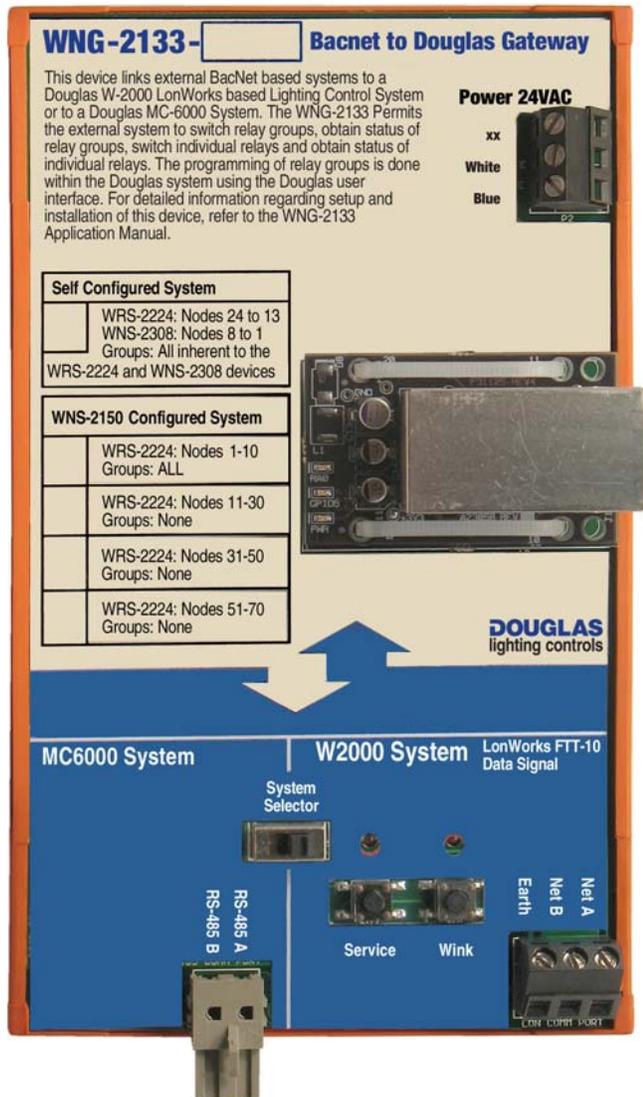


WNG-2133

BACnet Gateway



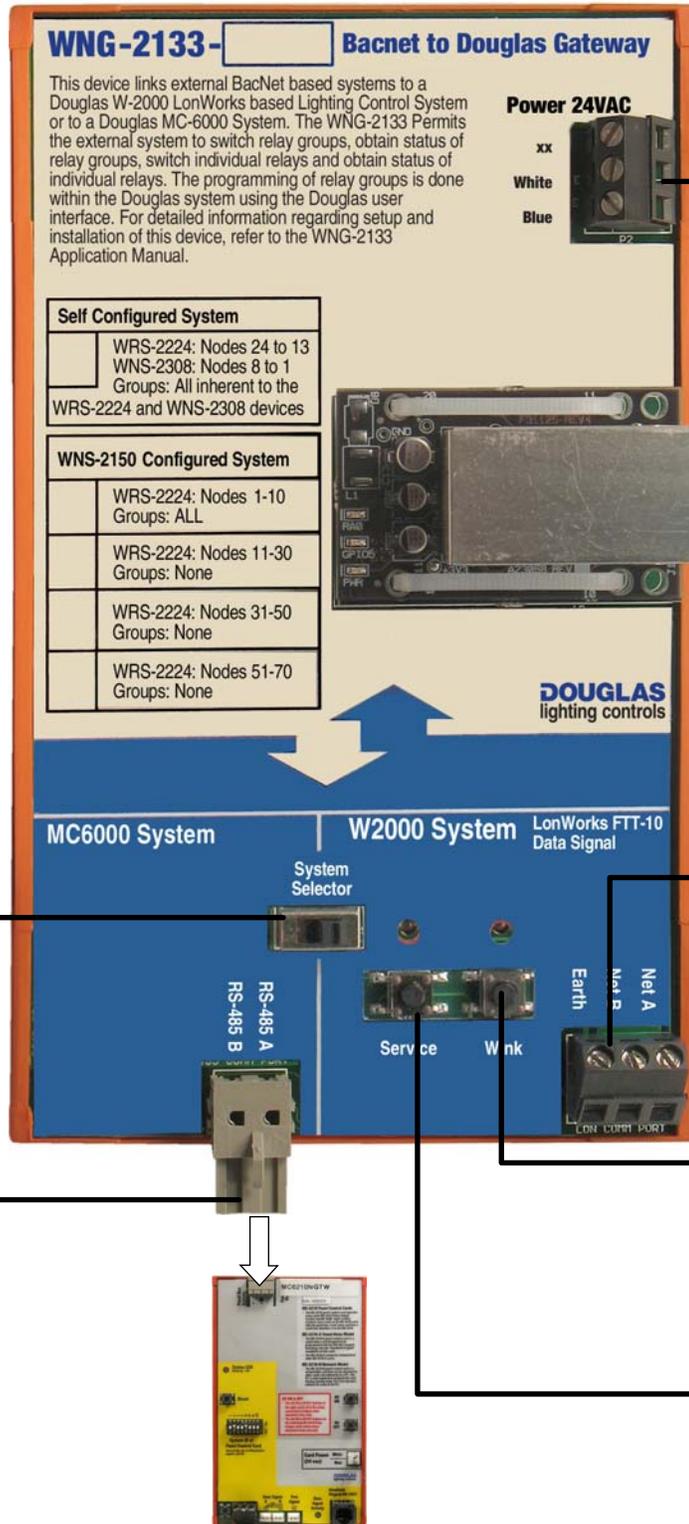
Instruction Manual

DOUGLAS
lighting controls

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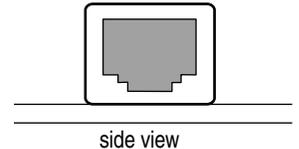
WNG-2133 Bacnet to Douglas System Gateway



24VAC Transformer Connections

BACnet Data Signal Connection

- IP from the external BACnet system.
- BACnet data signal cable is CAT-5e and plugs into the socket on the right side:



Selector Switch, Douglas System

- Toggle to select type of Douglas System to be connected to BACnet network.
- Pushing switch to left selects MC-6000 system, pushing switch to right selects W-2000 system.

Data Signal Connection, Douglas W-2000 System

- FTT-10 (78kbs) data signal from the Douglas W-2000 LonWorks lighting control system, if used.
- Wiring type is twisted pair, unshielded, #16 AWG Belden.

Data Signal Connection, Douglas MC-6000 System

- RS-485 data signal from the Douglas W-2000 LonWorks lighting control system, if used.
- Socket plugs into a MC-6000 GTW Panel Control Card, which is equipped with a BACnet encoder.

Wink LED & Pin Douglas W-2000 System

- Wink LED flashes, when prompted by network, to identify unit.
- Pressing the Wink pin disables the Wink LED.

Service LED & Pin Douglas W-2000 System

- Service LED flashes as diagnostic aid.
- Pressing the Service pin transmits WNG-2133 data to the W-2000 network.

Douglas System Identification Label

- Generally supplied at the factory.
- Other label, as shown below, can be supplied for a MC-6000 System.

MC-6000 Configured System			
Relay Group Assignments			
MC-6000 Group #s	BacNet Variables		
Individual Relay Assignments			
MC-6000 Node#	Relays	BacNet Variables	

Selector Switch, Douglas System

- Toggle to select type of Douglas system that is to be connected to the BACnet system.
- Pressing left side selects the MC-6000 System, pressing right side selects the W-2000 System.

Data Signal, Douglas MC-6000 System

- RS-485 data signal from the Douglas MC-6000 System, if used.
- Socket plugs into a MC-6210 Panel Control Card that has a BACnet encoder.

WNG-2133- BacNet to Douglas Gateway

This device links external BacNet based system to a Douglas W-2000 LonWorks based Lighting Control System or to a Douglas MC-6000 System. The WNG-2133 permits the external system to switch relay groups, obtain status of relay groups, switch individual relays and obtain status of individual relays. The programming of relay groups is done within the Douglas system using the Douglas user interface. For detailed information regarding setup and installation of this device, refer to the WNG-2133 Application Manual.

Power 24VAC

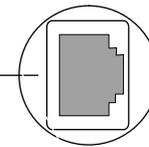


Power Connections

- 24VAC

BACnet Data Signal Connection

- IP from the external BACnet system.
- Data signal cable, which plugs into socket on side, is CAT-5e.

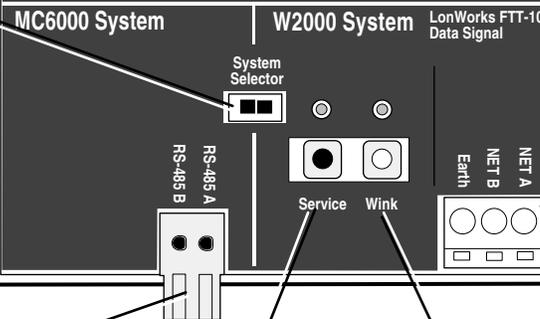


side view

Self Configured System	
<input checked="" type="checkbox"/>	WRS-2224: Nodes 24 to 13 WNS-2308: Nodes 8 to 1 Groups: All inherent to the WRS-2224 and WNS-2308 devices

WNS-2150 Configured System	
	WRS-2224: Nodes 1-10 Groups: ALL
	WRS-2224: Nodes 11-30 Groups: None
	WRS-2224: Nodes 31-50 Groups: None
	WRS-2224: Nodes 51-70 Groups: None

DOUGLAS lighting controls



Data Signal Connection, Douglas W-2000 System

- FTT-10 (78kbs) data signal from the the Douglas W-2000 LonWorks lighting control system, if used.
- Wiring type is twisted pair, unshielded, #16 AWG Belden.

Service Pin & LED, Douglas W-2000 System

- The Service LED flashes as a diagnostic aid.
- Pressing the Service Pin transmits WNG-2133 data to a W-2000 network, if connected.

Wink Pin & LED, Douglas W-2000 System

- The Wink LED flashes, when prompted by the W-2000 network, to identify unit.
- Pressing the Wink Pin disables the Wink LED.

Specifications & Dimensions

Specifications: WNG-2133 BACnet Gateway

Power

- 24VAC / 100mA Class 2 Low Voltage devices.

Input

- Input is a BACnet/IP network signal.
- BACnet/IP connection medium is Ethernet.
- Communication format is native BACnet/IP.
- Follow the wiring specifications issued by the host BACnet system.

Outputs

- Data signals of either the Douglas MC-6000 Network or the Douglas W-2000 Network connect to the unit.
- Output connection from the Douglas Network is activated by setting the selector switch to that network connection.
- Douglas W-2000 Network is standard LonTalk Transceiver, FTT-10 (78kbs) type. Wiring type is twisted pair, unshielded, #16 AWG Belden.
- Douglas MC-6000 Network is RS-485 Transceiver. Connection is a socket that plugs directly into an MC-6000 Panel Control Card that has a BACnet encoder.

Network Technology Specification

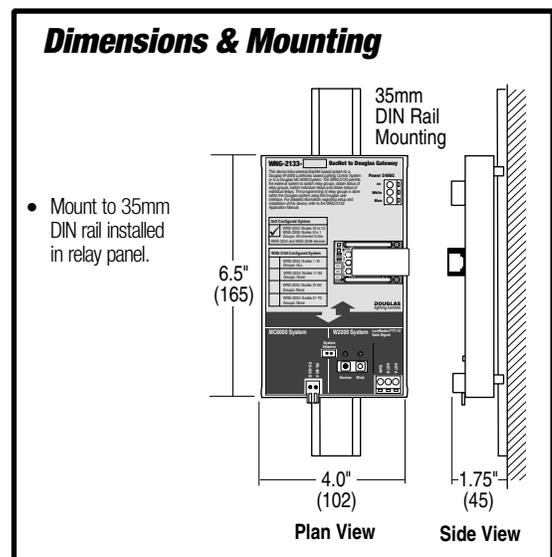
- Network signal: BACnet IP.

Programming

- Use Programming for groups and individual relays in the Douglas MC-6000 or W-2000 Network is done directly within the Douglas system interface.
- BACnet network is allowed up to 1000 points of control and status for the groups and relays within the Douglas System.

Environment

- Indoors, stationary, non-vibrating, non-corrosive atmosphere and non-condensing humidity.
- Ambient operating temperature: 0° F to +120° F (-15° to +50° C).



INSTALLATION INSTRUCTIONS: PRE-ASSEMBLED DOUGLAS W-2000 SYSTEMS

In most cases, a Douglas BACnet-accessible W-2000 system is assembled panel-by-panel and initially configured at the factory.

For each panel in a pre-assembled system, it is necessary to install the panel, check the basic network settings, connect the switch inputs to the appropriate group inputs and connect the outputs to the appropriate relays.

After this is done for all the panels in the network, the panels are interconnected following the one-line diagram supplied with the system. If not previously done at the factory, outputs can be assigned to the group inputs of each relay scanner once the panels are interconnected.

1. Install the pre-assembled relay panels. Be sure that the panels are located closely enough together so that the network line length required to interconnect them does not exceed the specification called out in the *One-Line Diagram* page of the drawings supplied with the system.
2. Make sure the Douglas network select setting and connections on the WNG-2133 BACnet Node are correct for a W-2000 System.
3. In each panel, connect the lighting loads to the output relays of the scanner. You should make note of which load is connected to each relay in the relay schedule for each panel.
4. In each panel, connect the group switching devices (switch or timer) to the scanner group inputs. If you are connecting 24V switching devices other than a default Douglas switch or time clock, you will have to first configure their inputs. Use the keyboard on the scanner, as detailed in the '*Scanner Input Configuration*' section on page 7 of this manual.
5. A maximum of 6 switching devices can be connected in parallel to the same master input, with a maximum wire length of 2000'/600m if using 18 AWG wire.
6. Interconnect the WNX-2624 Network Nodes with the data signal wire (shielded twisted pair in a single loop). Be sure to connect them in the exact order shown in the *One-Line Diagram* in the drawings supplied with the system.
7. Power the system up. LEDs will flash briefly on the scanners and nodes. Make sure that the Digital Link LED is ON on each scanner. If not, check the connections and the node settings.
8. Determine which output relays are to be switched together as groups. Different output relays from any scanners in the network can be grouped together to be switched by the same group input. An output relay can also be in more than one group.
9. (SELF-CONFIGURED SYSTEMS)
Use the keypad on each scanner to assign the output relays to each group input:
 - a) Go to the scanner with the group input to be programmed and select that input by toggling the scanner's INPUT SELECT BUTTON.
 - b) Press the scanner's PROGRAM MODE BUTTON. This places the entire network in Program mode. The Output LED for any output, on any scanner, that is controlled by the input will be lit.
 - c) Add or remove an output relay on any scanner from the input by toggling its OUTPUT BUTTON.
 - d) Press the NORMAL MODE BUTTON on the input's scanner to exit the network from Program mode.
 - e) Repeat steps (a-d) for other inputs.
9. (WNP-2150-CONFIGURED SYSTEMS)
Use the browser interface of the WNP-2150 Network Manager to assign the output relays to each group input:
 - a) Connect computer with Internet Browser to WNP-2150 following directions on label. Enter WNP-2150's IP address in browser's address field to display Lighting Scheduling software.
 - b) List relay groups using the GROUPS/NEW Submenu.
 - c) Assign relays to groups using GROUPS/PROGRAM RELAYS Submenu. Go panel-by panel until all relays have been added to all of the groups.
 - d) Assign groups to inputs using GROUPS/PROGRAM INPUTS Submenu. For each input, also assign the action triggered and hardware type.
 - e) Repeat steps (a-d) for other inputs.

INSTALLATION INSTRUCTIONS: PRE-ASSEMBLED DOUGLAS MC-6000 SYSTEMS

In most cases, a Douglas BACnet-accessible MC-6000 system is assembled panel-by-panel and initially configured at the factory.

For each panel in a pre-assembled system, it is necessary to install the panel, check the basic network settings, connect the switch inputs to the appropriate group inputs and connect the outputs to the appropriate relays.

After this is done for all the panels in the network, the panels are interconnected following the one-line diagram supplied with the system. If not previously done at the factory, outputs can be assigned to the group inputs of each relay scanner once the panels are interconnected.

1. Install the pre-assembled relay panels. Be sure that the panels are located closely enough together so that the network line length required to interconnect them does not exceed the specification called out in the *One-Line Diagram* page of the drawings supplied with the system.
2. Make sure the Douglas network select setting and connections on the WNG-2133 BACnet Node are correct for a MC-6000 System.
3. In each panel, connect the lighting loads to the output relays of the output card. You should make note of which load is connected to each relay in the relay schedule for each panel.
4. In each panel, connect the group switching devices (switch or timer) to the input cards. If you are connecting 24V switching devices other than a default Douglas switch or time clock, you will have to first configure their inputs. Refer to the MC-6000 Programming Module Manual for details.
5. A maximum of 4 switching devices can be connected in parallel to the same master input, with a maximum wire length of 2000'/600m if using 18 AWG wire.
6. Interconnect the MC-6210N-CPU cards with the data signal wire. Be sure to connect them in the exact order shown in the *One-Line Diagram* in the drawings supplied with the system.
7. Power the system up. LEDs will flash briefly on the WNG-2133 device and then begin blinking to indicate OK status.
8. Determine which output relays are to be switched together as groups. Different output relays from any panels in the network can be grouped together to be switched by the same group input or network device. An output relay can also be in more than one group.
9. All programming and configuration of the system is implemented via the RS-485 dataline through a front-end PC.

To configure the MC-6000 software:
 1. Change the shortcut by adding *-w1* after the executable file in the *Target*.
 2. Open the software with the BT files for the project.
 3. Go to: *Config/Remotes*.
 4. Create remote number 252, name *252 Gateway*
 5. 0 for all components.
 6. Set all the address DIP switches to the down position on the MC-6210N device.
 7. Go to: *Groups\Supergroups*.
 8. Create a supergroup *SNVTScene001* and add groups as required.
 9. Go to: *Misc\Online*.
 10. Click *Interface*, then select *252 Gateway*.
 11. Download, plus download to all panels afterwards.

Setting the IP Address

Setting the IP Address

Table 1: Valid IP/Subnet Mask Ranges

Class	Range of first octet	Subnet mask
A	0 - 127 (e.g. 125.10.4.1)	255.xxx.xxx.xxx
B	128 - 191 (e.g. 159.10.4.1)	255.255.xxx.xxx
C	192 - 223 (e.g. 192.10.4.1)	255.255.255.xxx

When configuring the IP address, please ensure that the IP address and Subnet mask are within the same class.

You will require the configuration software, *Ruinet*. Please contact technical support to obtain a link.

1. Configure your PC IP address to communicate with *192.168.10.11 / 255.255.255.0*
2. Connect the crossover cable.
3. Start *Ruinet*. The device should show up on the screen.
4. Change the *Subnet Mask*. Wait for the device to accept the change and the screen is accessible again.
5. Change the *IP Address*. Wait for the device to accept the change and the screen is accessible again.
6. Change the *Gateway*. Wait for the device to accept the change and the screen is accessible again.
7. Reboot the device.
8. Close *Ruinet*.
9. Configure your PC IP address to communicate with the new IP Address and the new Subnet Mask. Make sure the IP Address of the PC is the Gateway entered into the WNG-2133.
10. Start *Ruinet*. The device should show up and be brought up to the screen.

Recovering for Bad IP Address Setting (May not be recoverable).

If in error, the WNG-2133 may revert back to a default IP address and go into Broadcast mode.

To correct this:

1. Set your PCs address to:
 - IP Address: 192.168.1.1
 - Subnet Mask: 255.255.255.0
2. Start *Ruinet*.
3. The device should show up on to the screen. If it does not, you should use the *Wireshark* procedure as described below.

To use the freeware *Wireshark* program:

- 1`
2. Start *Wireshark* and initiate a capture.
3. Start *Ruinet*.
4. In *Wireshark* you will see packets coming from your Laptop's IP address and the lost WNG-2133.

Douglas Network Groups Status and Control

The WNG-2133 BACnet Gateway is a BACnet device that is used to simplify and streamline the inclusion of a Douglas Lighting Controls network into a larger BACnet network. The WNG-2133 is designed to work with the main Douglas network configurations, LonWorks and MC-6000. The WNG-2133 BACnet Gateway will simplify several of the otherwise awkward, although standard, data representations on a Lonworks system.

It will also isolate the Lighting subnet, effectively relieving the burden of lighting configuration from the integrator, allowing the 'user friendly' Douglas configuration tools to setup and bind the lighting portion of the network.

Group Status and Control

The WNG-2133 employs a FTT-10 and a RS-485 communication chip programmed to pass data to a Field Server Processor BACnet IP interface. Each processor has its own independent transceiver port for network communications to either the W-2000 system or the MC-6000 system. The BACnet IP interface will connect to the integrator toolset, while side B will connect to and monitor the lighting subnet using standard self-configuring routines.

Relay status will be made available for WNX-2624, WSP-2718, or MC-6210 devices. This "smart" status will consist of an ANALOG value per relay represented. **0=Not Connected, 1=On, 2=Off, 3=Error**. Relay status will be updated to the integrator whenever the gateway detects a change of relay state for a given device.

Relay activation is via a simple ANALOG value per relay represented. **0=Off, 1=On**.

Group Status will be made available for the system as a whole. This is via a simple BINARY POINT value per group represented. **0=Off, 1=On**.

Group Control is via a "smart" ANALOG value per group represented. When used with a MC-6000 System, **3=Off, 4=On**. With the W-2000 it has the full functionality of the LonWorks *SMVT_Scene*. The values entered into the value will operate the following functions:

	Name	Description
3	SC_GROUP_OFF	Network group OFF.
4	SC_GROUP_ON	Network group ON.
9	SC_FLICK	Relays are flicked as soon as this command is sent to warn occupant of an impending OFF sweep. After the flick warn is issued the tenant has 5 minutes to turn the relay OFF and back ON to exclude their light from the OFF sweep.
10	SC_TIMEOUT	The relays are set to Timeout mode. When the timeout period expires (default 2 Hours) the relays will go OFF without any warning. Relays will stay in Timeout mode until an SC_ENABLE_GROUP is issued.
11	SC_TIMEOUT_FLICK	Same as SC_TIMEOUT except relays are flicked 5 minutes before impending OFF sweep to warn the occupant. After the flick warn is issued the tenant has 5 minutes to turn the relay OFF and back ON to exclude their light from the OFF sweep. Relays will stay in Timeout mode until an SC_ENABLE_GROUP is issued.
12	SC_DELAYOFF	Relays are OFF after a timed period (Default delay time = 15 minutes).
13	SC_DELAYOFF_FLICK	Relays are OFF after a timed period (Default delay time = 15 minutes) with Flick Warn.
14	SC_DELAYON	Relays are ON after a timed period (Default delay time = 15 minutes).
15	SC_ENABLE_GROUP	Enable the group for network commands. This is also used to stop relays from Timeout mode.
16	SC_DISABLE_GROUP	Disable the group for network commands. Relays will be masked from all Network commands. Relays will stay in Disable mode until an SC_ENABLE_GROUP is issued.
17	SC_CLEANON	Cleaning mode, where relays turn ON then return to original state when manual OFF signal received, is activated.
18	SC_CLEANOFF	Cleaning mode is disabled.
19	SC_WINK	All group relays turn ON, then back to OFF after a delay period called 'wink'.

BACNET Control Points

The WNG-2133 BACnet Gateway has 1000 control points. Extensive lighting control networks may require more, due to the vast amount of data required to represent as many as to 255 groups overall and 72 points per panel. To overcome this constraint, multiple WNG-2133 Gateways of complementary configurations can be used. The best distribution of points is to group relays together by node. This would be done by bit-mapping each relay to an existing data structure.

WNG-2133 Profile Listing

Multiple WNG-2133's can be utilized within a system. Each profile has been created to maximize the 1000 points available.

BACnet to LonWorks Self-configured System

Self-configured systems up to 12 scanners:
Use one WNG-2133 Gateway.

Self-configured systems with more than 12 scanners:
Use two WNG-2133 Gateways, *WNG-2133-NP1-10G* & *WNG-2133-NP11-30*.

BACnet to LonWorks WNG-2150 System

WNG-2133-NP1-10G - BASE UNIT:
Controls 10 scanners 1-10 PLUS all groups.

WNG-2133-NP11-30:
Controls 20 scanners 11-30 (Needs WNG-2133-NP1-10G).

WNG-2133-NP31-50:
Controls 20 scanners 31-50 (Needs WNG-2133-NP1-10G).

WNG-2133-NP51-70:
Controls 20 scanners 51-70 (Needs WNG-2133-NP1-10G).

BACnet to MC-6000 System

WNG-2133-MC05-11:
CPU5-11, Grp0-52, MC-6210 incl.

WNG-2133-MC12-18:
CPU12-18, Grp 53-104, MC-6210 incl.

WNG-2133-MC19-25:
CPU19-25, Grp 105-156, MC-6210 incl.

WNG-2133-MC-G500:
Grp 1-500 ONLY, MC-6210 incl.

Changing the BACnet Node ID: Uploading, Editing and Downloading the config.csv File

To upload the config.csv File from the WNG-2133 to your PC

1. From the main menu select <U> to go to the upload screen.
2. Begin the uploading by selecting <U> .

To edit the config.csv File on your PC

1. Locate the files where the Ruinet.exe executable resides.
2. Select and launch the NOTEPAD program to edit the file. (Using any other program may corrupt the file).
3. Within the *config.csv* file, locate the *Server Side Connections - BACnet IP* area . Adjust the number under the *Node_ID* line. This should appear as shown below:

```
//=====
//
// Server Side Connections -BACnet IP
//
Nodes
Node_Name, Node_ID, Protocol
WNG-2133_GTW1, 11, BACnet_IP
//=====
```

To download the edited File to the WNG-2133

1. From the main menu select <D> to go to the download screen.
2. Begin the download by selecting <D>.

Setting the BBMD (BACnet/IP Broadcast Management Device)

BBMD: BACnet/IP Broadcast Management Device

The BACnet system relies on the use of broadcast messages. Routers join IP networks together so messages from one network can be sent to another. However, most routers do not forward broadcast messages and the BACnet signals do not get passed correctly.

To solve this problem BACnet provides a technology called BBMD which means **BACnet/IP Broadcast Management Device**.

BACnet/IP requires that a BBMD be defined on every subnet for cross-router communications. The WNG-2133 can act as a BBMD for the subnet that it resides on, while another BBMD must reside on the other subnet to pass the information forward. Setting the *Connection_Type* to *BBMD* will enable this functionality on the WNG-2133. Note that BBMD operation is not required if there is already another BBMD on the network.

The WNG-2133 supports the method of updating its internal broadcast distribution table to create BBMDs.

Two steps are needed:

1. Creating a custom "bdt.ini" file and downloading it to the WNG-2133
2. Uploading the *config.csv* file to the PC, editing the *config.csv* file then downloading it to the WNG-2133

1. Creating and Downloading the bdt.ini File

The Broadcast Distribution Table can be configured using the *bdt.ini* file. The *bdt.ini* file must be created and downloaded to the WNG-2133 using the Ruinet *Download Configuration* command. This example shows the WNG-2133 as IP **10.33.12.23** and the BBMD on the other subnet as IP **10.33.11.21**:

```
//=====
//          bdt.ini
//
// FST Customer : Douglas Lighting
// Configured By : CBR
//
// Copyright (c) 2000-2002 WNG-2133 Technologies
//
// BBMD ip_address BBMD port BBMD subnet Mask
//
10.33.12.23, 47808, 255.255.255.0
10.33.11.21, 47808, 255.255.255.0
//=====
```

To download the bdt.ini File to the WNG-2133

1. From the main menu select <D> to go to the download screen.
2. Use the <O> key to enable the downloading of 'other' files. When enabled you can download files other than .csv to the WNG-2133. Exercise caution with this option.
3. Specify the local file name by selecting <L>, then type the path and file name and press <Enter>.
4. If the remote filename is incorrect, select <R>, then type the file name and press <Enter>.
5. Begin the download by selecting <D>.

2. Uploading, Editing and Downloading the config.csv File

To upload the config.csv File from the WNG-2133 to your PC

1. From the main menu select <U> to go to the upload screen.
2. Begin the uploading by selecting <U> .

To edit the config.csv File on your PC

1. Locate the files where the *Ruinet.exe* executable resides.
2. Select and launch the *NOTEPAD* program to edit the file. (Using any other program may corrupt the file).
3. Within the *config.csv* file, locate the *Server Side Connections - BACnet IP* area. Append the *,Connection_Type,IP_Port* to the first line and *,BBMD,47808* to the next line. This should appear as shown below:

```
//=====
//
// Server Side Connections -BACnet IP
//
Connections
Adapter, Protocol, Connection_Type,IP_Port
N1, BACnet_IP ,BBMD,47808
//=====
```

To download the edited File to the WNG-2133

1. From the main menu select <D> to go to the download screen.
2. Begin the download by selecting <D>.

Troubleshooting: Douglas W-2000 Networks

General Guidelines:

- Make sure that 24V power exists in all panels (always measure between 22VAC and 30VAC);
- Make sure that data signal is connected to all Nodes;
- Make sure all inputs and outputs are tightly connected and inputs are configured properly;
- Make sure all relay groups are programmed correctly;
- Make sure the *Net Manager Select* switch is ON only for the Network Manager Node.

Problem Encountered	Possible Cause(s)	Corrective Action
Flashing Output LED(s) during NORMAL mode	Defective output relay.	- replace relay.
	2 relays connected to same output with one relay ON and the other OFF.	- reset relays to both ON or both OFF.
	External AC current leaking into circuit.	- check wiring for shorts or grounding.
Output relay(s) not tripping properly	Improper input voltage (must be between 22VAC and 30VAC).	- check input configuration. - check input switching device(s) and connections. - check power source.
	Input(s) not configured when non-default input device(s) or output function(s) used.	- configure input(s) per instructions on pages 7-8.
	Relay(s) also part of another input group with contradictory input signals.	- remove relay(s) from other group.
	Relay(s) not included in input group.	- check programming, re-program if necessary.
	Too many relays connected to one output.	- make sure there are 4 relays maximum per output.
FLICK WARN not working	FLICK WARN not properly programmed.	- check programming, re-program if necessary.
	HID lighting used in FLICK WARN group.	- use circuits with non-HID lighting.
TIME OUT not working	Inappropriate input switching device used.	- make sure input is only ON during TIME OUT period. - use timer as input instead of switch.
	Relay group not programmed properly.	- check programming, re-program if necessary.
	TIME OUT assigned to more than one group.	- assign TIME OUT only to one all-inclusive group.
Service LED flashing once every second	Node is unconfigured.	- (if Network Manager node) turn off node, designate another node as Network Manager and re-configure network. - (if not Network Manager node) restart panel, and Network Manager will automatically configure node and assign inputs to outputs as necessary.

W-2000 Network Troubleshooting Guide

Troubleshooting: Douglas MC-6000 Networks

General Guidelines:

- Make sure that 24V power exists in all panels (always measure between 22VAC and 30VAC);
- Make sure that data signal is connected to all Nodes;
- Make sure all inputs and outputs are tightly connected and inputs are configured properly;
- Make sure all relay groups are programmed correctly;
- Make sure the *Net Manager Select* switch is ON only for the Network Manager Node.

Problem Encountered	Possible Cause(s)	Corrective Action
Service LED flashing ON for 3 seconds, OFF for 1 second, repeatedly	Device is corrupt.	- replace node.
LEDs on, switch not giving ON/OFF status	Faulty wiring.	- check wiring.
	Incorrect hardware configuration for switch input.	- re-configure input to correct hardware type, per instructions on page 10.
Outputs responding erratically to switch input	Incorrect software configuration for switch input.	- re-configure input to correct software type, per instructions on page 8.
LEDs on, switch giving ON/OFF status but outputs not responding	Output relays not programmed properly.	- check programming, re-program if necessary.
	Faulty wiring.	- use Override buttons to check (If all relays respond to ON override & OFF override, wiring is OK.) Otherwise, check wiring.
Scanner LEDs all OFF	Scanner not receiving power.	- check 24VAC power.
	Scanner corrupt.	- replace scanner, re-program as necessary.

MC-6000 Network Troubleshooting Guide

Appendix A - Input/Output Log (copy this page for other panels used)

Panel _____ Node ID# _____ Date _____

Input	Input Switches		Output Relays (numbered by panel # / output#)			
1.	<i>Type</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>
2.	<i>Type</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>
3.	<i>Type</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>
4.	<i>Type</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>
5.	<i>Type</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>	<i>#</i>	<i>Remarks</i>

Additional Remarks: _____

DOUGLAS **lighting controls®**

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