30 Series Programming Instructions

For 30 Series Calibrators

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Overview

INTRODUCTION

Thank you for choosing the 30 Series Calibrator from Crystal Engineering Corporation. When connected to a personal computer, using a standard micro USB cable, your 30 Series can be customized through the use of our free software, ConfigM30, available for download from **crystalengineering.net**. Also available for free download from our website are drivers for Labview®, a graphical programming language from National Instruments. The 30 Series can be operated remotely, as if you were pressing the buttons. You can use a simple terminal program to send the commands, or you can incorporate them into your own software program.

I/O Settings

Windows Certified drivers should be automatically downloaded from Microsoft and installed the first time a 30 Series product is connected to a PC via the USB port. (If not, the driver is available for download from our website.) This driver is compatible with Windows XP, Vista and 7, both 32 and 64 bit versions.

The 30 series will be assigned to a COM port. Should you need to change the default settings, they are as follows:

Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
4800	8	none	1	none

Communication

30 SERIES COMMUNICATION FORMAT

All Model 30 series products communicate and are calibrated through the micro USB interface. The port can be used to collect both displayed and internal data, and all front panel keys can be actuated with the exception of the **(contrast)** and **(power)** keys.

The interface contains optical isolation, so that there is no direct electrical connection between the internal circuits and the external micro USB interface. This eliminates the possibility of ground loops, which may affect the accuracy of measurements. It also presents an electrically dead connection (versus live, exposed pins) when the unit is used in areas requiring intrinsic safety.

The Model 30 series products respond to one or two byte commands.
Two byte commands are used to distinguish between P1 and P2, for the Zero and Units keys.

Command Table

Command (ASCII)	Operand	Description	Response
Z	"1" or "2" ASCII	Zero / Tare	Same as pressing P1 or P2 ZERO key
C	(none)	Continuous Data Collection	See Data String Format Table
S	(none)	STOP collecting data	n/a
V	(none)	Firmware version	Transmits Firmware version
P	"1" or "2" ASCII	P1 or P2 Units key	Same as pressing P1 or P2 UNITS key
m	(none)	Press mA key	Same as pressing mA key

Data Strings

Once an ASCII "C" is sent, the unit will begin transmitting 31 byte, fixed length ASCII strings. The data string is identified by the prefix, has delimeters between fields, and a line terminator that reflects battery condition. The last character of the 31-byte string is one of three battery status characters. If the battery is good the character is ">", if the battery is low the character is "<", and if the battery is dead (too low for accurate operation) the character is a question mark "?".

Data String Format Table

Prefix (3 bytes)		,	Data	,	Data	,	Data	,
`P(S)(R)`	`S` = Sensor number `R` = Range number	'	8 bytes of direct ADC output	'	8 bytes of displayed data	'	8 bytes of internal offset/tare value	*
`mA(R)`	`R` = Range number	'	8 bytes of direct ADC output	'	8 bytes of displayed data	n/a	18 bytes of ASCII spaces	*
`P(S)T`	`S` = Sensor number	'	8 bytes of direct ADC output of sensor temperature signal	n/a	18 bytes of ASCII spaces	*		
`Amb`		'	8 bytes of direct ADC output of sensor temperature signal	n/a	18 bytes of ASCII spaces	*		
`BxC`	`x` = `Z` for zero -or- `x` = `S` for span `C` = ADC channel number	n/a	27 bytes of ASCII spaces. This is a background calibration of the analog to digital converter - no data.	*				

' = Delimiter

n/a = no delimiter is present for marked location in that string

* = Terminator: > or < or ?

> = good battery

< = low battery

? = expired battery (readings are not valid)

Model Ranges

The standard Model 33 range serial numbers `2262*-xxxxxx` are:

LP Sensor	HP Sensor	
(Eight Ranges)	(Three Ranges)	(Five Ranges)
P11= inH$_2$O	P21= bar	P21= kg/cm^2
P12= mbar	P22= kPa	P22= bar
P13= kg/cm^2	P23= PSI	P23= Mpa
P14= mmHg		P24= kPa
P15=mmH$_2$O		P25= PSI
P16= kPa		
P17= inHg		
P18= PSI		

Support

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If calling, have ready the model number, serial number, date of purchase, and reason for return. You will receive instructions for returning the device to us.

Crystal pressure

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**TEST & CALIBRATION
INSTRUMENTS**

ISO 9001:2008 17025:2005

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