

# General

Quick Start details the minimum recommended start up procedure for most HYDRORANGER PLUS installations. Refer to the individual product instruction manuals for complete installation and interconnection instructions for the:

- HYDRORANGER PLUS
- Ultrasonic Transducers
- TS-3 Temperature Sensors (if used)
- DOLPHIN interface (if used)

### Note:

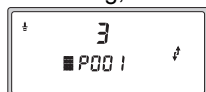
Ensure all process control equipment is disabled until satisfactory HYDRO+ performance is verified.

## Initial Start Up

Apply power; the unit rapidly takes measurements verifies repeatability, and calculates Readings.

As preset, the HYDRO+ displays transducer face to monitored level distance up to 8.00 m + 20% (9.6 m) max. With the programmer aimed at the HYDRO+ display window within 0.3 m (1 ft)...

Press to enter the program mode, stop measuring, and display...



### During the following procedure:

1. If the selection desired is already displayed, no entry is required. (Advance to the next step.)
2. If an entry error is made press and try again.

### Step 1 (P001)

#### Which type of Operation is desired?

- 0 = **off** (point out of service)
- 1 = **level** (how full the vessel is)
- 2 = **space** (how empty the vessel is)
- 3 = **distance** (from the transducer face)

e.g. Press for level



Press to advance.

### Step 2 (P002)

#### Which Material is being monitored?

- 1 = **liquid** \* (flat level surface)
- 2 = **solid** (uneven sloped surface)

e.g. liquid, no entry required



Press to advance.

### Step 3 (P003)

#### Which Measurement Response is desired?

- 1 = **slow** (0.1 m/min)
- 2 = **medium** \* (1 m/min)
- 3 = **fast** (10 m/min)

e.g. 0.5 m/min, no entry required



Press to advance.

### Step 4 (P004)

#### Which Transducer is connected (check nameplate)?

##### Ultrasonic

- 0 = none
- 1 = ST-25
- 2 = ST-50
- 100 = STH \*

##### Ultrasonic/temperature

- 101 = XCT-8
- 102 = XPS-10
- 103 = XCT-12
- 104 = XPS-15
- 111 = XKS-6
- 112 = XRS-5

e.g. Press for XPS-10



Press to advance.

### Step 5 (P005)

#### Which measurement Units are desired?

- 1 = **metres (m)** \*
- 2 = **centimetres (cm)**
- 3 = **millimetres (mm)**
- 4 = **feet (ft)**
- 5 = **inches (in)**

e.g. Press for feet



Press to advance.

### Step 6 (P006)

#### Where is Empty (transducer face to vessel bottom)?

Presets Span to the maximum recommended value 0.000 to 9999

e.g. Press for 15 feet (Step 5 units)



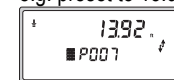
Press to advance.

### Step 7 (P007)

#### What is the Span (Empty to highest material level)?

0.000 to 9999

e.g. preset to 13.92 ft (Step 6), no entry required.



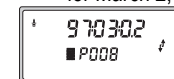
Press to advance.

### Step 8 (P008)

#### What is the DATE (YY.MM.DD format)?

00.00.00 to 99.12.31

e.g. Press for March 2, 1997.



Press to advance.

### Step 9 (P009)

#### What Time is it (24 hour format)?

00.00.00 to 23.59.59

e.g. Press for 2:15 P.M.



If relays are not required, proceed to OPERATION.

## Relays

### A) For wet well (2 pumps, pump down) control, to...

- energize RL1 (start lead pump) at 70% level,
- energize RL2 (start lag pump) at 80% level,
- de-energize RL1 & 2 (stop and shift lead) at 20% level,
- de-energize RL3 (HI alarm) at 90% level,
- de-energize RL4 (LO alarm) at 10% level . . .

Press



### B) For reservoir (2 pumps, pump up) control, to...

- energize RL1 (start lead pump) at 30% level,
- energize RL2 (start lg pump) at 20% level,
- de-energize RL1 & 2 (stop and shift lead) at 80% level,
- de-energize RL3 (HI alarm) at 90% level,
- de-energize RL4 (LO alarm) at 10% level . . .

Press



When complete, proceed to OPERATION.

# Operation

When the Quick Start procedure is complete:

1. Press to enter RUN mode.

---- is displayed briefly.

The HYDRO+ rapidly takes measurements, verifies repeatability, and calculates Readings.

The Bar Graph indicates material level (0 to 100%), regardless of the Operation (Step 1) value selected.

If relays are used and ▲ is displayed, the level has exceeded 90% and not yet fallen below 85% (HI alarm).

If relays are used and ▼ is displayed, the level has fallen below 10% and not yet exceeded 15% (LO alarm)

2. Press %

Readings are displayed in % per Operation (Step 1).

level	space or distance <sup>1</sup>
Empty to Span = 0 to 100%	Empty to Span = 100 to 0%

3. Press mA

View mA output values in the Auxiliary Reading display.

level	space or distance
Empty to Span = 4 to 20mA	Empty to Span = 20 to 4mA

4. Press or

View pump 1 or 2 total running time (in hours)

5. Press press and hold or for 4 seconds.

View total pump 1 or pump 2 starts

6. Press

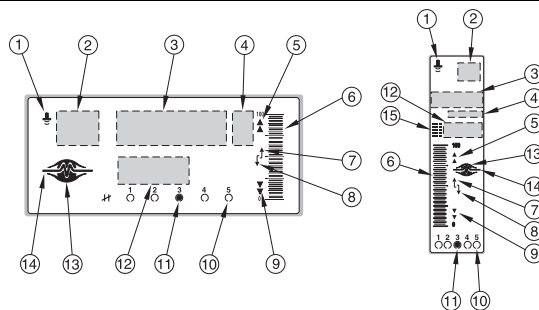
View transducer / TS-3 temperature (in °C).

As preset, if Failsafe operation is activated, the HYDRO+ de-energizes pump / control relays and "holds" the display (LOE flashes), mA output, and alarm relay status at last known values.

Operation continues when valid measurement is regained.

<sup>1</sup> less than 0.3 m (1 ft) cannot be measured; 0% Reading (4 mA) cannot be achieved during "distance" Operation.

# Run Mode Display Functions



- |                         |   |
|-------------------------|---|
| 1 Transducer            | 9 ▼ Lo or ▼ Lo Lo Alarm                         |
| 2 Transducer Number     | 10 ○ Relay Programmed                           |
| 3 Reading               | 11 ● Pump / Alarm On                            |
| 4 Units                 | 12 Auxiliary Reading                            |
| 5 ▲ Hi or ▲ Hi Hi Alarm | 13  Normal Operation                            |
| 6 Level Bar Graph       | 14  Failsafe Operation                          |
| 7 Filling Indicator     | 15  Programmer interface enable (rack or panel) |
| 8 Emptying Indicator    |   |

# Run Mode Keypad Functions

- |      |   |
|------|---|
| mA   | Display mA output in Auxiliary Reading area (12)        |
|      | Display temperature in Auxiliary Reading area           |
|      | Display Emptying/Filling Rate in Auxiliary Reading area |
|      | Display Failsafe time left in Auxiliary Reading area    |
|      | Display time (HH:MM) in Auxiliary Reading area          |
|      | Display date (DD:MM) in Auxiliary Reading area          |
| P... | Enter Parameter to display in Auxiliary Reading area    |
| Pxxx | Display material level in Auxiliary Reading area        |
|      | Display distance in Auxiliary Reading area              |
|      | Initiate program mode access (see  %).                  |
| %    | Display Units to % in 3.-complete program mode access   |
- (other functions available dependant upon programming)

# Performance Evaluation

Monitor system performance, under all operating conditions. If alternate display, relay, mA output, or failsafe operation is required, see instruction manual.

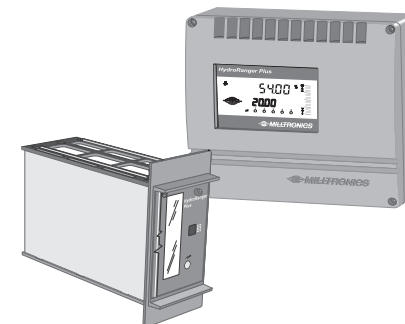
**Connect (or enable) alarm/control equipment only after satisfactory performance is verified.**

**MILLTRONICS**

# HYDRORANGER PLUS WATER/WASTE WATER LEVEL MONITOR

Quick Start Guide

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Rev. 1.0

HYDRORANGER PLUS