THETA DIGITAL
Citadel RS232 Protocol and Control Information

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 settings.

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's front panel.

Examples:

1) To select put the Citadel 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. Replace this data to match the ID of the Citadel to be controlled, if different.

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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'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

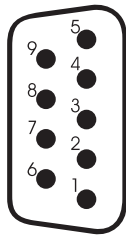RTS and CTS are not
implemented in the Citadel

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	---

Jumped

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

Jumped

CN3

```
    5
  9   4
  8   3
  7   2
  6   1
```

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

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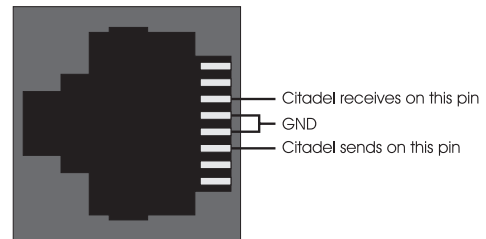
Note: The connections shown on this page are internal to the Citadel.
The RS232 cable should be wired straight pin for pin.

RS232 Jumper Settings

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 the user can request it manually. 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 can have any one of up to eight different product ID's. In this way, when communicating with a Citadel via RS232 in a system that has multiple Citadels, each one can be controlled separately. When a LEFT Citadel is shipped from the factory, it is set to be the Front Left. Accordingly a RIGHT Citadel is set to be Front RIGHT.
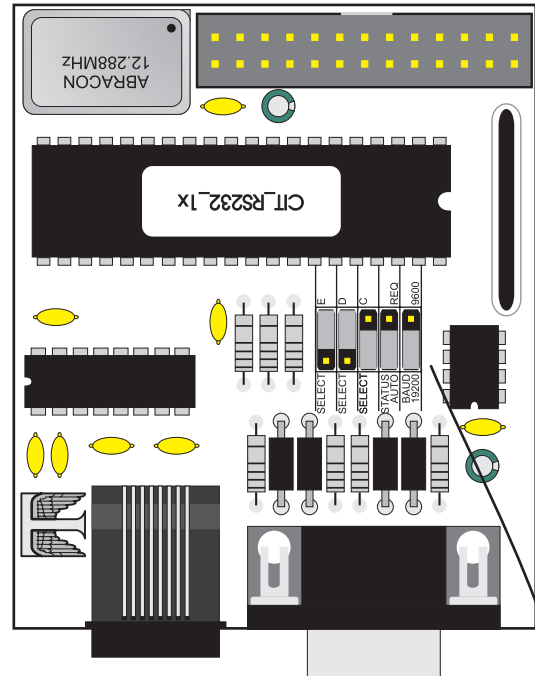
Address(h)	Address(d)	Jumper EDC	Assignment
FE, E0	254, 224	000	Front Left
FE, E1	254, 225	001	Front Right
FE, E2	254, 226	010	Amp # 3
FE, E3	254, 227	011	Amp # 4
FE, E4	254, 228	100	Amp # 5
FE, E5	254, 229	101	Amp # 6
FE, E6	254, 230	110	Amp # 7
FE, E7	254, 231	111	Amp # 8

Example of changing the Citadel 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.