Honeywell

W8735A1013 EnviraCOM™ Serial Adapter

INSTALLATION INSTRUCTIONS

TABLE OF CONTENTS

APPLICATION

The W8735A1013 EnviraCOM™ Serial Adapter provides a host computer, gateway, or controller, with an RS-232 port, local access to an EnviraCOM™ HVAC System. The host provides the application to control the W8735A1013. The W8735A1013 EnviraCOM™ Serial Adapter is powered through the EnviraCOM™ connection and is optically isolated for universal compatibility. The W8735A1013 uses the EnviraCOM™

Table 1. W8735A1013 Description

Model	Application	Terminals	Comment
W8735A1013	Local control of EnviraCOM™ HVAC system using host computer, gateway or controller with RS- 232 serial port. Host provides application.	1, 2, 3 – EnviraCOM™ DB9 – RS-232	W8735A1013 used with host. Host provides application software and user interface. As an application software any terminal tool like Microsoft® HyperTerminal can be used during initial evaluation. W8735A1013 provides means to move data from EnviraCOM™ Bus to RS-232 port.

69-2644-01

INSTALLATION

When installing this product…

1. Read these instructions carefully. Failure to follow these instructions can damage the product or cause a hazardous condition
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After completing installation, use these instructions to check out the product operation.

⚠ CAUTION

Electrical Hazard.
Can cause electrical shock or equipment damage.
Disconnect power before beginning installation.

Selecting Location

Locate the W8735A1013 near the host or near the HVAC system, as determined most suitable for the application.

Mounting W8735A1013 EnviraCOM™ Serial Adapter

⚠ CAUTION

Electrical Hazard.
Equipment Mounting Damage Hazard.
Mounting W8735A1013 inside HVAC can damage equipment.
Mount W8735A1013 outside HVAC equipment.

Mounting the W8735A1013 is optional. When mounting is desired, use the sheet of two-sided adhesive tape (provided).

1. Ensure the device is clean and dry and free of any oil or dirt.
2. Peel the protective lining from one side of the tape and press it to the back of the W8735A1013.
3. Remove the protective lining from the second surface of the tape and press the W8735A1013 to the mounting surface at the desired mounting location.

Wiring

⚠ CAUTION

Electrical Hazard.
Equipment Mounting Damage Hazard.
Mounting W8735A1013 inside HVAC can damage equipment.
Mount W8735A1013 outside HVAC equipment.

1. Refer to Fig. 1 for wiring diagram.
2. Loosen terminal screws on W8735A1013 and connect system wires. See Fig. 2.
3. Securely tighten each terminal screw.
4. Connect serial cable to W8735A1013 DB9 RS-232 connector to the host RS-232 connector (see host installation instructions for details), using a serial cable (not provided with W8735A1013).

NOTE: Maximum distance between W8735A1013 DB9 RS-232 connector and the host RS-232 connector is 25 feet.

5. Restore power to HVAC systems and host.

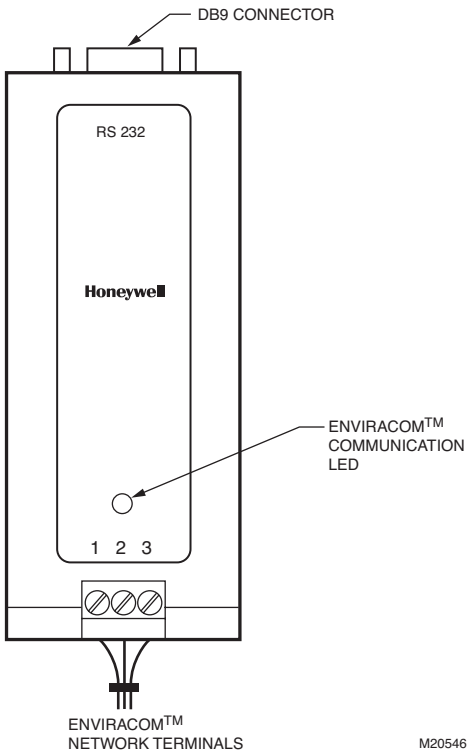

Fig. 1. Wiring W8735A1013

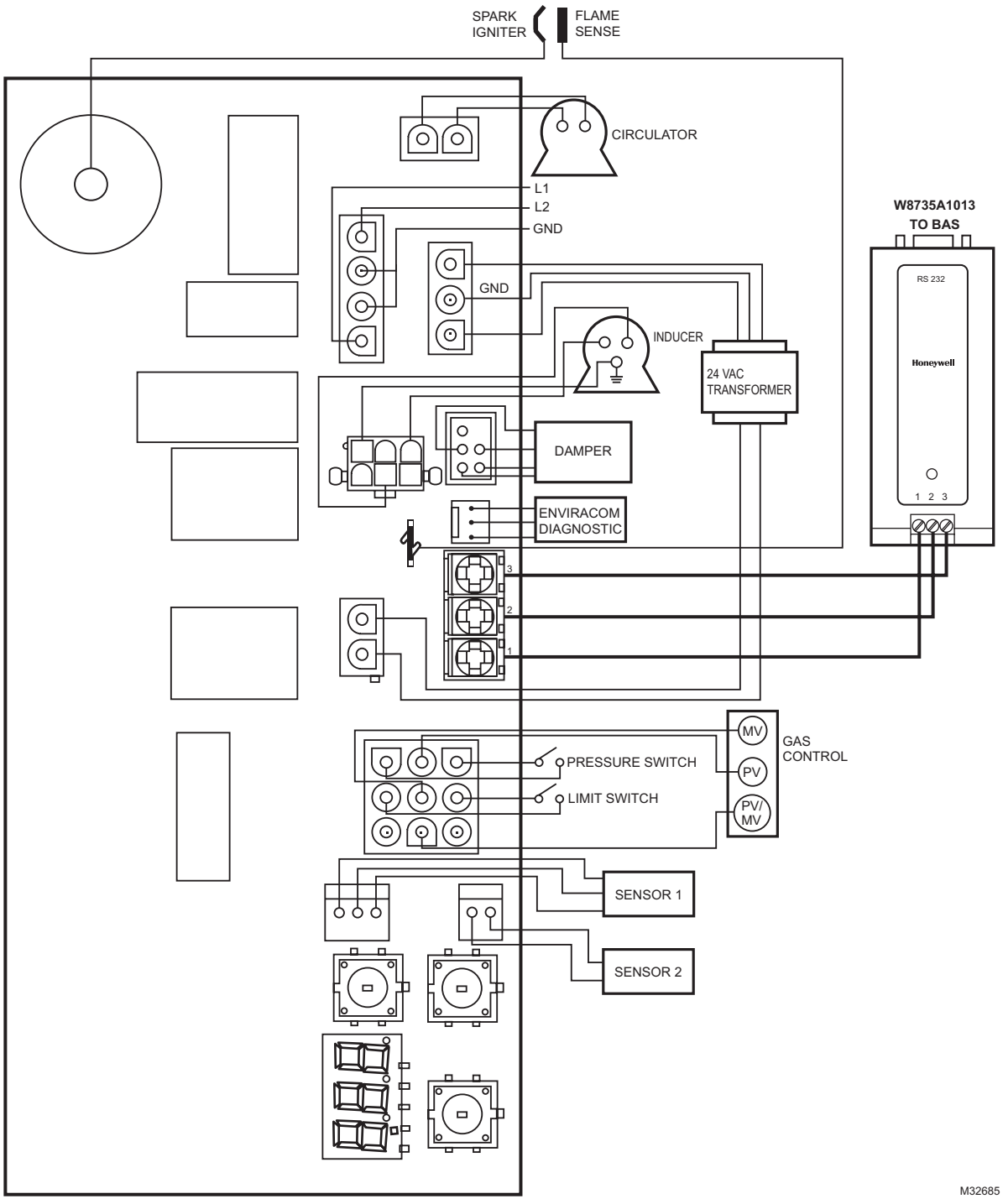

Fig. 2. Connecting the W8735A1013 to an S936X EnviraCOM™ enabled Integrated Water Heater Control

Table 2. Terminal Designations

W8735A1013 Terminal Designations	Function
1	To EnviraCOM™ network terminal 1 (data).
2	To EnviraCOM™ network terminal 2 (24 Vac).
3	To EnviraCOM™ network terminal 3 (24 Vac).
Serial	Connect W8735A1013 DB9 connector to host RS-232 serial port using serial cable (not provided with W8735A1013).

Host Port Configuration

The configuration of the host:

Baud rate: 19200 bps.
Parity: none.
Data bits: 8.
Stop bits: 1.
Flow control: none.

LED Description

The green Light Emitting Diode (LED) on the front of W8735A1013 is used to show EnviraCOM™ Bus activity as follows:

LED blinks rapidly	Device is currently transmitting information on communications bus.
LED blinks once	Device received and acknowledged a message.
LED on constantly	Device failure. Replace device.
LED off constantly	Wiring problem if device is not functioning correctly and there is no LED activity at least once a minute. Check wiring to communications bus terminals 1, 2 and 3.
LED blinks continuously	*It is normal for LED to blink continuously during startup and discovery.* Wiring problem if device is not functioning correctly and there is a continuous series of LED blinks. Check wiring to communications bus terminals 1, 2 and 3.

Glossary of Terms

RS-232 – Long-established standard that describes the physical interface and protocol for relatively low-speed serial data communication between computers and related devices. Originally defined by industry trade group, the Electronic Industries Association (EIA), for teletype devices.

Serial – Only one event occurring at a time, contrasted with parallel, which means more than one event happening at a time.

DB9 – Standard 9-pin connector. DB9 used on W8735A1013 is a female configuration.

EnviraCOM™ – Three-wire communications protocol used in HVAC products.

Host – Supports the application software. Devices such as a computer, gateway, controller are examples of a host.

HVAC – Heating, Ventilation and Air Conditioning.

EnviraCOM™ Bus

Communication over the EnviraCOM™ bus is managed by transmitting messages, one by one. There are three roles of EnviraCOM™ messages: Query, Report and Change Request.

- Query messages are used to retrieve information from devices.
- Devices respond to query messages by sending Report messages of the same message class.
- A Change Request message is used to request a change in settings of a device. Devices respond to Change Request messages with Report messages of the same message class to confirm the final settings.

Message Format

Messages sent or received from the W8735A1013 EnviraCOM™ Serial Adapter are coded in ASCII format (case sensitive) as follows with individual parts delimited by space characters (20 hex). All numbers are in hexadecimal format. The default message priority is medium.

NOTE: Message Class along with Message Instance Number defines type of message.

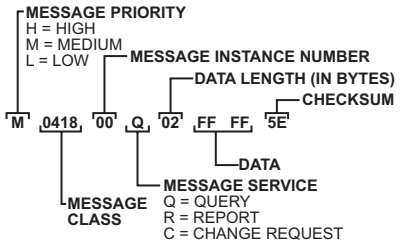

Fig. 3. Message format guide.

In addition to EnviraCOM™ messages, the W8735A1013 sends status messages to the host application.

Table 3. Status Messages.

Message	Description
[Reset - Vxx.xx]	Sent during power-up where Vxx.xx denotes the version of adapter firmware, e.g. V01.11.
[Idle]	Sent when EnviraCOM™ bus idle state is detected.
[Ack]	Sent when received message contained a valid checksum and message has been queued for transmission to EnviraCOM™ bus.
[Nak]	Sent when received message contained an invalid checksum.
[Sent]	Sent when queued message has been successfully transmitted to EnviraCOM™ bus.

NOTE: The host application will not send any new message before the previous one is transmitted to the EnviraCOM™ bus (i.e. prior receiving [Sent] status message).

Each message sent to W8735A1013 EnviraCOM™ Serial Adapter is terminated with Carriage Return character (0D hex) and optionally followed by Line Feed character (0A hex). Each message received from W8735A1013 EnviraCOM™ Serial Adapter is terminated with following sequence of characters:

Carriage Return (0D hex) + Line Feed (0A hex) + ">" (3E hex)

Message Checksum

Checksum is used as indicator of failure free communication between host application and W8735A1013 EnviraCOM™ Serial Adapter. Host application should check the checksum of received messages and only process messages with a correct checksum. W8735A1013 EnviraCOM™ Serial Adapter checks the checksum of messages received from the host application and sends the received messages to EnviraCOM™ bus only if no corruption is detected.

Checksum can be computed using Exclusive OR operation ⊕ over all bytes of a message.

Example:

Received message:

M 10E0 01 R 08 00 00 CE 45 D0 41 08 40 AB

Message priority and service is converted to hexadecimal number based on Table 4 and 5.

Table 4. Message Priority.

Priority	Value
L – Low	0(hex)
M – Medium	40(hex)
H – High	80(hex)

Table 5. Service Priority.

Service	Value
Q – Report Query	0(hex)
R – Report	40(hex)
C – Change Request	80(hex)

Checksum is computed as:

40 ⊕ 10 ⊕ E0 ⊕ 01 ⊕ 40 ⊕ 08 ⊕ 00 ⊕ 00 ⊕ CE ⊕ 45 ⊕ D0 ⊕ 41 ⊕ 08 ⊕ 40 = AB

SELECTED MESSAGE CLASSES

The following sections describe usage of most common message classes. Note that devices do not need to support all of the messages and sending of such messages will neither have an effect nor response will be received.

⚠WARNING

Usage beyond provided examples is not supported by Honeywell.

NOTE: Messages can be shorter than those shown in the following examples (truncated from the right). The callouts show samples of what bytes of information may be available to a device. Not all devices can transmitt all information.

Node Identification 1 (10E0)

Message is used to identify devices connected to EnviraCOM™ bus.

Whenever any device sends a Query message to EnviraCOM™ bus, Report message from each connected device is transmitted over the EnviraCOM™ bus. Report message contains encoded OS Number.

There are two formats of OS Number. Fig. 4 shows both formats as a response of two devices to Query message.

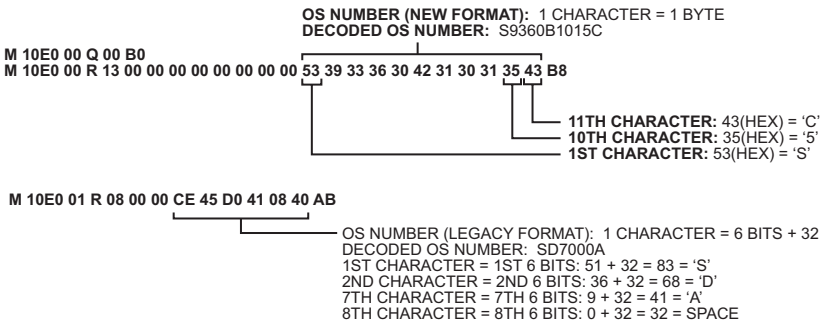

Fig. 4. Node Identification 1 (10E0).

Optionally, devices can send Node Identification 2 and 3 reports right after their Node Identification 1 report, containing additional identification information.

Node Identification 2 (10E1)

Fig. 5 shows an example of report following Node Identification 1 report.

Fig. 5. Node Identification 2 (10E1).

Device Status (3E70)

Message is used to identify existence of control device in a system and its current state. Fig. 6 and 7 show responses to a Device Status query.

M 3E70 00 Q 00 0E

INSTANCE: 00(HEX) = ALL DEVICES
00(HEX) – APPLIES TO ALL DEVICES THAT LISTEN TO THE MESSAGE CLASS
10(HEX) – FAN CONTROLLER
11(HEX) – GAS HEAT
42(HEX) – COMPRESSOR COOLING
F0(HEX) – WATER HEATER

M 3E70 F0 R 08 00 04 01 00 00 00 00 00 B3

FLAME CURRENT [nA]: 0000(HEX) = 0nA
CURRENT SEQUENCE STATE OF THE DEVICE: 01(HEX) = IDLE
00(HEX) = 0 = NOT USED – THIS VALUE SHOULD BE USED BY ALL EQUIPMENT EXCEPT GAS VALVES.
01(HEX) = 1 = IDLE – WAITING FOR A HEAT REQUEST
02(HEX) = 2 = WAIT PSW OPEN – WAITING FOR PRESSURE SWITCH TO OPEN
03(HEX) = 3 = WAIT PSW CLOSE – WAITING FOR PRESSURE SWITCH TO CLOSE
04(HEX) = 4 = PREPURGE – FLUSHING COMBUSTION CHAMBER
05(HEX) = 5 = HIS WARMUP – PREHEATING HOT SURFACE IGNITER
06(HEX) = 6 = IGN ACTV – IGNITION ACTIVATION - START FUEL FLOW
07(HEX) = 7 = PROVE FLAME – CHECKING FOR FLAME TO BE PRESENT WITHOUT IGNITION SOURCE
08(HEX) = 8 = RUNNING
09(HEX) = 9 = POSTPURGE – FLUSHING COMBUSTION PRODUCTS FROM COMBUSTION CHAMBER
0A(HEX) = 10 = INTERPURGE – SIMILAR TO POSTPURGE EXCEPT WILL RECYCLE BACK TO TRY ANOTHER IGNITION
0B(HEX) = 11 = PSW FAIL CLOSE – PRESSURE SWITCH HAS FAILED IN THE CLOSED CONDITION
0C(HEX) = 12 = PSW FAIL OPEN – PRESSURE SWITCH HAS FAILED IN THE OPEN CONDITION
0D(HEX) = 13 = SOFTLOCKOUT – FAILURE DETECTED BUT WILL RETRY AFTER A LOCKOUT PERIOD
0E(HEX) = 14 = HARDLOCKOUT – FAILURE DETECTED AND WILL NOT RETRY UNTIL A MANUAL RESET
0F(HEX) = 15 = LIMIT OPEN – LIMIT SWITCH IS IN AN OPEN CONDITION
10(HEX) = 16 = FLAME OUT OF SEQ – THE FLAME HAS BEEN DETECTED OUT OF SEQUENCE
11(HEX) = 17 = SELF TEST – THE DEVICE IS IN A SELF TEST MODE
12(HEX) = 18 = WAIT VENT OPEN – WAITING FOR VENT DAMPER TO OPEN (END SWITCH TO CLOSE)
13(HEX) = 19 = WAIT VENT CLOSE – WAITING FOR VENT DAMPER TO CLOSE (END SWITCH TO OPEN)
14(HEX) = 20 = VENT FAIL CLOSE – THE VENT DAMPER HAS FAILED IN THE CLOSED CONDITION (END SWITCH IS OPEN)
15(HEX) = 21 = VENT FAIL OPEN – THE VENT DAMPER HAS FAILED IN THE OPEN CONDITION (END SWITCH IS CLOSED)
CURRENT INSTANTANEOUS STATE OF THE DEVICE: 00(HEX) = OFF
00(HEX) = 0 = OFF
C8(HEX) = 200 = FULL ON

Fig. 6. Device Status (3E70).

M 3E70 F0 R 08 C8 04 08 00 00 00 1B 30 59

FLAME CURRENT [nA]: 1B30(HEX) = 6960nA
CURRENT SEQUENCE STATE OF THE DEVICE: 08(HEX) = RUNNING
CURRENT INSTANTANEOUS STATE OF THE DEVICE: C8(HEX) = FULL ON

Fig. 7. Device Status (3E70).

DHW Cylinder Temperature (1260)

Message is used to retrieve the water temperature.

Fig. 8 shows a response to a DHW Cylinder Temperature query.

M 1260 F0 Q 00 C2

INSTANCE: F0(HEX) = WATER HEATER

M 1260 F0 R 06 13 06 12 5C 15 B8 72

TEMPERATURE AT THE BOTTOM OF THE TANK [0.01°C]: 15B8(HEX) = 55.60°C (132.08°F)
TEMPERATURE AT THE TOP OF THE TANK [0.01°C]: 125C(HEX) = 47.00°C (116.60°F)
7FFF(HEX) = NOT AVAILABLE
TEMPERATURE [0.01°C]: 1306(HEX) = 48.70°C (119.66°F)

Fig. 8. DHW Cylinder Temperature (1260).

DHW Cylinder Setpoint (10A0)

M 10A0 F0 Q 00 00
M 10A0 F0 R 05 17 70 00 01 18 3B

DHW SETPOINT DIFFERENTIAL [0.01°C]: 0118(HEX) = 2.80°C (5.04°F)
DHW SETPOINT [0.01°C]: 1770(HEX) = 60.00°C (140.00°F)

Fig. 9. DHW Cylinder Setpoint (10A0).

Change of the temperature setpoint is shown in Fig. 10.

M 10A0 F0 C 02 19 64 FF
DHW SETPOINT [0.01°C]: 1964(HEX) = 65.00°C (149.00°F)

M 10A0 F0 R 05 19 64 00 01 18 21

Fig. 10. DHW Temperature Setpoint (10A0).

⚠ WARNING

Changing of the temperature setpoint may not work when other interacting devices are connected to EnviraCOM™ bus. Can cause severe injury, death or property damage.

DHW Setpoint Range (10A1)

Message is used to retrieve or change the range of values allowed for temperature setpoint and setpoint differential.

Fig. 11 shows a response to a DHW Setpoint Range query.

M 10A1 F0 Q 00 01
M 10A1 F0 R 08 1A B8 05 00 05 6E 02 30 56
MINIMUM SETPOINT DIFFERENTIAL [0.01°C]: 0230(HEX) = 5.60°C (10.08°F)
7FFF(HEX) = NOT AVAILABLE
MAXIMUM SETPOINT DIFFERENTIAL [0.01°C]: 056E(HEX) = 13.90°C (25.02°F)
7FFF(HEX) = NOT AVAILABLE
MINIMUM SETPOINT [0.01°C]: 0500(HEX) = 12.80°C (55.04°F)
7FFF(HEX) = NOT AVAILABLE
MAXIMUM SETPOINT [0.01°C]: 1AB8(HEX) = 68.40°C (155.12°F)
7FFF(HEX) = NOT AVAILABLE

Fig. 11. DHW Setpoint Range (10A1).

DHW Demand (30D0)

Message is used to retrieve a demand for the domestic hot water equipment.

Fig. 12 shows responses to a DHW Demand query message.

M 30D0 F0 Q 00 50

DHW FORCED OFF.

M 30D0 F0 R 02 FC 10 FE
STATUS – SUM OF FOLLOWING ITEMS:
EQUIPMENT TYPE: 00(HEX) = ELECTRIC HEATING, 10(HEX) = GAS OR OIL HEATING
ON/OFF: 00(HEX) = OFF, 01(HEX) = ON
DEMAND: FC(HEX) = 252 = FORCE – CHECK ON/OFF FIELD

DHW DEMANDED TO RUN AT 100%.

M 30D0 F0 R 02 C8 11 CB
DEMAND: C8(HEX) = 200 = 100%

DHW DEMANDED TO RUN AT 0%.

M 30D0 F0 R 02 00 10 02
DEMAND: 00(HEX) = 0 = 0%

Fig. 12. DHW Demand (30D0)

Boiler Temperature (3200)

Message is used to retrieve the temperature of water supplied by the boiler.

Fig. 13 shows a response to a Boiler Temperature query.

M 3200 3D Q 00 4F
INSTANCE: 3D (HEX) = BOILER

M 3200 3D R 04 18 6A 16 44 2B
RETURN TEMPERATURE TO THE BOILER [0.01°C]:
1644(HEX) = 57.00°C (134.60°F)
7FFF(HEX) = NOT AVAILABLE
BOILER WATER TEMPERATURE [0.01°C]:
186A(HEX) = 62.50°C (144.50°F)

Fig. 13. Boiler Temperature (3200)

Desired Boiler Setpoint (22D9)

Message is used to retrieve a desired setpoint of the boiler.

Fig. 14 shows a response to a Desired Boiler Setpoint query.

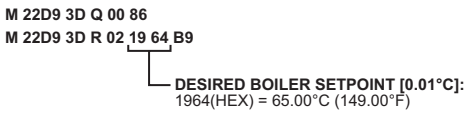

Fig. 14. Desired Boiler Setpoint (22D9)

Central Heat Setpoint (22DB)

Message is used to retrieve or change the boiler setpoint for the central heating function of a boiler.

Fig. 15 shows a response to a Central Heat Setpoint query.

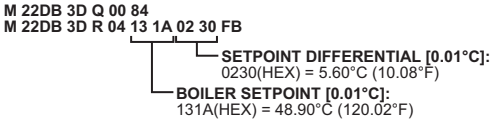

Fig. 15. Central Heat Setpoint (22DB)

Fig. 16 shows a response to a Central Heat Setpoint change request.

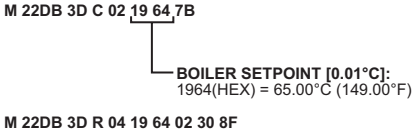

Fig. 16. Central Heat Setpoint (22DB)

⚠ WARNING

Changing of the boiler setpoint may not work when other interacting devices are connected to EnviraCOM™ bus.

Supply High Limit (1081)

Message is used to retrieve the supply high limit temperature setpoint, differential and the state of the limit.

Fig. 17 shows a response to a Supply High Limit query.

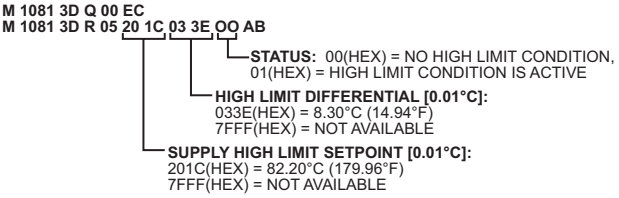

Fig. 17. Supply High Limit (1081)

Heat/Cool Demand (3110)

Message is used to retrieve a demand for the emergency heat, heating equipment.

Fig. 18 shows responses to a Heat/Cool Demand query.

M 3110 00 Q 00 61

EQUIPMENT (ONE STAGE) FORCED OFF:

M 3110 00 R 04 01 FC 10 10 D8

- **SYSTEM STAGE1 – SUM OF FOLLOWING ITEMS:**
  EQUIPMENT TYPE:
  10(HEX) = NATURAL GAS OR OIL HEATING – IF MODE = 10(HEX) OR 30(HEX)
  STAGE1 ON/OFF: 00(HEX) = OFF, 01(HEX) = ON
- **QUALIFICATION – SUM OF FOLLOWING ITEMS:**
  MODE:
  10(HEX) = HEATING, 30(HEX) = EMERGENCY HEATING
  ON/OFF:
  00(HEX) = ALL OF THE STAGES ARE OFF, 01(HEX) = AT LEAST ONE STAGE IS ON
- **DEMAND:**
  FC(HEX) = 252 = FORCE – CHECK STAGE1 ON/OFF FIELD

EQUIPMENT (ONE STAGE) DEMANDED TO RUN AT 100%:

M 3110 00 R 04 01 C8 11 11 EC

- **DEMAND:**
  C8(HEX) = 200 = 100%

EQUIPMENT (ONE STAGE) DEMANDED TO RUN AT 0%:

M 3110 00 R 04 01 00 10 10 24

- **DEMAND:**
  00(HEX) = 0 = 0%

Fig. 18. Heat/Cool Demand (3110)

Boiler Heat/Cool Demand (3114)

Message is used to retrieve a demand for the boiler.

Fig. 19 shows responses to a Boiler Heat/Cool Demand query.

M 3114 3D Q 00 58

- **INSTANCE:** 3D(HEX) = BOILER

BOILER (ONE STAGE) FORCED OFF:

M 3114 3D R 04 01 FC 10 10 E1

- **SYSTEM STAGE1 – SUM OF FOLLOWING ITEMS:**
  EQUIPMENT TYPE:
  10(HEX) = NATURAL GAS OR OIL HEATING – IF MODE = 10(HEX) OR 30(HEX)
  STAGE1 ON/OFF: 00(HEX) = OFF, 01(HEX) = ON
- **QUALIFICATION – SUM OF FOLLOWING ITEMS:**
  MODE:
  10(HEX) = HEATING, 30(HEX) = EMERGENCY HEATING
  ON/OFF:
  00(HEX) = ALL OF THE STAGES ARE OFF,
  01(HEX) = AT LEAST ONE STAGE IS ON
- **DEMAND:**
  FC(HEX) = 252 = FORCE – CHECK STAGE1 ON/OFF FIELD

BOILER (ONE STAGE) DEMANDED TO RUN AT 100%:

M 3114 3D R 04 01 C8 11 11 D5

- **DEMAND:**
  C8(HEX) = 200 = 100%

BOILER (ONE STAGE) DEMANDED TO RUN AT 0%:

M 3114 3D R 04 01 00 10 10 1D

- **DEMAND:**
  00(HEX) = 0 = 0%

Fig. 19. Boiler Heat/Cool Demand (3114)

Displayed Temperature (12C0)

Message is used to retrieve a displayed ambient temperature.

Fig. 20 shows responses to a Displayed Temperature query.

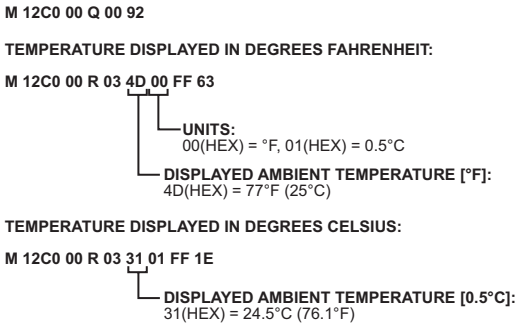

Fig. 20. Displayed Temperature (12C0)

Outdoor Temperature (1290)

Message is used to retrieve an outdoor temperature.

Fig. 21 shows a response to an Outdoor Temperature query.

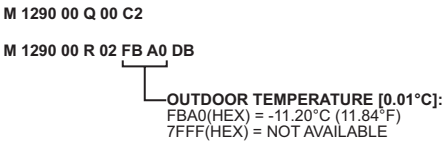

Fig. 21. Outdoor Temperature (1290)

Outdoor Humidity (1280)

Message is used to retrieve an outdoor humidity.

Fig. 22 shows a response to an Outdoor Humidity query.

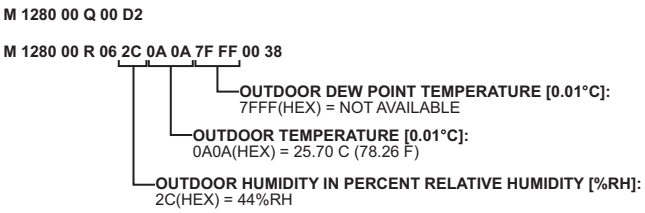

Fig. 22. Outdoor Humidity (1280)

Alarm (3120)

Message is used to retrieve states of alarms.

Fig. 23 shows responses to an Alarm query.

M 3120 00 Q 00 51

NO ALARM REPORTED:

M 3120 00 R 04 70 00 00 00 65

ALARM TYPE:
0000(HEX) = NO ALARM – THE DEVICE HAS NO ALARMS

MATURED ALARM REPORTED:

M 3120 00 R 08 F8 00 38 F0 33 00 00 00 1A

INSTANCE: IDENTIFYING INSTANCE OF THE DEVICE
F0(HEX) = WATER HEATER

ALARM TYPE:
0000(HEX) = 0 = NO ALARM – THE DEVICE HAS NO ALARMS
0002(HEX) = 2 = LPS OPEN – PRESSURE SWITCH FAILED TO OPEN
0004(HEX) = 4 = FLAME CURRENT – FLAME CURRENT CAUTION LEVEL WHILE RUNNING
0006(HEX) = 6 = SLO FLAME SEQ – SOFT LOCKOUT – FLAME SENSED OUT OF NORMAL SEQUENCE
0017(HEX) = 23 = FLAME IN PREPURGE – FLAME SENSED DURING PREPURGE
0018(HEX) = 24 = FLAME IN POSTPURGE – FLAME SENSED DURING POSTPURGE
001A(HEX) = 26 = HIGH LIMIT – HIGH LIMIT SWITCH OPEN
001D(HEX) = 29 = LPS CLOSE – PRESSURE SWITCH FAILED TO CLOSE
001F(HEX) = 31 = DHW UPPER – THE DHW UPPER TEMPERATURE SENSOR IS OUT OF SPECIFICATION
0020(HEX) = 32 = DHW LOWER – THE DHW LOWER TEMPERATURE SENSOR IS OUT OF SPECIFICATION
0037(HEX) = 55 = DAMPER SW CLOSE – ATMOSPHERIC DAMPER END SWITCH FAILED TO CLOSE (STUCK OPEN)
0038(HEX) = 56 = DAMPER SW OPEN – ATMOSPHERIC DAMPER END SWITCH FAILED TO OPEN (STUCK CLOSED)
0039(HEX) = 57 = ROD SHORT – FLAME ROD SHORTED TO GROUND
003A(HEX) = 58 = ZERO CROSSING – AC LINE FREQUENCY ERROR – SIGNAL IS TOO NOISY OR FREQUENCY IS OUT OF RANGE
003B(HEX) = 59 = AC LINE – AC LINE VOLTAGE TOO HIGH OR TOO LOW
003C(HEX) = 60 = STAT PHASE – THERMOSTAT INPUT PHASE WRONG
003D(HEX) = 61 = POWER SUPPLY – POWER SUPPLY OUTPUT UNSTABLE
003E(HEX) = 62 = SLO RETRY – SOFT LOCKOUT – MAXIMUM NUMBER OF RETRIES EXCEEDED
003F(HEX) = 63 = SLO RECYCLE – SOFT LOCKOUT – MAXIMUM NUMBER OF RECYCLES EXCEEDED
0040(HEX) = 64 = SLO ELECTRONICS – SOFT LOCKOUT – ELECTRONICS FAILURE
0041(HEX) = 65 = WATER HIGH TEMP – OVER TEMPERATURE ERROR. SENSORS MEASURED TEMPERATURE IN EXCESS OF ECO LIMIT

FAULT STATE, 7TH BIT:
1 – ON, 0 – OFF
F8(HEX) AND 80(HEX) = 80(HEX) – ALARM IS ON

CLEARED ALARM REPORTED:

M 3120 00 R 08 78 00 37 F0 33 00 00 00 95

ALARM TYPE:
0037(HEX) = 55 = DAMPER SW CLOSE – DAMPER END SWITCH FAILED TO CLOSE (STUCK OPEN)

FAULT STATE, 7TH BIT:
78(HEX) AND 80(HEX) = 00(HEX) – ALARM IS OFF

Fig. 23. Alarm (3120)

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