WEIGH-TRONIX

SCALES FOR AGRIBUSINESS

Model 715
Service Manual

Table of Contents

Programming 5

Configuration Mode 5

Viewing Current Configuration Code 6

Entering A New Configuration Code 6

Axle Sizes 7

Using Table 1: Configuration Code Example 7

Table 1: Configuration Code Chart 8

Table 2: Valid Numbers For Configuration 9

Table 3: Model 715 Calibration Table 9

Configuring Custom Sensitivity With Capacity x Increment Size 10

Table 4: Row Numbers For Custom Capacity x Increment Size 11

Configuring Custom Warning Alarm Factor 12

Calibration Mode 14

Calibrating Using A Known Weight 14

Getting Ready To Calibrate With BLH Model 625 Calibrator 15

Table 5: Calibrator Connections And Calibration Tables 15

Calibrating With A BLH Model 625 Calibrator 15

Auto Zero Tracking Selection 16

Internal Raw Counts Mode 17

Viewing Internal Counts Display 17

Software Revision Mode 17

Circuit Description 18

Power Supply 18

Analog to Digital Circuitry 19

Microprocessor Circuitry 20

Display Circuitry 21

Optional RS-232 or Remote Circuitry 21

Programming Appendix

Configuration For Eaton, J-Star, and Two Additional Weigh-Tronix Menus 23

Table 6: Eaton: A Sample Set of Configuration Choices 24

Table 7: J-Star: A Sample Set of Configuration Choices 24

Figure 2: Standard and Optional Procedure for Accessing Optional Setup Modes 25

Table 8: Eaton Configuration Code Chart 26

Table 9: J-Star Configuration Code Chart 27

Illustrations

Figure 1: Hidden E Key 5
Model 715 Indicator System Block Diagram 29
Model 715 Indicator Parts and Assembly 30
Weigh Bar Panel Assembly and Cable/Connector Schematics 31
Keypad Overlay 32
Model 715 Main PC Board A/D Assembly 33
Model 715 Main PC Board A/D Schematic 34
RD712/XL Remote Display Assembly and Parts List 35
RD712 Display PC Board A/D Components and Schematic 36
RD712/XL Display PC Board, Components and Schematic 37
XM710-L Wireless Remote Installation 38

Programming

The MODEL 715 Farm Indicator provides three setup modes:

- Configuration Mode
- Calibration Mode
- Internal Raw Counts Mode — Used for J-Box coarse zero adjustment.

The indicator is front-panel programmable via all three modes .

The Hidden E Key

The hidden E key is used to access the setup modes. The E key is touch-sensitive like all other indicator keys, but unlike other keys, the E key has no key face. Access to the setup modes is intended only for trained technicians who use this SERVICE MANUAL, rather than for end users. FIGURE 1 shows the location of the hidden E key.

Configuration Mode

In this mode you will key in a four- or five-digit Configuration Code to program the following operational parameters:

	Represented by
- Axle Size	1st and 2nd digits
- Capacity x Increment Size	3rd digit
- Warning Alarm Factor	4th digit
- Units of Measure	5th digit
- Auto Hold ON or OFF	5th digit

Instructions in this section include:

- Viewing a Current Configuration Code
- Entering a New Configuration Code
- Configuring Custom Sensitivity with Capacity x Increment Size
- Configuring Custom Warning Alarm Factor

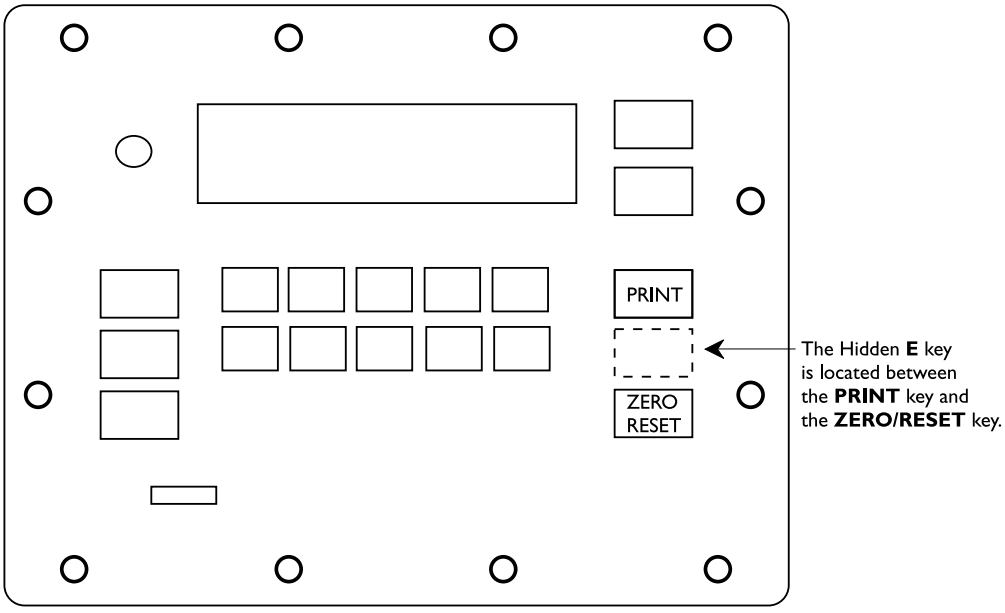


FIGURE 1
Hidden **E** Key on Model 715 Indicator

Viewing Current Configuration Code

Step 1 display depends upon selected capacity for your system.

l.	Key in **715**. . .	***715*** is displayed.
2.	Press hidden **E** key and hold for two seconds. . .	***715E*** is displayed.
3.	Press **E** key. . .	***E*** is displayed.
4.	Press **LOAD/UNLOAD**. . .	Current Configuration is displayed.
5.	Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode.	

Entering a New Configuration Code

Step 2 display depends upon selected capacity for your system.

1.	Determine an appropriate Configuration Code number from chart in TABLE l.	
2.	Key in **7 1 5**. . .	***715*** is displayed.
3.	Press hidden **E** key and hold for two seconds. . .	***715E*** is displayed.
4.	Key in appropriate 4- or 5-digit Configuration Code. . .	New Configuration Code is displayed. (See Table 2: *Valid Numbers for Configuration Code*.) If re-keying is necessary, press **ZERO/RESET**, then re-key.
5.	Press **E** key. . .	***E*** is displayed.
6.	Press **LOAD/UNLOAD**. . .	New Configuration Code is displayed again; entry of code is complete.
7.	Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode. (Refer to TABLE 1 on following page.)	

You may exit this procedure from any display, except E, with **GROSS**, **HOLD***, or* **LOAD/UNLOAD** *key.*

Axle Sizes

Physical axle size and calibration axle size are not the same for some Weigh Bars. If your Weigh Bar physically measures 5/8" in diameter but is marked with a calibration axle size of 2-1/4" D (Dual), then use data shown in Table 1 for a 5/8" bar. If your Weigh Bar measures 1" in diameter but is marked with a calibration axle size of 2-1/8 ", use data shown in Table 1 for a 1" bar.

For Weigh Bars or weight transducers which have a physical axle size of either 5/8" or 1" but which have a calibration axle size other than 2-1/4" D or 2-1/8", respectively, select Custom Sensitivity and Capacity x Increment in Table 1.

For all other Weigh Bars or weight transducers, if physical axle size and calibration axle size of a bar do not match, use the calibration axle size for Table 1.

Using Table 1: Configuration Code Example

Table 1 shows you how selections shown for these parameters would be represented by a Configuration Code of **5151**:

CONFIGURATION CODE EXAMPLE		
Parameter	**Represented by**	**Selection**
Axle Size	2nd digit	2-1/8"
Capacity X Increment Size	3rd digit	20K x 2
Warning Alarm Factor	4th digit	25 x 2 = 50lb
Units of Measure	5th digit	lb
Auto Hold Mode	5th digit	ON
CODE **5151** uses 2nd, 3rd, 4th and 5th of five available digits.		

Divide desired **WARNING ALARM VALUE** by Increment Size to find **WARNING ALARM FACTOR**.

Table 1: Configuration Code Chart

CALIBRATION AXLE SIZE+	CAPACITY x INCREMENT SIZE					
0: **5/8"***	200 x 0.01	200 x 0.02	200 x 0.05	2K x 0.1	2K x 0.2	2K x 0.5
1: **1"***	2K x 0.1	2K x 0.2	2K x 0.5	20K x 1	20K x 2	20K x 5
2: **1-1/4"**	2K x 0.1	2K x 0.2	2K x 0.5	20K x 1	20K x 2	20K x 5
3: **1-7/8"**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
4: **2"**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
5: **2-1/8"**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
6: **2-1/4"**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
7: **2-1/4"D**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
8: **2-1/4"D-P**	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
9: **2-1/2"**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
10: **3-1/8"**	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
11: **4"**	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
12: **CC-20**	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
13: **Alley Weigh**	2K x 0.1	2K x 0.2	2K x 0.5	20K x 1	20K x 2	20K x 5
19: Custom Sensitivity and Capacity x Increment (See text: *Configuring Custom Sensitivity with Capacity x Increment Size*.)						

Column Numbers: 0 | 1 | 2 | 3 | 4 | 5

0: 0
1: 2
2: 5
3: 10
4: 20
5: 25
6: 30
7: 40
8: 50
9: Custom (See text: *Configuring Custom Warning Alarm Factor*.)

UNITS	**AUTO HOLD**
0: lb	No
1: lb	Yes
2: kg	No
3: kg	Yes

_ **5 1 5 1** is the Configuration Code number representing selections cited in *USING TABLE 1: CONFIGURATION CODE EXAMPLE.*

1 2 3 4 5 are place numbers for each digit in Configuration Code.

\+ Axle size determines Weigh Bar sensitivity in mV/V. Refer to Table 3 to relate axle sizes to exact sensitivity values.

K = Multiply by 1000

* If physical axle size of your Weigh Bar equals 5/8" or 1", but differs from its identifying calibration axle size, see text: AXLE SIZES.

D-P =Dual Platform: Eight 350-ohm Weigh Bars and junction box with span pots.

D =Dual: double-ended Weigh Bar

@ Divide desired Warning Alarm by selected Increment Size to find Warning Alarm Factor.

Table 2
Valid Numbers for the Configuration Code

PARAMETERS	VALID #'S	INVALID #'S
Axle Size	0 - 13, 19	14 - 18
Capacity x Increment Size	0 - 5	Any number greater than 5 will be recognized as a 5.
Warning Alarm Factor	0 - 9	
Units and Auto Hold	0 - 3	Any number greater than 3 will be recognized as a 3.

Table 3
Model 715 Calibration Table

Calibration Axle Size	Scale Capacity	Number of Weigh Bars	mV/V	Calibration
5/8"*	200 lb	4	0.2	180.039 lb
1"*	2,000 lb	4	0.4	1,464.82 lb
1-1/4"	2,000 lb	4	0.2	1,742.58 lb
Alley Weigh	2,000 lb	2	1.0	1,913.8 lb
1-7/8"	20,000 lb	4	0.6	15,399.2 lb
2"	20,000 lb	4	0.6	19,143.8 lb
2-1/8"	20,000 lb	4	0.4	14,648.2 lb
2-1/4"	20,000 lb	4	0.4	18,003.9 lb
2-1/4"D	20,000 lb	4	0.2	18,003.9 lb
2-1/2"	20,000 lb	4	0.2	12,540.9 lb
2-1/4"D	200,000 lb	4	1.0	90,019.3 lb
2-1/4"D-P	200,000 lb	8/350	1.0	186,816.0 lb
3-1/8"	200,000 lb	4	1.0	126,402.0 lb
4"	200,000 lb	4	0.6	155,273.1 lb
CC-20	200,000 lb	4	2.0	109,940.0 lb

* If physical axle size of your Weigh Bar equals 5/8" or 1", but differs from its identifying calibration axle size, see previous text: AXLE SIZES.

D-P is Dual Platform: Eight 350-ohm Weigh Bars and junction box with span pots.

D is Dual: double-ended Weigh Bar.

Configuring Custom Sensitivity with Capacity x Increment Size

*You may exit this procedure from any display, except **E**, with **GROSS**, **HOLD**, or **LOAD/UNLOAD** key.*

This procedure allows you to select a weight transducer sensitivity rating other than those referenced by axle sizes in Table 1. You may even configure another manufacturer's weight transducer for interface with the Model 715. Before starting the keying procedure for custom configuration, you must verify three facts about your interfaced transducer(s):

- Trade name of transducer
- Sensitivity of transducer
- Capacity x Increment Size of transducer

TRADE NAME OF TRANSDUCER

To configure custom sensitivity for Weigh-Tronix Weigh Bars, continue now to the next topic, SENSITIVITY.

To configure for transducers from manufacturers other than Weigh-Tronix, refer now to instructions located in the PROGRAMMING APPENDIX. Then, if you find that custom configuration of sensitivity is required, return to this section and proceed to the next topic.

SENSITIVITY OF TRANSDUCER

A. Determine the sensitivity rating, that is, mV/V output at full capacity, for the weight transducer(s) you are using. The transducer probably carries this information, or access to it, stamped or printed on the transducer itself.

B. **Call the factory at 1-800-458-7062 for help in determining the Model 715 sensitivity rating for your transducer(s)**.

   Because many different types of bars are used by various manufacturers, it is impossible to generically document a way to determine Model 715 sensitivity ratings for all available weight transducers.

C. Write down your calculated sensitivity rating: _ ._ _ _ _ _ _ _, using this format:

   n.nnnnnnn = your sensitivity rating
   1 2345678 = digit places

You may key in a mV/V value of up to eight digits. Selection range for sensitivity is from 0.075 to 6.0 mV/V. Keep your notation handy for entry in steps 6 and 8 of the following keying procedure.

CAPACITY X INCREMENT SIZE OF TRANSDUCER

D. Refer to TABLE 4 and locate a Capacity x Increment Size combination that is appropriate for your Indicator.

E. Note the column number in which appropriate Capacity x Increment Size combination is located. Write down the column number:_____. Keep your notation handy for entry in step 3 of the following keying procedure.

Table 4
Row Numbers for Custom Capacity x Increment Size

Column Numbers: 0	1	2	3	4	5	Row #'s
200K x 10.0	200K x 20.0	200K x 50.0	200K x 100.0	200K x 200.0	200K x 500.0	0
20K x 1.0	20K x 2.0	20K x 5.0				
2K x .1	2K x .2	2K x .5				
200 x .01	200 x .02	200 x .05				

F. Now look to the right, and find the row number that applies to your selected Capacity x Increment Size.

G. Write down the appropriate row number for use in step 12:_____.
Steps 1-5 open the door to custom configuration of Sensitivity and Capacity x Increment Size.

1. Key in **715**. . .	***715*** is displayed.
2. Press hidden **E** key and hold for two seconds. . .	***715E*** is displayed.
3. Key in custom Configuration Code: • For digits 1 and 2, key in 19 for Custom (See TABLE 1). • For digit 3, key in column number you previously identified in Letter E. • For digits 4 and 5, key in appropriate code numbers for Warning Alarm Factor, Units of Measure, and Auto Hold parameters.	New Configuration Code is displayed.
4. Press **E** key. . .	***E*** is displayed.
5. Press **LOAD/UNLOAD**. . .	New Configuration Code is displayed again.
6. Key in first four digits of sensitivity rating, previously identified in Letter C, **n.nnn**nnnn 1 234 pressing 0 key for each unused digit place. . .	First four digits are displayed.
7. Press **E** key. . .	***E*** is displayed.
8. Press **1** key. . .	First four digits are again displayed.

First four digits of custom sensitivity are configured into Register 1 by steps 6, 7, and 8.

Last four digits of custom sensitivity are configured into Register 2 by steps 9, 10, and 11.

9. Key in last four digits of appropriate sensitivity rating, n. nnn**nnnn** 5678 pressing 0 key for each unused digit place or once for four unused digit places. . .	Entered digits are displayed.
10. Press **E** key. .	***E*** is displayed.
11. Press **2** key. . .	Entered digits, last four digits of sensitivity rating, are again displayed.
12. Key in row number you previously identified in Letter G. . .	Row number is displayed.
13. Press **E** key. . .	***E*** is displayed.
14. Press **3** key. . .	Row number is again displayed. Configuration of Custom Sensitivity with Capacity x Increment Size is complete.
15. Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode.	

Configuring Custom Warning Alarm Factor

This procedure starts with example Configuration Code 5151 shown in TABLE 1. Code 5151 used the second, third, fourth, and fifth of five available digit places; the first digit place is unused.

We will configure a Custom Warning Alarm Factor of 60 to provide an actual Warning Alarm Value of 120. We divide the desired Warning Alarm Value by the selected Increment Size to find the Warning Alarm Factor. TABLE 1 shows that in Configuration Code 5151, the second digit place, a 5, (fourth digit place from right) selects an Increment Size of 2.

*You may exit this procedure from any display, except **E**, with **GROSS**, **HOLD**, or **LOAD/UNLOAD** key.*

Desired Warning Alarm Value	divided by	Selected Increment Size	equals	Warning Alarm Factor
↓		↓		↓
120		2		60

For Step 6, any keyed in value higher than 2000 will be read by the Indicator as 2000. Selection Range for Custom Warning Alarm Factor is O to 2000.

1.	Key in **7 1 5**. . .	***715*** is displayed.
2.	Press hidden **E** key and hold for two seconds. . .	***715E*** is displayed.
3.	Using example Configuration Code 5151, change fourth digit place (second from right) to the numeral 9, for *Custom*, and key in Configuration Code **5 1 9 1** . . .	***5191*** is displayed.
4.	Press **E** key . . .	***E*** is displayed.
5.	Press **LOAD/UNLOAD** . . .	***5191*** is again displayed.
6.	Key in Custom Warning Alarm Factor, **6 0**. . .	***60*** is displayed.
7.	Press **E** key . . .	***E*** is displayed.
8.	Press **4** key . . .	***60*** is again displayed.
		Configuration of Custom Warning Alarm Factor is complete.
9.	Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode.	

Calibration Mode

Instructions for Calibration Mode include:

- Calibrating Using a Known Weight
- Getting Ready to Calibrate with BLH Model 625 Calibrator
- Calibrating with BLH Model 625 Calibrator

Calibrating Using a Known Weight

*You may exit this procedure from any display, except **E**, with **GROSS**, **HOLD**, or **LOAD/UNLOAD** key.*

Use a reliable known weight equal to or greater than the maximum weight of material that will be weighed.

l.	Empty and zero the scale.	
2.	Key in **7 1 5**. . .	***715*** is displayed. *Step 2 display depends upon selected capacity for your system.*
3.	Press hidden **E** key and hold for two seconds . . .	***715E*** is displayed.
4.	Press **E** key. . .	E is displayed.
.		
5.	Press **GROSS** . . .	Zero value should be displayed before you continue. If **RE-ZERO-ING** is necessary following Step 5, press **ZERO/RESET**.
6.	Place known weight on scale . . .	Display represents gross weighment of known weight prior to calibration.
7.	**Adjust span**, using numeric keys as shown, **until weight display equals value of known weight** (Span is adjustable +/- 10%):	

- To increase span, press 1, 2, 4, or 5;
- To decrease span, press 6, 7, 9, or 0;
- To return span to factory-calibrated value, press 3 or 8. . .

Calibration is complete.

8. Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode.

Getting Ready to Calibrate with BLH Model 625 Calibrator

This method of calibration is intended for trained technicians using specialized equipment.

1. Use appropriate instruction shown in TABLE 5 to connect the BLH Model 625 Calibrator to the Model 715 Indicator.
2. Determine highest mV/V reading according to factors of Weigh Bar size and full capacity of system, using appropriate Calibration Table as referenced in TABLE 5.
3. Write down highest mV/V reading for use in Step 7 of following procedure: _____.

Table 5
Calibrator Connections And Calibration Tables

Number of Weigh Bars and Type of Connector	Instructions for Connecting Indicator with BLH Calibrator	Calibration Tables
Four Weigh Bars w/ 5-Pin Connectors	Connect single cable from BLH Calibrator to one of the 5-pin Weigh Bar connectors.	Use W-T Spec P/N 24375 Model 715 Calibration Tables.
Four Weigh Bars w/ 4-Pin Connectors	Connect four cables from a modified BLH Calibrator to all four 4-pin Weigh Bar connectors.	Use W-T Spec P/N 14599 Farm Scale Calibration Tables.
One Weigh Bar w/ 7-pin Connector	Connect single cable from BLH Calibrator to the single 7-pin Weigh Bar Connector.	Use W-T Spec P/N 24375 Model 715 Calibration Tables.

Calibrating with a BLH Model 625 Calibrator

*You may exit this procedure from any display, except **E**, with **GROSS**, **HOLD**, or **LOAD/UNLOAD** key.*

1. Dial BLH Calibrator to zero mV/V.
2. Zero Indicator.
3. Key in **7 1 5** . . . ***715*** is displayed. *Step 3 display depends upon selected capacity for your system*.
4. Press hidden **E** key and hold for two seconds . . . ***715E*** is displayed.
5. Press **E** . . . E is displayed.
6. Press **GROSS**. . . Zero value should be displayed before you continue. ***IF RE-ZEROING** is necessary following Step 6, press **ZERO/RESET***.
7. Turn BLH Calibrator dial to highest mV/V setting for this system, as determined in Step 2 of *Getting Ready to Calibrate with BLH* . . . Display represents gross weight prior to calibration.

8. **Adjust span**, using numeric keys as shown, **until weight display** equals weight value known in Calibration Table for highest **mV/V setting** (Span is adjustable to +/- 10%):
   - Press 1, 2, 4, or 5 to increase span;
   - Press 6, 7, 9, or 0 to decrease span;
   - Press 3 or 8 to return span to factory calibrated value. . .

   Calibration is completed. ***HOLDING IN NUMERIC KEY*** *in Step 8 causes display progression to auto-repeat and accelerate.*

9. Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode.

Auto Zero Tracking Selection

Model 715 comes standard with Auto Zero Tracking (AZT) of +/- .025% of full capacity. This section explains how to disable this feature if necessary.

Disabling Azt

1.	Key in **715** . . .	***715*** is displayed.
2.	Press hidden **E** key and hold for two seconds . . .	***715E*** is displayed.
3.	Press **0** . . .	***0*** is displayed.
4.	Press the hidden **E** key . . .	***E*** is displayed.
5.	Press and hold **0** until . . .	***0*** is displayed.

Enabling Azt

1.	Key in **715** . . .	***715*** is displayed.
2.	Press hidden **E** key and hold for two seconds . . .	***715E*** is displayed.
3.	Press **1** . . .	***1*** is displayed.
4.	Press hidden **E** key . . .	***E*** is displayed.
5.	Press and hold **0** until . . .	***1*** is displayed.

Internal Raw Counts Mode

Use this mode to access Internal Raw Counts display. Internal Raw Counts value is useful in two ways:

A. In troubleshooting, to verify correct A-D output.

B. In conjunction with a coarse zero potentiometer on a junction box, to adjust absolute zero.

Viewing Internal Raw Counts Display

*You may exit this procedure from any display, except **E**, with **GROSS**, **HOLD**, or **LOAD/UNLOAD** key.*

l.	Key in **715**. . .	***715*** is displayed.
2.	Press hidden **E** key and hold for two seconds . . .	***715E*** is displayed.
3.	Press **E**. . .	***E*** is displayed.
4.	Press **ZERO/RESET**. . .	Internal Raw Count value is displayed.

At 1.0 mV/V, the display will always read 10,955 counts, +/- 6%.

You May Adjust Absolute Zero if your scale system includes a junction box with a coarse zero potentiometer. When Internal Raw Counts are displayed, remove all weight from the scale and adjust the coarse zero potentiometer until the display reads 0.

5. Press **GROSS**, **HOLD**, or **LOAD/UNLOAD** key to return to corresponding operational mode.

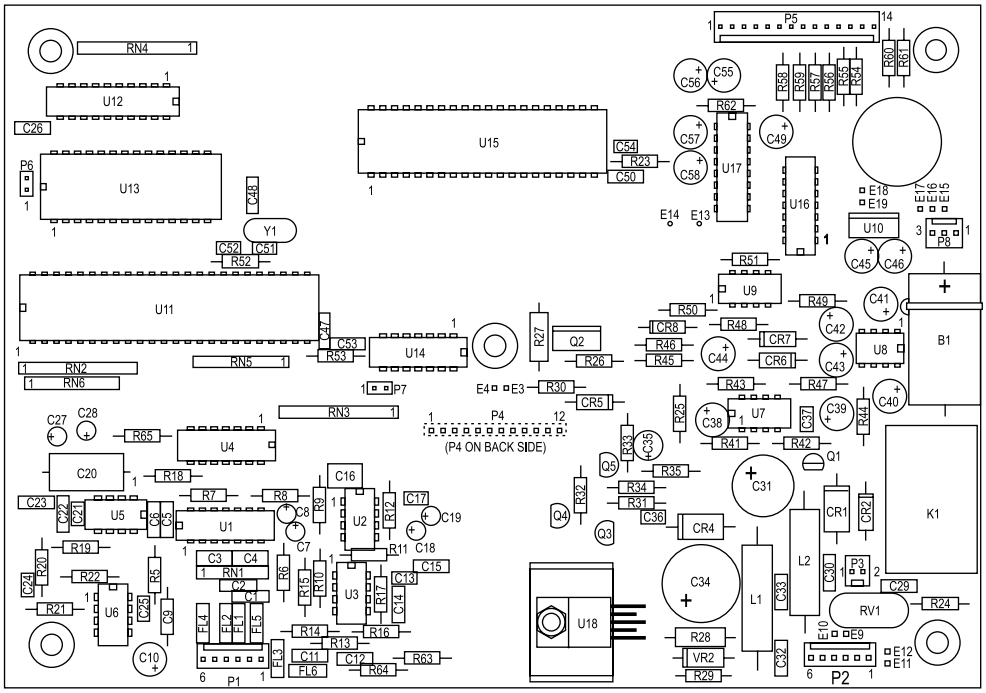
Software Revision Mode

Use this mode to verify the software version that has been installed in your 715.

1.	Key in **715** . . .	***715*** is displayed.
2.	Press hidden **E** key and hold for two seconds . . .	***715E*** is displayed.
3.	Press hidden **E** key . . .	E is displayed
4.	Press **5** and hold . . .	***XXX*** is displayed.
5.	Release key . . .	***Rev. X*** is displayed.

This information gives you the dash number of the Weigh-Tronix 27657 - XXXX with appropriate revision level.

Circuit Descriptions



Main Printed Circuit Card

This printed circuit card contains the

- Power Supply
- Analog-To-Digital Circuitry
- Microprocessor Circuitry
- Display Circuitry.

This indicator, which is energized by 10 to 18 vdc in reference to a NEGATIVE GROUND utilizes two five amp fuses mounted on the bottom of the chassis for current protection. (Systems with a positive ground are modified by cutting jumpers from E11 to E12 and E9 to E10. Then install jumpers from E9 to E12 and E10 to E11.)

The circuit card receives power from the fuse at P2 and is protected against high voltage transients with varistor RV1.

Input voltage is monitored by 16 volt zener diode VR2. If the voltage across VR2 exceeds 16 vdc, Q3 will turn “ON” holding the power circuitry in the “OFF” condition. In addition, if the input voltage drops below 10 volts DC, PA7 disables the power circuitry by outputting a low signal.

To prevent the unit from turning off below 10 volts, remove CR5 and C36. When configured this way, the unit will return to the Gross mode if it loses power.

A “Power On” command is generated when the ON key is pressed. This turns Q5 on and provides a low signal to +8v regulator (u18) pin1 enable input. When the power is turned off, the Q5 turns off, the Q4 turns on and a high signal disables (U18) the +8 regulator and turns it off.

The -7.5 vdc supply voltage is established by U7, a voltage convertor. This device inverts the input voltage to a -7.5 vdc level.

The +5 vdc voltage is provided by U8, a 7805 regulator.

As soon as the +8 volt power supply voltage is present, Q2 turns on which turns on the DS2 and DS3 LEDS

Analog to Digital Circuitry

The analog-to-digital circuitry consists of two weight voltage amplifiers (U1 and U2), a reference amplifier (U3), an analog switch (U4), switch control logic gate (U14C), a dual slope integrator (U5), and a comparator (U6).

An 8 vdc excitation voltage is supplied to the weight sensors from P1 pins 1 and 6. The millivolt signal received back from the weight sensors enters the analog-to-digital circuitry at P1, pins 3 and 4.

This millivolt signal is amplified and filtered by U1 and U2 to establish the amplified weight voltage (0 to +9 vdc) at U2 pin 6. This weight voltage is then provided to U4 pin 5. A logic low during the weight voltage interval at U4 pin 1 enables the amplified weight voltage to be received by the dual slope integrator (U5). Starting at zero volts, the integrator capacitor (C20) charges at ramp angle directly proportional to the amplified weight voltage but of opposite polarity. As the amplified weight voltage increases, the integrator output ramps more in the negative direction.

The voltage received from the sense lines enters the analog-to-digital circuitry at P1 pins 2 and 5. This sense voltage establishes a reference voltage of -9 vdc at U3 pin 6. The reference voltage is applied to U4 pin 10.

After the integrator capacitor has been charged for a fixed period of time, the Weight Voltage Interval, U4 pin 1 goes high. U14 applies a logic low to pin 14 of U4 which allows the reference voltage to be applied to the integrator. Since the reference voltage (-9 vdc) is of opposite polarity to the amplified weight voltage, it causes the integrator output to ramp back toward zero. (This period of time is known as the Reference Voltage Interval.)

While the integrator output is ramping back to zero, the comparator (U6) signals the microprocessor to record this period of time in clock pulses. The microprocessor uses this number of pulses to calculate the amount of weight on the scale.

When the integrator reaches zero, the comparator output goes low which triggers U14C to remove the logic low at U4 pin 14 completing one analog-to-digital cycle.

This analog-to-digital conversion repeats at a frequency of 30 hertz.

Microprocessor Circuitry

The Microprocessor Circuitry consists of a Motorola MC68HC11A1 8-bit microprocessor IC (u11), a 74HC573 tristate latch (U12), a 27C128 EPROM (U13), and various other components.

The microprocessor features on chip memory 256 bytes of RAM, 512 bytes of EEPROM, along with a Computer Operating Properly (COP) watch dog system.

A 2 MHZ internal clock is contained in the microprocessor and is controlled by an external crystal (Y1). Output (ECLK) from this clock provides timing reference for the EPROM (U13), and input to voltage monitoring circuit U9.

The microprocessor communicates with Analog-to-Digital switch control logic gate U14 through ports PA2 and PA6. Through U14, the timing reference for the Reference Voltage Interval and Weight Voltage Interval are provided.

The switches on the front panel receive a signal from ports PD2-PD5 on the microprocessor and they are monitored for an electrical change by ports PE0PE3 on the microprocessor.

As signals are received by the microprocessor, it will send them to the EPROM (U13) on the address lines A0-A15. The signals will be translated and held by U12. Once all translating is completed, the microprocessor will enable U12 to return the new information on data lines D0-D7 to the microprocessor. Then, the appropriate device will receive a signal from the microprocessor.

The Computer Operating Properly (COP) watch dog system in the microprocessor detects errors introduced by electromagnetic interference. If an error is detected, the microprocessor is reset and operation continues. When the indicator is powered up, the momentary displayed "hi" message, indicates the watch dog system is active.

If a "hi" message is displayed, the indicator will perform correctly, but will not be guarded by the COP watch dog system. This may happen when a new microprocessor IC is installed. The COP watch dog system can be activated by following this procedure:

- Turn the indicator OFF jumper P7-1 to P7-2 and P6-1 to P6-2
- Turn the Model 715 ON for a few seconds
- Turn the Model 715 OFF
- Remove the jumpers

Display Circuitry

The six digit liquid crystal display (DS1) features black segments against a silver transflective background.

Liquid crystal display driver U15 requires a +5 vdc power supply and two signal inputs from the microprocessor to function: (1) a 33-bit serial data input and (2) a microprocessor controlled input. When both of these conditions have been met, the display driver will energize the appropriate segments on the display.

Optional RS-232 or Remote Circuitry

Additional circuitry required to provide either an RS-232 communications interface or a remote display interface requires R49-57, C48-51, U16, U10, and P6 connector.

The RS-232 transmitter/receiver (U10) internally generates +10v and -10 v supplies and meets all EIA RS-232C specifications. Through U10, the microprocessor communicates with peripherals which will accept the following protocol: baud rate 1200, 1start bit, 8 data bits, no parity, and one stop bit. The RS-232 communications port supports X-on (HEX 11), X-off (HEX 13_) handshake and responds to an inquire character (HEX 05) print request.

The invertor/buffer gates (U16) are used in the remote clock, remote data, remote zero, and remote print lines to provide isolation and assure proper logic; levels to and from the remote display.

P6 connector provides external access to power supply voltages, RS-232 data lines, remote displaydrive lines, remote zero lines, and remote print lines.

To Install Remote Receiver

After installing PC board assembly P/N 27643-0030 as shown in assembly section, plug 3 pin cable assembly into P8. This enables user to have remote zero capabilities within the Model 715. Be sure to match dip switch selections between receiver card and transmitter. Place antenna through small hole in the lower stainless steel assembly in order to function properly.

Programming Appendix

A new feature makes the Model 715 more easily configurable with J-Star and Eaton transducers than before. The added J-Star/Eaton interface protocol slightly modifies display and keying sequences for accessing Configuration Mode, Calibration Mode, and Internal Raw Counts Mode. The Model 715 has added two more (716E, 717E) menus to make converting between different Weigh-Tronix applications even more flexible than it was with the 700E model.

Configuration for J-Star, Eaton and Two Additional Weigh-Tronix Menus

New displays and keying sequences require modified instructions. Modified documentation presented in the *PROGRAMMING APPENDIX* applies whenever you change the transducer interface on your system, and the change means a different transducer trade name than that previously configured for. This includes switching from J-Star or Eaton transducers back to Weigh-Tronix Weigh Bars.

In applications where Weigh-Tronix Weigh Bars are retained, original documentation applies.

When switching the transducer interface on a system means a change in transducer trade names, follow the modified procedure shown below and illustrated in FIGURE 2 to access Configuration Mode, Calibration Mode, and Internal Raw Counts Mode.

Always execute the steps below before keying in a new Configuration Code or trying to calibrate a transducer with a different trade name.

1. Key in **715** and press **E** key for two seconds. . . Currently configured menu is displayed: For Weigh-Tronix, **715E, 716E**; for Eaton, **EAtn 717E;** for J-Star, **JStr**.

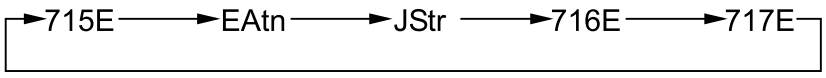
2. You now have two choices, A or B:

   A. If displayed menu is correct, skip to step 4.

   OR

   B. If displayed menu does not correspond with new transducer interface, press and hold **E** key until next menu appears.

3. If each of the Weigh-Tronix menus have been configured for different applications, it is possible to bounce between the **715E**, **716E**, and **717E** menus. Press **715**, **716**, or **717** and hold the **E** key until the optional menu is displayed.



4. Continue keying as appropriate to access desired modes.

Configuration Code Charts

To determine an appropriate Configuration Code for J-Star or Eaton transducers, consult the Configuration Code Charts in Tables 6 or 7.

Using the Eaton Configuration Code Chart (Table 6)

The Eaton Configuration Code Chart (See Table 6) shows you how selections listed below for five configurable parameters would be represented by a configuration code of *4151*. Notice that each digit in the code represents a parameter, and the value of each digit represents a selection for that parameter as shown in Table 8: Eaton Configuration Code Chart.

Table 6
Eaton: A Sample Set of Configuration Choices and Its Corresponding Configuration Code, 4151

Parameter	Represented by	Selection	Config. Code
Sensitivity	2nd digit	.034/1K	**4**
Capacity x Increment Size	3rd digit	20K x 2	**1**
Warning Alarm Factor	4th digit	25 = 50lb / 2	**5**
Units of Measure & Auto Hold Mode	5th digit	lb/ON	**1**

CODE 4151 uses 2nd, 3rd, 4th and 5th of five available digits.

Using the J-Star Configuration Code Chart (Table 7)

The J-Star configuration Code Chart (See Table 7) shows you how selections listed below for five configurable parameters would be represented by a Configuration Code of *3151.* Notice that each digit in the code represents a parameter, and the value of each digit represents a selection for that parameter as shown in Table 9: J-Star Configuration Code Chart.

Table 7
J-Star: A Sample Set of Configuration Choices and Its Corresponding Configuration Code, 3151

Parameter	Represented by	Selection	Config. Code
Axle Size	2nd digit	2-1/8"	**3**
Capacity x Increment Size	3rd digit	20K x 2	**1**
Warning Alarm Factor	4th digit	25 = 50lb / 2	**5**
Units of Measure & Auto Hold Mode	5th digit	lb/ON	**1**

CODE 3151 uses 2nd, 3rd, 4th and 5th of five available digits.

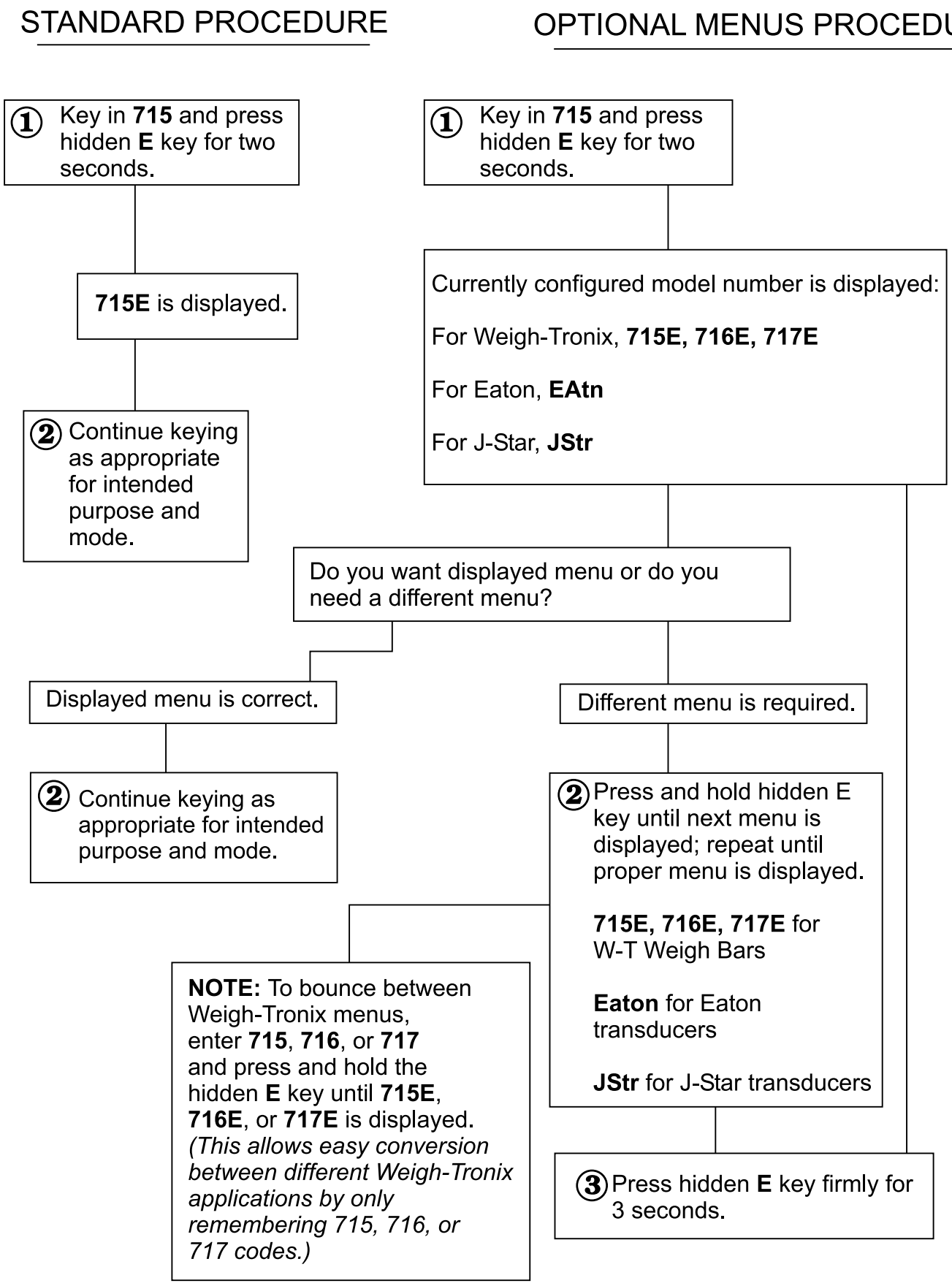


FIGURE 2:
Standard and Optional Procedures for Accessing Optional Setup Modes

Table 8: Eaton Configuration Code Chart

TRANSDUCER DESCRIPTION: SENSITIVITY	CAPACITY x INCREMENT SIZE					
0: .068/100 (5-pin)	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
1: .034/100	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
2: .017/100	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
3: .068/1K	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
4: .034/1K	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
5: .017/1K (5-pin)	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
6: .100/1K (5-pin)	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50

19: Custom Sensitivity and Capacity x Increment (See text: *Configuring Custom Sensitivity with Capacity x Increment Size*.)

Column Numbers: 0 1 2 3 4 5

WARNING ALARM FACTOR
0: 0
1: 2
2: 5
3: 10
4: 20
5: 25
6: 30
7: 40
8: 50
9: Custom (See text: *Configuring Custom Warning Alarm Factor*.)

FIELD RECALIBRATION
To insure accuracy, recalibrate the scale system with a known weight after reconfiguring for Eaton (See *Calibrating Using a Known Weight*, p. 10).

UNITS	AUTO HOLD
0: lb	No
1: lb	Yes
2: kg	No
3: kg	Yes

_ **4 1 5 1** is the Configuration Code number representing selections cited in *USING EATON TABLE 6.*

1 2 3 4 5 are place numbers for each digit in Configuration Code.

Symbols Used in Table 6

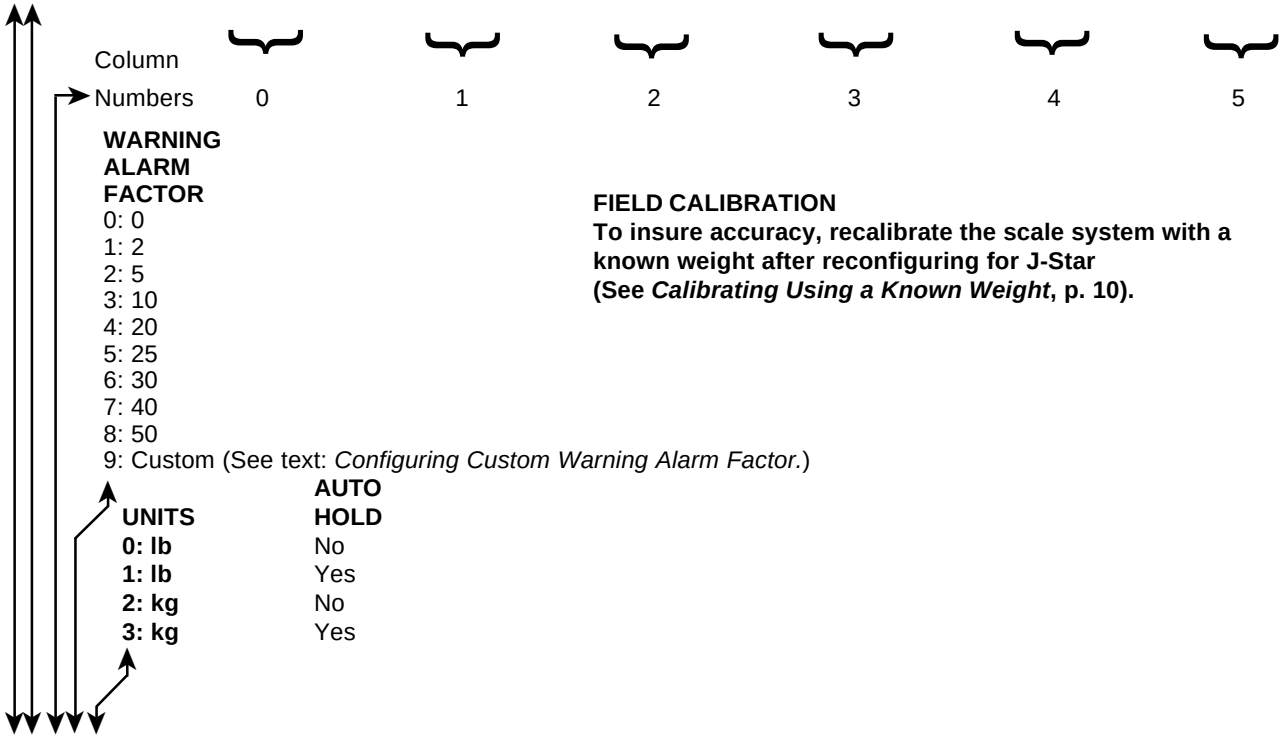
K Multiply by 1000

@ Divide desired Warning Alarm Value by selected Increment Size to find Warning Alarm Factor.

Table 9: J-Star Configuration Code Chart

TRANSDUCER DESCRIPTION: AXLE SIZE	CAPACITY x INCREMENT SIZE					
0: 1"	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
1: 1" (Poly)	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2: 1-7/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
3: 2-1/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2-1/2"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2-7/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
3-3/4"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
4: CT	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50

19: Custom Sensitivity and Capacity x Increment (See text: *Configuring Custom Sensitivity with Capacity x Increment Size*.)



FIELD CALIBRATION
To insure accuracy, recalibrate the scale system with a known weight after reconfiguring for J-Star (See *Calibrating Using a Known Weight*, p. 10).

_ 3 1 5 1 is the Configuration Code number representing selections cited in *USING TABLE 1: CONFIGURATION CODE EXAMPLE.*

1 2 3 4 5 are place numbers for each digit in Configuration Code.

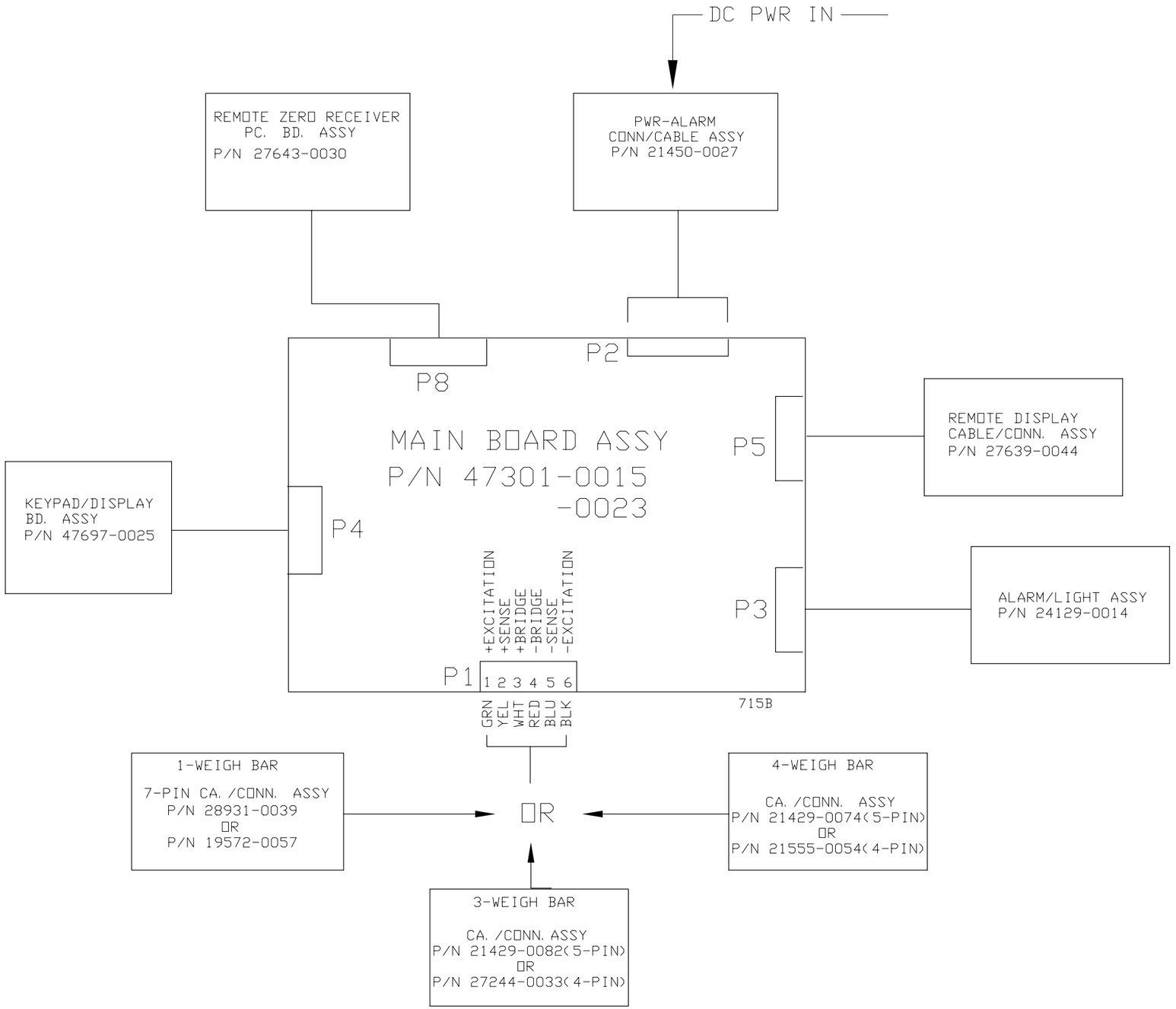
Symbols Used in Table 8

K Multiply by 1000

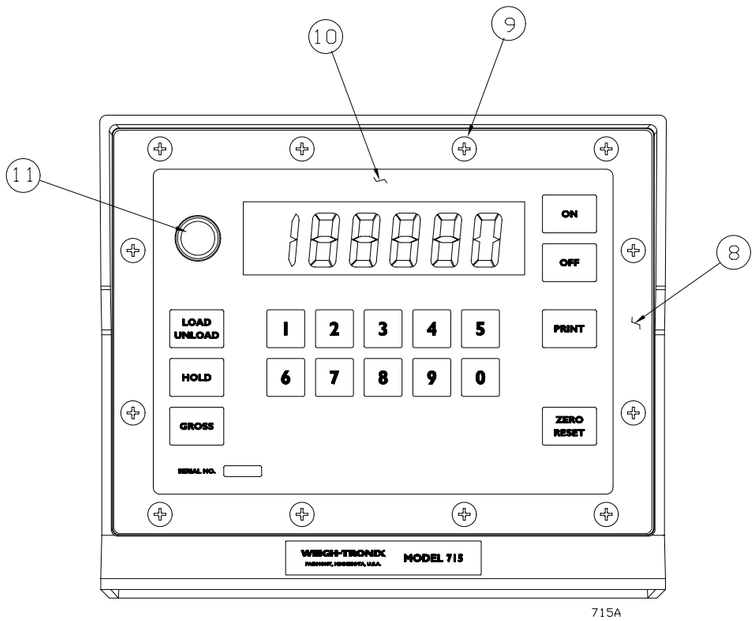
@ Divide desired Warning Alarm Value by selected Increment Size to find Warning Alarm Factor.

MODEL 715 INDICATOR 12VDC

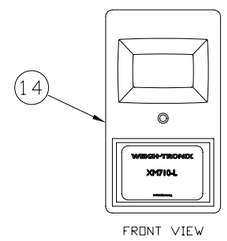
SYSTEM BLOCK DIAGRAM



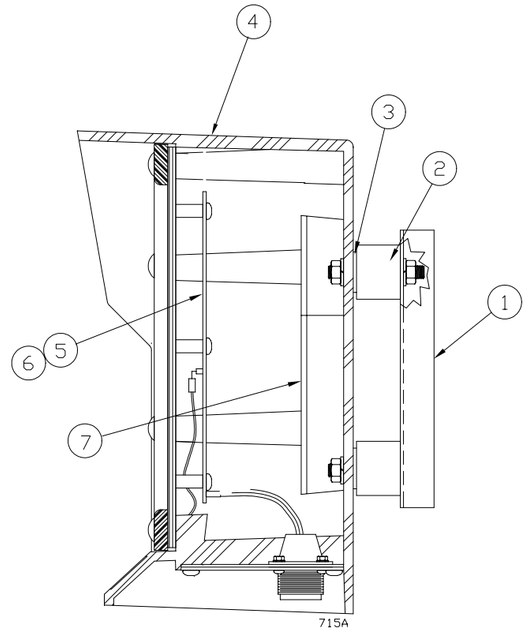
MODEL 715 INDICATOR 12VDC
PARTS AND ASSEMBLY



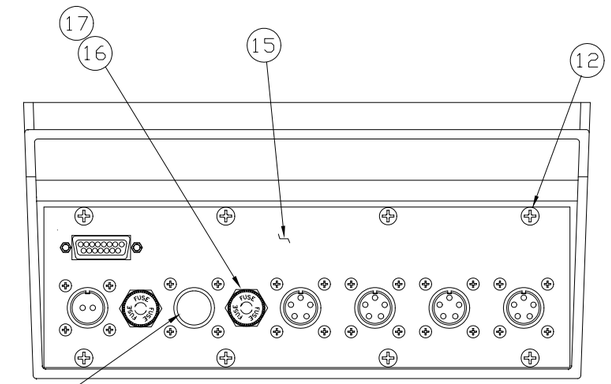
FRONT VIEW



FRONT VIEW



SIDE VIEW

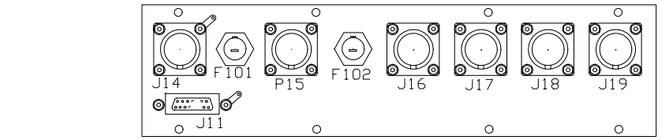


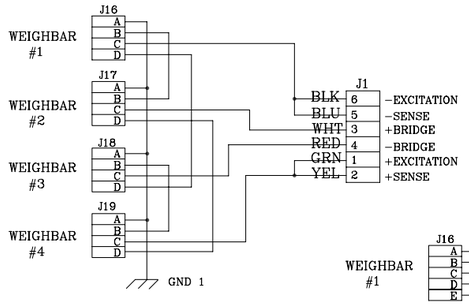
BOTTOM VIEW, LOWER PANEL
(4 WEIGH BAR, 5 PIN CONN., RS232 PANEL SHOWN)

ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Mounting Bracket	11899-0043	1
2	Rubber Mount	17807-0058	4
3	Neoprene Washer	27357-0010	4
4	Enclosure	47017-0010	1
5	Main Pc Board	47301-0015	1
6	Main Pc Board W/ Rs-232, R/D	47301-0023	1
7	“Remote Zero” Receiver Kit (Optional)	27643-0030	1
8	Bezel	21356-0014	1
9	Screw, #10-32 x .75"L	18087-0073	12
10	Keypad Ass'y	47697-0025	1
11	Alarm Light Ass'y	24129-0014	1
12	Screw, #10-32 x .31"L	14473-0348	8
13	Plastic Cap (Threaded)	15351-0029	1
14	Xm710, Hand-Held Remote	27809-0014	1
15	Pnl Assy, Single W/B Conn (7-Pin)	52956-0054	1
	Pnl Assy, Single W/B Conn (7-Pin) W/Rd or RS232	52956-0104	1
	Pnl Assy 3-W/B Conn (4-Pin)	52956-0047	1
	Pnl Assy 3-W/B Conn (4-Pin) W/Rd or RS232	52956-0096	1
	Pnl Assy 3-W/B Conn (5-Pin)	52956-0039	1
	Pnl Assy 3-W/B Conn (5-Pin) W/Rd or RS232	52956-0088	1
	Pnl Assy 4-W/B Conn (4-Pin)	52956-0021	1
	Pnl Assy 4-W/B Conn (5-Pin)	52956-0013	1
	Pnl Assy 4-W/B Conn (4-Pin) W/Rd or RS232	52956-0070	1
	Pnl Assy 4-W/B Conn (5-Pin) W/Rd or RS232	52956-0062	1
16	Fuse Holder	15455-0016	2
17	Fuse (5 AMP)	15453-0042	2

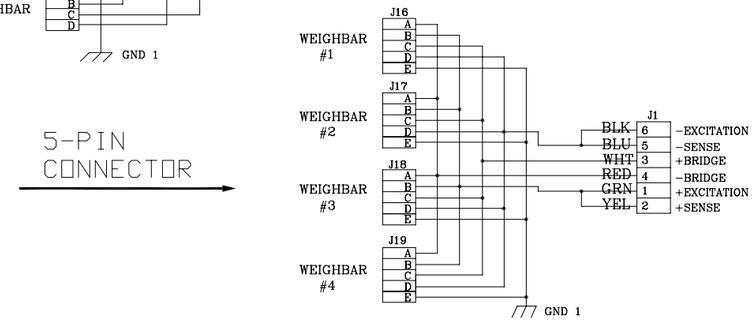
MODEL 715 INDICATOR 12VDC

WEIGH BAR PANEL ASSEMBLY AND
CABLE / CONNECTOR SCHEMATICS



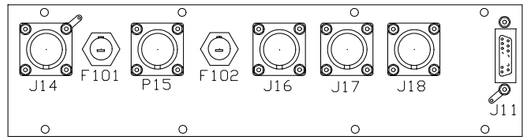


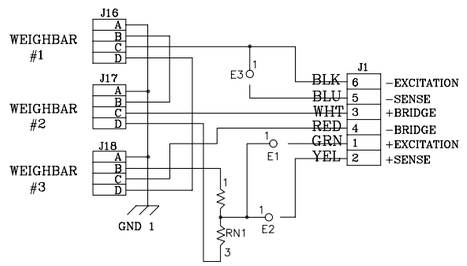
4-PIN CONNECTOR



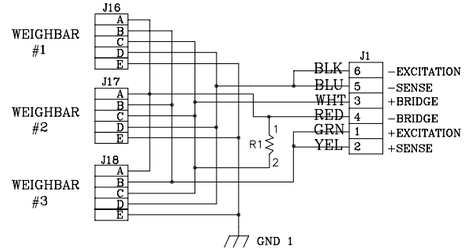
5-PIN CONNECTOR

715C



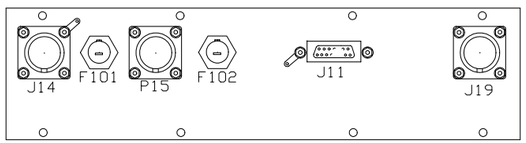


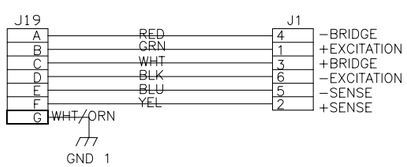
4-PIN CONNECTOR



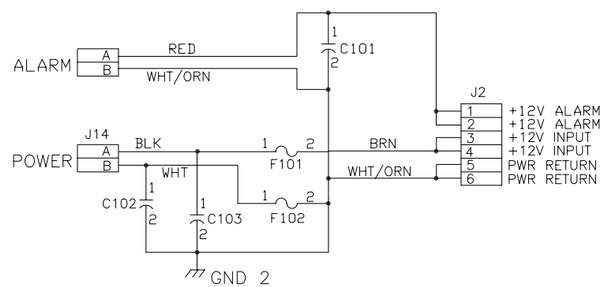
5-PIN CONNECTOR

715C

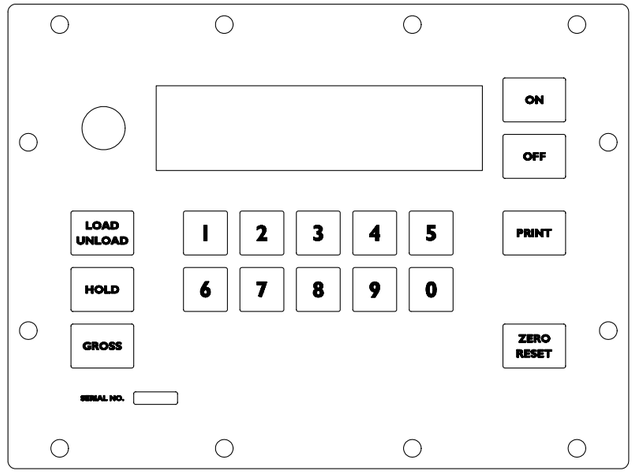


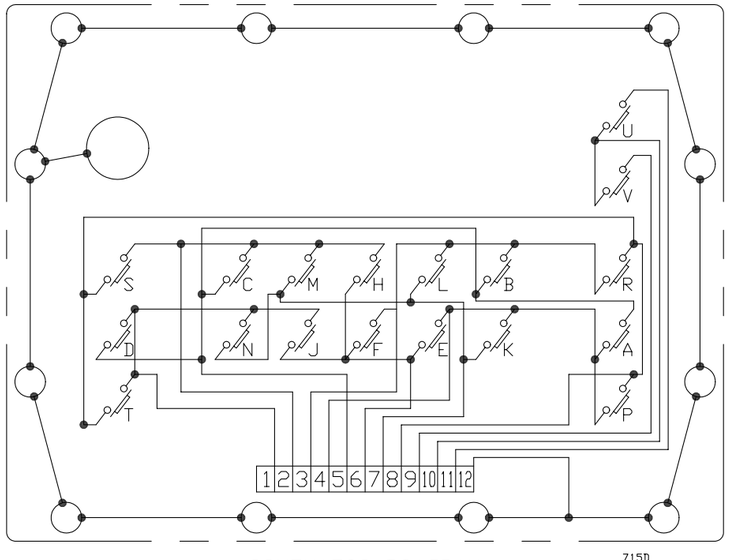


7-PIN CONNECTOR



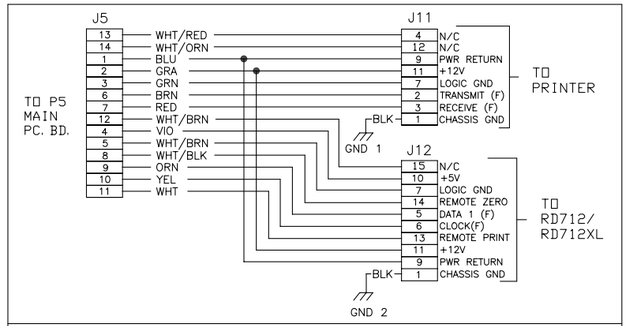
MODEL 715 INDICATOR 12VDC
KEYPAD OVERLAY P/N 47697-0025 *AND* SCHEMATIC



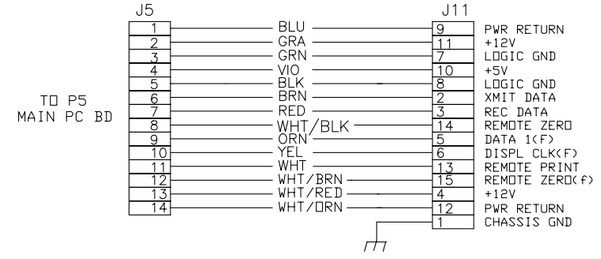


SCHEMATIC DIAGRAM

EXTERNAL INTERFACE
CABLE PIN-OUTS



REMOTE DISPLAY AND RS232
CABLE CONNECTOR P/N 27639-0051

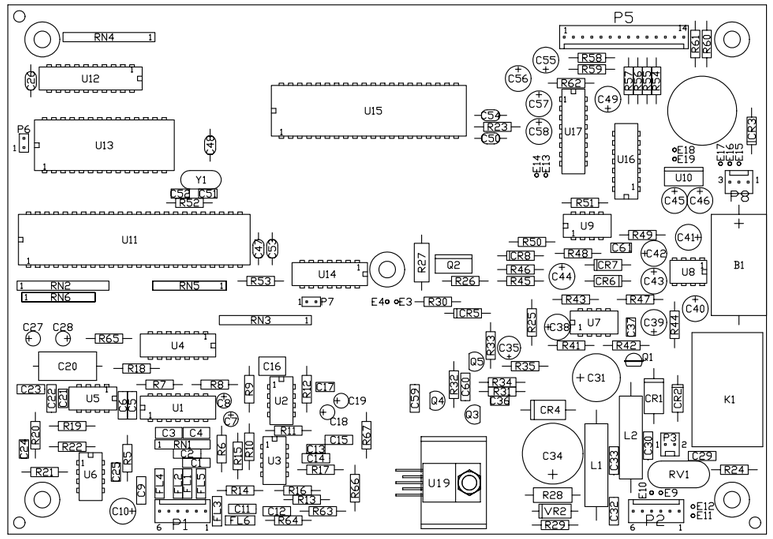


REMOTE DISPLAY OR RS232
CABLE/CONNECTOR P/N 27639-0044

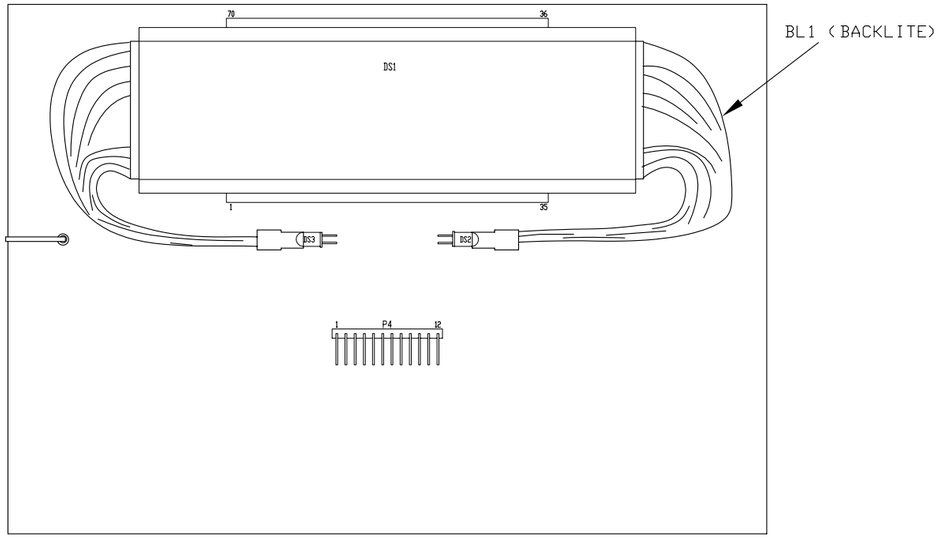
MODEL 715 INDICATOR 12VDC

MAIN PC BOARD A/D ASSEMBLY

P/N 47301 –0015, -0023 & COMPONENTS



COMPONENT SIDE



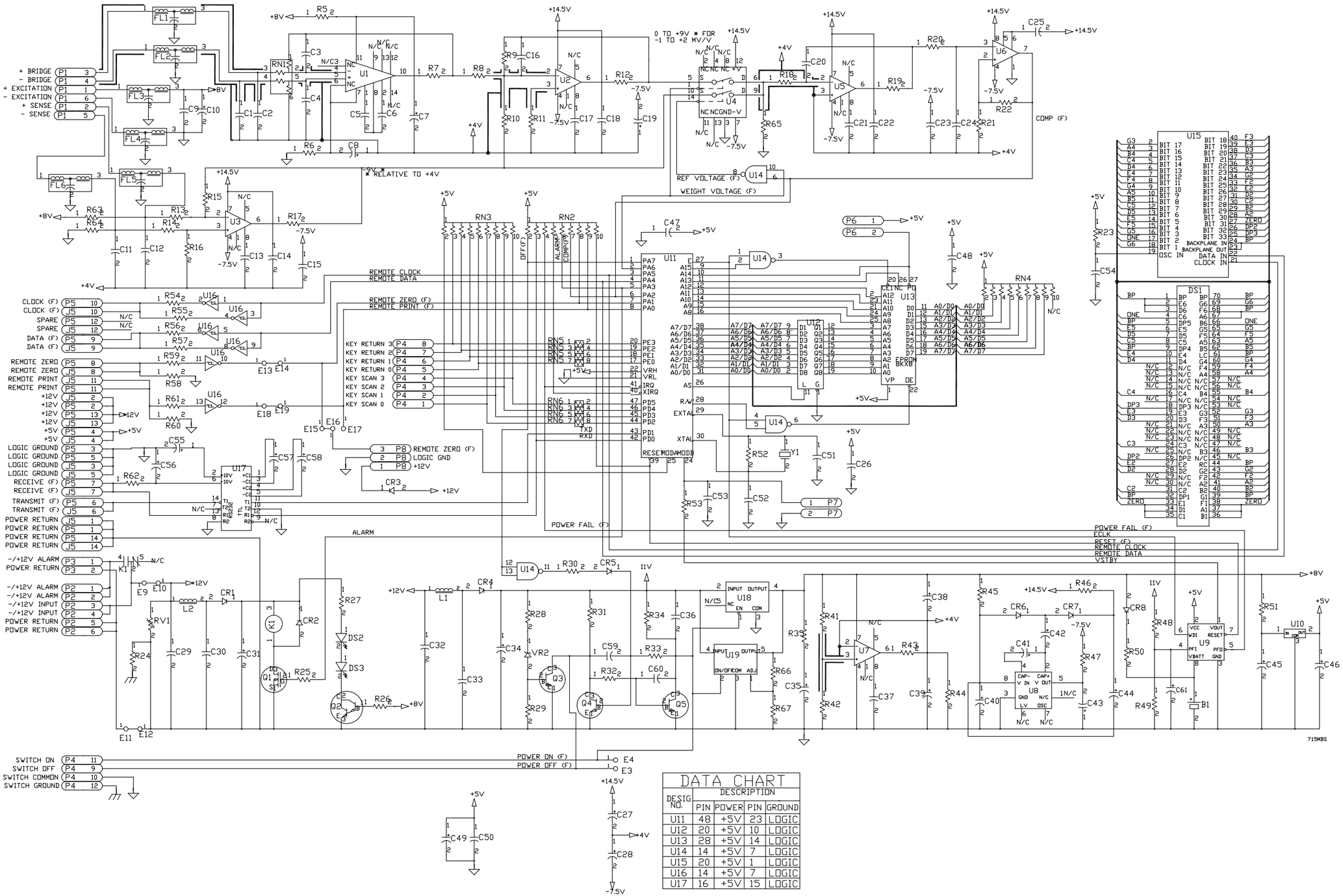
BACK SIDE

SYMBOL	DESCRIPTION	W-T P/N
B1	BATTERY, 3.6 V	23957-0021
BL1	BACKLITE, DISPLAY	27459-0041
C1,2,5,6,9, 11,12,14,15 ,22,23,26,2 9,30,32,33, 47,48,50,53 ,59,60, 61	CAP. 0.1 UF 100 V	15623-0120
C3,4	CAP. .22 UF 50 V	23267-0117
C7,8,18,19, 27,28	CAP. 1.0 UF 35 V	22327-2519
C10,38-46, 49,55-58	CAP. 47 UF 16 V	17993-0094
C13,17,21, 37	CAP. 100PF 200 V	15619-0134
C16	CAP. 1.0 UF 50 V	23267-0158
C20	CAP. .15 UF 100 V	18083-0127
C24	CAP. 4700PF 100 V	15620-0018
C25	CAP. 0.01 UF 100 V	15620-0123
C31	CAP. 470 UF 35 V	17995-0134
C34	CAP. 1000 UF 35 V	17995-0142
C35	CAP. 10 UF 35 V	22327-2618
C36	CAP. 0.01 UF 100 V	15620-0123
C51,52	CAP. 22PF 200 V	15619-0050
C54	CAP. 1000 PF 200 V	15619-0258
CR1,4	DIODE, 1N4142	15668-0076
CR3	DIODE, 1N5817	15668-0324
CR2,6,7	DIODE, 1N4004	15668-0043
CR5	DIODE, 1N4148	15668-0035
CR8	---------- NOT USED----------	----------
DS1	DISPLAY, LCD	22329-0040
DS2,3	LED, H-2000	27472-0010
FL1-6	FILTER, EMI	46547-0011
K1	RELAY	17982-0022
L1,2	CHOKE, 10 UHY	15779-0015
P1,2	CONN. 6 PIN	17794-0053
P3	CONN. 2 PIN	17794-0012
P4	CONN. 12 PIN	17731-0117
P5	CONN. 14 PIN	17794-0137
P6,7	CONN. 2 PIN	17734-0015
P8	CONN. 3 PIN	17794-0020
Q1	TRANSISTOR, VN10KM	15665-0152
Q2	TRANSISTOR, TIP122	16271-0032
Q3-5	TRANSISTOR, 2N3904	15665-0012
R5-7,12,17, 19,43	RESISTOR, 100 OHM	14477-0492
R8	RESISTOR, 9.09 K	17873-1899
R9	RESISTOR, 64.9 K	17873-2715
R10	RESISTOR, 196 K	17873-3176
R11	RESISTOR, 8.06 K	15677-3764
R13,14	RESISTOR, 37.4 K	17873-2483
R15,16	RESISTOR, 42.2 K	17873-2533
R18	RESISTOR, 110 K	15673-4857

SYMBOL	DESCRIPTION	W-T P/N
R20,21	RESISTOR, 182 OHM	15677-2188
R22	RESISTOR, 470 K	14477-1375
R23	RESISTOR, 510 K	14477-1383
R24, 25	RESISTOR, 3.3 K	14477-0856
R26,30	RESISTOR, 2.0 K	14477-0807
R27	RESISTOR, 390 OHM	15670-0635
R28	RESISTOR, 750 OHM	15670-0700
R29	RESISTOR, 910 OHM	14477-0724
R31-34	RESISTOR, 15 K	14477-1011
R35	RESISTOR, 0.475 OHM	46602-0179
R41,42	RESISTOR, 10.0 K	15677-3855
R44	RESISTOR, 3.9 K	14477-0872
R45,51	RESISTOR, 4.7 OHM	14477-0179
R46,47	RESISTOR, 22 OHM	14477-0336
R48	RESISTOR, 78.7 K	15677-4713
R49	RESISTOR, 13.0 K	15677-3962
R50	---------- NOT USED ----------	----------
R52	RESISTOR, 10 MEG	14477-1698
R53	RESISTOR, 5.1 K	14477-0906
R54-57	RESISTOR, 120 OHM	14477-0518
R58-62	RESISTOR, 22K	14477-1052
R63,64	RESISTOR, 39 K	14477-1110
R65	RESISTOR, 22 MEG	14477-1771
R66	RESISTOR, 5.23 K	15673-3586
R67	RESISTOR, 1.0 K	15673-2893
RN1	RESISTOR NETWORK, 5.62/301K	23256-0011
RN2-4	RESISTOR NETWORK, 9 X 10 K	17852-0045
RN5,6	RESISTOR NETWORK, 4 X .1 K	17852-0037
RV1	VARISTOR, V827A12	16046-0028
U1	IC, 7652	14323-0464
U2,3,5,7	IC, 308A	14323-0266
U4	IC, DG200	14323-0241
U6	IC, 311	14323-0258
U8	VOLTAGE REGULATOR 7660	15658-0227
U9	IC, 690	15657-0673
U10	VOLTAGE REGULATOR 7805	15658-0011
U11	IC, MC68HC11A1P	15657-0632
U12	IC, 74HC573	18080-0559
U13	IC, PROGRAMMED MOD 715	27657-0058
U14	IC, 74HC00	18080-0013
U15	IC, 5453N	15657-0624
U16	IC, 74HC14	18080-0096
U17	IC, MAX232CPE	14323-0621
U19	REGULATOR, 2941T	15658-0359
VR2	DIODE, ZENER 1N5353B 16V	15669-0158
XDS1	SOCKET, SIP 25 PIN	17847-1017
XDS1	SOCKET, SIP 10 PIN	17847-1066
XU13	SOCKET, IC 28 PIN	14361-0079
XU18	HEAT SINK	15556-0014
Y1	CRYSTAL, 8.00 MHZ	16125-0212

715MB

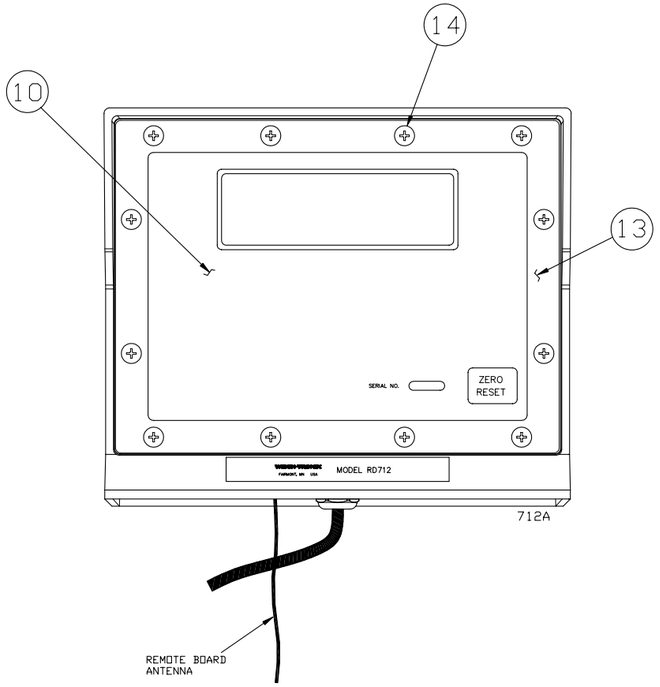
MODEL 715 INDICATOR 12VDC
MAIN PC BOARD A/D SCHEMATIC

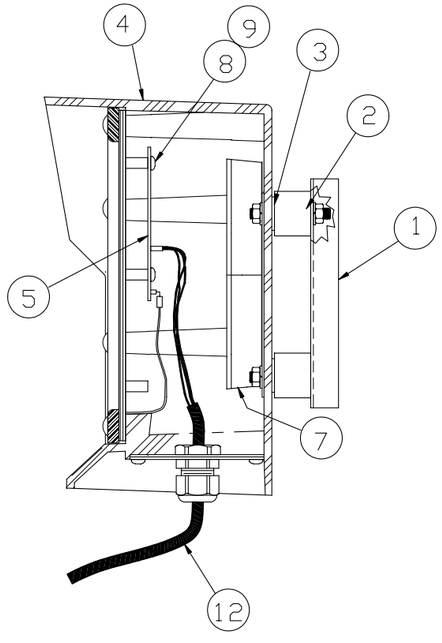


DATA CHART				
DESIG NO.	DESCRIPTION			
	PIN	POWER	PIN	GROUND
U11	48	+5V	23	LOGIC
U12	20	+5V	10	LOGIC
U13	28	+5V	14	LOGIC
U14	14	+5V	7	LOGIC
U15	20	+5V	1	LOGIC
U16	14	+5V	7	LOGIC
U17	16	+5V	15	LOGIC

RD712 / 712XL REMOTE DISPLAY

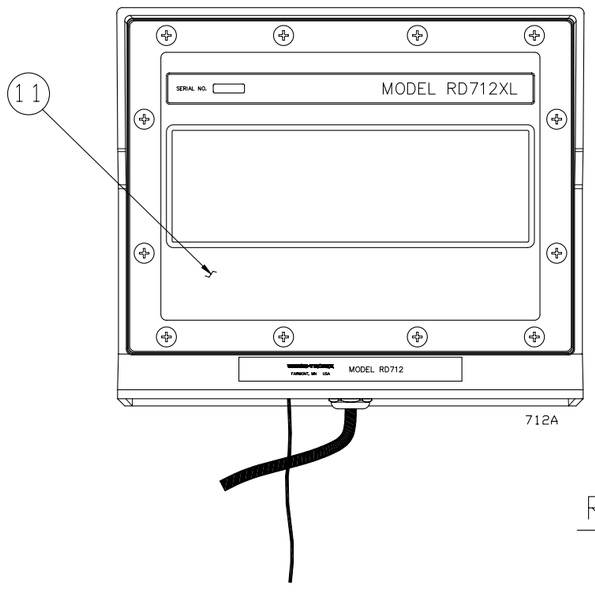
ASSEMBLY P/N 48406 *AND* PARTS LIST

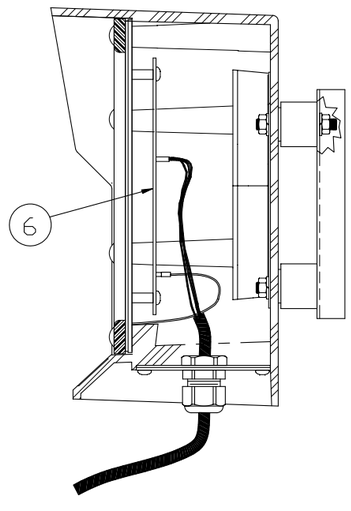




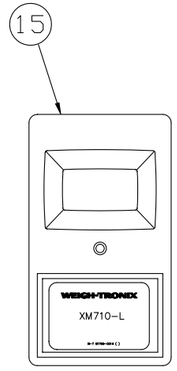
RD712

712A





RD712XL



FRONT VIEW

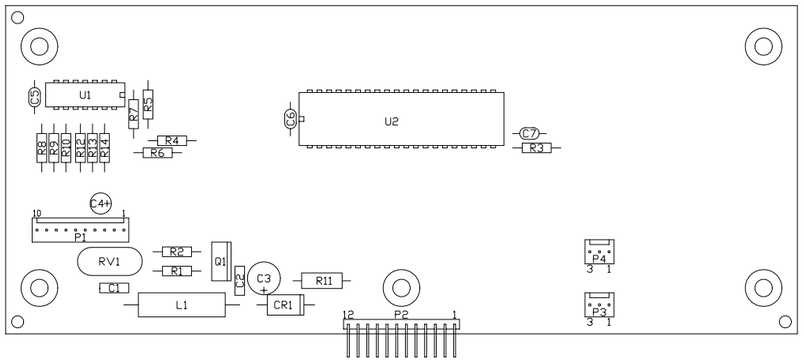
ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Mounting Bracket	11899-0043	1
2	Rubber Mount	17807-0058	4
3	Neoprene Washer	27357-0012	4
4	Enclosure	47017-0010	1
5	Main Pc Board Assy W/Display (RD712)	48445-0010	1
6	Main Pc Board Assy W/Display (RD712XL)	48865-0029	1
7	“Remote Zero” Receiver Assy (Optional)	51763-0018	1
8	Screw, #6-32 x .25"L	14473-0223	4
9	Lock Washer #6	14474-0032	4
10	Rd712 Keypad/Backer Plate Assy (incl.: keypad, backer plate, gasket)	48279-0029	1
11	Rd712xl Keypad/Backer Plate Assy (incl.: keypad, backer plate, gasket)	48715-0021	1
12	Cable Assy 15'	48412-0027	1
	Cable Assy 30'	48412-0019	1
13	Bezel	21356-0014	1
14	Screw #10-32 x .75"L	18087-0073	12
15	Xm710-L Hand Held Remote (optional)	51760-0011	1

RD712 REMOTE DISPLAY

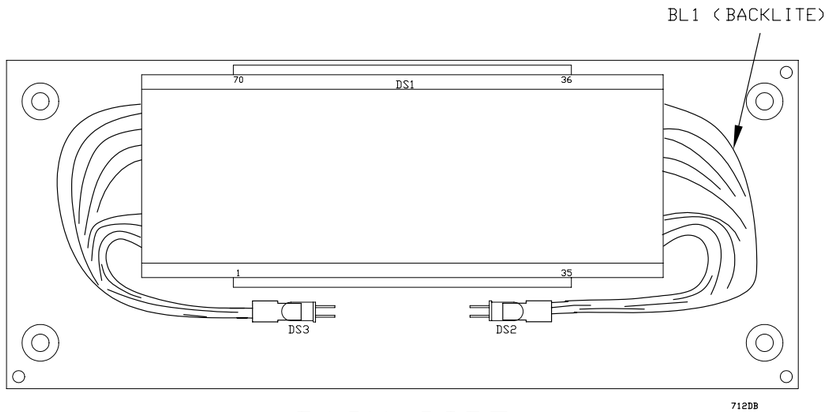
DISPLAY PC BOARD A/D P/N 48445-0010,
COMPONENTS *AND* SCHEMATIC

SYMBOL	DESCRIPTION	W-T P/N
BL1	BASCKLIGHT DSPL FIB OP	27459-0058
C1, 2	CAP .1 UF 100 V	15623-0120
C3	CAP 100 UF 25 V	17994-0101
C4	CAP 47 UF 10 V	17992-0095
C5, 6	CAP 0.1 UF 50 V	46684-0048
C7	CAP 1000 PF 100 V	46684-0022
CR1	DIO 1N4142	15668-0076
DS1	DISPLAY LCD 2"	46671-0019
DS2,3	LED	27472-0010
L1	CHOKE 10 UHY	15779-0015
P1	CONN 10 PIN	17794-0095
P2	CONN 12 PIN	17731-0117
P3	CONN 3 PIN	17794-0020
Q1	TRANS TIP122	16271-0032

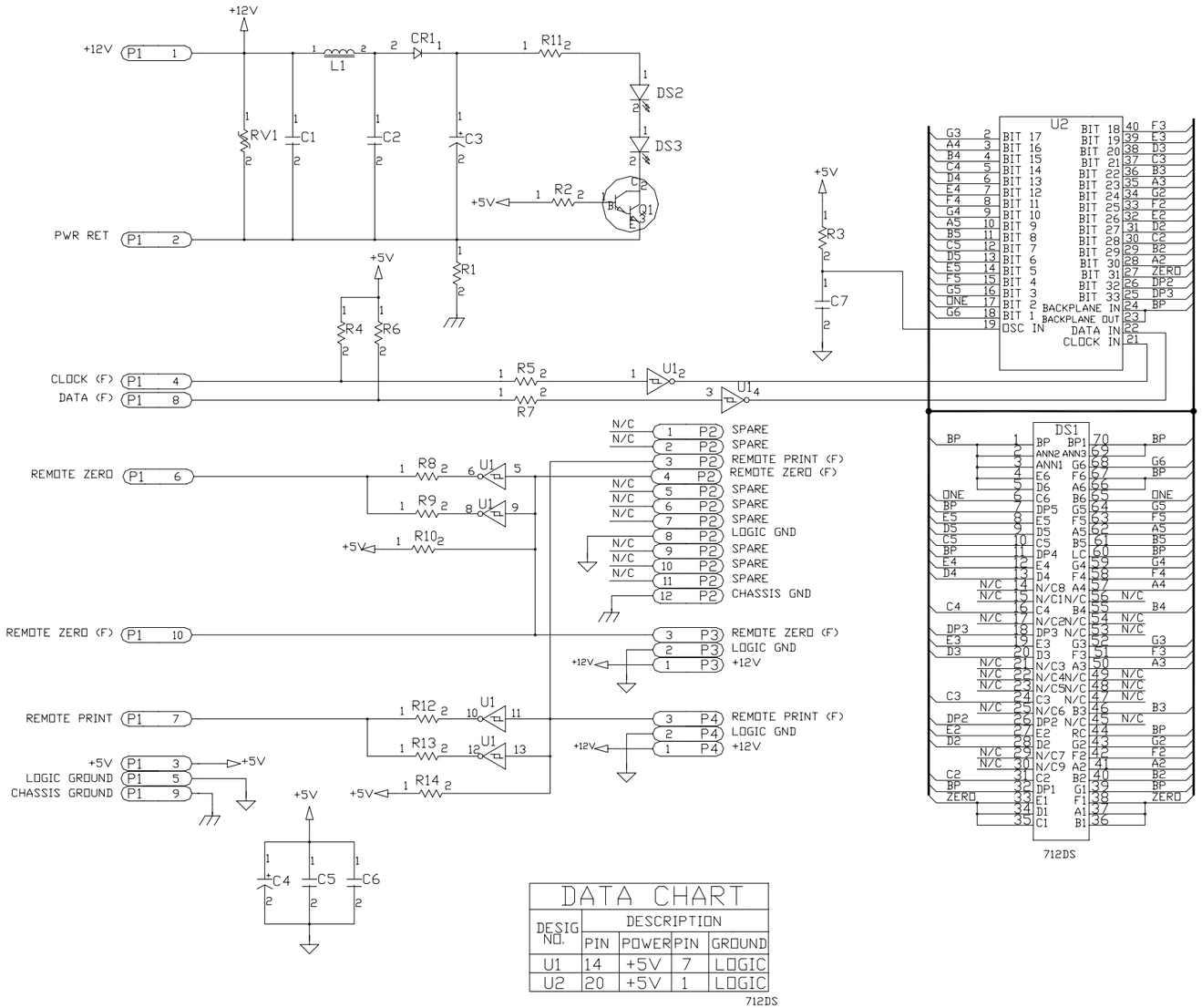
SYMBOL	DESCRIPTION	W-T P/N
R1	RES 303 K	14477-0856
R2	RES 1.0 K	14477-0732
R3	RES 510 K	14477-1383
R4,6,10,14	RES 10 K	14477-0971
R5, 7	RES 22 K	14477-1052
R8,9,12,13	RES 120 OHM	14477-0518
R11	RES 330 OHM	15670-0619
RV1	VARIS V82ZA12	16046-0028
U1	IC 74HC14	18080-0096
U2	IC 5453N	15657-0624
XDS1	SOCKET 25 PIN	17847-1017
XDS1	SOCKET 10 PIN	17847-1066



COMPONENT SIDE



BACK SIDE



DATA CHART

DESIG NO.	DESCRIPTION			
	PIN	POWER	PIN	GROUND
U1	14	+5V	7	LOGIC
U2	20	+5V	1	LOGIC

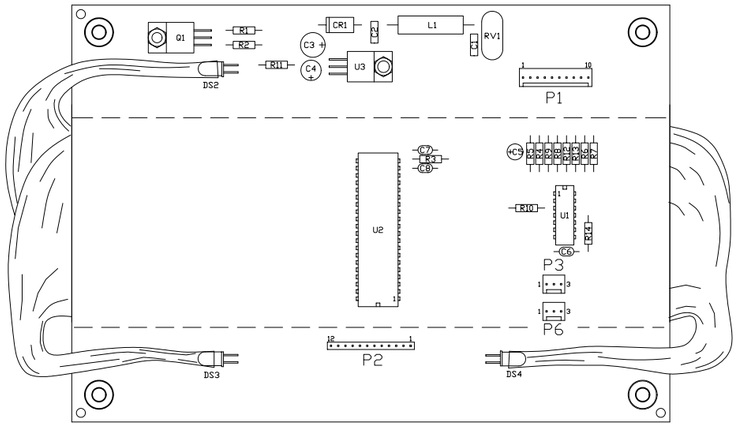
712DS

RD712XL REMOTE DISPLAY

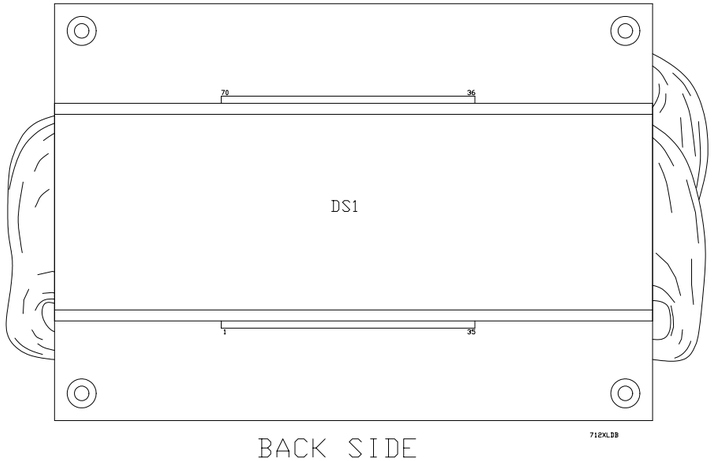
DISPLAY PC BOARD P/N 48865-0029,
COMPONENTS *AND* SCHEMATIC

SYMBOL	DESCRIPTION	W-T P/N
BL1	BACK LITE DSPL FIB OP	27459-0066
C1,2	CAP .1 UF 100 V	15623-0120
C3	CAP 100 UF 25 V	17994-0101
C4	CAP 47 UF 16 V	17993-0094
C5	CAP 47 UF 10 V	17992-0095
C6,7	CAP 0.1 UF 50 V	46684-0048
C8	CAP 1000 PF 100 V	46684-0022
CR1	DIO 1N4142	15668-0076
DS1	DISPLAY LCD 2"	46643-0014
DS2,3,4	LED	27472-0010
L1	INDUCTOR 10 UHY	15779-0015
P1	CONN 10 PIN	17794-0095
P2	CONN 12 PIN	17734-0114
P3	CONN 3 PIN	17794-0020

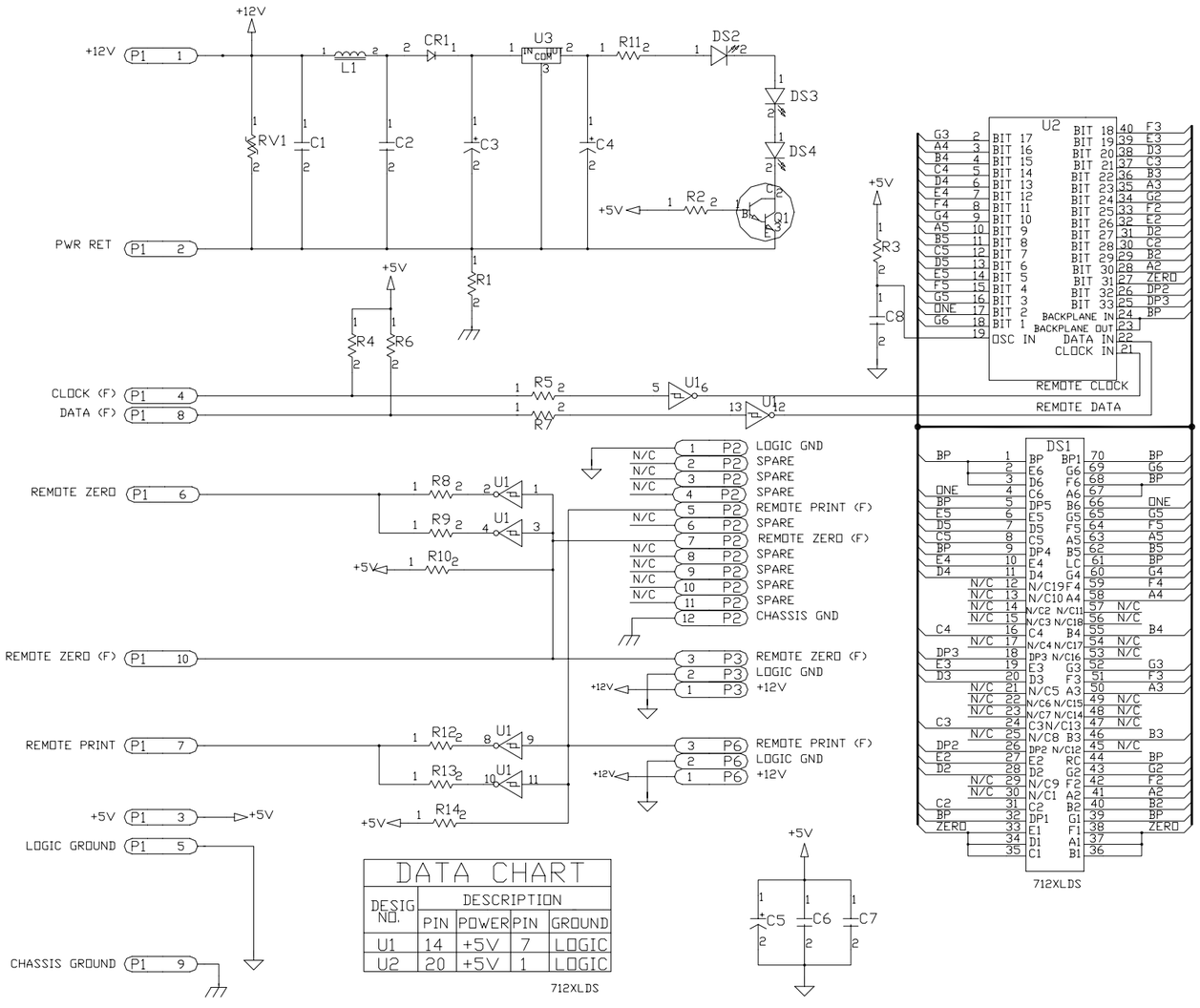
SYMBOL	DESCRIPTION	W-T P/N
Q1	TRANS TIP122	16271-0032
R1	RES 303 K	14477-0856
R2	RES 1.0 K	14477-0732
R3	RES 1 MEG	14477-1458
R4,6,10,14	RES 10 K	14477-0971
R5,7	RES 22 K	14477-1052
R8,9,12,13	RES 120 OHM	14477-0518
R11	RES 33 OHM	14477-0377
U1	IC 74HC14	18080-0096
U2	IC 5453N	15657-0624
U3	VOLT REG	15658-0292
XDS1	SOCKET 25 PIN	17847-1017
XDS1	SOCKET 10 PIN	17847-1066



COMPONENT SIDE



BACK SIDE



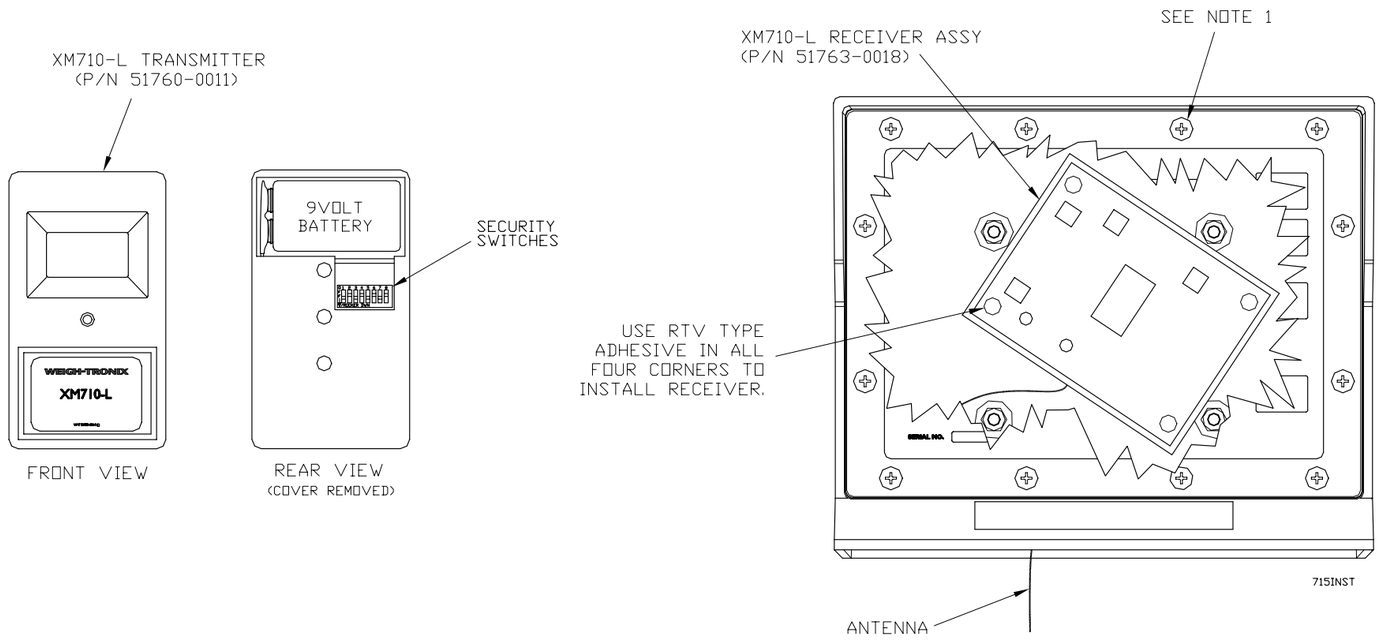
DESIG NO.	DESCRIPTION			
	PIN	POWER	PIN	GROUND
U1	14	+5V	7	LOGIC
U2	20	+5V	1	LOGIC

DATA CHART

712XLDS

The XM710-L hand-held transmitter provides the ability to remotely perform a zero/reset command and can be installed in MODEL 715 or RD712 / 712XL. The XM710-L wireless remote system is similar to those used on garage door openers. For selectable security, the transmitter and receiver assembly boards have programmable security code switches.
The eight position switch is used to determine the security code. These can be programmed to a different code, but the programmed code must match on both the transmitter and receiver. The unit is shipped from the factory with the following settings:

1, 3, 5, 7 = ON (closed)
2, 4, 6, 8 = OFF (open)



XM710-L RECEIVER
INSTALLATION INSTRUCTIONS:

1. TO DISASSEMBLE MODEL 715 (OR REMOTE DISPLAY RD712/712XL) , REMOVE THE 12 SCREWS FROM THE FRONT OF THE INDICATOR, THEN REMOVE THE FRONT ASSEMBLY.
2. WHEN INSTALLING IN THE FIELD, CUT THE FOLLOWING TRACE LOCATED ON UPPER RIGHT CORNER OF THE MAIN PC BOARD: MODEL 715 : BETWEEN E18 AND E19
   RD712 : NONE
3. INSTALL RECEIVER CARD AS SHOWN, USING RTV TYPE ADHESIVE, AND MATCHING DIP-SWITCH SETTINGS TO XM710-L. PLUG 3-PIN CONNECTOR INTO THE FOLLOWING CONNECTORS, AND PLACE ANTENNA THROUGH HOLE ON STAINLESS STEEL BASE OF THE INDICATOR:

   FROM M715 PLUG INTO P14
   FROM RD712 PLUG INTO P3

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