Advantage III

Hybrid Series by Ebtron

Installation Guide

HTN104

"Plug & Play" Transmitter with
RS-485 Network Output
for use with all sensor probes

Document Name: IG_HTN104_R3B

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This document provides only the instructions necessary to install the HTN104 Transmitter and prepare it for operation. Transmitter installation consists of mounting the transmitter, installing output/network cable and connecting the sensor probes cables. For complete setup and operating instructions refer to the HTx104 Installation, Operation and Maintenance technical manual, TM_HTx104 under separate cover.

1. HTN104 TRANSMITTER INSTALLATION

The HTN104 transmitter is designed for use in an environment between -20° F to 120° F *(-28.8° C to 48.8° C)* where it will not be exposed to rain or snow. Install transmitter upright and in a field accessible location. The enclosure accepts 1/2 in. (12.7 mm) electrical fittings for signal and power wiring at both sides at the top of the enclosure.

Locate the transmitter so that the connecting cables from all of the sensor probes will reach the receptacles on the bottom of the transmitter enclosure.

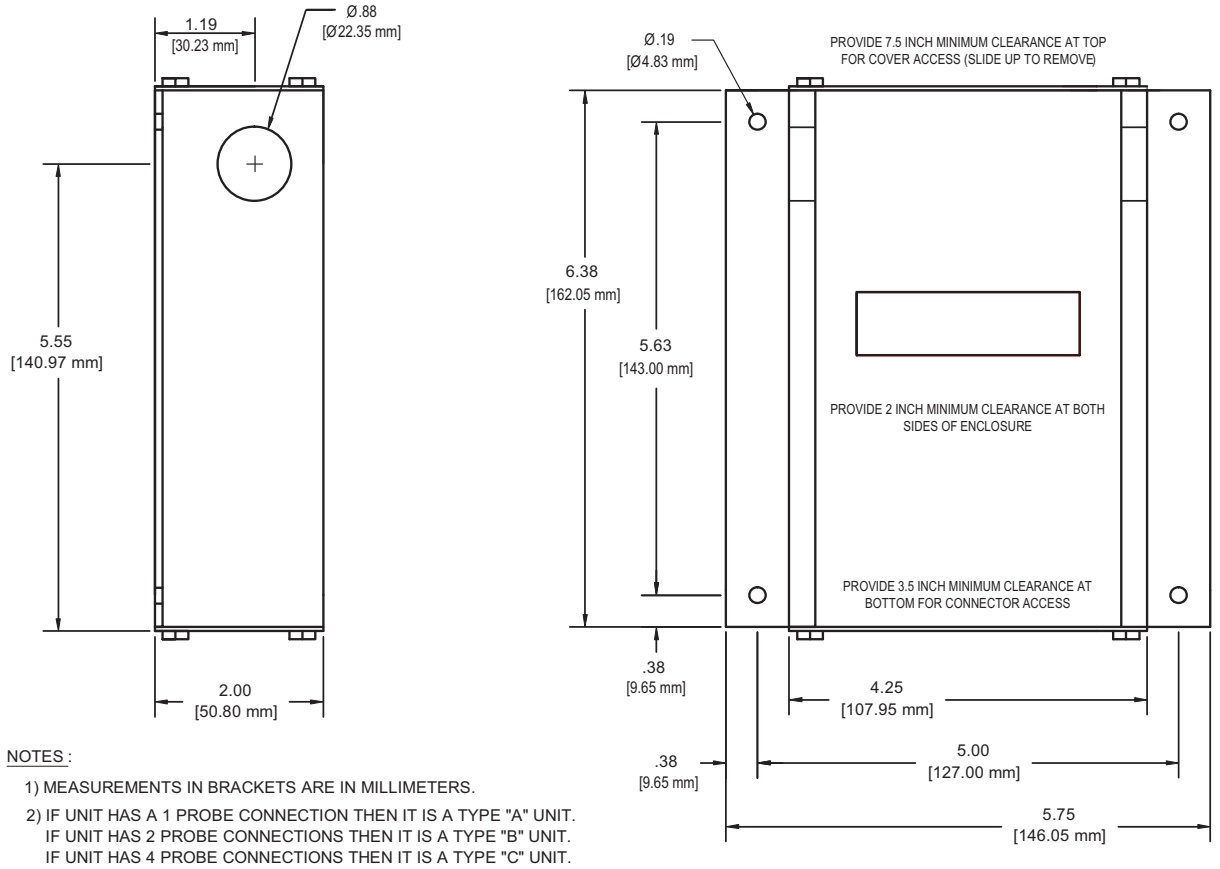
⚠ In locations exposed to direct rain and/or snow, the transmitter must be enclosed in a NEMA4 enclosure.

⚠ Leave unobstructed space of at least 7.5 in. (190.5 mm) above, and 2 in. (50.8 mm) to each side and 3.5 in. (88.9 mm) below the transmitter to allow for cover removal, probe connections and heat dissipation.

⚠ Locate the transmitter in a location that can be reached by all connecting cables from the sensor probes.

⚠ Do not drill into the transmitter enclosure since metal shavings could damage the electronics.

1.1 HTN104 Mechanical Dimensions



NOTES :

1) MEASUREMENTS IN BRACKETS ARE IN MILLIMETERS.

2) IF UNIT HAS A 1 PROBE CONNECTION THEN IT IS A TYPE "A" UNIT.
IF UNIT HAS 2 PROBE CONNECTIONS THEN IT IS A TYPE "B" UNIT.
IF UNIT HAS 4 PROBE CONNECTIONS THEN IT IS A TYPE "C" UNIT.

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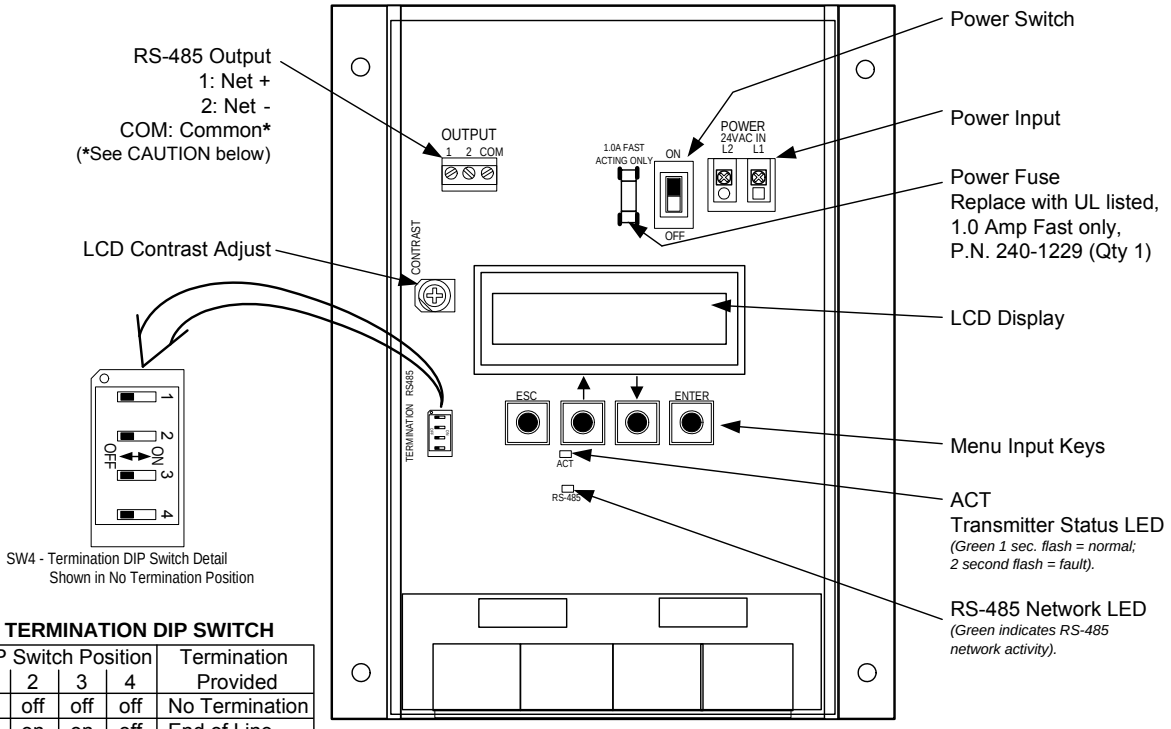
Figure 1. HTN104 Mechanical Dimensions

2. HTN104 TRANSMITTER INTERIOR VIEW/FEATURES



SW4 - Termination DIP Switch Detail
Shown in No Termination Position

TERMINATION DIP SWITCH

DIP Switch Position				Termination
1	2	3	4	Provided
off	off	off	off	No Termination
off	on	on	off	End of Line
on	off	off	on	Fail-safe Bias

***CAUTION**

For ISOLATED output, the **COM** connection **MUST BE CONNECTE**D to the network common for proper operation.

For NON-ISOLATED output, the **COM** connection **MUST BE CONNECTED** to the common ground that other network devices are using (typically the ground side of the 24VAC supply (the L2 lug of the POWER terminals). Refer to RS-485 Network Wiring Connections text for additional detail.

Figure 2. HTN104 Transmitter Interior View/Features

3. HTN104 TRANSMITTER POWER AND PROBE CONNECTIONS

3.1 Power Transformer Selection

Select a 24 VAC transformer based on the maximum power requirements indicated on the transmitter label (11 VA) or from the table below. The operating supply voltage (transmitter power "ON" with all sensor probes connected) should not be less than 22.8 VAC or greater than 26.4 VAC.

Table 1. HTN104 Power Transformer Selection Guide

Total Sensors	Minimum VA Req.
1	6
2	8
3	9
4	11

3.2 Connecting Power to the Transmitter

Connect 24 VAC power to the large, two position power input terminal labeled "POWER" on the upper right hand side of the main circuit board (Figure 3). Since the output signals are isolated from the power supply, it is not necessary to provide an isolated (secondary not grounded) power source.

⚠ Multiple HTN104 transmitters wired to a single transformer must be wired "in-phase" (L1 to L1, L2 to L2).

⚠ Sensor probes must be connected to the transmitter before turning the power switch to the "on" position to properly "flash" sensor calibration data to the transmitter.

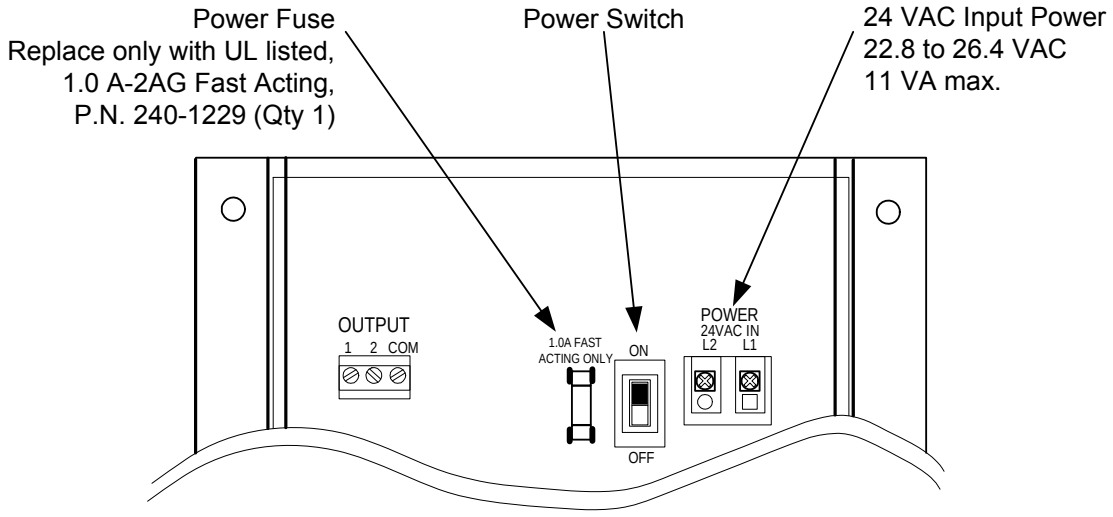


Figure 3. Connecting Power to the Transmitter

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3.3 Connecting Sensor Probes to the Transmitter

After installing the sensor probes and transmitter, connect each of the sensor probe cable plugs to the circular receptacles located at the bottom of the HTN104 transmitter enclosure. Probes are "Plug and Play" and do not have to be connected to a specific receptacle on the transmitter unless traverse data is desired (see note below).

⚠ Provide a "drip loop" at the transmitter if there will be the potential for water runoff or condensation along the sensor probe cable(s).

⚠ Sensor probe cable plugs are "keyed" as shown below. Line up plug with receptacle and push straight in to receptacle.

⚠ DO NOT TWIST. Forcing the cable plug in or out of the receptacle will damage the connectors and void warranty.

⚠ When traverse data is desired, probes should be installed and connected to the transmitter using the mounting convention specified in the separate sensor probe Installation Guide. Proper installation simplifies sensor location decoding during data analysis.

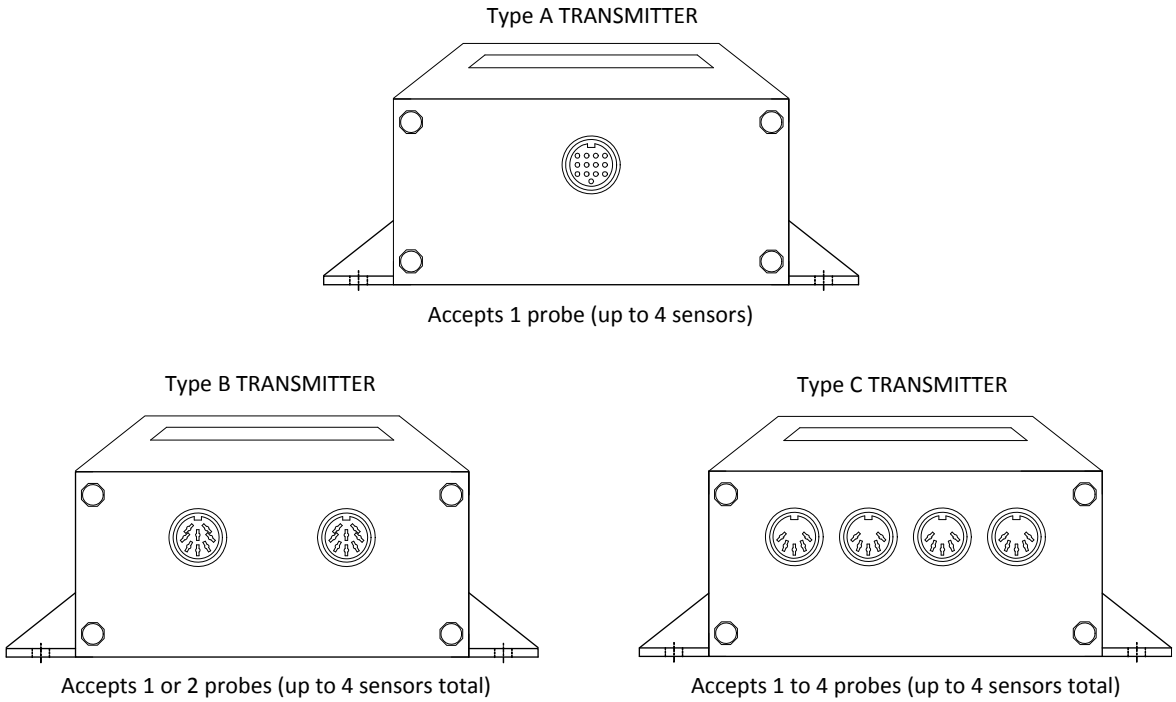


Figure 4. Type A, Type B and Type C Transmitter Connector Panel Detail

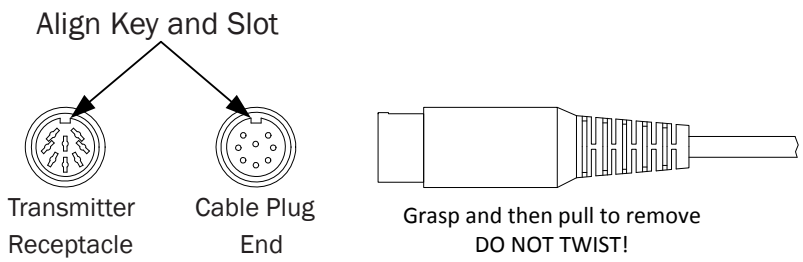


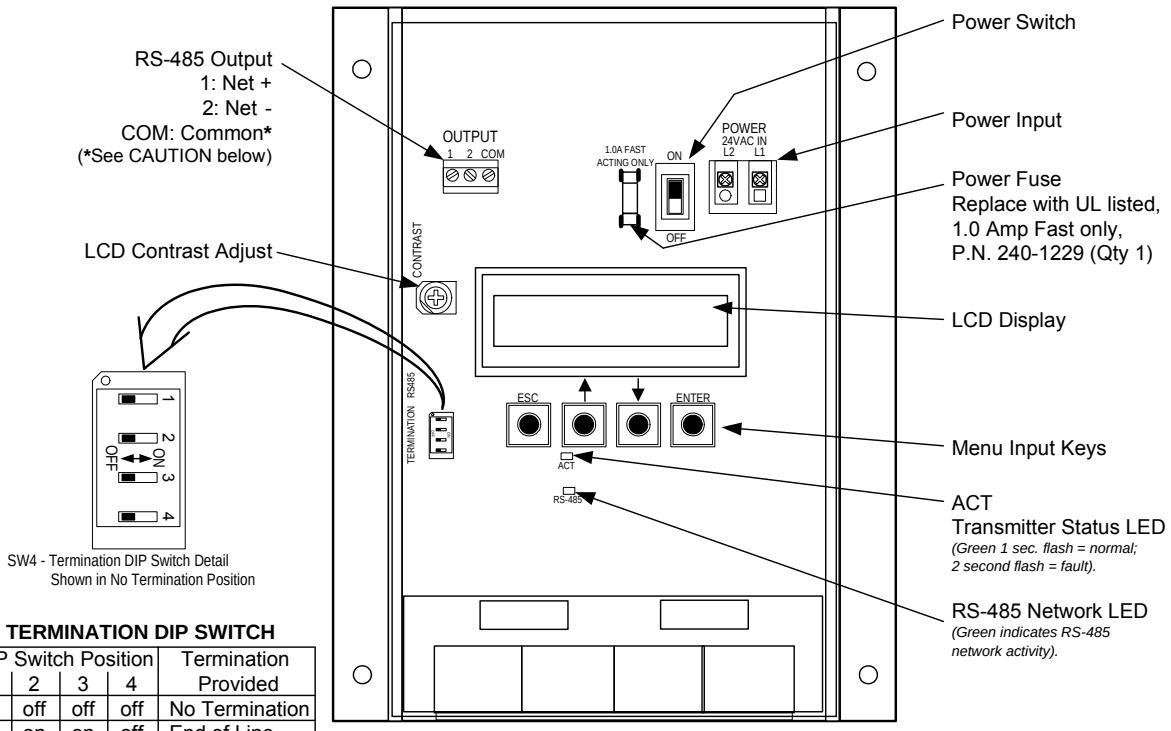
Figure 5. Connector Detail

4. HTN104 NETWORK CONNECTIONS

This section contains RS-485 network output wiring instructions for the HTN104 transmitter.

4.1 HTN104 - RS-485 NETWORK WIRING CONNECTIONS

RS-485 network connections are made at the top left of the transmitter main circuit board OUTPUT terminals as shown in Figure 6.



SW4 - Termination DIP Switch Detail
Shown in No Termination Position

TERMINATION DIP SWITCH

DIP Switch Position				Termination
1	2	3	4	Provided
off	off	off	off	No Termination
off	on	on	off	End of Line
on	off	off	on	Fail-safe Bias

***CAUTION**

For ISOLATED output, the **COM** connection **MUST BE CONNECTE**D to the network common for proper operation.

For NON-ISOLATED output, the **COM** connection **MUST BE CONNECTED** to the common ground that other network devices are using (typically the ground side of the 24VAC supply (the L2 lug of the POWER terminals). Refer to RS-485 Network Wiring Connections text for additional detail.

Figure 6. HTN104 Combination Analog/RS-485 Transmitter Interior Detail

4.1.1 HTN104 - RS-485 Network Cable Specifications

The RS-485 network cable shall be shielded twisted pair with a characteristic impedance of 100 to 130 ohms. Distributed capacitance between conductors shall be less than 100 pF per meter. Distributed capacitance between conductors and shield shall be less than 200 pF per meter. The maximum recommended length of a network segment is 1200 meters with AWG 18 cable.

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4.1.2 HTN104 - Connecting to an RS-485 Network:

Connect the NET+, NET- and COM terminals with shielded twisted pair cable meeting the specifications defined in the previous paragraph. The connection to the network must be made in a "daisy chain" configuration. "T" connections and stubs are NOT permitted. The shield should be terminated at one end on the network only. If the HTN104 is not the first or last device, set the on-board TERMINATION DIP switches for NO TERMINATION. If the HTN104 is the first or last device, set the on-board TERMINATION DIP switches to either END OF LINE or FAIL SAFE BIAS termination.

***CAUTION**

For ISOLATED output, the COM connection MUST BE CONNECTED to the network common for proper operation.

For NON-ISOLATED output, the COM connection MUST BE CONNECTED to the common ground that is used by the other network devices (typically the ground side of the 24VAC supply; terminal L2 at the POWER connector block in Figure 6).

4.2 HTN104 - Transmitter Setup for RS-485 Network Operation

Network protocol, MS/TP address, device instance number and baud rate options are all selected within the NETWORK section of SETUP menu shown in Appendix A.

4.2.1 HTN104 - RS-485 Network Options and Communications Menu Settings

The transmitter is shipped from the factory with the protocol set for BACnet MS/TP Master, address 2, MS/TP Device ID 2, Baud rate of 76,800 and no termination. Initial RS-485 communications settings are accomplished within the HTN104 NETWORK sub menu shown in Appendix A. Termination is set up by the TERMINATION DIP switch SW4 as shown in Figure 6.

4.2.2 HTN104 - Setting Transmitter Termination for RS-485 Network

The HTN104 is shipped with the TERMINATION switch set for No termination, which is the recommended setting for devices installed on the network bus anywhere EXCEPT at the ends of the bus/segment. *EBTRON* recommends the following termination strategy for devices connected at the ends of the network bus/segment:

When the transmitter is at one end of the network, it should be terminated with "End of Line" (or 120 ohm standard) termination, and the device at the other end should be terminated with "Fail Safe Bias" termination. This method provides proper network termination and ensures that the bus is in a known state during idle-line conditions (when no devices are driving the bus). *EBTRON* HTN104 transmitters include three termination options for "End of Line" (standard 120 ohm) and "Fail-safe Bias" (recommended at one end of the bus) or for "No Termination". Termination is selected by setting TERMINATION DIP switch SW4 as shown below.

Check the network/network segment to ensure that only one device is terminated with either method. If multiple devices are terminated as described above, network segment operation will be adversely affected.

4.2.3 HTN104 - Setting RS-485 Network Protocol

Transmitter protocol can be set for MS/TP or MODBUS as shown in the NETWORK submenu (Appendix A). Tables 2 and 3 list the specific features of each protocol.

4.2.4 HTN104 - Setting Transmitter Address

The HTN104 is factory set to an address of 2. Each transmitter must be assigned a unique address between 0 and 127 for BACnet, or between 1 and 247 for Modbus prior to connecting it to the network. (See address setting in NETWORK submenu, Appendix A.

4.2.5 HTN104 - Setting Baud Rate

The HTN104 transmitter default baud rate for MS/TP is 76,800 and for MODBUS is 19,200. Baud rate can be configured in the NETWORK sub menu (Appendix A).

4.2.6 HTN104 - Setting Modbus Parity

When using Modbus communications protocol, Parity can be changed in the NETWORK submenu. Parity can be set for Even (default), Odd, None 1 (with 1 stop bit), or None 2 (with 2 stop bits).

4.2.7 HTN104 - Setting Device Instance Number

The HTN104 is factory set with a Device Instance Number of 2. Device Instance Number can be set as shown in the NETWORK submenu. Device Instance Number can also be changed to any number between 1 and 4,194,302 by writing to the Device Object's Object Identifier Property over the network.

4.2.8 HTN104 - Resetting Communications Options to Factory Default Values

Communications options can be reset to factory default values (asterisk) * values using the HTN104 RESET NET menu option.

Table 2. HTN104 BACnet Objects List

HTN104 BACnet Objects for -P, -F, -T, -U Sensors/Probes, SINGLE MODE

Analog Inputs

Type, ID	Name	Default Units	
Device	HTN104		
AI, 1	Airflow	FPM	
AI, 2	Temperature	°F	
AI, 3	Alarm Status		0: No alarm, 1: High Alarm 2: Low Alarm, 3: Both

Analog Values

AV, 1	Free Area	sq.ft.	
AV, 2	Traverse Status		0=Disabled, 1=Flow, 2=Temp, 3=Both
AV, 3	Flow Traverse C1	FPM	
↕	↕	↕	
AV, 6	Flow Traverse C4	FPM	
AV, 7	Temperature Traverse	°F	
↕	↕	↕	
AV, 10	Temperature Traverse	°F	

Notes:

1. Number of AV objects is dependent on the probe count.
2. User Executed Services Supported:
   Subscribe COV, Read Property, Write Property,
   Device Communication Control, Who-Is.

HTN104 BACnet Objects for -U Probes, DUAL MODE

Analog Inputs

Type, ID	Name	Default Units	
Device	HTN104		
AI, 1	Flow 1	FPM	
AI, 2	Flow 2	FPM	
AI, 3	Temp 1	°F	
AI, 4	Temp 2	°F	
AI, 5	Alarm Status		

Analog Values

AV, 1	Area 1	sq.ft.	
AV, 2	Area 2	sq.ft.	

Notes:

User Executed Services Supported:
Subscribe COV, Read Property, Write Property,
Device Communication Control, Who-Is.

Table 3. HTN104 Modbus Register Map

HTN104 Modbus Register Maps for -P, -F, -T, -U Sensors/Probes, SINGLE MODE

Function	Address	Type	Units	Description	Range/Value
2	10001	boolean		Trouble Status	0:OK, 1:Trbl
4	30001-30002	float	FPM	Average Airflow	0 to 15,000
4	30003-30004	float	°F	Average Temperature	-20 to 160
4	30005	word		Number of Inserts	0 to 4
4	30006	word		Alarm Status	0: No alarm 1: High Alarm 2: Low Alarm 3: Both
4	30007	word		Connector C1 Sensors	0 to 4
4	30008	word		Connector C2 Sensors	0 to 4
4	30009	word		Connector C3 Sensors	0 to 4
4	30010	word		Connector C4 Sensors	0 to 4
4	**30011-30018**	float	FPM	**Airflow Traverse**	0 to 15,000
	30011-30012			Insert 1 Flow	
	↕			↕	
	30017-30018			Insert 4 Flow	
4	**30019-30026**	float	°F	**Temperature Traverse**	-20 to 160
	30019-30020			Insert 1 Temp	
	↕			↕	
	30025-30026			Insert 4 Temp	
4	**30027-30028**	float	Sq.Ft	**Area**	0 to 100
4	300202	word		Float word order	0: high word first; 1: low word first

HTN104 Modbus Register Maps for -U Probes, DUAL MODE

Function	Address	Type	Units	Description	Range/Value
2	10001	boolean		Trouble Status	0:OK, 1:Trbl
4	30001-30002	float	FPM	Flow 1	0 to 15,000
4	30003-30004	float	FPM	Flow 2	0 to 15,000
4	30005-30006	word	°F	Temperature 1	-20 to 160
4	30007-30008	word	°F	Temperature 2	-20 to 160
4	30009	word		Number of Inserts	0 to 4
4	30010	word		Alarm Status	0: No alarm 1: High Alarm 2: Low Alarm 3: Both
4	30011	word		Connector C1 Sensors	0 to 4
4	30012	word		Connector C2 Sensors	0 to 4
4	30013	word		Connector C3 Sensors	0 to 4
4	30014	word		Connector C4 Sensors	0 to 4
4	30015-30016	float	Sq.Ft	Area 1	0 to 100
4	30017-30018	float	Sq.Ft	Area 2	0 to 100
4	300202	word		Float word order	0: high word first; 1: low word first

5. HTN104 TRANSMITTER START-UP, INITIALIZATION AND SETUP MENUS

To ensure a successful start-up, verify that the airflow measuring station sensor probes and transmitter have been installed in accordance with *EBTRON* guidelines.

Check the physical installation, power connections and model specific signal wiring prior to turning the power switch to the "ON" position.

The HTN104 must be properly configured for the desired system network protocol prior to operation. Review the previous section of this document for the network settings, or contact *EBTRON* Customer Service, toll free, at 800-232-8766.

Move the power switch to the "ON" position. The transmitter executes a complete self-check each time the power is turned on that takes 10 seconds to complete. The LCD will display current airflow and temperature. Refer to Tables 2 and 3 for network status outputs.

5.1 Changing the System of Units - IP or SI Units

The HTN104 transmitter is provided with the system of units set to IP. To change to SI units, simultaneously press and release the "ENT" and "ESC" buttons during normal operation. "IP/SI UNITS" will be indicated on the LCD display. Refer to Appendix A SYSTEM OF UNITS MENU for details on the System of Units menu. Note that Setup Menu items are shown in IP System Of Units. When SI System of Units is selected, the units of measure abbreviations used in the menus is shown in Table 4.

Table 4. Standard "IP" and "SI" Menu Units Abbreviations

"IP" System of Units	Description	"SI" System of Units	Description
FPM	Feet per minute	MPS	Meters per second
CFM	Cubic feet per minute	LPS	Liters per second
SQF	Square feet	SQM	Square meters
F	Fahrenheit	C	Celsius

5.2 HTN104 Transmitter Calibration

The HTN104 uses high quality industrial grade components and is designed for years of trouble-free operation. Periodic recalibration of the transmitter is neither required or recommended. Transmitter field calibration verifiers are available for purchase from *EBTRON* for installations requiring periodic validation of instrumentation. Contact *EBTRON* for more information.

5.3 HTN104 LCD Display Notifications

Following the brief initialization at power up, the LCD display automatically displays airflow and temperature with units of measurement in all upper case (caps) characters. The display provides additional information on system status and alarm conditions. Refer to the ALARM FEATURES section of this manual for additional detail on Alarm and Trouble Error code indications.

5.4 Factory Default Menu Settings for HP1 Sensor Probes

The HTN104 transmitter is “plug and play” and does not require setup unless a network option is selected that requires configuration. Table 5 shows the factory default settings for all compatible sensor probes.
To change the Factory Default Settings, see: CHANGING FACTORY DEFAULT SETUP MENU SETTINGS.

Table 5. Factory Default Menu Settings

Display	Description	I-P	S.I.
AIRFLOW=	Airflow measurement method, Actual or Standard.	ACT	ACT
*LCDU/M=	Airflow units of measure	ACFM	LPS
*AREA=	Free area where station is located (required for volumetric measurement)	0.00 sq.ft. (see note)	0.000 sq.meters (see note)
*LLIMIT=	Low limit cutoff	0 AFPM	0 MPS
*FLOW ADJ=	Offset-Gain On/Off	Off	Off
*GAIN=	Gain factor	1.000	1.000
*OFF=	Offset factor	0.000	0.000
*TEMP METH=	Temperature Averaging	Weighted Avg.	Weighted Avg.
*LCD INTG=	Number of flow calculations to be averaged for LCD display.	100	100
*NET INTG=	Number of flow calculations to be averaged for network output.	30	30
*ALT=	Altitude for flow correction relative to mean sea level (0 ft).	0 ft	0 m
*SETPNT=	Alarm setpoint value. For AO2 ASGN=ALARM , operates in conjunction with TOL=value.	0	0
*TOL=	Alarm range tolerance value. For AO2 ASGN=ALARM , this setting establishes the alarm range relative to the SETPNT= value.	10%	10%
*DELAY=	Time that the alarm condition must exist before alarm output is activated.	2 minutes	2 minutes
*ZERO OFF =	Set to YES to inhibit LO alarm condition when flow reading is below LLIMIT= setting. Set to NO to disable this feature.	NO	NO
*RESET =	Set to AUTO to have alarm self-clear when alarm condition no longer exists. Set to MANUAL to require manual reset of alarm.	AUTO	AUTO

Note: For HP1 probes, area is stored in one-wire, but can be changed.

5.5 HTN104 Changing Factory Default Setup Menu Settings

5.5.1 Setup Menu Options

The HTN104 Transmitter is setup and tested at the factory to be fully operational when sensor probes are connected and power is applied (set the power switch to the “ON” position). Factory settings can easily be changed using the SETUP MENU by simultaneously pressing and releasing the “UP” and “DOWN” buttons while the transmitter is in its normal operating mode. Appendix A details the SETUP menus. Navigate through the SETUP menus to make changes to the transmitter configuration. The settings take effect immediately. The following are common field modifications to the factory default settings.

5.5.2 Selecting Actual and Standard Output Measurement Type

The transmitter is set from the factory to provide actual airflow measurement units (displayed as “ACFM” and “AFPM”). In this mode, airflow measurements are calculated for the for actual airflow conditions. If using actual airflow, corrections for altitude are entered through the ALT= setting in the Setup menu. If desired, the output can be set to provide standard airflow measurement units (displayed as “SCFM” and “SFPM) which provides measurements that are corrected to standard conditions.

5.5.3 Changing the LCD Display from Volumetric Flow CFM to Velocity FPM

The HTN104 transmitter is shipped from the factory to indicate volumetric flow. To display velocity in FPM, enter the SETUP menu and in the DISPLAY submenu, change the “*LCD UM=ACFM” to “*LCD UM=AFPM”. Changing the LCD display units will not affect the analog output signal.

5.5.4 Locking the Configuration Settings

The HTN104 transmitter configuration settings can be locked at one of three security levels within the SECURITY submenu using the LOCK SEC= item.

When LOW security level is selected (LOCK SEC=LOW) the last 4 digits of the board serial number are automatically assigned as the lock code. To see the board serial number, navigate to DIAGNOSTICS menu in SERIAL NUMBERS item.

When the MED security level is selected (LOCK SEC=MED) the user enters a security code. In the event that this code is lost/misplaced, EBTRON can provide a key that is unique to the transmitter to unlock it. Contact EBTRON customer service for this code.

When the HIGH security level is selected (LOCK SEC=HIGH) the user enters a security code. In the event that this code is lost/misplaced, the transmitter must be returned to the factory in order to unlock it.

⚠ **When LOCK SEC=HIGH is selected, the user defined setting can only be changed after entering the user defined code. STORE THE LOCK CODE IN A SAFE LOCATION! For security reasons, the HIGH level lock code can only be reset by returning the transmitter to the factory.**

5.6 HTN104 - Alarm Features

The RS-485 network output contains values for both Trouble Status and Alarm Status that can be read over the network. In addition, the transmitter LCD display will normally cycle through any active Alarm status for 2 seconds each, and then display the current actual flow for 2 seconds. Detailed set up of the Alarm features is shown in the Setup menu of Appendix A.

5.6.1 Alarm Types and Indications

Table 6 and the following paragraphs detail the alarm types and LCD indications available from the HTN104. Refer also to Tables 2 and 3 for relevant network objects and variables. User can select either or both of the two Average Airflow Alarms (LO ALRM and HI ALRM) or the Trouble Alarm.

Table 6. HTN104 Alarm Types and Notifications

ALARM OUTPUT ASSIGNMENT TYPE	LOCAL LCD DISPLAY OF ALARM TYPE AND NOTIFICATION	ALARM STATUS ON NETWORK OBJECTS
User can select any one of the following Alarms:		
****LOW ALARM** (Average Alarm)**	Display alternates between ****LOW ALARM**** (then any other alarms) and actual reading for 2 seconds each.	0 = No Alarm 1 = High Alarm 2 = Low Alarm 3 = Both
****HIGH ALARM** (Average Alarm)**	Display alternates between ****HIGH ALARM**** (then any other alarms) and actual reading for 2 seconds each.	
TROUBLE ! (Trouble Alarm)	Display indicates **TROUBLE !** (Refer to DIAGNOSTIC menu to obtain a brief description of the error and any other alarms).	

5.6.2 Low Alarm - "LO ALRM= ON"

The Low Alarm is activated when the average airflow falls to a defined level below the SETPNT= value. The defined level is equal to the SETPNT= value minus the calculated value of (TOL= value * SETPNT= value). Once active, the alarm can be cleared when the average airflow rises above the set point minus calculated tolerance value.

5.6.3 High Alarm - "HI ALRM= ON"

The High Alarm is activated when the average airflow rises above a defined level above the SETPNT= value. The defined level is equal to the SETPNT= value plus the calculated value of (TOL= value * SETPNT= value). Once active, the alarm can be cleared when the average airflow falls below the set point + calculated tolerance value.

5.6.4 Trouble Alarm

The Trouble alarm provides trouble codes useful for isolating setup issues or problems within the transmitter or sensors. The Diagnostic submenu can be engaged for the error code and a brief description of the trouble. Contact EBTRON customer service for information on troubleshooting using the Trouble error codes.

5.7 Viewing Sensor Data

5.7.1 Viewing Sensor Data on the Local LCD Display

Airflow and temperature can be displayed on the local LCD display by entering the Diagnostic Menu. Simultaneously depress the up ↑ and down ↓ arrows to enter the HTN104 SETUP menu, and then navigate to the Diagnostic submenu.

5.7.2 Viewing Sensor Data via BACnet or Modbus networks

Airflow and temperature of individual sensors can be read across BACnet or Modbus networks. Refer to the following Sensor Addressing and Probe Positioning paragraph for the suggested probe installation configuration. Tables 2 and 3 provide BACnet objects and register addressing information for individual sensor data.

5.7.3 Sensor Addressing and Probe Positioning

Sensors are automatically addressed after power is applied to the transmitter as follows:

Type ‘A’ (1 Connector) Transmitter
Sensor 1 is sensor opposite cable end of probe.

Type ‘B’ (2 Connector) and Type 'C' (4Connector) Transmitter
Probes are statically numbered. The probe that is connected to the left-most receptacle (labeled C1) on the transmitter is addressed as probe 1.

Note that if only average data is desired, the mounting position of the probes is not critical. When a probe is disconnected and then plugged in to a different port, the transmitter will re-discover it within 15 seconds and make any necessary addressing adjustments.

To standardize installation and decoding of data, *EBTRON* recommends a left to right (or top to bottom in vertical applications) sensor probe mounting convention as detailed in the separate sensor probe installation instructions.

6. SETUP MENUS

Appendix A details the various setup menus and submenus.

7. WIRING DIAGRAM

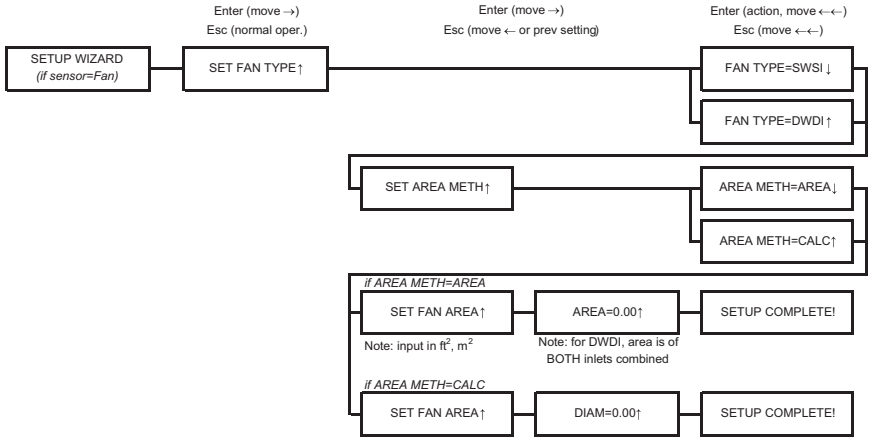
Appendix B is the wiring diagram for the HTN104 transmitter.

APPENDIX A -
ADVANTAGE 3 HTN104 SETUP MENUS

FAN SENSOR SETUP WIZARD (ACTIVE ONLY WITH FAN INLET SENSOR PROBES)

FAN SENSOR SETUP WIZARD

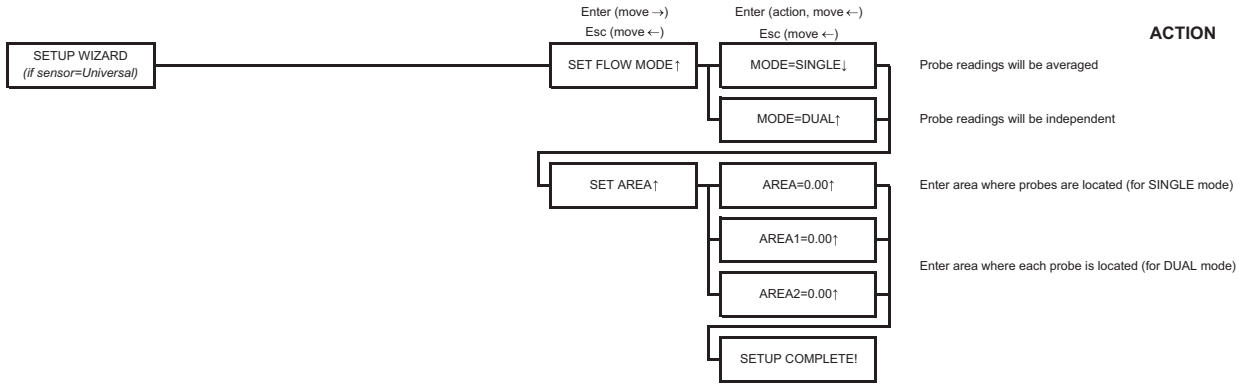
Launched at initial power-up when Fan Sensors are attached to transmitter, and if Setup Wizard was not completed.



UNIVERSAL PROBE SETUP WIZARD (ACTIVE ONLY WITH UNIVERSAL PROBES)

UNIVERSAL PROBE SETUP WIZARD

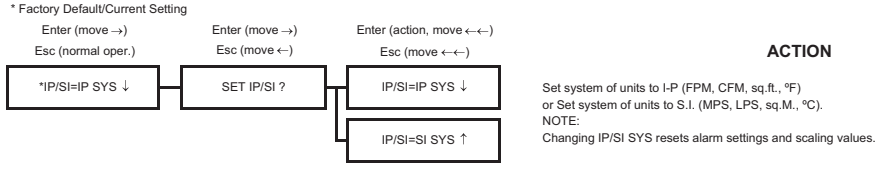
Launched at initial power-up when Universal Probes are attached to transmitter, and if Setup Wizard was not completed.



SYSTEM OF UNITS MENU

SYSTEM OF UNITS MENU

Simultaneously depress/release ENTER + ESC keys during normal operation to select



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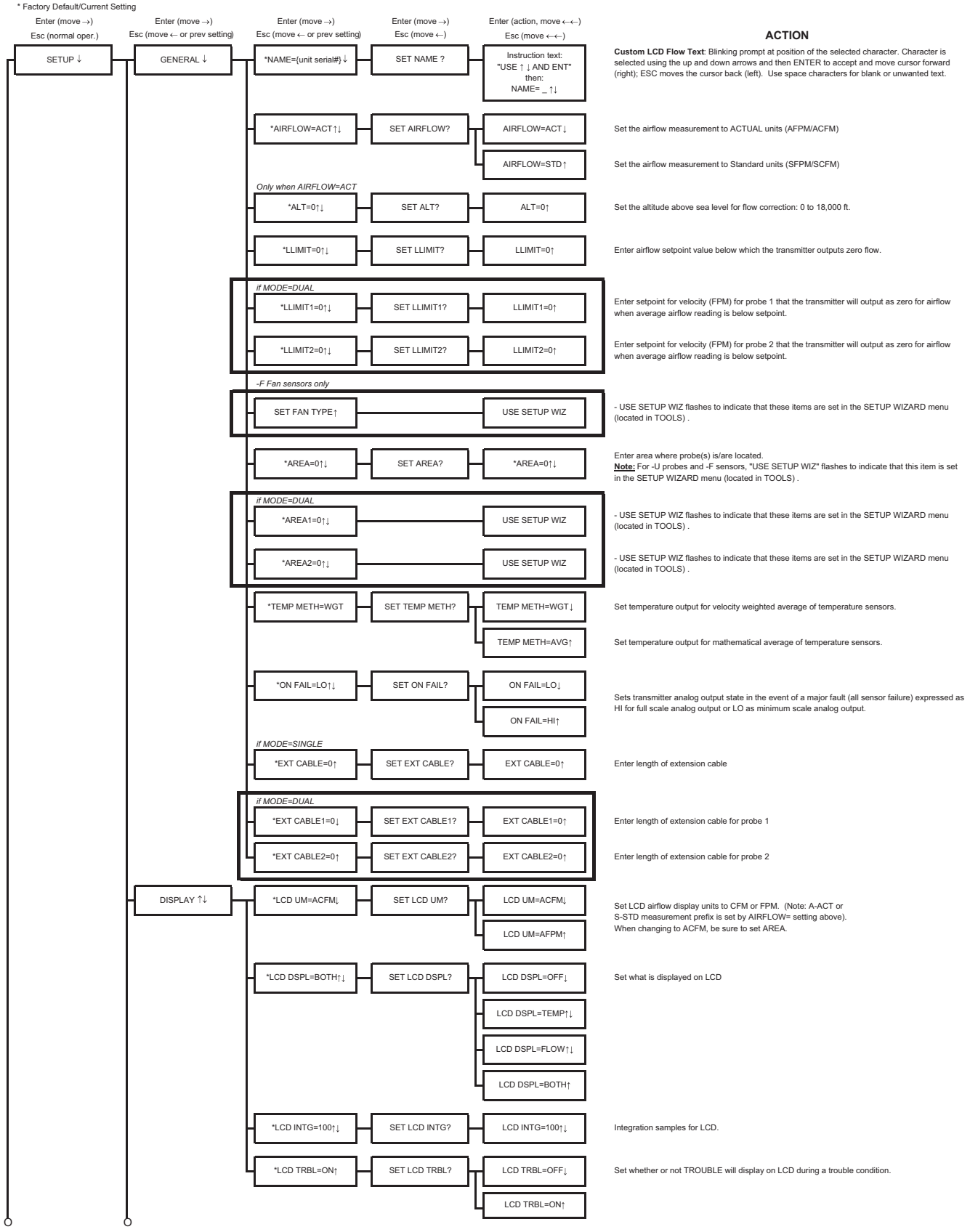
SETUP MENU PART 1

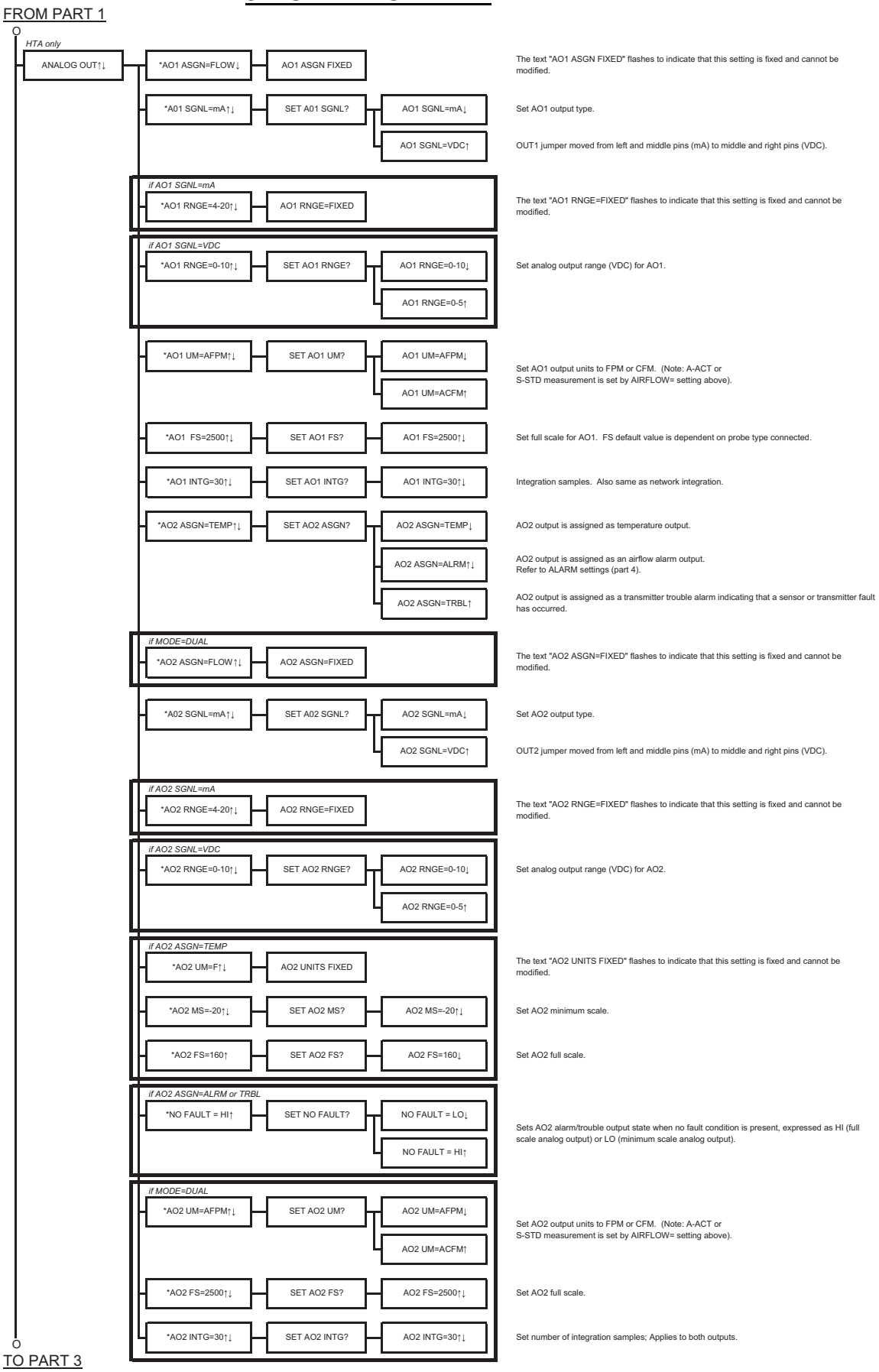
SETUP MENU

Simultaneously depress/release ↑ + ↓ keys during normal operation to select



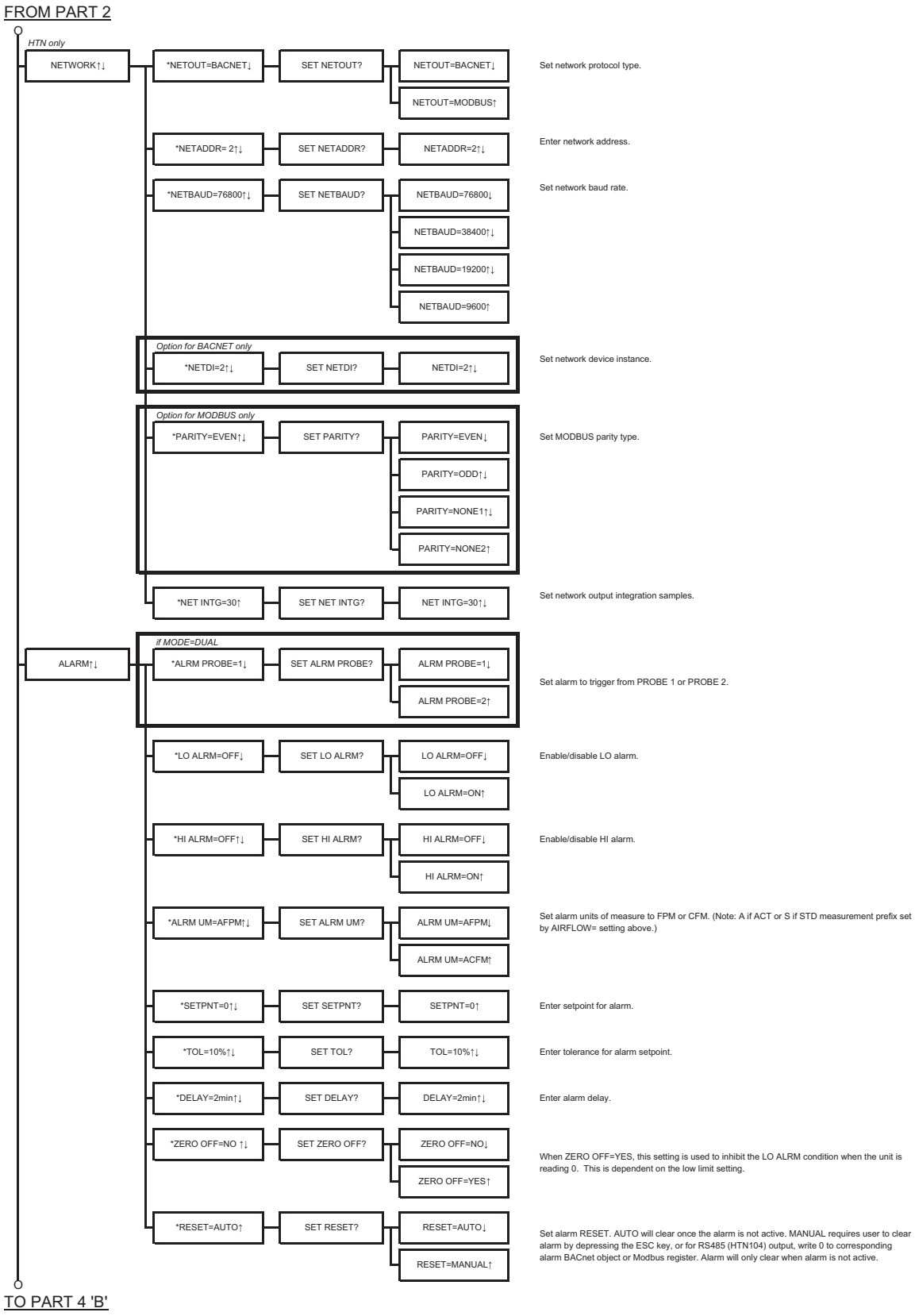
IG_HTN104_R3A

SETUP MENU PART 2



IG_HTN104_R3A

SETUP MENU PART 3



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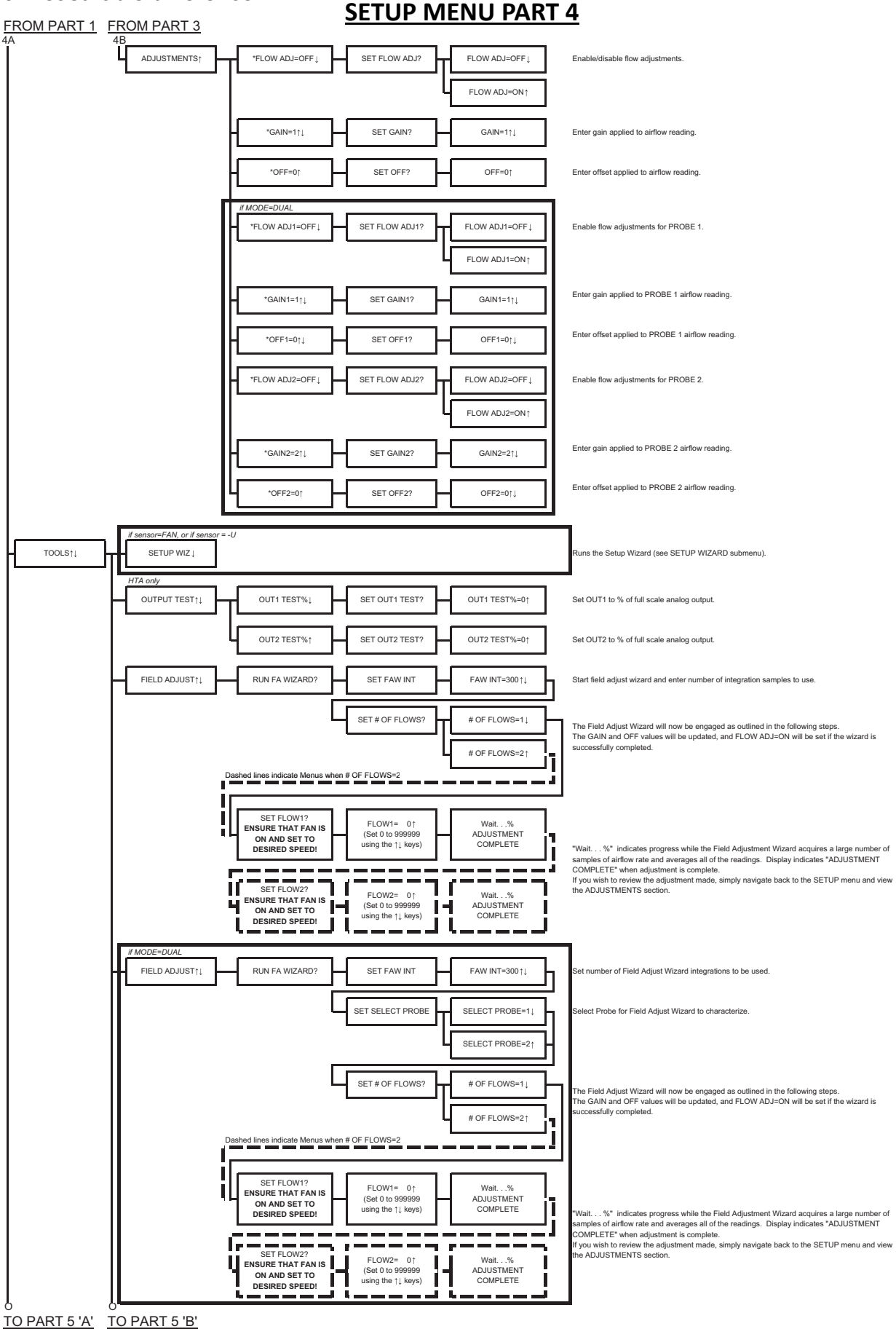
SETUP MENU PART 4



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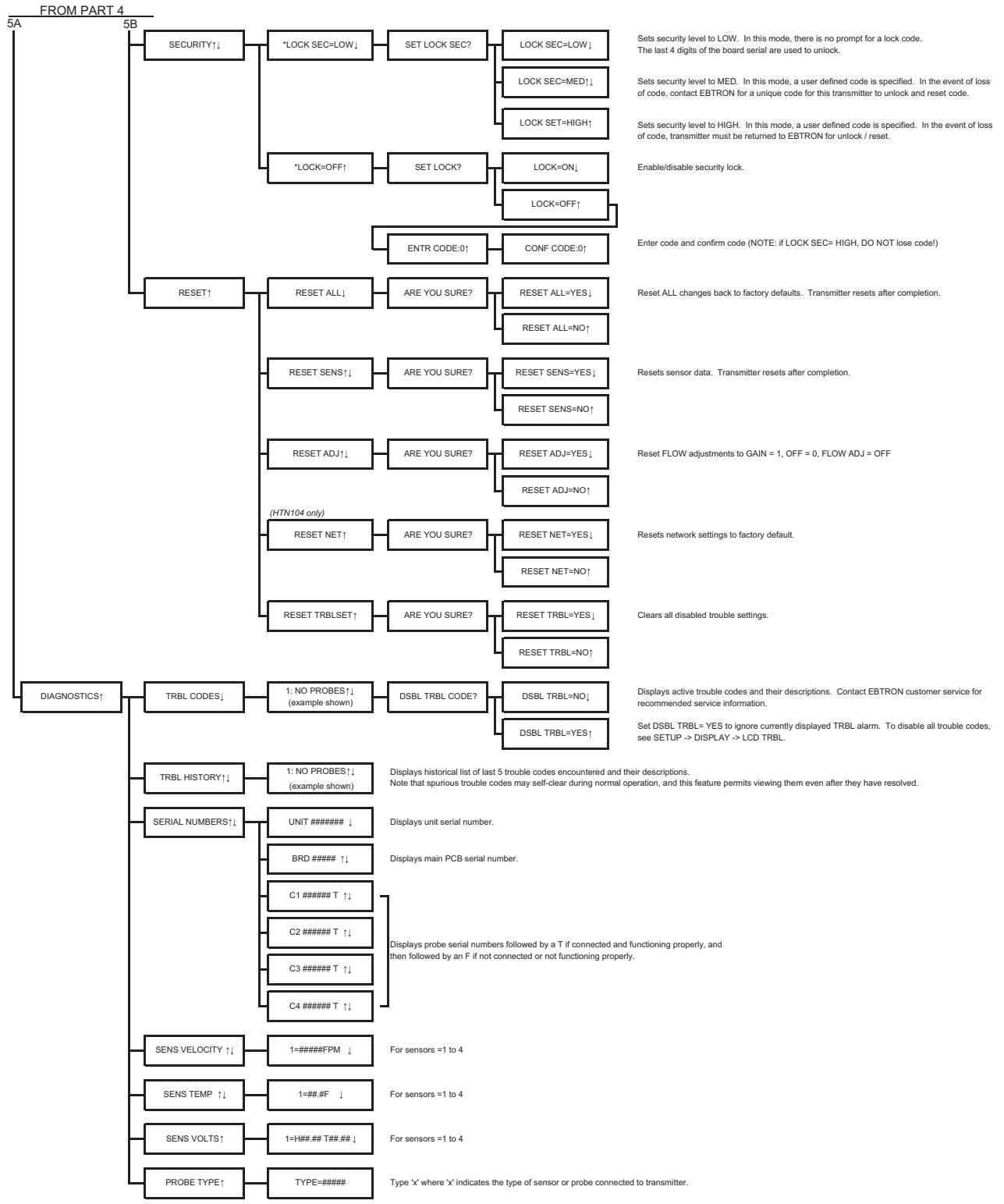
SETUP MENU PART 5



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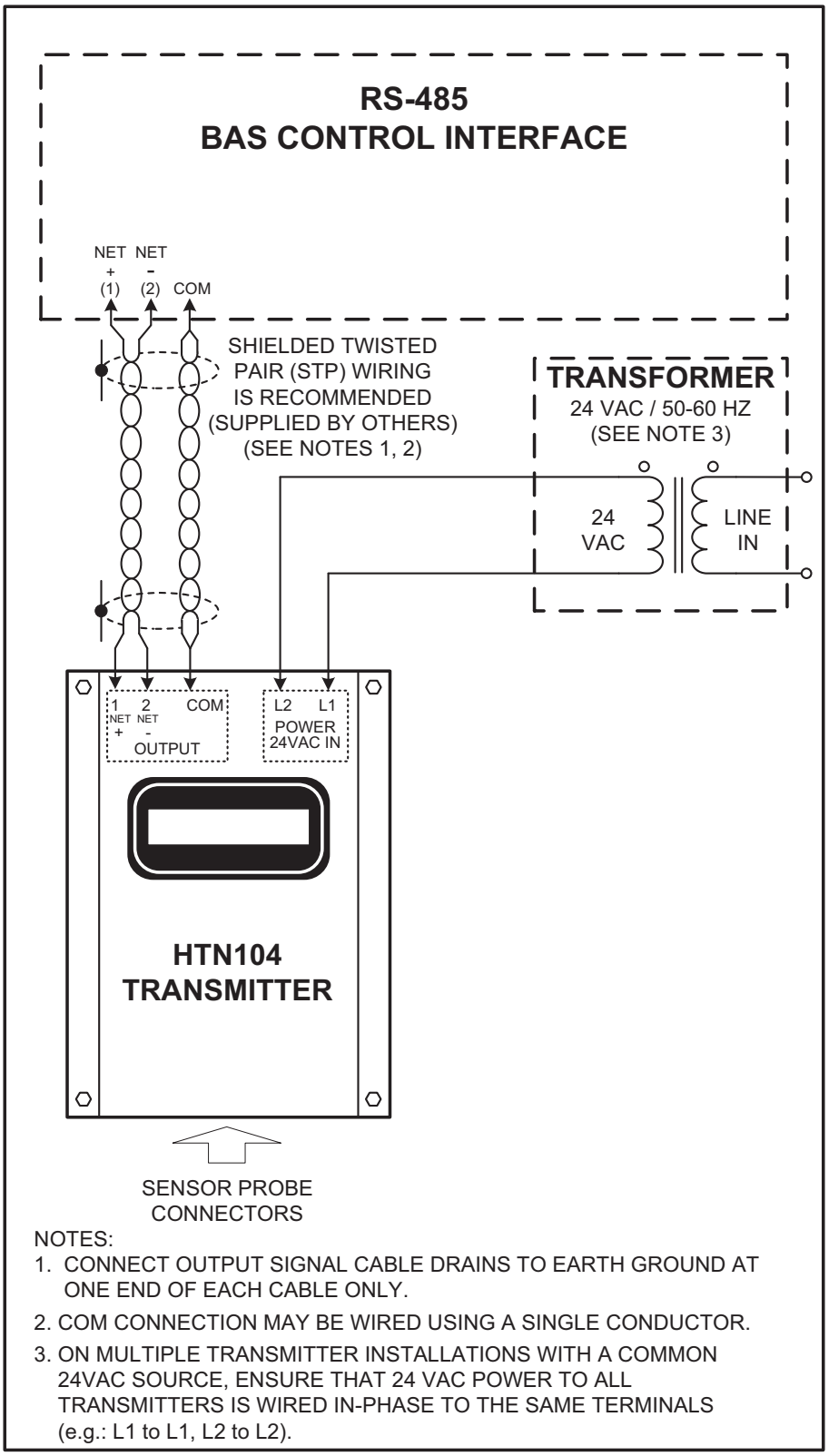
APPENDIX B -
HTN104 WIRING DIAGRAM



NOTES:

1. CONNECT OUTPUT SIGNAL CABLE DRAINS TO EARTH GROUND AT ONE END OF EACH CABLE ONLY.
2. COM CONNECTION MAY BE WIRED USING A SINGLE CONDUCTOR.
3. ON MULTIPLE TRANSMITTER INSTALLATIONS WITH A COMMON 24VAC SOURCE, ENSURE THAT 24 VAC POWER TO ALL TRANSMITTERS IS WIRED IN-PHASE TO THE SAME TERMINALS (e.g.: L1 to L1, L2 to L2).

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