NeXGen Controller Installation Guide for Bennett Equipment

There are two configurations that will need to be considered as the location is being prepared for installation. If the location has 16 Fueling Points or less than follow Figure A (page 2). If the location has 17 fueling Points or more then follow Figure B (page 3).

**NeXGen:**
The pin-outs that should be used for the cable from the Point of Sale (P.O.S.) to the NeXGen is as followed:

<table>
<thead>
<tr>
<th>NeXGen RJ45 Pins</th>
<th>CAT 5 Cable (T568B Spec.)</th>
<th>RJ45 Adapter Pins</th>
<th>Bennett Interconnect Box Screw terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal GND 3</td>
<td>Wht/Grn</td>
<td>3 (Blk)</td>
<td>Signal GND</td>
</tr>
<tr>
<td>RS485 (-) 4</td>
<td>Blue</td>
<td>4 (Red)</td>
<td>RS485 (-)</td>
</tr>
<tr>
<td>RS485 (+) 8</td>
<td>Brown</td>
<td>8 (Wht)</td>
<td>RS485 (+)</td>
</tr>
</tbody>
</table>

This chart is to be used for the Fuel Data and the SPM Data cable.

**NOTE:** The “SPM Data” refers to the Bennett Pump Company’s Debit/Credit Card Readers. If the location consists of the Verifone Secure PumpPAY (MX760) Readers then the rules will still apply.

**NeXGen to Interconnect Box:**
There are three ports that the NeXGen will use to communicate with the Bennett Equipment. The ports are as followed:

Port 7: Fuel Data 1 - 16  
Port 8: SPM Data 1 - 32  
Port 11: Fuel Data 17 - 32

Each port must go to a designated Fan-Out Board (see figure C.1). If the NeXGen is using Port 7 then there must be a Fan-Out Board designated for Port 7. Each Fan-Out Board can handle eight dispensers or 16 Fueling Points. If the NeXGen is using Port 7 and Port 8 then the Interconnect Box must have two Fan-Out Boards, one for Port 7 and one for Port 8 (see figure C.1). If the NeXGen is using Port 7, Port 8 and Port 11 then there must be two Interconnect Boxes. One Interconnect Box will need two Fan-Out Boards, for Port 7 (Fuel Data 1-16) and Port 11 (Fuel Data 17-32) and the other Interconnect Box will need two Fan-Out Boards, for Port 8 (SPM Data) (see figure C.2).

**Note:** Each Fan-Out Board can handle up to eight dispensers (two sided). If the location has more than sixteen Fueling Points (eight dispensers with two Fueling Points each) then one Fan-Out Board must be used for Port 7 (Fuel Data 1-16), one Fan-Out Board must be used for Port 11 (Fuel Data 17-32) and two Fan-Out Boards must be used for Port 8 (SPM Data 1 - 32). If a Double Fan-Out Interconnect Box is used for Port 8 then the two Fan-Out Boards will have to be configured so that only one port would be used (see figure C.2).

**Configuring the Double Fan-Out Interconnect Box (see figure C.2):**
1. Remove the wires from the top terminals of the Fan-Out Board going to the port on the side of the Interconnect Box used for the NeXGen Box Port 8 or 11. This will not be used.
2. Add a jumper from the top terminals of the first Fan-Out Board to the top terminals on the second Fan-Out Board. Note that the wires going to the port on the side of the Interconnect Box for the NeXGen Box Port 8 stay connected.
3. Addresses 1 - 16 should be applied to the first Fan-Out Board and addresses 17 - 32 should be applied to the second Fan-Out Board.
Location with less than 17 fueling points for Pacific and/or 3000 Series Dispenser.

Each line represents 6 wires (3 for Fuel Data and 3 for SPM Data).

*= See Figure C.1
**= See Page 6
Location with more than 16 fueling points for Pacific and/or 3000 Series Dispenser.

- Allied NeXGen Box
  - Port 7
  - Port 8
  - Port 11

- Fuel Data 1-16
- Fuel Data 17-32

- Bennett Double Fan-Out Interconnect Box
  - Port 1
  - Port 2

- Bennett Single Fan-Out Interconnect Box
  - Port 1

Each line represents 3 wires for Fuel Data.
Each line represents 3 wires for SPM Data.

See Figure C.2
See Page 6
Field Wiring - to dispensers or SPMs (3 twists per foot recommended)

Figure C.1 - Interconnect Box (I.C. Box)

To NeXGen Box Port 8 or 11

Fan-Out Board 104080

Data +

Comm.

Data -

Addresses

Off

On

Not Used

15 / 16

13 / 14

11 / 12

9 / 10

7 / 8

5 / 6

3 / 4

1 / 2

To NeXGen

Fan-Out Board 104080

Data +

Comm.

Data -

Addresses

Off

On

Not Used

31 / 32

29 / 30

27 / 28

25 / 26

23 / 24

21 / 22

19 / 20

17 / 18

Field Wiring - to dispensers or SPMs (3 twists per foot recommended)

Field Wiring - to dispensers or SPMs (3 twists per foot recommended)
Field Wiring - to SPMs (3 twists per foot recommended)

Figure C.2 - Interconnect Box (I.C. Box)

I. C. (Interconnect) Box

Fan-Out Board 104080

Data +

Comm.

Data -

Off

On

Addresses

Not Used

15 / 16
13 / 14
11 / 12
9 / 10
7 / 8
5 / 6
3 / 4
1 / 2

To NeXGen

Field Wiring - to SPMs (3 twists per foot recommended)
Dispenser Field Wiring Hook-up.

As seen on Figures A and B, there are 3 wires used for the RS485 Communication. If each dispenser has a SPM then there will be two sets of RS485 Communication for each unit. Following is an example of how many wires each type of dispenser will be needed to communicate with the NeXGen Box:

Pacific with SPM: 6 wires (3 for fuel + 3 for SPM)
Pacific without SPM: 3 wires (3 for fuel)
3000 Series with SPM: 6 wires (3 for fuel + 3 for SPM)
3000 Series without SPM: 3 wires (3 for fuel)

Note: It is highly recommended that these three wires are twisted at least three times per foot. Also, it is acceptable to use a Belden Wire for this if the Belden Wire has the specifications that we require (see dispenser’s Installation Manual for wire specifications). If using Belden DO NOT use the Shield nor Drain.

Pacific Instructions:
The Fuel Data will be terminated in a separate location compared to the SPM Data.

The Fuel Data is terminated right above the CPU Board on a Terminal Strip. There is a pre-installed harness from the Daughter Board to one side of the Terminal Strip. Attach the (-) wire to the left terminal, the (return) wire to the middle terminal and the (+) wire to the right terminal (see figure D).

See Appendix A for more details.

The SPM Data will be terminated at the Power Distribution Board (TS4). See figure E for the location. Attach the (+) wire to terminal 20 (left of TS4), the (return) wire to terminal 21 (middle of TS4) and the (-) wire to terminal 22 (right of TS4).

See Appendix B for more details.

3000 Series Instructions:
The Fuel Data will be terminated in a separate location compared to the SPM Data.

The Fuel Data is terminated on to the Display / CPU Board. TS1 is the terminal for the RS485 Fuel Communication. Attach the (+) wire to terminal five, the (return) wire to terminal six and the (-) wire to terminal seven (see figure F).

See Appendix C for more details.

The SPM Data will be terminated on a Terminal Strip which will be located on the door of the dispenser (see figure G). Attach the (+) wire to the violet wire, the (return) wire to the white wire and that (-) wire to the yellow wire.

See Appendix D for more details.
NOTES FOR HORIZON 2 & PACIFIC RS485 INSTALLATIONS

Daughter Board:
• Used for POS or Interface systems that support the Bennett Retail RS485 Protocol. Ex: Allied NeXGen.

Daughter Board Functions

LEDS: (Only utilized in RS-485 Mode)
• D1 (Green) - Receive Data
• D4 (Red) - Transmit Data
• D5 (Yellow) - Data Link Direction - When lit, dispenser is transmitting. When out, dispenser is waiting for POS to transmit.

Connectors:
• J1 Door Sensor (Currently not used in domestic USA)
• J4 RS-485 Communication to POS Interface
  1 - Data (-) (Brown)
  2 - Data Return (Black) *If Required by Interface
  3 - Data (+) (Orange)

Communication Jumpers:
• JW1 & JW4 - Jumpers installed for RS-485
• JW2 & JW3 - Jumpers installed for Current Loop

Quick Start Reference

Step 1 - Communication jumpers MUST be configured prior to applying dispenser AC power. Note: Communication errors or damage to the equipment will occur if jumpers are not set correctly.

Step 2 - After AC power is applied, manager mode 7 must be programmed for the appropriate Sides, Grades, Hoses, and Blend Type.

Step 3 - Manager mode 21 must be set for option 2 RS-485 communication. Option 0 is to be set if utilizing Current Loop communication.

Step 4 - Access managers mode 22 and set the appropriate fueling point address if utilizing RS-485.

For additional information on dispenser installation and programming, refer to the following manuals located on the CD provided with the dispenser.
• Horizon 2 Installation Manual (105894)
• Horizon 2 Operators Manual (106362)
• Pacific Installation Manual (111102)
• Pacific Retail Operators Manual (111160)
APPENDIX B

NOTES FOR HORIZON 2 AND PACIFIC SPM COMMUNICATION

Communication Installation:

- TS4 - Card Reader RS-485 Communication to POS Interface
  - 20 - Data (+) (Violet)
  - 21 - Data Return (Gray) *If Required by Interface
  - 22 - Data (-) (Blue)

Quick Start Reference

**Step 1** - After AC power is applied, SPM managers mode must be accessed by pressing the right soft keys in the sequence 122114.

**Step 2** - SPM manager mode 01 must be programmed for the appropriate address.

**Step 3** - Manager mode 07 contrast must be adjusted for best viewing in an outdoor environment.

**Step 4** - Access managers mode 12 and adjust the receipt line feeds (length) if necessary.

Note: This depends on the amount of information printed on the receipt. If too short, additional line feeds will be necessary. The factory default is 5 line feeds.

For additional information on dispenser installation and programming, refer to the following manuals located on the CD provided with the dispenser.

- Horizon 2 Installation Manual (105894)
- Horizon 2 Operators Manual (106362)
- Pacific Installation Manual (111102)
- Pacific Operators Manual (111660)
- Bennett SPM Operator, Service, and Parts Manual (116029)
APPENDIX C
NOTES FOR 3800 & BLUEFUELER 200 SERIES FUEL COMMUNICATION

Connectors:

- **TS1 Communication**
  - RS-485 Communication to POS Interface
    - 5 - Data (+) (Orange)
    - 6 - Data Return (Brown) *If Required by Interface.
    - 7 - Data (-) (Yellow)
  - Current Loop Communication to POS Interface
    - 5 - Data (-) (Yellow)
    - 6 - *Not Used
    - 7 - Data (+) (Orange)

- **TS2 AC Power Connections**
  - 1 - Neutral
  - 2 - Electronics AC Hot
  - 3 - Submersible Coil Signal or Suction Motor Power Out
  - 4 - Suction Motor AC Hot (If Applicable)

Communication Jumpers:


Communication Types:

- **Stand Alone Mode** - Allows independent operation of dispenser.
- **Current Loop** - Used by interfaces that support Bennett Current Loop Protocol Ex: TMS MPC and Bennett 515 Pump Controller to a Verifone POS.
- **RS-485 Fleet** - Simple command protocol that is primarily used with the Bennett Pulse Output Board (emulates mechanical pump) or fleet card pedestals that support Bennett RS-485 Simple Protocol. Ex: E-Fueling, E.J. Ward, Fuel Force, TMS, and Trac.
- **RS-485 Retail** - Used by interfaces that support the full Bennett Retail RS-485 command code. Ex: Allied NeXGen

Quick Start Reference

**Step 1** - Communication jumpers MUST be configured prior to applying dispenser AC power. Note: Communication errors or damage to the equipment may occur if jumpers are set incorrectly.

**Step 2** - Manager mode 21 must be set for correct communication type.
- Option 0 - Current Loop
- Option 1 - Stand Alone
- Option 2 - RS-485 Fleet
- Option 3 - RS-485 Retail

**Step 3** - Access managers mode 22 and set the appropriate fueling point address if utilizing RS-485. Note: Pulse Output will always be addressed as 1 or 2.

For additional information on dispenser installation and programming, refer to the following manuals located on the CD provided with the dispenser.
- 3K Installation Manual (107931)
- 3K Retail Operators Manual (108796)
- BlueFueler Installation Manual (113914)
- BlueFueler Retail Operators Manual (114461)
APPENDIX D

NOTES FOR 3800 & BLUEFUELER 200 SERIES SPM COMMUNICATION

Communication Installation:

- J5 - Terminal Block RS485 Communication to POS Interface
  1 - Data (-) (Brown)
  2 - Data Return (Black) *If Required by Interface
  3 - Data (+) (Orange)

Quick Start Reference

**Step 1** - After AC power is applied, SPM manager mode must be accessed by pressing the right soft keys in the sequence 122114.

**Step 2** - SPM manager mode 01 must be programmed for the appropriate address.

**Step 3** - Manager mode 07 contrast must be adjusted for best viewing in an outdoor environment.

**Step 4** - Access managers mode 12 and adjust the receipt line feeds (length) if necessary.
Note: This depends on the amount of information printed on the receipt. If too short, additional line feeds will be necessary. The factory default is 5 line feeds.

For additional information on dispenser installation and programming, refer to the following manuals located on the CD provided with the dispenser.

- 3K Installation Manual (107931)
- 3K Retail Operators Manual (108796)
- Bennett SPM Operator, Service, and Parts Manual (116029)