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Section 1: Mounting Dimensions / Viewing



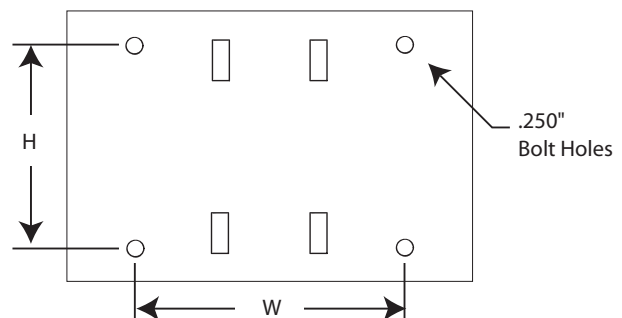
Display Information

Viewing Distances (Ft.)

Model	W	X	H	X	D1	X	D2	Weight	Minimum	Optimum	Maximum
SBL-2	12.25		4.75		5.625		8.375	8 lbs.	2'	5-25'	75'
SBL-4	26		7.375		6.625		9.375	15 lbs.	10'	20-100'	150'
SBL4-SG	29.75		7.375		6.625		9.375	17 lbs.	10'	20-100'	150'
SBL-6	35.375		10.25		6.625		9.375	23 lbs.	15'	50-200'	250'
SBL-6SG	39.25		10.25		6.625		9.375	26 lbs.	15'	50-200'	250'
SBL-9	60		14.375		6.625		9.375	50 lbs.	25'	75-375'	375'
SBL-9SG	69.5		14.375		6.625		9.375	55 lbs.	25'	75-375'	375'

Mounting Dimensions

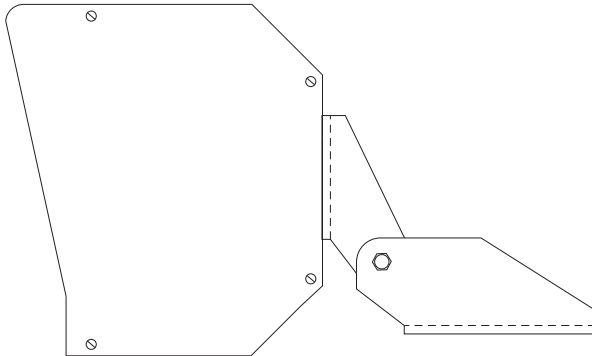
Model	W	H
SBL-2	4"	3"
SBL-4	4"	3"
SBL-6	8"	3"
SBL-9	8"	5.5"



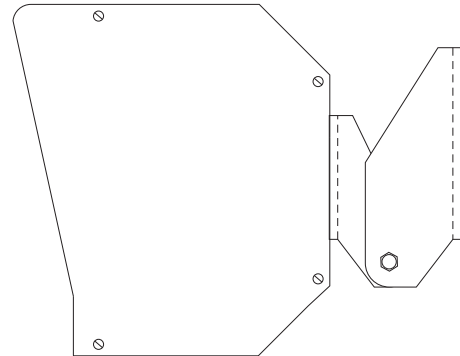
Section 1: Mounting Options



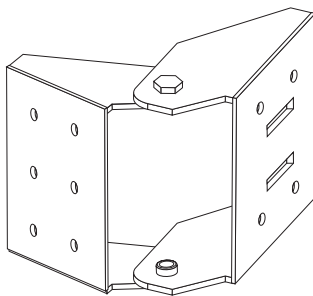
Roof Mount



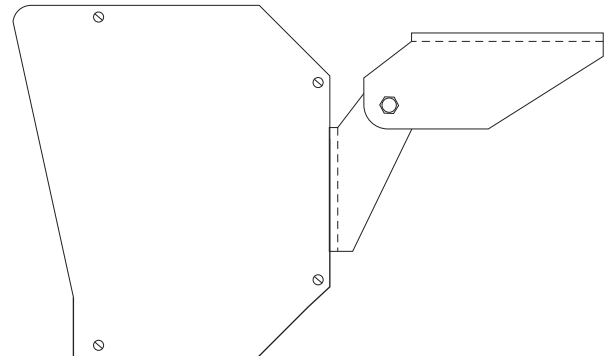
Wall Mount



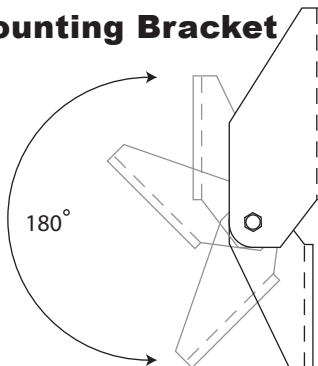
Side Mount



Eave Mount



Mounting Bracket



Section 2: Wiring Configuration



Connect the Scale indicator using the appropriate diagram.

	Indicator	Pin	Display	Connector Pin Out
Indicators with Active 20 mA Output	+20mA	6	CL (+)	1 VCC
	-20mA	5	CL (-)	2 GND
Indicators with Passive 20 mA Output	+20mA	1	VCC	3 232 RXD
		2	GND	4 232 TXD
		5	CL(-)	5 CL(-)
	-20mA	6	CL(+)	6 CL(+)
Indicators with RS232 Output	TXD	3	232 RXD	7 RX 422A
	GND	2	GND	8 RX 422B
Indicators with RS422 Output	TX 422A (+)	7	RX 422A	9 TX CL(-)
	TX 422B (-)	8	RX 422B	10 TX CL(+)
				11 TX 422A
				12 TX 422B
				13 13 GREEN
				14 14 RED

The corresponding green LED will blink when the following three requirements are satisfied.

1. The display is powered on.
2. The indicator's port is enabled to transmit continuously.
3. The wires are connected to the terminal block as previously described.

The display will learn "automatically configure" to the transmitting device when the **LEARN** button is pressed at the end of startup. It will display the BAUD rate and then display the weight. Pressing **LEFT** or **RIGHT** will move the displayed stream accordingly until the desired data can be seen on the display.

Section 3: Quick Setup Procedures



If possible place a weight on the scale. Wire up the display according to Section 2 and configure the transmitting device to output continuously. Press and release the **RESET** button on the display. While the display is counting down from 9 to 0 hold the **LEARN** button. At the end of countdown the display will flash "LEARN" then the BAUD rate such as 1200 and then the weight. Shift the data using the **LEFT** and **RIGHT** buttons until the desired weight is in view.

SBL Series Specs

Power	Interface
117 VAC or 12 VDC 2 Amp max 12 Watt (AVG) 26 Watt (MAX)	RS 232 20 mA Current Loop Active/Passive RS 422
Protocol	
8 Data bits No Parity 7 Data bits Odd Parity 7 Data bits Even Parity 300 to 19200 Baud	

The SBL Series has an echo feature which will take the received data stream and echo it out to further displays via RS 232, Current Loop or RS 422.
(To transmit RS 422 remove the 8 pin SP485 in socket U5 and place it in U8)

The echo feature transmits every other data stream unless option 4 is enabled.
See Section 6 for more details.

Section 4: **Changing Intensity**



To change the display's intensity:

Press and release the **RESET** button

Hold the **RIGHT** button during countdown

At the end of countdown the **RIGHT** button will toggle between displaying "high" and "low"
(on 7 segment displays "lo" is displayed)

Select the desired intensity and press **LEARN** to save changes

Factory default is "low"

***Intensity may also be adjusted using Option 27 (See Sections 5/6)**

Section 5: Option Summary



To enter into the options hold the **LEFT** button during power up. At the end of the countdown the display will display "OPTION". Once in options, **LEFT** will cycle through the option numbers. The **RIGHT** button will toggle between On/Off for some options and will enter into an advanced menu for more complicated options. See specific options in Section 6 for more advanced option descriptions. Pressing **LEARN** at any time will save the settings and reset the display. To restore to factory default, press both the **LEFT** and **RIGHT** button simultaneously during countdown.

#	Name	Description for "ON" Value
0	Reset	Resets all settings to factory defaults
1	Version	Displays the current software version
2	Toledo / Fairbanks	Decodes Toledo / Fairbanks status bytes
3	Timeout Length	Maximum time allowed between data transmissions Default = 5 seconds
4	On Demand	Data received less than once a second
5	No Data	Set what is displayed when no data is received
6	Fixed Decimal	Sets a fixed decimal point position
7	No Count Down	Does not count down on startup
8	No 0 Suppression	Does not suppress leading 0's
9	Alpha	Will display alpha and numeric characters
10	Mirror	Displays data to be seen in a rearview mirror
11	Addressable	Makes the display addressable
12	No Auto Shift	Disable auto shifting while learning
13	Fixed Shift	Set a fixed shift amount
14	Fixed Baud	Sets a fixed baud rate
15	Fixed End Character	Sets a fixed end character
16	Minimum Weight	Sets the minimum weight to display
17	Maximum Weight	Sets the maximum weight to display
18	Blank Out Character 1	Sets a character to cause the scoreboard to blank
19	Blank Out Character 2	Sets a character to cause the scoreboard to blank
20	Blank Out Character 3	Sets a character to cause the scoreboard to blank
21	Red Stoplight	See Section 7
22	Green Stoplight	See Section 7
23	Grams/Ounces	Display annunciators for grams and ounces
24	Fairbanks Addressable	Addressable for Fairbanks 40-41
25	Fixed Annunciators	Choose the LB/KG and GR/NT annunciators indicated regardless of data stream
26	Demo Mode	Cycle through different weights as a demo
27	Intensity	Set the intensity low (off) or high (on)
28	Siemens	Use Siemens BW500 Modbus Protocol (manual at www.matko.com/siemens/)
29	Hardware Test	Test Serial ports hardware

Section 6: Option Details



0: Restore Factory Defaults

Option 0 resets the display to factory default. It erases all data stored in non-volatile RAM including shift amount, baud rate, end character, and sets all options to off.

1: Version

Option 1 displays the software version of the display. The unit will display the month, followed by the year. This option is only used for trouble shooting purposes.

2: Toledo

When Option 2 is set to 1 or 3 the unit will decode standard Toledo Style Data Stream. When Option 2 is set to 2 or 4 the unit will decode extended Toledo Format Stream. Settings 1 and 2 will set annunciators for the SBL-4A and SBL-6A, while settings 3 and 4 will decode LB/KG GR/NT for standard Matko units with annunciator dots.

Status Byte A			
Decimal Position	Bit 2	Bit 1	Bit 0
X	0	1	0
0.X	0	1	1
0.0X	1	0	0
0.00X	1	0	1

Status Byte B	
Function	Bit
Gross / Net, Net = 1	0
Under Zero, Negative = 1	1
Overcapacity = 1	2
Motion = 1	3
Lb / Kg, kg = 1	4

3: Timeout Length

Option 3 is used to set the timeout length. The timeout length is the maximum amount of time expected between data streams before communication is considered interrupted. The default (0/Off) acts as a 5 second timeout, all other values represent the number of seconds the display will wait for a new data stream. The display will then do one of three things after the timeout depending on how Option 5 is set. The maximum timeout allowed to be set is 255 seconds. While in setup for the time out option **LEFT** decrements the value and **RIGHT** increments.

4: Display on Demand

Option 4 sets the display for On Demand mode. It is recommended to be turned on when connected to the print button of an indicator or when data is only sent once every 2 or more seconds. While in On Demand mode the display will wait for and display every data stream. While in the default (off) the display uses every other data stream to ensure data integrity.

Option Details Cont.



5: No Data

Option 5 sets the display to do one of three things after a data stream time out. The default is to display "NoData". The other two options are "Clear" (blank the display) and "Hold" (keep the last weight sent). The time out length can be specified with Option 3. **RIGHT** toggles between the three choices, "NoData", "Clear", and "Hold"

6: Fixed Decimal Point

Option 6 will set the display to illuminate a decimal point when it is not present in the data stream. Default (off) will show a decimal point only where it is located in the data stream. All other values represent the digit to attach a decimal point to, starting from right to left.

Value	Decimal Placement
0	Default
1	#####
2	#####.
3	####.##
4	###.###
5	##.####
6	#.#####

7: No Count Down

Option 7 will disable the display from counting down from 9 to 0 when powered up.

8: No Zero Suppression

Option 8 will disable the display's ability to suppress leading "0"s with spaces. The default (off) will display a space for all leading "0"s up to the final two in the 1s and 10s column or up to a "0" immediately in front of a decimal point. For example when the option is off the stream "000000" will become " 00" and the stream "0000.00" will become " 0.00".

9: Display Alpha Characters

Option 9 will enable the unit to display both alpha and numeric characters. The default (off) will replace all non-numeric with spaces. A 7 segment display is limited by the alpha characters it can display. For example it can not display characters such as "x", "q", "k", "!" or "?".

Option Details Cont.



10: Mirror

Option 10 enables a display to be read in a rear view mirror. The default (off) is for direct viewing.

11: Addressable

Option 11 will set the display to be addressable. The display will ignore any characters until the addressable character is received, then display the data immediately following it. The addressable character can be set to any character from 1 to 255. The number selected represents the decimal equivalent of the desired character. For example if an "A" is at the beginning of the data stream then you would set the address to 65. **LEFT** decrements the character value and **RIGHT** increments the character value. See Section 9 for ASCII character values. If the indicator is sending 7 data bits even or odd parity then the parity bit may change the decimal value of the character by adding 128 to it. We recommend setting the indicator to 8 data bits no parity for convenience. Default (off) uses standard data stream.

12: No Auto Shift

Option 12 will cause the scoreboard to display the first 6 characters of the data stream when it is learned. When this option is off the scoreboard will attempt to shift the weight into view when learned.

13: Fixed Value

Option 13 is used to set or view the shift amount. **LEFT** decrements the value and **RIGHT** increments the value. Has the same effect as shifting Left and Right during normal operation

14: Baud Rate

Option 14 is used to set or view the Baud Rate. **RIGHT** will cycle through the options. 0/Off indicates the unit has not been set, 1 = 300, 2=600, 3=1200, 4=2400, 5=4800, 6=9600 and 7=19200.

15: End Character

Option 15 is used to set or view the end character. When in learn mode the unit will look for an end of text(ETX), line feed(LF) and a carriage return(CR), which have decimal values of 3, 10, and 13 respectively. Any character may be manually selected through this option by setting it to the desired decimal equivalent of the desired character. **LEFT** decrements the character value and **RIGHT** increments the character value. See Section 9 for ASCII character values. If the indicator is sending 7 data bits even or odd parity then the parity may change the decimal value of the character by adding 128 to it. We recommend setting the indicator to 8 data bits no parity for convenience.

Option Details Cont.



16: Minimum Weight

Option 16 sets the minimum weight that the unit will display. **LEFT** will change the value of the selected digit and **RIGHT** will change which digit is selected. For example if you set the minimum weight† to "000030" and the indicator is sending "000000" then the display will go **BLANK** until the threshold value is exceeded.

17: Maximum Weight

Option 17 sets the maximum weight that the unit will display. **LEFT** will change the value of the selected digit and **RIGHT** will change which digit is selected. For example if you set the maximum weight to "100000" and the indicator is sending "120000" then the display will go **BLANK** until the weight drops below the threshold value.

18: Blank Out Character 1

Option 18 sets a character in the data stream to look for to blank the display. For example if you want the display to blank when over capacity and the indicator sends an "O", set option 18 to 79.

19: Blank Out Character 2

Option 19 sets a character in the data stream to look for to blank the display. For example if you want the display to blank when over capacity and the indicator sends an "O", set option 18 to 79.

20: Blank Out Character 3

Option 20 sets a character in the data stream to look for to blank the display. For example if you want the display to blank when over capacity and the indicator sends an "O", set option 18 to 79.

Option Details Cont.



21: Red Stoplight

See section 7.

22: Green Stoplight

See section 7.

23: Grams / Ounces

Annunciator will display according to the following chart when the designated character is in the data stream.

Character	Display	Designator for
"G" or "g"	"G"	Gross Weight
"N" or "n"	"N"	Net Weight
"L" or "l"	"L"	Pounds
"K" or "k"	"kg"	kilograms
"M" or "m"	"gr"	grams
"Z" or "z"	"oz"	Ounces

24: Fairbanks Addressable

Set option 24 only if the Fairbanks indicator is sending out multiple streams, ie. gross and tare weights. Set the option according to the chart.

Value	Addressable for	Value	Addressable for
1 Scale 1	40 with 7 data bits odd parity	11 Scale 3	42 with 8 data bits no parity
2 Scale 2	41 with 7 data bits odd parity	12 Scale 4/Total	43 with 8 data bits no parity
3 Scale 3	42 with 7 data bits odd parity	13 Scale 2	46 with 7 data bits odd parity
4 Scale 4/Total	43 with 7 data bits odd parity	14 Scale 3	52 with 7 data bits odd parity
5 Scale 1	40 with 7 data bits even parity	15 Scale 4	58 with 7 data bits odd parity
6 Scale 2	41 with 7 data bits even parity	16 Scale 5	64 with 7 data bits odd parity
7 Scale 3	42 with 7 data bits even parity	17 Scale 6	70 with 7 data bits odd parity
8 Scale 4/Total	43 with 7 data bits even parity	18 Scale 7	76 with 7 data bits odd parity
9 Scale 1	40 with 8 data bits no parity	19 Scale 8	82 with 7 data bits odd parity
10 Scale 2	41 with 8 data bits no parity	20 Sum of all Scales	99 with 7 data bits odd parity

Option Details Cont.



25: Fixed Annunciator

Option 25 will disregard the characters in the data stream and force the annunciators on according to the following chart

Value	SBL-2	SBL-4 and SBL-6	SBL-4A and SBL-6A
0	Use Data Stream	Use Data Stream	Use Data Stream
1	LB - GR		lb - G
2	KG - GR		kg - G
3			gr - G
4			t - G
5			T - G
6			to - G
7		KG - NT	pw - G
8		LB - NT	oz - G
9	LB - NT		lb - N
10	KG - NT		kg - N
11			gr - N
12		LB - GR	t - N
13			T - N
14		KG - GR	to - N
15			pw - N
16			oz - N

26: Demo Mode

Option 26 is used to set the display to cycle through various weights for use as a demo unit without connecting to an indicator.

27: Intensity

Option 27 is used to set the LED intensity to low (OFF) or High (ON). See Section 4 for an alternative way to set the intensity.

28: Siemens

Option 28 enables the remote display to use a Siemens Milltronics BW500 Integrator and will direct the remote into a Siemens Sub Menu. Siemens Sub Menu Options may be downloaded at www.matko.com/siemens

29: Hardware Test

Option 29 enables the remote display to test the serial ports by adding jumper wires. Test the RS232 connection with a jumper between RXD and TXD or test Current Loop with 2 jumpers between RX CL(+) to TX CL(+) and RX CL(-) to TX CL(-). If the display shows either "Bad 0" or "Bad 1" then there is a problem with hardware.

Section 7: **Stoplight**



The Stoplight Requires that options 21 and 22 be set for the desired configuration*
Pin 2 (GND) can be shared with the Stoplight and RS232 Signal Ground.

Switch

Option 21 = 1

Option 22 = 1

Connect a dry contact switch between pins 13 and pin 2 (GND).

Circuit Logic:

Open = Red, Closed = Green

Single Line TTL

Option 21 = 1

Option 22 = 1

Connect a TTL Output to Pin 13 and reference a common Ground from the transmitting device to Pin 2 (GND).

Circuit Logic TTL:

High = Red, Low = Green

Dual Line TTL (Open On)

Option 21 = 2

Option 22 = 2

Connect TTL Green Control Line to pin 13

Connect TTL Red Control Line to pin 14

Reference a common Ground between the display and outputting device.

Result

High turns Light On, Low turns Light Off

Dual Line TTL (Closed On)

Option 21 = 3

Option 22 = 3

Connect TTL Green Control Line to pin 13

Connect TTL Red Control Line to pin 14

Reference a common Ground between the display and outputting device.

Result

High turns Light Off, Low turns Light On

Section 7: Stoplight Cont.



Momentary Green

Option 21 = 4

Option 22 = #####

Connect a switch between Ground and Pin 13. When pin 13 goes low the light will toggle from red to green and remain green for a certain number of data streams set with Option 22, then will go back to red.

Momentary Red

Option 21 = 5

Option 22 = ###

Connect a switch between Ground and Pin 14. When pin 14 goes low the light will toggle from green to red and remain red for a certain number of data streams set with Option 22, then will go back to green.

ASCII Control

Option 21 = Any ASCII character from 06(ACK) to 127(DEL) for the Red light.

Option 22 = Any ASCII character from 06(ACK) to 127(DEL) for the Green light.

***Both options 21 and 22 must be set to a value of 6 or higher. Setting only one option will cause the remote to ignore ASCII control codes.**

Result

When the character set in option 21 is in the data stream the Red light will be on.

If the character is not in the data stream then the Red light will be off.

When the character set in option 22 is in the data stream the Green light will be on.

If the character is not in the data stream then the Green light will be off.

***When option 2 is set to 2 the stoplight will be controlled by the appropriate status byte.**

Setting options 21 and 22 will over ride the Toledo option byte.

Serial Traffic Commands

Option 21 = 0

Option 22 = 4

The Serial Traffic commands can be used to set the traffic lights with one time commands. Unlike the standard ASCII Control which controls the traffic lights via a character constantly within the stream, this option will set the traffic light based on the command code sent once and then that state will hold until a new command is sent. The command character must be within a set data stream format. If Option 11 is set then the command code must be after the addressable character and must be before the end character set as option 15. The command may be sent as a part of a larger stream including weight or in a simple two character stream of command character followed by the end character. The four command characters are:

DC1 (Decimal 17) = Turn Red Light On

DC2 (Decimal 18) = Turn Green Light On

DC3 (Decimal 19) = Turn Both Lights Off

DC4 (Decimal 20) = Turn Both Light On

Section 7: **Stoplight** Cont.



Axle System Programming

There are three types of programs to select from to control traffic to receive axle weights and totals.

- A simple Axle Scale
- An Inbound Truck Scale (driving on)
- An Outbound Truck Scale (driving off)

The general rule for all systems is a green light means the remote is ready to accept the next axle.

A red light means to come to a stop when the next axle is in position.

Axle Scale Program – Use only with axle scales

Set Option 21 = 0

Set Option 22 = 6

Sequence of Operations

- Scale is at zero with a green light.
- Truck pulls on first axle. The light will turn red signaling to stop when the axle is in position. Once stable it will display "A-1" for axle 1 then will show the weight.
- The light will turn green to signal ready for next axle.
- Truck will pull on each additional axle on the scale one at a time. The light will turn red to signal stop when axle is in position, display "A-N" for the axle number then the weight.
- After the last axle is weighed and the truck pulls off the display will show "total" then the total weight of all axles.
- The system will then reset for the next truck with a green light.

Inbound Truck Scale Program – Use with a full truck scale

Set Option 21 = 0

Set Option 22 = 7

Sequence of Operations

- Scale is at zero with a green light.
- Truck pulls on first axle. The light will turn red signaling to stop when the axle is in position. Once stable it will display "A-1" for axle 1 then will show the weight.
- The light will turn green to signal ready for next axle.
- Truck will pull on each additional axle on the scale one at a time. The light will turn red to signal stop when axle is in position, display "A-N" for the axle number then the weight.
- After the last axle is weighed and the truck remains on the scale. The display will show "total" then the total weight of all axles.
- The system will then reset for the next truck with a green light.

Outbound Truck Scale Program – Use with a full truck scale

Set Option 21 = 0

Set Option 22 = 8

Sequence of Operations

- **Scale is at zero with a green light.**
- Truck pulls all the way onto the scale. The light will go red signaling stop when in position. After the scale is stable it will display "total" then display the total weight.
- The light will turn green to signal ready to remove the next axle.
- Truck pulls off first axle. The light will turn red signaling to stop when the axle is in position. Once stable it will display "A-1" for axle 1 then will show the weight.
- Truck will pull off each additional axle on the scale one at a time. The light will turn red to signal stop when axle is in position, display "A-N" for the axle number then the weight.
- After the truck pulls off the scale and the last axle is displayed the system will reset and the light will turn green.

Section 8: Wireless Cont.



Transceiver Setup

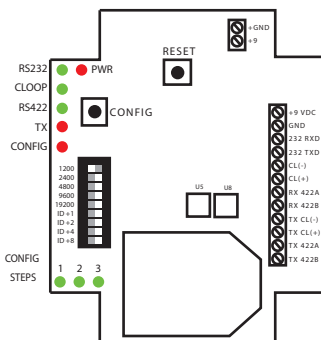


Figure 2 - XT300
Transceiver

1. Set the upper 5 DIP switches on the transceiver to the same baud rate as the indicator. If all switches are set to off or more than one switch is turned on then the unit will default to 9600 baud
2. Set the dip switch 1 to 4 on the transceiver for a system ID. There are 16 possible system IDs available 0 (all off) to 15 (all on). If more than one wireless system are present each system requires a unique ID
3. Press the CONFIG button on the transceiver to save the dip switch settings. The three green configuration LEDs will illuminate as setup progresses. LED 1 indicates setup initiated. LEDs 1 and 2 indicate internal communication established. LEDs 1, 2, and 3 indicate setup complete. If there is a problem with configuration the red CONFIG LED will blink every 5 seconds up to 6 times as internal communication is re-established. The red CONFIG LED will then blink several times rapidly. Wait a minimum of 5 seconds before pressing CONFIG again.
4. Wire the transceiver to the indicator according to Figure 1. When properly wired the corresponding LED (RS232, CLOOP, or RS422) will blink with each data transmission

Receiver Setup

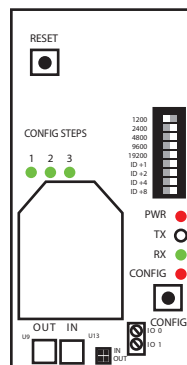


Figure 3 - XT300
Receiver

1. Set the dip switch 5 to 9 on the transceiver to the same baud rate as the indicator. If all switches are set to off or more than one switch is turned on then the unit will operate at 9600 baud.
2. Set the dip switch 1 to 4 on the transceiver for a system ID. There are 16 possible system IDs available, 0 (all off) to 15 (all on) for the XT300, 2 IDs for the XT200 and 1 ID for the XT100. If more than one wireless system is present each system requires a unique ID. All transmitters and receivers on the same system must have the same system ID
3. Press the CONFIG button on the transceiver to save the dip switch settings. The three green configuration LEDs will illuminate as setup progresses. LED 1 indicates setup initiated. LEDs 1 and 2 indicate internal communication established. LEDs 1, 2, and 3 indicate setup complete. If there is a problem with configuration the red CONFIG LED will blink every 5 seconds up to 6 times as internal communication is re-established. The red CONFIG LED will then blink several times rapidly. Wait a minimum of 5 seconds before pressing CONFIG again.
4. The RX LED will blink to indicate that the scoreboard is receiving the wireless signal.

Section 8: Wireless Cont.



Wireless Wiring Diagram

	Indicator	Pin	Transceiver
Indicators with Active 20 mA Output	+20mA	6	CL (+)
	-20mA	5	CL (-)
Indicators with Passive 20 mA Output	+20mA	1	VCC
		2	GND
	-20mA	5	CL(-)
		6	CL(+)
Indicators with RS232 Output	TXD	3	232 RXD
	GND	2	GND
Indicators with RS422/RS485 Output	TX 422A (+)	7	RX 422A
	TX 422B (-)	8	RX 422B

Note: Mount all units in a direct line of site with each other with all antennas going vertically (up or down is OK)

XT400 Input Output Setup

The XT400 units have the ability for up to 4 lines of digital IO line passing, useful for stop and go light control. A built in Switch can be added for inputs. Relays can be added to outputs for remote zero and remote printing for many indicators. Each transceiver can either be set up for inputs or outputs, but not both. To make a transceiver accept digital inputs place the blue jumper on IN and place the two MCT62 ICs in the sockets under the label "IN", closest to the heat sink on the far right hand side. To make the transceiver output TTL levels place the blue jumper on OUT and place the two MCT62 ICs in the sockets under the label "OUT".

*Any serial devices can be connected using XT Series Wireless transceivers. PCs can be connected to printers or multiple indicators can be networked together... Matko remotes are not required for a wireless system.

RF Exposure

WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter. The preceding statement must be included as a CAUTION statement in OEM product manuals in order to alert users of FCC RF Exposure compliance.

Section 8: Wireless Cont.



Product Comparison

	XT100	XT200 (Discontinued)	XT300	XT400
Baud Rate				
1200		◆	◆	◆
2400		◆	◆	◆
4800		◆	◆	◆
9600	9600 (Fixed)	◆	◆	◆
19200		◆	◆	◆
Line Of Sight Distance				
Outdoor	1/4 Mile	1/2 Mile	1 Mile	1 Mile
Indoor	75 Feet	150 Feet	300 Feet	300 Feet
Protocol (Input)				
RS232	◆	◆	◆	◆
20 mA CI Active		◆	◆	◆
20 mA CI Passive		◆	◆	◆
RS422/RS485		◆	◆	◆
Approvals				
US (FCC)	◆	◆	◆	◆
Canada (IC)			◆	◆
Europe (ETSI)			◆	◆
Network IDs	1	2	16	16
TTL Line Passing	0	0	0	0
Congiguration	Fixed	In Field	In Field	In Field
Enclosure	NEMA4	NEMA4	NEMA4	NEMA4

Section 9: Trouble Shooting



General Purpose Solution:

Set the transmitting device to 1200 BAUD; 8 data bits; no parity. Make sure the data stream contains 6 weight characters followed by a carriage return, line feed or end of text. *Set the display to factory default and re-learn the display.*

The red LED is on and the display reads “NoData”. Communication was lost.

Suggestions:

Make sure the indicator is powered on.

Make sure the indicator port is enabled to transmit data continuously.

Make sure the wiring is correct. (The corresponding green LED should blink with every data transmission).

If data delay between data streams is greater than 2 seconds, turn on option 4.

The unit displays the incorrect digits.

Suggestions:

Try shifting the data to the right or left.

Lower the BAUD rate, default the unit, and re-learn

Rice Lake indicators:

Suggestions:

Set End of Line Delay (EOL Delay) to 250 ms or higher.

Do not set to 0 ms.

Display updates slowly.

Suggestions:

Increase the frequency of data transmission.

Turn on option 4.

Default Remote display and re-learn

Section 10: ASCII Table



Dec	Hex	Char
0	0	NUL null
1	1	SOH start of heading
2	2	STX start of text
3	3	ETX end of text
4	4	EOT end of transmission
5	5	ENQ enquiry
6	6	ACK acknowledge
7	7	BEL bell
8	8	BS backspace
9	9	TAB horizontal tab
10	A	LF line feed
11	B	VT vertical tab
12	C	FF form feed, new page
13	D	CR carriage return
14	E	SO shift out
15	F	SI shift in
16	10	DLE data link escape
17	11	DC1 device control 1
18	12	DC2 device control 2
19	13	DC3 device control 3
20	14	DC4 device control 4
21	15	NAK negative acknowledge
22	16	SYN synchronous idle
23	17	ETB end of trans. block
24	18	CAN cancel
25	19	EM end of medium
26	1A	SUB substitute
27	1B	ESC escape
28	1C	FS file separator
29	1D	GS group separator
30	1E	RS record separator
31	1F	US unit separator
32	20	Space
33	21	!
34	22	"
35	23	#
36	24	\$
37	25	%
38	26	&
39	27	'
40	28	(
41	29)
42	2A	*

Dec	Hex	Char
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7
56	38	8
57	39	9
58	3A	:
59	3B	;
60	3C	<
61	3D	=
62	3E	>
63	3F	?
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U

Dec	Hex	Char
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D]
94	5E	^
95	5F	_
96	60	`
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	
125	7D	}
126	7E	~
127	7F	DEL

Section 11: Replacement Parts



Part Number	Description
PWR	110-220 AC Switching Power Supply
LMB	Motherboard for LED Display
LMB-SG	Motherboard for LED Display with stop and go lights
L2-Main	LED Digit board for SBL-2 Display
L2-Main-SG	LED Digit board for SBL-2 Display with stop and go light
L4-LED-KIT	LED digit boards for SBL-4 Series Displays
L6-LED-KIT	LED digit boards for SBL-6 Series Displays
XT-ANT	2.4 Ghz antenna for all XT Series models
XT100 Receiver	XT100 Receiver board mounted internally to SBL- Series Display
XT300 Receiver	XT300 Receiver board mounted internally to SBL- Series Display
XT400 Receiver	XT400 Receiver board mounted internally to SBL- Series Display
XT100 Transceiver	XT100 Transmitter/Receiver in a NEMA 4 case
XT300 Transceiver	XT300 Transmitter/Receiver in a NEMA 4 case
XT400 Transceiver	XT400 Transmitter/Receiver in a NEMA 4 case
PWR-9V	9 Volt power supply for RD-100 and XT Series Transceivers
SGB	Replacement Stop and go light board
Enclosure-MB-2/4	Mounting bracket for SBL-2 and SBL-4 Series Displays
Enclosure-MB-6	Mounting bracket for SBL-6 Series Displays

Section 10: Manual Revision History



Revision	Descriptions
05/07	Wiring diagram and expansions changed to reflect 4 LED interface as opposed to the 2 LED interface. Corrected Numbering for Option 24.
10/07	Adding setting 3 and 4 to Option 2 to correctly display annunciator dots with a Toledo data stream.
6/08	Option 1 changed to display the software version, previously located under option 20.††Option 19 for test mode was removed and options 19 and 20 were added to perform the same way as option 18 to allow a total of 3 blank out characters.
10/10	Updated Enclosure dimension chart. Modified Options 13, 14, 15, and 23. Added Options 25-27. Expanded Stoplight options to allow for values 3-5. Added new Section for replacement parts.
11/12	Siemens Sub Menu added under Option 28 to interface with a Modbus protocol on a BW500. Option may also be entered by holding RIGHT and LEARN buttons during countdown. Added Wireless manual. Revised dimension chart to add SBL-9 displays
07/13	Expanded Stoplight Options to allow for one time ASCII commands.
08/13	Correction on Section 7: Stoplight Instructions: momentary green uses pin 13 and momentary red uses pin 14.
04/19	Rebuilt Manual, lots of minor changes. Added Option 29
10/19	Fixed Minor Typos