



## Installation and Operation Manual

for the

DSC-20

## Dual Satellite Receiver Controller

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SA "ENCORE" DSR-3610, AD-4595 are <sup>TM</sup> of Scientific-Atlanta, Inc.

All specifications and features for this product are subject to change without notice.



# Broadcast Tools, Inc.

## DSC-20, Dual Satellite Receiver Controller Set-up guide

### PRODUCT DESCRIPTION

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The **DSC-20** allows the remote control of any combination of **TWO** StarGuide II and/or III, Wegener Unity 4000, ComStream or Scientific-Atlanta ENCORE, DSR-3610, AD-4595 receivers. The DSC-20 provides a convenient means of service/ providers /program /channel /switching these receivers with contact closures, open collectors, or 5 volt TTL/CMOS logic. When the **DSC-20** is controlled from a PC's serial port, twenty, forty-eight character ASCII strings are provided for the above-mentioned receivers. Custom programming of the **DSC-20** is accomplished with a **NON-DEDICATED** computer.

**Features:**

- ❖ Twenty - forty-eight character printable ASCII serial strings in both the PC and/or contact closure (GPI) mode
- ❖ Audio channel swapping, service, provider, frequency and data rate control for the StarGuide II / III receivers
- ❖ Selection of active receiver ports
- ❖ Power and data activity LED's
- ❖ Non-volatile program memory
- ❖ Two - 9600 baud RS-232 receiver serial ports
- ❖ 9600 baud RS-232 or RS-485 network PC control and programming serial port (either locally or remotely via optional modem)
- ❖ Password / ID option

**NOTE: More than two receivers may be controlled by adding the optional SDD-8 serial data director.**

**Applications:** Dual contact closure and/or PC serial control of the "StarGuide II and/or III", Wegener Unity 4000 or ComStream type receivers.

### StatGuide II note

The DSC-20 in the (SG) "StarGuide II and/or III" mode will switch services only after the network has authorized the receiver. Please refer to your receiver manual for instructions on verifying the services authorized. If you have questions about your network services, please contact your network provider.

### Unpacking and Handling

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Please examine your *DSC-20* for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately. Retain the packaging for inspection by the shipper. The package should contain the *DSC-20*, 9vac wall power transformer, Installation manual, Female 25 pin D-sub connector and shell, 3 - modular cables, 1 - 9 pin female "S-9" D-sub and 2 - 9 pin male "V-9" D-sub serial modular adapters.

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**Mounting**

Mount the DSC-20 where it will be visible, close to the receivers and the rear panel accessible. Four (4) screw holes are provided for mounting. You may elect to purchase either the RM-2 or RM-3 and rack mount up to 2 units.

**(SG) StarGuide Setup for contact closure control**

The DSC-20 is normally configured with the StarGuide II and/or III connected to either Receiver 1 or 2's serial port. (Refer to the Variable String setup page of the Configuration Menu for more information on changing these memories).

**E Note:** Please verify that JP- 7 & 8 are jumpered to position 2 & 3

- Step 1. Connect one end of the supplied modular cable to either J7 (Receiver # 1) or J8 (Receiver # 2) on the DSC-20 and the other end to the male 9 pin D-Sub to modular adapter labeled "V-9".
- Step 2. Plug the male D-Sub modular adapter labeled "V-9" into the "M & C" connector on the rear of the StarGuide II and/or III Receiver.
- Step 3. Connect your contact closures or TTL/CMOS compatible signals to J1, the male 25 pin D-sub connector. Mating connector and shell supplied. Follow the channel chart on the next page.
- Step 4. Plug in the supplied wall transformer to a stable source of 117VAC @ 60Hz and the 2.1 mm coaxial end into J3 on the DSC-20.
- Step 5. Verify that the GREEN Power LED is lit.

**E Note:** The DSC-20 will accept 20 contact closures for each receiver. The closures correspond to the preset variables listed in table 1 and are configured for the StarGuides II and III receiver "C" audio port. These services are from Westwood One Radio Networks "Westwood East" and may be changed. Refer to the Variable String setup page of the Configuration Menu for more information on changing these memory locations.

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***J1 Contact closure table for StarGuide II/III Receiver***

<b><i>J1, Control Pin(s), Memory Locations:</i></b>	<b><i>Service:</i></b>	<b><i>Audio Mode:</i></b>	<b><i>Comments:</i></b>
1, <u>NOTE 1</u>	DATS 00 / 01	Dual	
2, <u>NOTE 1</u>	DATS 09.0 / 09.1	Dual	
3, <u>NOTE 1</u>	DATS 06.1 / 09.1	Dual	
4, <u>NOTE 1</u>	DATS 14 / 15	Dual	
5, <u>NOTE 1</u>	CNBC / MISC	Dual	
6, <u>NOTE 1</u>	CNN-E / NEWSLINK	Dual	
7, <u>NOTE 1</u>	CNN-W / NEWSLINK	Dual	
8, <u>NOTE 1</u>	DATS 07 / 08	Dual	
9, <u>NOTE 1</u>	MBS-E / NEWSEVNTS	Dual	
10, <u>NOTE 1</u>	MBS-W / NEWSEVNTS	Dual	
11, <u>NOTE 1</u>	NBC-E / NEWSEVNTS	Dual	
12, <u>NOTE 1</u>	NBC-W / NEWSEVNTS	Dual	
13, <u>NOTE 1</u>	SPECIAL A / B	Dual	
14, <u>NOTE 1</u>	DATS 01 / 00	Swap	Swaps Channels A/B
15, <u>NOTE 1</u>	DATS 09.1 / 09.0	Swap	Swaps Channels A/B
16, <u>NOTE 1</u>	DATS 15 / 14	Swap	Swaps Channels A/B
17, <u>NOTE 1</u>	Open		
18, <u>NOTE 1</u>	Open		
19, <u>NOTE 1</u>	Open		
20, <u>NOTE 1</u>	Open		
22,23,24	Ground	Ground	Pin 25 Chassis Ground

**E Note:** All inputs are pulled high. To select any Channel for Receiver # 2, pulse the desired pin low, while holding Pin 21 low.

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**COMPILING THE NEEDED INFORMATION TO PROGRAM THE DSC-20**

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✂ **Tool Tip:** Take advantage of your program provider and receiver manual. They are great resources!

- 1 Have your receiver installed and authorized. Be sure you can manually select the program(s) from the receiver's front panel keyboard and have a audio monitor attached to the correct audio port.
- 2 Request the provider number(s) for the program(s) you will be receiving.
- 3 Request the service number(s) for the program(s) you will be receiving.
- 4 Determine what audio port(s) you plan to use.
- 5 Record this information for later use.

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**TESTING YOUR STARGUIDE RECEIVER WITH YOUR COMPUTER'S SERIAL (COM) PORT**

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✂ **Tool Tip:** This step is required to confirm that the communication program and StarGuide II / III receiver are configured properly.

**The following instructions are for use with Windows 95/98/ME/NT/XP/2000 HyperTerminal.**

You can start HyperTerminal by clicking **Start**, pointing to **Programs**, pointing to **Accessories**, pointing to **Communications**, clicking **HyperTerminal**, and then double-clicking on the icon labeled **Hypertrm** or **Hypertrm.exe**.

- A new window will open labeled **CONNECTION DESCRIPTION**.
- In this window, Type a name that describes the connection (We suggest **BTI96**), click the appropriate icon, if desired this is not required, and then click **OK**.
- A new window will open labeled **CONNECT TO**.
- At the **CONNECT TO** screen,
  1. Move your cursor to the **CONNECT USING** box
  2. Press the down arrow on the right of the box to select the available com port ("Direct to com x"),
  3. Then click the **OK** button.

- The **PORT SETTING** window will appear.
- At the **PORT SETTING** window,
  1. Change the **baud rate** to **9600**,
  2. **Flow control** to **NONE**
  3. Then click **OK** button.
- You will have a new window open labeled with the Connection Description you typed in earlier (in our example, BTI96).
- At this window
  1. Click on the word **FILE** at the upper left portion of the menu bar and click on **Properties**.
    - i) Click the **Settings** tab, and then change the
      - (1) **EMULATION** to **ANSI**,
      - (2) Then click the **OK** button.
  2. Click on **FILE**, click **Save**.
  3. Click on **FILE**, click **Exit**.
- Click **Yes**, when asked to disconnect. This will place you back at the HyperTerminal screen
- At the HyperTerminal screen, find the Icon and/or file you named and double click on it.

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**TESTING THE STARGUIDE II or III RECEIVER**

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- 1 Set your receivers M & C serial port for 9600,8,N,1 via the receivers front panel keyboard.
- 2 Connect a Male - Female, DB-9 straight-through serial cable between the M & C port on the receiver and your computers com port.

**♪ NOTE: Do not use the cables supplied by us for this test!**

- 3 On your computer keyboard, type the following command: VER and press the ENTER key.
- 4 If the two are communicating, the details of the current receiver's software and other information will be displayed.
- 5 If your test was successful, remove the Male - Female, DB-9 straight through serial cable from the computer and receiver; proceed to the section labeled "**Connecting the DSC-20 to your computers serial port**". If your test failed, follow the troubleshooting steps A through G that follows.

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**TROUBLESHOOTING**

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- A Build a loop-back "TESTER" by purchasing a "FEMALE" 9 pin D-sub solder cup connector (Radio Shack, CompUSA, Local Electronic Store, etc).
- B Solder a jumper between pins 2 & 3.
- C Try typing on the keyboard with nothing connected to the computer's com port. You shouldn't see any characters. If you do, the "ECHO typed characters locally" is checked (ON)" in the ASCII settings in HyperTerminal. Turn this OFF (Uncheck) and retest Step C.
- D Plug the "TESTER" into the com port under test
- E Try typing on the keyboard, if you're using the correct com port, each character typed will be displayed.



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F If this test fails, try changing com ports on the communication program until you find the correct port. When a working com port is found, repeat the above test starting at step 1.

✂ **Tool Tip:** With some communication programs, any change made to the program settings requires you to save the changes, exit the program and restart the program.

♪ **NOTE:** If you find that a failure is traced to the receiver and ALL receiver troubleshooting has failed contact the receiver manufacture.

**Connecting the DSC-20 to your computers serial port**

- Connect one end of the supplied modular cable to J5 (Computer) on the DSC-20 and the other end to the male D-Sub to modular adapter labeled "S-9".
- Plug the female D-Sub modular "S-9" adapter into your computers serial port.
- Press the space bar ONCE and the configuration menu will appear.

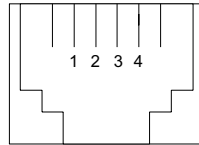
The pin out of the modular/D-Sub adapters is shown below.

RJ-11 Adapter Pin Number.	DB-9 "V-9" Male. Pin Number. StarGuide II/III M & C port	DB-9 "S-9" Female. Pin Number. "Remote"	DSC-20 point of view. Function Name.
4	2	3	RS-232 Receive
3	3	2	RS-232 Transmit
2	5	5	Ground

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*DSC-20's point of view of modular connectors.*

**Modem control**

The DSC-20 may be operated remotely with the use of an external 9600-baud or greater AT compatible modem. Follow the instructions supplied with the modem for dumb modem (auto-answer) operation. The remote modem is normally supplied with a 25-pin D-sub connector. You will need to purchase a male 9 pin D-sub to 25-pin male D-sub adapter. Please contact your local computer store for this adapter. After you have made your modem connection, follow the same procedure as if you were operating the unit locally.

**Password / ID Programming**

- Step 1. Hold down SW-1 at power-up, while holding down SW-1, press the SPACE BAR and wait for the menu to appear.
- Step 2. Enter number 8.
- Step 3. When prompted, enter your password / ID and press the enter key.
- Step 4. Press <Q> to QUIT.
- Step 5. Unplug the power supply, wait 10 seconds and return power to the unit.
- Step 6. Enter <P> plus the password and than the space bar.
- Step 7. The Configuration Menu will reappear.

**RS-485 Set-up**

- Step 1. Locate J-4 and move the jumper from position 1 and 2 to position 2 and 3
- Step 2. Connect the data cable to J-6, observing the proper polarity.
- Step 3. The DSC-20 is now ready for RS-485 operation, receive mode only.

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*(SG) StarGuide II table configuration setup*

The StarGuide II and/or III receiver selection table may be modified to meet your needs. Each of the 20 memory locations per receiver port may be changed. To change any of the locations for Receiver port one and/or two, follow the steps below.

- Step 1. Connect one end of the supplied modular cable to J5 (Computer) on the DSC-20 and the other end to the male D-Sub to modular adapter labeled "S-9".
- Step 2. Plug the female D-Sub modular "S-9" adapter into your computers serial port.
- Step 3. Press the space bar ONCE and the configuration menu will appear.
- Step 4. Enter number 5 to modify the StarGuide II and/or III table data for Recvr port # 1 or 6 to modify Recvr port # 2.
- Step 5. Enter the location you desire to change.
- Step 7. Refer to the StarGuide II and/or III's receiver manual and your Network provider for the required parameters to enter in step 8.
- Step 8. Enter up to 48 characters and terminate by a carriage return. To enter a carriage return in the string, enter a back slash [ \ ] and press the enter key twice. Example: \*1E00\enter key, enter key. The carriage return takes the form of [13] when viewed on screen.
- Step 9. Press <Q> to return to the MAIN MENU.
- Step 10. Press <Q> to QUIT.

**✘ Tool Tip: More than two receivers may be controlled by the DSC-20. By purchasing the SDD-8, Serial data (router) director, up to 32 additional receivers may be control from one receiver port of the DSC-20.**

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*Serial burst mode programming*

The Serial BURST mode data format is as follows: \*PRMM<cr>

Pxxxxxxx = OPTIONAL Password (ID).  
\* = Indicates burst mode.  
P = Recvr Port Number 1 or 2.  
R = Receiver Type: <V> for Variable (StarGuide II and/or III,  
Wegener Unity 4000)  
MM = Channel number.  
<cr> = Carriage return, End of string. *(DO-IT)*

*Examples w/ No Password:*

\*1V01<cr> Selects Variable (StarGuide II and/or III,  
Wegener Unity 4000) 01 on Recvr port # 1

\*2V01<cr> Selects Variable (StarGuide II and/or III,  
Wegener Unity 4000) 01 on Recvr port # 2

\*1V20<cr> Selects Variable (StarGuide II and/or III,  
Wegener Unity 4000) 20 on Recvr port # 1

\*2V20<cr> Selects Variable (StarGuide II and/or III,  
Wegener Unity 4000) 20 on Recvr port # 2

*Examples w/ Password:*

P1234\*2V01<cr> Selects Variable (StarGuide II  
and/or III, Wegener Unity 4000) 01 on Recvr port # 2



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**ABC network string examples:**

SP A,P,1\enterSP A,S,19\enterAM A,0\enterenter (String for ABC NY, WOR 1/WOR 2,  
with normal audio)

SP A,P,2\enterSP A,S,18\enterAM A,0\enterenter (String for ABC News, ESPN East, with normal  
audio)

SP A,P,1\enterSP A,S,19\enterAM A,3\enterenter (String for ABC NY, WOR 2/WOR 1,  
with reversed audio)

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**WW1 Network Program and Service Codes:**

<b>Programs</b>	<b>Service Code / ID #</b>	<b>Strings</b>	<b>Comments</b>
FOXTALK / WFAN Mets/Giants	23	SP C,S,23\#AM C,0\##	Bill O'Reilly is on Foxtalk
CBS 36 / CBS 39	24	SP C,S,24\#AM C,0\##	
CBS 37 / CBS 39	25	SP C,S,25\#AM C,0\##	
CBS 38 / CBS 39	26	SP C,S,26\#AM C,0\##	
DATS 00 / DATS 01	2	SP C,S,2\#AM C,0\##	
NBC-E / Newslink	17	SP C,S,17\#AM C,0\##	
NBC-W / Newslink	18	SP C,S,18\#AM C,0\##	
CNN-W / ATOM	12	SP C,S,12\#AM C,0\##	
MBS-E / Newslink	15	SP C,S,15\#AM C,0\##	
MBS-W / Newslink	16	SP C,S,16\#AM C,0\##	
CNN HEADLINE / Newslink	20	SP C,S,20\#AM C,0\##	
DATS 06-1 / TALK 10	4	SP C,S,4\#AM C,0\##	
DATS 07 / DATS 08	14	SP C,S,14\#AM C,0\##	
DATS 09-0 / DATS 09-1	3	SP C,S,3\#AM C,0\##	
CNN-E / ATOM	11	SP C,S,11\#AM C,0\##	
FOX Radio Net / FOX (TV) News Channel	21	SP C,S,21\#AM C,0\##	
DATS 14 / DATS 15	5	SP C,S,5\#AM C,0\##	
MARKETWATCH / MISC	6	SP C,S,6\#AM C,0\##	
TALK 7 / TALK 8	7	SP C,S,7\#AM C,0\##	
CBS 40 / CBS VC	27	SP C,S,27\#AM C,0\##	
CBS 41 / CBS 43	8	SP C,S,8\#AM C,0\##	
CBS 42 / CBS 44	22	SP C,S,22\#AM C,0\##	
CBS 45 / CBS 46	19	SP C,S,19\#AM C,0\##	
SPORTS 1 / SPORTS 2	9	SP C,S,9\#AM C,0\##	
TRNET / TALK 1	28	SP C,S,28\#AM C,0\##	
SPECIAL 1 / 2	29	SP C,S,29\#AM C,0\##	

**# Denotes pressing the enter key once**

**## Denotes pressing the enter key twice**

**Use the "AM" Command to add audio flow control. Examples are given below:**

- AM C,0##** Leaves audio on Port C normal.
- AM C,1##** The Program on the "LEFT" Channel is routed to the left and right channel of Port C
- AM C,2##** The Program on the "RIGHT" Channel is routed to the left and right channel of Port C
- AM C,3##** Swaps the Left and Right Channels on Port C

**Please check with your NETWORK to verify that they support the "AM" (Audio Mode) command. Note: We offer three handy solutions for wiring up the audio and relays on the StarGuide II & III receivers: 1.) COP; 2.) COA-15, and 3.) COA-37. Please check our website for more information at [www.broadcasttools.com](http://www.broadcasttools.com)**

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Premiere / NSN Program, Provider and Service Codes:

Program	Provider Code / ID #	Service Code / ID #	Audio Mode	String
Premiere One	3	8	Mono	SP x,S,8\##
Premiere Two	3	5	Mono	SP x,S,5\##
Premiere Three	3	19	Mono	SP x,S,19\##
Premiere Four	3	21	Mono	SP x,S,21\##
Premiere Five	3	20	Mono	SP x,S,20\##
Premiere Six	3	16	Mono	SP x,S,16\##
Premiere Seven	3	27	Mono	SP x,S,27\##
Premiere Eight	3	14	Mono	SP x,S,14\##
Premiere Nine	3	18	Mono	SP x,S,18\##
Premiere Ten	3	31	Mono	SP x,S,31\##
				x = Port A through F
NSN 4 / Equity 1	1	28		
NSN 5 & 6	1	2		
NSN 8	1	24	Left/Right	
NSN 10 / Nubian	1	30		
Comedy 1 / 2	1	26		
Fisher / Jason	1	29		

- # Denotes pressing the enter key once
- ## Denotes pressing the enter key twice



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**Specifications**

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Logic / memory:	Microprocessor, Non-Volatile memory.
J-1, "CONTROL" Input connector:	25 pin Male D-sub, mating connector/shell supplied. Inputs, CMOS, TTL compatible, 5-volt logic, active low.
J-3, Power connector:	2.1mm, coaxial 9 volt AC, 500 ma. /w Green LED. Wall (Wart) transformer supplied.
J-5, "COMPUTER" connector:	RJ-11, (6P4C).
Data rate, "COMPUTER" port:	9600- 8N1, RS-232c or RS-485.
J-7, "RECVR 1" connector:	RJ-11, (6P4C)
J-8, "RECVR 2" connector.	RJ-11, (6P4C).
Date rate, "RECVR" ports:	9600-8N1, RS-232c. w/ Red LED data indicator.
Dimensions:	7.75" x 4.0" x 1.25" with four # 6 mounting holes.
Weight:	2.0 pounds.
Options:	RM-2 rack panel holds two units (3-RU's) RM-3 rack shelf holds two units (1-RU) SDD-8, Serial Data (Router) Director

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### **BROADCAST TOOLS, INC. LIMITED WARRANTY AND REMEDIES**

#### **LIMITED WARRANTY**

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