

# Pulsar Quick Start Manual - Ultra 5



*Congratulations on your purchase of a Pulsar Ultra 5!*

This quality system has been developed with the latest digital ultrasonic technology for liquids, slurries, and solids. No more noise and beam angle issues.

It provides non-contacting level, volume, advanced pump control, differential level, and open channel flow with 5 user-defined relays. Comes standard with 110VAC and 24VDC with an isolated 4-20 mA output.



Press to close enclosure!

## TRANSDUCER INSTALLATION

### LIQUIDS and SOLIDS

- Mount the transducer away from any obstructions, falling water/solids, rough walls, pumps, switches, etc...
- Visualize looking down the echo path of the transducer and seeing a nice clear shot (2' dia.) to the very bottom during fill and empty cycles.
- Ensure the maximum level does not come within the minimum dB blanking distance.
- Confirm the inside of the standpipe is smooth and does not have any protrusions at the weld.
- Do not hang the transducer by the cable.
- Typically, mount the dB transducer 1/2 the tank radius.

## TROUBLESHOOTING

*(Call Pulsar Technical Support for Special Service Passcode and Instructions 850-609-1777.)*

### LIQUIDS

- Dome top tanks will require Gain & Algorithm change.
- If reading false level, use P21 and set true distance

### SOLIDS

- Consult factory if the silo is extremely dusty—we can increase the return signal strength (even during fill).
- DATEM may map-out the true echo. Use P21 to set true distance and turn "Update Datem" off!
- If acoustically noisy, change Algorithm to Largest.



## TRANSDUCER WIRING

### TERMINAL

RED = POWER

WHITE = SIGNAL

BLACK & GREEN = 0V

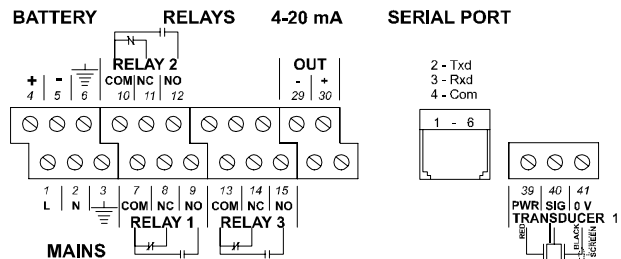
### IF SP LICING (shielded pair)

RED = BLACK

WHITE = WHITE

BLACK & GREEN = SHIELD

- Use any standard, 2 conductor/shielded pair for splicing (recommend 18 AWG gauge, UV protected)
- Use 16 AWG gauge if going 500 - 3,000 ft cable run.
- Transducer shield is required - do not cut or float!
- Battery is actually the 24VDC terminals.
- If I.S. Zone 0 is required, consult factory for details.



*Above wiring diagram is on the back of terminal cover.*



# QUICK START PROGRAMMING

## 1. Enter Program Mode

(press and hold each button until the dash appears)



## 2. Choose "Ultra Wizard"



"Select Apps." (default is Level)  
"Currently Level/Vol., 0 to Reset"

**a. For Level or Volume** (Level only, no pump control, differential level, or open channel flow)



"Quick Setup" (go to step 3a)

**b. For Pump, Differential, or Flow**

(Unit needs to be reset)



Select Apps.: 1=Level/Vol 2=Pump/Diff 3= Flow  
("Loading" will require up to 2 minutes)  
"Quick Setup" (Pump/Diff go to 3b, Flow go to 3c)

## 3a. Choose "Quick Setup" (LEVEL Pg. 34)

Press "Enter" and choose "Application":

1= Level 2= Volume

(Always hit "Enter" to save and confirm by seeing "Saved")

"Control" (Relay will Energize ON & DeEnergize OFF)

"Alarm" (Relay will DeEnergize ON & Energize OFF)

Choose how many of each, set to corresponding relay, and choose what type "Control" or "Alarm" it is.

If no relays are used, then type "0" and "Enter" for each.

"Wait..." could take up to 30 seconds.

"Xducer" Choose the transducer being used: 1=dB3 2=dB6

3=dB10 4=dB15 5=dB25 6=dB40 7=dBS6 8=dBMach3

"Material" Choose 1= Liquid or 2= Solid

"Measurement Units" Choose 1=m 2=cm 3=mm 4=ft 5=in

"Empty Level" Enter the distance from the face of the transducer to the bottom of the vessel/tank (sets 4mA)

"Span" Enter the distance from the bottom of the tank/vessel (Empty Level) to the top or 100% point (sets 20mA)

For Volume, go to the Ultra 3 manual on Pg. 37 and answer: "Vessel Shape", "Vessel Dim.", "Vol. Units", "Max Vol."

"For More Options Hit Enter" (Calibration is done, step 4!)

**NOTE about Relays.** Quick Setup assumes ON and OFF setpoints based on level percentages. For Example:  
High Alarm is "ON" at 85% and "OFF" at 80% of level  
Low Alarm is "ON" at 10% and "OFF" at 15% of level  
Pump 1 (Pump Down) is "ON" at 50% and "OFF" at 20%  
Pump 2 (Pump Down) is "ON" at 70% and "OFF" at 20%  
Consult manual for more information on Relays.

## 3b. Choose "Quick Setup" (PUMP/DIFF Pg. 104)

Press "Enter" and choose "Application":

1= Level 2= Pump Down 3= Pump Up 4=Differential (screen) (for Differential Control Relay Setup, follow menu on page 106)

"No. Of Pumps" Choose # of pumps and set to Relay #.

(Pump Relay will Energize ON & DeEnergize OFF)

"Pump Duty" Choose 3 for "Alt Duty Assist" (Alternating Lead/Lag Routine is the most common) and set to Relay #.

"No. Of Alarms" Choose # of Alarms based on remaining open.

(Alarm Relay will DeEnergize ON & Energize OFF)

Choose how many of each, type of Alarm, and set to Relay #.

If no relays are used, then type "0" and "Enter" for each.

"Wait..." could take up to 30 seconds.

"Xducer" Choose the transducer being used: 1=dB3 2=dB6

3=dB10 4=dB15 5=dB25 6=dB40 7=dBS6 8=dBMach3

"Material" Choose 1= Liquid or 2= Solid

"Measurement Units" Choose 1=m 2=cm 3=mm 4=ft 5=in

"Empty Level" Enter the distance from the face of the

transducer to the bottom of the vessel/tank (sets 4mA)

"Span" Enter the distance from the bottom of the tank/vessel

(Empty Level) to the top or 100% point (sets 20mA)

"For More Options Hit Enter" (Calibration is done, go to step 4!)

## 3c. Choose "Quick Setup" (FLOW Pg. 198)

"PMD Type" Primary Measuring Devices to choose from:

1= Exponential (most commonly used: 1=Rectangular Weir  
2=Trapezoid 3=Venturi 4=Parshall Flume 5=Leopold  
6=V-Notch Weir 7=Other) 2= Never use (European) 3= Never use (European) 4= Area Velocity 5= Special (Palmer Bowlus, H-Flume, or V-Notch Angle) 6= Universal (32 pt curve-fit)

"Calculation" Choose the method to calculate Flow:

1=Absolute (may require K factor, Exponent, Dimensions, etc.)

2=Ratiometric (most common, requires Max Head vs. Max Flow)

"Alarm" (Relay will DeEnergize ON & Energize OFF)

If no relays, type "0" & "Enter" (Totalizer relay setup on pg 254)

"Wait..." could take up to 40 seconds.

"Xducer" Choose the transducer being used: 1=dBMach3

2=dB6 3=dB10 4=dB15 7=dBS6

**IMPORTANT:** dB3 will not work in FLOW! Call Pulsar ASAP.

"Volume Units" 1=liters 2=cubic m 3=cubic ft 4=UK Gallons

5=US Gallons 6=Million Gallons

"Time Units" 1= /sec 2= /min 3= /hour 4= /day

"Measurement Units" Choose 1=m 2=cm 3=mm 4=ft 5=in

"Empty Level" Enter the distance from the face of the

transducer (bottom of dBMach3 cone) to the 0% Flow of the PMD

"Minimum Head" (usually set to 0, Pg. 260- sometimes for weirs)

"Max Head" Distance from 0% Flow to Max Flow (updates Span)

"Totalizer Enable" Choose 1 (On) for Totalizer to be viewed

using the Sigma Hot Key

"TotalizerR" Choose 1 (On) to display Totalizer in Run Mode.

"Totalizer Mult" pick 1 (/1000) for MGD and 7 (\*1000) for gpm

"Max Flow" used in Ratiometric. At Max Head, what is the flow?

"For More Options Hit Enter" (Calibration is done, go to step 4!)

## 4. Calibration is done, go into Run Mode!!!



"Run Mode?"

