

VSD-608200-01-152 Rev A

# **Enhanced Mini-Chansim**

## **Model VCS-232**

### **Operations Manual**

The logo for ViaSat, featuring the word "ViaSat" in a bold, italicized, sans-serif font. The "i" in "Via" has a small graphic element above it consisting of three horizontal lines. The logo is set against a dark grey background.

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## **SAFETY WARNING**

Always observe standard safety precautions during installation, operation and maintenance of this product. To avoid the possibility of electrical shock, be sure to disconnect the power cord from the power source before you remove the IEC power fuses or perform any repairs.

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## 1.0 Introduction

The VCS-232 allows two ViaSat Data Controllers (VDC) to communicate within proximity of each other as shown in figure 1-1. The VCS-232 transmits data bi-directionally at data rates up to 128Kbps between VDC devices. All clocking and signal crossover is provided within the VCS-232. The unit is equipped with two female DB-25 connectors and can be connected using either the STUIII/STE or Mini-ChanSim cable (see optional accessories on page 7 for ordering information).

The VCS-232 is an excellent choice for interconnecting your VDC's. When performing unclassified bench testing, substantial cost savings are realized using the VDC-232 instead of radios or cryptographic equipment.

Installation is fast and simple. Just connect the interface cables, apply power, and set the rotary clock selector switch to the desired clock rate and you are ready to go. The VCS-232 has status LED's for each attached VDC device, which allows the user to visually confirm the presence of clock, data, and control signals.

The VCS-232 utilizes state of the art digital CMOS technology to provide a feature filled product at a very affordable price. Our Field Programmable Gate Array (FPGA) design has allowed us to offer this product with a wide selection of user Baud Rates. This design approach has also eliminated clock jitter for high-speed 128Kbps transmissions.

The VCS-232 is housed in a sturdy metal enclosure and operates on 110/220VAC. Typical MTBF figures are in excess of 100,000 hours of operation.

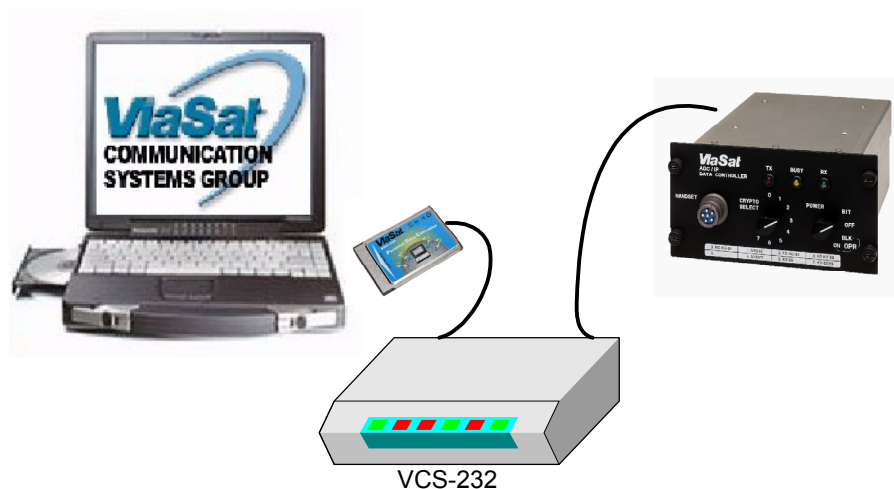


Figure 1-1. Sample VDC-400 to VDC-500 Application

## 2.0 Basic Operation

### 2.1 Front Panel Indicators

Two adjacent sets of *Green* LEDs illuminate in union with individual VDC port control signal activity.

### 2.2 Rear Panel Connectors and Fuses

Located on the back or rear of the product you will find an IEC Power receptacle. The supplied power cord plugs into this receptacle. This receptacle also contains a fuse drawer. Two (2) fuses are located in this compartment. For 110 VAC +/- 10% operation the unit is equipped with slow blow 160ma Fuses. For 220 VAC +/- 10% operation the unit is equipped with slow blow 80ma Fuses. Additionally, DB-25 female connectors, marked *PORT A* and *PORT B*.

### 2.3 Clocking

The VCS-232 provides an internal baud rate generator with user defined clock rates from 1200bps up to 128Kbps. Clocking is selected via rotary switch located on the front panel.

### 2.4 Electrical Interface

The VCS-232 is EIA RS-232-C compliant utilizing the international EIA specification. The unit is equipped with female DB-25 connectors. Refer to the interface chart in the Appendix for detailed interface information.

### 2.5 Clear to Send (CTS) Follows Request to Send (RTS)

The VCS-232 has individual settings for each user port so that *CTS* follows *RTS*.

#### 2.5.1 Request to Send (RTS) Delay

The VCS-232 has individual user port settings for *RTS* delay. Options of no delay (**factory default**), 6ms, 12ms and 24ms are provided via internal dip switches.

### 3.0 Installation

**CAUTION: Disconnect Power Before Servicing**

#### 3.1 Voltage Selection

It is *very* important to check that the unit is set to the correct voltage setting for your application before applying AC power. Located on the rear of the unit you will find a rotary 110/220 VAC switch. Using a coin or small screwdriver, *gently* turn the switch to the appropriate power position as required for your installation (110 or 220 VAC).

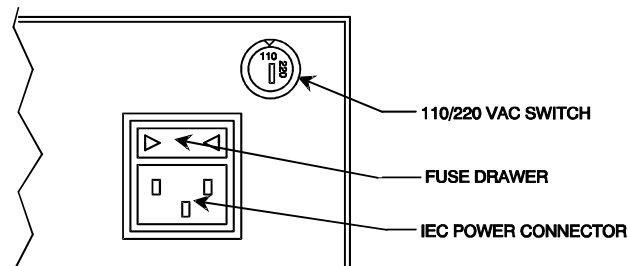
#### 3.2 Voltage Selection Fuses

Located on the back or rear of the product you will find an IEC Power receptacle. This receptacle contains a fuse drawer. Two (2) fuses are located in this compartment. For 110 VAC +/- 10% operation the unit is equipped with slow blow 5 x 20mm 160ma Fuses. For 220 VAC +/- 10% operation the unit is equipped with slow blow 5 x 20mm 80ma Fuses. Spare fuses may be purchased by calling the fuse manufacturer: Little Fuse at (312) 824-3024 or Shurter, Inc. at (707) 778-6311.

Little Fuse Part #'s are: 160ma = 218.160 and 80ma = 218.080  
Shurter, Inc. Part #'s are: 160ma = 034.3109 and 80ma = 034.3106

#### 3.3 Power Connection

Before connecting the VCS-232 to an AC power source the top cover should be installed with the supplied #4-40 screws. AC power is supplied to the unit through a 2.3m (6.6 ft) cord terminated by a grounded 3-prong plug. Select an appropriate location accessible to and within four to five feet of an AC outlet. The AC Power source **MUST** be grounded or the unit's Warranty will be void.



**Figure 3-1. Power Connection**

### 3.4 Default Configuration Switch Settings

The VCS-232 is configured prior to shipping with the Dip Switches set as follows:

- 1) Port A / Port B *RTS* - *Follows CTS*
- 2) Port A / Port B *CTS* delay - *No Delay*
- 3) Chassis to Signal GND - *Not Connected*

If your system application requires one or more of the default settings to be changed, it will be necessary to remove the top cover. Disconnect the AC Power source before servicing the unit. Removal of the top cover is accomplished by using a small Philips screwdriver and removing the four outside screws. After setting the switches, replace the top cover before applying AC power.

### 3.5 ViaSat Data Controller Connection

Before applying AC Power to the VCS-232, connect the cables between the VDC crypto port and the VCS-232 port A and port B as depicted in Figure 1-1. The chart below lists the recommended ViaSat cables for each VDC and the proper VDC crypto mode setting. ViaSat cables are shielded and range from 3 to 6 feet in length. When using cables other than those offered by ViaSat, avoid cables that are not shielded or are over 30 feet in length.

ViaSat Data Controller	ViaSat Cable	Cable Length (ft)	Crypto Mode
VDC-200	None Available*	-	-
VDC-300/500	CBL-009108-0000	6	KG-84HD/ MD-1324
VDC-400/600	CBL-006586-0000 CBL-009107-0000	6	KG-84HD/ MD-1324

\* See Section 4 for recommended pinouts when interfacing to the VDC-200. Note ViaSat Cable CBL-004387-0000 can be easily modified to work in this application.

### 3.6 Internal Switch Settings

#### 3.6.1 DIP Switches

The VCS-232 has one *Dip Switch* that is accessible by removing the Top Cover. Located safely inside the unit, you will find a *10 position Dip Switch* marked **S2**. To change the settings, you may use your fingertip or a small nonconductive instrument. It is recommended **NOT** to use metal objects to push on the *Dip Switches*, as you may slip and damage a component trace.

#### 3.6.2 Switch Functions

The following section describes the function of the VCS-232 straps and switches.

**3.6.3 Strap and Switch Settings**

**Port “A” Straps**

Jumper J3	Position 1 Position 2	Port A DSR follows Port B DTR Port A DSR forced on
Jumper J4	Position 1 Position 2	Port A DCD follows Port B RTS Port A DCD forced on
Jumper J5	Position 1 Position 2	Port A Ring Indicate follows Port A DCD Port A Ring Indicate forced on

**Port “B” Straps**

Jumper J3	Position 1 Position 2	Port B DSR follows Port A DTR Port B DSR forced on
Jumper J4	Position 1 Position 2	Port B DCD follows Port A RTS Port B DCD forced on
Jumper J5	Position 1 Position 2	Port B Ring Indicate follows Port B DCD Port B Ring Indicate forced on

**General Strap**

Jumper J9	Position 1 Position 2	Signal Ground connected to Frame Ground Signal Ground isolated from Frame Ground
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**Switch S2**

<u>S10</u>	<u>S9</u>	<u>S8</u>	<u>S7</u>	<u>S6</u>	<u>S5</u>	<u>S4</u>	<u>S3</u>	<u>S2</u>	<u>S1</u>	
Not Used	Port B CTS Delay		Port B CTS	Port B Clock	Not Used	Port A CTS Delay		Port A CTS	Port A Clock	
	I	I	I	I		I	I	I	OFF	Port A Clocks from BRG
	I	I	I	I		I	I	V	ON	Port A Clocks from Port A Ext.
	I	I	I	I		I	I	OFF		CTS Follows RTS according to S4, S3
	I	I	I	I		V	V	ON		CTS is forced on
	I	I	I	I		OFF	OFF			No Delay from RTS
	I	I	I	I		OFF	ON			6 mS Delay from RTS
	I	I	I	I		ON	OFF			12 mS Delay from RTS
	I	I	I	V		ON	ON			24 mS Delay from RTS
	I	I	I	OFF						Port B Clocks from BRG
	I	I	V	ON						Port B Clocks from Port A External
	I	I	OFF							CTS Follows RTS according to S9, S8
	V	V	ON							CTS is forced on
	OFF	OFF								No Delay from RTS
	OFF	ON								6 mS Delay from RTS
	ON	OFF								12 mS Delay from RTS
	ON	ON								24 mS Delay from RTS

## 4.0 Interface Assignments

### VCS-232 Port A and B Pin Assignments (RS-232)

Pin No.	CCITT Circuit No.	Circuit Name	Signal Description	To DTE	To DCE
1	---	---	Shield	---	---
2	103	BA	Send Data		X
3	104	BB	Receive Data	X	
4	105	CA	Request To Send		X
5	106	CB	Clear To Send	X	
6	107	CC	DCE Ready	X	
7	102	AB	Signal Ground	---	---
8	109	CF	Receive Line Detector	X	
15	114	DB	Send Timing	X	
17	115	DD	Receive Timing	X	
20	108.2	CD	Terminal Ready		X
22	125	CE	Ring Indication	X	
24	113	DA	External Timing		X

### VDC-200/300/400/500 and 600 Pin Assignments (RS-232)

Signal	Signal Description	VDC-400/600 Pin	VDC-300/500 Pin	VDC-200 Pin	CBL-004387-0000*	VCS-232 DB25F Connector
PTT	Push-to-Talk	1	10	10	10	-
RXC	Receive Timing	2	9	9	9	17
DM	Data Mode	3	11	11	11	-
RXD	Receive Data	4	2	2	2	3
DTR	Data Terminal Ready	6	4	4	4	20
TXCLK_I	Receive Timing In	7	6	6	6	15
RTS	Request to Send	8	7	7	7	4
CTS	Clear to Send	10	8	8	8	5
TXD	Send Data	11	3	3	3	2
GND	Signal Ground	12	5	5,12,13	5,13,14	1,7

\* Included here to show how to modify CBL-004387-0000 to work with the VDC-200.

## 5.0 Technical Specifications

### Application

The VCS-232 provides a variable data rate channel for communications between two VDC's.

### Capacity

Two (2) VDC's

### Interface

RS-232 EIA Specification

### Data Rates

1200bps to 128Kbps

### Channel Interface

Two Female DB-25 Connectors

### Surge Protection

Main power supply

### Power Source

100-120 to 200-220VAC @10%, 50/60Hz, 0.16/0.08A, external 110/220 volt select switch, IEC Power Inlet, (2) 5mm Fuses

### Environmental

Operating Temperature . . . . 32 to 122 deg F  
(0 to 50 deg C)  
Relative Humidity . . . . . 5% to 95%  
Non-Condensing  
Altitude . . . . . 0 to 10,000 ft

### Dimension

Height . . . . . 1.75 inches (4.44 cm)  
Width . . . . . 7.90 inches (20.07 cm)  
Length . . . . . 9.00 inches (22.86 cm)

### Weight

2 pounds (0.914Kg)

### Warranty

One Year

### Ordering Information

Part Number: VCD-017610-0000

Model: VCS-232

Description: Enhanced Mini-Chansim, 128Kbps max data rate

### Included with each unit:

1. Operations Manual
2. USA Grounded Power Cord

### Optional Accessories

1. VDC-300/500 Interface Cable,  
CBL-009108-0000, 6ft
2. VDC-400/600 Interface Cable  
CBL-006586-0000, 6ft  
or  
CBL-009107-0000, 6ft

For further technical support on this product, contact ViaSat by phone at (888) ViaSat-4 or (760) 476-4754; by e-mail at [vdc@viasat.com](mailto:vdc@viasat.com); or visit our website at [www.viasat.com](http://www.viasat.com) and our on-line forum at [www.vdcforum.com](http://www.vdcforum.com).

### Other ViaSat Products

- VDC-200 Compact Data Controller (CDC)
- VDC-300 Airborne Data Controller (ADC)
- VDC-400 Personal Data Controller (PDC)
- VDC-500 Advanced Data Controller for Internet Protocol (ADC/IP)
- VDC-600 Personal Data Controller (PDC II)