

Appendix C RS232 Protocol

RS232 settings are internally definable via jumper blocks, to accommodate interfacing with a wide range of control products.

Baud rate	9600 or 19200
Echo status	AUTO or REQUEST
Select C	0 or 1
Select D	0 or 1
Select E	0 or 1

Baud rate: Maximum number of bits per second. The duration of a single bit is equal to 1 / baud rate.

Echo status: Specifies whether the **STATUS** of each parameter shown in the protocol will automatically (**AUTO**) be echoed back to the controller when there is any change, or whether the user must manually request (**REQ**) the status information be sent to the controller.

Select C,D & E The three **SELECT** jumpers are used to set the unit ID. There are a possible 8 configurations.

All commands will follow the format:

<Header><Command Identifier><Argument 1><Argument 2><Argument 3>

where:

<Header> = <FEh><E0h> **

<Command identifier> = <byte>

<Argument x> = <byte>

Each command will be able to access the system configuration directly, eliminating the need to press any button on the Citadel 1.5's front panel.

Examples:

- 1) To put the Citadel 1.5 into standby: Send FE, E0h **, 01, 00, 00, 00 (all values in Hex).
Where FE and E0h ** are the header, 01 = standby command, 00 = put into standby, 00 = filler and 00 = filler (4 characters required).
- 2) To select the source as the optional DAC: Send FE, E0h **, 03, 01, 00, 00
Where FE and E0h ** are the header, 01 = input select command, 01 = digital, 00 = filler and 00 = filler (4 characters required).

** In the examples above, the header ID is set to the Left Citadel 1.5. Replace this data to match the ID of the Citadel 1.5 to be controlled, if different.

Command	Description	Argument 1	Argument 1 Description	Argument 2	Argument 2 Desc	Argument 3	Argument 3 Desc
1	Standby	0	Put in standby				
		1	Take out of standby				
2	Status	0	Return amplifier status.				
3	Input Select	0	Analog				
		1	Digital				
4	Toggle Standby	0	Toggles Amp in/out of standby.				
The RS232 can be set using a hardware jumper to automatically send changes to the RS232 port.							
There can be multiple Citadel 1.5's in a system. Each can have a different device address, selectable on the RS232 board and defined in Status byte #2, below.							
Status Byte #	Byte Desc	Bit	Value Description	Comment			
1	Status	0	Standby	0 = In, 1 = Out			
		1	Temperature	0 = OK, 1 = Over temperature			
		2	Fuse +	0 = Good, 1 = Blown			
		3	Fuse -	1 = Good, 1 = Blown			
		4	DAC Installed	0 = Not Installed, 1 = Installed			
		5	Ana/Dig	0 = Analog, 1 = Digital attempted, regardless of whether DAC installed.			
		6	Signal Path status	0 = Analog, 1 = Digital			
		7	Lock	DAC installed, digital selected, valid digital signal present.			
2	Device Address	Lower 3 bits	0=Front Left, 1=Front right, 2=Amp #3, 3=Amp #4, 4=Amp #5, 5=Amp #6, 6=Amp #7, 7=Amp #8				

RS232 Hardware Connections

RTS and CTS are not implemented in the Citadel

DB9

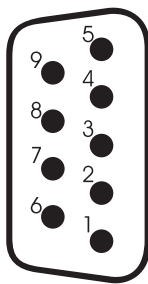
Pin	I/O	
1 - DCD	0	
2 - Citadel sends on this pin	0	
3 - Citadel receives on this pin	1	
4 - DTR	1	
5 - GND		
6 - DSR	0	
7 - RTS	1	
8 - CTS	0	
9 - Ring	---	

CN2

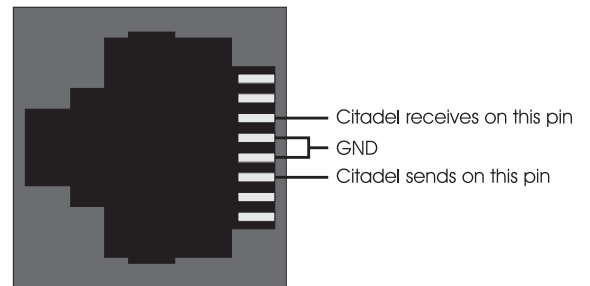
RJ45

Pin	I/O	
1 - RTS	1	
2 - DTR	1	
3 - Citadel receives on this pin	1	
4 - GND		
5 - GND		
6 - Citadel sends on this pin	0	
7 - DCD	0	
8 - CTS	0	
9 - Ring	---	

CN3



Rear panel view of DB9 connector
(From outside of unit).



Note: The connections shown on this page are internal to the Citadel.
The RS232 cable should be wired straight pin for pin.

Figure 6 – Citadel 1.5 RS232 Jack Pinout

RS232 Jumper Settings

Note: Changing the RS232 jumper settings must be done by an authorized Theta Dealer or Installer ONLY. Removing the cover of the amplifier in all other cases will void the warranty and can cause an electric shock. Please see warnings on page ii.

There are 2 possible Baud rates: **9600** and **19200**. The factory default is **19200**. To change the baud rate to **9600**, move the **BAUD** jumper to the center and top pins (if the RS232 board is orientated as in figure 6). This is also known as position 0.

The **STATUS** can be returned to the controller either automatically every time a parameter has changed, or only on user request. The factory default is **AUTO**. To set the Echo **STATUS** to return Status information only upon request, move the **STATUS** jumper to the top pins position 0), or nearer to **REQ** on the RS232 board.

The three **SELECT** jumpers are used to derive the product ID number, or the “header” ID. The Citadel 1.5 can have any one of up to eight different product ID’s. In this way, when communicating with a Citadel 1.5 via RS232 in a system that has multiple Citadel 1.5s, each one can be controlled separately. When a LEFT Citadel 1.5 is shipped from the factory, it is set to be the Front Left. Accordingly a RIGHT Citadel 1.5 is set to be Front RIGHT.

Address(h)	Address(d)	Jumper EDC	Assignment
FE, E0	254, 224	000	Front Left
FE, E1	254, 225	001	Front Right
FE, E2	254, 226	010	Amp # 3
FE, E3	254, 227	011	Amp # 4
FE, E4	254, 228	100	Amp # 5
FE, E5	254, 229	101	Amp # 6
FE, E6	254, 230	110	Amp # 7
FE, E7	254, 231	111	Amp # 8

Example of changing the Citadel 1.5 header ID to be Amp #3:

Set the jumper on SELECT E to 0, the jumper on SELECT D to 1 and the jumper on SELECT C to 0. The diagram to the right shows the ID set to 001.

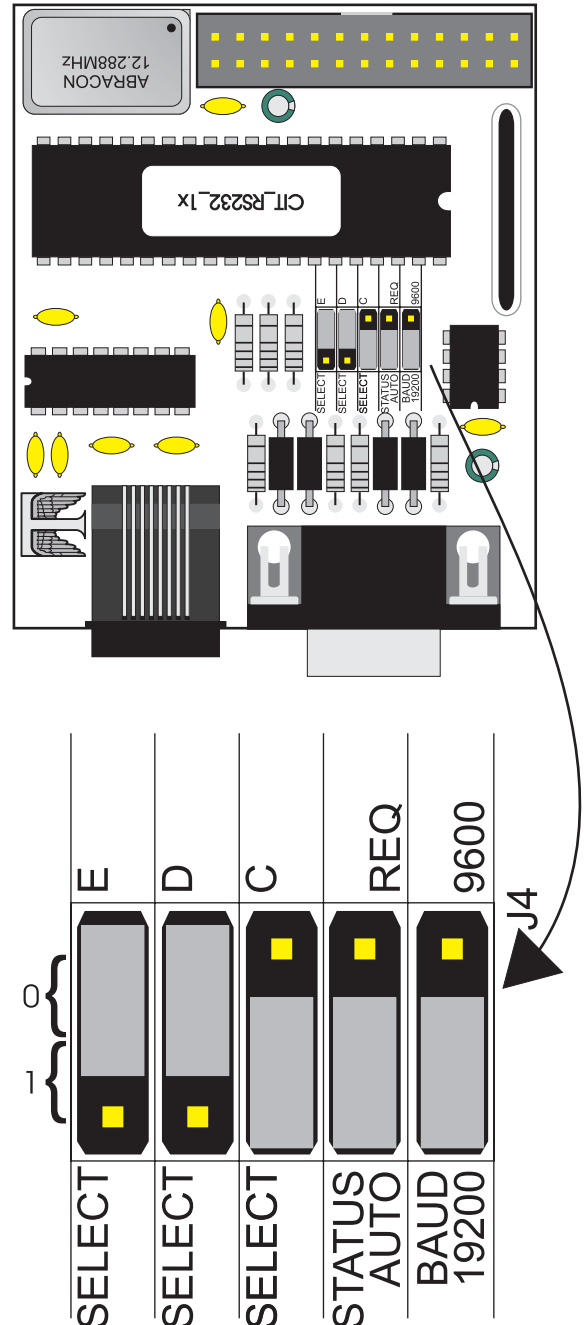


Figure 7 – Citadel 1.5 RS232 Jumper Settings

Appendix D Specifications

Inputs: Analog audio:
1 Single-ended RCA jack.
1 Balanced (XLR) jack.

Input Impedance: 60 K Ω Single-Ended or Balanced, for each phase.

Input sensitivity: (Single-Ended) 3.1V RMS input for 400W into 8 ohms.
(Balanced) 1.55V RMS input for 400W into 8 ohms.

Gain: (Single-Ended) 25dB (18x).
(Balanced) 31dB (36x).

Polarity: (Single-Ended) Non-Inverting.
(Balanced) Pin-2 = Positive, Pin-3 = Negative for Non-Inverting Output.

Digital Audio:
TBA

Outputs: Analog Audio: 1 balanced output (Standard); optional second balanced output for bi-wiring.

I/O RS232: 1 DB9 and 1 RJ45 connector.

Modes/Processes: Standby: Amplifier is muted and output bias is reduced to 20%.
Thermal: Channel has overheated; amp automatically switches to Standby.

Power Output:

(8 ohms)	400 W (rated)	425 W (typical)
(4 ohms)	600 W (rated)	650 W (typical)
(2 ohms)	800 W (rated)	800 W (typical)

Frequency Response: (-3dB points @ full power) 0.2 Hz - 400 KHz.

THD+Noise: <2%

Signal to Noise Ratio: (unweighted) >103dB

Power Requirements: 117 VAC, 15A Slo Blo fuse for analog, 1A Slo blo fuse for digital; 230 VAC, 10A Slo Blo fuse for analog, 1A Slo Blo fuse for digital; 50-60 Hz.

Power Consumption: 80W @ Standby; 120W @ idle; 800W @ full power into 8 ohms; 1350W @ 4 ohms, 2100W @ 2 ohms.

Standby Trigger Input: 5-12 VDC Pulse between 1 and 500mS.

Dimensions: 8 13/16" W x 19 5/8" H x 23 5/8" D (224 x 499 x 600 mm)

Weight: 110 Lbs. Stand alone (41.05 Kg), 130 Lbs. Boxed with accessories (48.52 Kg)

Maximum Operating Temperature: Internal: 176° F (80° C)
Room: 131° F (55° C)

90 DAY LIMITED WARRANTY TERMS AND CONDITIONS
(5 Year optional extended service contract)

1. Theta Digital Corporation, henceforth referred to as Theta, warrants the product designated herein to be free of manufacturing defects in material and workmanship, subject to the conditions set forth herein, for a period of 90 days from the date of purchase by the original purchaser, henceforth referred to as purchaser. If the purchaser registers the unit with Theta by mailing in the warranty card, together with a copy of the bill of sale, within 14 days of the date of purchase, said purchaser will be registered for an extended service contract. The extended service contract extends the 90 days to a period of 5 years from the date of purchase by the original purchaser or no later than 7 years from the date of shipment to the authorized Theta dealer, whichever comes first.
2. **CONDITIONS**
This warranty is subject to the following conditions and limitations. The warranty is void and inapplicable if the product has been used or handled other than in accordance with the instructions in the owner's manual, abused or misused, damaged by accident or neglect or in being transported, or if the defect is due to the product being repaired or tampered with or modified by anyone other than Theta or an authorized Theta repair center. In the unlikely event that the unit requires service, contact Theta for an RA (Return Authorization) number. The product must be packed and returned to Theta or an authorized Theta repair center by the customer at his or her sole expense. Theta will pay return freight of its choice. A returned product must be accompanied by a written description of the defect, a photocopy of the original purchase receipt, and a daytime phone number where the owner can be reached. The unaltered receipt must clearly list model and serial number, the date of purchase, the name and address of the purchaser and authorized dealer and the purchase price. Theta reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.
3. **REMEDY**
In the event the above product fails to meet the warranty, and the above conditions have been met, the purchaser's sole remedy under the limited warranty shall be to obtain an RA number and return the product to Theta or an authorized Theta repair center where the defect will be rectified without charge for parts or labor.
4. **LIMITED TO ORIGINAL PURCHASER**
This warranty is for the sole benefit of the original purchaser of the covered product and shall not be transferred to a subsequent purchaser of the product.
5. **DURATION OF WARRANTY**
This warranty expires 90 days after the date of original purchase. If Theta receives the completed warranty registration card within 14 days of original purchase, this period is extended to the third anniversary of the original date of purchase or no later than the seventh anniversary of the shipment to the authorized Theta dealer, whichever comes first.
6. **MISCELLANEOUS**
ANY IMPLIED WARRANTIES RELATING TO THE ABOVE PRODUCT SHALL BE LIMITED TO THE DURATION OF THIS WARRANTY. THE WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COSTS OR DAMAGES TO THE PURCHASER. Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.
7. **WARRANTOR**
Inquiries regarding the above limited warranty may be sent to the following address:

THETA DIGITAL CORPORATION
5330 DERRY AVENUE, SUITE "R"
AGOURA HILLS, CA 91301

WARRANTY OUTSIDE THE USA

Theta has formal distribution in many of the countries of the free world, in each country the Theta Importer has contractually accepted the responsibility for product warranty. Warranty service should normally be obtained from the importing dealer or distributor from whom you obtained your product.

WARNINGS

1. To prevent fire or shock hazard, do not expose your Theta product to rain or moisture.
2. This unit contains voltages which can cause serious injury or death. Do not operate with covers removed. Refer all servicing to your authorized Theta dealer.
3. For continued protection against fire hazard, replace fuses only with the same type and rating of fuses as specified.