



Belt-Way Scales
In Motion Weighing Solutions

2016

TV DISPLAY MODULE QUICK START GUIDE v1.0



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Table of Contents

1. INTRODUCTION	2
2. WHAT'S IN THE BOX	2
3. DISPLAY SPECIFICATIONS	3
4. INSTALLATION PROCEDURE	3-4
5. NETWORK SETUP	5
6. DISPLAY NETWORK SCREEN	6
7. INTEGRATOR IP ADDRESS SETUP	6
8. MAIN SCREEN & ZERO CALIBRATION	7-8
9. MENU	9
10. CAL DATA	9
11. TOTALS	9
12. SETUP	10
13. TIME AND DATE	10
14. CONNECTION STATUS	10
15. REPORTS	11
16. USB	12
17. DOWNLOAD SOFTWARE UPDATE	13-14

TV Display Module Quick Start Guide v1.0

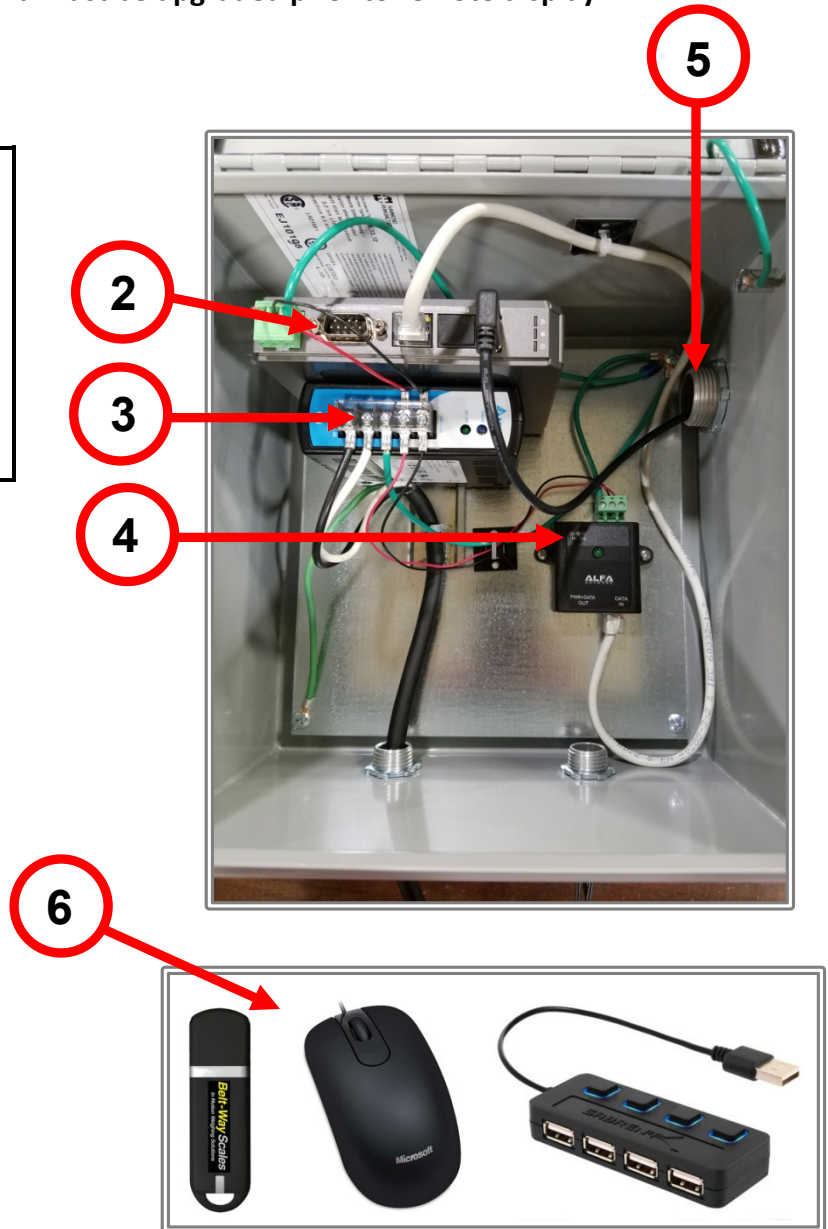
1. Introduction

The Belt-Way TV Display module allows a plant operator to monitor multiple conveyor belt scales from a single location. The operator can reset scale totals and perform zero calibrations on all connected scales. The remote display also displays historical production information and records accumulated weight and flow rate data files to the included USB flash drive. The module connects to an HDMI capable TV or monitor. The TV must be purchased separately.

NOTE: The TV module is designed to communicate with the new style Belt-Way integrator ONLY! Older integrators will NOT work and must be upgraded prior to remote display installation!

2. What is in the Box?

1. TV Display Module Enclosure
2. Display CPU
3. 24 VDC Power Supply
4. POE to power Ethernet Transmitter
5. USB, HDMI, and Ethernet cables
6. USB Hub, Flash Drive and Mouse

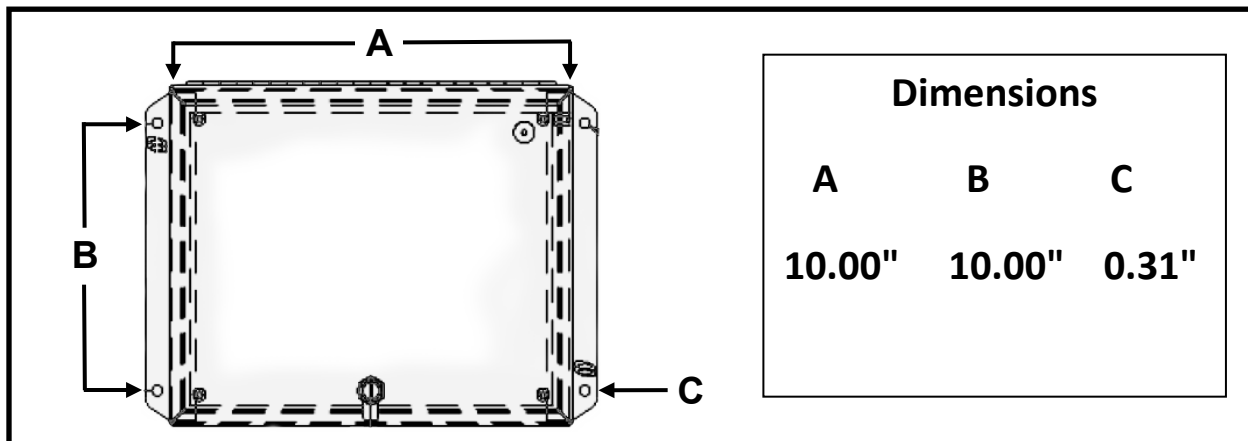


3. Display Specifications

Part Number: BWTVMODULE	
Display Screen: Customer supplied HDMI TV	Communication Com ports: Ethernet Data Storage: 256 MB Internal 4 GB USB Flash Drive
Power Requirements: 24 VDC @ 350 mA (110 / 220 - 24VDC Power Supply Included)	
Enclosure 10" x 10" x 6" Painted Steel box with latch	Environmental Temperature Rating: 32- 122 °F Protection: IP65 (Nema 4) Suitable for Indoor Use only!
Accessories 4 port USB hub with extension cable. 10 ft HDMI Cable USB Mouse	

4. Installation Procedure

STEP 1: Mount the enclosure so it is free of vibration.



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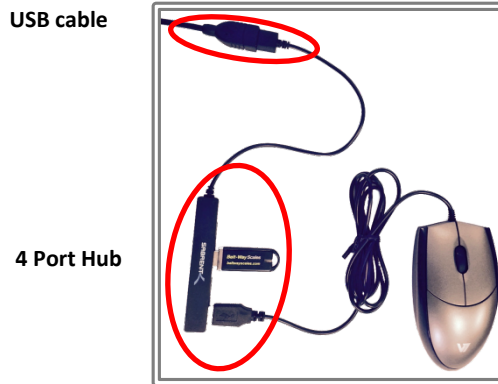
Step 2: Connect Ethernet cable to Power Over Ethernet module.

Multiple scales and remote displays may be hardwire to a local area network or installed as part of a stand alone wireless network. One wireless transmitter is required for each display and scale. An ethernet cable to the network or wireless transmitter must be connected to the PWR+DATA OUT terminal. The POE module will power a single transmitter with 24 VDC.



Step 4: Connect USB Hub, USB Flash Drive, and Mouse

Connect the 4 port USB hub to the USB cable exiting the enclosure. Plug the USB flash drive and mouse into the hub.



Step 6: Connect the HDMI cable to TV / Monitor

Connect the provided HDMI cable to an open HDMI port on the TV.



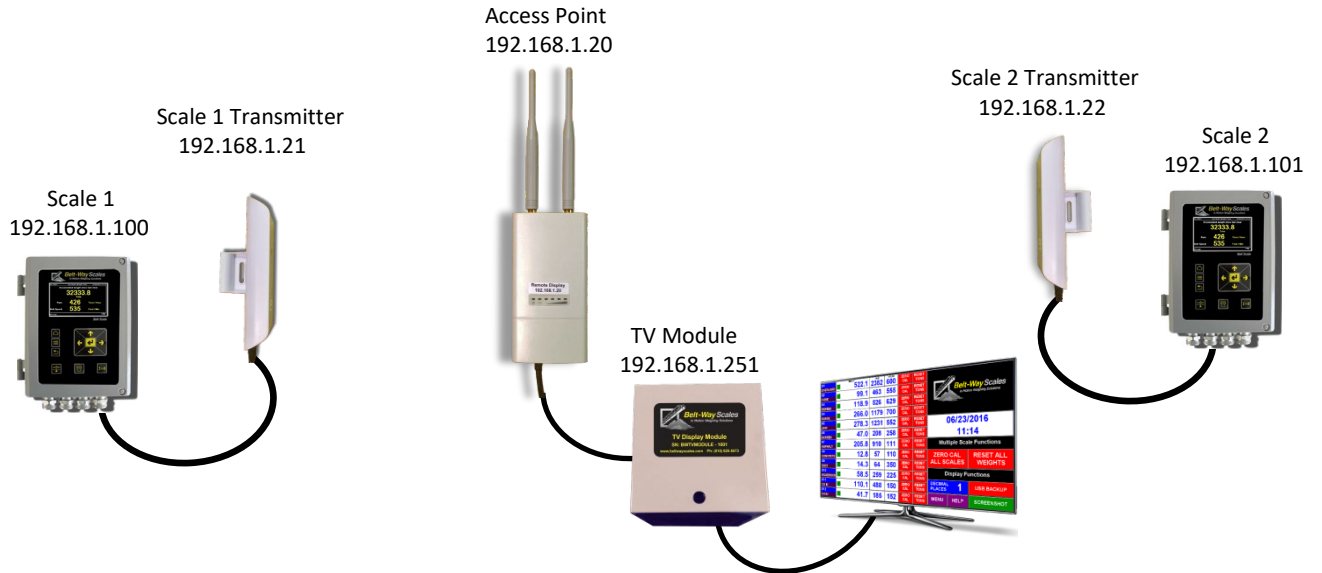
Step 5: Power the module and TV. The module comes with a 110/220 AC to 24 VDC power supply. Plug the power cord into a grounded outlet. Power on the TV. Make sure the TV is set to view the HDMI input that the module is connected to.

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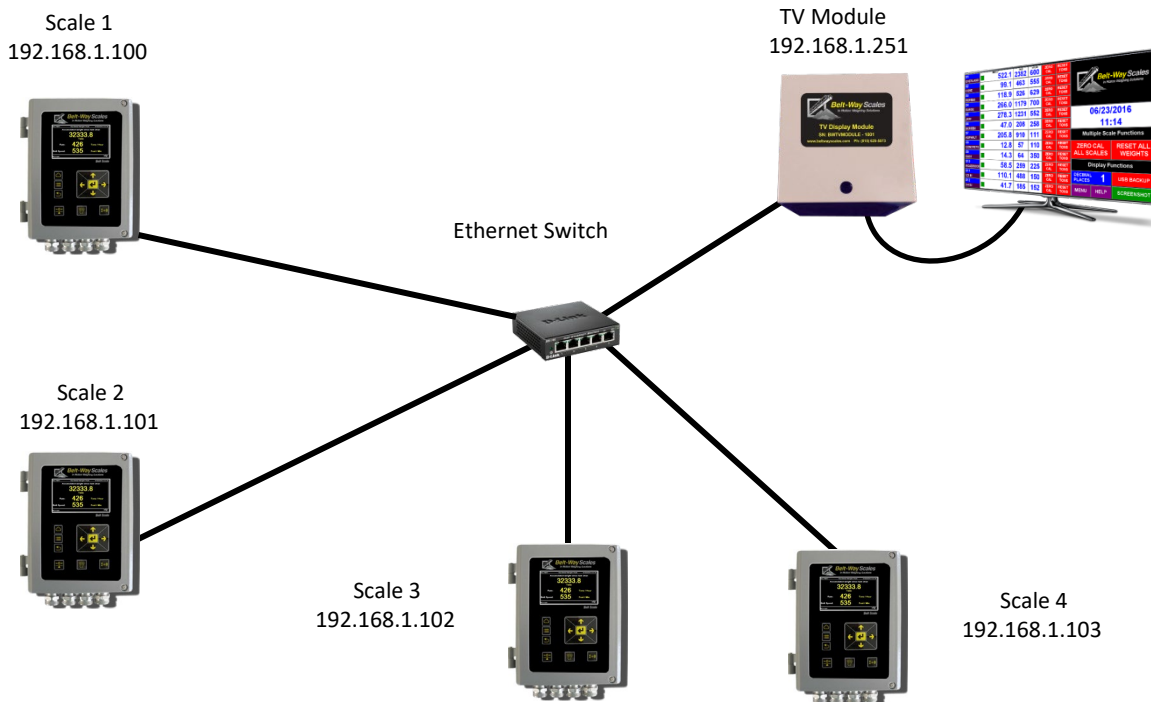
5. Network Setup

The scale network may be wireless or hardwired. The remote display, scale integrators, wireless transmitters and other devices on the network must have unique IP addresses.

Wireless Network Example:



Hardwire Network Example:



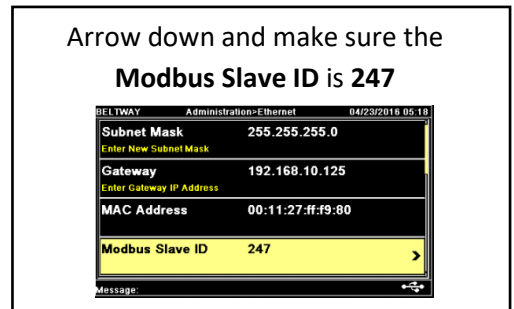
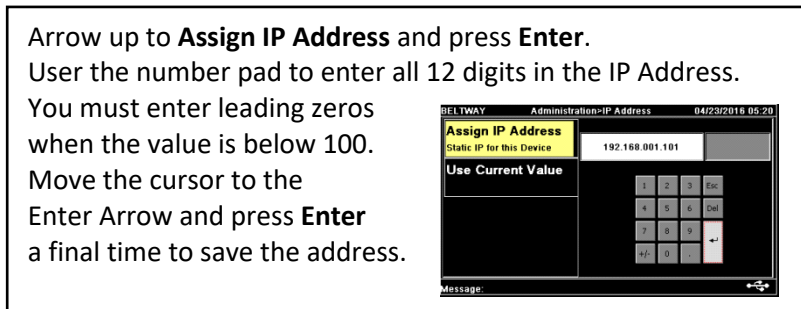
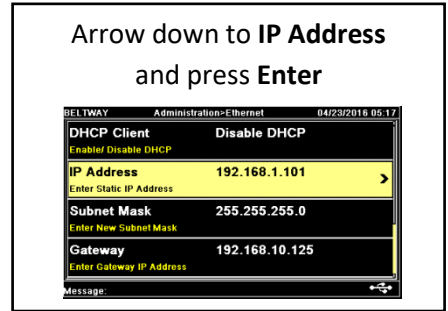
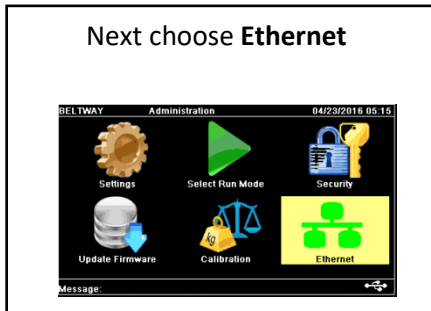
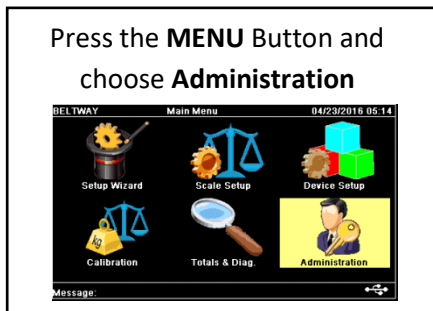
6. Display Network Screen

The Network screen shows scale IP addresses currently programmed into the display. All devices must be on the same subnet (e.g., 192.168.1.XXX) but the 4th number must be unique. The default display module IP address is **192.168.1.251**. Scale 1 defaults to **192.168.1.101**, Scale 2 defaults to **192.168.1.102**, etc. The Scale IP address **MUST MATCH** the actual IP address programmed into the scale control box. **The default Slave ID value is 247 so each scale control box Slave ID must be 247.** Each IP value may be modified by pressing the numeric input field. Click the **RESTART DISPLAY** button to reboot the display and save IP Address changes. The new settings will take effect once the display restarts.

Remote Display IP Address: 192 168 1 251	Scale 1 IP Address: 192 168 001 101 ■
The display and scale IP addresses must be programmed on the same network. The first 3 numbers must be the same the 4th must be different. The default display address is 192.168.1.251. The default addresses for scales 1-12 are 192.168.1.101 - 112. The default Slave ID is 247 for all scales. These values must be programmed into each scale integrator for the display to show the correct information. RESTART THE DISPLAY AFTER ALL CHANGES! RESTART DISPLAY	Scale 2 IP Address: 192 168 001 102 ■
	Scale 3 IP Address: 192 168 001 103 ■
	Scale 4 IP Address: 192 168 001 104 ■
	Scale 5 IP Address: 192 168 001 105 ■
	Scale 6 IP Address: 192 168 001 106 ■
	Scale 7 IP Address: 192 168 001 107 ■
	Scale 8 IP Address: 192 168 001 108 ■
	Scale 9 IP Address: 192 168 001 109 ■
	Scale 10 IP Address: 192 168 001 110 ■
	Scale 11 IP Address: 192 168 001 111 ■
	Scale 12 IP Address: 192 168 001 112 ■
	MENU

7. Integrator IP Address Setup

Program the IP address and Slave ID into each integrator. The first scale is usually left at the default address 192.168.1.100. Each additional scale must be changed to 192.168.1.101, 192.168.1.102, etc.



Restart the integrator after IP address or Modbus Slave ID changes!

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8. Main Screen

The main screen displays Total Weight, Tons Per Hour, and Belt Speed values.

The standard module is programmed for 12 scales. The connection indicators show when each scale is connected to the remote display.

Use **RESET TONS** buttons to reset any scale weight to 0. The reset process takes about 5 seconds to complete.

Use the blue buttons to label each scale or product. The keyboard appears when the button is pressed.

Scale	WEIGHT	RATE	SPEED	ZERO CAL	RESET TONS
S1	2.83	55	666	ZERO CAL	RESET TONS
S2	12.81	250	300	ZERO CAL	RESET TONS
S3	26.94	526	629	ZERO CAL	RESET TONS
S4	60.35	1179	700	ZERO CAL	RESET TONS
S5	10.66	208	258	ZERO CAL	RESET TONS
S6	28.51	556	555	ZERO CAL	RESET TONS
S7	46.74	910	111	ZERO CAL	RESET TONS
S8	2.91	57	110	ZERO CAL	RESET TONS
S9	2.44	48	350	ZERO CAL	RESET TONS
S10	.00	0	0	ZERO CAL	RESET TONS
S11	24.99	488	150	ZERO CAL	RESET TONS
S12	9.46	185	152	ZERO CAL	RESET TONS

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07/14/2016 14:36	
Multiple Scale Functions	
ZERO CAL ALL SCALES	RESET ALL WEIGHTS
Display Functions	
DECIMAL PLACES 2	USB BACKUP
MENU	HELP
SCREENSHOT	

ZERO ALL or **RESET ALL** perform simultaneous functions on all scales.

Use the **SCREENSHOT** button to save a copy of the screen to the USB flash drive. The file is saved as a bitmap in the Hardcopy folder. The filename is **YYMMDD_0000.bmp**

Use the **MENU** button to navigate to other display screens.

Use this button to adjust the Weight decimal places to 0,1 or 2.

Scale Connection Status Indicator
Each scale has a connection indicator. The indicator is **GREEN** when the scale is connected and the data is updated. The indicator is **RED** when the scale is not connected. This can be caused by several conditions such as power loss, wireless network failure, damaged Ethernet cables, etc.

Scale	Connection	WEIGHT	RATE	SPEED	ZERO CAL	RESET TONS
S1	Red		0	0	ZERO CAL	RESET TONS
S2	Green	259.39	250	300	ZERO CAL	RESET TONS
S3	Green	545.30	526	629	ZERO CAL	RESET TONS
S4	Red		0	0	ZERO CAL	RESET TONS
S5	Green	215.81	208	258	ZERO CAL	RESET TONS
S6	Red		0	0	ZERO CAL	RESET TONS
S7	Green	943.36	910	111	ZERO CAL	RESET TONS
S8	Green	58.95	57	110	ZERO CAL	RESET TONS
S9	Green	49.99	48	350	ZERO CAL	RESET TONS
S10	Green	.00	0	0	ZERO CAL	RESET TONS
S11	Green	505.82	488	150	ZERO CAL	RESET TONS
S12	Green	191.59	185	152	ZERO CAL	RESET TONS

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Multiple Scale Functions	
ZERO CAL ALL SCALES	RESET ALL WEIGHTS
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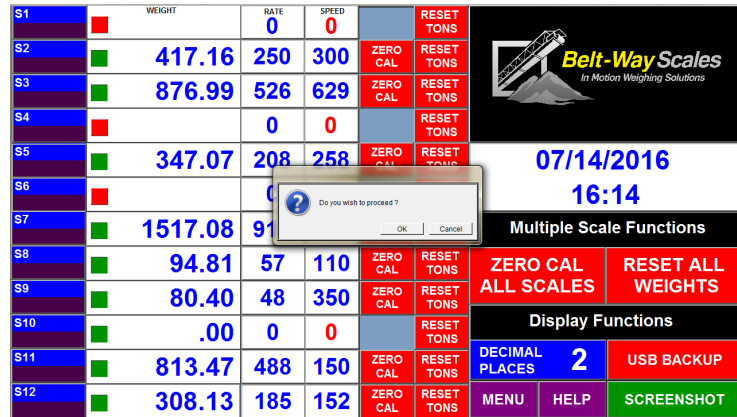
Zero Calibration Procedure

The Zero Calibration should be performed when a scale continually accumulates or subtracts weight while the belt is empty.

THE BELT MUST BE RUNNING EMPTY BEFORE STARTING THE ZERO CALIBRATION!

Step 1 :

The **ZERO CAL** button appears only when the belt is running. Make sure each belt is running empty. Press **ZERO CAL** to initiate the **ZERO CALIBRATION** on a single scale or **ZERO ALL** to calibrate multiple scales.



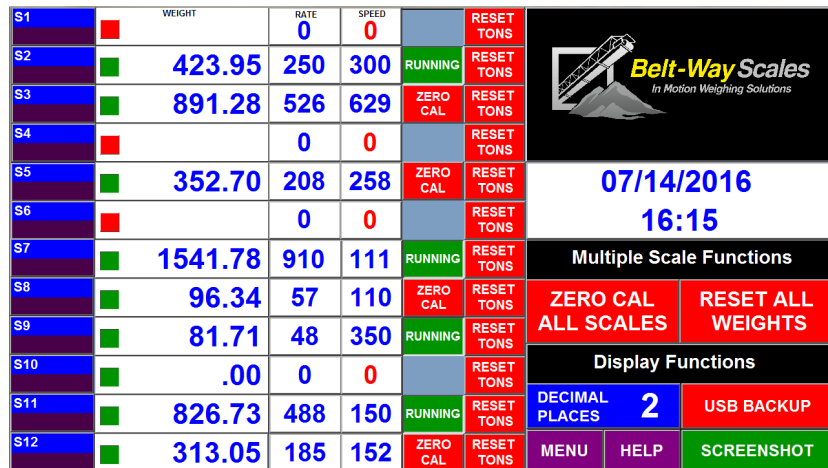
Step 2 :

Press **OK** to confirm and proceed with the ZERO CALIBRATION.

Step 3:

Each indicator turns **green** and displays **RUNNING**.

They automatically return to normal when each scale's ZERO CALIBRATION process completes.



THE ZERO CALIBRATION SHOULD BE PERFORMED A MINIMUM OF ONCE PER DAY OR AS NEEDED DEPENDING ON WEATHER CONDITIONS, BELT CONDITIONS, MECHANICAL CHANGES TO THE CONVEYOR, ETC.

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9. Menu

The Menu allows access to all other display screens.

TPH Records	Weight Records	Speed Records	Connect Status	TPH Graph	Weight Graph	Speed Graph
Main Screen	Cal Data	Totals	Network	Setup	USB	Time & Date

10. Cal Data

The Cal Data Screen shows important calibration information including Previous Trim Factor, Current Trim Factor, Trim Factor Difference, Previous Zero Value, Current Zero Value, and Belt Length. The Zero Value changes each time the Zero Calibration is performed. All other calibration values are read only.

Calibration Data	Previous Trim Factor	Current Trim Factor	Trim Factor % Difference	Previous Zero Value	Current Zero Value	Belt Length
S1	1.000	1.000	-89.0	222.0	102.7	16
S2	0.870	1.000	14.9	101.5	88.1	61
S3	1.000	1.000	1.0	129.7	106.0	1
S4	1.000	1.000	0.0	22.6	23.0	1
S5	1.000	1.000	*****	139.6	133.7	1
S6	1.000	1.000	-66.7	122.6	127.1	11
S7	3.000	3.000	0.0	37.0	37.3	100
S8	1.000	1.000	1.0	29.8	30.6	1
S9	1.000	1.000	1.0	29.0	28.6	111
S10	1.000	1.000	1.0	23.0	100.0	1
S11	0.100	2.000	1.0	23.3	23.9	20
S12	0.143	0.178	24.0	19.6	19.6	6

The Cal Data information for all scales is displayed.

Previous Trim Factor is the stored from the last calibration performed on the scale.

The Trim Factor Difference shows the % change of the Trim Factor from the last calibration.

The Zero Value is in pounds or kilograms.

The Belt Length is in feet or meters.

07/14/2016
13:17

MENU SCREENSHOT

11. Totals

The Totals Screen shows accumulated weight totals for all scales. The Job Total may be manually reset at any time. The Daily, Weekly, Monthly, and Yearly totals reset automatically according to the belt scale's internal clock and calendar.

Scale Totals	Job	Daily	Weekly	Monthly	Yearly
S1	0	168	168	0	0
S2	48376	3283	27076	80507	214954
S3	101700	6902	56922	169304	862139
S4	227807	15462	127506	369398	4827978
S5	40247	2731	22527	65261	858062
S6	107502	7297	60171	178971	2428493
S7	175912	11940	98462	293074	825543
S8	10994	746	6153	18303	264046
S9	9840	633	5220	18035	74943
S10	0	0	0	0	173197
S11	94332	6403	52801	157039	497080
S12	35803	2434	20044	59126	1475970

The Accumulated Weight Totals for all scales are shown on this screen.

The Job totals may be reset using the red buttons.

The Daily, Weekly, Monthly and Yearly totals reset automatically based on the internal clock and calendar of each scale.

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13:15

MENU SCREENSHOT

12. Setup

Setup shows the current version of the remote display software.

Example: TV-12-03 (12 scales Version 3) There is also an automatic restart feature that should be activated if the display is powered continuously for 24 hours per day. The restart time should be a few minutes before the normal plant start-up time. Press the SAVE button to record changes.

Belt-Way Scales Inc. Remote Display
Program: TV Display 12 Scales (New Integrators Only)
Version TV-12-03 Release Date: 7-01-2016
Support from Belt-Way Scales Inc.
Phone: (815) 625-5573
Email: sales@beltwayscales.com

The auto restart function reboots the display automatically at the programmed time. This operation refreshes all scale communications. It should be enabled if the display is powered 24 hrs / day. Press the RED button to enable auto restart. Use the Hour and Minute buttons to change the restart time. The time format is 24 hour. Press SAVE to record time changes.

Current Time 13:38:47

AUTO RESTART ON

Hour 10 Min 28

Save

TOGGLE SETTINGS MENU

MENU The Display Menu button enables a hardware settings menu. It should only be used under the direction of a factory technician.

13. Time and Date

Use the blue buttons to manually adjust the Time or Date.

Use the blue buttons to set the Time and Date.

05/27/2015

11:32

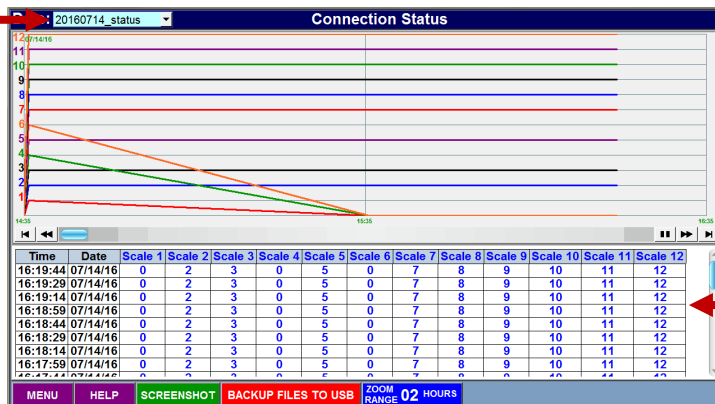
5 27 2015

11 32

14. Connection Status

The Connection Status Screen continually monitors which scales are connected to the remote display. The scale number 1-12 is saved as long as the scale is connected to the remote display. A 0 is saved as soon as the scale disconnects. Up to 30 days of past status records can be viewed.

Date Selector



0 is recorded when a scale is disconnected from the module.
 1 - 12 shows when a scale is connected.

A line appears for each scale when connected.

15. Total Production, TPH, and Belt Speed Reports

The graphing screens show the trend of accumulated weight, tons per hour, or belt speed over time. The readings are logged once per minute. Each graph is independently scaled using the Max button. The Date menu allows viewing of 90 days of past files. The graph is 12 hours wide. Use the scroll arrows to move back and forth on a given day. Click on the screen to show the exact values of each scale at any point. The SCREENSHOT button creates a picture copy of the graph on the USB flash drive. Screenshots are bitmap files that can be opened in any picture viewing PC software. The file name is **YYMMDD_0000.bmp** (Year, Month, Day). The files are saved in the Hardcopy folder on the USB.

Use the Date selector to choose which day to view.

Click on the graph to view values at a specific time. The watch line appears and the values for each scale populate below the graph.

Use the **MAX** button to adjust the upper range of the graph.

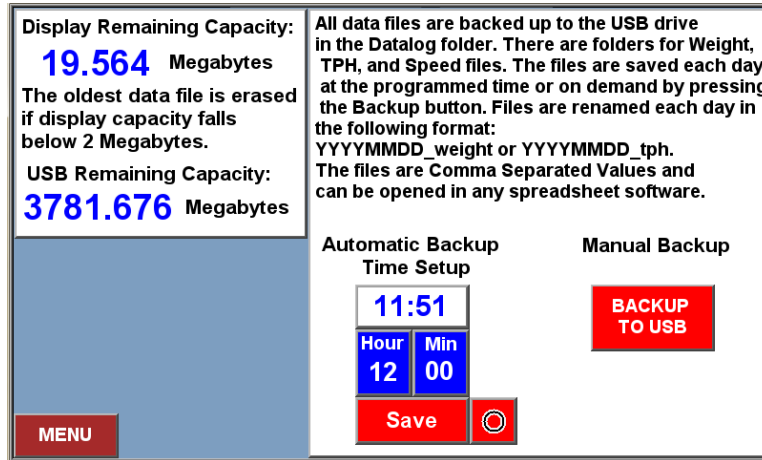
Use the **ZOOM RANGE** button to adjust the time range of the graph from 1-24 hours.

Click the **TPH, Weight, Speed Record** buttons to view the minute-by-minute raw data records.

Time	Date	Scale 1	Scale 2	Scale 3	Scale 4	Scale 5	Scale 6
23:59	21/05/15	914	0	835	415	210	685
23:58	21/05/15	914	0	835	415	210	678
23:57	21/05/15	914	0	835	415	210	678
23:56	21/05/15	914	0	835	415	210	678
23:55	21/05/15	914	0	835	415	210	678
23:54	21/05/15	914	0	835	415	210	678
23:53	21/05/15	914	0	835	415	210	678
23:52	21/05/15	914	0	835	415	210	678
23:51	21/05/15	914	0	835	415	210	678
23:50	21/05/15	914	0	835	415	210	678
23:49	21/05/15	905	0	835	415	210	678
23:48	21/05/15	905	0	835	415	210	678
23:47	21/05/15	905	0	835	415	210	678
23:45	21/05/15	914	0	835	415	0	678
23:44	21/05/15	914	0	835	415	0	685
23:43	21/05/15	914	0	835	415	0	685
23:42	21/05/15	905	0	835	415	0	678
23:41	21/05/15	905	0	835	415	0	678
23:40	21/05/15	905	0	835	415	0	678
23:39	21/05/15	905	0	835	415	0	678
23:38	21/05/15	905	0	835	415	0	678
23:37	21/05/15	905	0	835	415	0	678
23:36	21/05/15	905	0	835	415	0	678

16. USB

The USB screen shows the remaining capacity for the display's internal memory and the USB flash drive. The data log files are saved to the internal memory and backed up to the USB flash drive each day at 12:00 pm. The display will automatically erase the oldest files if the internal memory drops below 2 megabytes.



The files are saved on the USB under the data log folder and either the tph file folder or weight file folder. The data files are saved as CSV (comma separated values) and may be viewed in Excel or other spreadsheet software.

The files are saved by date and named in the following format:

YYYYMMDD_weight.csv, YYYYMMDD_tph.csv, YYYYMMDD_speed.csv

TPH Example

Date	Time	Millisecond	Scale 1	Scale 2	Scale 3	Scale 4	Scale 5	Scale 6
6/4/2015	10:48:46	840	0	0	0	125.0671	0	210.3235
6/4/2015	10:49:47	180	0	768.8689	0	125.0671	0	210.3235
6/4/2015	10:50:46	900	746.0709	768.8658	0	125.0671	0	210.3235
6/4/2015	10:51:46	890	746.0709	768.8116	0	125.0671	0	210.3235
6/4/2015	10:52:47	70	746.0709	768.8367	0	125.0671	0	210.3235

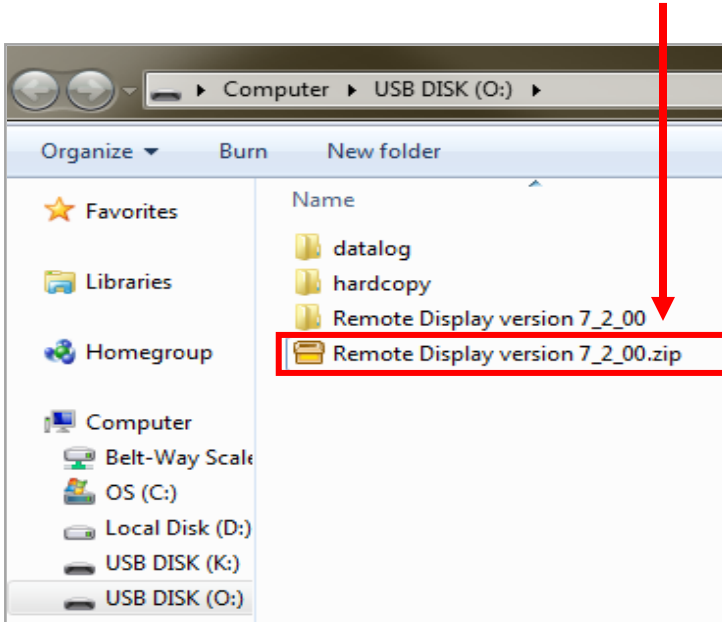
Weight Example

Date	Time	Millisecond	Scale 1	Scale 2	Scale 3	Scale 4	Scale 5	Scale 6
6/8/2015	0:00:46	840	322093	123992	0	52479	0	84892
6/8/2015	0:01:46	890	322106	123993	0	52481	0	84896
6/8/2015	0:02:46	890	322119	123993	0	52483	0	84899
6/8/2015	0:03:46	860	322132	123994	0	52486	0	84902
6/8/2015	0:04:46	840	322145	123995	0	52488	0	84906

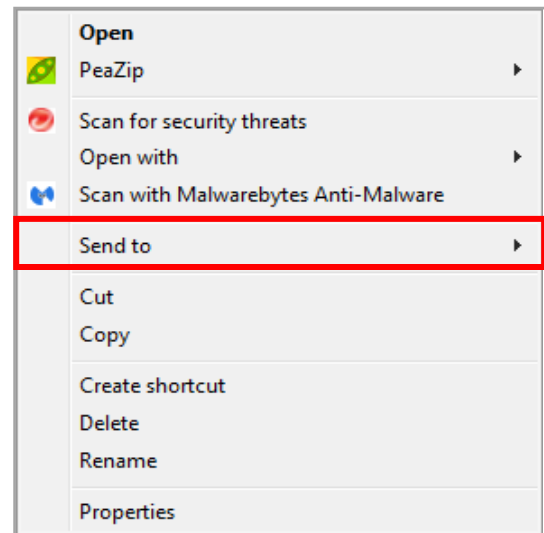
17. Download Software Update

Updates to the display can be downloaded from the USB drive.
The update files are emailed from Belt-way as Zip files.

Step 1: Remove the USB drive from the display and plug it into the computer.
Download the Zip file from the email and save it on the USB drive.



Step 2:
Right click on the Zip file and click **Send to**.

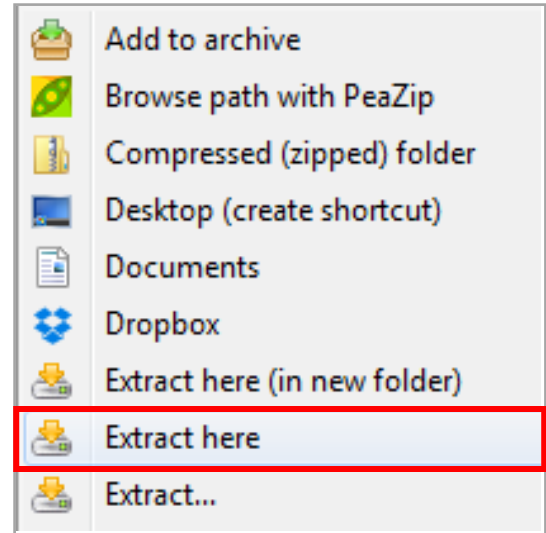


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Step 3:

Click **Extract here**.

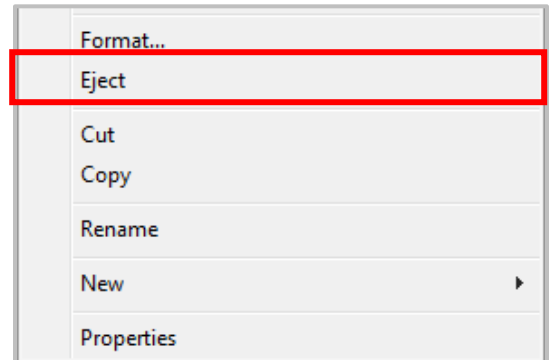
Follow the steps to save the Zip file as a new folder on the USB drive.



Step 4:

Right click on the USB drive and choose **Eject**.

Remove the USB drive from the computer.



Step 4:

Insert the USB drive into the display USB port.

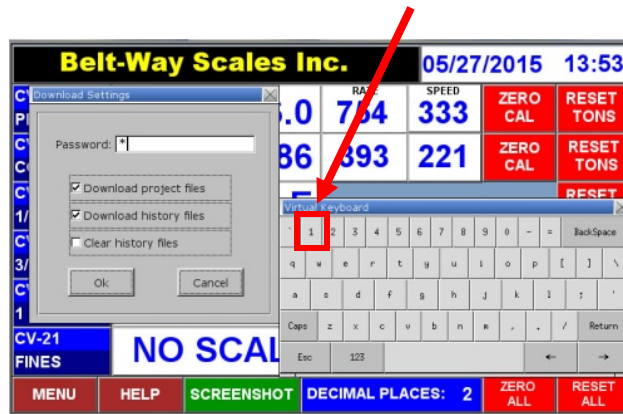
The Download menu appears and remains on the screen for 10 seconds. Click **Download**.



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Step 5:

Use the keyboard to enter the default password of "1".



Step 6:

The **Pick a Directory** window appears. **Double click** the **usbdisk** folder. **Double click** the **disk_a_1** folder. **Single click** to highlight the update folder and click Ok. The display will automatically restart and run the new program.

