Universal Interface

4100 Universal Interface Option 6 and 7

SPECIFICATIONS AND OPERATOR MANUAL

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SERIAL OUTPUT INTRODUCTION

The Serial Output is a single active 20ma current loop (current supplied by the UIB PCA0109) or an RS232 compatible output. The output character format can be set to be compatible with most printers and computers. The output can be set for a continuous output for use with controllers and computers, or can be activated on demand by a switch closure. Also included is a selectable autoprint with two print modes. "Autoprint 1" will print all stable weights. "Autoprint 2" will print only one weight when stable above zero and then must return to zero before it will print another stable weight.

These specifications are subject to change without notice.

B. SERIAL CHARACTER FORMAT

All characters are in ASCII and can consist of the following:

1 Start Bit
7 or 8 Data Bit*
Even, Odd, or no Parity
2 Stop Bits

* With parity enabled there are 7 data bits and 1parity bit. With parity disabled, there are 8 data bits in which the 8th bit is a "dead zero". Desired character format can be selected via internal DIP switches.

C. SERIAL DATA FORMAT

The data formats are:

1. Standard format in manual demand and Autoprint modes for LB,KG,and OZ weight display modes:

| STX | POL | DATA | SP | LB/KG/OZ | SP | OVER
ACPT
UNDR | CR+LF |

2. Standard format in manual demand and Autoprint modes for LB & OZ weight display mode (not available in units with Keyboard option):

| STX | POL | DATALB | SP | LB | SP | DATAOZ | SP | OZ | OVER
ACPT
UNDR | CR+LF |

3. Standard format in continuous mode for LB,KG, and OZ weight display modes:

| STX | POL | DATA | L/K/O | ST | CR+LF |

4. Standard format in continuous mode for LB & OZ weight display mode (not available with Keyboard option):

| STX | POL | DATALB | L | SP | DATAOZ | O | ST | CR+LF |

Where:
- STX: Non-recording "Start of Text" character (ASCII 02H).
- POL: Polarity sign. A space is transmitted for positive data and a minus(-) is transmitted for negative data.
- DATA: Six digits of data including decimal points. Leading zero suppression with leading zeroes transmitted as spaces.
- ST: One character field used in continuous output mode only to indicate the status of the scale.

Characters listed in order of priority.

Character	Description
"M"	Motion
"O"	Scale in Over
"A"	Scale in Accept
"U"	Scale in Under
"SP"	None of the above

SP: Space Character

CR+LF: Two character field, "Carriage Return" and "Line Feed" characters, used to signal end of message.

OVER/:
ACPT/
UNDR/ Four character field for demand mode. Checkweigh status.

OVER = Scale in Over
ACPT = Scale in Accept
UNDR = Scale in Under

DATALB: One to three character field (depending on scale capacity) for integral pound weight data in pounds and ounces. Leading zeros are transmitted as spaces.

DATAOZ: Two to five character field (depending on scale capacity) including decimal point for ounce weight data in pounds and ounces. Leading zeros are transmitted as spaces.

LB/KG/OZ: Two character field for weight units.

LB for pounds
KG for kilograms
OZ for ounces

L/K/O: One character field for data identification in continuous mode.

Weight in LB = "L"
Weight in KG = "K"
Weight in OZ = "O"

D. DEMAND, CONTINUOUS, and AUTOPRINT MODE:

Serial data transmission can be initiated in either of four ways as follows:

1. DEMAND:

The demand mode is used to interface to printers and requires a manual "print" command (switch closure), to initiate data output in the format described in Section C. An optional "print" button can be provided with any 4100 scale. The output is inhibited during the following conditions:

a. Scale in motion
b. Positive/Negative Overload
c. Scale in display test mode

2. CONTINUOUS:

The continuous mode is used to interface to computers and transmits the data automatically following each update of the display, in the format described in Section C.

3. AUTOPRINT:

a. AUTOPRINT 1: When the data output mode is set to "AUTOPRINT 1", the scale will transmit once and only once for each stable weight. Data transmission occurs any time scale goes into motion and stabilizes again.

This output mode can be used either with a printer or computer/data-logger when a complete sampling of weights is required and a minimum of operator intervention is desired.

b. AUTOPRINT 2: When the data output mode is set to "AUTOPRINT 2", the scale will transmit stable weights above gross zero (empty platform) once and only once for transition from zero to the weight. This means that when an object is placed on the platform, the scale reading will increase to its weight and stabilize. At this point the data output will transmit the displayed weight data and remain disabled until the scale returns to gross zero (empty platform). Then the data output is enabled to transmit the next stable weight.

This differs from the AUTOPRINT 1 mode in that the weight must return to zero before the next weight data can be sent.

The AUTOPRINT 2 output mode is useful with printers or computers where there is a need for large number of high quality weight samples with a minimum of operator intervention.

E. DIP SWITCH SETTINGS FOR UIB (PCA0109)

SW1		1	2	3	4	5	6	7	8
Autoprint Selections:	Autoprint on	1							
	Autoprint off	0							
	Autoprint 1		1						
	Autoprint 2		0						
Parity Selections:	Even parity			0					
	Odd parity			1					
	Parity on				0				
	Parity off				1				
Transmission Mode:	Transmit on demand					0			
	Continuous output					1			
Baud Rate Selections:	110						0	0	0
	300						0	0	1
	1200						0	1	0
	2400						0	1	1
	3600						1	0	0
	4800						1	0	1
	7200						1	1	0
	9600						1	1	1

1 = closed or on. 0 = open or off.

Note: When parity is turned off, the data character is an 8 bit ASCII character with the 8th character being a zero. when parity is turned on, the character becomes a 7 bit ASCII character with the 8th bit being the parity bit.

F. DIP SWITCH SETTING FOR 4100 (PCA0101)

SW3		1	2	3	4
Units Selection:	LBS	0	0		
	OZS	0	1		
	KGS	1	0		
	LBS & OZS	1	1		
Display Selection:	Internal Counts			0	
	Weight Display			1	
Tolerance Selection:	DVT Enabled				0
Software before rev 3.0	DVT Disabled				1
Standard software rev 3.0 or 2, 5, or 10lb SP rev 3.1	AZM Enabled				1
	AZM Disabled				0

Note: SW3-5 through SW3-8 select proper tolerance. Refer to the 4100 Operating and Service Manual for more information.

G. SERIAL TERMINAL BLOCK CONNECTIONS, TB1.

TB1 Pin	Function	Serial Cable Color Code
1	Print Switch	Green
2	RS232 txd	Red
3	20ma + txd	Red
4	20ma - txd	Black
5	Spare	
6	Spare	
7	Spare	
8	Signal Gnd	Black/ White

PARALLEL OUTPUT INTRODUCTION

The Parallel Output Option is a positive true 5 volt BCD (binary coded decimal) TTL output. The output is compatible with most printers and computers utilizing a parallel interface. Parallel output is not available with the Keyboard Option. Specifications subject to change without notice.

I. PARALLEL DATA FORMAT

The output has, at terminal block 2 (TB2), 5 1/2 digits of BCD data, motion, busy, and polarity.

J. PARALLEL HARDWARE

The Parallel output can source 1 TTL load and sink 10 TTL loads and is not Centronix compatible.

K. PARALLEL TERMINAL BLOCK CONNECTIONS, TB2.

TB2 Pin	Function		Cable Color Code
1	Digit 1	Bit 1	Orange/Red
2		Bit 2	Blue
3		Bit 4	Blue/Red
4		Bit 8	Black
5	Digit 2	Bit 1	Orange
6		Bit 2	Green
7		Bit 4	Black/Red
8		Bit 8	Orange/Black
9	Digit 3	Bit 1	Orange/Green
10		Bit 2	Red
11		Bit 4	Blue/Black
12		Bit 8	White
13	Digit 4	Bit 1	Blue/White
14		Bit 2	Red/White
15		Bit 4	Green/White
16		Bit 8	Green/Black
17	Digit 5	Bit 1	White/Red
18		Bit 2	White/Red/Black
19		Bit 4	Red/White/Black
20		Bit 8	Black/White/Red
21	Spare		Not Used
22	Spare		Not Used
23	Motion	0v = Motion 5v = Stable	Black/White
24	Neg sign	0v = neg 5v = Pos	Green/White/Black
25	Busy	0v = Busy 5v = Stable	Red/Black
26	Ground		Red/Green