

Installation and Operation Guide

SmartCable™ Single Input Gage Interface

This guide describes how to set up and use the **SmartCable™** Single Input gage interface with your computer or any RS-232 serial device (RS-232 Output), or any Mitutoyo compatible external interface or device (Mitutoyo Output). Follow the instructions in this guide to:

- Set up and configure the **SmartCable™** to operate with your gage in the desired mode
- Connect the **SmartCable™** to the external device and power on
- Interface with the **SmartCable™** and assist in the configuration of your SPC software or other programs to accept or request output or reconfigure operating modes from the computer

System Requirements

Before you begin to setup and install the **SmartCable™** interface we recommend that you check to see that you have the following components and your system meets these requirements:

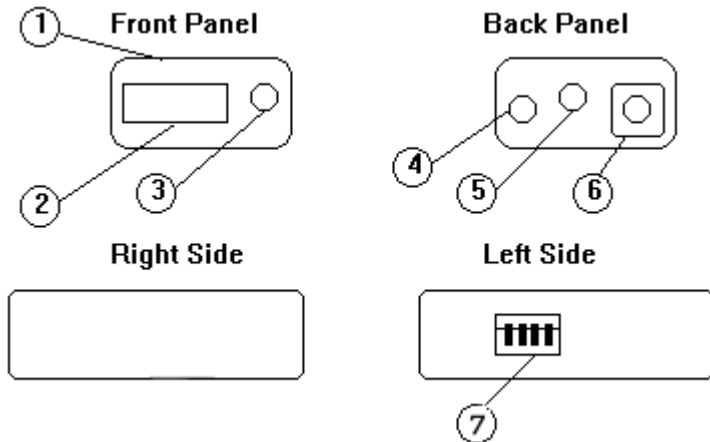
1. **SmartCable™** gage interface
2. Any Mitutoyo compatible device (GageMux multiple gage interface, Mitutoyo DP1, etc.)
3. Optional Power Supply (Available from Advanced Systems & Designs)



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SmartCable™ Interface Components

Below is a diagram showing the side panels of the **SmartCable™** interface and a description of each component.



1. LED Indicator (located on top)
2. Gage Input Connector (or cable to gage connector)
3. Foot switch Input Connector (2.5mm phono jack, standard contact closure switch)
4. Mode Reset Push-button
5. Output Interface Cable (to Mitutoyo device)
6. Power Jack Connector
7. Mode Selection DIP Switch

This program enables the serial port (COM1 in line 30 may be changed to COM2 as required) for input and output and when the “Enter” key is pressed it will request a reading from the **SmartCable™** and print the result on the screen. Press the “Esc” key to exit the program.

Change Setup of a Channel:

Syntax:
S<channel #><mode><CR>
Where channel # = 1,
mode = 0 for Normal, 1 for MIN
2 for MAX, or 3 for TIR
and CR = carriage return (or enter)

Example: S12<CR> will change mode of channel 1 to MAX

Change Output String Mode:

Syntax: 0<mode><CR>
Where mode = 1 for full string
or 0 for reading only and CR =
Carriage return (or return)

Example: 01<CR> changes output mode to full string

Program Example (RS-232 Output)

The following program can be used to test any RS-232 output format **SmartCable™** with any PC equipped with a serial port and with the capability to run a BASIC program.

```
10 ON ERROR GOTO 70
20 KEY OFF: CLS
30 OPEN "COM1:9600,N,8,1,CS,DS,CD" FOR RANDOM AS #1
40 K$ = INKEY$
45 IF K$ = CHR$(27) THEN GOTO 80
50 IF K$ = CHR$(13) THEN GOSUB 85
60 GOTO 40
70 PRINT ERR: RESUME 50
80 END
85 PRINT #1, "R1" + CHR$(13)
90 LINE INPUT #1, RD$
95 PRINT RD
100 RETURN
```

SmartCable™ Configuration and Setup

The DIP switch bank on the left side of the **SmartCable™** configures the interface to operate in various modes. The following is a description of these modes and instructions on how to set the switches for operation.

Note: The DIP switch bank switches are numbered 1 to 4 from left to right.

Switch #1: Input mode select (see table below).

Switch #2: Input mode select (see table below).

Switch	#1	#2
TIR	ON	ON
MIN	ON	OFF
MAX	OFF	ON
NRM	OFF	OFF

Switch #3: For RS-232 output **SmartCable™** only, sets reading only output string when OFF, full comma delimited output string when ON. In full output string mode the output of the interface for each reading is in the following format:

NNN, RRRRRRRRRR, MMM, CC<CR><LF>

Where NNN is the reading number, RRRRRRRRRR is the reading, MMM is the mode (MIN, MAX, TIR, NRM), and CC is the channel number. The ASCII text is followed by a carriage return and line feed. In reading only mode the output string is as follows:

RRRRRRRRRR<CR><LF>

Where RRRRRRRRRR is the reading and the ASCII text is followed by a carriage return and line feed as before

Switch #4: For CDI Gages only, this switch selects the decimal point location. The OFF position selects 4 digits after the decimal point (0.0000), ON selects 5 digits (0.00000).

Using Mode Keys with the **SmartCable™**

The optional connector on the right side of the can be used to configure the interface to operate in various modes. To change modes using a mode key, plug the key into the connector and press the reset button. The mode is now changed until either power is removed from the interface or the reset button is pressed. The mode key may be removed from the connector.

Connecting the **SmartCable™** & Powering On

To connect the **SmartCable™** interface to the external device, plug the interface cable connector to the connector on the external device (PC or other interface). Connect the gage cable to the gage or plug the gage into the **SmartCable™**

Power to the **SmartCable™** interface is provided through the interface cable connector for most applications. A power jack connector on the back panel is provided for those applications which do not provide power through this connector. (9V DC MAX input power, center pin negative)

On power up and any time the mode reset button is pressed, the interface will reconfigure itself to the various modes and the LED indicator should flash on and off one time to signal that the **SmartCable™** is ready to receive data.

Interfacing with the **SmartCable™**

Output String Formats (RS-232 Output)

The **SmartCable™** interface outputs data in one of two standard ASCII test strings based on mode settings (see Configuration and Setup section for DIP switch settings). The full comma delimited output string is in the following format:

NNN, RRRRRRRRR, MMM, CC<CR><LF>

Where NNN is the reading number, RRRRRRRRR is the reading, MMM is the mode (MIN, MAX, TIR, or NRM), and CC is the channel number (01). The ASCII text is followed by a carriage return and line feed. The reading only output string is in the following format:

RRRRRRRRR<CR><LF>

Where RRRRRRRRR is the reading and the ASCII text is followed by a carriage return and line feed as before.

*** Note: Communications parameters are 9600 Baud, No Parity, 8 Data Bits, 1 Start and 1 Stop Bit**

Host Commands (RS-232 Output)

The **SmartCable™** interface will accept various commands from the host computer to change the channel setup or request data from the gage. The following is a list of the commands and their formats. Note that any change to the mode using host commands takes effect immediately and lasts until the mode is changed from the host, the mode reset button is pressed (modes are always reset to DIP switch settings), or power is removed

Read Data from a Channel:

Syntax: R<channel #><CR>
Where channel # = 1 and CR = Carriage return (or enter)

Example: R1<CR> Requests a reading from channel #1