RITE-HITE®
ALWAYS LOOKING AHEAD

Fan-Commander 2.0

Installation/Service/Owner's Manual

This manual covers units shipped August 2018 to date.

Language: **English** (Hazards: English, French)

Publication: **AMEN00190 2019-03-07**

NOTICE TO USER

READ AND SAVE THESE INSTRUCTIONS.

Thank you for purchasing a Rite-Hite product.

The Fan-Commander 2.0 is a wireless touch screen that allows for operation of up to 24 Rite-Hite fans (with a wireless control platform) from a central location. Any combination of Geared & Direct Drive Rite-Hite fans can be controlled on the same Fan-Commander 2.0.

Read and understand manual prior to installation or operation of this equipment.

The English version of this manual shall prevail over any error in, or conflicting interpretation of, any translations.

Rite-Hite reserves the right to substitute and/or modify parts and drawings. If separate prints are included with the unit, they supersede those contained in the manual.

For best results, have this product serviced by an authorized Rite-Hite representative.

A Planned Maintenance Program (P.M.P.), customized to your specific operation is available and recommended. For a P.M.P., contact your local Rite-Hite representative or Rite-Hite technical support at (U.S.) 888-456-3625 or 1-414-973-3625, (S.A.) +55 21 99616 4421, (E.U.) +49-5693 98700.

The Rite-Hite® products in this manual are covered by one or more of the following U.S. patents: 7658232, 8622712, 8142156, D631536, 7726945 and may be covered by additional pending U.S. and foreign patent applications.

Manufactured by Rite-Hite Engineered Solutions Group, Inc.

FCC Compliance

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

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

Contains FCC ID: MCQ-XB900HP

Contains IC: 1846A-XB900HP

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesirable operation.

SAFETY

Safety Identifications

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Indique une situation dangereuse qui, si elle n'est pas évitée, peut entraîner la mort ou de graves blessures.

WARNING / AVERTISSEMENT

Indicates a hazardous situation which, if not avoided, *could result in death or serious injury*.

Indique une situation dangereuse qui, si elle n'est pas évitée, *peut entraîner la mort ou des blessures graves*.

CAUTION / ATTENTION

Indicates a hazardous situation which, if not avoided, *could result in minor or moderate injury*.

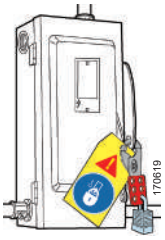
Indique une situation dangereuse qui, si elle n'est pas évitée, *peut entraîner des blessures légères à modérées*.

NOTICE

Indicates a situation which can cause damage to the equipment, personal property and/or the environment, or cause the equipment to operate improperly.

NOTE: A note is used to inform you of important installation, operation, or maintenance information.

Lockout Procedure



Barricade work area and post safety warnings.

Power supply/control must:

- Be disconnected or locked in OFF position using a lockout device approved by local codes.
- Have signage that:
  - Clearly states repairs are being made.
  - Identifies person responsible for lockout condition.

    NOTE: Only this person should be able to remove warnings and lockout device.
  - Withstands environmental conditions (weather, wet, and damp, etc.) and remains readable.

SAFETY

General

DANGER

Installation to be completed in accordance with the National Electric Code, ANSI/NFPA 70-1999, and local codes.

L'installation doit être effectuée conformément au Code national de l'électricité, à la norme ANSI/NFPA 70-1999, et aux codes locaux.

DANGER

Use lockout procedures to prevent death or severe personal injury.

Afin de réduire le risque de blessures graves ou mortelles, utilisez des procédures de verrouillage.

WARNING / AVERTISSEMENT

Rotating fan blades can cause serious injury.

Les lames rotatif du ventilateur peut causer des blessures graves.

CAUTION / ATTENTION

Barricade the work area during installation or maintenance.

Barricader la zone de travail pendant l'installation ou l'entretien.

NOTICE

Only use materials and hardware supplied with the fan. Rite-Hite expressly disclaims any liability arising from the use of any materials or hardware other than those supplied or recommended by Rite-Hite. Contact your Rite-Hite Representative to verify hardware specifications as required.

INSTALLATION

Fan Configuration

⚠ CAUTION / ATTENTION

Disconnect power to Fan-Commander 2.0 before making any fan control configuration changes to prevent unexpected motion of the fan when new settings take effect.

Coupez l'alimentation du Fan-Commander 2.0 avant de modifier la configuration de la commande du ventilateur afin d'éviter tout mouvement inattendu du ventilateur lorsque de nouveaux réglages prennent effet.

6 LEDs on the configuration panel provide basic diagnostic feedback.

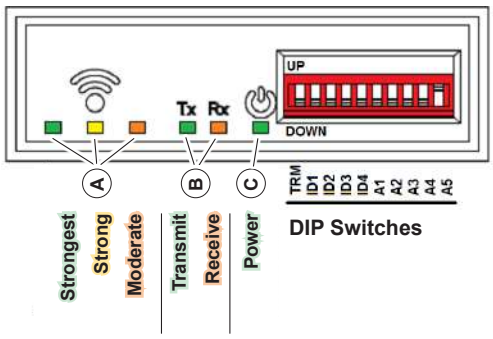
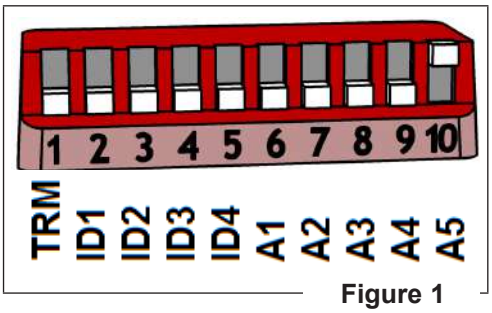
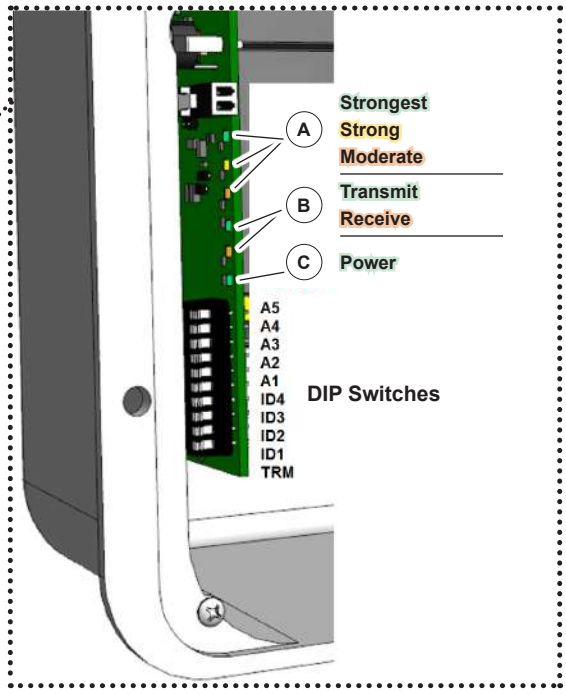
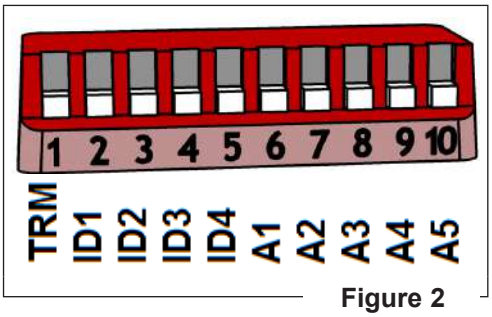
A. RSSI (Received Signal Strength Indicators) – indicate the strength of the wireless signal.

B. DATA – indicates the unit is sending and receiving wireless data.

C. POWER – lit solid indicates normal operation, flashing indicates power cycle is required.

Advanced diagnostic feedback is available through the Fan-Commander 2.0 **(Figure 19)**.

Network Configuration Panel

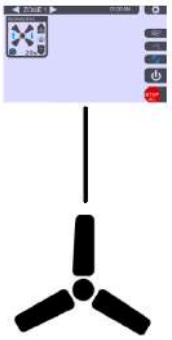
	Location	DIP Switch Default Setting
Fan Controls Configuration	Direct drive: Bottom of fan control enclosure Geared: Inside control box enclosure (must open lid) 	 **Figure 1** DIP switch #10 UP, all others DOWN. For single fan installations, there is no need to change any settings. For installations with multiple fans, each fan must be configured with a unique address.
Fan-Commander 2.0 Configuration	 Back of Fan-Commander 2.0 Enclosure (must remove cover) 	 **Figure 2** All DIP switches DOWN. For single fan installations, and most multiple fan installations, there is no need to change any settings.

INSTALLATION

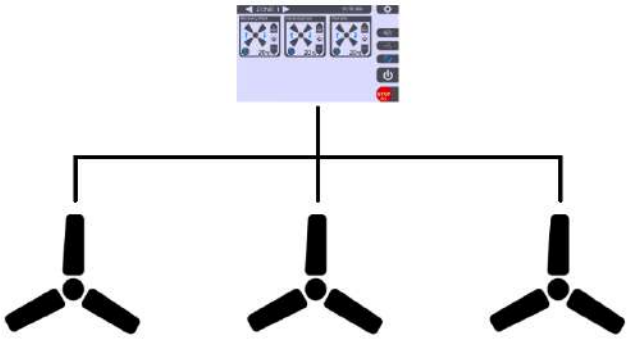
Fan Configuration *Continued*

Determine the type of installation:

1 Fan, 1 Fan-Commander 2.0 (page 6)



Multiple Fans, 1 Fan-Commander 2.0 (page 7)



Multiple Fans, Multiple Fan-Commander 2.0s (page 10)

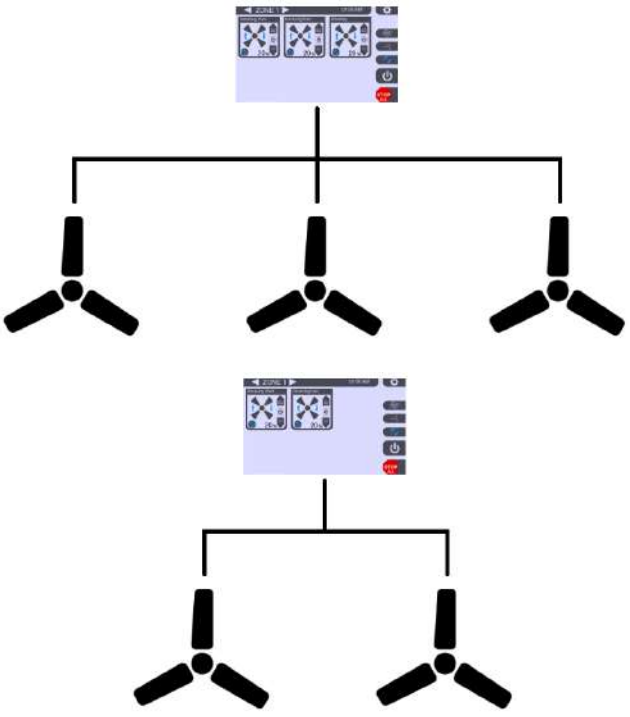


Figure 3

NOTE:

To customize fan names (to better describe their location in a facility):

In the *Fan Network Setup* screen, touch the default fan name (e.g. (A) **(Figure 4)**) and enter a new name. The new name will be displayed on the *Zone Control* screens and *Diagnostics* screen for easier identification.

1 Fan, 1 Fan-Commander 2.0

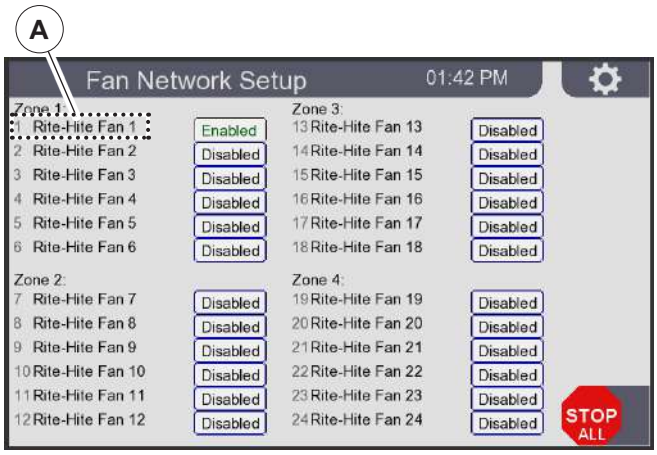


Figure 4

No configuration is required.

- Fan configuration DIP switches are factory set for a single fan **(Figure 1).**
- Fan-Commander 2.0 configuration DIP switches are factory set for a single fan network **(Figure 2)**.
- Fan-Commander 2.0 *Fan Network Setup* is factory configured to communicate with a single fan (ID #1) **(Figure 4)**.

INSTALLATION

Fan Configuration *Continued*

Multiple Fans, 1 Fan-Commander 2.0

			WIRELESS FAN CONTROLS DIP SWITCH CONFIGURATION									
			NETWORK ID				DEVICE ID					
		SWITCH LABEL	TERM	ID1	ID2	ID3	ID4	A1	A2	A3	A4	A5
		DIP SWITCH NO.	1	2	3	4	5	6	7	8	9	10
FAN NETWORK 1		FAN-COMMANDER 2.0	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down
	FAN ZONE 1	FAN #1	Down	Down	Down	Down	Down	Down	Down	Down	Down	Up
		FAN #2	Down	Down	Down	Down	Down	Down	Down	Down	Up	Down
		FAN #3	Down	Down	Down	Down	Down	Down	Down	Down	Up	Up
		FAN #4	Down	Down	Down	Down	Down	Down	Down	Up	Down	Down
		FAN #5	Down	Down	Down	Down	Down	Down	Down	Up	Down	Up
		FAN #6	Down	Down	Down	Down	Down	Down	Down	Up	Up	Down
	FAN ZONE 2	FAN #7	Down	Down	Down	Down	Down	Down	Down	Up	Up	Up
		FAN #8	Down	Down	Down	Down	Down	Down	Up	Down	Down	Down
		FAN #9	Down	Down	Down	Down	Down	Down	Up	Down	Down	Up
		FAN #10	Down	Down	Down	Down	Down	Down	Up	Down	Up	Down
		FAN #11	Down	Down	Down	Down	Down	Down	Up	Down	Up	Up
		FAN #12	Down	Down	Down	Down	Down	Down	Up	Up	Down	Down
	FAN ZONE 3	FAN #13	Down	Down	Down	Down	Down	Down	Up	Up	Down	Up
		FAN #14	Down	Down	Down	Down	Down	Down	Up	Up	Up	Down
		FAN #15	Down	Down	Down	Down	Down	Down	Up	Up	Up	Up
		FAN #16	Down	Down	Down	Down	Down	Up	Down	Down	Down	Down
		FAN #17	Down	Down	Down	Down	Down	Up	Down	Down	Down	Up
		FAN #18	Down	Down	Down	Down	Down	Up	Down	Down	Up	Down
	FAN ZONE 4	FAN #19	Down	Down	Down	Down	Down	Up	Down	Down	Up	Up
		FAN #20	Down	Down	Down	Down	Down	Up	Down	Up	Down	Down
		FAN #21	Down	Down	Down	Down	Down	Up	Down	Up	Down	Up
		FAN #22	Down	Down	Down	Down	Down	Up	Down	Up	Up	Down
		FAN #23	Down	Down	Down	Down	Down	Up	Down	Up	Up	Up
		FAN #24	Down	Down	Down	Down	Down	Up	Up	Down	Down	Down
	OPTIONAL DEVICES	I/O OPTION	Down	Down	Down	Down	Down	Up	Up	Down	Down	Up
		REPEATER 1	Down	Down	Down	Down	Down	Up	Up	Down	Up	Down
		REPEATER 2	Down	Down	Down	Down	Down	Up	Up	Down	Up	Up
		REPEATER 3	Down	Down	Down	Down	Down	Up	Up	Up	Down	Down
		REPEATER 4	Down	Down	Down	Down	Down	Up	Up	Up	Down	Up
		REPEATER 5	Down	Down	Down	Down	Down	Up	Up	Up	Up	Down
		REPEATER 6	Down	Down	Down	Down	Down	Up	Up	Up	Up	Up
		RADIO DISABLED	Down	Up	Up	Up	Up					

Figure 5

INSTALLATION

Fan Configuration *Continued*

Multiple Fans, 1 Fan-Commander 2.0 *Continued*

1. Configure each fan with a unique Device ID (address).
   - The Device ID is selected by changing the DIP switch settings on the enclosure **(Figure 5)**.
   - The fans will be grouped into zones on the Fan-Commander 2.0 based on the configured Device ID.

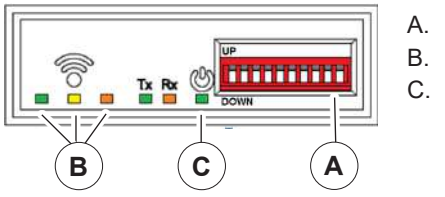
   Zone 1 = Fan #1 through Fan #6

   Zone 2 = Fan #7 through Fan #12

   Zone 3 = Fan #13 through Fan #18

   Zone 4 = Fan #19 through Fan #24

2. After changing DIP switch settings on the fan (A), complete the following steps:



A. DIP Switches
B. RSSI LEDs
C. Power LED

Figure 6

   a. Wait (≈ 10 seconds) for the RSSI LEDs (B) to flash in a chase pattern.

   b. Wait (≈ 3 seconds) for RSSI LEDs to stop flashing. Power LED (C) will continue to flash, indicating control reboot is required.

   c. The fan controller must be completely powered down for changes to take effect. Disconnect power supply (remove twist lock plug).

   d. Wait (≈ 20 seconds) for green Power LED (C) to turn off.

   e. Wait (20 seconds) for controls to fully reset.

   f. Reapply supply power (plug in twist lock plug).

   g. Verify that green Power LED (C) is on solid, indicating changes have been successfully applied.

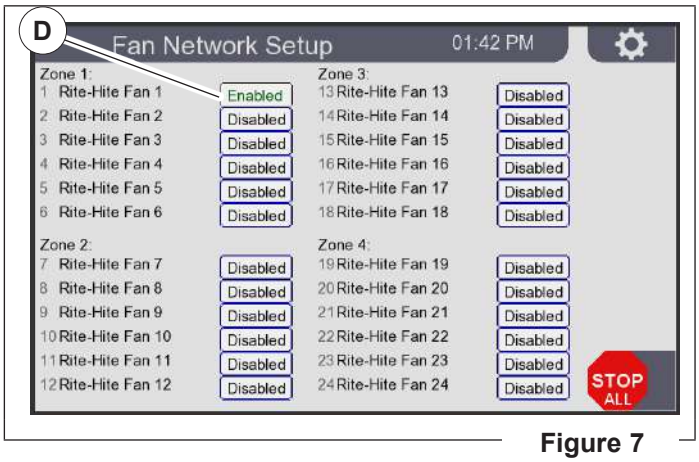


Figure 7

3. After each fan has unique ID, configure the Fan-Commander 2.0 to communicate with the installed fans. In the *Fan Network Setup* screen, toggle the installed fan Device IDs from *Disabled* to *Enabled* (D).

INSTALLATION

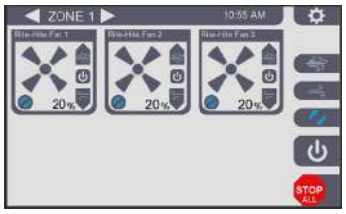
Fan Configuration *Continued*

Multiple Fans, 1 Fan-Commander 2.0 *Continued*

Example 1 – Configuration

5 fans are installed with a 1 Fan-Commander 2.0.

- 3 fans are in the 1st Zone (Fan Zone 1).
- 2 fans in the 2nd Zone (Fan Zone 2).

Fan Network #1	
	
Zone 1	**Zone 2**
Fan #1	Fan #7
Fan #2	Fan #8
Fan #3	

			DIP SWITCH CONFIGURATION									
			TERM	NETWORK ID				DEVICE ID				
			1	2	3	4	5	6	7	8	9	10
FAN NETWORK 1		FAN-COMMANDER 2.0	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down
	FAN ZONE 1	FAN #1	Down	Down	Down	Down	Down	Down	Down	Down	Down	Up
		FAN #2	Down	Down	Down	Down	Down	Down	Down	Down	Up	Down
		FAN #3	Down	Down	Down	Down	Down	Down	Down	Down	Up	Up
	FAN ZONE 2	FAN #7	Down	Down	Down	Down	Down	Down	Down	Up	Up	Up
		FAN #8	Down	Down	Down	Down	Down	Down	Up	Down	Down	Down

After all devices are configured (power cycle required), the installed devices would be toggled to *Enabled* in the *Fan Network Setup* screen (A).

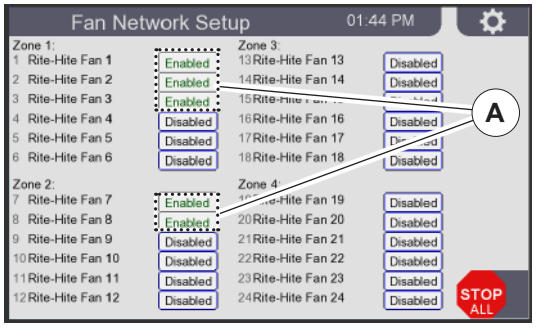


Figure 8

INSTALLATION

Fan Configuration *Continued*

Multiple Fans, Multiple Fan-Commander 2.0s

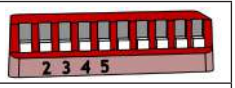
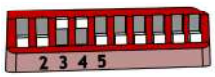
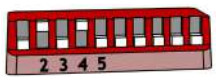
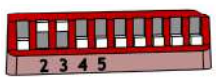
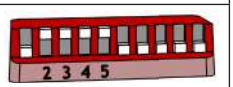
	WIRELESS FAN CONTROLS DIP SWITCH CONFIGURATION				
	DIP SWITCHES 2-5				
SWITCH LABEL	ID1	ID2	ID3	ID4	
DIP SWITCH NO.	2	3	4	5	
NETWORK #1	Down	Down	Down	Down	
NETWORK #2	Down	Down	Down	Up	
NETWORK #3	Down	Down	Up	Down	
NETWORK #4	Down	Down	Up	Up	
NETWORK #5	Down	Up	Down	Down	
NETWORK #6	Down	Up	Down	Up	
NETWORK #7	Down	Up	Up	Down	
NETWORK #8	Down	Up	Up	Up	
NETWORK #9	Up	Down	Down	Down	
NETWORK #10	Up	Down	Down	Up	
NETWORK #11	Up	Down	Up	Down	
NETWORK #12	Up	Down	Up	Up	
NETWORK #13	Up	Up	Down	Down	
NETWORK #14	Up	Up	Down	Up	
NETWORK #15	Up	Up	Up	Down	
RADIO DISABLED	Up	Up	Up	Up	

Figure 9

If multiple Fan-Commanders are installed, each Fan-Commander 2.0 must have a unique network identifier to prevent interference between devices.

To communicate, all devices (Fan-Commander 2.0 and Fan Controls) within a network must have the same Network ID settings.

- Device ID and zone selection are the same as a single network installation **(Figure 5)**.
- Each Fan Network must have a unique Network ID. 15 Network configurations are available **(Figure 9)**:
  - Configure DIP switches on Fan Controls
  - Configure DIP switches inside Fan-Commander 2.0 enclosure
- Power cycle is required after changing settings.

INSTALLATION

Fan Configuration *Continued*

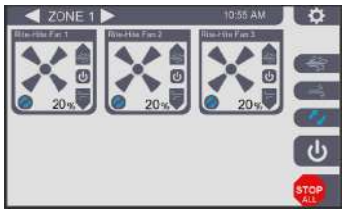
Multiple Fans, Multiple Fan-Commander 2.0s *Continued*

Example 2 – Configuration

2 fans are added to the configuration in **"Example 1 – Configuration" (page 9).**

A second independent Fan-Commander 2.0 is added (instead of adding these fans to the existing Fan-Commander 2.0).

This creates 2 independent networks. The second network is given a unique Network ID to avoid interference with the first network.

Fan Network #1		Fan Network #2	
			
Zone 1	**Zone 2**	**Zone 1**	
Fan #1	Fan #7	Fan #1	Fan #2
Fan #2	Fan #8		
Fan #3			

			DIP SWITCH CONFIGURATION									
			TERM	NETWORK ID				DEVICE ID				
			1	2	3	4	5	6	7	8	9	10
FAN NETWORK 1		FAN-COMMANDER 2.0 #1	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down
	FAN ZONE 1	FAN #1	Down	Down	Down	Down	Down	Down	Down	Down	Down	Up
		FAN #2	Down	Down	Down	Down	Down	Down	Down	Down	Up	Down
		FAN #3	Down	Down	Down	Down	Down	Down	Down	Down	Up	Up
	FAN ZONE 2	FAN #7	Down	Down	Down	Down	Down	Down	Down	Up	Up	Up
		FAN #8	Down	Down	Down	Down	Down	Down	Up	Down	Down	Down
FAN NETWORK 2		FAN-COMMANDER 2.0 #2	Down	Down	Down	Down	Up	Down	Down	Down	Down	Down
	FAN ZONE 1	FAN #1	Down	Down	Down	Down	Up	Down	Down	Down	Down	Up
		FAN #2	Down	Down	Down	Down	Up	Down	Down	Down	Up	Down

After all devices are configured (power cycle required), the installed devices would be toggled to *Enabled* in the *Fan Network Setup* screen.

Network 1 is configured the same as (A) **"Figure 8" (page 9)**.

Network 2 is configured with only fans 1 and 2 enabled.

Figure 10

INSTALLATION

Fan Communication

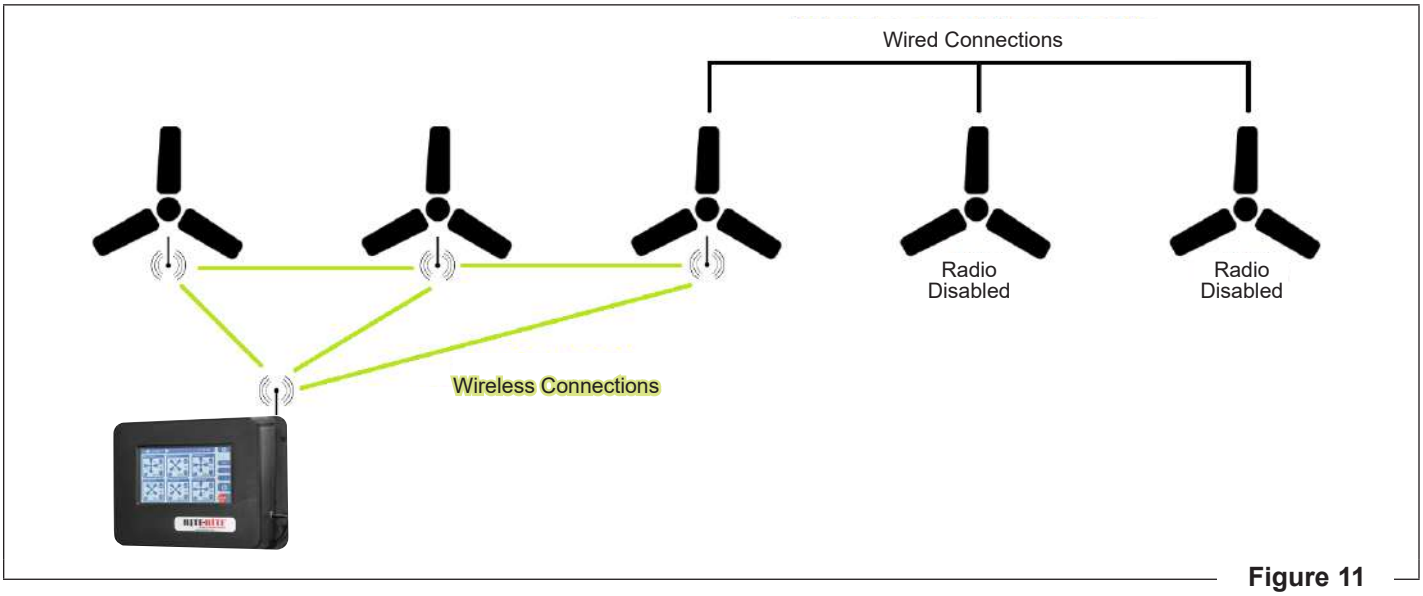


Figure 11

Each fan communicates wirelessly with the Fan-Commander 2.0 using a self-healing mesh network. This allows greater range than point to point wireless communication, as messages can be “passed” along from device to device. When fan configuration is complete, and all devices are powered, each radio controller will indicate its respective signal strength with RSSI LEDs.

See **(Network Configuration Panel, page 5)** to locate the RSSI LEDs.

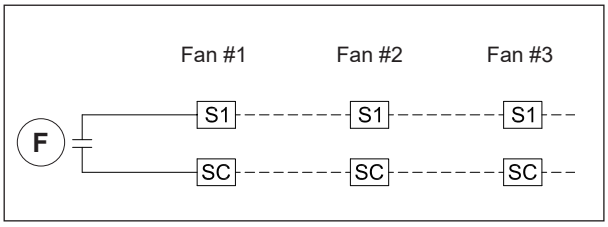
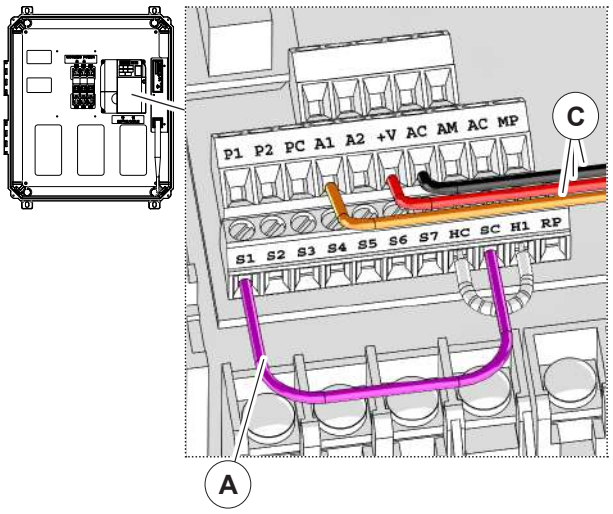
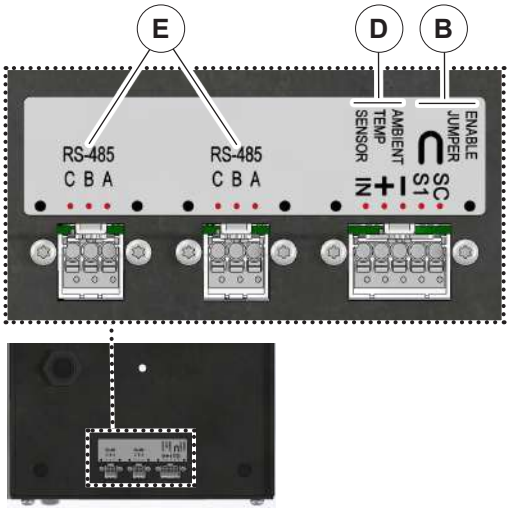
In some instances, it may be necessary to add repeater(s) to boost signal strength between devices. Repeaters must be configured to match the Network ID of the devices they are bridging. 5 unique repeater Device IDs are available for each Network ID. See **"Figure 5"** for DIP switch configuration.

Wired Connections (OPTIONAL)

In applications with excessive radio interference, it is possible to disable the radio link between units and establish wired communication between some or all devices. **"RS-485 Wired Network" (page 13).**

INSTALLATION

Low Voltage Wiring

	TERMINALS FOR OPTIONAL CONNECTIONS:		
	ENABLE JUMPER (FIRE STOP)	**AMBIENT TEMPERATURE SENSOR INPUT**	**RS-485 WIRED NETWORK**
ALL FANS	Opening this jumper will cause the fan to initiate a controlled stop. This may be wired to a contact from a fire system or BMS to stop the fans during an alarm or water flow event. Dry contact (F) from external control system must be closed for fans to operate. 	When installed, the sensor allows the fan speed to automatically respond to changing temperatures. See **"Automatic Temperature Control" on page 18**.	Each radio controller includes an RS-485 port that may be linked to the RS-485 port(s) on other devices. When multiple devices are connected by RS-485, no more than 1 radio may be active in the wired group **(Figure 12)**.
GEARED (REVOLUTION, ROGUE)	Factory installed jumper between S1 and SC (A) (Inside of Control Box on the VFD). 	The Rite-Hite ambient temperature sensor may be wired to terminals A1, +V, and AC (C). A1 ↔ OUT +V ↔ + AC ↔ –	An additional RS-485 cable adapter is required for each device (sold separately). Consult Rite-Hite applications. Located on radio board (not shown).
DIRECT DRIVE (REVOLUTION 25, 75, 150)	Factory installed jumper (B) (Top of Fan Enclosure). 	Connection point for a Rite-Hite ambient temperature sensor (D).	Connection point to establish a wired network, or wired sections of a network, if wireless communication is not viable (E).

ELECTRICAL WIRING

Fan-Commander 2.0 Input/Output Module Field Wiring

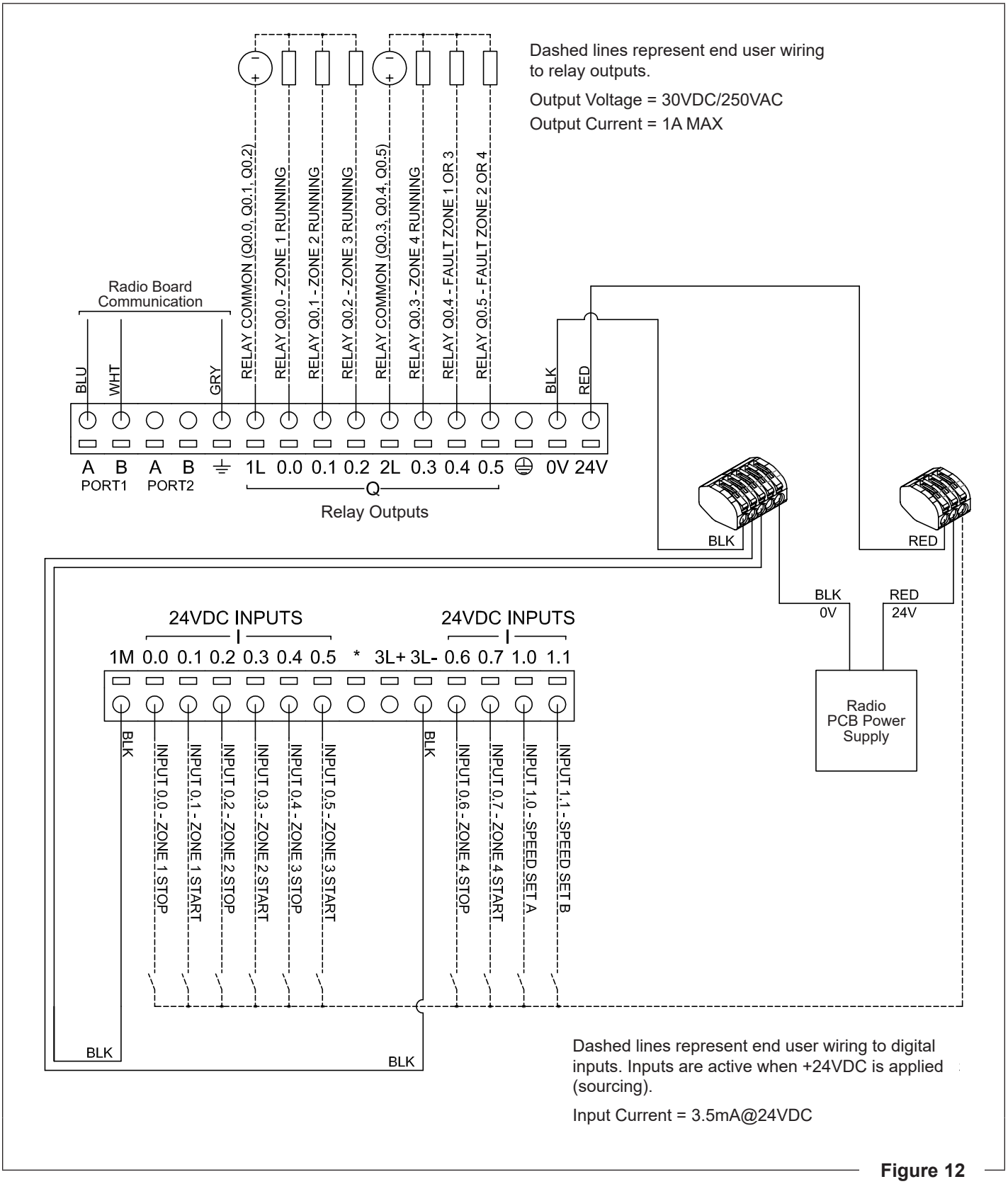


Figure 12

OPERATION

Each fan is wirelessly controlled by a Fan-Commander 2.0 (touchscreen). 1 Fan-Commander 2.0 may be used to control 1 to 24 fans.

Each Fan-Commander 2.0 allows fans to be grouped into 4 zones, with up to 6 fans per zone. Fans may be controlled individually, or controlled in groups by zone.

Fan operation is controlled by the user interface on the Fan-Commander 2.0 or mobile device app.

Fans are controlled:

- As needed by adjusting settings, or
- Automatically based on schedule, ambient temperature (optional sensor required), or BMS (Building Automation System).

User Interface – Overview

Home Screen

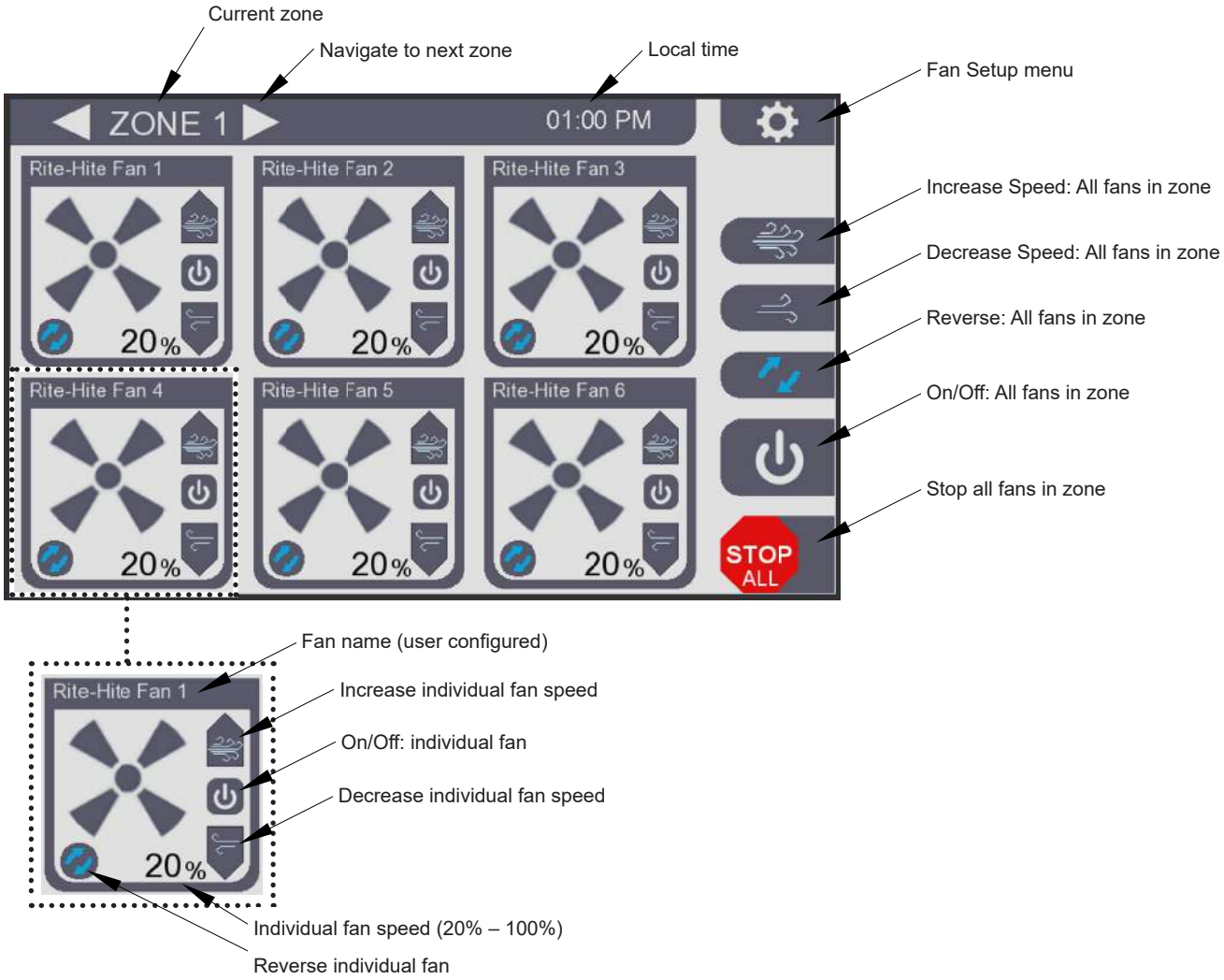


Figure 13

OPERATION

User Interface – Setup

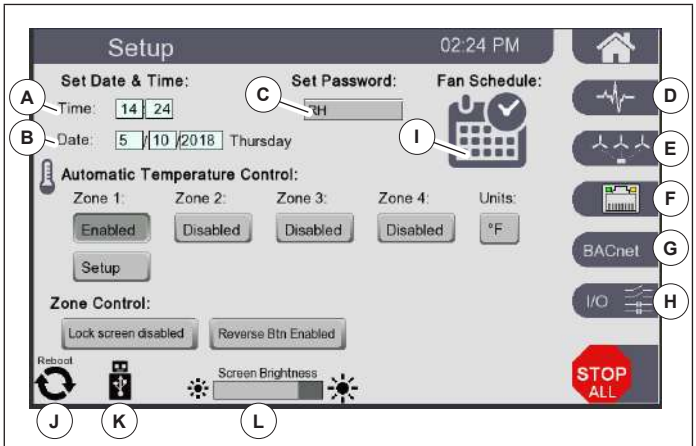
Access Setup Menu

1.  Touch the Fan Setup Menu button.

2. 

Touch the Password field to enter the default password "RH" (case sensitive).

3. The *Setup* screen is displayed after successful password entry.



A. Time (24 hour format)
B. Date
C. Password
D. Diagnostic
E. Fan Network
F. Network
G. BACnet
H. I/O Option
I. Fan Schedule
(Time in 24 hour format)
J. Reboot
(Reboots user interface/ Fan-Commander 2.0)
K. USB/Initiate Firmware
(Rite-Hite use only)
L. Screen Brightness
Increase or decrease touchscreen backlight intensity. Brightness changes gradually (over several seconds).

Figure 14

Date, Time and Password

Touch the corresponding field to set the following:

A. *Time* (24 hour format)
B. *Date* (month/day/year)
C. *Set Password* (to change the default password)

OPERATION

User Interface – Setup *Continued*

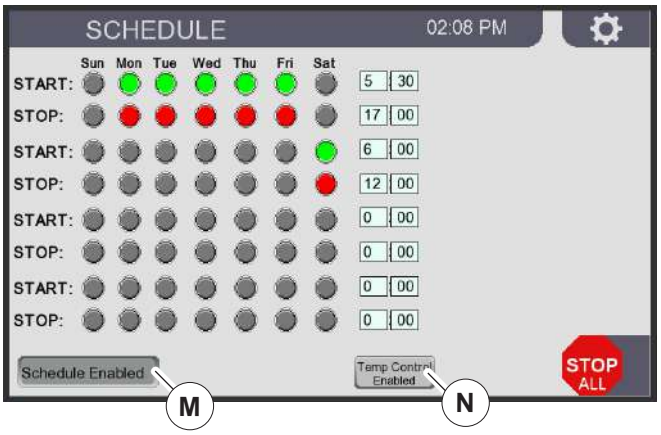
Fan Schedule

Touch the *Fan Schedule* button (I) **(Figure 14)** to schedule fans to be automatically started and stopped based on time and day of the week.

Customize weekly schedules by toggling on and off the START (green) and STOP (red) day buttons.

- The *Schedule Enabled/Disabled* button (M) allows the schedule function to be toggled on and off.
- If automatic ambient temperature control is not enabled, the schedule function will restart the fans at their most recent speed setting (displayed on the Home screen) **(Figure 13)**.
- If automatic ambient temperature control (option) is enabled:
  - At scheduled stop time, the *Automatic Temperature Control* function toggles to *Disabled* (fans will not automatically run based on temperature conditions). Temperature control may be temporarily re-enabled by toggling the *Temp Control Enabled* button (N).
  - At scheduled start time, the *Automatic Temperature Control* function is toggled to *Enabled* (fans will automatically run based on temperature conditions).

Example



All fans will:

Start at 5:30 AM Monday through Friday
Stop at 5:00 PM Monday through Friday
Start at 6:00 AM Saturday
Stop at noon Saturday

Figure 15

OPERATION

User Interface – Setup *Continued*

Automatic Temperature Control

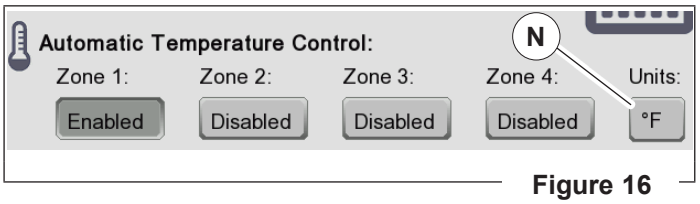
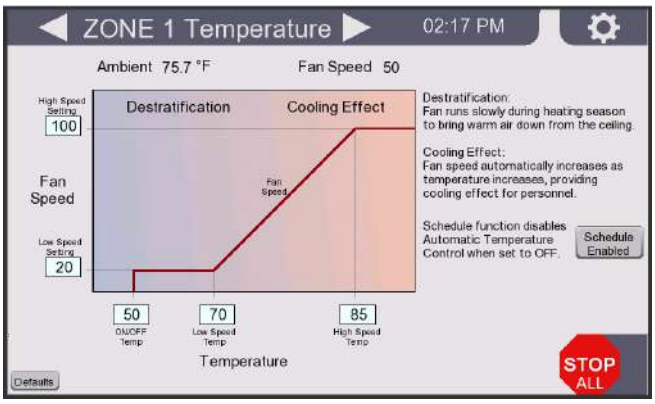


Figure 16

- Each zone may be equipped with an optional ambient temperature sensor. When the sensor is connected to the first fan in the zone (Fan ID 1, 7, 13, 19), all fans in the zone may be controlled based on the sensed ambient temperature.
- The *Units* button (N) allows the user to toggle between Fahrenheit and Celsius.
- If the Schedule function is enabled:
  - At a scheduled stop time, the *Automatic Temperature Control* function is disabled to prevent fans from restarting based on temperature conditions. "*Schedule Disabled*" will be displayed during scheduled off time. The automatic temperature function will not operate until the next scheduled on time.
  - Temperature control may be manually re-enabled by toggling the *Schedule Disabled* button to *Schedule Enabled* (M) **(Figure 15)**.
  - At a scheduled start time, the *Automatic Temperature Control* function is re-enabled to allow the fans to operate based on ambient temperature settings. "*Schedule Enabled*" will be displayed during scheduled on time. The fans will start or stop based on the configured automatic temperature settings.

Example



- Below 50 degrees (*ON/OFF Temp*), the fans will turn off.
- Between 50 degrees (*ON/OFF Temp*) and 70 degrees (*Low Speed Temp*), the fan will operate at 20% speed (*Low Speed Setting*).
- Between 70 degrees (*Low Speed Temp*) and 85 degrees (*High Speed Temp*), the fan will gradually accelerate from 20% (*Low Speed Setting*) to 100% (*High Speed Setting*) speed.
- The sensor is measuring 75.7 degrees ambient temperature in this example. This is between the *Low Speed Temp* and the *High Speed Temp*. The controller automatically calculates a fan speed that is proportionally between the *Low Speed Setting* and the *High Speed Setting*. In this case, the speed is 50%. As the ambient temperature rises or lowers, this speed will automatically increase or decrease.
- All speed and temperature set points may be changed to suit the needs of the application.
- Each zone may have unique temperature settings.

Figure 17

OPERATION

User Interface – Setup *Continued*

Zone Control

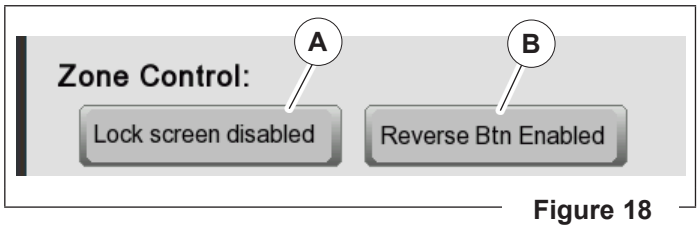


Figure 18

A. **Lock Screen Button:** By default, all users have access to basic fan control (speed, start/stop). This button (A) may be toggled to prevent users from accessing the Zone Control screen. To lock out all users, toggle the Lock Screen button, press the Home button (top right) **(Figure 14)** to return to the Zone Control screen, and press the gear button (top right) **(Figure 15)** to enter the Login screen **(Figure 14)**.

B. **Reverse Button:** By default, all fans may be operated in reverse. Toggle to disable the reverse function.

NOTE: Rite-Hite fan blades produce the most efficient airflow when operating in the forward direction.

User Interface – Diagnostics

Access the *Diagnostics* screen with Diagnostics button on Setup screen (D) **(Figure 14)**.

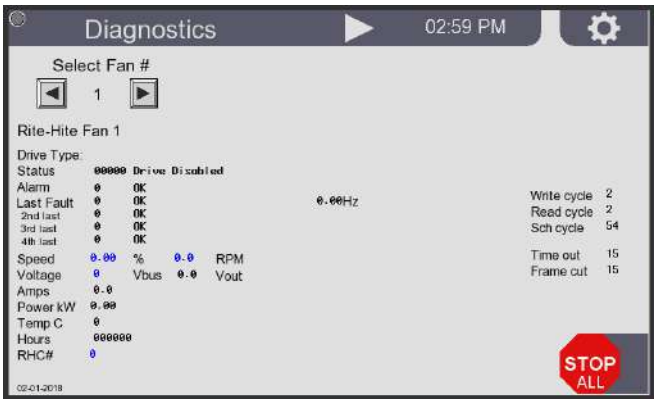


Figure 19

This screen provides data on current operating conditions and fault history for each fan on the network.

User Interface – Fan Network Setup

Access the *Fan Network Setup* screen **(Figure 4)** with Fan Network button on Setup screen (E) **(Figure 14)**.

This screen may be used to:

- Add new fans to the network.
- Temporarily disable existing fans for maintenance.
- Customize fan names.

OPERATION

User Interface – Network

Access the *Network Setup* screen with Network button on Setup screen (F) **(Figure 14)**.

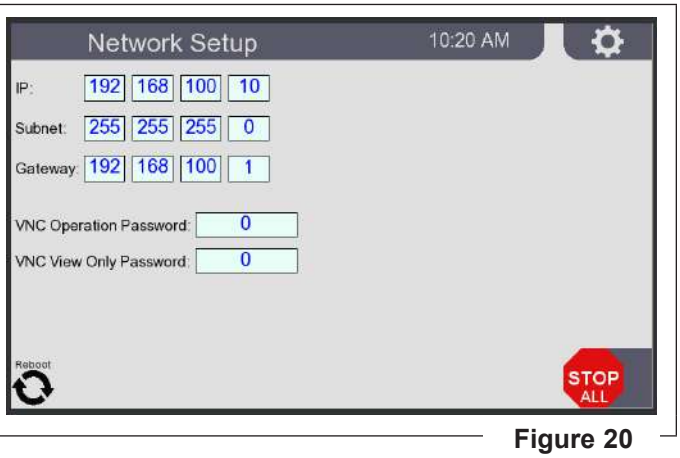


Figure 20

The Fan-Commander 2.0 includes Ethernet connectivity. The Ethernet port is located on the back of the Fan-Commander 2.0 assembly (inside the touch screen enclosure).

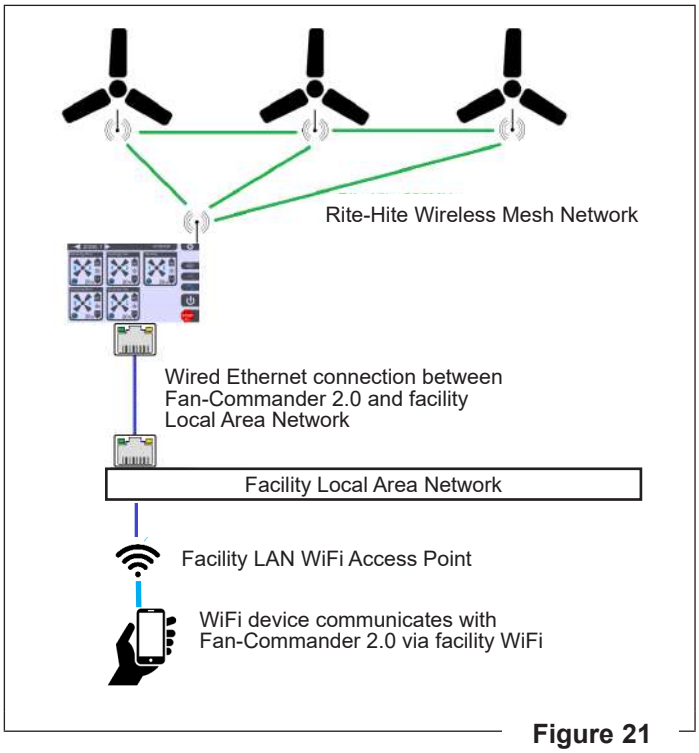


Figure 21

Connecting the Fan-Commander 2.0 to the LAN allows the system to be controlled remotely, via a third party VNC Viewer, from a PC or mobile device.

The user may set 2 levels of password protection:

– A remote user with the "Operation" Password has complete control of the system.

– A remote user with the "View Only" Password may only view the active screen.

OPERATION

User Interface – BACNet

BACnet | Access the *BACnet* screen with *BACnet* button on Setup screen (G) **(Figure 14)**.

This interface allows up to 8 fans to be monitored and controlled via BACnet over IP.

NOTE: The Fan-Commander 2.0 must have a wired Ethernet connection, and a valid IP address must be specified in the *Network Setup* screen.

The *BACnet Enabled/Disabled* button (A) **(Figure 22)** allows the user to toggle the BACnet function ON/OFF.

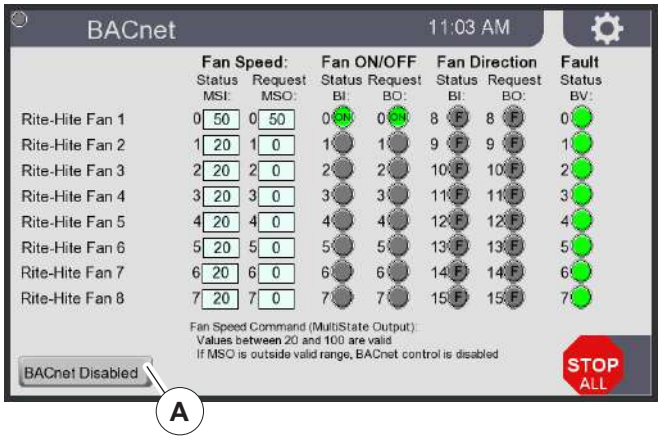
The BMS (Building Management System) can read the status of the fans with these variables:

MSI (Multi-State Input) (0-7)	Current Fan Speed Setting (20 to 100)
BI (Binary Input) (0-7)	ON = Fan Running OFF = Fan Stopped
BI (Binary Input) (8-15)	ON = Reverse Direction OFF = Forward Direction
BV (Binary Value) (0-7)	ON = Fault Condition OFF = No Fault (green)

The BMS can command the fans by writing the following variables:

- MSO (Multi-State Output) (0-7)
  - To over-ride local control, BMS writes value between 20 and 100.
  - To allow local control, BMS writes value of 0.
- BO (Binary Output) (0-7) [ON/OFF Request Bit]
  - If Speed Request (MSO) is within range, and the corresponding ON/OFF Request bit is OFF, the fan will receive a stop command.
  - If Speed Request (MSO) is within range (20 to 100), and the corresponding ON/OFF Request bit is ON, the fan will receive a start command.
- BO (Binary Output) (8-15) [Direction Request Bit]
  - If Speed Request (MSO) is within range, and the corresponding Direction Request bit is OFF, the fan direction will be set to Forward.
  - If Speed Request (MSO) is within range, and the corresponding Direction Request bit is ON, the fan direction will be set to Reverse.

Example



In the Example shown, the BMS would read:

MSI 0 = 50	Fan 1 set to 50% speed
BI 0 = ON	Fan 1 is running
BI 8 = OFF	Fan 1 Forward Direction
BV 0 = OFF	Fan 1 No Fault

In the Example shown, the BMS would write

MSO 0 = 50	Speed Request = 50%
BO 0 = ON	Start Request = Fan ON
BO 8 = OFF	Direction Request = Forward

Fan 1 will start (or continue to run) in the Forward direction at 50% speed.

Figure 22

OPERATION

User Interface – I/O Option

Access the *I/O Option* screen with I/O Option button on Setup screen (H) **(Figure 14)**.

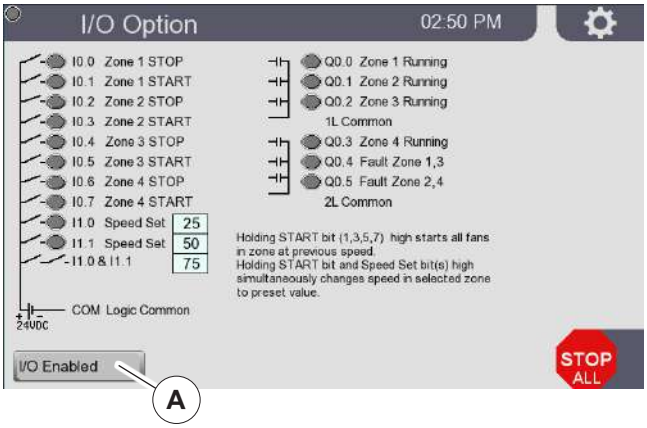


Figure 23

This interface allows the fans to be operated by zone using discrete signals.

The *I/O Enabled/Disabled* button (A) toggles the I/O function ON/OFF.

Similar to the fan controls, the I/O Option must be configured with a radio Network ID and Device ID. The Network ID must match the Fan-Commander 2.0 and Fans. The Device ID for the I/O Option is factory set to 25, and may not change (See **"Figure 1"** for DIP switch settings).

Like the fans, the Fan-Commander 2.0 scans the I/O module periodically. Allow a couple minutes for status changes to be reflected on the Fan-Commander 2.0.

The I/O Option includes 10 digital inputs (logic high when +24VDC is applied).

Energizing the first 8 inputs allows a BMS or other control system to remotely start or stop each of the 4 zones by closing a contact.

Energizing 1 or both of the last 2 inputs concurrently with a "Zone START" input applies 1 of 4 user selectable preset speeds to the respective zone.

Example

If Input 0.1 is energized on the I/O module (+24V applied), the input status is indicated by an LED on the I/O module, as well as by the green ON indicator on the I/O Option screen. When the Fan-Commander 2.0 next scans the I/O module, all of the fans in Zone 1 will receive a Start command. The fans will run at their previous set speed.

– To start Zones 1 and 2 at a speed of 75%, simultaneously energize I0.1, I0.3, I1.0, and I1.1 to assign the speed reference to the selected zones. The preset speed references may be changed by touching the value on the screen.

– To stop all fans, in all zones energize all 4 stop inputs; I0.0, I0.2, I0.4, and I0.6.

The I/O Option includes 6 relay outputs that may be used to provide feedback about the connected fans.

Outputs Q0.0 through Q0.3 close a contact to indicate 1 or more fans is operating within each of the 4 zones.

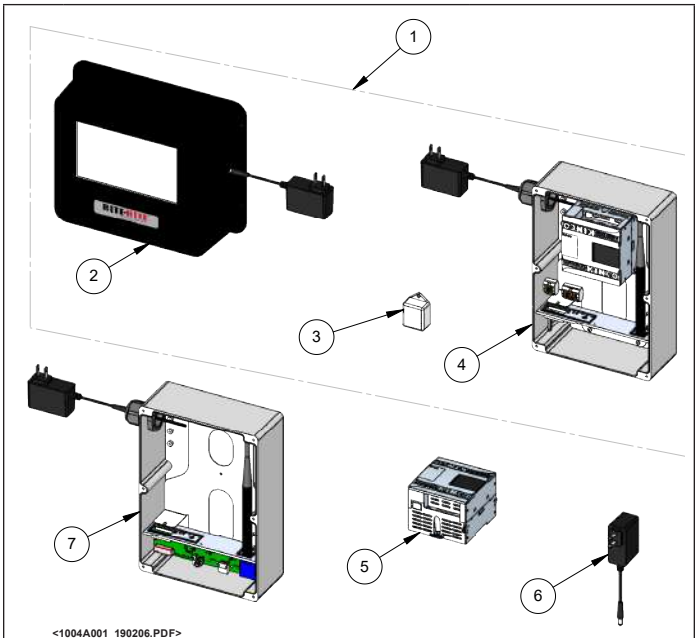
Outputs Q0.4 and Q0.5 close a contact to indicate 1 or more fans is in a fault condition within the indicated zones.

See **Electrical Wiring (page 14).**

Figure 24

PARTS

Fan-Commander 2.0



#	DESCRIPTION	PART #
1	FANCOMMANDER2 (CONFIGURABLE)	FANCOMMANDER2
2	CBOX., ASSY, 900MHZ, HMI	17250234
3	SENSOR, TEMP, 24V, 0-125F, 0-10VDC	68900008
4	CBOX,ASSY,I/O,900MHZ	17250236
5	PCL, KINCO, 16I/0, 24VDC	65100018
6*	PWR SPLY, WALL, US, 24V,12W,2.1MM	65700014
7	CBOX,ASSY,REPEATER, 900MHZ	17250250

*For use with any of the control box assemblies shown.

Rite-Hite Company, LLC and its affiliates (collectively "Rite-Hite") warrant that the Product sold to the Owner will be free of defects in design, materials and workmanship (ordinary wear and tear excepted) for the periods set forth below ("Limited Warranty").

Three (3) Year(s) on all mechanical and electrical parts (non-prorated).
One (1) Year(s) labor, based on Rite-Hite approved travel and labor repair times.

REMEDIES
Parts: Rite-Hite's obligations under this Limited Warranty are limited to repairing or replacing, at Rite-Hite's option, any part which is determined by Rite-Hite to be defective during the applicable warranty period. Such repair or replacement shall be Rite-Hite's sole obligation and the Owner's exclusive remedy under this Limited Warranty.
Labor: Rite-Hite will provide warranty service without charge for labor per the specified warranty period. Thereafter, a charge will apply to any repair or replacement under this Limited Warranty.

CLAIMS Claims under this Limited Warranty must be made (i) within 30 (thirty) days after discovery and (ii) prior to expiration of the applicable warranty period. Warranty period commences on the date of shipment. Claims shall be made in writing or by contacting the representative from whom the Product was purchased directly. Owner must allow Rite-Hite or its agent, a reasonable opportunity to inspect any Product claimed to be defective and shall, at Rite-Hite's option, either (x) grant Rite-Hite or its agent access to Owner's premises for the purpose of repairing or replacing the Product or (y) return of the Product to the Rite-Hite, F.O.B. Rite-Hite's factory.

NOT WARRANTED Rite-Hite does not warrant against and is not responsible for wear items such as fuses, batteries, bulbs, vision and seals. No implied warranty shall be deemed to cover damages that result directly or indirectly from: (i) the unauthorized modification or repair of the Product, (ii) damage due to misuse, neglect, accident, failure to provide necessary maintenance, or normal wear and tear of the Product, (iii) failure to follow Rite-Hite's instructions for installation, failure to operate the Product within the Product's rated capacities and/or specified design parameters, or failure to properly maintain the Product, (iv) use of the Product in a manner that is inconsistent with Rite-Hite's guidelines or local building codes, (v) movement, settling, distortion, or collapse of the ground, or of improvements to which the Products are affixed, (vi) fire, flood, earthquake, elements of nature or acts of God, riots, civil disorder, war, or any other cause beyond the reasonable control of Rite-Hite, (vii) improper handling, storage, abuse, or neglect of the Product by Owner or by any third party.

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