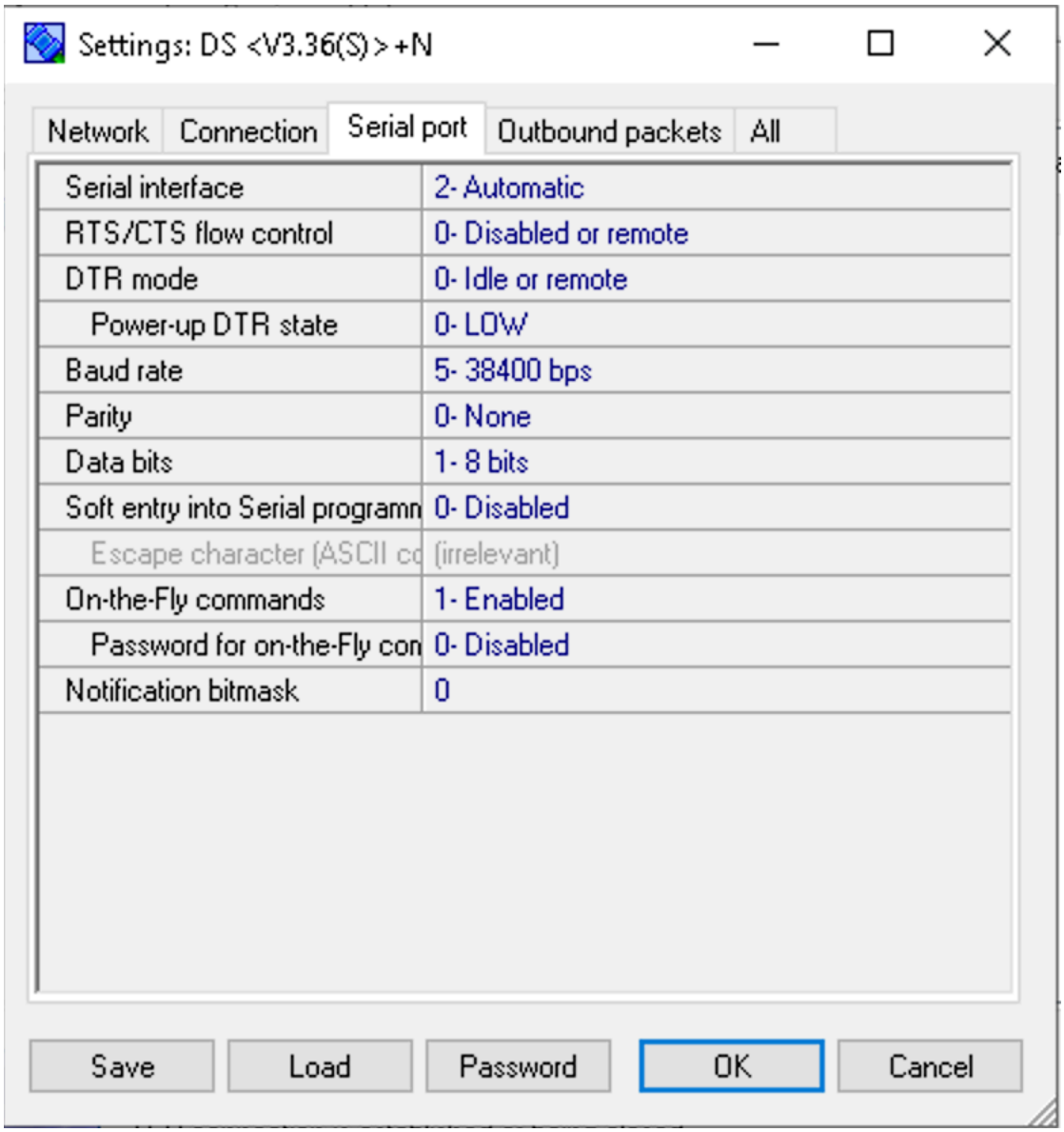
Network Settings

- Connection Timeout - **5 Mins (Default)**
- Transfer Protocol - **TCP**
- Routing Mode - **Server (Slave)**



Serial Settings

- Serial Interface - **Automatic**
- RTS / CTS Flow Control - **Disabled or Remote**
- Baud Rate - **19200bps**
- Parity - **Even**
- Data Bits - **8 bits**
- On Fly Commands - **Enabled**

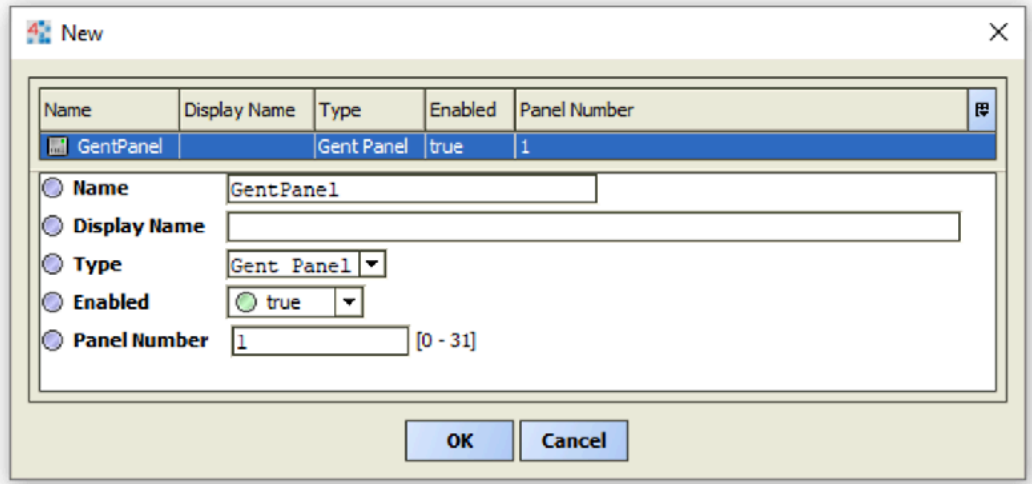


GENT DEVICE (PANELS)

The Gent network will always have 1x Device by default, this represents the locally connected Gent panel (Default of Panel Address1).

Each installed fire panel on the network will need a device adding to the network. It is recommended to add all panels before populating with data points.

To add a new Gent Panel Device click the **New Button**



PROPERTY	DESCRIPTION
Name	Real Name of the Panel
Display Name	Descriptive Label of the Panel
Panel Number	Physical Address of the Panel

Each New Panel Device will support:

- Device Points
- Zone Points
- Supervisory Points

DEVICE (PANEL) COMMANDS

The Gent Network supports several Actions or Commands, these are accessible via **right clicking** the **Device > Actions**

ACTION	DESCRIPTION
Ping	Ping the specific Panel Address
Import CSV	Import a CSV configuration file Allows rapid configuration of all devices in the panel
Export CSV	Export a CSV configuration file Allows the current configuration to be exported and quickly edited for re-import
Reset Panel	Reset command to this panel only
Sounders On	Turn the sounders ON **WARNING:** this will evacuate the panel
Sounders Off	Turn the sounders OFF After a fire event the sounders must be turned off before the panel can be reset
Clear All States	Clear all points values to a 'Normal' condition

DEVICE POINTS

Device points can be added by:

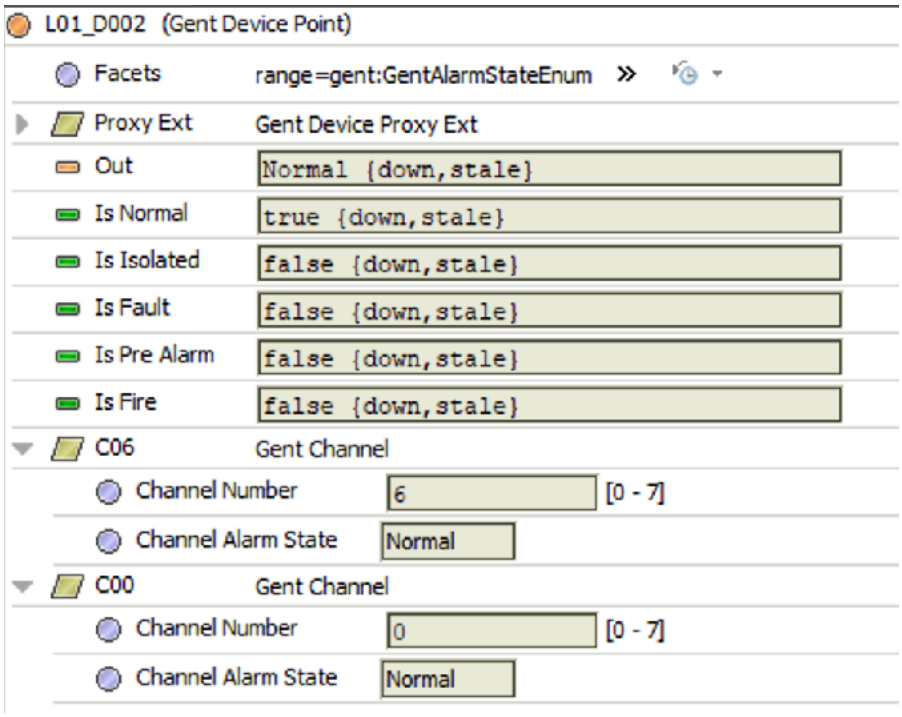
- Manually Creating Point(s)
- Automatic Creation of Points Based on Incoming Events
- CSV Import

Each Device Point will consume 1x Tridium Global Capacity Point.

Device points are sourced from a Loop (Loop 1 - 16).

Whilst the driver is communicating with the fire system it is not a ‘polling based’ driver, the system is fully event driven. This means that as an event occurs in real time on the fire panel(s) an event message is reported to the Gent communications interface. This message is then reported to the driver and the associated fire alarm ‘point’ will be updated to reflect the active state.

Each Device Point is a Multi State Enumerated Point. Within the Point there are additional Status Slots reflecting specific conditions.



Point Facets are:

VALUE	DESCRIPTION
0	Normal
1	Isolated / Disabled
2	Fault
3	Pre-Alarm (Not available in Gent Open Protocol)
4	Fire

The Gent Channel slot will only be created when an Event for the specific sub-channel occurs. The Fault & Fire conditions occur on different Sub-Channels.

Any of the available slots can be referenced within the Station for PX Pages, Wire Sheet logic or BMS Point Export such as Modbus or BACnet.

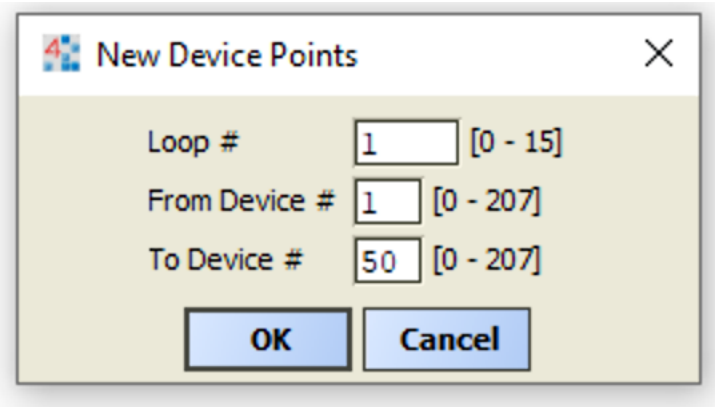
Manually Creating Device Points

Navigate to the target **Panel** > **Device Points** container.

It is recommended to create a **Points Folder** to represent each Loop of fire alarm devices. Otherwise the Point container may become a very large list of Points.

Select the **New** Button.

A range of input settings will be requested:



PROPERTY	DESCRIPTION
Loop	Loop Number Devices Will Belong To
From Device	Fire Detection Start Address
To Device	Fire Detection End Address

Automatic Creation of Device Points

Navigate to the **Panel** > **AX Property Sheet View** container.

Set the property Create Points From Alarm to True.

The driver will then automatically create points upon the receipt of new Events.

Warning: This may exceed your current license limitations based on the size of the fire alarm system being connected.

CSV Import of Device Points

Navigate to the **Panel > Device Points** container.

Right click on the parent **Panel Device > Actions** and select **CSV Export**.

The CSV file will be exported to the Station folder ***gent\csvExports***

The CSV file can then be edited with Excel or similar.

Panel #	Point Type	Folder Path	Loop #	Device #	Zone #	Display Name
1	Device	Loop 1	1	1	1	Kitchen Manual Call Point

Once the CSV file has been updated the file should be re-saved to the folder ***gent\csvImports***

Right click on the parent **Panel Device > Actions** and select **CSV Import**.

Select the target CSV file.

The Device Points container will then populate as per the configured CSV file.

DEVICE POINT COMMANDS

The Gent Device points support several Actions or Commands, these are accessible via **right click the Device Point > Actions**

ACTION	DESCRIPTION
Isolate Device	Isolate / Disable the Device.
De-Isolate Device	De-Isolate / Enable the Device.

NOTE: The Gent Open Protocol does not report isolation states.

If a device is isolated via the panel display the driver will not reflect the isolation status.

If a device is isolated via the Gent driver the point state will reflect isolated. If the same device is de-isolated via the panel display the Gent driver point state will remain isolated. If a new event (such as Fault) is received the point will automatically update from Isolated to the newly reported state.

ZONE POINTS

Zone points belong to each individual panel.

Zone points can be added by:

- Manually Creating Point(s)
- Automatic Creation of Points Based on Incoming Events
- CSV Import

Each Zone Point will consume 1x Gent Point & 1x Tridium Global Capacity Point license.

Zone points are not reliant on the associated Gent Panel OR Device points being programmed. This means that driver can be configured only with Zone points and still function correctly reflecting the live state of the fire alarm system.

A Zone can potentially have multiple events occurring at the same time:

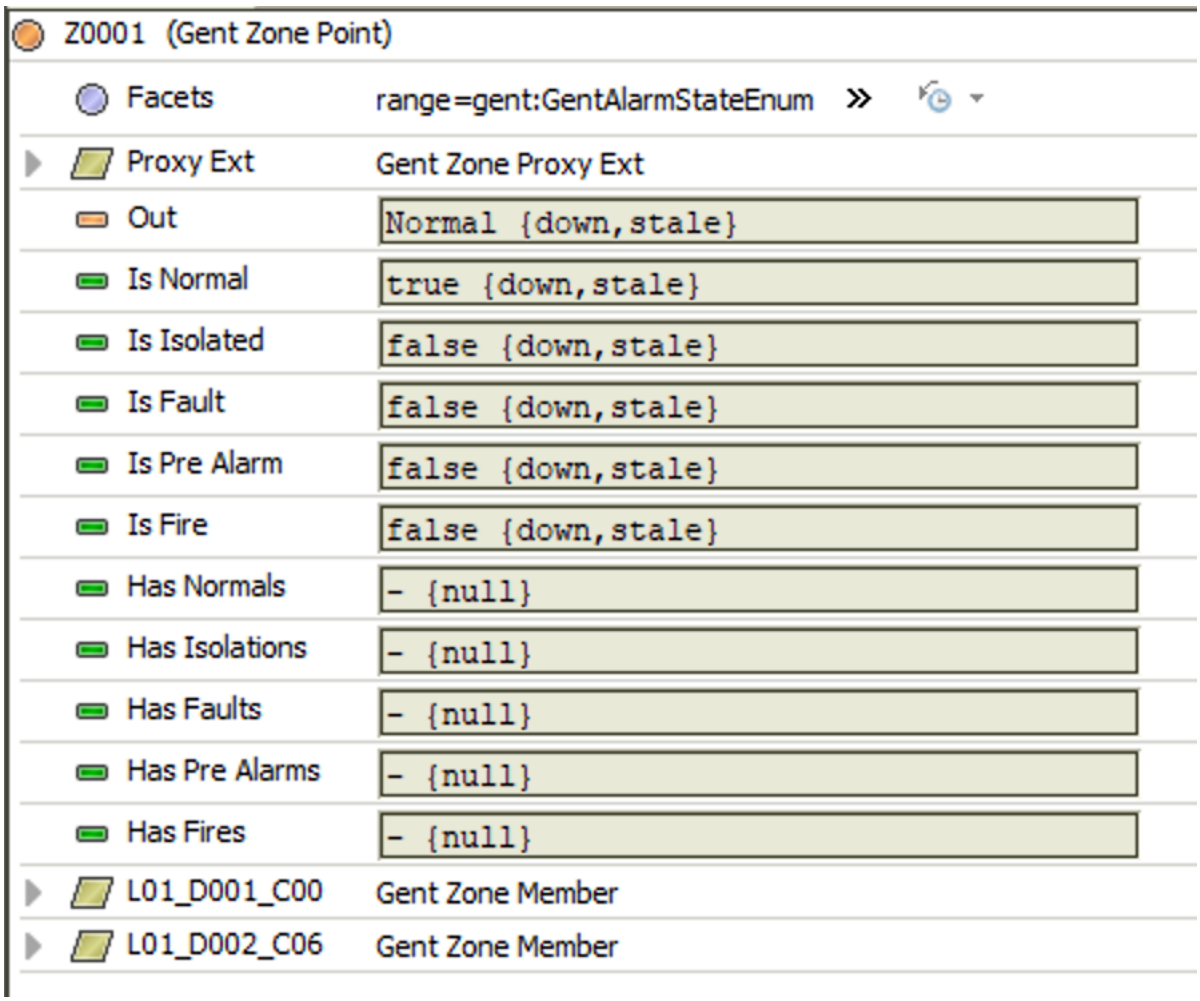
- Fires
- Faults
- Isolations

The Zone Point Out slot will reflect the most significant state of the fire alarm system, Fire Alarm conditions will always be the most significant state. The point will also present additional informant slots:

- Is Fire
- Is Pre Alarm (Not available in Gent Open Protocol)
- Is Fault
- Is Isolated
- Has Fire(s)
- Has Pre Alarm(s) (Not available in Gent Open Protocol)
- Has Fault(s)
- Has Isolations(s)

Whilst the driver is communicating with the fire system it is not a 'polling based' driver, the system is fully event driven. This means that as an event occurs in real time on the fire panel(s) an event message is reported to the Gent Communications Interface. This message is then reported to the driver and the associated fire alarm 'point' will be updated to reflect the active state.

Each Zone Point is a Multi State Enumerated Point. Within the Point there are additional Status Slots reflecting specific conditions.



Point Facets are:

VALUE	DESCRIPTION
0	Normal
1	Isolated / Disabled
2	Fault
3	Pre-Alarm (Not available in Gent Open Protocol)
4	Fire

Additional Slots are also provided.

The **Is** fields represent the current most significant state of the Zone. Fire Alarm will always be the most significant event.

The **Has** fields represent all conditions in the current zone. It is possible for a Zone to have all conditions active a the same time based on one detector being in each possible state.

Each of the associated detection points are also listed underneath the Zone, providing they are programmed in the Station.

Any of these slots can be referenced within the Station for PX Pages, Wire Sheet logic or BMS Point Export such as Modbus or BACnet.

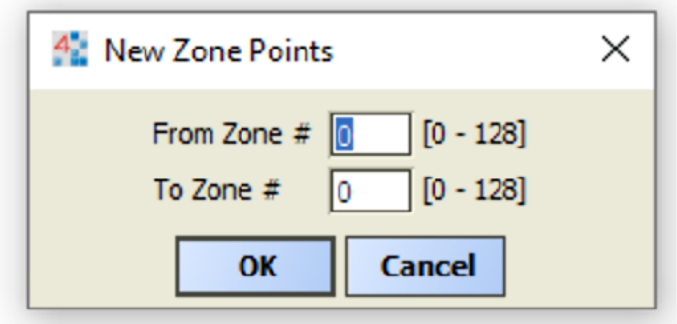
Manually Creating Zone Points

Navigate to the **System Node** > **Zone Points** container.

Select the **New** Button.

Enter a range of the Zones to be created. For example

- From 1 To 1
- From 1 To 20



PROPERTY	DESCRIPTION
Display Name	Programmed Label of the Zone
Enabled	Enable / Disable This Point
Zone Number	Number of the Zone This property is frozen and non adjustable

Automatic Creation of Zone Points

Navigate to the **Panel** > **AX Property Sheet View** container.

Set the property Create Points From Alarm to True.

The driver will then automatically create points upon the receipt of new Events.

Warning: This may exceed your current license limitations based on the size of the fire alarm system being connected.

CSV Import of Zone Points

Navigate to the **Panel** > **Zone Points** container.

Right click on the parent **Panel Device > Actions** and select **CSV Export**.

The CSV file will be exported to the Station folder ***gent\csvExports***

The CSV file can then be edited with Excel or similar.

Panel #	Point Type	Folder Path	Loop #	Device #	Zone #	Display Name
1	Zone				1	Ground Floor East
1	Zone				2	Ground Floor West

Once the CSV file has been updated the file should be re-saved to the folder ***gent\csvImports***

Right click on the parent **Panel Device > Actions** and select **CSV Import**.

Select the target CSV file.

The Zone container will then populate as per the configured CSV file.

ZONE POINT COMMANDS

The Gent Zone points support several Actions or Commands, these are accessible via **right click the Zone Point > Actions**

ACTION	DESCRIPTION
Isolate Zone	Isolate / Disable the Zone
De-Isolate Zone	De-Isolate / Enable the Zone

SUPERVISORY POINTS

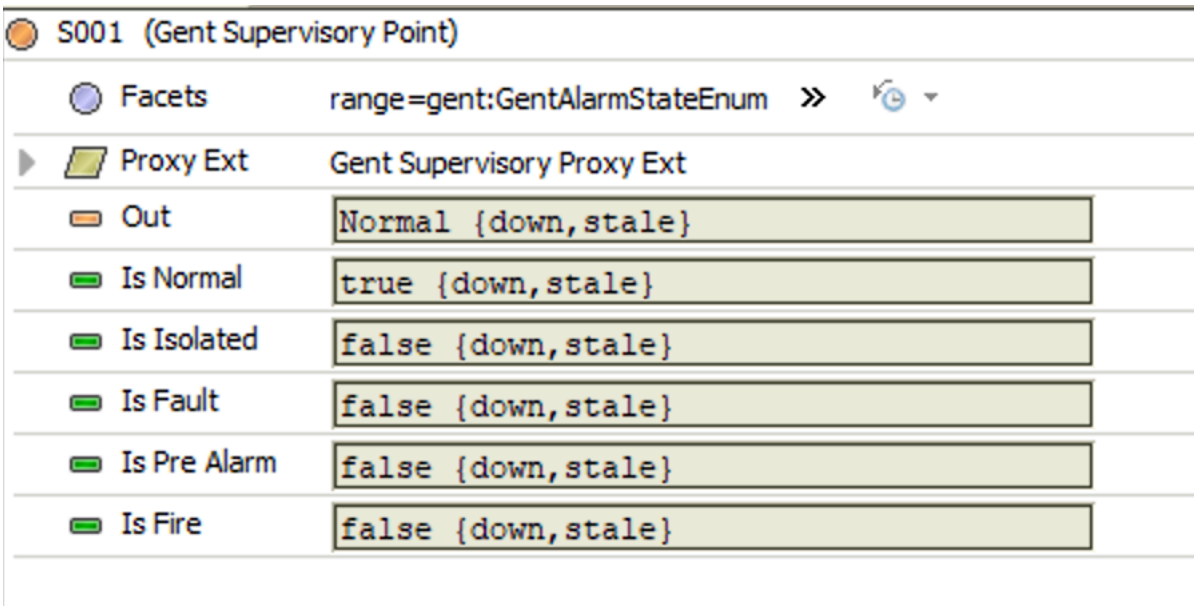
Device points can be added by:

- Manually Creating Point(s)
- Automatic Creation of Points Based on Incoming Events
- CSV Import

Each Supervisory Point will consume 1x Tridium Global Capacity Point.

Whilst the driver is communicating with the fire system it is not a ‘polling based’ driver, the system is fully event driven. This means that as an event occurs in real time on the fire panel(s) an event message is reported to the Gent communications interface. This message is then reported to the driver and the associated fire alarm ‘point’ will be updated to reflect the active state.

Each Supervisory Point is a Multi State Enumerated Point. Within the Point there are additional Status Slots reflecting specific conditions.



Point Facets are:

VALUE	DESCRIPTION
0	Normal
1	Isolated / Disabled
2	Fault
3	Pre-Alarm (Not available in Gent Open Protocol)
4	Fire

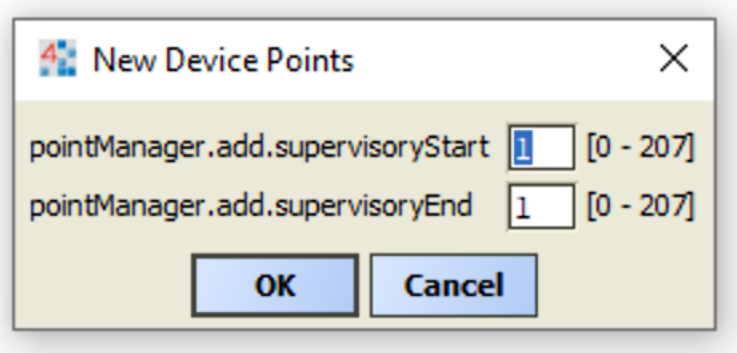
Any of the available slots can be referenced within the Station for PX Pages, Wire Sheet logic or BMS Point Export such as Modbus or BACnet.

Manually Creating Device Points

Navigate to the target **Panel** > **Supervisory Points** container.

Select the **New** Button.

A range of input settings will be requested:



PROPERTY	DESCRIPTION
From Device	Fire Detection Start Address
To Device	Fire Detection End Address

Automatic Creation of Supervisory Points

Navigate to the **Panel** > **AX Property Sheet View** container.

Set the property Create Points From Alarm to True.

The driver will then automatically create points upon the receipt of new Events.

Warning: This may exceed your current license limitations based on the size of the fire alarm system being connected.

CSV Import of Supervisory Points

Navigate to the **Panel > Device Points** container.

Right click on the parent **Panel Device > Actions** and select **CSV Export**.

The CSV file will be exported to the Station folder ***gent\csvExports***

The CSV file can then be edited with Excel or similar.

Panel #	Point Type	Folder Path	Loop #	Device #	Zone #	Display Name
1	Supervisory			1		BMS Critical Alarm

Once the CSV file has been updated the file should be re-saved to the folder ***gent\csvImports***

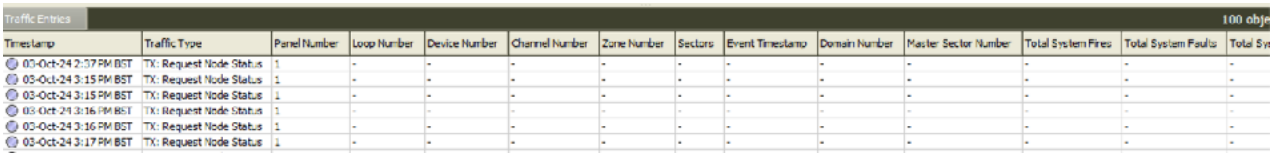
Right click on the parent **Panel Device > Actions** and select **CSV Import**.

Select the target CSV file.

The Device Points container will then populate as per the configured CSV file.

RECENT EVENT LIST

The Gent Driver provides a list of recent events from the fire system. This can accessed form the **Gent Network > Traffic** folder.



The Table can be used for testing and diagnosis. The table format is as follows:

- Timestamp
- Traffic Type
- Panel Number
- Loop Number
- Device Number
- Chanel Number
- Zone Number
- Sectors
- Event Time Stamp
- Domain Number
- Master Sector Number
- Total System Fires
- Total System Faults
- Total System Disablements
- Supervisory Number
- Device Text
- Disable

The Event Viewer Window also includes a **Clear All Events** Button at the bottom of the Window.

The Event Viewer will keep the last 100 Events by default, this can be increased to a maximum of 1000 events via the **AX Property Sheet** View.

REVISION HISTORY

REVISION	DESCRIPTION
1.0	Draft Release For Approval
1.1	Panel RS232 Connections Expanded RS232 Connections Expanded