Section

2

INSTALLATION

2-1. INTRODUCTION

This section contains unpacking, inspection, and installation instructions and recommendations for the Model NTGY81AA Single Channel Power Amplifier. Carefully read all material in this section prior to equipment unpacking or installation. Also read and review the operating procedures in Section 3 prior to installing the equipment. It is important that the licensee perform these tasks correctly and in good faith. If applicable, carefully read the appropriate parts of the Federal Communications Commission (FCC) rules to determine how they apply to your installation. DON'T TAKE CHANCES WITH YOUR LICENSE.

2-2. ELECTRICAL SERVICE RECOMMENDATIONS

Powerwave Technologies recommends that proper AC line conditioning and surge suppression be provided on the primary AC input to the +26 Vdc power source. All electrical service should be installed in accordance with the National Electrical Code, any applicable state or local codes, and good engineering practice. Special consideration should be given to lightning protection of all systems in view of the vulnerability of most transmitter sites to lightning. Lightning arrestors are recommended in the service entrance. Straight, short ground runs are recommended. The electrical service must be well grounded.

Each amplifier system should have its own circuit breaker, so a failure in one does not shut off the whole installation. Circuit breakers should be thermal type, capable of handling the maximum anticipated inrush current, in a load center with a master switch.

2-3. UNPACKING AND INSPECTION

This equipment has been operated, tested and calibrated at the factory. Carefully open the container(s) and remove the amplifier module(s). Retain all packing material that can be reassembled in the event that the unit must be returned to the factory.

CAUTION

Exercise care in handling equipment during inspection to prevent damage caused by rough or careless handling.

Visually inspect the amplifier module for damage that may have occurred during shipment. Check for evidence of water damage, bent or warped chassis, loose screws or nuts, or extraneous packing material in the connector. If the equipment is damaged, a claim should be filed with the carrier once the extent of any damage is assessed. We cannot stress too strongly the importance of IMMEDIATE careful inspection of the equipment and the subsequent IMMEDIATE filing of the necessary claims against the carrier if necessary. If possible, inspect the equipment in the presence of the delivery person. If the equipment is damaged, the carrier is your first area of recourse. If the equipment is damaged and must be returned to the factory, write or phone for a return authorization. Powerwave may not accept returns without a return authorization. Claims for loss or damage may not be withheld from any payment to Powerwave, nor may any payment due be withheld pending the outcome thereof. WE CANNOT GUARANTEE THE FREIGHT CARRIER'S PERFORMANCE

2-4. INSTALLATION INSTRUCTIONS (Refer to figure 1-1)
The NTGY81AA amplifier module is designed for installation on a heatsink that permits access to the module for connection of RF cables and the power, alarm, and control connector.

To install the amplifier proceed as follows:

1. Install amplifier on heatsink with thermally conductive material inserted between amplifier module and heatsink, and secure in place with appropriate mounting screws.

2. Connect the antenna cable to **RF OUT** female SMA connector.

3. Connect the transceiver output cable to **RF IN** frmale SMA connector.

WARNING
Turn off external primary DC power before connecting any cables.

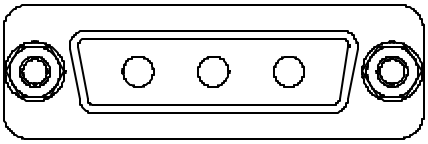
4. Connect power, alarm, and control cables to matching P1 through P5 connectors. Refer to paragraphs 2-5 through 2-9 following.

6. Check your work before applying DC voltage to the system. Make certain all connections are tight and correct.

7. Measure primary DC input voltage. DC input voltage should be +26 ±0.5 Vdc. If the DC input voltage is above or below the limits, call and consult Powerwave before you turn on your amplifier system.

8. Refer to section 3 for initial turn-on and checkout procedures.

2-5. +26 VDC POWER AND GROUND CONNECTOR P1
The +26 Vdc power and ground connections on the amplifier are made through an 3-pin female D-Sub connector (figure 2-1) and are listed and described in table 2-1.



3 2 1

Figure 2-1. +26 Vdc Power and Ground Connector P1

Table 2-1. +26 Vdc Power and Ground Connector P1 Definition

PIN	SIGNAL	DESCRIPTION
1	+26V	+26 Vdc for MCPA
2	+26V_RTN	+26 Vdc return, grounded to MCPA chassis ground.
3	Chassis Gnd.	Chassis Ground

2-6. ALARMS AND SENSING CONNECTOR P2

The alarms and sensing connections on the amplifier are made through a 14-pin micro-fit connector (figure 2-2) and are listed and described in table 2-2.

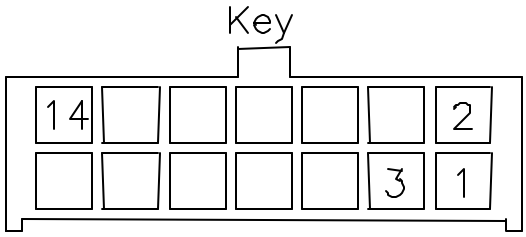


Figure 2-2. Alarms and Sensing Connector P2

Table 2-2. Alarms and Sensing Connector P2 Definition

PIN	SIGNAL	DESCRIPTION
1	+5V_AIM	5-volt supply for the AIM; routed directly to the fan assembly / AIM connector
2	+5V_AIM_RTN	5-volt supply return for the AIM; routed directly to the fan assembly / AIM connector
3	+26V_ALARM	26V HPCA alarm input
4	+15V_ALARM	15V HPCA alarm input
5	REMOTE_SENSE	Remote sense for HPCA; connected directly to 26V supply
6	REMOTE_SENSE_RTN	Remote sense return for HPCA; connected directly to 26V supply return
7	+5V_ALARM	5V HPCA alarm input
8	NC	Not connected
9	26ARTN	26V alarm return connected to 26V return on the MCPA
10	ARTN	5V and 15V alarm return connected to 26V return on the MCPA
11	+26V_FAN	26V supply for the fans; routed to fan assembly / AIM connector
12	+26V_FAN_RTN	26V supply return for the fans; routed to fan assembly / AIM connector
13	+26V_FAN	26V supply for the fans; routed to fan assembly / AIM connector
14	+26V_FAN_RTN	26V supply return for the fans; routed to fan assembly / AIM connector

2-7. DIFFERENTIAL IIC CLOCK, RECEIVE, AND TRANSMIT CONNECTOR P3

The alarms and sensing connections on the amplifier are made through a 6-pin micro-fit connector (figure 2-3) and are listed and described in table 2-3.

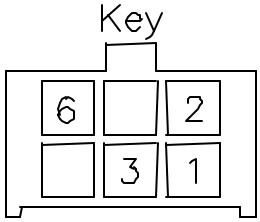
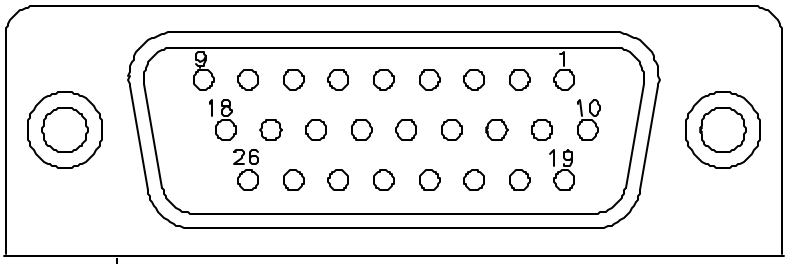


Figure 2-3. Differential IIC Clock, Receive, and Transmit Connector P3

Table 2-3. Differential IIC Clock, Receive, and Transmit Connector P3 Definition

PIN	SIGNAL	DESCRIPTION
1	IIC_CLK+	Differential IIC Clock to the DPM
2	IIC_CLK-	Differential IIC Clock to the DPM
3	IIC_RX_DATA+	Differential IIC Receive Data (from DPM)
4	IIC_RX_DATA-	Differential IIC Receive Data (from DPM)
5	IIC_TX_DATA+	Differential IIC Transmit Data (to DPM)
6	IIC_TX_DATA-	Differential IIC Transmit Data (to DPM)



2-8. IIC, POWER, ALARMS, AND CONTROLS CONNECTOR P4

The alarms and sensing connections on the amplifier are made through a 26-pin high density D-Sub connector (figure 2-4) and are listed and described in table 2-4.

Figure 2-4. IIC, Power, Alarms, and Controls Connector P4

Table 2-4. IIC, Power, Alarms, and Controls Connector P4 Definition

PIN	SIGNAL	DESCRIPTION
1	+26_FAN	26V supply to the fans; routed from 12-position HPCA connector
2	+26_FAN_RTN	26V supply returnto the fans; routed from 12-position HPCA connector
3	FAN_ALARM1	Alarm for one of three fans in fan assembly / AIM. Generated by the fan assembly / AIM and sent to the MFRM via the MCPA's RS485 link.
4	FAN_ALARM2	Alarm for one of three fans in fan assembly / AIM. Generated by the fan assembly / AIM and sent to the MFRM via the MCPA's RS485 link.
5	FAN_ALARM3	Alarm for one of three fans in fan assembly / AIM. Generated by the fan assembly / AIM and sent to the MFRM via the MCPA's RS485 link.
6	AUX_ALARM+	Analog voltage signal that is generated from either an external power combiner or an intrusion alarm mechanism, passed to the MFRM through the RS485.
7	AUX_ALARM-	Analog voltage signal that is generated from either an external power combiner or an intrusion alarm mechanism, passed to the MFRM through the RS485.
8	AUX_CTRL1	Contact closure switch on the MCPA but controlled by the MFRM software. Default status is OPEN upon power up and CLOSED on power down conditions.
9	AUX_CTRL2	Contact closure switch on the MCPA but controlled by the MFRM software. Default status is OPEN upon power up and CLOSED on power down conditions.
10	+5V_AIM_RTN	5V supply return for the AIM. Comes from the HPCA via connector P2 and routed through MCPA.
11	+5V_AIM	**5V supply for the AIM. Comes from the HPCA via connector P2 and routed through MCPA**
12	IIC_CLK+	Differential IIC clock to the fan assembly / AIM
13	IIC_CLK-	Differential IIC clock to the fan assembly / AIM
14	IIC_RX_DATA+	Differential IIC receive data (from fan assembly / AIM)
15	IIC_RX_DATA-	Differential IIC receive data (from fan assembly / AIM)
16	IIC_TX_DATA+	Differential IIC transmit data (to fan assembly / AIM)
17	IIC_TX_DATA-	Differential IIC transmit data (to fan assembly / AIM)
18	FORCE_ON+	Routed directly from MTRM connector; turns on LEDs (in the AIM) during power-up sequence.
19	FORCE_ON-	Routed directly from MTRM connector; turns on LEDs (in the AIM) during power-up sequence.
20	+26V_FAN	26V supply for the fans from (HPCA) connector P2
21	+26V_FAN_RTN	26V supply return for the fans from (HPCA) connector P2
22-26	NC	Not connected

2-9. IIC, RS485, POWER, AND OTHER SIGNALS CONNECTOR P5

The alarms and sensing connections on the amplifier are made through a 18-pin micro-fit connector (figure 2-5) and are listed and described in table 2-5.

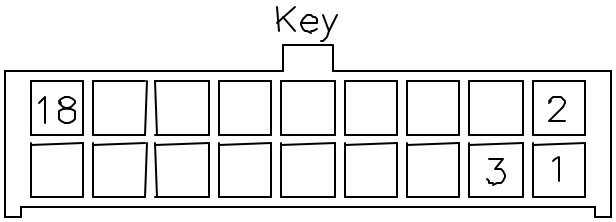


Figure 2-5. IIC, RS485, Power, and Other Signals Connector P5

Table 2-5. IIC, RS485, Power, and Other Signals Connector P5 Definition

PIN	SIGNAL	DESCRIPTION
1	FORCE_ON+	Turns on LEDs (in the AIM) during power up sequence; routed directly from MTRM connector to fan assembly / AIM connector
2	FORCE_ON-	Turns on LEDs (in the AIM) during power up sequence; routed directly from MTRM connector to fan assembly / AIM connector
3	+ALLOW_HPA_ENABLE	Enables MCPA when high. Requires enable command via RS485 **and** HW_ENABLE high impedance to ground **and** no shutdown conditions exist.
4	-ALLOW_HPA_ENABLE	Enables MCPA when high. Requires enable command via RS485 **and** HW_ENABLE high impedance to ground **and** no shutdown conditions exist.
5	MCPA_TX+	Differential RS485 link to MTRM
6	MCPA_TX-	Differential RS485 link to MTRM
7	MCPA_RX+	Differential RS485 link from MTRM
8	MCPA_RX-	Differential RS485 link from MTRM
9	IIC_CLK+	Differential IIC clock from MTRM
10	IIC_CLK-	**Differential IIC clock from MTRM**
11	IIC_RX_DATA+	**Differential IIC receive data (from MTRM)**
12	IIC_RX_DATA-	**Differential IIC receive data (from MTRM)**
13	IIC_TX_DATA+	**Differential IIC transmit data (to MTRM)**
14	IIC_TX_DATA-	**Differential IIC transmit data (to MTRM)**
15	+5V_DC_IN	+5V supply voltage for the IIC circuit on MCPA; not used in any other circuits.
16	+5V_DC_RTN	+5V supply voltage return for the IIC circuit on MCPA; not used in any other circuits.
17	CABLE_DETECT	Cable detect line connected to GPI/O port of MTRM

		microprocessor. Pulled high via +5V_DC_IN; connected to reset pin on microcontroller to allow MTRM reset if necessary.
18	HW_ENABLE	Hardware enable signal. MCPA enabled when shorted to chassis ground.