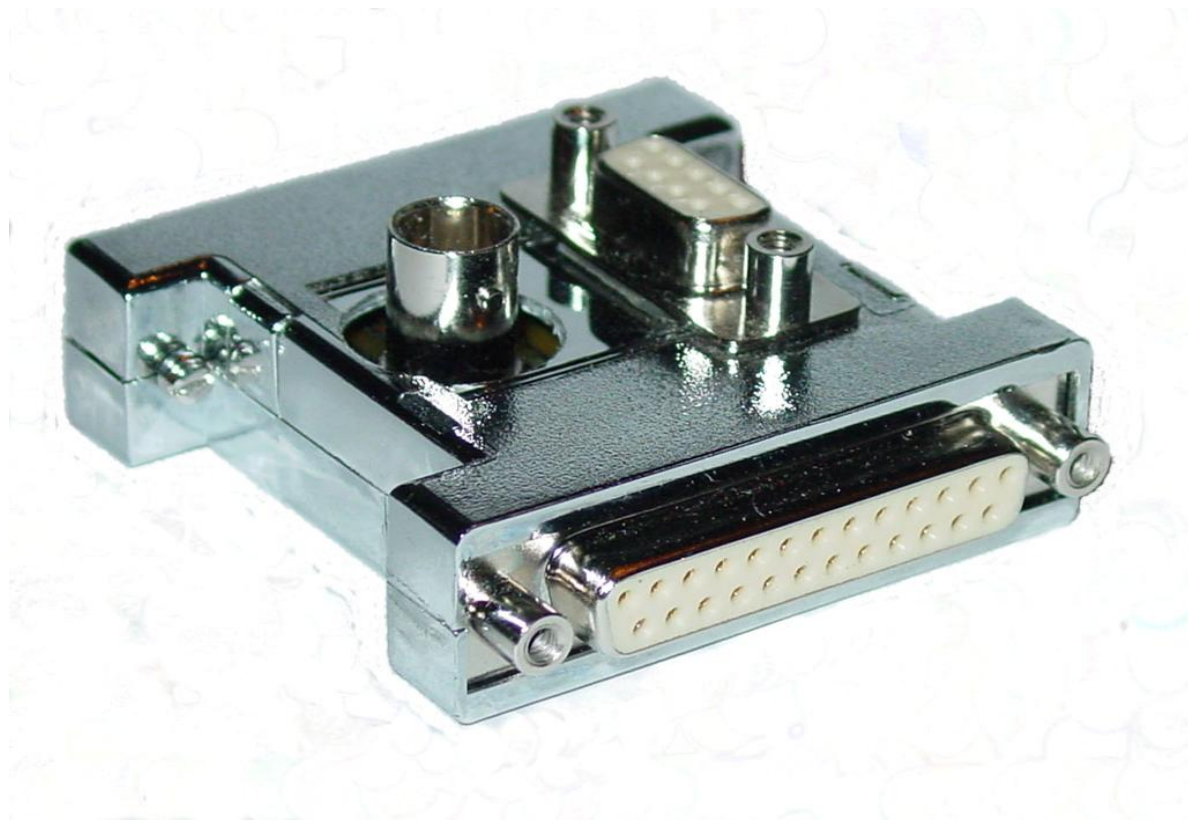


# RTD Data Port Expander for Daktronics Scoreboards

[www.serialtools.tv](http://www.serialtools.tv)



**Support For Daktronics 5000 Series Scoreboards**

## **Tap into Daktronics Real Time Data**

Daktronics RTD (Real Time Data) is available on all 5000 series scoreboards. RTD contains clock, scores, periods and anything else associated with the game play that might appear on the scoreboard. Gaining access to those outputs is easy using this in-line adapter.

Daktronics RTD serial data is made available on the main 25pin D-Sub connector located on the back of the scoreboard controller. This RTD output is available as either RS232 or as a 20mA current loop (CL #4) protocols.

The Serialtools DAK Port Expander is designed to be installed in-line with the 25pin D-Sub connector on the back of the scoreboard controller. The port expander passes all lines through and only taps into the RS232 and 20mA current loop output pins avoiding any disruption with communication to the scoreboard panels.

If this is your first time using RTD be aware that the data is transmitted at a higher rate (19200 Baud) which limits your cable length to about one hundred feet using low capacitance cable. Serialtools makes a Port Powered Current Loop receiver as well as the DKO Modem to overcome these cable length limitations if you need it. Contact [support@serialtools.tv](mailto:support@serialtools.tv) for more information.

## **Some Basic Rules to Follow;**

Always ask permission to install the port expander. You are interrupting their main scoreboard feed, it's their house.

Demonstrate that their scoreboard system is still fully functional with the port expander installed.

Use a shielded cable to bring data back to the mobile unit to avoid data noise from coupling into the house/arena microphone lines.

Don't over tighten the port expander connector screws. The screws are there to keep the connectors mated and the degree of tightness has no effect on the quality of electrical connection.

Test your data transmission path in advance. If the "bug" computer isn't available yet you can use any computer that has a serial port (usb to RS232 adapters work well with scoreboard data).

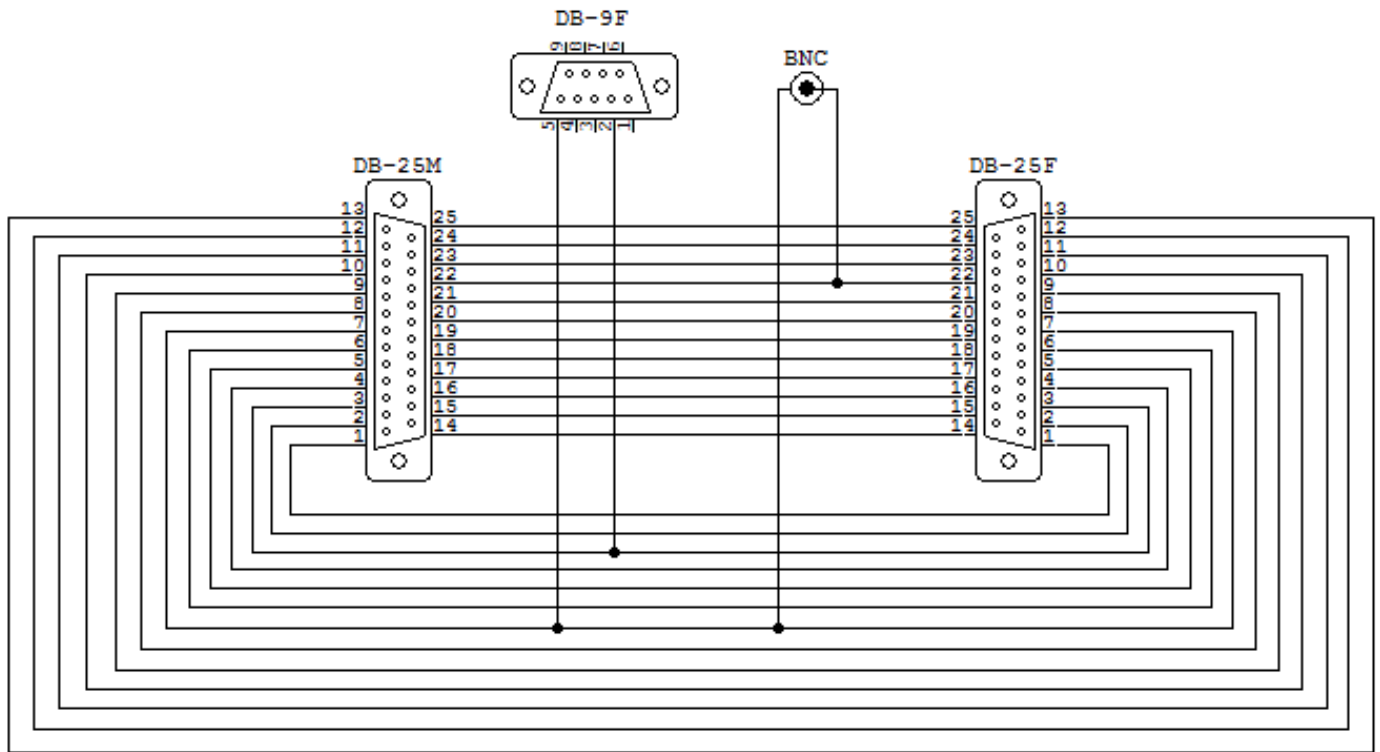
A terminal program (like HyperTerminal) can read and display Daktronics RTD. Set your terminal software to receive 19200 baud, 8 data bits, no parity, 1 stop bit and no flow control.

Strain relief your data cable at the scoreboard table. If someone trips on your cable, something has got to give. The scoreboard controller may just wind up on the floor during a game.

Questions?

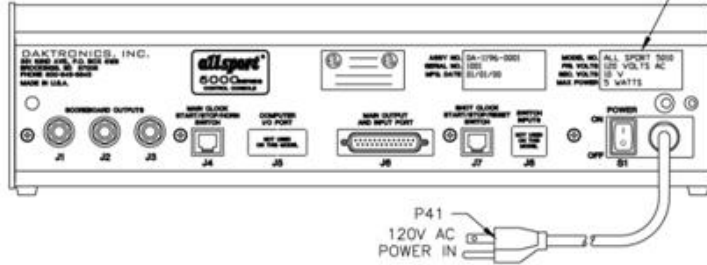
Email;

[support@serialtools.tv](mailto:support@serialtools.tv)

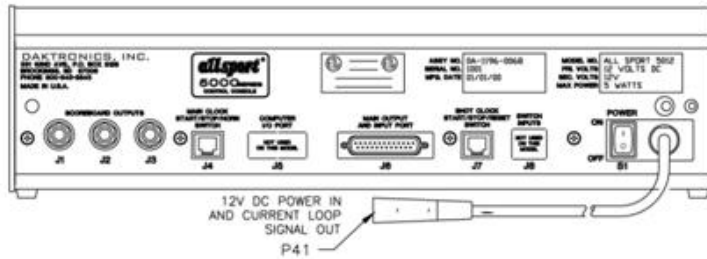


Serialtools DAK Port Expander Schematic

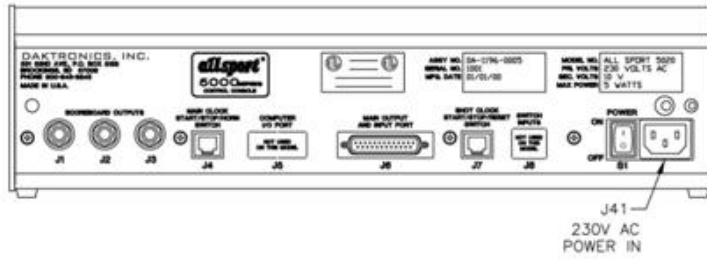
ALL SPORT 5010



ALL SPORT 5012



ALL SPORT 5020



**J1-J3 - OUTPUT #1-#3**

CONTACT	FUNCTION
TIP	CURRENT LOOP OUTPUT 1 +
RING	CURRENT LOOP OUTPUT 1 -
SHAFT	GND

**J4 - START/STOP/HORN**

PIN #	FUNCTION
1	SWITCH INPUT 2 -
2	SWITCH INPUT 1 -
3	RELAY OUTPUT -
4	RELAY OUTPUT +
5	SWITCH INPUT 1 +
6	SWITCH INPUT 2 +

**J6 - MAIN PORT**

PIN #	FUNCTION
1	EARTH
2	RS232 RECEIVE +
3	RS232 TRANSMIT +
4	NOT USED
5	NOT USED
6	NOT USED
7	C. L. OUTPUT 4 - /RS232 GND
8	SWITCH INPUT 1 +
9	CURRENT LOOP INPUT +
10	CURRENT LOOP INPUT -
11	RELAY OUTPUT +
12	NOT USED
13	NOT USED
14	CURRENT LOOP OUTPUT 1 +
15	CURRENT LOOP OUTPUT 1 -
16	CURRENT LOOP OUTPUT 2 +
17	CURRENT LOOP OUTPUT 2 -
18	CURRENT LOOP OUTPUT 3 +
19	CURRENT LOOP OUTPUT 3 -
20	NOT USED
21	SWITCH INPUT 1 -
22	CURRENT LOOP OUTPUT 4 +
23	RELAY OUTPUT -
24	10V AC/DC INPUT-P
25	10V AC/DC INPUT-N

**J7 - SHOT/PLAY CLOCK**

PIN #	FUNCTION
1	SWITCH INPUT 5 -
2	SWITCH INPUT 4 -
3	SWITCH INPUT 3 -
4	SWITCH INPUT 3 +
5	SWITCH INPUT 4 +
6	SWITCH INPUT 5 +

FOR STANDARD CODES, THESE FUNCTIONS ARE USUALLY ASSIGNED TO THE FOLLOWING TASKS:

FUNCTION	USUAL TASK
SW IN 1	MAIN CLOCK STOP/START
SW IN 2	MAIN CLOCK HORN
SW IN 3	NOT USED
SW IN 4	SHOT/PLAY CLOCK STOP
SW IN 5	SHOT/PLAY CLOCK RESET
SW OUT	CLOCK STOP OUT
CL OUT 1	SCOREBOARD OUTPUT
CL OUT 2	SCOREBOARD OUTPUT
CL OUT 3	SCOREBOARD OUTPUT
CL OUT 4	DATA STREAM

**ALL SPORT 5000 SERIES MODELS**

MODEL #	FUNCTION
5010	120V, STANDARD PROGRAMMING
5020	230V, STANDARD PROGRAMMING

REV.	DATE	DESCRIPTION	BY	APPR.
3	05 OCT 01	ADDED A/S 5012 TO LAYOUT CHANGED DWG SCALE FROM 1=3 TO 1=4	NW	
2	24 APR 99	CHANGED TO BE FOR A/S 5010 CONSOLES ONLY	EB	
1	13 APR 99	ADDED J10 ADDED A/S 5010 LAYOUT	EB	

<b>DAKTRONICS, INC. BROOKINGS, SD 57006</b>	
PROJ: ALL SPORT 5000 SERIES CONSOLES	
TITLE: REAR VIEW, A/S 5010 CONNECTOR ASSIGNMENTS	
DES. BY: EBRAVEK	DATE: 27APR98
APP. BY:	
SCALE: 1=4	1196-R04A-102142

## FAQs

Q. What is the maximum data cable length I can use with RTD and DSTI data?

A. If you use low capacitance cable you should be able to go about 120 feet with RTD and 350 feet with DSTI.

Q. What is the 3ft. 25 pin cable for?

A. It helps save space behind the controller.

Q. I'm trying to use a Black Box ASHM to receive data from the BNC output but it's not working, what's wrong?

A. The Black Box ASHM can only receive a "differential" or balanced signal. Daktronics current loops are single ended.

Q. Is there a single ended current loop receiver you can recommend?

A. Serialtools now has a port powered current loop receiver that works with the port expander.

Q. Can I get RTD data out of the 1/4" phone connectors on the back of the controller?

A. No. Those are for driving scoreboard panel displays. There is no RTD data coming from those ports.

Q. Does using the port expander disrupt normal operation of the scoring system in any way?

A. No. All 25 pins of the connector are carried through and it is only the RS232 and 20mA current loop outputs that are made available.

## **Other Serialtools Products you may be interested in.**

### **Port Powered Current Loop Receiver**

A good companion piece to the Dak port expander. With it you can use thousands of feet of cable and its optically isolated to prevent ground loops. No power supply needed since it takes its power from the serial port.

### **High Speed DKO Modem**

And updated version that supports high speed data from Tissot Swiss Timing. Reliably extends RS232 data cable lengths by detecting the data via current instead of voltage, similar to how a current loop works. It can also receive current loops.

### **Handheld Data Meter V3**

Troubleshoot RS232 data connections for scoreboards and speed guns. The meter will display either the clock data or the speed data if the data on your cable is good. Version 3 now offers downloadable firmware update capability to stay up to date with the many changes to data protocols by the various scoreboard manufacturers.

### **Upgrades (small fee involved);**

#### **Handheld Data Meter V1 & V2**

An upgrade is available for both earlier versions of the data meter. Brings the software up to date, adds Tissot scoreboard, a faster processor and downloadable firmware update capability.

#### **DKO Modem**

Upgrade to the latest chipset that supports 115200 baud (Tissot). Also offers improved input surge suppression.

# Warranty Information

## SERIALTOOLS.TV FIVE YEAR WARRANTY

SERIALTOOLS.TV will repair, without charge, any defects due to faulty materials or workmanship for five years from the date of purchase. This warranty does not cover part failure due to normal wear or tool abuse. This warranty does not apply to accessories or damage caused where repairs have been made or attempted by others. This warranty gives you specific legal rights and you may have other rights which vary in certain states or provinces.

### RESPONSIBILITY OF ORIGINAL PURCHASER (initial User):

\* To process a warranty claim on this product, email [SUPPORT@SERIALTOOLS.TV](mailto:SUPPORT@SERIALTOOLS.TV) requesting service or repair. Include a brief description of the problem, your name and contact information. You will receive an RMA number and shipping information. Freight costs, if any, must be paid by the purchaser.

\* Use reasonable care in the operation and maintenance of the product as described in the Owners Manual(s).

### THIS WARRANTY DOES NOT COVER:

\* Merchandise that has become damaged or inoperative because of ordinary wear, misuse, cold, heat, rain, excessive humidity, freeze damage, use of improper chemicals, negligence, accident, failure to operate the product in accordance with the instructions provided in the Owners Manual(s) supplied with the product, improper maintenance, the use of accessories or attachments not recommended by SERIALTOOLS.TV, or unauthorized repair or alterations.

\* Expendable parts or accessories supplied with the product which are expected to become inoperative or unusable after a reasonable period of use, including but not limited to adapters, cables and carrying cases.

\* ANY INCIDENTAL, INDIRECT OR CONSEQUENTIAL LOSS, DAMAGE, OR EXPENSE THAT MAY RESULT FROM ANY DEFECT, FAILURE OR MALFUNCTION OF THE PRODUCT IS NOT COVERED BY THIS WARRANTY. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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