

ALLIED ELECTRONICS, INC

NeXGen Controller

Installation and Start Up Guide

ExxonMobil

NeXGen-to-Wayne Direct



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Table of Contents

1	General Information.....	1-1
1.1	Installation Environment.....	1-1
1.2	Wiring.....	1-1
1.2.1	Field Wiring.....	1-1
1.2.2	Internal Wiring.....	1-1
1.2.2.1	Introduction.....	1-1
1.2.2.2	Planning.....	1-1
1.2.2.3	Execution.....	1-2
1.2.2.4	Testing.....	1-2
1.3	Power and Data line protection.....	1-3
1.4	Warranty.....	1-3
1.5	FCC Warning.....	1-3
1.6	Overview.....	1-4
2	Installation Information.....	2-1
2.1.1	Procedures.....	2-1
2.2	Configuration Diagram.....	2-3
2.2.1	NeXGen to Wayne.....	2-3
2.3	Communication Cable and RJ45 Pin Assignments.....	2-4
2.3.1	POS Communication.....	2-4
2.3.2	Wayne Dispenser Communication.....	2-5
2.3.2.1	Wayne Direct to the Wayne Data Distribution Box.....	2-5
2.3.2.2	Wayne Direct to the Gilbarco Distribution Box.....	2-5
2.3.3	Wayne CAT Communication.....	2-6
2.3.3.1	Wayne Direct CAT via the Allied Isolation Box.....	2-6
2.3.4	ExxonMobil VSAT Cable.....	2-6
2.3.5	Wayne Direct TRAC.....	2-7
2.3.6	Tank Gauge Communication.....	2-8
2.3.6.1	Veeder Root TLS 250/350.....	2-8
2.3.6.2	Veeder Root TLS 450.....	2-8
2.3.6.3	Red Jacket ST.....	2-9
2.3.6.4	Omntec.....	2-10
2.3.6.5	OPW EECO.....	2-10
2.3.6.6	Incon Tank Sentinel.....	2-11
2.3.7	Car Wash Communication.....	2-12
2.3.7.1	Ryko III and Kesseltronics Standard.....	2-12
2.3.7.2	Ryko IV (S/N less than 166600), Unitec POS 4000 and Portal Ti.....	2-12
2.3.7.3	Unitec Enterlink, Smart terminal and Ryko IV (S/N 166600 or greater).....	2-13
2.3.7.4	PDQ.....	2-13
2.3.7.5	Kesseltronics Advanced dual bay via the MUX PAP isolator box.....	2-14
2.3.8	Fuel Price Sign Communication.....	2-15
2.3.8.1	Daktronics Fuel Price Sign.....	2-15

ExxonMobil • NeXGen • Wayne Direct / Installation and Start Up Guide

2.3.8.2 Future Media Displays Fuel Price Sign 2-15

2.3.8.3 PWM Fuel Price Sign 2-15

2.3.9 ExxonMobil VSAT Cable 2-16

3 Programming..... 3-1

3.1 Wayne Direct Addressing 3-1

3.1.1 Wayne Direct Dispensers and CATs 3-1

3.1.2 Wayne “Vista” Dispensers 3-2

3.1.3 Wayne “Vista” Blending Dispensers 3-2

3.1.4 Wayne Blending Quick Reference Guide 3-6

3.1.5 Gilbarco Distribution Box Jumper Settings 3-7

3.2 NeXGen Parameters Values and Options 3-8

3.3 Wayne Keypads 3-9

3.4 Peripheral Devices 3-17

3.4.1 Tank Gauge Systems 3-17

3.4.2 Car Wash Controllers 3-18

3.4.3 Fuel Price Signs 3-19

1 General Information

1.1 Installation Environment

1. The Allied Electronics NeXGen Controller (NeXGen) operates on 115 VAC @60Hz, 36 Watts. The NeXGen controller is supplied with approximately 8 feet of 115 VAC power cord, and should be connected to an approved isolated ground receptacle on its own dedicated circuit. The NeXGen must be installed in a temperature controlled environment (between 32⁰ F and 100⁰ F).
2. The controller must be installed in accordance with the National Electrical Code (NFPA 70), the Automotive and Marine Service Station Code (NFPA 30A), and all state and local electrical codes.
3. The controller must be installed indoors, above the Class 1, Division 2 Hazardous location.
4. The controller is designed for use with peripheral devices which are UL Listed.

1.2 Wiring

1.2.1 Field Wiring

All field wiring (that is, all wiring connected directly to dispensing devices) should be oil and gas resistant, as required by Paragraph 501-13 of the NEC, and should be sealed in accordance with Article 500 of the NEC.

1.2.2 Internal Wiring

1.2.2.1 Introduction

- a. The purpose of this section is to provide a list of installation practices that we feel are crucial to ensure error-free communications.
- b. All cabling must comply with Local, State, and Federal building codes.
- c. Data connections between the Forecourt Controller (SSC or NeXGen) are to be made with CAT-5 Cable compliant with TIA/EIA-568-B or better.
- d. Proper cable installation techniques go a long way to preventing data loss.

1.2.2.2 Planning

- a. Pull cables in continuous runs.
- b. Do not splice any communications cables.
- c. Separate all cables from fluorescent lighting ballasts and neon sign transformers by at least 4 feet.
- d. Separate all cables from electrical supply conductors by at least 2 feet.
- e. Provide extra wire for service loops at the termination points but do not leave more than is required.

1.2.2.3 Execution

- a. Maintain the natural twist of the cable.
 - i. The cables have four pairs of twisted wires that can very easily lose their ability to reject electromagnetic interference when unraveled.
 - ii. Pay-out cable from spools so that the spool rotates.
- b. Avoid kinking and over-stressing the cable.
 - i. Kinks not only pick up interference, but can cause the jacket to chafe and internal conductors to break.
 - ii. Never exert more than 25 pounds of tension when pulling a communications cable.
- c. Provide a generous bend radius whenever the cable turns a corner.
 - i. Never bend the cable more than 90 degrees.
 - ii. Limit the bend to a 3 inch radius.
 - iii. Use a 1 pound coffee can as a guide.
- d. Support all cabling in both horizontal and vertical planes.
 - i. Unsupported horizontal cable runs, especially above drop ceilings, are problematic.
 - ii. In the event that cable trays are not available, the cabling can be secured with zip-ties, hook clips, J-hooks, or plastic coated staples provided they are spaced no greater than 2' apart.
 - iii. Do not use utility piping or drop ceiling grid-work to secure or support communications cables.
- e. Protect the cable from mechanical damage and install appropriate fire blocking whenever cables pass through floors or walls.
- f. Install carefully all zip-ties ensuring that they do not bite into the cable through excessive force.
- g. Label both ends of all cables.
- h. Use the proper punch down tool and ensure it is set properly.
 - i. Remove as little of the jacket as possible.
 - ii. Untwist the conductors as little as possible.

1.2.2.4 Testing

- a. Inspect thoroughly all cables for damage after they are pulled and before they are bundled or otherwise secured.
- b. Perform a continuity test of all pairs.

1.3 Power and Data line protection

Allied Electronics recommends that the controller be installed with the appropriate power and data line protection devices in order to protect against power surges, transients, low voltage (brown outs), and lightning.

Note: Due to the magnitude of power that's contained within a lightning strike it's impossible to totally eliminate the possibility of damage, but we feel with the introduction of high quality protection devices the incidence of failure can be greatly reduced.

1.4 Warranty

The controller has a one year parts warranty only, from date of installation, which can either be phoned in or submitted using the warranty registration card enclosed with every controller. If the start up information is not registered with our office within thirty (30) days of installation, warranty will begin from the date of shipment. Allied will warrant the controller against defects but not against physical damage or improper installation. All controllers being returned "under warranty" must be accompanied with an Allied RMA number. When calling Allied for an RMA number, you will be asked for the controller serial number, located on the base unit, and a description of the problem.

1.5 FCC Warning

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class "A" computing device pursuant to Subpart B of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

1.6 Overview

The NeXGen controller interfaces to the following devices:

Wayne Dispensers & CATs

1. Wayne dispensers via the 20/30/45 mA current loop & RS485 4-port board, which is connected to the manufacturer's distribution box or appropriate 3rd party distribution box.
2. Wayne CATs, Graphic displays, Debit MSM modules and Cash acceptors via a 4 channel RS-485 interface board which can be connected to the Allied Isolation box or can be hard wired directly to the individual CATs via a junction box.
3. DSM (DUKPT Security Module) or MSM (Security Module) for CAT systems with debit support. The controller communicates to the unit via the RS485 port used for CAT communications.

Point - Of - Sale (POS)

1. Generic PC based Point -Of -Sale Computer via an RS-232 port or Ethernet port, supporting the ANDI protocol interface.

Tank gauge

1. Veeder-Root TLS 250, 350 & 350R or equivalent tank gauge system via an RS-232 port.
2. Any Tank Gauge system that supports the Veeder Root protocol.

Car Wash

1. Ryko III, Ryko IV, Unitec POS 4000, Unitec/Enterlink, Unitec Portal Ti, Unitec Smart Terminal, PDQ and Kesseltronics Car Wash controllers via a fully populated RS-232 board.
2. Ryko compatible controllers

Fuel Price Sign

1. Daktronics, Future Media and PWM Price sign via a fully populated RS-232 board.

VSAT

1. Hughes satellite system used to communicate to the Credit Card host via a fully populated RS-232 board.

RFID

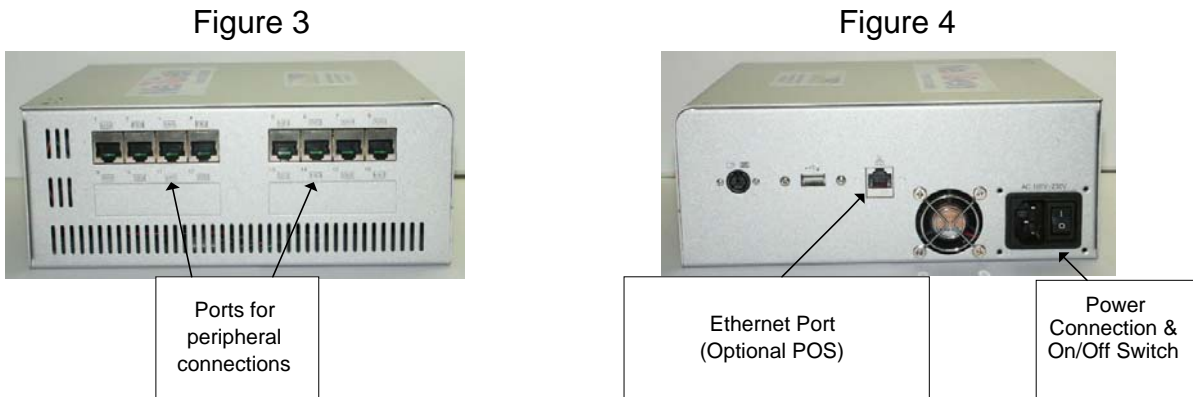
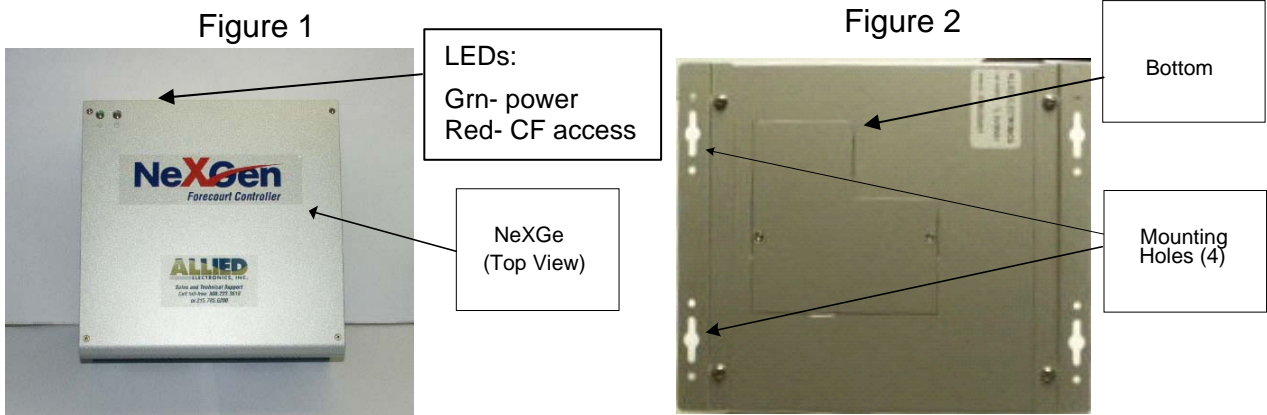
1. Wayne TRAC system via an RS-485 interface board.
2. Gilbarco TRIND system via a 45mA current loop board used for the CRIND interface.

2 Installation Information

2.1.1 Procedures

1. Hardware Installation

- a. Attach the two mounting brackets to the NeXGen controller as shown in figure 2.
- b. Mount the NeXGen controller unit to the mounting area using the mounting holes as shown in figure 2. Underwriters Laboratories (UL) requires that NeXGen be mounted horizontally to the floor on a shelf perpendicular to the wall. The bottom of the unit, with the CF access panel, should lay flat on the mounting surface. The mounting brackets secure NeXGen to the mounting surface.
- c. Route and connect all communication cables as labeled. Refer to “*Configuration Diagrams*” section (see figure 3).
- d. Apply AC power to unit by turning the power switch to the ON position (see figure 4).



2. Startup and System Beep Sequence

Once the NeXGen system is powered up, the controller will beep indicating the following events have been successful:

- a. One beep- the NXG operating system is starting up.
- b. Two beeps- the application software is loading.
- c. Three beeps- NXG has received an IP address from the DHCP server.

3. Programming steps

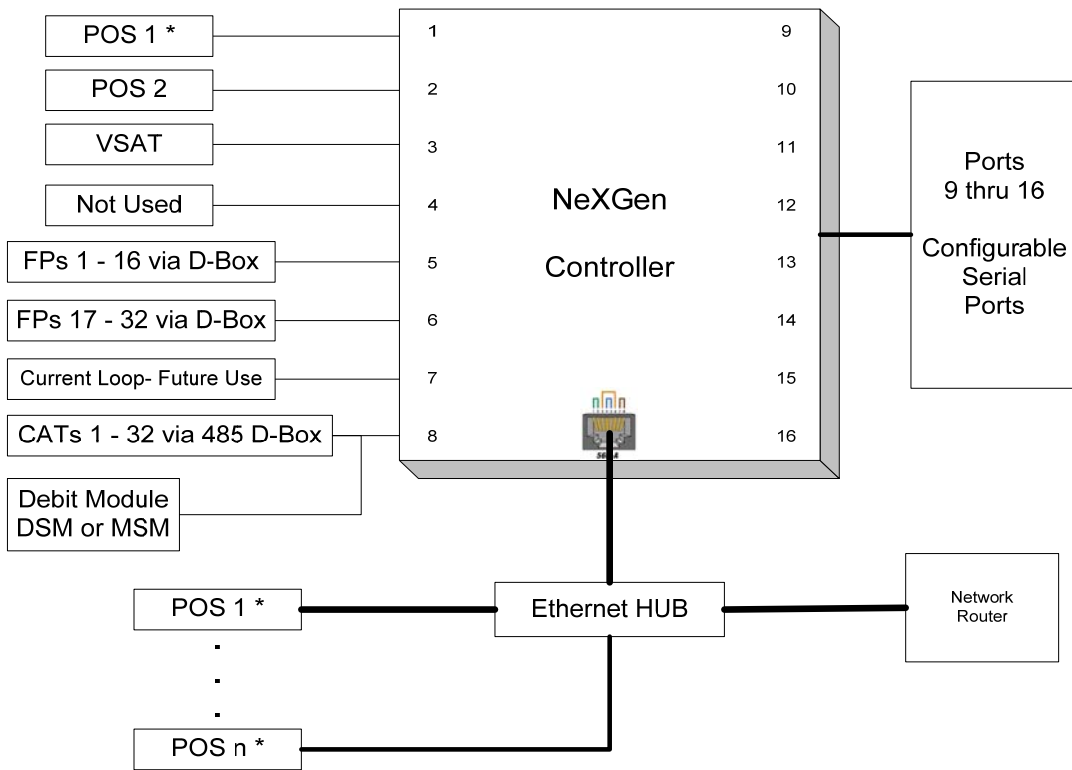
- a. Program the dispensers*.
- b. Program the NeXGen controller via the POS**.

Note* - Dispenser programming is not within the scope of this manual.

Note** - It is not within the scope of this manual to supply complete step-by-step POS programming instructions.

2.2 Configuration Diagram

2.2.1 NeXGen to Wayne



This figure describes the NeXGen to Wayne system installation.

* Note: denotes alternative POS connectivity options (RS232 vs. Ethernet)

Communication Ports

CH 1- POS	On board RS-232 port
CH 2- POS	On board RS-232 port
CH 3- VSAT	On board RS-232 port
CH 4- Not Used or Reserved for Future Use	
CH 5- Dispenser	20/30/45 mA current loop port
CH 6- Dispenser (Optional).....	20/30/45 mA current loop port
CH 7- Dispenser (Optional).....	20/30/45 mA current loop port
CH 8- Card Readers/ CATs & Debit Module...	8-wire RS485 port
CH 9- TBD (Optional)	20/30/45 mA current loop port
CH 10- TBD (Optional)	20/30/45 mA current loop port
CH 11- TBD (Optional)	20/30/45 mA current loop port
CH 12- TRAC.....	8-wire RS485 port
CH 13- TBD (Optional)	Configurable Serial Port if present
CH 14- TBD (Optional)	Configurable Serial Port if present
CH 15- TBD (Optional)	Configurable Serial Port if present
CH 16- TBD (Optional)	Configurable Serial Port if present
ETHERNET	Network and POS

2.3 Communication Cable and RJ45 Pin Assignments

2.3.1 POS Communication

The NeXGen controller supports up to 8 POSs. The POS is a PC based computer which runs the Point-Of-Sale software. The serial port on the POS can be either a DB-25 or a DB-9 connector.

NeXGen (CH1) RJ45 adapter to POS (Serial Port, DB25) (Part #N9325-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Modular Jack Pins	POS DB25 Female Pins
DSR 2	Orange	2 (Org)	20 DTR
RXD 3	Wht/Grn	3 (Blk)	2 TXD
RTS 4	Blue	4 (Red)	5 CTS
TXD 5	Wht/Blu	5 (Grn)	3 RXD
CTS 6	Green	6 (Yel)	4 RTS
DTR 7	Wht/Brn	7 (Brn)	6 DSR
GND 8	Brown	8 (Wht)	7 GND

NeXGen (CH1) RJ45 adapter to POS (Serial Port, DB9) (Part #N9359-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Modular Jack Pins	POS DB9 Female Pins
DSR 2	Orange	2 (Org)	4 DTR
RXD 3	Wht/Grn	3 (Blk)	3 TXD
RTS 4	Blue	4 (Red)	8 CTS
TXD 5	Wht/Blu	5 (Grn)	2 RXD
CTS 6	Green	6 (Yel)	7 RTS
DTR 7	Wht/Brn	7 (Brn)	6 DSR
GND 8	Brown	8 (Wht)	5 GND

2.3.2 Wayne Dispenser Communication

A total of 32 fueling positions may be connected to the controller. Up to 16 may be connected to channel 5 and up to 16 may be connected to channel 6. Channels 5, 6 and/ or 7 must have a 2-wire custom cable or RJ45 adapter set that will be connected to either a Wayne Data Distribution box or a Gilbarco Universal "D" box.

2.3.2.1 Wayne Direct to the Wayne Data Distribution Box

NeXGen (CH5, CH6 or CH7) RJ45 adapter to Wayne Direct via the Wayne "D" box (Part #N9393-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Mod Jack Pins	Wayne "D" Box Hard wired Terminal block
- 6	----- Green -----	6 (Yel)	2 -
+ 7	----- Wht/Brn -----	7 (Brn)	1 +
			3
			4
			5
			6

Note: This jumper must be installed to close the loop.

2.3.2.2 Wayne Direct to the Gilbarco Distribution Box

NeXGen (CH5, CH6 or CH7) RJ45 adapter to Wayne Direct via the Gilbarco "D" box (DB9) (Part #N9323W-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Mod Jack Pins	Gilbarco "D box DB9 Female Pins
- 6	----- Green -----	6 (Yel)	6 -
+ 7	----- Wht/Brn -----	7 (Brn)	7 +

NeXGen (CH5, CH6 or CH7) RJ45 adapter to Wayne Direct via the Gilbarco "D" box (RJ45)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	Gilbarco "D box DB9 Female Pins
- 6	----- Green -----	6 -
+ 7	----- Wht/Brn -----	7 +

2.3.3 Wayne CAT Communication

2.3.3.1 Wayne Direct CAT via the Allied Isolation Box

The NeXGen uses an RS485 port to communicate to the Wayne CATs. Up to 32 CATs (**see note below**) may be connected to channel 8 of the controller.

Note: Up to 32 CATs may be connected to the NeXGen on channel 8. In DUKPT systems, a DSM is used and therefore 32 CATs can be supported. If Master Key/ Session Key debit is required, then only 29 CATs are supported because the MSM is set to respond to poll ID 30.

A plain junction box can be used in order to connect the CAT communication wires to the RS485 wires that extend from the modular jack. In this configuration, up to 8 CATs can be hard wired to each of the four RS485 channels.

SSC (CH8) Wayne Direct CAT to the Allied Isolation box

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		Allied CAT Isolation Box Pins
RT1 + 1	-----	Wht/Org	-----	1 RT1 +
RT1 - 2	-----	Orange	-----	2 RT1 -
RT2 + 3	-----	Wht/Grn	-----	3 RT2 +
RT2 - 6	-----	Green	-----	6 RT2 -
RT3 + 5	-----	Wht/Blu	-----	5 RT3 +
RT3 - 4	-----	Blue	-----	4 RT3 -
RT4 + 7	-----	Wht/Brn	-----	7 RT4 +
RT4 - 8	-----	Brown	-----	8 RT4 -

2.3.4 ExxonMobil VSAT Cable

NeXGen (CH 3) RJ45 adapter to the ExxonMobil Hughes VSAT (Part #N9383-ADP)

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		RJ45 Adapter Pins		VSAT DB25 Male Pins
DSR 2	-----	Orange	-----	2 (Org)		6 DTR
RXD 3	-----	Wht/Grn	-----	3 (Blk)		3 TXD
TXD 5	-----	Wht/Blu	-----	5 (Grn)		2 RXD
CTS 6	-----	Green	-----	6 (Yel)		8 DCD
DTR 7	-----	Wht/Brn	-----	7 (Brn)		20 DSR
GND 8	-----	Brown	-----	8 (Wht)		7 GND

2.3.5 Wayne Direct TRAC

The NeXGen uses an RS485 port to communicate to the Wayne TRAC Controller (WTC). The TRAC controller may be connected to channel 12 of NeXGen.

NeXGen (CH12) RJ45 adapter to Wayne Direct TRAC *(Part #N9382-ADP)*

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Mod Jack Pins	WTC
- 4	----- Blue -----	4 (Blk)	2 -
+ 5	----- Wht/Blu -----	5 (Red)	1 +

2.3.6 Tank Gauge Communication

The NeXGen uses Channel 2 to interface to a Veeder-Root or equivalent tank gauge system. Configure the tank gauge communication parameters as follows:

Baud Rate: 9600 Parity: Odd Stop Bits: 1 Data Bits: 7

2.3.6.1 Veeder Root TLS 250/350

On a TLS-250, the communication parameters are set using a rotary switch and DIP switches, (please refer to the TLS 250 manual).

On a TLS-350, the communication parameters are programmed via the TLS keyboard (please refer to the TLS 350/350R manual).

On a TLS-450, the communication parameters are programmed via the touch-screen display (please refer to the TLS 450 manual).

NeXGen (CH 2) RJ45 adapter to the VR TLS 250/350 (Part #N9338-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	TLS DB25 Male Pins
RXD 3	----- Wht/Grn -----	3 (Blk)	2 TXD
TXD 5	----- Wht/Blu -----	5 (Grn)	3 RXD
GND 8	----- Brown -----	8 (Wht)	7 GND

2.3.6.2 Veeder Root TLS 450

NeXGen (CH2) RJ45 adapter to the VR TLS 450 (Part #N9445-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Modular Jack Pins	TLS DB9 Male Pins
DSR 2	----- Orange -----	2 (Org)	4 DTR
RXD 3	----- Wht/Grn -----	3 (Blk)	3 TXD
RTS 4	----- Blue -----	4 (Red)	8 CTS
TXD 5	----- Wht/Blu -----	5 (Grn)	2 RXD
CTS 6	----- Green -----	6 (Yel)	7 RTS
DTR 7	----- Wht/Brn -----	7 (Brn)	6 DSR
GND 8	----- Brown -----	8 (Wht)	5 GND

2.3.6.3 Red Jacket ST

NeXGen (CH 2) RJ45 adapter to the Red Jacket “ST”

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		RJ45 Adapter Pins		Red Jacket DB9 Female Pins
RXD 3	-----	Wht/Grn	-----	3 (Blk)		3 TXD
TXD 5	-----	Wht/Blu	-----	5 (Grn)		2 RXD
GND 8	-----	Brown	-----	8 (Wht)		5 GND

2.3.6.4 Omntec

NeXGen (CH 2) RJ45 adapter to the OMNTEC OEL 8000 II

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		RJ45 Adapter Pins		OMNTEC DB9 Female Pins
RXD 3	-----	Wht/Grn	-----	3 (Blk)		2 TXD
TXD 5	-----	Wht/Blu	-----	5 (Grn)		3 RXD
GND 8	-----	Brown	-----	8 (Wht)		5 GND

2.3.6.5 OPW EECO

NeXGen (CH 2) RJ45 adapter to the OPW EECO #1500, 2000, 3000
(Part #N9396-ADP)

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		RJ45 Adapter Pins		EECO DB9 Male Pins
RXD 3	-----	Wht/Grn	-----	3 (Blk)		3 TXD
RTS 4	-----	Blue	-----	4 (Red)		8 CTS
TXD 5	-----	Wht/Blu	-----	5 (Grn)		2 RXD
GND 8	-----	Brown	-----	8 (Wht)		5 GND

2.3.6.6 Incon Tank Sentinel

NeXGen (CH 2) RJ45 adapter to the Incon Tank Sentinel

(Part #N9389-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	Incon/Comm 1 DB9 Male Pins
RXD 3	----- Wht/Grn -----	3 (Blk)	2 TXD
TXD 5	----- Wht/Blu -----	5 (Grn)	3 RXD
GND 8	----- Brown -----	8 (Wht)	5 GND

2.3.7 Car Wash Communication

The NeXGen controller uses channel 3 to interface to the car wash controller. Six different car wash controller pinouts are listed in the section below:

- Ryko Code-A-Wash III
- Ryko Code-A-Wash IV (S/N less than 166600)
- Ryko Code-A-Wash IV (S/N 166600 or greater)
- Unitec POS 4000
- Unitec Portal Ti
- Unitec Enterlink
- Unitec Smart terminal
- Kesseltronics Standard
- Kesseltronics Advanced dual bay w/DB9 connection
- Kesseltronics Advanced dual bay w/RJ45 connection

2.3.7.1 Ryko III and Kesseltronics Standard

NeXGen (CH 3) RJ45 adapter to the Ryko Code A Wash III and Kesseltronics Standard (Part #N9348-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	Car Wash DB9 Male Pins
RXD 3	----- Wht/Grn -----	3 (Blk)	9 TXD
TXD 5	----- Wht/Blu -----	5 (Grn)	8 RXD
GND 8	----- Brown -----	8 (Wht)	7 GND
			1 CTS
			4 DCD

2.3.7.2 Ryko IV (S/N less than 166600), Unitec POS 4000 and Portal Ti

NeXGen (CH 3) RJ45 adapter to the Ryko Code A Wash IV and Unitec POS 4000 (Part #N9344-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	Car Wash DB9 Female Pins
RXD 3	----- Wht/Grn -----	3 (Blk)	3 TXD
RTS 4	----- Blue -----	4 (Red)	8 CTS
TXD 5	----- Wht/Blu -----	5 (Grn)	2 RXD
DTR 7	----- Wht/Brn -----	7 (Brn)	6 DSR
GND 8	----- Brown -----	8 (Wht)	5 GND

2.3.7.3 Unitec Enterlink, Smart terminal and Ryko IV (S/N 166600 or greater)

NeXGen (CH 3) RJ45 adapter to the Unitec/Enterlink
(Part #N9352-ADP)

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		RJ45 Adapter Pins		Enterlink DB9 Female Pins
RXD 3	-----	Wht/Grn	-----	3 (Blk)		3 TXD
TXD 5	-----	Wht/Blu	-----	5 (Grn)		2 RXD
GND 8	-----	Brown	-----	8 (Wht)		5 GND

2.3.7.4 PDQ

NeXGen (CH 3) RJ45 adapter to the PDQ
(Part #N9352-ADP)

NeXGen RJ45 Pins		CAT 5 Cable (T568B Spec.)		RJ45 Adapter Pins		PDQ DB9 Female Pins
RXD 3	-----	Wht/Grn	-----	3 (Blk)		3 TXD
TXD 5	-----	Wht/Blu	-----	5 (Grn)		2 RXD
GND 8	-----	Brown	-----	8 (Wht)		5 GND

2.3.7.5 Kesseltronics Advanced dual bay via the MUX PAP isolator box

NeXGen (CH 3) RJ45 adapter to the Kesseltronics
 “Advanced Dual bay” via MUX PAP isolator box /DB9
 (Part #N9352-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	Kesseltronics ADB DB9 Female Pins
RXD 3	----- Wht/Grn -----	3 (Blk)	3 TXD
TXD 5	----- Wht/Blu -----	5 (Grn)	2 RXD
GND 8	----- Brown -----	8 (Wht)	5 GND

NeXGen (CH 3) RJ45 adapter to the Kesseltronics
 “Advanced Dual bay” via MUX PAP isolator box /RJ45

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	Kesseltronics ADB RJ45 Pins
RXD 3	----- Wht/Grn -----	3 TXD
TXD 5	----- Wht/Blu -----	2 RXD
GND 8	----- Brown -----	4 GND

2.3.8 Fuel Price Sign Communication

The NeXGen controller uses an RS232 channel to interface to the Fuel Price Sign.

2.3.8.1 Daktronics Fuel Price Sign

NeXGen (CH-RS232) RJ45 adapter to the Daktronics Fuel Price Sign (Part #N9443-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Modular Jack Pins	Daktronics DB9 Female Pins
TXD 5	----- Wht/Blu -----	5 (Grn)	2 RXD
RXD 3	----- Wht/Grn -----	3 (Blk)	3 TXD
GND 8	----- Brown -----	8 (Wht)	5 GND
DSR 2	----- Orange -----	2 (Org)]	
DTR 7	----- Wht/Brn -----	7 (Brn)]	
RTS 4	----- Blue -----	4 (Red)]	
CTS 6	----- Green -----	6 (Yel)]	

2.3.8.2 Future Media Displays Fuel Price Sign

NeXGen (CH-RS232) RJ45 adapter to the FMD Fuel Price Sign (Part #N9411-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	FMD DB9 Male Pins
RXD 3	----- Wht/Grn -----	3 (Blk)	2 TXD
TXD 5	----- Wht/Blu -----	5 (Grn)	3 RXD
GND 8	----- Brown -----	8 (Wht)	5 GND

2.3.8.3 PWM Fuel Price Sign

NeXGen (CH-RS232) to the PWM Fuel Price Sign

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	PWM CAT 5 Cable
DSR 2	----- Orange -----	Loop to DTR
DTR 7	----- Wht/Brn -----	Loop to DSR
RXD 3	----- Wht/Grn -----	5 TXD
RTS 4	----- Blue -----	2 CTS
TXD 5	----- Wht/Blu -----	4 RXD
CTS 6	----- Green -----	3 RTS
GND 8	----- Brown -----	1 GND

2.3.9 ExxonMobil VSAT Cable

NeXGen (CH 3) RJ45 adapter to the ExxonMobil Hughes VSAT
(Part #N9383-ADP)

NeXGen RJ45 Pins	CAT 5 Cable (T568B Spec.)	RJ45 Adapter Pins	VSAT DB25 Male Pins
DSR 2	----- Orange -----	2 (Org)	6 DTR
RXD 3	----- Wht/Grn -----	3 (Blk)	3 TXD
TXD 5	----- Wht/Blu -----	5 (Grn)	2 RXD
CTS 6	----- Green -----	6 (Yel)	8 DCD
DTR 7	----- Wht/Brn -----	7 (Brn)	20 DSR
GND 8	----- Brown -----	8 (Wht)	7 GND

3 Programming

3.1 Wayne Direct Addressing

3.1.1 Wayne Direct Dispensers and CATs

Channels 5 and 6 have been designated to communicate to the Wayne dispensers (a maximum of 32 fueling positions). Each Channel can accommodate up to 16 fueling positions. The address of the first fueling position on Channel 5 will be set to address “1”, the second to address “2” etc. If channel 6 is used, the address of the first fueling position connected on this channel will be set to address “1”, the second to address “2” etc. See example.

Note: Up to 32 CATs may be connected to the NeXGen on channel 8. For Master Key/ Session Key debit , the MSM responds to poll address 30, limiting the number of CATs to 29.

Fueling Position			CAT	
Fueling Point	Address	NXG Channel	Address	NeXGen Channel
1	1	CH-5	1	CH-8
2	2	CH-5	2	CH-8
3	3	CH-5	3	CH-8
4	4	CH-5	4	CH-8
5	5	CH-5	5	CH-8
6	6	CH-5	6	CH-8
7	7	CH-5	7	CH-8
8	8	CH-5	8	CH-8
9	9	CH-5	9	CH-8
10	10	CH-5	10	CH-8
11	11	CH-5	11	CH-8
12	12	CH-5	12	CH-8
13	13	CH-5	13	CH-8
14	14	CH-5	14	CH-8
15	15	CH-5	15	CH-8
16	16	CH-5	16	CH-8
17	1	CH-6	17	CH-8
18	2	CH-6	18	CH-8
19	3	CH-6	19	CH-8
20	4	CH-6	20	CH-8
21	5	CH-6	21	CH-8
22	6	CH-6	22	CH-8
23	7	CH-6	23	CH-8
24	8	CH-6	24	CH-8
25	9	CH-6	25	CH-8
26	10	CH-6	26	CH-8
27	11	CH-6	27	CH-8
28	12	CH-6	28	CH-8
29	13	CH-6	29	CH-8
30	14	CH-6	30	CH-8
31	15	CH-6	31	CH-8
32	16	CH-6	32	CH-8

3.1.2 Wayne “Vista” Dispensers

The following parameters must be set in the Wayne “Vista” dispensers in order for the system to function correctly. Please note that the sections below only provide examples of commonly used dispensers and their required settings. This section does not outline all of the models and macro options available by Wayne.

Vista Dispenser		
Model	Option #2 (Macro)	Option #51 (Blend Ratios)
V390 D1, <i>(non-blend)</i>	5	N/A
V395 D1, <i>(variable blend)</i>	13	Must match Point Of Sale
V580 D1, <i>(variable blend)</i>	10	Must match Point Of Sale
V580 D3, <i>(variable blend)</i>	11	Must match Point Of Sale
V590 Uni-hose, <i>(fixed blend)</i>	10	Must match Point Of Sale
V590 D1, <i>(fixed blend)</i>	7	Must match Point Of Sale

3.1.3 Wayne “Vista” Blending Dispensers

Variable Blenders

The NeXGen interfaces to the Wayne variable blenders. Examples are:

- 580 D1** - Single hose. Multi product dispenser without diesel.
- 580 D3** - Single hose. Multi product dispenser without diesel.
- 395** - Single hose + 1. Multi product dispenser with diesel.

Fixed Blenders

The NeXGen interfaces to the Wayne fixed blenders. Examples are:

- 590** - Multi hose, multi product dispenser without diesel.
- 590U** - Single hose, multi product dispenser without diesel. Uses the same configuration as the 580.

Dispenser and POS Settings

For Wayne blenders to operate properly, several options must be set at the dispenser and also at the POS.

Dispenser Macro

The dispenser options are set via a macro. Below are the proper macro settings for the variable blenders.

Model Type	Macro Setting
590	7
395	13
580 D1 & 590U	10
580 D3	11

Note: The blend ratio that is set at the POS must match option 51 in the dispenser.

POS Product to Position Mapping

The tables below list the proper fueling point “*product to position*” assignment for each blender type. This programming is done via the ***Fueling Point Configuration Menu*** at the POS.

The ***blender type*** setting (NeXGen configuration) is not used and should be set to zero (0).

Model 590

Position	Product
1	Not assigned
2	Low grade
3	Blended product
4	High grade
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned

**** The low grade and the high grade products may be switched depending on the position of the dispenser and the installation of the product lines.***

Model 395

Position	Product
1	Diesel
2	Not assigned
3	Not assigned
4	High grade
5	Blended product
6	Low grade
7	Not assigned
8	Not assigned

**** The low grade and the high grade products may be switched depending on the position of the dispenser and the installation of the product lines.***

Models 580 D1 & 590 U

Position	Product
1	Not assigned
2	Not assigned
3	High grade
4	Not assigned
5	Blended product
6	Not assigned
7	Low grade
8	Not assigned

** The low grade and the high grade products may be switched depending on the position of the dispenser and the installation of the product lines.*

Model 580 D3

Position	Product
1	Not assigned
2	Not assigned
3	High grade
4	Blended product
5	Low grade
6	Not assigned
7	Not assigned
8	Not assigned

** The low grade and the high grade products may be switched depending on the position of the dispenser and the installation of the product lines.*

3.1.4 Wayne Blending Quick Reference Guide

Dispenser Model	Dispenser Macro	POS FP Positions
395	13	1- Diesel 2- Not Assigned 3- Not Assigned 4- High grade 5- Blend grade 6- Low grade 7- Not Assigned 8- Not Assigned
580 D1 & 590 U	10	1- Not Assigned 2- Not Assigned 3- High grade 4- Not Assigned 5- Blend grade 6- Not Assigned 7- Low grade 8- Not Assigned
580 D3	11	1- Not Assigned 2- Not Assigned 3- High grade 4- Blend grade 5- Low grade 6- Not Assigned 7- Not Assigned 8- Not Assigned
590	07	1- Not Assigned 2- Low grade 3- Blend grade 4- High grade 5- Not Assigned 6- Not Assigned 7- Not Assigned 8- Not Assigned

Note: "Not Assigned" = 0 product value.

3.1.5 Gilbarco Distribution Box Jumper Settings

The NeXGen controller can utilize the Gilbarco distribution box as the distribution box instead of the Wayne isolation box for Wayne dispensers.

The following is a list of the jumper settings for the Gilbarco distribution box for dispenser communications.

Two wire configuration (45ma)

Jumper	Jumper setting for Boards 1 and 2
JP10	Horizontal
JP12	Horizontal
JP9	Horizontal (Pumps/CRINDs/IPTs)
JP14	Installed

Single and dual board configurations (There are three options:)

- 1 board, 1 input
 - 8 loops for dispensers or CRINDS on board 1
- 2 boards, 1 input
 - 16 loops for dispensers or CRINDs on boards 1 & 2
- 2 boards, 2 inputs
 - 8 loops for dispensers on board 1 and 8 loops for CRINDs on board 2

OR

- 8 loops for dispensers on board 1 and 8 loops for dispensers on board 2.

Option	Jumper setting for Board 1	Jumper setting for Board 2
1	JP11, set to "B"	N/A
1	JP13, set to "B"	N/A
2	JP11, set to "B"	JP11, set to "A"
2	JP13, set to "A"	JP13, set to "B"
3	JP11, set to "B"	JP11, set to "B"
3	JP13, set to "B"	JP13, set to "B"

3.2 NeXGen Parameters Values and Options

The NeXGen configuration is provided and sent to the controller by the POS. The POS has to download all required parameters to the NeXGen. The controller will start polling the dispensers, CRINDs and other peripheral devices only after the POS has downloaded all necessary station configuration data.

Examples Of Parameters Downloaded from POS:

- DPT Configuration
- Fuel Information
- Product Information
- Car Wash Information
- Cash / Credit Limits
- Mode of Service
- Default Price Level
- Sale Stacking
- Number of fueling points
- Network site specific parameters

3.3 Wayne Keypads

Please note that the keypads listed below are predefined within the controller. All other keypad types can be configured via the POS to NeXGen interface using the “DPT Configure Keyboard” command.

Type 1

1	2	3		Pay Outside Credit
4	5	6	Pay Inside Cash	Pay Inside Credit
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type 2

1	2	3		Pay Outside
4	5	6		Pay Inside
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type 3

1	2	3	Pay Outside Debit	Pay Outside Credit
4	5	6	Pay Inside Cash	Pay Inside Credit
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type 4

1	2	3	Pay Inside	Pay Outside
4	5	6		
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type 6

1	2	3	Yes
4	5	6	No
7	8	9	Help
Clear	0	Enter	Cancel

Type 7

1	2	3	Yes
4	5	6	No
7	8	9	
Clear	0	Enter	Cancel

Type 8

1	2	3	Yes
4	5	6	No
7	8	9	Help
Clear	0	Cancel	Enter

Type 9

1	2	3		
4	5	6		
7	8	9	Yes	Help
Clear	0	Enter	No	Cancel

Type A

1	2	3		Pay Outside Credit
4	5	6		Pay Inside
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type B

1	2	3	Pay Outside Debit	Pay Outside Credit
4	5	6		Pay Inside
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type C

1	2	3		Pay Outside Credit
4	5	6	Pay Outside Cash	Pay Inside
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type D

1	2	3	Pay Outside Debit	Pay Outside Credit
4	5	6	Pay Outside Cash	Pay Inside
7	8	9	No	Yes
Clear	0	Enter	Help	Cancel

Type E

1	2	3	Yes
4	5	6	No
7	8	9	Help
Clear	0	Enter	Cancel

Type F

1	2	3	Yes
4	5	6	No
7	8	9	Cancel
Clear	0	Enter	Debit

Type G

1	2	3	Pay Inside	
4	5	6	Pay Outside Credit	Pay Outside Debit
7	8	9	Help	Cancel
Clear	0	Enter	Yes	No

Type H

1	2	3	Credit	
4	5	6	Debit	
7	8	9	No	Yes
Clear	0	Enter	Help	Clear/Cancel

Type I

1	2	3	Yes	French
4	5	6	No	
7	8	9	Help	
Clear	0	Enter	Cancel	

Type J

1	2	3	Pay Outside	
4	5	6	Pay Inside	
7	8	9	Yes	Help
Clear	0	Enter	No	Cancel

Type K

1	2	3	Soft Key 1	Soft Key 5
4	5	6	Soft Key 2	Soft Key 6
7	8	9	Soft Key 3	Soft Key 7
Clear	0	Enter	Soft Key 4	Soft Key 8

Type L

1	2	3	Pay Inside	
4	5	6	Yes	
7	8	9	No	
Clear	0	Enter	Help	Cancel

Type M

1	2	3	Pay Outside Credit	Pay Outside Debit
4	5	6	Pay Inside	
7	8	9	Yes	Help
Clear	0	Enter	No	Cancel

3.4 Peripheral Devices

3.4.1 Tank Gauge Systems

The NeXGen controller uses Channel 2 to interface to either the Veeder-Root tank gauge system or compatible system. The controller is connected to the serial board on a device and it may be connected to the DIM board on a TLS 350R.

When the controller is connected to the DIM board on a TLS 350R, it will send real-time fuel transaction data (i.e. sale started, sale complete, volume dispensed, meter reading etc.). This is accomplished by implementing the Veeder-Root Dispenser Interface Protocol (a proprietary interface defined by Veeder-Root for the TLS 350R). This will allow the TLS to utilize the AccuChart Automatic Tank Calibration feature for underground storage tank reconciliation.

Configure the TLS-250/350/350R or the Red Jacket communication parameters as follows:

Baud Rate - 9600, Parity - Odd, Stop Bits - 1, Data Bits - 7

Notes:

On a TLS-250, the communication parameters are set using a rotary switch and some DIP switches, (please refer to the TLS 250 manual).

On a TLS-350/350R, the communication parameters are programmed via the TLS keyboard (please refer to the TLS 350/350R manual).

No additional controller configuration is needed. The NeXGen will automatically check if it is connected to a DIM card. Otherwise, the controller will not send any Dispenser Interface commands to the TLS. Communicating with other devices requires POS programming.

3.4.2 Car Wash Controllers

The following requirements must be met in order for the Car Wash controllers to communicate to the NeXGen controller.

Car Wash controller	Software Version
Ryko Code A Wash III	"8B" or newer
Ryko Code A Wash IV	"V" ⁽¹⁾
Unitec POS 4000	"6.50" or newer ⁽²⁾
Unitec Portal Ti	Any version
Unitec/Enterlink	Any version
Unitec Smart terminal	
Kesseltronics	Any version
PDQ	Any version

Notes:

1. The Ryko Code-A-Wash IV should communicate to the NeXGen using any version of software. However, Ryko recommends that the controller be upgraded to the latest version.
2. The Unitec software must be able to support External POS 1, 2 or 3. This information may be found either on the PROM label which is located inside the controller, or via the configuration report printed from the controller. There will be a line on the report indicating the "External POS" type.
 - a. The Unitec controller must be programmed to use the Ryko protocol. See section 6.2.10 in the External POS Menu of the Unitec manual. Set POS offset to "0", Down. Set External POS type to "2". Set baud rate to 9600.
 - b. If the Unitec hardware version is 6.1, a (SA1606) 9 pin adapter (which can be ordered from Unitec, if required) must be used to connect the serial port to the communication cable. If the hardware version is 6.2 or higher, the communication cable must be connected directly to the 9 pin serial port.
 - c. To distinguish the difference between 6.1 type hardware and 6.2 type hardware, look at the label attached to the base of the unit. If the Model field has "POS4000" then it unit is equipped with 6.1 hardware. If it has "POS4000/2" (or /3 etc.) then it is equipped with 6.2 or higher hardware. The 6.2 and higher cable pinouts are standard for a 9-pin DTE serial port, which is not the case for 6.1 units.
3. The Ryko Code A Wash II will not work with the NeXGen system. It can be upgraded to a Code A Wash III.

3.4.3 Fuel Price Signs

The NeXGen controller supports the Future Media Display (FMD) protocol. The use of the FMD electronic price sign is configurable and can be mapped to an available serial RS232 port via the Allied Diagnostic (ANDI_DGS) utility.

For specific versions available with support for the FMD protocol, please visit the Allied Electronics, Inc. website and review the release notes for the system in question. The release notes can be found at the link noted below:

http://www.alliedelectronics.com/Software_Release_Notes.html

The following signs communicate with the NeXGen controller via the use of the ANDI protocol message set. These devices physically connect to an available POS RS232 for communications.

- PWM
- Daktronics

The controllers noted above may have specific software version requirements for the support of the ANDI protocol interface. Please contact the respective manufacturer for specific details.

Other sign integrations are currently under development. Please contact Allied Electronics, Inc. for up to date details regarding other possible signs that have integrated to the controller.