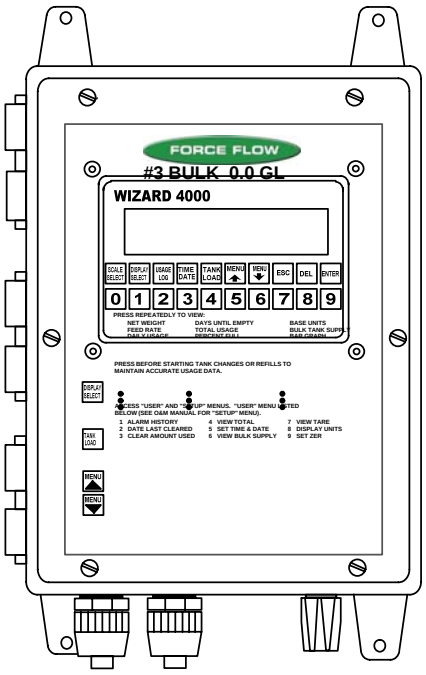
WIZARD 4000
DIGITAL WEIGHT INDICATOR
1 to 4 Channels



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FORCE FLOW

INDEX

SECTION II - WIZARD 4000 WEIGHT INDICATOR

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REF: T4\O&M\INDEX.\WIZ INDEX 2007.tcw
03/21/08 MT

INSTALLATION CHECKLIST

INSTALL SCALE PLATFORM(S), PROCELL(S)® or ECHO-SCALE(S)™ in accordance with supplied Operation & Maintenance Manual.

MOUNT INDICATOR

- ☐ Avoid direct sunlight on display and keypad
- ☐ Mount at eye-level
- ☐ Use (4) integral mounting feet to secure indicator to structure

WIRE INDICATOR

- ☐ Disconnect circuit power
- ☐ Always follow standard OSHA Lockout/Tagout (LOTO) procedures
- ☐ Connect dedicated AC power
- ☐ Connect Load Cell(s) or Echo-Scale(s)
- ☐ Connect optional 4-20mA outputs
- ☐ Connect optional relays
- ☐ Connect optional RS232/RS485 communications
- ☐ Power up indicator
- ☐ Adjust display view angle if indicator not mounted at eye-level

FORMAT INDICATOR (See Pages W.4 through WA-16)

- ☐ Check all current settings in USER and SETUP Menus.. Make changes as needed for your specific application.

SEAL ENCLOSURE

- ☐ Tighten all six (6) door screws to seal and maintain NEMA 4X rating. Check all cord connectors and conduit connectors for tight seal.

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START-UP CHECKLIST

☐ **POWER-UP:**

Scale display should read NET WT or NET REMAINING. Press DISPLAY SELECT key as needed until display reads NET WT or NET REMAINING.

☐ **SCALE APPLICATIONS:**

Apply weight (press on platform or tank) and verify indicator NET WT responds.

☐ **ULTRASONIC SENSOR (ECHO-SCALE) APPLICATIONS ONLY:**

Enter tank diameter in SETUP MENU "17 TANK SETUP". See Page W.23B for details.

☐ **SET ZERO:**

Enter USER MENU "8 SET ZERO" and follow prompts. See page W.15 for details.

(Indicator typically zero'd with empty tank and all other appurtenances installed. For gas cylinders and ton containers, zero scale with empty platform).

☐ **CLEAR AMOUNT USED:**

Enter USER MENU "3 CLEAR AMOUNT USED" and follow prompts. See page W.13 for details.

☐ **REVIEW TANK LOAD PROCEDURE:**

See page W.7 for details.

☐ **AUTO REFILL WARNING!**

If using AUTO REFILL OPTION (ARC), thoroughly review pages W.24 through W.26 to protect against chemical spills!

☐ **REVIEW ALL MENU ITEMS:**

Review all USER MENU and SETUP MENU items and change as required for your application.

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File: T4\O&M\WIZ MSTR\WIZ NEW PR328 CHKOFF.tcw
03/21/08 MT

KEYBOARD
QUICK REFERENCE GUIDE

These are the functions that are used on a day-to-day basis.

SCALE SELECT Scrolls forward through individual scales.

DISPLAY SELECT Toggles through a multi-function display for each scale in the following decending order:

1	**NET REMAINING.....**	Chemical remaining in tank or cylinder (default screen)
2	**BAR GRAPH .....**	Analog bar graph. 0-100%
3	**AVERAGE FEED RATE.**	Chemical feed rate displayed as weight/volume per hour or day.
4	**DAILY USAGE.....**	Amount of chemical fed so far today.
5	**DAYS UNTIL EMPTY.....**	Days until empty at the current feed rate
6	**AMOUNT USED .....**	A running total of net chemical used since last reset.
7	**PERCENT FULL .....**	Numeric display of 0-100%.
8	**BASE UNITS .....**	Units of measure that Wizard was calibrated in.

USAGE LOG: Daily usages of most recent 31 days.

TIME DATE Time and Date

TANK LOAD Loading new tanks or chemicals and entering tank tare weights.

MENU UP/DOWN Access to USER and SETUP Menus. Allows you to scroll through each of these Menus from beginning to end.

ESC ESCAPE key returns you to main display

DEL DELETE key backspaces or previous screen.

ENTER Data Entry or Advance to Next Screen.

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JOB REFERENCE: _____/s/_____

SUBMITTAL DATA:

Wizard 4000 Model No._____

INPUTS

No. of Channels _____

Qty	Model	Description

OPTIONS:

No. of Sourcing 4-20mA Outputs _____

No. of Relays: _____ Dry Contact / Solid State N.O. / N.C.

_____ Dry Contact / Solid State N.O. / N.C.

Other Options _____

_____

MODELS:

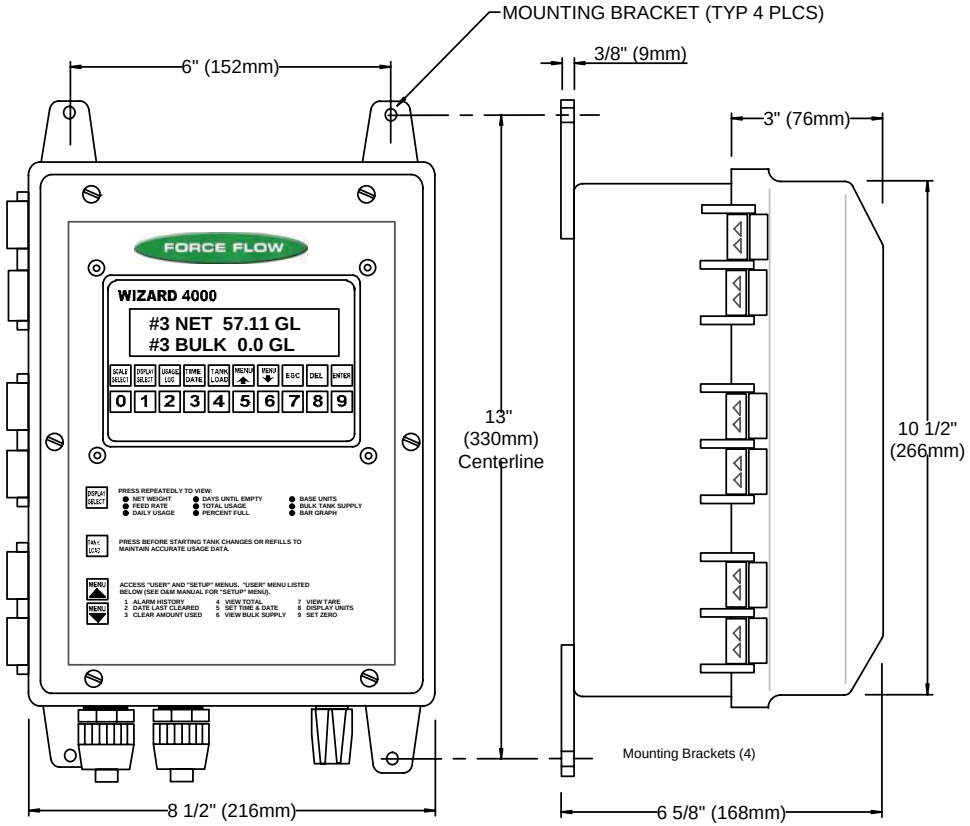
4000-1 (1-Channel)
4000-2 (2-Channel)
4000-3 (3-Channel)
4000-4 (4-Channel)

OPTIONS:

4-20mA OUTPUT SIGNALS (Model WMA420):
Up to 8 separate output signals (NET, RATE, DAILY, BULK or TOTALS) 1000 ohms max per output.

RELAYS (Models W5ASP-OD, W5AP-CD, W5ASP-OS & W5ASP-CS):
A maximum of 12 solid state or dry contact relays, NO/NC latching/non-latching.

COMMUNICATIONS (Models WRS232 & WRS485):
RS232 Serial Port or RS485 Serial Network Port (MODBUS ASCII protocol).



SPECIFICATIONS

CHANNELS:	1 to 4 independent channels
INPUTS:	Up to 4 electronic load cells or 1 Ultrasonic sensor per channel
INCREMENTS:	1, 2, 5, 10, 20, 50
DISPLAY UNITS:	LB, KG, GAL, LITER, IN, CM
RANGE:	0.01 TO 2,000,000
RESOLUTION:	UP TO 20,000
DISPLAY:	2 lines, 16 characters per line, alphanumeric LCD display backlighting, 0.4" characters
KEYBOARD:	10 function keys, 10 numeric keys with tactile feedback
OPERATING TEMP:	32 to 122 degrees F (0-50 degrees C)
POWER:	110, 220 or 240 VAC, 50/60 Hz, 1/4 AMP Max.
CONNECTORS:	Power and input/output - 1/2" nylon conduit connectors Load Cells - 1/2" nylon cord connectors
ENCLOSURE:	Nema 4X, UL listed structural foam molded enclosure
PERFORMANCE:	Overall System Accuracy: 0.1 to 0.25% F.S. Non-Linearity: <0.03% F.S. Hysteresis: <0.02% F.S. Non-Repeatability: <0.01% F.S. Thermal Stability: <0.002% degrees F, zero and span

W.5

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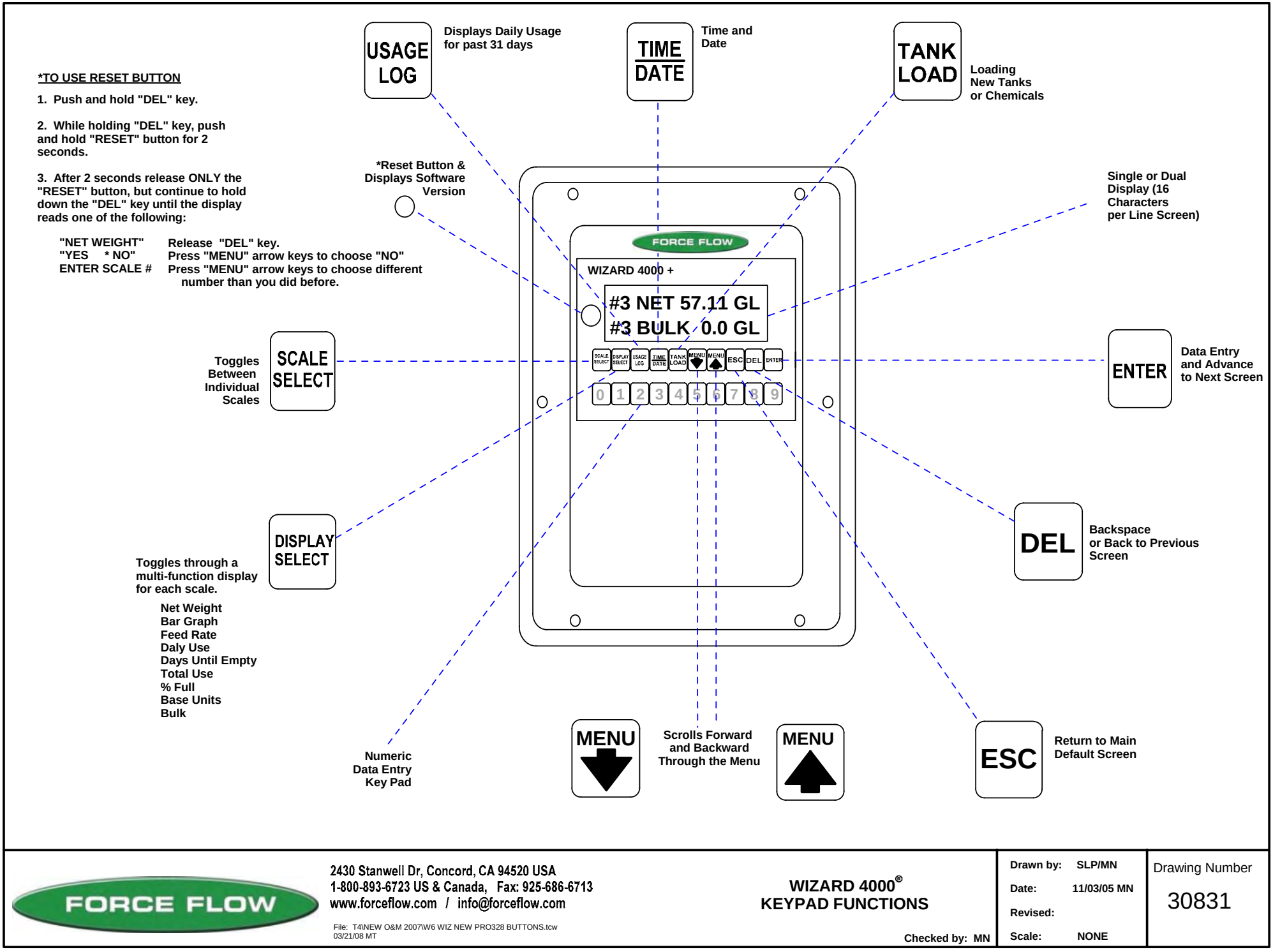
File: T4\O&M_NEW O&M 2007\W5 WIZ NEW PR328 WIZARD.tcw

WIZARD 4000
ELECTRONIC INDICATOR

Drawn by:	SLJ/MT
Date:	09/01/95
Revised:	04/08/08 MT
Scale:	NONE

Drawing Number
30835



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File: T4\NEW O&M 2007\W6 WIZ NEW PRO328 BUTTONS.tcw
03/21/08 MT

WIZARD 4000®
KEYPAD FUNCTIONS

Checked by: MN

Drawn by: SLP/MN
Date: 11/03/05 MN
Revised:
Scale: NONE

Drawing Number
30831

WIZARD 4000® TANK LOAD PROCEDURE:

TANK LOAD MODE

'TANK LOAD" key allows you to load new tanks without adversly affecting the "AMOUNT USED" and "DAILY USAGE" displays.

It also allows you to enter the tare weight(s) of your tanks if you choose "Manual" tank load mode, or load the net weight of a cylinder if you chose the "Auto" tank load mode.

WARNING ! DO NOT UNLOAD or LOAD tanks until "CHANGE TANKS NOW, THEN PRESS ENTER" appears on the display. If you load or unload tanks before reaching this step, the "AMOUNT USED" and "DAILY USAGE" displays will be incorrect.

	Digital Display	Action Required - Press "ENTER" after completing each step.
Step 1	#1 NET = 0 LB #2 NET = 1950 LB	Press "TANK LOAD" key to enter the tank load mode.
Step 2	SELECT CHANNEL ▼ ▲ , enter CH# 1	Use "MENU" arrow keys, to choose channel, press "ENTER" to accept the channel you want to load/unload tanks. This "freezes" or "holds" the AMOUNT USED and DAILY USAGE displays until tank load procedure finishes.
Step 2	ARE YOU SURE NO *YES	Verify you would like to continue tank load procedure.

Skip to STEP 7 in "PERMANENT" Tank Applications.

"PORTABLE" Tank Applications (follow Steps 1 thru 6 only), such as Ton Containers, Drums and Cylinders.

Step 3 TANK TARE ⬆⬇
*AUTO MANUAL

Press "MENU" arrow keys to select which method, then press "ENTER".

Use "MANUAL" for PARTIALLY FULL containers.
....If you chose "MANUAL" you will manually enter tank tare weight in Step 6.

Use "AUTO" for FULL containers.
....If you chose "AUTO" the WIZARD automatically loads the net weight and goes into the weighing mode (skip Step 6).

Step 4 CHANGE TANKS NOW
THEN PRESS ENTER

Remove empty tanks and place new tank(s) onto the scale then press "ENTER" key to continue.

Step 5 WAIT

Wait until this clears to continue.

....If MANUAL chosen above in Step 3...

Step 6 #2 TANK #1 TARE
LBS = 1234

MANUAL Mode: Requires that you enter tare weight of EACH tank on EACH scale. (Example: Scale #2, tare weight of TANK #1is 1234 lbs., then TANK #2, etc). After entering the tare weights of all your tanks, the WIZARD 4000 automatically adds them up and subtracts them from the gross weight.

"PERMANENT" Tank Applications (follow Steps 1, 2 and 7 only), such as Chem-Scale, Hoppers, Procells and Ultrasonic

Step 7 FILL TANK NOW
THEN PRESS ENTER

Fill your tank with chemicals, then press "ENTER" key to continue.

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NON-HAZARDOUS LOCATION

INDICATOR IS NOT APPROVED FOR USE IN HAZARDOUS LOCATIONS. IF YOUR INSTALLATION CONSTITUTES AN EXPLOSIVE OR COMBUSTIBLE ENVIRONMENT, PLEASE CONSULT FACTORY FOR SAFETY PRECAUTIONS.

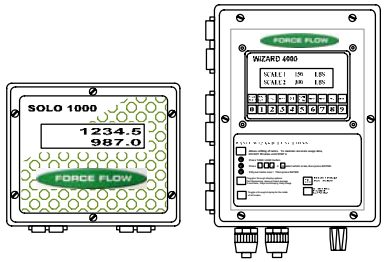
FOR FURTHER TECHNICAL INFORMATION OR FOR APPLICATIONS ENGINEERING ASSISTANCE, PLEASE CONTACT FORCE FLOW AT FORCE FLOW AT 925-686-6700; info@forceflow.com OR 1-800-893-6723.

HAZARDOUS LOCATION

FOR HAZARDOUS LOCATIONS, VERIFY ELECTRONIC LOAD CELL(S) FURNISHED WITH YOUR SCALE HAVE THE FOLLOWING LABEL TO MEET SAFETY REQUIREMENTS:

HESIVE Intrinsically Safe
Class I, II, III
Div 1, Groups A, B, C, D, E, F, G
Nonincendive Class I, Div 2
Suitable Class II, Div 2, Groups F, G
Suitable Class III, Div 2
When installed per Sentran Control Drawing 14001

FM APPROVED



SOLO 1000 Indicator

WIZARD 4000 Indicator

W.8

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File: T4\NEW O&M 2007\W8 WIZ NEW INTRINSIC WIZ SOLO.tcw

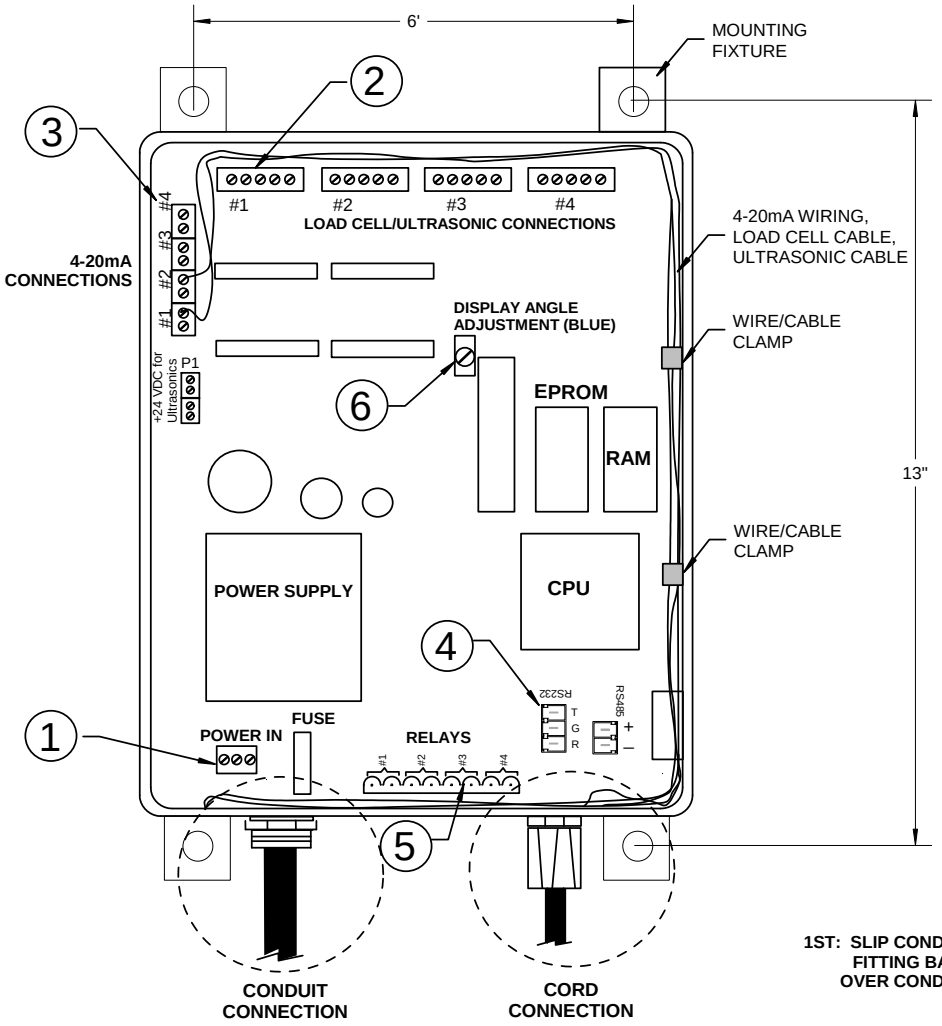
HAZARDOUS LOCATIONS

Drawn by:	SLJ/JGMNMD
Date:	07/22/98
Revised:	03/03/05
Scale:	NONE

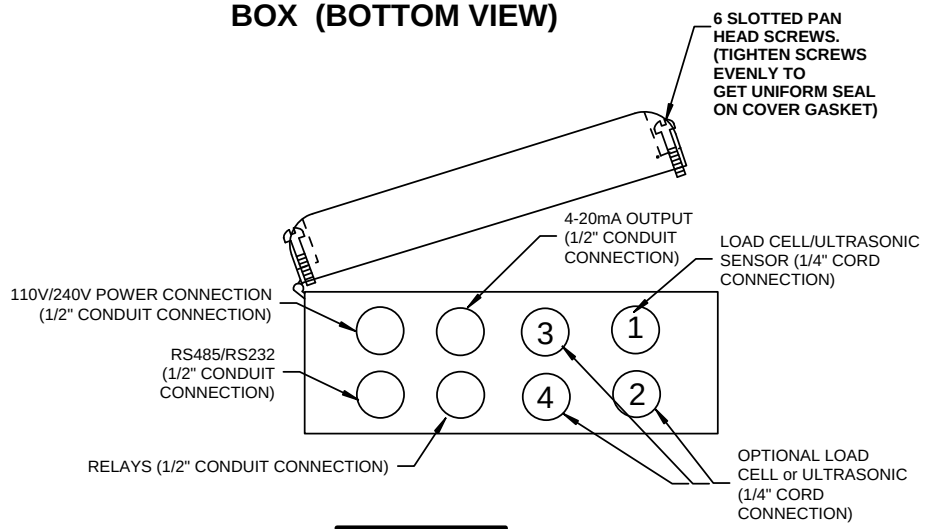
Drawing Number
30774

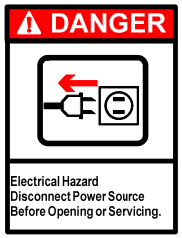
W.9

BOX (FRONT VIEW)



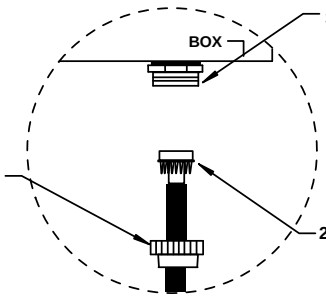
BOX (BOTTOM VIEW)





NOTE:
Mount Indicator at "EYE LEVEL" for easy viewing.

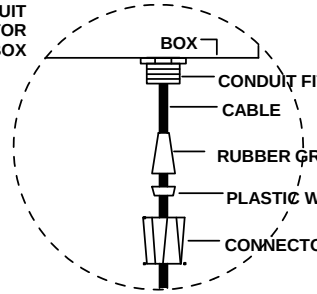
CONDUIT CONNECTION



1/2" CONDUIT CONNECTOR, USED FOR:

- POWER
- 4-20 MA SIGNAL
- RELAY WIRING
- COMMUNICATIONS

CORD CONNECTION



1/4" CORD CONNECTOR, USED FOR:

- LOAD CELL CABLE
- ULTRASONIC CABLE

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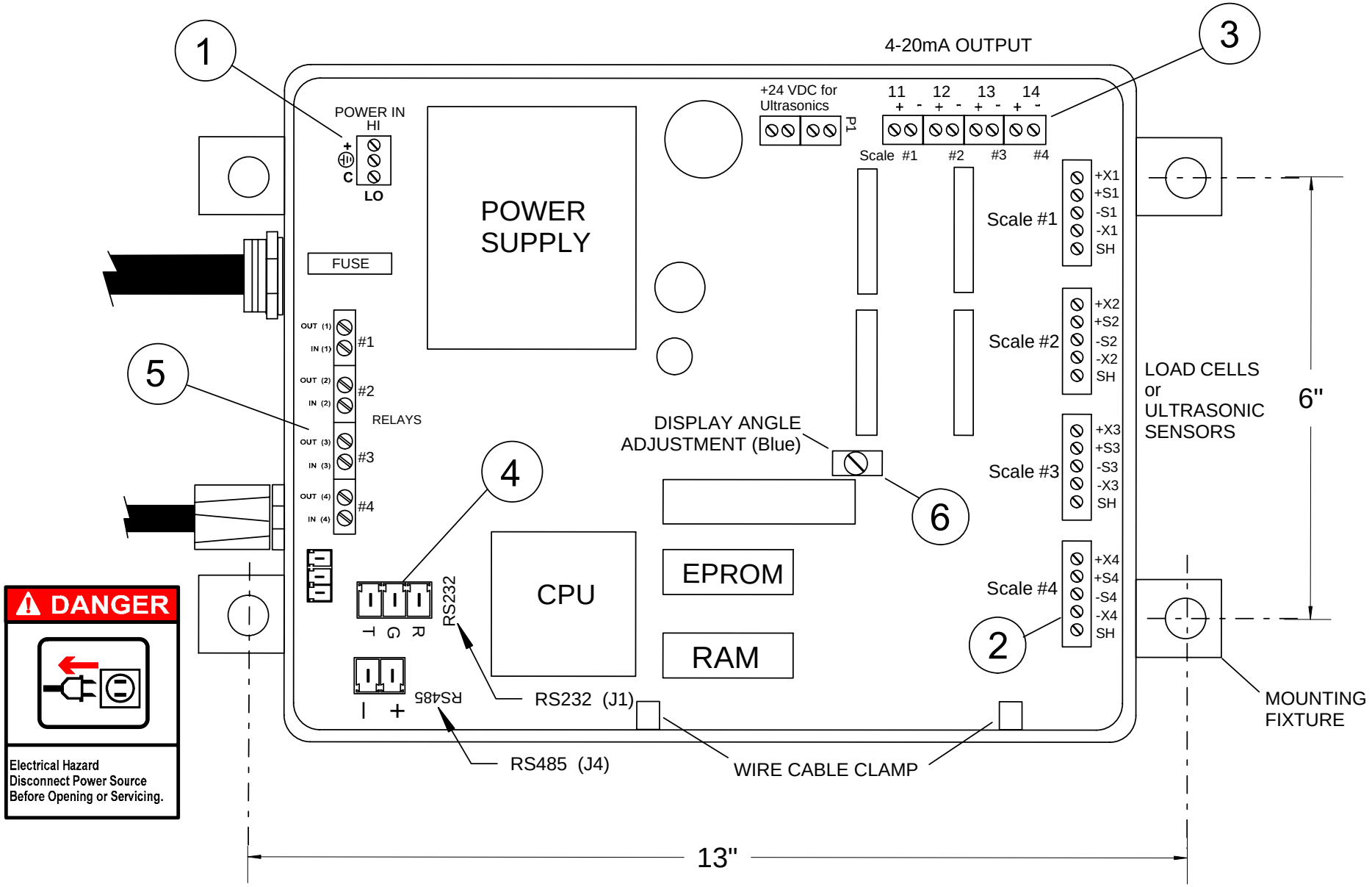
File: T4\NEW O&M 2007\W9 WIZ NEW PR328 INDI.tcw

WIZARD 4000® INDICATOR WIRING REFERENCE

Drawn by: SLP/MD
Date: 09/01/95
Revised: 12/05/06 PR328
Scale: NONE

Drawing Number
29893

NOTE: For best viewing, mount indicator at "eye level".



W.10

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WIZARD 4000® INDICATOR
COMPONENT LAYOUT

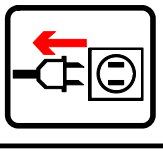
Drawn by:	SLP
Date:	09/01/95
Revised:	12/08/06 Mt
Scale:	NONE

Drawing Number
29892

File: T4\NEW O&M 2007\W10 WIZ NEW PR328 INDIA.tcw

WIZARD 4000® INDICATOR INSTALLATION & WIRING

DANGER



Electrical Hazard
Disconnect Power Source
Before Opening or Servicing.

- ALWAYS SHUT OFF MAIN POWER, AS WELL AS POWER TO ANY AUXILIARY EQUIPMENT THAT WILL BE INSTALLED IN THIS UNIT, BEFORE OPENING FRONT OF CASE !!
- INDICATOR IS NOT APPROVED FOR USE IN HAZARDOUS LOCATIONS. IF YOUR INSTALLATION CONSTITUTES AN EXPLOSIVE OR COMBUSTIBLE ENVIRONMENT, PLEASE CONSULT FACTORY FOR SAFETY PRECAUTIONS.
- ALL CONNECTORS HAVE A "PLUG-IN" FEATURE TO ASSIST IN CONNECTING WIRES. REMOVE THE CONNECTOR FROM THE BOARD BEFORE ATTACHING WIRES.

1 POWER HOOK-UP

TURN OFF MAIN POWER BEFORE CONNECTING !! Use a dedicated 110/220 VAC (using 220 VAC requires changing the voltage selector switch position to 220 VAC. This switch is located between the incoming power connector and the power transformer) power line, connected directly to the main power panel at the facility. DO NOT connect any other inductive loads, relays, etc. to this power line ! Resulting power surges can damage the electronics !!! Use far left bottom port and connect per following: (NOTE: Use 1/2" conduit connector)

CHOOSE THE 2ND STEP THAT RELATES TO THE EQUIPMENT PURCHASED:

2 IF "LOAD CELL" CONNECTION

The Wizard 4000 indicator is shipped with the load cell(s) already connected. If routing load cell cable through conduit or trimming cable length, remove cable connector from motherboard, then cable from connector and finally cable from Wizard enclosure. After routing cable through conduit or trimming length, reverse above procedure to reconnect. A separate cord connector is provided into the enclosure for each load cell cable.

ROUTING CABLE IN CONDUIT

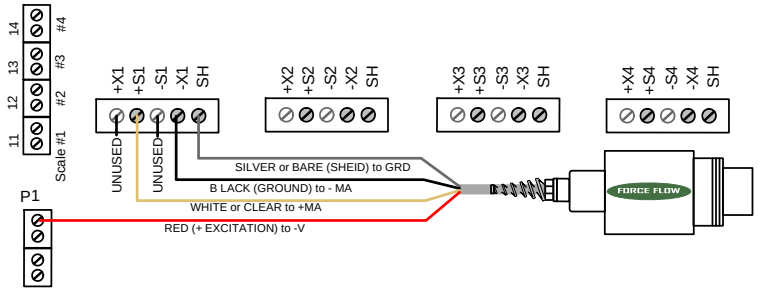
More than one load cell can be routed in a single conduit. Load cells must not share conduit with power lines or wiring from any inductive load.

PC BOARD	WIRE COLOR	DESCRIPTION
+ X	RED	+ EXCITATION
+ S	GREEN	+ SIGNAL
- S	WHITE	- SIGNAL
- X	BLACK	- EXCITATION
SH	BRAIDED WIRE	SHIELD

TRIMMING LOAD CELL CABLE

Wizard 4000 is pre-calibrated at factory based on supplied cable lengths. Depending on how much cable is trimmed, field recalibration of Wizard may be required for best accuracy. Contact factory for more information.

2 IF "ULTRASONIC SENSOR" CONNECTION

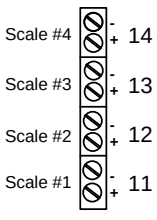


BOARD	WIRE COLOR	DESCRIPTION
P1	RED	+ EXCITATION
+SI	WHITE	+ SIGNAL
- X1	BLACK	GROUND
SH	SILVER	SHIELD

3 4-20 MA SIGNALS

(OPTION MODEL NO. WMA420)

Your 4-20 MA signals are internally powered for up to 900 OHMS each. DO NOT use external loop power. Run 4-20 MA wiring up the right hand side of enclosure using the cableclamps to keep wires off of PC Board. (NOTE: Use 1/2" conduit connector). If more than one (1) 4-20 MA signal is used, you may use the same conduit and connector, but DO NOT run 4-20 MA signals with any other power lines, which carry an inductive load.



DESCRIPTION

+ 4-20MA LOOP
- 4-20MA LOOP

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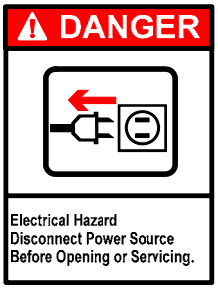
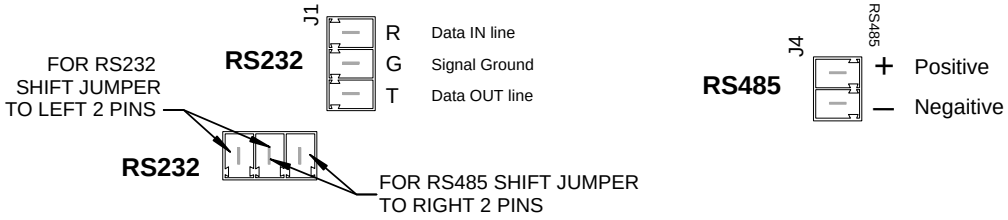
File: T4\NEW O&M 2007\W11 WIZ NEW PR328 WZININST.tcw
04/08/08 MT



4 MODBUS SERIAL COMMUNICATION OPTION

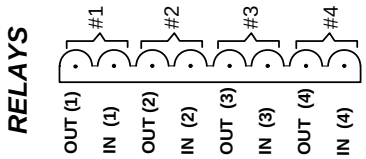
(OPTION MODEL NO's: WRS232 & WRS485)

The Wizard 4000 is provided with a separate 1/2" conduit connector for your serial port communication wiring. DO NOT co-locate inductive load wiring or power lines with communication wiring. Attach your communication wiring per the following:



5 RELAY OPTION

(OPTION MODEL NO's: W5ASP-OD, CD, OS, CS)



SOLID STATE relays for external apparatus (pumps, valves, alarms, etc) may be ordered either Normally Open (NO) or Normally Closed (NC).

SOLID STATE relays are rated at: 3amp Max. (fused @ 4amp) 1.5amp motorload.

DRY CONTACT relays (SCADA, PLC, etc) inputs may be ordered either Normally Open (NO) or Normally Closed (NC).

DRY CONTACT relays are rated at: 0.5amp @ 12VDC maximum (fused @ 1amp).

The Wizard 4000 is provided with a separate 1/2" conduit connector for your relay wiring. To format relays, go to SETUP MENU 12, "ALARM/RLY CONFIG".

NC: Circuit is NOT complete until the relay is activated. (i.e.turning ON a warning light).

NO: Circuit IS complete until relay is activated. (i.e. turning OFF a pump)

6 DISPLAY VIEW ANGLE ADJUSTMENTS

The Wizard display has been factory adjusted for standard "eye level" viewing. If you install your indicator at a height other than eye level, you may adjust the display angle for best viewing. Turn the blue screw potentiometer (R9 located near the middle of the motherboard) clockwise or counter clockwise until display appears correct at your viewing angle. The potentiometer is a 30 turn, no stop design. A slight click will be heard when you reach min. or max. adjustment.

Potentiometer (blue) located near middle of motherboard

LIGHTNING ~ SURGE PROTECTION:

Be sure that indicator power circuit is sufficiently protected against transient lightning strikes and power surges. Improper protection may void your warranty.

STATIC ELECTRICITY PROTECTION

CAUTION should be observed whenever box is open to avoid damage or memory loss by static electricity. DO NOT touch any of the circuit board, other than the intended contact noted in these instructions. Carpets especially can build up static electricity.

USER MENU (WIZARD 4000)

MENU Arrow Keys: There are 2 menus that may be accessed via the "MENU" keys. The "USER" Menu and "SETUP" Menu. The "USER" Menu has 8 menu items, and these are functions that are used for day-to-day operations. The "SETUP" Menu has 17 menu items, and these are functions that are used during equipment start-up, or if your chemical feed operation has been changed.

You may scroll through these items with the "MENU" arrow keys, or simply enter the Menu Item Number to jump straight to that menu item.

MENUS	
* USER	SETUP

DIGITAL DISPLAY: | **ACTION REQUIRED:**

1 ALARM HISTORY

Allows the user to retrieve the time, date, and type of alarm for the most recent 10 alarm conditions.

Step 1

USER MENU ⬆⬇ 1
ALARM HISTORY

Press "ENTER" key to continue.

Step 2

ALARM HISTORY
3 BL 9/25 9:10

Channel 3 had a SETPOINT B LOW LEVEL condition on 9/25 at 09:10 hours (9:10 am). Press "ENTER" key to continue. "DEL" key to return to "USER" menu.

ALARM CODE ABREVIATIONS: 3 B L

- 3 = Channel
- A = Setpoint A, B = Setpoint B, R = Feedrate
- D = Daily, LC = Load Cell Failure, BK = Low Bulk Supply, SF = Slow Fill
- H = High, L = Low

2 DATE LAST CLEARED

This function allows the user to find out the last time and date the "Amount Used" display was cleared or reset for each scale.

Step 1

USER MENU ⬆⬇ 2
DATE LAST CLRD

Press "ENTER" key to continue.

Step 2

CH# 1 CLEARED
8/19/ 5 14:15

Displays DATE and TIME the "AMOUNT USED" function was last cleared (for approximately 1 minute). Use the "MENU" arrow keys to toggle through other channels. Example: Channel 1 was last cleared on 8/19/05 at 14:15 hours (2:15 pm).

3 CLEAR AMOUNT USED

Clears or resets the "AMOUNT USED" and 'DAILY USAGE" displays to zero.

Step 1

USER MENU ⬆⬇ 3
CLR AMOUNT USED

Press "ENTER" key to continue.

Step 2

CLEAR ALL CHAN ?
* NO YES

Use 'MENU" arrow keys to choose "NO" or "YES". Press "ENTER" key to accept. Choosing NO takes you to Step 3 to choose which channels. Choosing YES asks "ARE YOU SURE?" and clears ALL channels

Step 3

SELECT CHANNEL
⬆⬇ , enter CH# 1

Use 'MENU" arrow keys to choose which channel to clear. Press "ENTER" key to accept.

Step 4

ARE YOU SURE
* NO YES

Use 'MENU" arrow keys to choose "NO" or "YES". Press "ENTER" key to accept.

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DIGITAL DISPLAY:

ACTION REQUIRED:

4 VIEW TOTAL

Step 1

```
USER MENU        ⬆⬇ 4
VIEW TOTAL
```

Allows user to view the combined Net, Rate and Usage for more than 1 channel. This function must be configured under the SETUP VIEW TOTAL selection in the SET UP MENU. Allows you to choose which channels to total.

Press "ENTER" key to continue.

Step 2

```
CHAN   1,   2
tNET    26.0 LB
```

This display shows that the total Net weight of channels 1 and 2 is 26.0 lbs. Press enter again for total feed rate of channels 1 & 2, and again for total usage on channels 1 & 2.

tNET = Net Weight
tRATE = Feed Rate
tUSED = Total Usage

5 SET TIME & DATE

Sets time and date.

Step 1

```
USER MENU        ⬆⬇ 5
SET TIME & DATE
```

Press "ENTER" key to continue.

Step 2

```
SET TIME & DATE
   YEAR=          5
  MONTH=          9
    DAY=         27
  HOURS=         14
MINUTES=         15
```

Press "ENTER" key to continue.

Example: YEAR 2005 = "5", YEAR 2010 = "10"

Press "ENTER" key after each enter to get MONTH, DAY, HOUR and MINUTES.
Note: Use Military time for HOURS (1 to 24).

6 SET BULK SUPPLY

Step 1

```
USER MENU        ⬆⬇ 6
SET BULK SUPPLY
```

Allows user to view the remaining inventory in their bulk supply tank even though they have no level sensor hooked up to the bulk tank. Before filling your day tank, press the "TANK LOAD" key & follow the menu prompts. The Wizard will then subtract how much is added to the day tank from the remaining bulk supply number. This function must be turned on under the BULK SUPPLY selection in the SET UP MENU. Press "ENTER" key to continue.

Step 2

```
#2  BULK SUPPLY
LBS =          2900
```

This display shows that Channel #2 has a bulk supply tank that contains 2900 lbs of chemical

7 VIEW TARE

Allows users to view the tare weight of their tank. This function is only active when the system is configured for "portable tanks" like chlorine, drum, carboy and tote scales.

Step 1

```
USER MENU        ⬆⬇ 7
VIEW TARE
```

Press "ENTER" key to continue.

Step 2

```
#3  VIEW TARE
LBS =          25.0
```

Tare weight will be displayed. Example: Channel #3 tare weight is 25.0 lbs.

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DIGITAL DISPLAY: | ACTION REQUIRED:

8 SET ZERO

Allows user to "zero" the scale or sensor when tank or scale is empty. If tank is not empty but weight of chemical in tank is known, SET ZERO allows user to adjust display to read this known weight.

Step 1

```
USER MENU  ⬆⬇ 9
     SET ZERO
```

Press "ENTER" key to continue.

Step 2

```
     SET ZERO  ⬆⬇
* NO        YES
```

Use MENU keys (UP/DOWN ARROWS) to select NO or YES, then press ENTER.

Step 3

```
ARE YOU SURE  ⬆⬇
* NO        YES
```

Use MENU keys (UP/DOWN ARROWS) to select NO or YES, then press ENTER.

Step 3

```
SELECT CHANEL
⬆⬇ ,  enter  CH# 1
```

Select channel (scale or sensor number) using arrow keys, then press ENTER.

NOTE:

If system was not initially zeroed BEFORE chemical was added to tank, the NET WT may not accurately reflect the actual amount in tank.

To adjust without emptying tank, use the zero function located in SETUP MENU 15, "FIELD CAL". That zero function prompts for MINIMUM AMOUNT (amount of chemical currently in tank).

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SETUP MENU

MENU Arrow Keys: There are 2 menus that may be accessed via the "MENU" keys. The "USER" Menu and the "SETUP" Menu. The "USER" Menu has 8 menu items and these are functions that are used for day-to-day operations
The "SETUP" Menu has 17 menu items, and these are functions that are used during equipment startup, or if your chemical feed operation has been changed.

MENUS	
USER	*SETUP

You may scroll through these items with the "MENU" arrow keys, or simply enter the Menu Item Number to jump straight to that menu item.

DIGITAL DISPLAY: | *ACTION REQUIRED:*

1 DISPLAY FORMAT

Configures how many channels are displayed simultaneously, and whether the auto scan is engaged.

Step 1

SETUP MENU ⬆⬇ 1
DISPL FORMAT

Press "ENTER" key to continue.

Step 2

SELECT FORMAT ⬆⬇
* SINGL DUAL

Choose a single channel to be displayed, or 2 channels to be displayed if a multichannel indicator is being used.

Step 3

AUTO SCAN ?
* NO YES

Use "MENU" arrow keys to select. If "YES" is selected, the Wizard will automatically scan all the channels in the Wizard without the operator having to touch any keys. Display Format menu is exited if "NO" is selected.

Step 4

ALTERNATING TIME
SECONDS = 6

Allows you to set the scan time period in seconds from one channel to the next.

2 CHANNEL ID

If there are multiple Wizard controllers on a single site, this function allows you to assign an Identification Number from 1-99 for each channel.

Step 1

SETUP MENU ⬆⬇ 2
CHANNEL ID

Press "ENTER" key to continue.

Step 2

#1 CHANNEL ID#
NUMBER = 1

Use the numeric keypad to enter any number from 1 to 99.

Step 3

SYSTEM ADDRESS
NUMBER = XXX

Set MODBUS device address (1 to 247)
***Only visible if OPTIONAL MODBUS Serial Communication enabled.**

3 100 PERCENT

Allows you to tell the Wizard what value you consider 100% full. This will calibrate the BAR GRAPH and PERCENT function for the "Display Select" key.

Step 1

SETUP MENU ⬆⬇ 3
100 PERCENT

Press "ENTER" key to continue.

Step 2

#1 100 PERCENT
GAL = 400.00

Enter value that you consider 100% full.

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DIGITAL DISPLAY: | **ACTION REQUIRED:**

4 AUTO LOAD

For portable tank (load on/ load off) applications, this allows you to set the net weight of the container so that when using the “TANK LOAD” key, the Wizard will automatically load the net weight of the containers that you are loading.

Step 1

SETUP MENU ⬆⬇ 4
AUTO LOAD

Press "ENTER" key to continue.

Step 2

#1 TANK NET
LBS = 2000

Enter the value of the net weight that your containers are filled with: Examples
2000 lbs = Ton Containers USA
150 lbs = 150 lb cylinders USA
907 kgs = Canadian ton containers
1000 kgs= Metric ton containers

5 FILTER BAND

Allows you to steady a fluctuating display. This function will only help smooth out fairly rapid fluctuations. Slow, long term fluctuations (over minutes or hours) will likely not be corrected by changing the filter value. Contact factory for assistance in correcting slow, long term display fluctuations.

Step 1

SETUP MENU ⬆⬇ 5
FILTER BAND

Press "ENTER" key to continue.

Step 2

#1 FILTER BAND
GAL = 0.70

Allows you to steady a fluctuating display. This function will only help smooth out fairly rapid fluctuations. Slow, long term fluctuations (over minutes or hours) will likely not be corrected by changing the filter value. Contact factory for assistance in correcting slow, long term display fluctuations.

6 MOTION BAND

Menu operations such as TANK LOAD, ZERO and FIELD CALIBRATION require the Wizard in certain steps to store a weight value before moving to the next step. MOTION BAND determines how steady the weight reading is required to be before the Wizard accepts the value and continues on. The greater the value, the greater the fluctuation allowed.

Step 1

SETUP MENU ⬆⬇ 6
MOTION BAND

Press "ENTER" key to continue.

Step 2

#2 MOTION BAND
GAL = .02

Changing this value will rarely be required. If a menu operation will not advance from the “Wait …” screen, you may ESC from the operation then increase this value and try the function again. The “WAIT . . .” screen indicates the Wizard is waiting for the weight to stabilize (sloshing chemical in tank) to a value within the MOTION BAND value. This value can be set to any number greater than 0.

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DIGITAL DISPLAY: | **ACTION REQUIRED:**

7 SYSTEM TIME BASE

Allows configuring of feed rate update periods, daily usage update periods, and whether the pause and project function is used.

Allows you to choose between "Lbs (or Gallons) per day" and "Lbs. (or gallons) per hour" and allows you to set your sample time or "update period" for your feed rate function.

IMPORTANT NOTE FOR SETTING UP YOUR "UPDATE PERIOD":
In general, if your feed rates are fairly constant on a daily basis, the longer you set your update period for, the more accurate your feed rate function will be. However, if your feed rate varies from hour to hour or minute to mintue, choose a shorter update period to give you a more accurate feed rate at a point in time. You may have to experiment with different update periods to get the desired result for your application.

	HIGH FEED	LOW FEED (less than 2% capacity/day)
FLUCTUATING	Use a Short Update Period	N/A (Not Accurate)
CONSTANT	Use a Short or Long Update Period	Use a Longer Update Period

For certain applications with very low feed rates (less than 2% of full scale capacity per day), low sample times will not give you accurate readings.

Step 1

```
SETUP MENU      ⬆⬇ 7
SYSTEM TIME BASE
```

Press "ENTER" key to continue.

Step 2

```
RATE TIME BASE
* HOUR          DAY
```

Use "MENU" arrow keys to choose time base of HOUR or DAY. Press "ENTER" key to continue.

Step 3

```
PERIOD BASE
 * MIN          HOUR
```

Use "MENU" arrow keys to choose MINUTES or HOURS. Press "ENTER" key to accept.

Step 4

```
UPDATE PERIOD   ⬆⬇
MINUTES =       1
```

Use "MENU" arrow keys to update increment. Press "ENTER" key to accept.
MIN Choices: 1, 2, 5, 10, 20, 30, 60
HOUR Choices: 1, 2, 4, 6, 8, 12, 24

Step 5

```
SHIFT START HOUR
0 - 23          0
```

Enter the hour at which you want the daily usage accumulator to begin (in military time). “0” is midnight; 8 is 8am, 13 is 1pm, etc.

Step 6

```
#2  PAUSE/PROJ
  * NO          YES
```

Use the “MENU” arrow key to choose NO or YES. Choosing YES turns on the “PAUSE & PROJECT” feature which allows the Wizard to keep track of chemical usage while your tank is getting refilled. By pressing the “TANK LOAD” key before and after your tank fill is done, the Wizard calculates how much was used during the fill process based on total time and most recent feed rate. The Wizard then adds this amount back to your usage data.

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DIGITAL DISPLAY:

ACTION REQUIRED:

8 CONFIG 4-20mA OUT

If you have 4-20 mA output hardware installed on your motherboard, this allows you to configure your 4-20 outputs to send either: NET; RATE; DAILY USAGE or BULK TANK data, and set full scale value (20 mA = full scale).

Step 1

SETUP MENU ⬆⬇ 8
CONFIG 4-20 OUT

Press "ENTER" key to continue.

Step 2

OF 4-20 PORTS
2 ACTIVE

Momentarily displays number of active 4-20mA ports, then automatically advances to Step 3.

Step 3

P1 USED FOR CH #
⬆⬇ , enter 1

Designate which channel (1-4 or "TOTALS" you would like Port 1 (P1) output to be on. Use "MENU" arrow keys to select then press "ENTER" key to continue. Repeat process for additional ports.

Step 4

PORT 1 CHAN 1
⬆⬇ , enter NET

Designate whether you would like NET, RATE, DAILY USAGE or BULK data to be sent out on this port. Use the the "MENU" arrow key to select then press "ENTER" key to continue

Step 5

PORT 1 RANGE FS
GAL = XXXX.X

Use the numerical keypad to input what full scale output you would like 20 mA to be equal to. 4 mA is always equal to 0.

9 BULK SUPPLY

FIXED TANK APPLICATIONS ONLY:

This option is used for stationary day tanks that refill their Chemical from a bulk supply tank. By turning this function on, it allows you to inferentially track remaining chemical in the bulk supply tank.

Step 1

SETUP MENU ⬆⬇ 9
BULK SUPPLY

Press "ENTER" key to continue.

Step 2

#2 MONITOR BULK
* NO YES

Use "MENU" arrow keys to choose NO or YES, then press "ENTER" key to continue.

10 AUTO REFILL

(OPTION MODEL NO. ARC4000)

This item is only available if you have purchased the ARC4000 option.

Step 1

SETUP MENU ⬆⬇ 10
AUTO REFILL

Press "ENTER" to continue to next screen.

Step 2

#1 AUTO REFILL
* LEVEL BATCH

LEVEL mode: Fills tank to preset level.

BATCH mode: Fills (adds) preset amount.

Step 3

#1 AUTO REFILL
* SEMI AUTO

(LEVEL MODE ONLY)

SEMI requires operator to initiate fill using TANK LOAD key.

AUTO begins refill automatically.

Continued...

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DIGITAL DISPLAY: *ACTION REQUIRED:*

10 AUTO REFILL continued...

Step 4

#1 PUMP ON VAL
LBS = XXX.X

(AUTO MODE ONLY)

NET value at which refill event is to begin.

Step 5

#1 PUMP OFF VAL
LBS = YYY.Y

(LEVEL MODE ONLY)

NET value where refill event is to end.

Step 6

#1 BATCH TARGET
LBS = XXX.X

(BATCH MODE ONLY)

Amount (typically water) to be added when TANK LOAD key pressed.

11 SET ALARM VALUES

This function allows you to choose the value at which you want your various alarms/setpoints to trigger at. Options include: Net High A & B, Net Low A & B, Rate High, Rate Low, Daily Usage High, Daily Usage Low, Bulk Tank Low and Slow Fill Time.

Step 1

SETUP MENU ⬆⬇ 11
SET ALARM VALUES

Press “ENTER” key to continue.

Step 2

SELECT CHANNEL
⬆⬇ , enter CH# 1

Select which channel you would like to work on.

Step 3

#1 SP A HIGH
GAL = 250.0

Enter values at which you want your alarms or setpoints to trigger. Each channel has two low (descending) alarm or control setpoints available (A and B) and two high (ascending) setpoints. As you press ENTER to advance through the different alarms you will also see HIGH FEED RATE, LOW FEED RATE, HIGH DAILY and LOW DAILY alarms. We recommend setting the alarm value to 0 if you do not intend to use it.

12 ALARM / RLY CONFIG

(OPTION MODEL NO's. W5ASP-OD, CD, OS, CS)

If you have optional relay contact outputs installed on your motherboard, this menu allows you to designate which relay you would like a particular alarm to go to. You may send multiple alarms to the same relay contact if so desired.

Step 1

SETUP MENU ⬆⬇ 12
ALARM / RLY CONFIG

Press "ENTER" key to continue.

Step 2

SELECT CHANNEL
⬆⬇ , enter CH# 1

Use “MENU” arrow keys to select which channel you would like to work on. Press “ENTER” key to accept.

Step 3

#1 SP A HIGH
RLY, 2- 4 2

Designate a relay number for this alarm. Choose “0” if you do not want this alarm to go to a relay. For example, this screen indicates: On Channel #1 High Setpoint A, choose which relay (choices are 2-4) that you would like this alarm to go to.

Continued...

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DIGITAL DISPLAY: **ACTION REQUIRED:**

12 ALARM/RLY CONFIG continued...

Step 4

```
#1  SP A  HIGH
DISPLAY * NO    YES
```

Choose YES if you would like your alarm condition to be displayed on the LCD screen. Choose NO if you don't.

Step 5

```
SENSOR ALARM
DISPLAY * NO    YES
```

Displays an alarm if load cell or sensor fails.

Step 6

```
INVERT RELAYS
        * NO    YES
```

Changes relay logic for relays 1 through 4 to "FAIL-SAFE". If "YES", relays active (red light on module turned on) in NORMAL condition, de-activated in ALARM conditions or when power interrupted.

13 USER PRIVILEGES

This function allows you to establish or change your password, and to password various keys and menu items to prevent unauthorized use.

Step 1

```
SETUP MENU      ⬆⬇ 13
USER PRIVILEGES
```

Press "ENTER" key to continue.

Step 2

```
CHANGE PASSWORD
* NO          YES
```

Choose YES if you would like to change the Password (or see what it currently is).

Step 3

```
USER PASSWORD
NUMBER =      1234
```

Establish new 4 digit password and press enter.

Step 4

```
TANK LOAD
PASSWRD *NO   YES
```

Choose YES if you would like to password this item. Press "ENTER" key to continue to scroll through menu choices. "DEL" key to get back to the Setup Menu.

14 DIAGNOSTICS

This function is used for trouble shooting, and is usually used by a factory trained technician. Contact a Force Flow technician at 800-893-6723 (or fax 925-686-6713) to interpret this information.,

Step 1

```
SETUP MENU      ⬆⬇ 13
DIAGNOSTICS
```

Press "ENTER" key to continue.

Step 2

```
VIEW/SET  FACTORS
* NO          YES
```

Choose "YES" to view calibration data.

Step 3

```
SELECT CHANNEL
⬆⬇  , enter  CH #1
```

Use "MENU" arrow keys to select channel.

Continued...

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DIGITAL DISPLAY: **ACTION REQUIRED:**

14 DIAGNOSTICS continued...

Step 4

```
#1  ZERO COUNTS
NUMBER=    23281
```

Zero factor for Channel #1.

Step 5

```
#1  MIN  CAL  VALUE
LBS=        0.0
```

Value at which zero was set for Channel #1.

Step 6

```
#1   SPAN   FTR
NUMBER =     2.32423
```

Span factor for Channel #1 .

Step 7

```
RAW    A/D
  *  NO          YES
```

If YES:

```
  3282          5970
201019        350447
```

Raw A/D Signal.

Press "DEL" to quit.

15 FIELD CAL

Your indicator has been factory calibrated. This function allows you to field calibrate your indicator by setting the zero and span with known weights or values.

Step 1

```
SETUP MENU      ⬆⬇ 15
FIELD  CAL
```

Press "ENTER" key to continue.

Step 2:

```
SELECT CHANNEL
⬆⬇  , enter  CH# 1
```

Enter which channel to calibrate.

Step 3

```
#1   ZERO   ONLY ?
 *  NO          YES
```

Choose "YES" if you only want to re-zero. If you want to do a full calibration, choose "NO".

Step 4

```
#1   FULL   CAL ?
 *  NO          YES
```

Choose "YES" for full calibration procedure.

Step 5

```
#1   APPLY MINIMUM
THEN PRESS ENTER
```

Remove cylinder/drum from scale; empty a fixed tank or remove most of the chemical.

Step 6

```
WAIT . . . .
```

Wait for instructions.

Continued....

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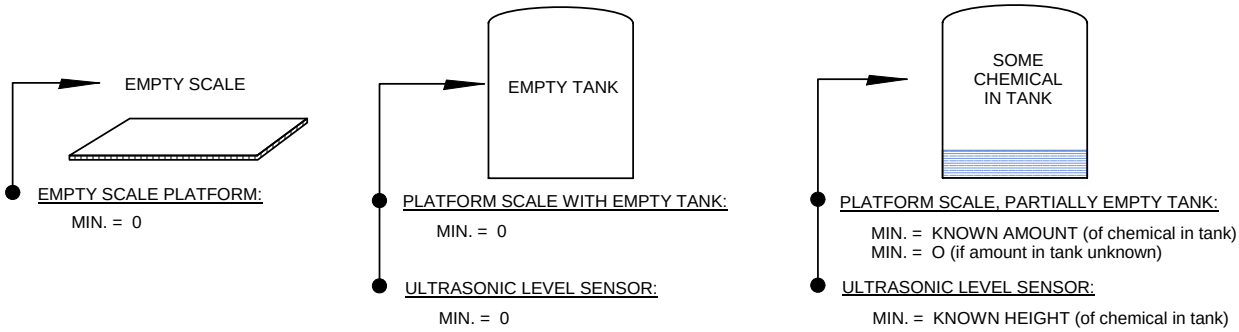
DIGITAL DISPLAY: *ACTION REQUIRED:*

15 FIELD CAL continued...

Step 7

```
ENTER MIN. VAL
      LBS =      0.0
```

Enter minimum value. If tank or scale is empty, enter "O".
If tank is partially full, enter value of contents. See examples below:



Step 8

```
#1   APPLY MAXIMUM
THEN PRESS ENTER
```

Add a known amount to the scale or tank.

- PORTABLE = Full cylinder, ton container or drum.
- FIXED TANKS = Fill tank with a known weight of chemical, or volume converted to weight.

Step 9

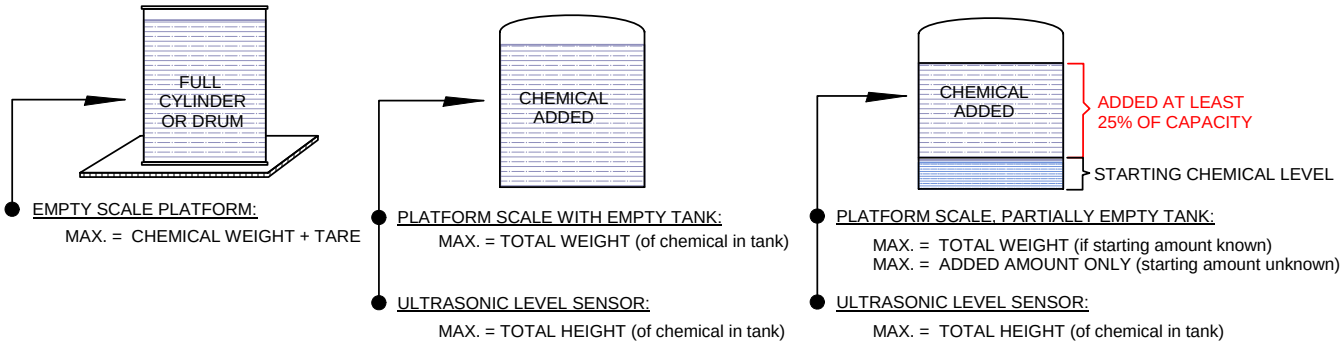
```
WAIT .....
```

Wait for instructions.

Step 10

```
ENTER MAX. VAL
      LBS =     100.0
```

Enter the amount of weight (scale) or the chemical height (ultrasonic). See Examples below:



Step 11

```
CALIBRATE MORE ?
  * NO        YES
```

"NO" to exit. "YES" to calibrate other channels.

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File: T4\NEW O&M 2007\W23A WIZ NEW PR328 SETUP8 2008.tcw
03/21/08 MT

DIGITAL DISPLAY: | *ACTION REQUIRED:*

16 CONFIG TOTALS

Allows you to select which channels are to be displayed in the total.

Step 1

```
SETUP MENU      ⇅ 16
CONFIG TOTALS
```

Press "ENTER" key to continue.

Step 2

```
#1   IN TOTAL ?   ⇅
* NO          YES
```

Choose "YES" using arrows to include this channel in totals. Options will include only channels with the same units of measure. See "USER MENU", "17 TANK SET UP".

17 TANK SET UP

Step 1

```
SETUP MENU      ⇅ 17
TANK SETUP
```

Press "ENTER" key to continue.

Step 1

```
#1 DISPLAY UNITS   ⇅
  WT          *VOL
```

Select "WEIGHT" or "VOLUME" using arrow keys.

If Scale "VOLUME" or Ultrasonic "WEIGHT" in Step 1:

Step 2

```
#1  SPECFIC GRAV
NUMBER =  X.XXXX
```

You will be prompted for specific gravity of chemical. (Default "1.000", if applicable)

Ultrasonic Only:

Step 3

```
#1  TANK DIA
INCHES =    XXX.X
```

You will be prompted for tank diameter. (Default "100.0", if applicable)

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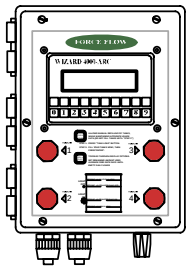
AUTO REFILL CONTROL (ARC) OPTION

(OPTION MODEL NO. ARC4000)



WARNING

INJURY OR DEATH CAN RESULT FROM CHEMICAL SPILLS OR IMPROPER OPERATION !

CAREFULLY DETERMINE & SET REFILL START AND STOP VALUES.

VISUALLY OBSERVE ONE COMPLETE REFILL CYCLE BEFORE UNMANNED OPERATION. READ COMPLETE OPERATION MANUAL.

ARC QUICK START GUIDE (See below for complete ARC information)

1. Connect transfer device (solenoid valve, transfer pump, secondary relay) to 2-pin connector plug located below relay module on Wizard motherboard slot J7. If more than one channel has ARC option: RELAY 1 = Ch. 1, RELAY 2 = Ch. 2, etc.
2. Set ARC Mode to LEVEL or BATCH and set refill values. (SETUP MENU "10 AUTO REFILL"). LEVEL refills to preset level, BATCH adds preset amount.
3. Emergency Stop Button (located on Wizard door): Press in to STOP refill. Rotate button clockwise to release and reset.
4. Insure tank has some form of secondary overfill protection such as high level float switch or sealed day tank with vent line leading back into bulk tank.

DESCRIPTION

The Wizard can be purchased with up to four (4) Auto Refill Control options (one per channel). The ARC option consists of an Emergency Stop Button located on the front of the enclosure, pre-installed software and a control relay.

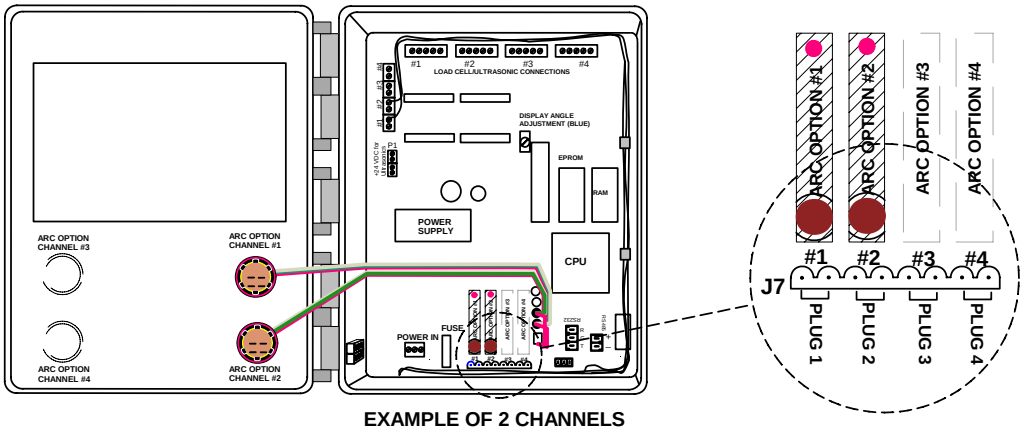
The standard ARC relay provided is a solid state, normally open relay. This relay requires a minimum loop current of 20mA with a maximum motor load of 1.5 amps. The relay typically activates a transfer pump, solenoid valve or other device provided by others which allows the transfer of chemical from bulk storage to day tank, or controls the addition of water to the day tank for mixing.

If the relay signal is to be taken directly into a PLC, a dry contact relay is available. Please contact factory for dry contact relay. Solid state relay modules are BLACK, dry contact modules are RED.

WIRING

Connect the two wires from your transfer device to the 2-pin plug connector located in socket J7 as marked on the motherboard. This socket is located along the lower edge of the motherboard directly below the relay module(s).

NOTE: FULL DRAWING ON PAGE W.10



EXAMPLE OF 2 CHANNELS

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File: T4\NEW O&M 2007\W24 WIZ NEW PR328 ARC START.tcw
04/08/08 MT

AUTO REFILL CONTROL (ARC) OPTION cont...

SET TRANSFER ON & OFF VALUES

Set your transfer begin (empty tank) and end (full tank) values in SETUP Menu "10 AUTO REFILL, Page W.2.204.

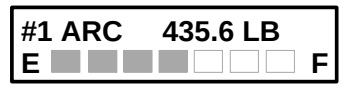
OVERFILL PROTECTION

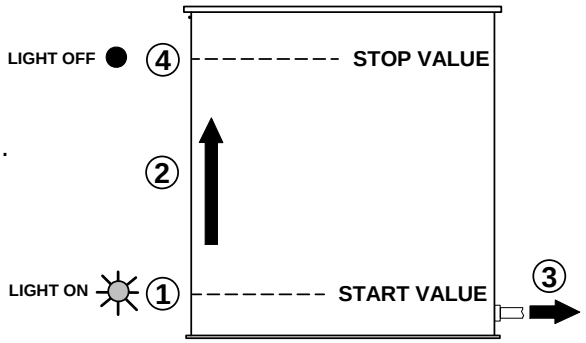
Even though the Wizard 4000 is a highly stabile and sophisticated device, a secondary form of tank overfill protection is always recommended. EXAMPLE : A high level switch mounted in the tank or a sealed day tank with vent line routed back into bulk tank.

NORMAL ARC CYCLE

1. Tank feeds down to refill start value.
2. Relay closes and refill event begins.
3. Chemical continues to be fed during refill process.
4. Tank level reaches refill stop value and relay opens.
5. During refill, Wizard displays "ARC" (instead of "NET").

EXAMPLE:





PAUSE & PROJECT™ (Patent Pending)

In order to keep DALY (24 hr), USED (cumulative) and FEED RATE values correct, the Wizard 4000 must lock these values out during the refill event. If you feed during the refill process, the amount fed during refill will not be reflected in DALY or USED.

PAUSE & PROJECT™ logic allows an estimated amount of chemical fed during the refill process to be added into the DALY and USED values.

Pause & Project can be turned on in SETUP Menu "7 SYSTEM TIME BASE".

Pause & Project works by sampling the feed rate value at the moment before the refill event begins. The length of the refill event is then timed and based on that time and the feed rate, a calculated amount of chemical fed during the refill process is added to the DALY USED and AMOUNT USED.

The accuracy of this feature depends on the accuracy of the displayed FEED RATE value. To optimize the accuracy of the feed rate function, the update period can be adjusted (Setup Menu "7 SYSTEM TIME BASE"). The update period is factory set to 2 hrs. That means once every two hours, the loss in weight or volume during that 2 hr. period is recorded and based on that value, the daily or hourly feed rate is calculated and the displayed feed rate value is updated.

The update period can be set from 24 hours down to 1 minute. The shorter the update period, the more "real-time" the displayed feed rate will be. Trial and error will indicate just how short of an update period your application will allow. If your feed rates are high, you will likely be able to use a small update period successfully. We suggest you decrease the update period until the displayed feed rate begins showing obvious errors, and then increase it until feed rate stabilizes. IMPORTANT: After changing the update period the Wizard 4000 initially may take up to 2 times the new update period before the displayed feed rate actually shows you a realistic value.

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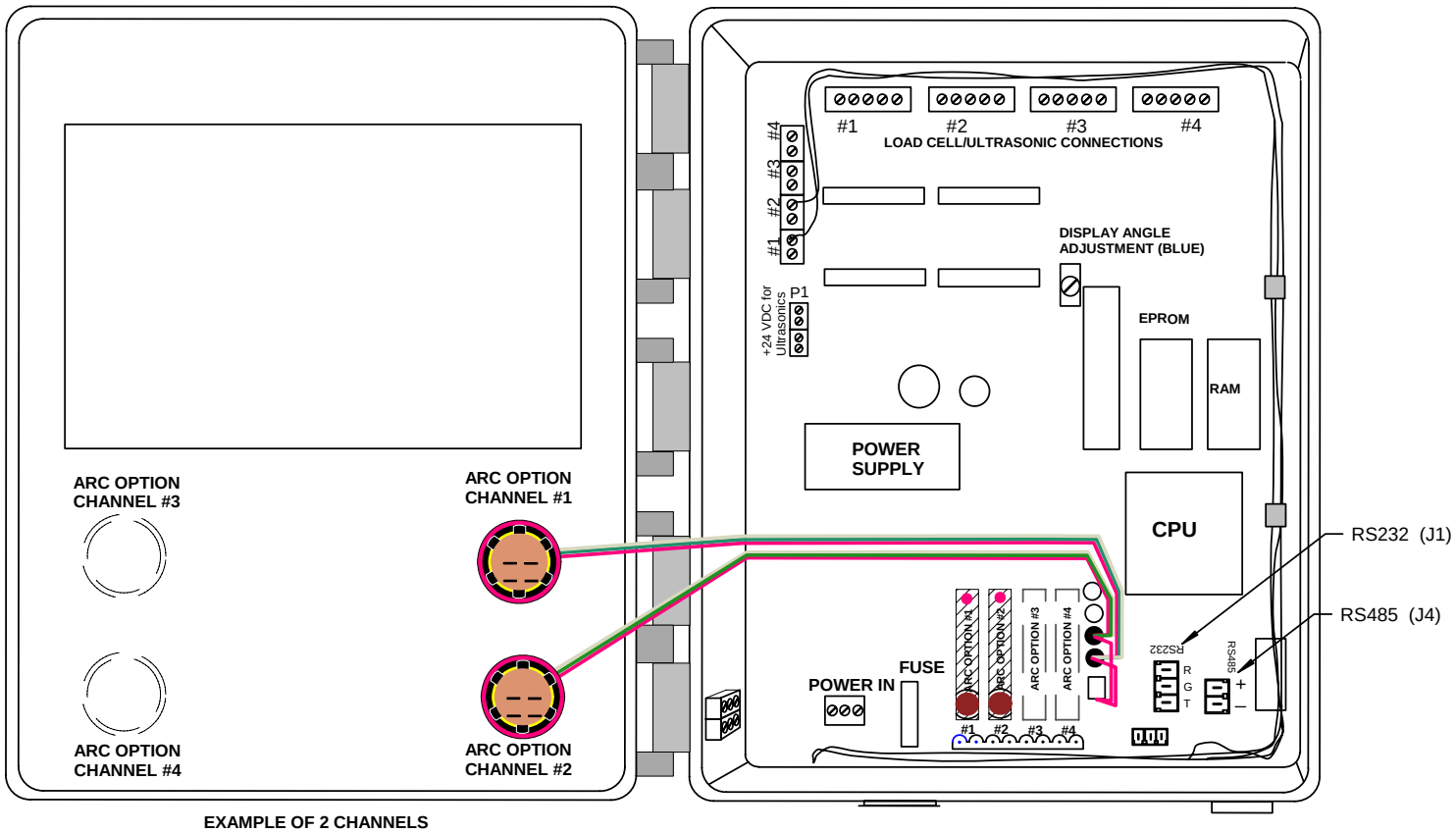
WIZARD 4000 with AUTO REFILL CONTROL (ARC) OPTION

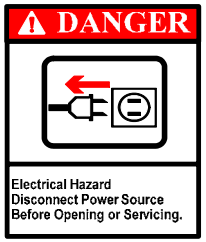
WIRING DIAGRAM



EXAMPLE OF 2 CHANNELS

ARC RELAY SPECIFICATION

	TYPE	FUNCTION	LOAD RATING (MIN/MAX AMPS)
STANDARD	SOLID STATE (Black Module)	Standard: NORMALLY OPEN Optional: NORMALLY CLOSED	0.020A min. / 3.00A (1.5A motor load) max., 240VAC
OPTIONAL	DRY CONTACT (Red Module)	Optional: NORMALLY OPEN Optional: NORMALLY CLOSED	O min. / 0.5A @ 12V, 0.416A @ 24V, 0.083A @ 120V max.



W.26

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File: T4\NEW O&M 2007\W26 WIZ NEW ARC PR328.tcw

WIZARD 4000®
ARC OPTION WIRING

CHECKED BY : MT

Drawn by:	SLJ/MT
Date:	11/21/06
Revised:	12/05/06 MT
Scale:	NONE

Drawing Number

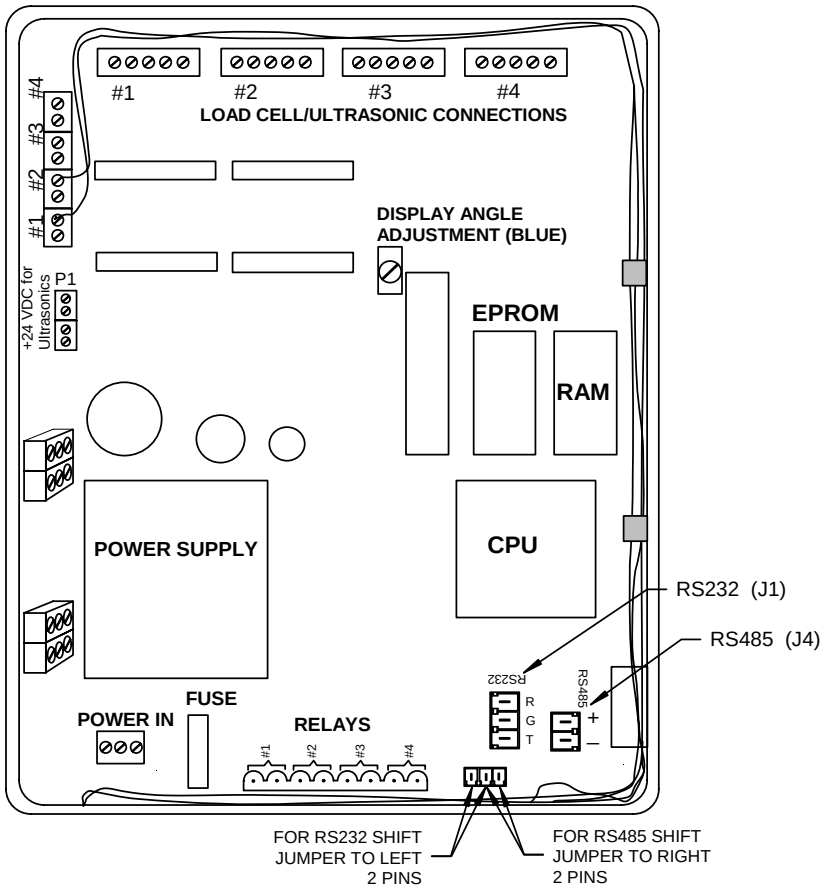
31172

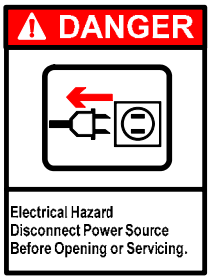
MODBUS ASCII SERIAL COMMUNICATION

(OPTION MODEL NO's. WRS232 & WRS485)

CONFIGURATION

The Wizard 4000 Digital Weight Indicator has the ability to independently monitor up to four separate scales or sensors (four channels). The MODBUS ASCII Serial Communication option allows all of the standard data functions to be sent to the receiving instrument via the RS232 / RS485 serial outputs.





COMMUNICATION SETUP

DATA BITS	**8**
STOP BIT	**1**
PARITY	**NO**
BAUD RATE	**9600**

DEVICE ADDRESS

Device address is factory preset to "1".
To assign a different address (1-247), see CHANNEL ID (Item #2) in SETUP menu.

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File: T4\O&M\WIZ MSTR\NEW 2007\W27 WIZ NEW MODBUS COMM.tcw
04/08/08 MT

MODBUS REGISTER MAP

CHANNEL 1: Starting Register Address: ALWAYS 40101 (addressed as 100 in data string)

Number of Registers: MINIMUM: 6 (units, decimals and NET WT only) MAXIMUM: 13 (all data for channel)

REGISTER #	CH #	DATA	UNITS / DECIMAL
40101	1	BASE UNITS	0=LB, 1=KG, 2=INCHES, 3=CM
40102	1	BASE DECIMAL	0=0, 1=0.1, 2=0.01
40103	1	DISPLAY UNITS	0=LB, 1=KG, 2=GAL, 3=LITERS
40104	1	DISPLAY DECIMAL	0=0, 1=0.1, 2=0.01
40105	1	FEED RATE BASIS	0=PER HOUR, 1=PER DAY
40106	1	NET WT.	REF. 40103, 40104
40107	1	FEED RATE	REF. 40103, 40104, 40105
40108	1	DAILY USAGE	REF: 40103, 40104
40109	1	DAYS TIL EMPTY	DAYS, Always 0.1 decimal
40110	1	AMOUNT USED	REF. 40103, 40104
40111	1	% FULL	%, NO DECIMAL
40112	1	BULK WT.	REF. 40103, 40104
40113	1	BASE WT.	REF. 40101, 40102

CHANNEL 2: Starting Register Address: ALWAYS 40201 (addressed as 200 in data string)

Number of Registers: MINIMUM: 6 (units, decimals and NET WT only) MAXIMUM: 13 (all data for channel)

REGISTER #	CH #	DATA	UNITS / DECIMAL
40201	2	BASE UNITS	0=LB, 1=KG, 2=INCHES, 3=CM
40202	2	BASE DECIMAL	0=0, 1=0.1, 2=0.01
40203	2	DISPLAY UNITS	0=LB, 1=KG, 2=GAL, 3=LITERS
40204	2	DISPLAY DECIMAL	0=0, 1=0.1, 2=0.01
40205	2	FEED RATE BASIS	0=PER HOUR, 1=PER DAY
40206	2	NET WT.	REF. 40203, 40204
40207	2	FEED RATE	REF. 40203, 40204, 40105
40208	2	DAILY USAGE	REF: 40203, 40204
40209	2	DAYS TIL EMPTY	DAYS, Always 0.1 decimal
40210	2	AMOUNT USED	REF. 40203, 40204
40211	2	% FULL	%, NO DECIMAL
40212	2	BULK WT.	REF. 40203, 40204
40213	2	BASE WT.	REF. 40201, 40202

CHANNEL 3: Starting Register Address: ALWAYS 40301 (addressed as 300 in data string)

Number of Registers: MINIMUM: 6 (units, decimals and NET WT only) MAXIMUM: 13 (all data for channel)

REGISTER #	CH #	DATA	UNITS / DECIMAL
40301	3	BASE UNITS	0=LB, 1=KG, 2=INCHES, 3=CM
40302	3	BASE DECIMAL	0=0, 1=0.1, 2=0.01
40303	3	DISPLAY UNITS	0=LB, 1=KG, 2=GAL, 3=LITERS
40304	3	DISPLAY DECIMAL	0=0, 1=0.1, 2=0.01
40305	3	FEED RATE BASIS	0=PER HOUR, 1=PER DAY
40306	3	NET WT.	REF. 40303, 40304
40307	3	FEED RATE	REF. 40303, 40304, 40305
40308	3	DAILY USAGE	REF: 40303, 40304
40309	3	DAYS TIL EMPTY	DAYS, Always 0.1 decimal
40310	3	AMOUNT USED	REF. 40303, 40304
40311	3	% FULL	%, NO DECIMAL
40312	3	BULK WT.	REF. 40303, 40304
40313	3	BASE WT.	REF. 40301, 40302

CHANNEL 4: Starting Register Address: ALWAYS 40401 (addressed as 400 in data string)

Number of Registers: MINIMUM: 6 (units, decimals and NET WT only) MAXIMUM: 13 (all data for channel)

REGISTER #	CH #	DATA	UNITS / DECIMAL
40401	4	BASE UNITS	0=LB, 1=KG, 2=INCHES, 3=CM
40402	4	BASE DECIMAL	0=0, 1=0.1, 2=0.01
40403	4	DISPLAY UNITS	0=LB, 1=KG, 2=GAL, 3=LITERS
40404	4	DISPLAY DECIMAL	0=0, 1=0.1, 2=0.01
40405	4	FEED RATE BASIS	0=PER HOUR, 1=PER DAY
40406	4	NET WT.	REF. 40403, 40404
40407	4	FEED RATE	REF. 40403, 40404, 40405
40408	4	DAILY USAGE	REF: 40403, 40404
40409	4	DAYS TIL EMPTY	DAYS, Always 0.1 decimal
40410	4	AMOUNT USED	REF. 40403, 40404
40411	4	% FULL	%, NO DECIMAL
40412	4	BULK WT.	REF. 40403, 40404
40413	4	BASE WT.	REF. 40401, 40402

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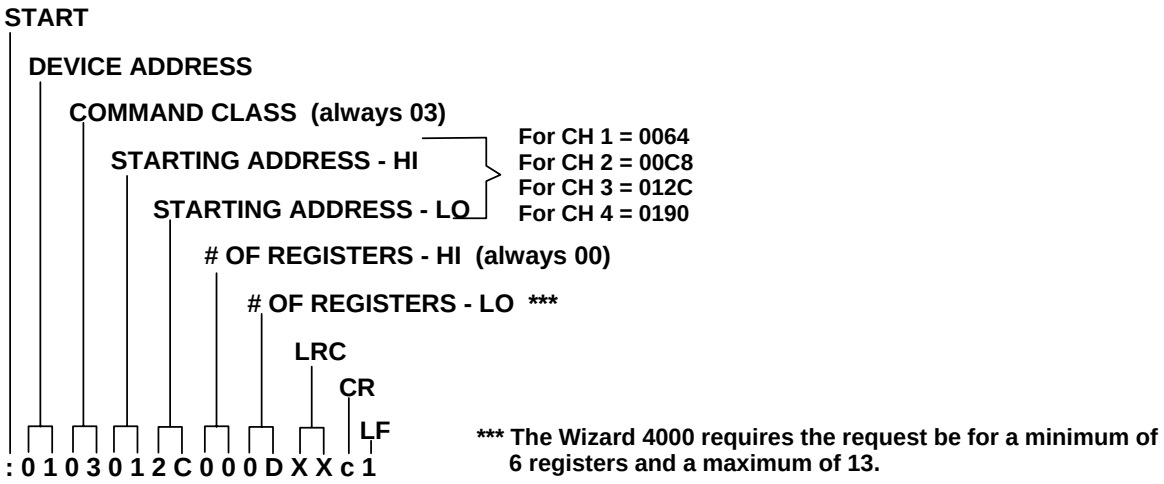
MODBUS SAMPLE DATA STRINGS

READ ALL DATA FROM CHANNEL 3

ALL NUMBERS MUST BE IN HEXIDECIMAL (ASCII FORMATTED).

To call the data from a specific MODBUS REGISTER, you must subtract 1 from the register address then convert to hexidecimal.

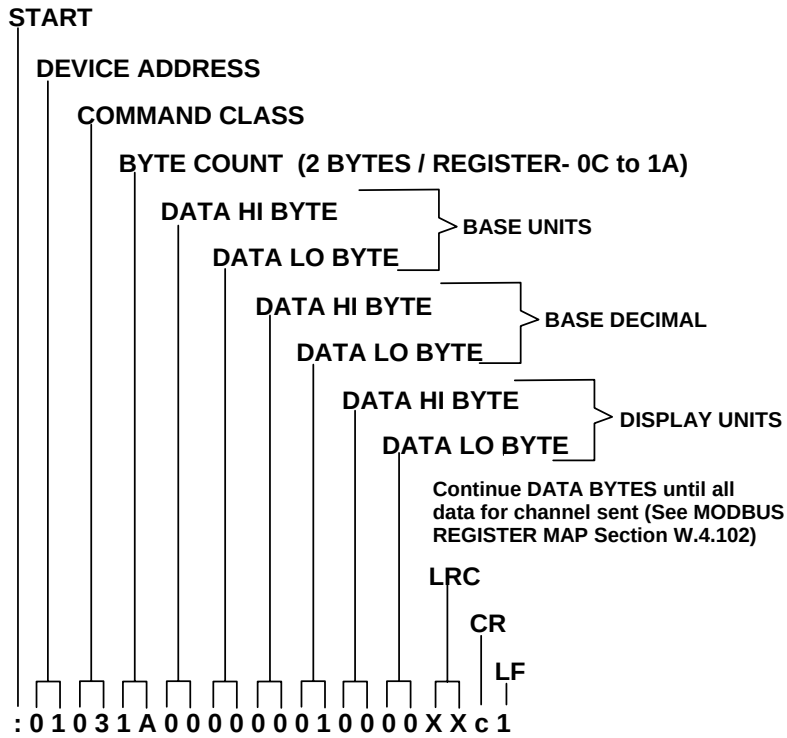
EXAMPLE OF MASTER REQUEST
(ALL HEX, ASCII FORMAT)
REQUESTING ALL AVAILABLE DATA from WIZARD CH3



*** The Wizard 4000 requires the request be for a minimum of 6 registers and a maximum of 13.

RESPONSE from WIZARD 4000 (SLAVE):

WIZARD RETURNS 26 BYTES OF DATA (HEX) (See Register Map)
- **1ST 2 BYTES = BASE UNITS**
- **2ND 2 BYTES = BASE DECIMAL**
- **3RD 2 BYTES = DISPLAY UNITS**
- **etc... (See Modbus Register Map, Section W.4.102)**



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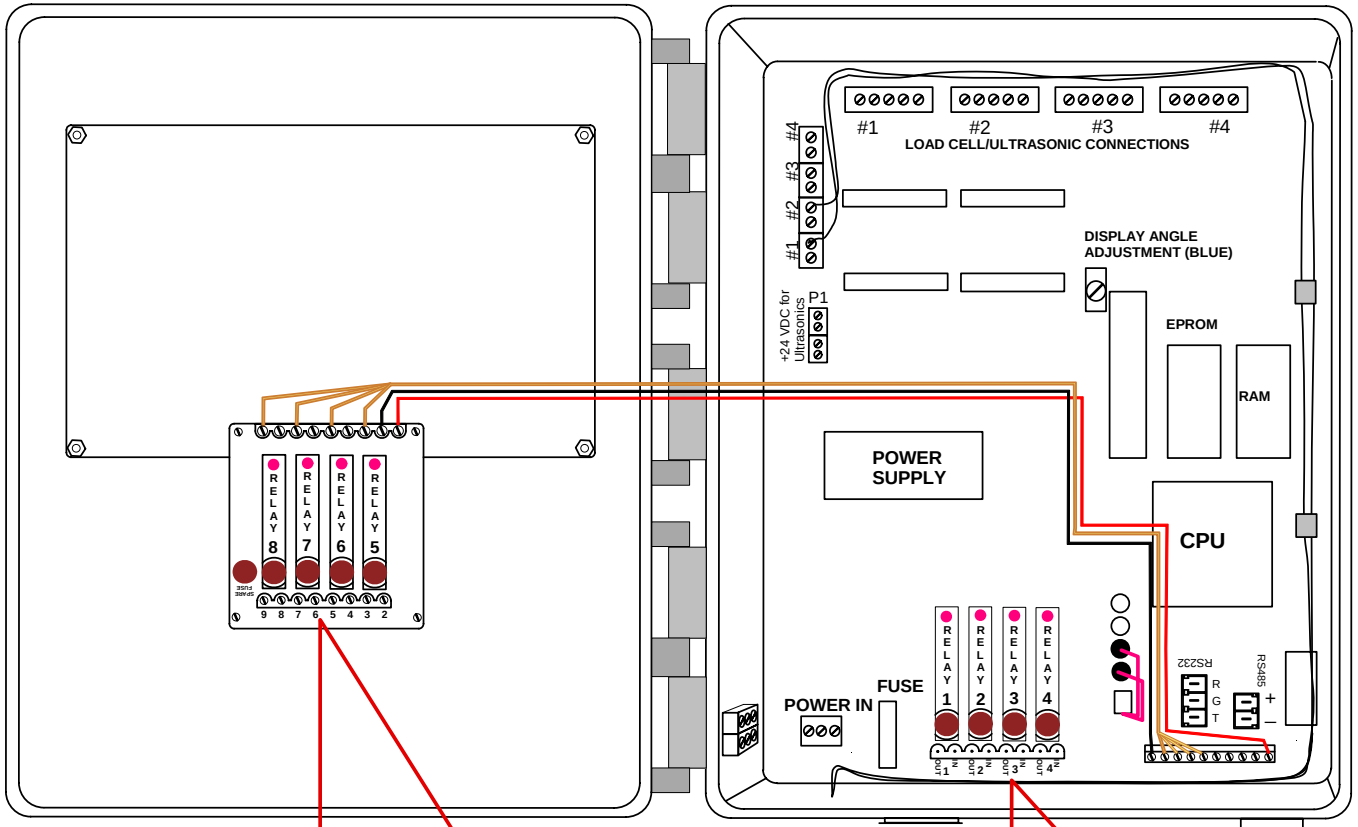

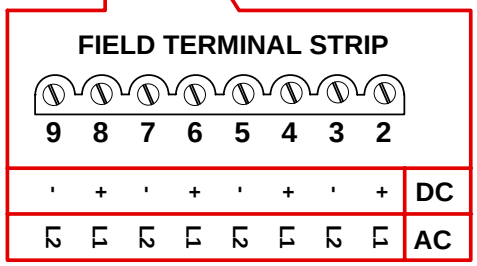

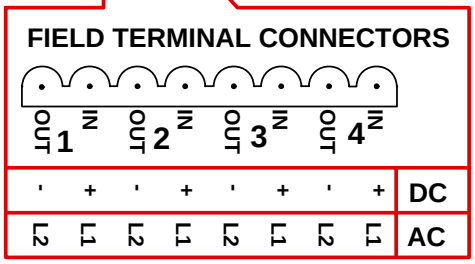

WIZARD RELAY SPECIFICATION

	TYPE	FUNCTION	LOAD RATING (MIN/MAX AMPS)
STANDARD	SOLID STATE (Black Module)	Standard: NORMALLY OPEN Optional: NORMALLY CLOSED	0.020A min. / 3.00A (1.5A motor load) max., 240VAC
OPTIONAL	DRY CONTACT (Red Module)	Optional: NORMALLY OPEN Optional: NORMALLY CLOSED	O min. / 0.5A @ 12V, 0.416A @ 24V, 0.083A @ 120V max.

RELAY WIRING DIAGRAM FOR 1 TO 8 RELAYS

DANGER

Electrical Hazard
Disconnect Power Source
Before Opening or Servicing.

W.30

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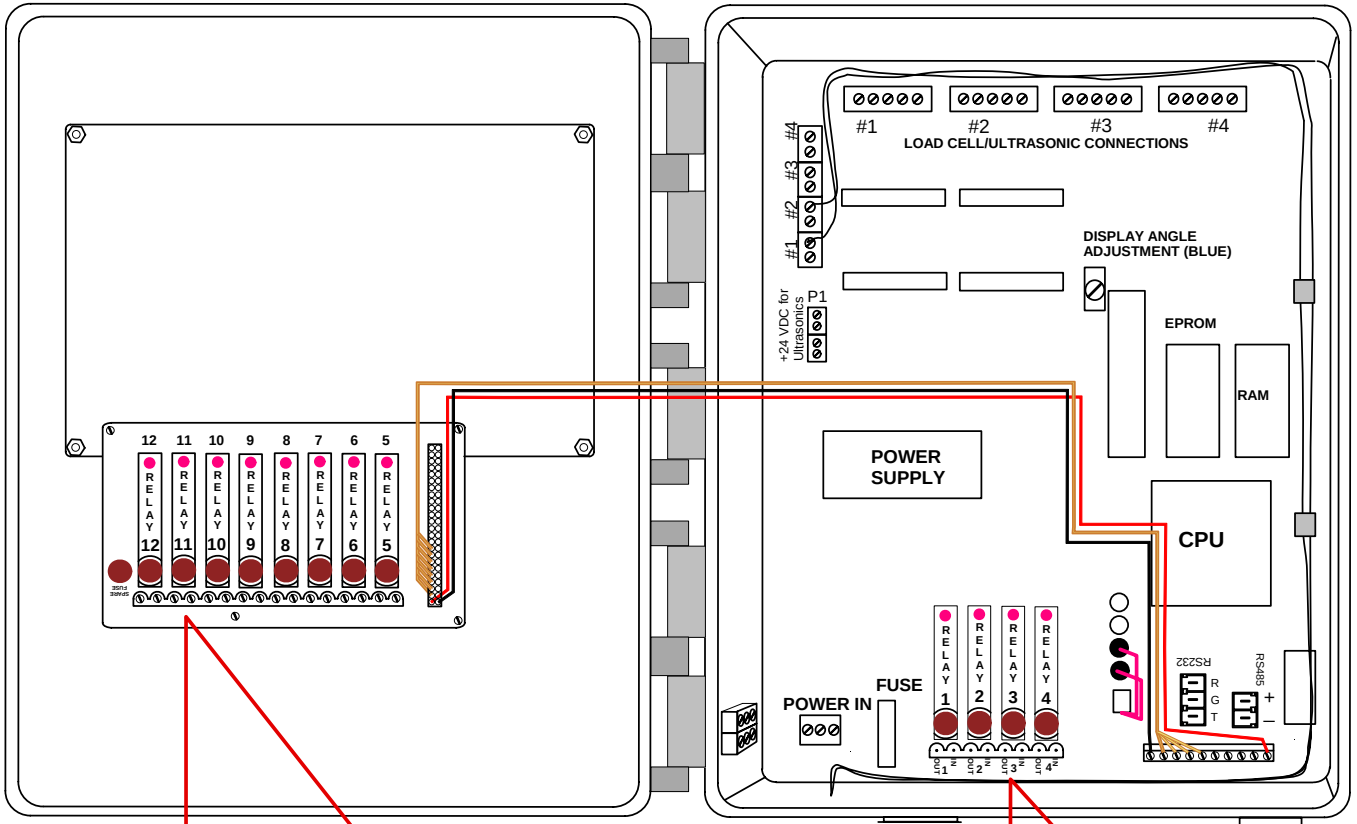
File: T4\O&M\WIZ MSTR_WIZ 1 TO 8 RELAYS PR328.tcw
EMAIL/DRAWINGS/INDICATOR/WIZARD/_WIZ 1 TO 8 RELAYS PR328.pdf

WIZARD 4000®
WITH 1 TO 8 RELAYS

CHECKED BY : MT

Drawn by: SLJ/MT
Date: 11/21/06
Revised: 09/10/07 MT
Scale: NONE

Drawing Number
31272



FIELD TERMINAL STRIP

NOT USED

	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	-	+
DC	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+		
AC	L2	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2	L1		

FIELD TERMINAL CONNECTORS

	OUT 1	IN	OUT 2	IN	OUT 3	IN	OUT 4	IN	
DC	-	+	-	+	-	+	-	+	DC
AC	L2	L1	L2	L1	L2	L1	L2	L1	AC

WIZARD RELAY SPECIFICATION

	TYPE	FUNCTION	LOAD RATING (MIN/MAX AMPS)
STANDARD	SOLID STATE (Black Module)	Standard: NORMALLY OPEN Optional: NORMALLY CLOSED	0.020A min. / 3.00A (1.5A motor load) max., 240VAC
OPTIONAL	DRY CONTACT (Red Module)	Optional: NORMALLY OPEN Optional: NORMALLY CLOSED	O min. / 0.5A @ 12V, 0.416A @ 24V, 0.083A @ 120V max.

DANGER

Electrical Hazard
Disconnect Power Source
Before Opening or Servicing.

RELAY WIRING DIAGRAM FOR 9 TO 12 RELAYS

W.31

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File: T4\O&M\WIZ MSTR_WIZ 9 TO 12 RELAYS PR328.tcw
EMAIL/DRAWINGS/INDICATOR/WIZARD/_WIZ 9 TO 12 RELAYS PR328.pdf

WIZARD 4000®
WITH 9 TO 12 RELAYS

CHECKED BY : MT

Drawn by:	SLJ/MT
Date:	11/21/06
Revised:	09/11/07 MT
Scale:	NONE

Drawing Number
31273

FACTORY WARRANTY

FORCE FLOW

SERIAL NUMBERS:
(found on side of indicator)

S/N _____
S/N _____
S/N _____
S/N _____
S/N _____

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From the initial writing of a specification through the installation and operation of the equipment, 100% satisfaction is our goal. At Force Flow, we know that a superior customer service and support team is crucial to the success of our company.

PERFORMANCE GUARANTEE

With the purchase of every Force Flow product comes our performance guarantee. If you are unhappy about the performance of one of our products in your chlorination or chemical feed application, you may request a performance guarantee from the selling distributor. Under the performance guarantee, if within 30 days of the original installation you are not completely satisfied with the performance of the Force Flow product, you may return or exchange it for the full purchase price. To qualify, all performance guarantees must be pre-approved by the factory service manager before returning the equipment to the factory.

WARRANTY

Force Flow warrants its hydraulic and electronic scales (including accessories), for a period of Five (5) Years. If a failure occurs within said period, the warranty extends from the date of Force Flow's shipment, and liability is limited to repayment of the purchase price, repair or replacement of the equipment. All warranty work must be returned to the factory or a warehouse designated by Force Flow.

WARRANTY

TECHNICAL & APPLICATION SUPPORT

Force Flow factory engineers have strong technical backgrounds with many years of process weighing experience in both chlorine and chemical feed applications. If you require technical information, application support or help with a custom project, please contact an application engineer on our HELP HOTLINE 1-800-893-6723 USA/Canada or email info@forceflow.com. Also, see our website at www.forceflow.com

SERVICE

Our policy is to get all repairs, warranty work and retrofits completed and shipped within 48 hours of their arrival at the factory. Trained technicians and a large parts inventory make this happen. We understand that there is nothing more frustrating than sending something back to the manufacturer and wondering when you will see it again. 2-Day turnaround on repairs -- that is our policy ! For prompt service, call our TOLL FREE HELP HOTLINE at 1-800-893-6723.