CBL170 I/O Interface Cable for Model 831 and SoundAdvisor™ 831C

–Important–

For proper operation, connect the CBL170 cable to the sound level meter only when it is powered off. Some features of this cable only function if the CBL 170 is connected when the instrument is first powered on.

–Warning–

The Model 831/831C is a sensitive electronic instrument, which can be permanently damaged by application of out-of-range voltages, reversed polarity voltages, lightning-induced voltages, and electrostatic discharge on the input, output, and power lines exposed on the CBL 170 cable.

Use of the cable indicates your understanding of electronics and your acceptance that you are fully responsible for any damage that may occur through the use or misuse of this product.

Some features of the cable are only recognized when the instrument is first powered on. For proper operation, connect the cable to the Model 831/831C only while it is powered off.

The examples in this guide are for reference only and do not guarantee proper functionality for your application. Please use at your own risk.

LARSON DAVIS
A PCB DIVISION

Please read this document thoroughly— including the warnings found on the back page —BEFORE using this product.

—Connection Table—

The Pinout/Connection table is also shown in the Model 831 and SoundAdvisor 831C Reference Manuals.

Note for Model 831: CBL170 provides the nine most common signals; other signals from the 18-pin auxiliary connector may be used with the 831-INT Interface Module, or an outdoor environmental preamp cable. For Model 831 for serial numbers up to 3300 (manufacture date before 2014), max voltage is 2.7 V, instead of 3.3 V as shown below.

Signal Description	Pigtail Color	Terminal Block No.	DB-09 Pin No.	Power Jack	831 Pin #
Ground	Black	1	1	Sleeve (–)	1
Logic Out 3.3 V logic thru 1kΩ	Brown	2	2		2
+3.3 Volts Power Out thru 220Ω	Red	3	3		13
Logic In 3.3 V logic, +5 V max, -0.5 min	Orange	4	4		4
Wind Speed Input 5Vpp max Pulse, 0 to +5 V	Yellow	5	5		14
Wind Direction Input 2.048 V full-scale (831), 2.5 V full-scale (831C) 100kΩ load	Green	6	6		15
Sensor A Input 2.048 V full-scale (831), 2.5 V full-scale (831C) 100kΩ load	Blue	7	7		16
B Sensor Input 2.048 V full-scale (831), 2.5 V full-scale (831C) 100kΩ load	Violet	8	8		17
External Power Input +10.8 to +16 V	White	9	9 (In or out)	Tip (+)	7
Shield	Bare	n/a	Shell		Shell

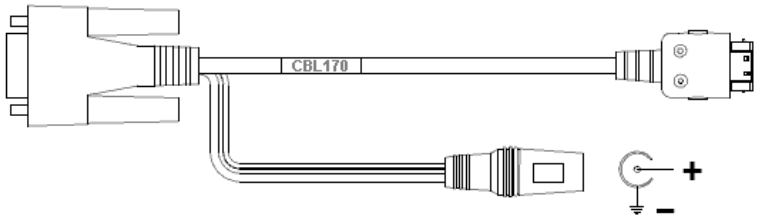
–Component Descriptions & Example–

CBL 170 to Model 831

Figure 1 shows the CBL170 to Model 831 portion, with the following connectors:

- A Hirose 18-pin connector that connects to the Model 831/831C I/O connector
- A 2.5 x 5.5 mm power jack (May be connected to PSA027: 12V DC out, 90 to 264V AC in Power Adapter)
- A female DB-09 connector for use with the pigtail cable, terminal block, or user supplied connector

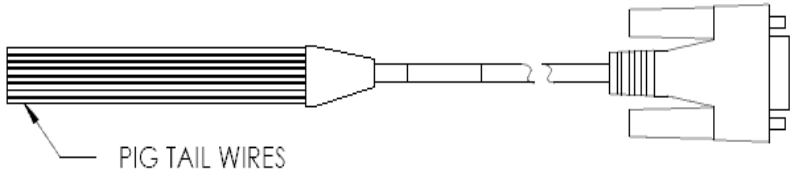
Fig. 1



CBL170 Breakout (Pigtail)

The CBL170 Breakout portion has a male DB-09 connector and 10 individual color-coded wires that may be connected as desired. The ends may be cut and stripped to the desired length based on the application. If additional length is required, a standard 9-pin D extension cable may be used (usually called an RS-232 extension cable). One common application is to connect a SwitchCraft ED903 or ED913 pushbutton to the Red and Orange wires for a remote Run/Stop button. (See Digi-Key ED913-ND or ED903-ND)

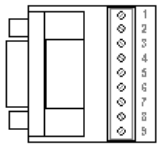
Fig. 2



CBL170 Terminal Block

The CBL170 Terminal Block provides easy access to each signal. Simple, discrete electronic components can be directly connected to the terminals, or wires from another circuit board can be connected to these terminals.

Fig. 3



Example Terminal Block Usage

The schematic in Fig. 4 on page 5 shows a use for every line. Ground is pin 1. Power for the circuit is obtained by using the +12-Volts from a PSA027 plugged into the power jack on the CBL170 that is presented on pin 9 of the terminal block.

The Logic Output (pin 2) is used to light an LED and trigger a camera shutter. A MOSFET turns them on when Logic Output is high (~+2.7-Volts).

Logic Input (pin 4) is connected to a push button switch (normally open) to provide remote Run/Stop operation. Power comes from the +3.3-Volts from the Model 831 (pin 3), and may require a pull-down resistor (for Model 831 with SN < 0002090 only).

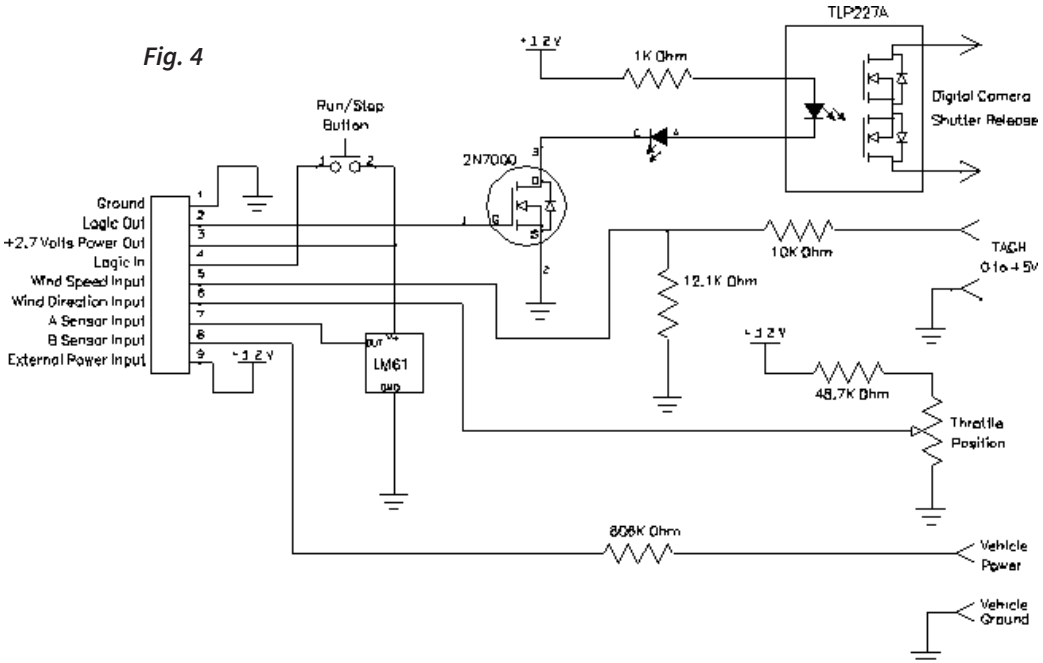
The Wind Speed input (pin 5) is used to record the pulse stream from a tachometer that outputs a 0 to +5-Volt logic signal.

The Wind Direction input (pin 6) is used to measure the position of the throttle. This is done by applying a simple potentiometer, which is scaled with resistors to provide a maximum voltage of +2.048-Volts to the input.

Sensor A Input (pin 7) is used to connect a remote temperature sensor. One example is National LM61, with temperature range −30° C to +100° C. Set scale to 204.8 and offset to -60.0.

Sensor B Input (pin 8) is used to measure the vehicle's power, which is nominally 12-Volts, approx. 0 to +16.3-Volts. Use a scale of 16.384 and offset of 0.0.

Fig. 4



—Purpose—

The CBL170 is used to interface the Model 831 or 831C to various external devices for control and measurement. The cable provides both a terminal block interface and pigtail extensions, with color-coded wires. It is used to make an electrical connection for a range of devices: from a simple push-button, which can start and stop a measurement, to more complex external sensors and indicators. Note: Use only one interface at a time—either the terminal block or the wire extension.

CBL170 also provides the means for powering the Model 831/C from an external source.

This document shows the connections available, specifies the electrical capability, and offers an example use for each line extension.

Distributed by

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