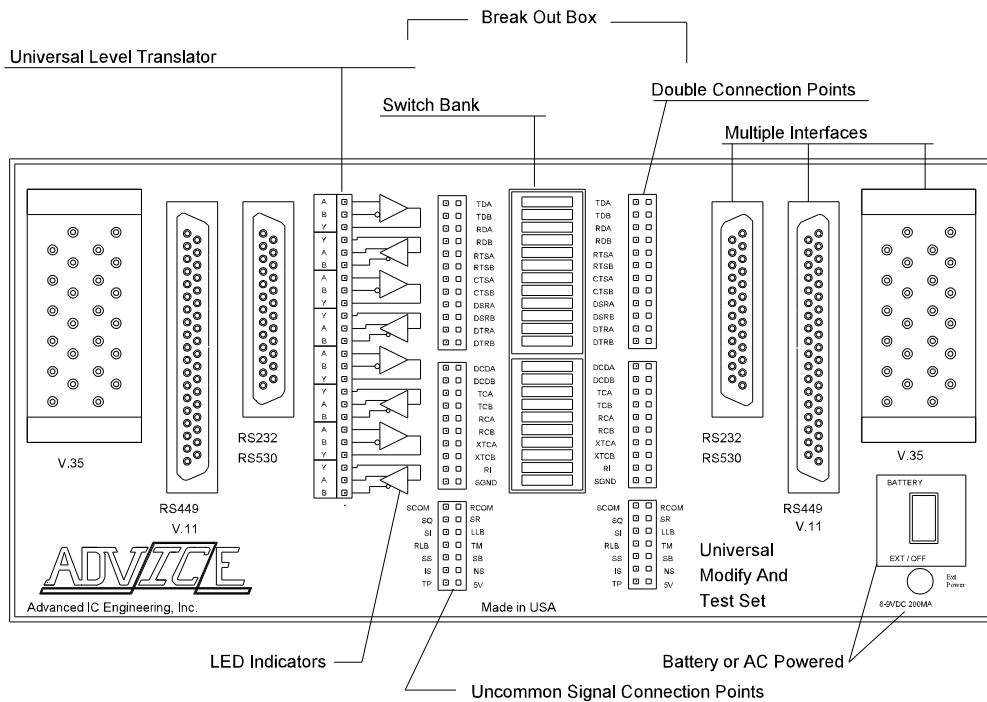


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# UMATS

## Universal Modify And Test Set

### Technical Reference



## Operation

The UMATS is a hand-held, lightweight, breakout and test set for RS232, V.24, RS449, RS530, RS530A, V.11, and V.35. The UMATS can perform many tasks:

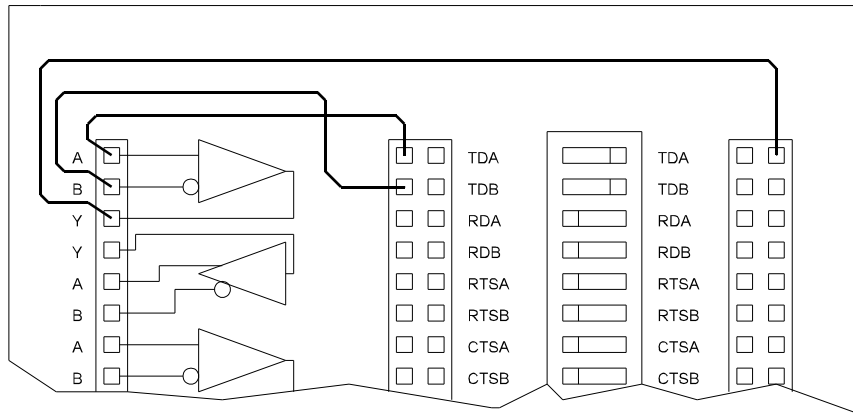
**Break Out Box** - The UMATS provides signal breakout of all signals specified for the various interfaces it supports. Signals are brought to the jump and switch area of the box in a unique fashion. Instead of being presented as pin numbers, as in most break out boxes, the interface is presented as signals. This is important especially when dealing with balanced (differential) signals such as those used by V.35, RS530 or RS449. As you review this area of the unit, notice the signals have an "A" or "B" suffix indicating its polarity with respect to the balanced portion of the interface. For the unbalanced signals used in RS232 and part of V.35 the "A" portion of the signal is active only. See the Physical Connection Chart on page 10 for details. Also note when connecting balanced signals together it is important that "A" connects to "A" and "B" connects to "B", otherwise you will invert the signals.

**Universal Level Translators** - This unique area of the UMATS offers level conversion among all supported interfaces. There are two basic interface types: Balanced and Unbalanced. On the Physical Connection Chart, signals that have both an A and B component can be considered balanced. Signals that only have an A component can be considered unbalanced. RS232 is all unbalanced, RS449 is mostly balanced, and V.35 rides in-between with the data and clock lines balanced and the control and status signals unbalanced. The following pages provide examples of how to use this option. After you become accustomed to its operation, you will wonder how you got along without it.

**To convert from a Balanced to an Unbalanced interface:**

- o Open both switches for the desired signal.
- o Put a jumper from input A of the converter to "Signal A".
- o Put a jumper from input B of the converter to "Signal B".
- o Put a jumper from output Y of the converter to "Signal A" on the other side of the switch.

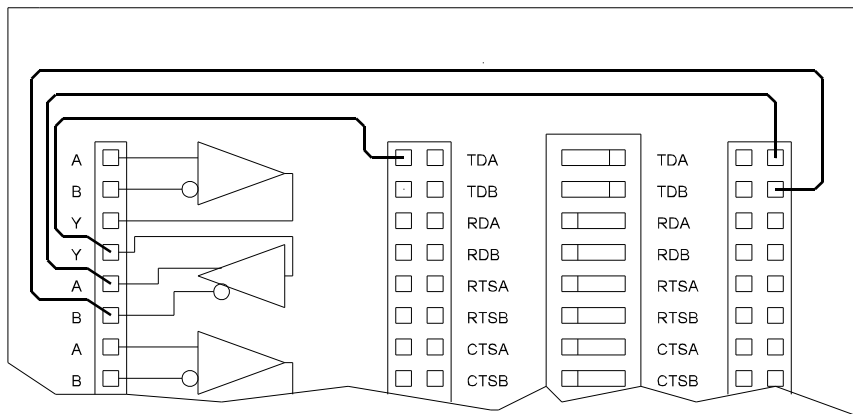
This will now convert the balanced signal to an unbalanced signal.



**To convert from an Unbalanced to a Balanced interface:**

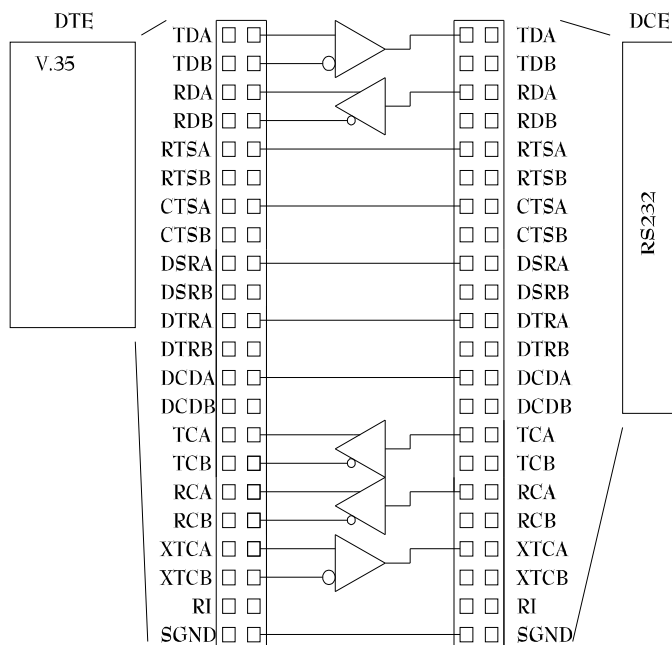
- o Open both switches for the desired signal.
- o Put a jumper from output A of the converter to "Signal A".
- o Put a jumper from output B of the converter to "Signal B".
- o Put a jumper from input Y of the converter to "Signal A" on the other side of the switch.

This will now convert the unbalanced signal to a balanced signal.



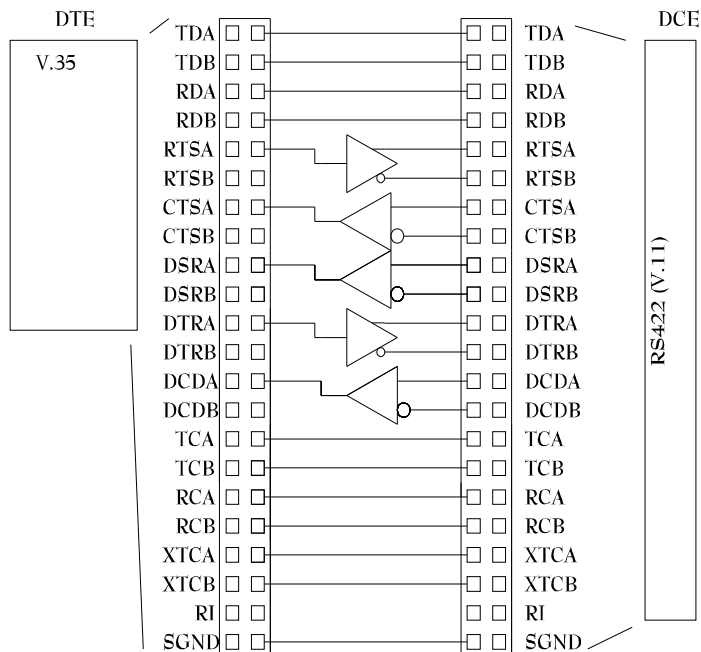
# EXAMPLES

CONVERT V.35 (DTE) TO RS232 (DCE)



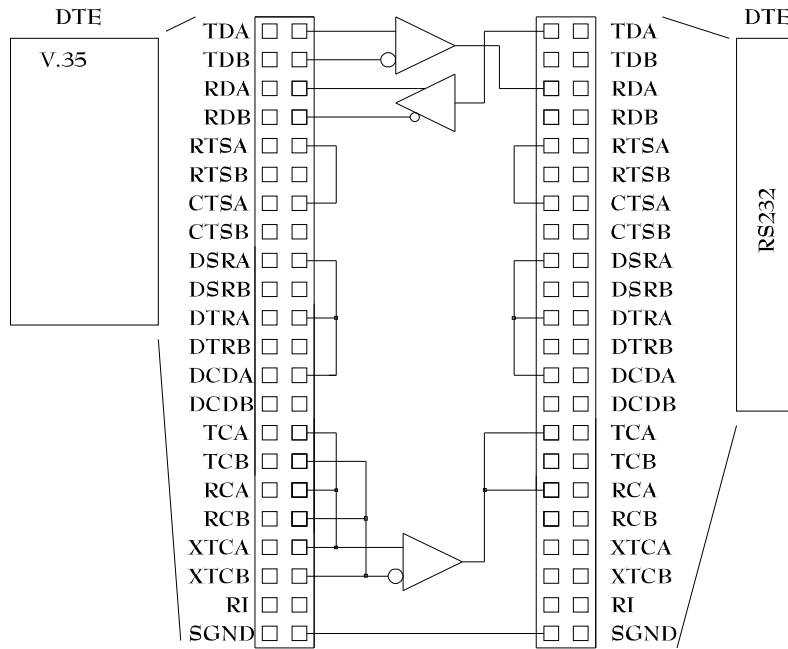
Note: A straight through connection can be achieved by closing the appropriate switch.

CONVERT V.35 (DTE) TO RS422 (DCE)

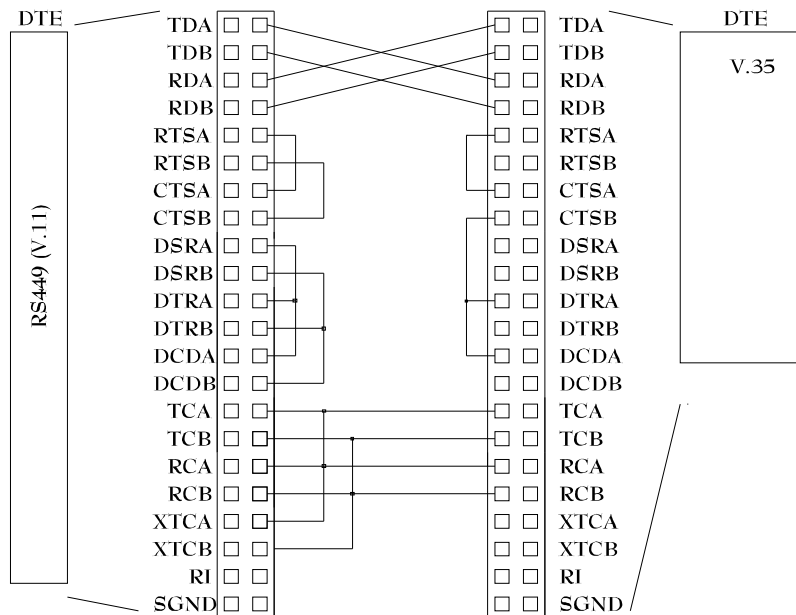


# EXAMPLES

V.35 (DTE) TO RS232 (DTE) NULL MODEM, V.35 PROVIDES CLOCK

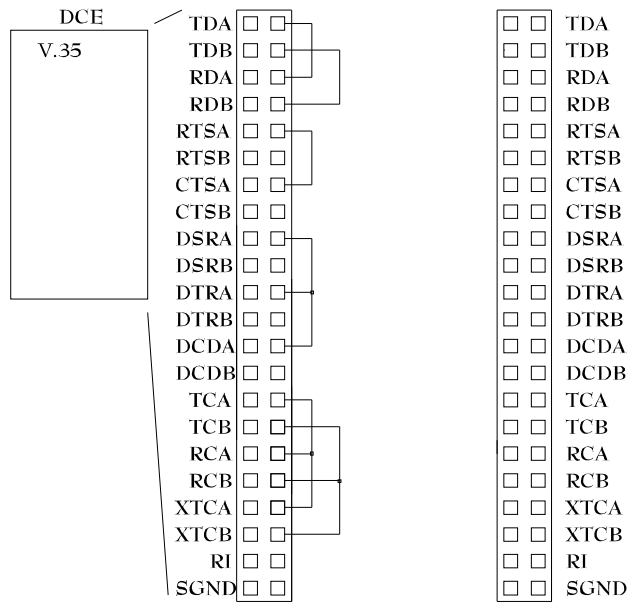


RS449 (DTE) TO V.35 (DTE) NULL MODEM, RS449 PROVIDES CLOCK

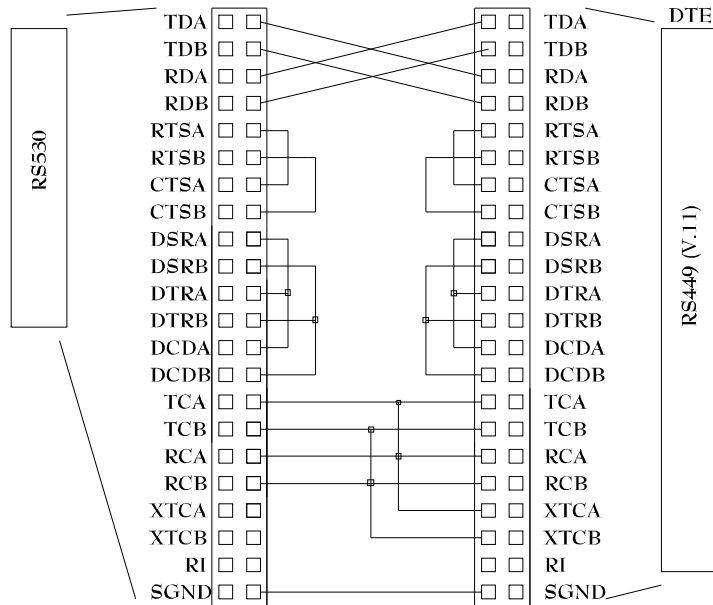


# EXAMPLES

## V.35 LOOPBACK

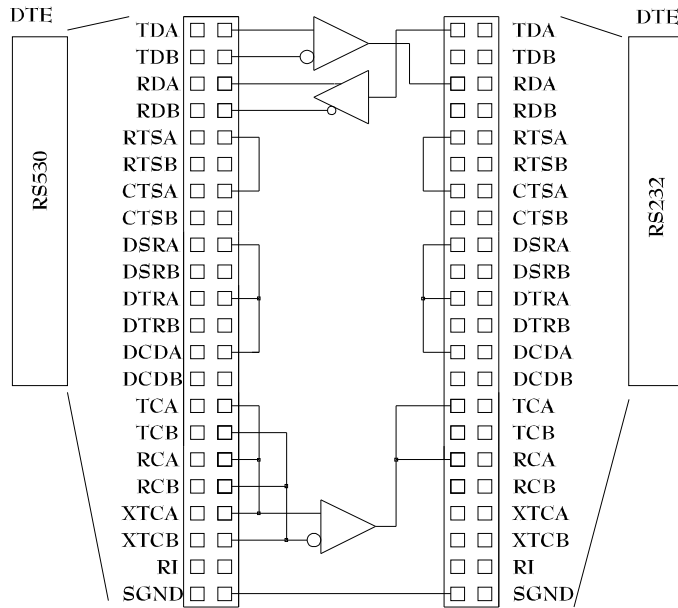


## RS530 (DTE) TO RS449 (DTE) NULL MODEM, RS449 PROVIDES CLOCK

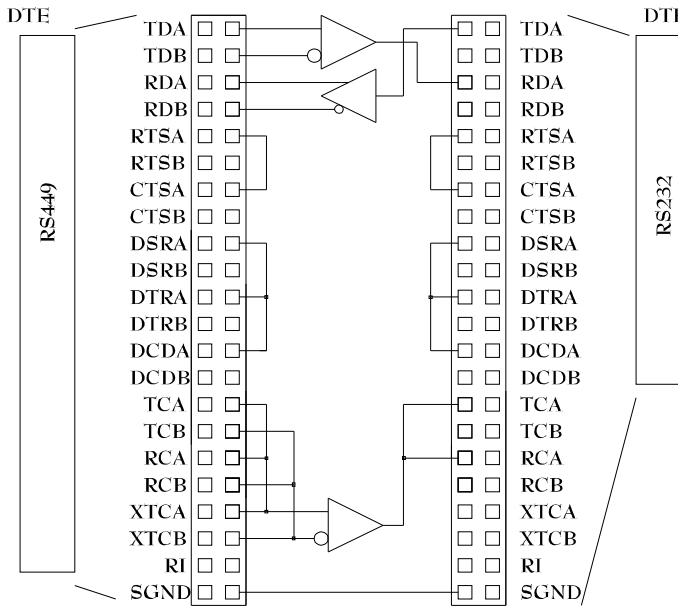


# EXAMPLES

RS530 (DTE) TO RS232 (DTE) NULL MODEM, RS530 PROVIDES CLOCK

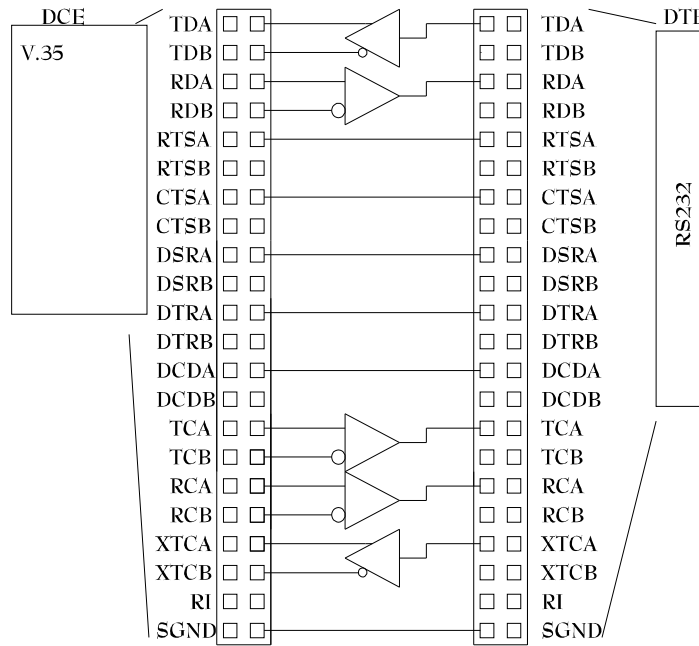


RS449 (DTE) TO RS232 (DTE) NULL MODEM, RS449 PROVIDES CLOCK

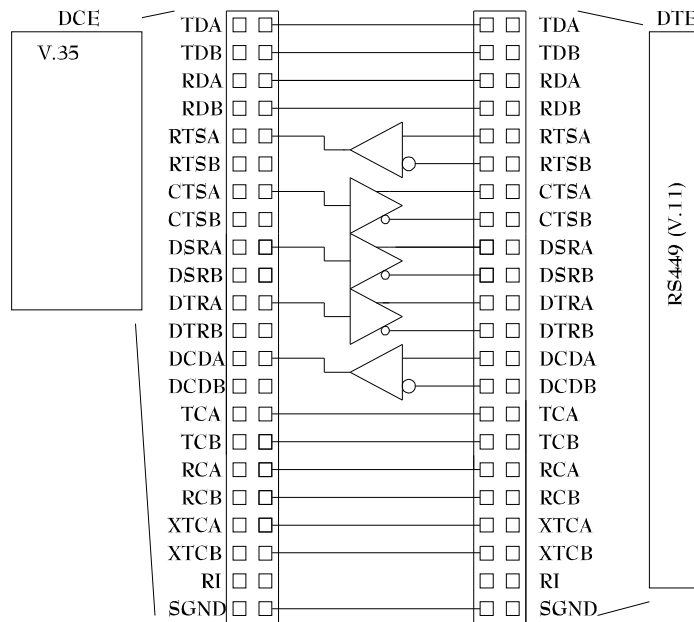


# EXAMPLES

CONVERT V.35 DCE TO RS232 DTE



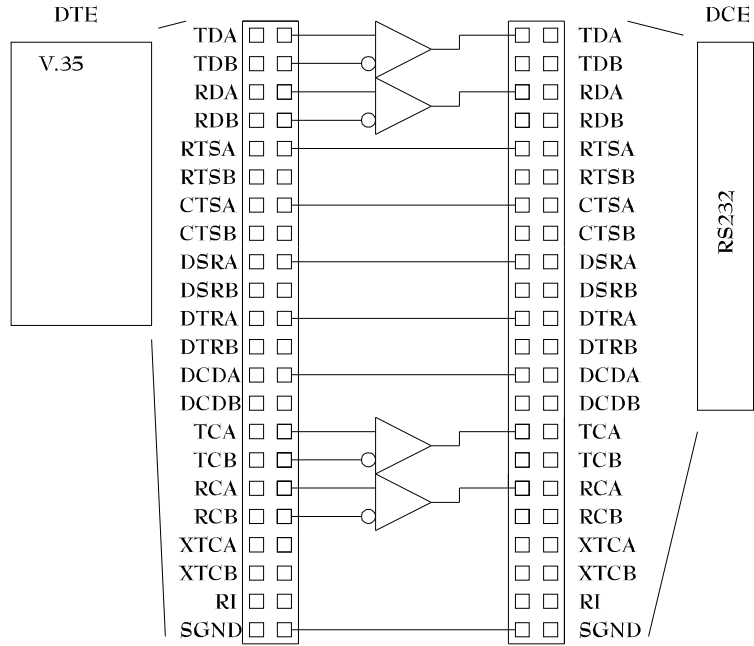
CONVERT V.35 (DCE) TO RS449 (DTE)



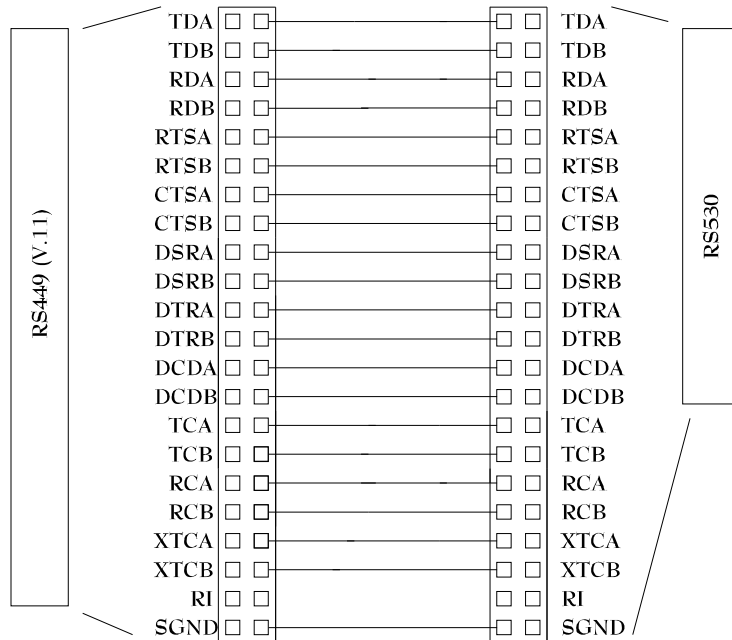


# EXAMPLES

## MONITOR V.35 ON RS232



## CONVERT RS449 (V.11) TO RS530



### Physical Connection Chart

V.35 Pin #	RS449 V.11 Pin #	RS530 Pin #	RS232 Pin#	UMATS Mnemonic
-----	-----	-----	-----	-----
P	4	2	2	TDA
S	22	14	(14)	TDB
R	6	3	3	RDA
T	24	16	(16)	RDB
C	7	4	4	RTSA
	25	19	(19)	RTSB
D	9	5	5	CTSA
	27	13	(13)	CTSB
E	11	6	6	DSRA
	29	22	(22)	DSRB
B	19	7	7	SGND
F	13	8	8	DCDA
	31	10		DCDB
Y	5	15	15	TCA
AA	23	12	12	TCB
V	8	17	17	RCA
W	26	9		RCB
H	12	20	20	DTRA
	30	23	(23)	DTRB
	15			RI
U	17	24	24	XTCA
W	35	11		XTCB
	37			SCOM
	20			RCOM
	33			SQ
	16			SR
	2			SI
J	10	18	18	LLB
BB	14	21	(21)	RLB
K	18	25	(25)	TM
	32			SS
	36			SB
	28			IS
	34			NS
L				TP
				5V

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Depending on the interface the signal may have more than one name, even though its function is the same, such as TD and SD (Transmit Data and Send Data). In this case the more common US mnemonic is used.

## General Features

**LEDs** - Each level converter has a tristate LED associated with it which will appear in the middle of the triangle. Connect these by hooking up the input of the level shifter to the pin(s) you want to view. These can be used to analyze the signals as follows:

**Red** indicates Low, Signal Mark, Control Off, V.24 negative voltage, V.11/RS422 voltage A > voltage B.

**Green** indicates High, Signal Space, Control On, V.24 Positive voltage, V.11/RS422 voltage A < voltage B.

**Orange** indicates that the signal is toggling.

**Jumpers** - Each major signal has two pins connected to it on each side (four pins total) to allow you to jump signals without needing daisy chain jumpers. These allow crossover/loopback or null modem designs to be accomplished on the unit.

The lowest group of pins, starting with SCOM and RCOM are single pins that do not connect to the opposite side. If these pins are needed, place a jumper from the left side to the right side.

**Power** - This can be provided by either battery or a wall mount transformer which will allow long term use with a data scope, bit error rate tester, or other monitoring device. To use the wall mount transformer, simply plug it into the jack labeled "Ext. Power" and place the switch in the Ext./Off position. For battery operation place the switch in the Battery position. Always turn off the unit by placing the switch in the Ext./Off position before storing.

**Battery replacement** - Remove the four screws and cover on the back of the UMATS. Remove the battery and replace with a similar kind. For long life alkaline batteries are recommended. Replace the cover and four screws. Be careful to not over tighten.

## UMATS Specifications

### Balanced to Unbalanced Level Converters:

Signal In type:	Balanced
Common Mode Range:	+/- 0.2V to 14V Max.
Impedance:	1k Ohms
Protection:	2000V ESD
Signal Out type:	Unbalanced
Common Mode Range:	+/- 10 Volts
Current Capacity:	10 mA
Protection:	Thermal Shutdown

### Unbalanced to Balanced Level Converters:

Signal In type:	Unbalanced
Common Mode Range:	+/- 0.3 to 25V Max.
Impedance:	2k Ohms
Protection:	2000V ESD
Signal Out type:	Balanced
Protection:	Thermal Shutdown
Common Mode Range:	0 to 5 Volts
Current Capacity:	100mA

### General Information:

Weight:	1 pound 9 ounces / 0.71 kilograms (with case and AC adapter)
Size:	Height 7.5", Width 4", Depth 1.5" (not including case or AC adapter)
Power:	9V Alkaline Battery or Transformer: 120VAC, 60Hz 3W/6-9VDC 200mA, UL/CSA

Made in the USA