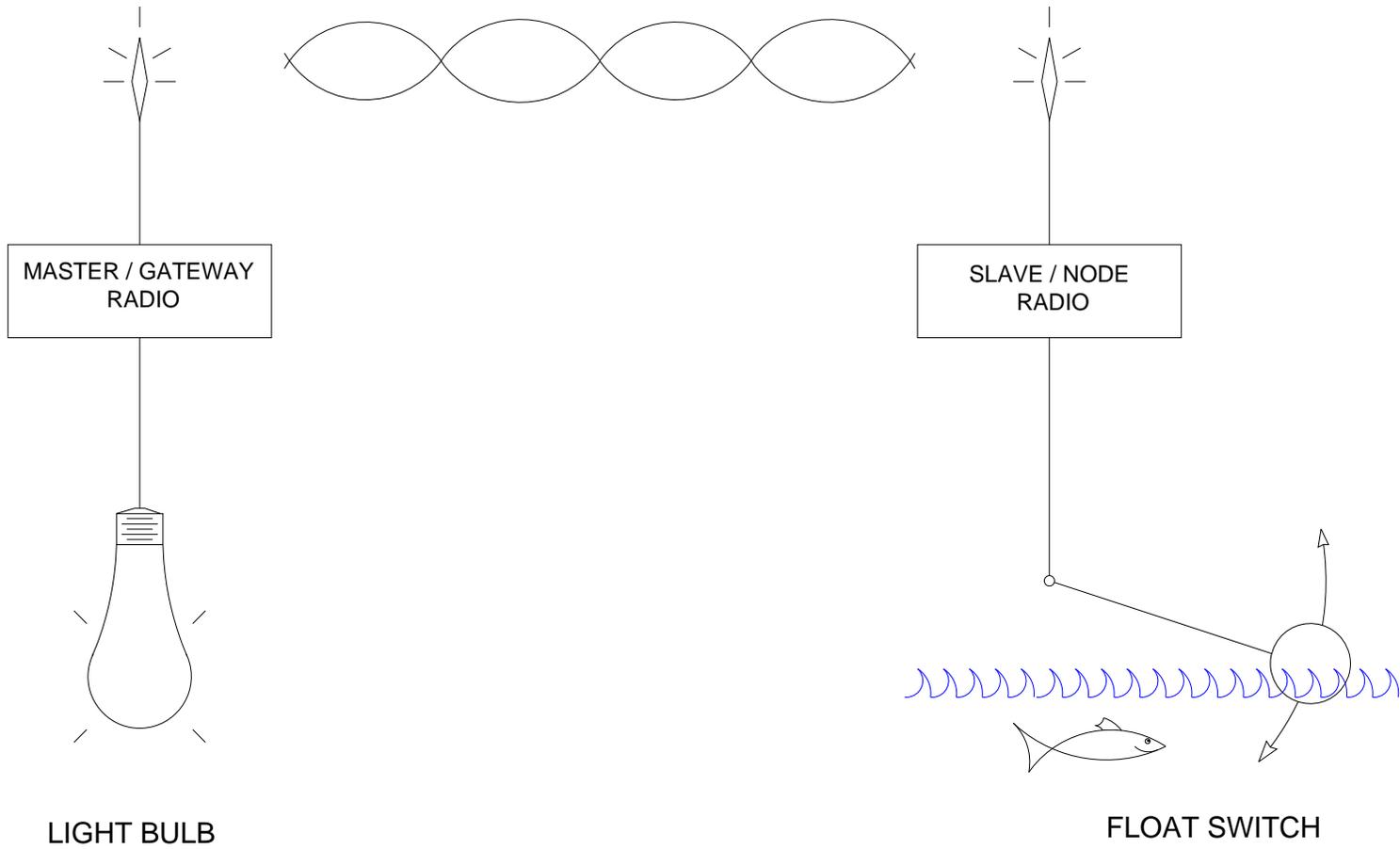


Wireless Communication for Hatchery Alarm and Monitoring Systems

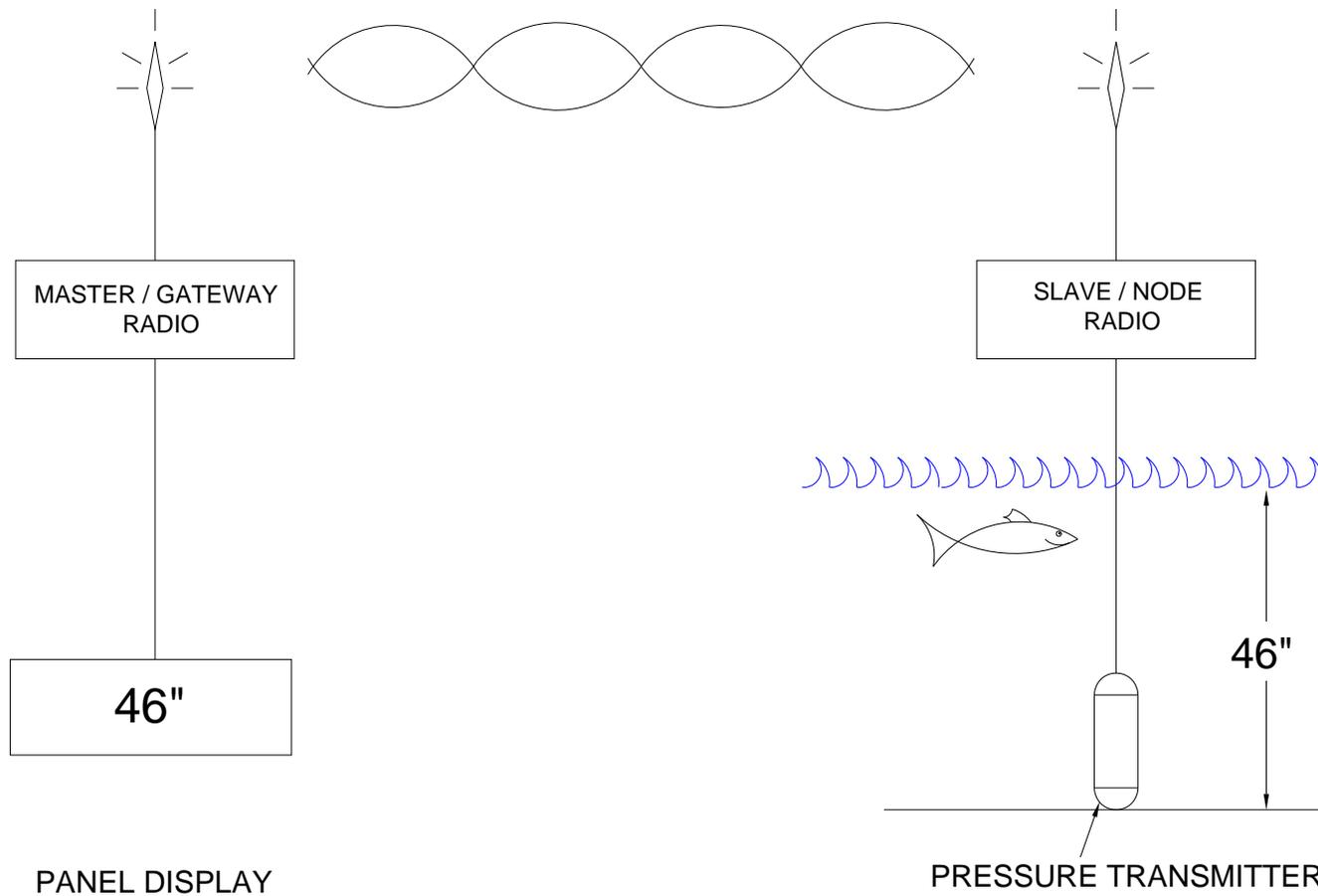
Setting up a wireless network

- Things we need to know:
 - What are you trying to monitor?
 - Discrete or analog data?
 - How do want to use the data?
 - Is wireless suitable for the location?

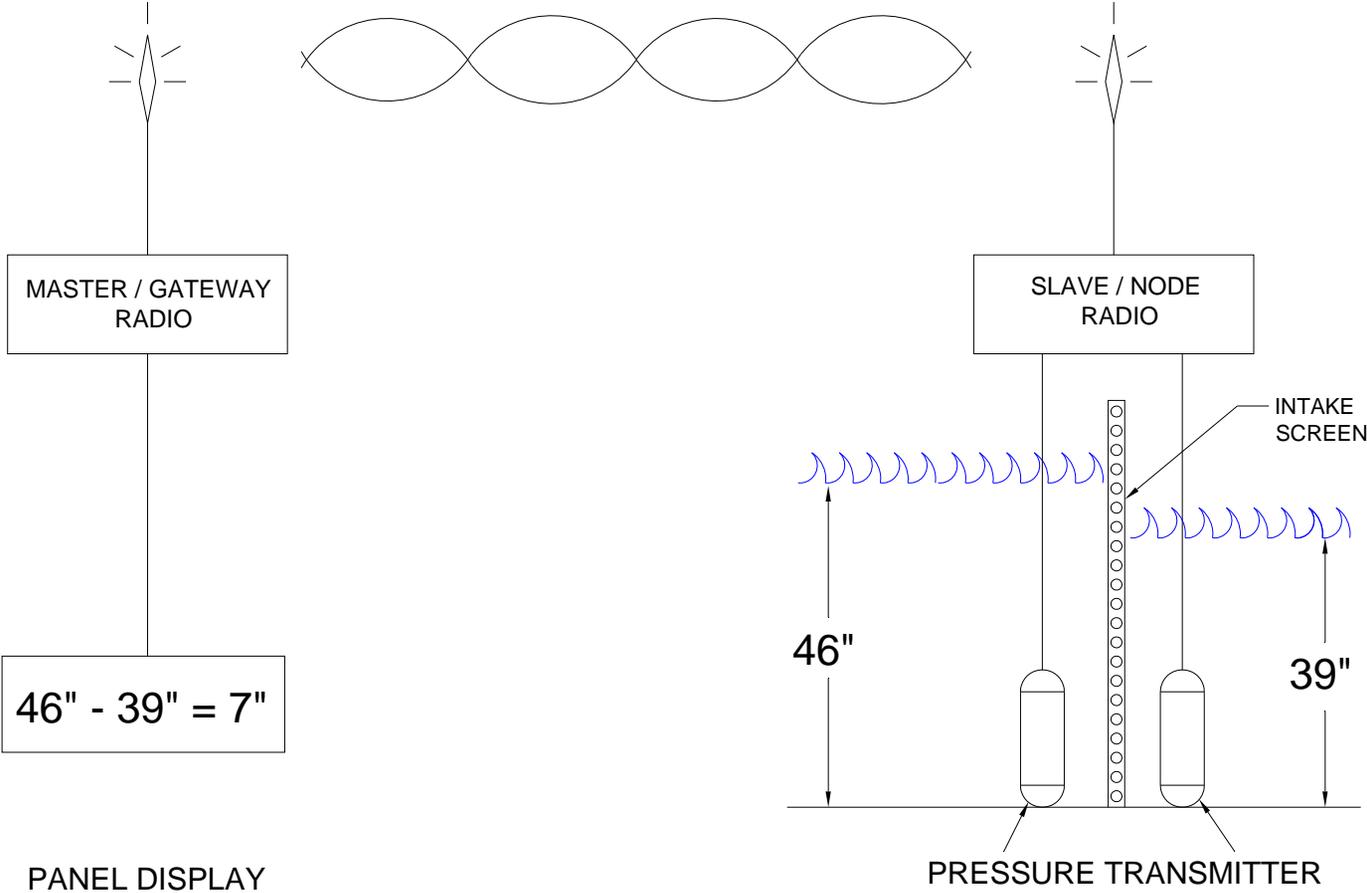
SIMPLE DISCRETE WIRELESS SETUP



SIMPLE ANALOG WIRELESS SETUP

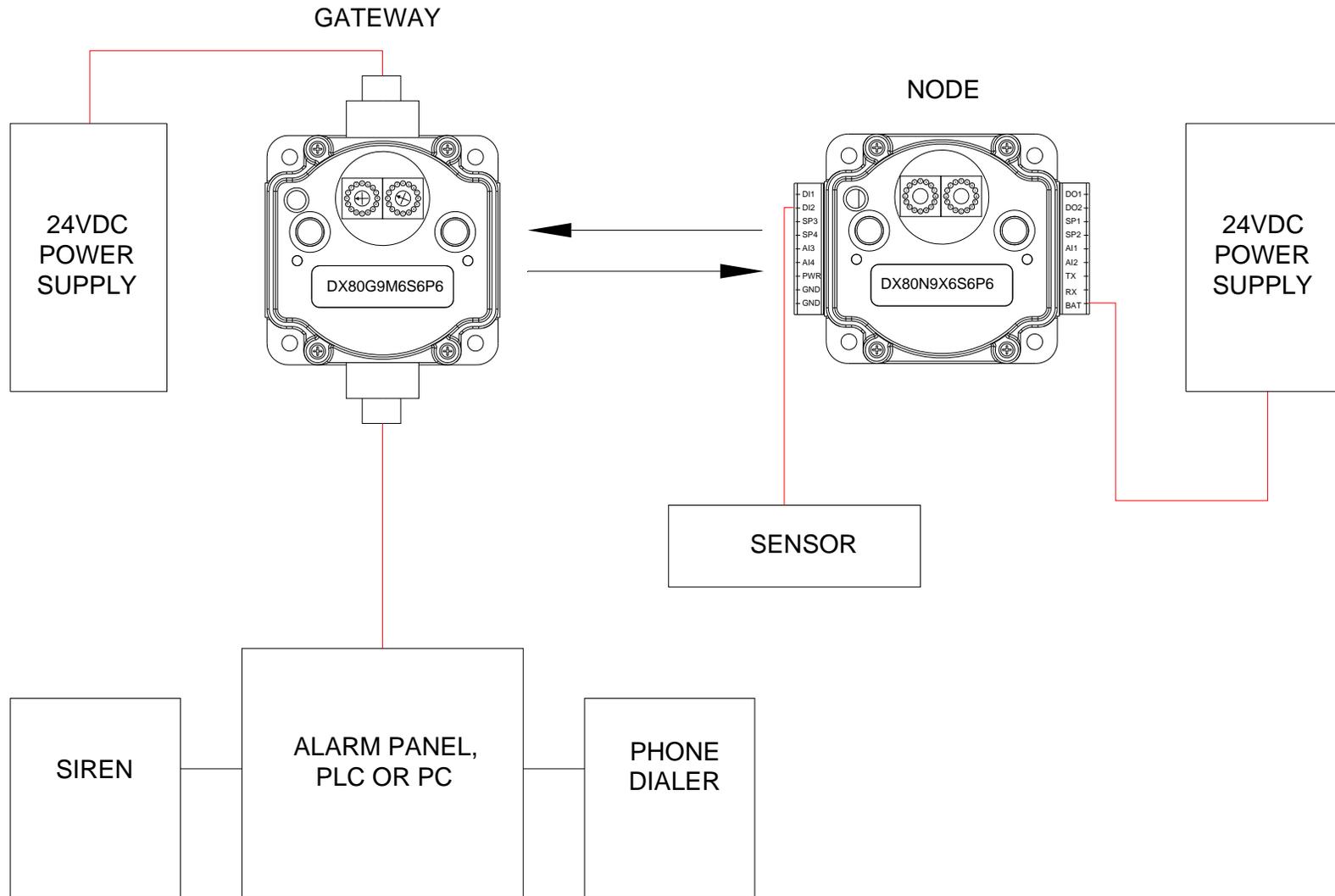


ANALOG DIFFERENTIAL WIRELESS SETUP

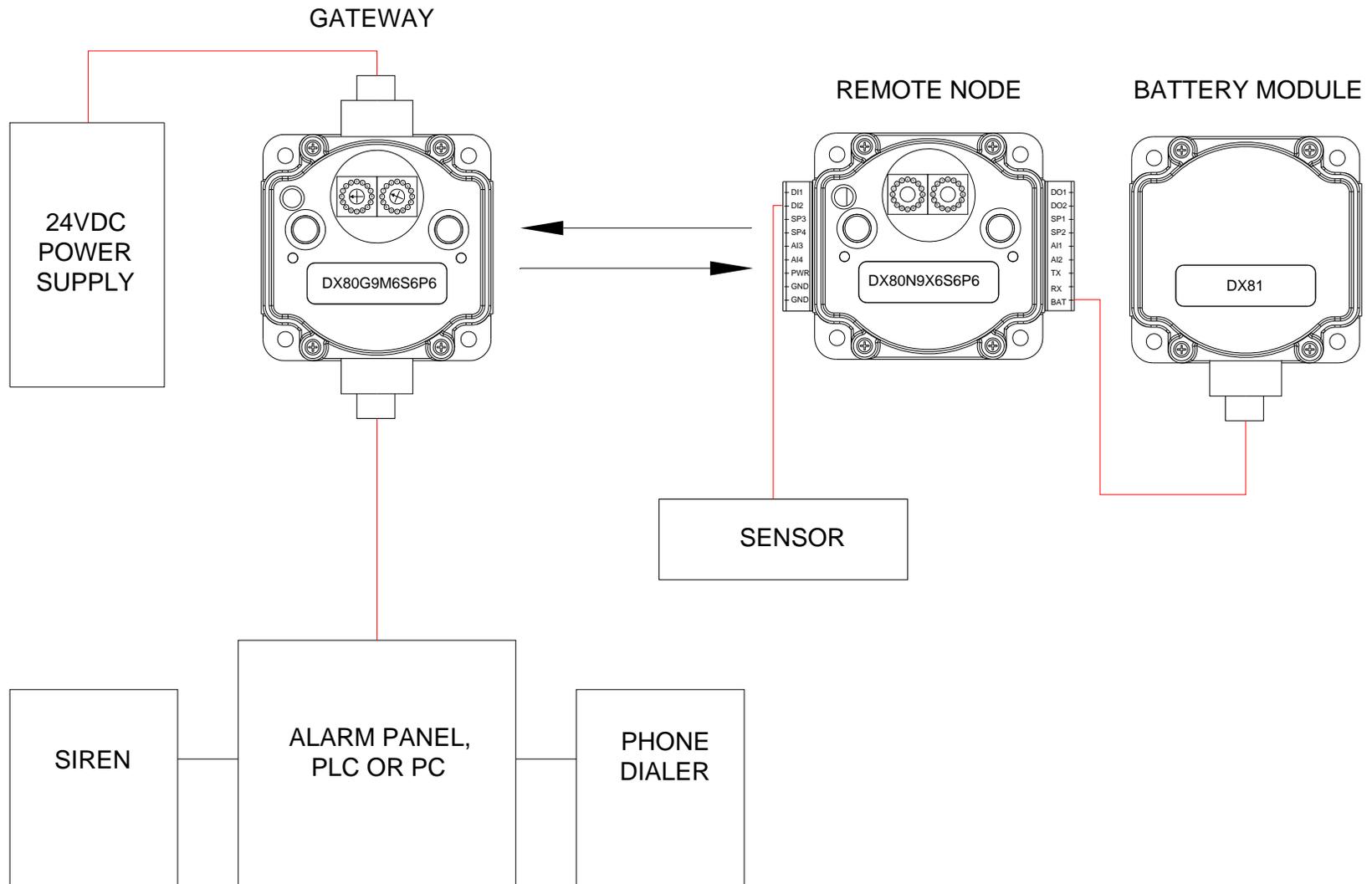


- Banner Engineering carries the DX80 series of radios that come as a matched pair, making it easy to setup a remote monitoring system
- Several different discrete and analog models are offered
- Range up to 3 miles line of sight, more with high gain antennas
- Sight survey is recommended

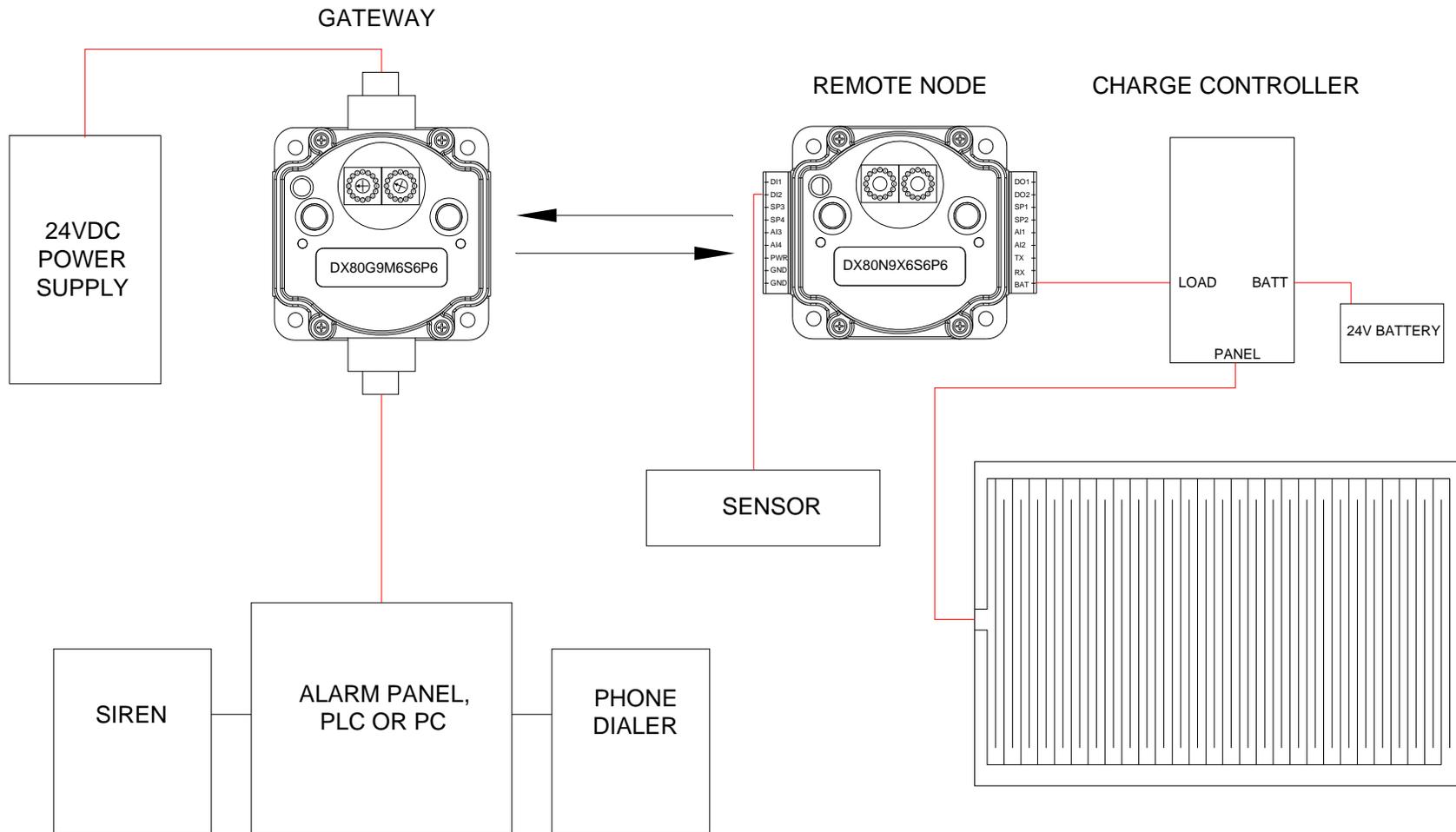
24VDC POWERED WIRELESS SETUP



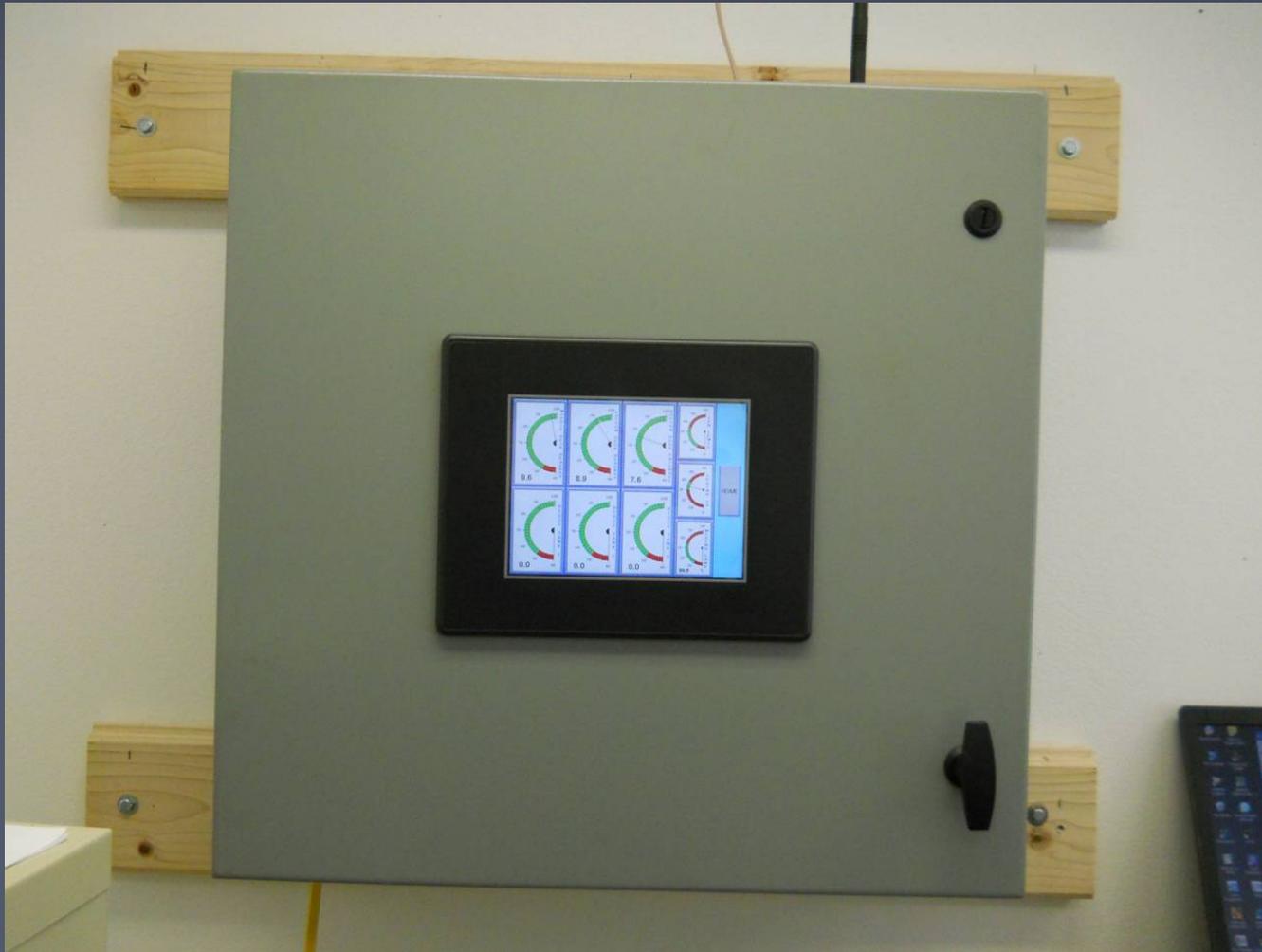
BATTERY POWERED WIRELESS SETUP



SOLAR POWERED WIRELESS SETUP



Hagerman National Fish Hatchery Annunciation System



Wireless Network Monitor Points

■ Len Lewis Spring

- Water Level
- Screen Running
- Screen Overload

■ Middle Deck

- Upper End DO Level
- Lower End DO Level
- O2 Pump Running
- O2 Pump Overload

■ Bottom Deck

- Lower End DO Level

■ Spring 13

- Water Level

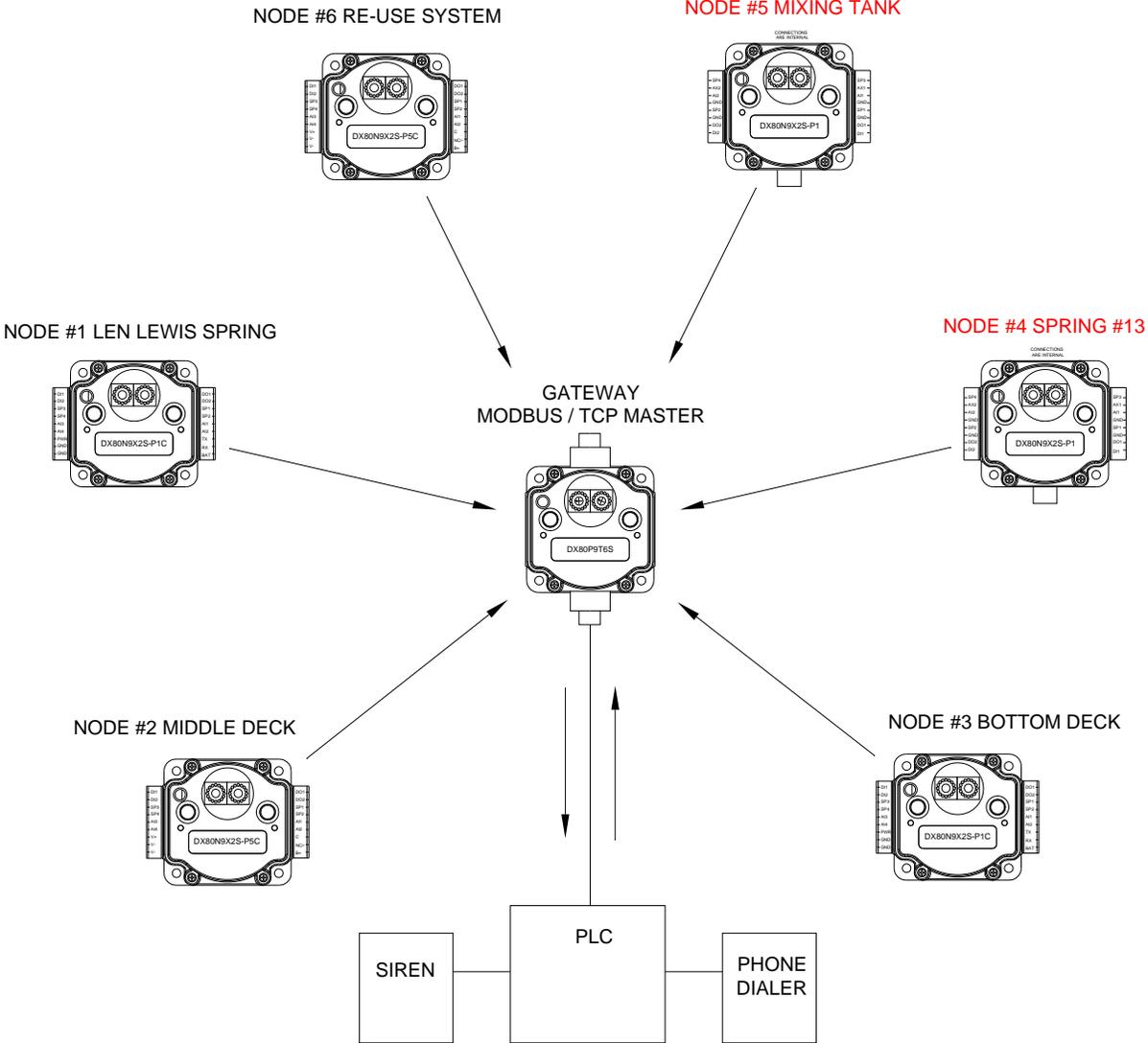
■ Mixing Tank

- Water Level
- DO Level

■ Re-Use System

- Tank #1 DO Level
- Tank #2 DO Level
- Tank #3 DO Level
- Power Monitor
- Alarm System

HAGERMAN NATIONAL FISH HATCHERY ANNUNCIATION SYSTEM WIRELESS NETWORK



STAR NETWORK

Up to 16 nodes, more with extended addressing



Hagerman National Fish Hatchery

ANNUNCIATION SYSTEM

03:26 PM 02/26/14

ZONE ACTIVATION	ZONE MONITOR	LEVEL MONITORS	LEVEL RECORDERS
ALARM HISTORY	USB	MAINTENANCE	HELP

R	HATCH #1 NODE1 OFF
R	HATCH #2 NODE1 OFF
G	MIDDLE DECK HEADBOX NODE2 ON
G	BOTTOM DECK HEADBOX NODE2 ON
R	BOTTOM DECK TAILTRACE NODE3 ON

ZONE ACTIVATION

WARNING!!

DO NOT ACTIVATE A ZONE UNLESS GREEN LIGHT IS ON OR ALARM WILL SOUND

R	RE-USE SYSTEM NODES OFF
G	LEN LEWIS NODE1 ON
R	SPRING #13 NODE1 ON
G	MIXING TANK NODES ON
G	RACEWAY O2 PUMP NODE2 ON

03:26 PM 26-FEB-14

HOME ZONE MONITOR

01/01 BOTTOM DECK TAILTRACE LOW DO LEVEL

	HATCH #1
	HATCH #2
G	MIDDLE DECK HEADBOX
G	BOTTOM DECK HEADBOX
R	BOTTOM DECK TAILTRACE

ZONE MONITOR

GRAY = ALARM INACTIVE
GREEN = ALARM ACTIVE
YELLOW = OVERRIDE
RED = ALARM

NO USB DEVICE

SILENCE AUDIBLE ALARM

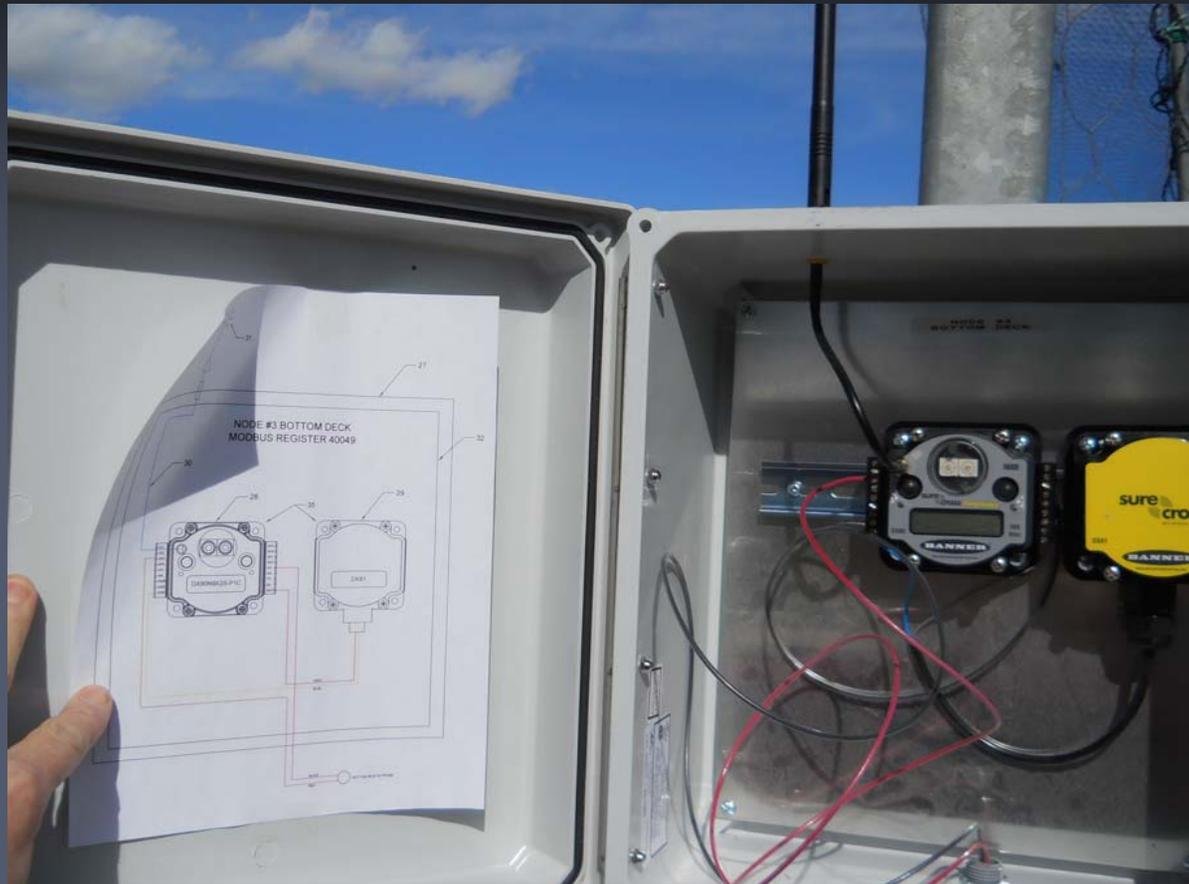
	RE-USE SYSTEM
G	SPRING LEN LEWIS
R	SPRING #13
G	MIXING TANK
G	RACEWAY O2 PUMP

03:26 PM 26-FEB-14

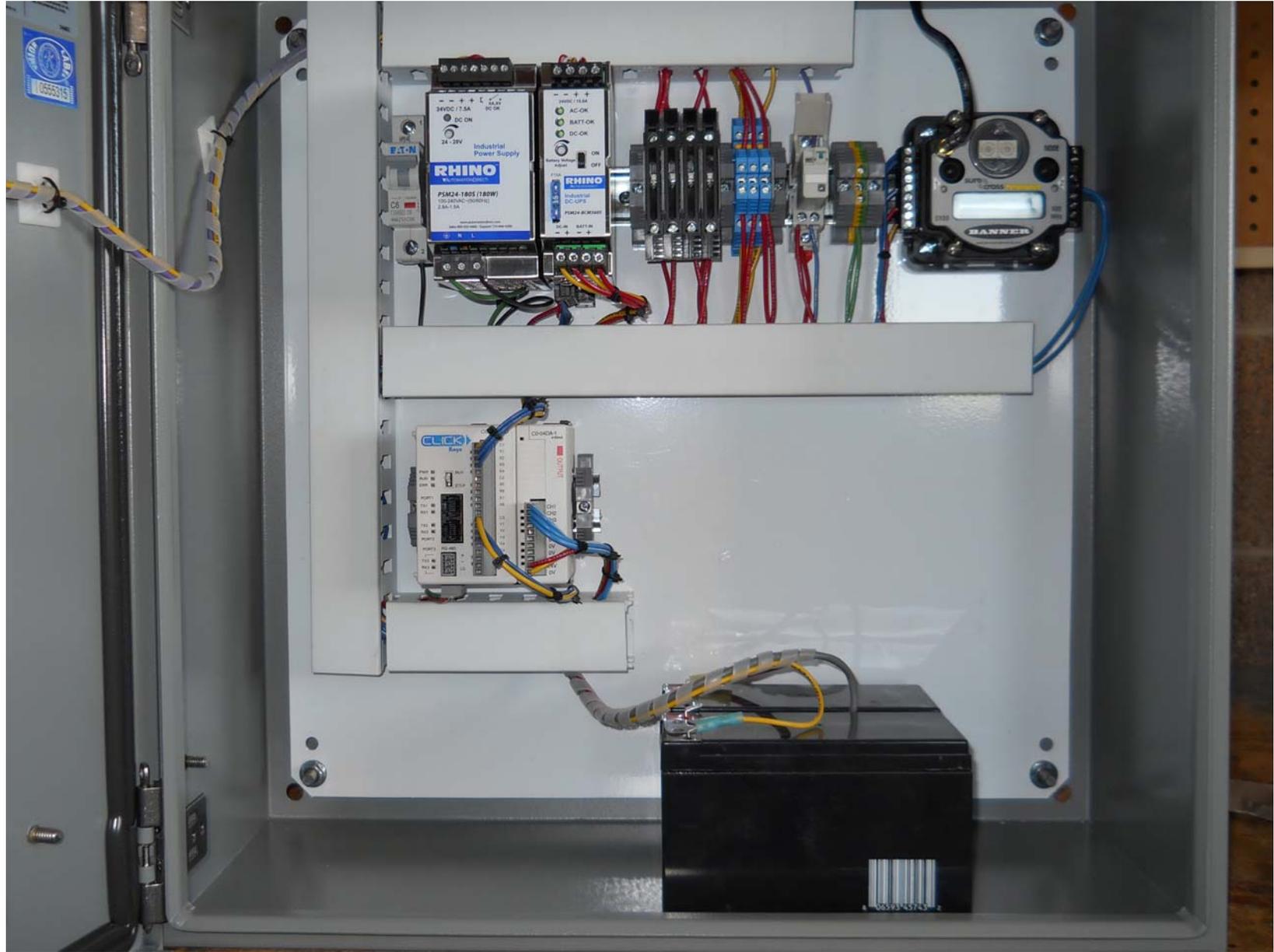
HOME ZONE ACTIVATION

01/02 BOTTOM DECK TAILTRACE LOW DO LEVEL

	HOME		

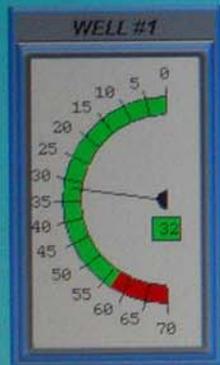


Hagerman Hatchery
Bottom Deck DO Monitor

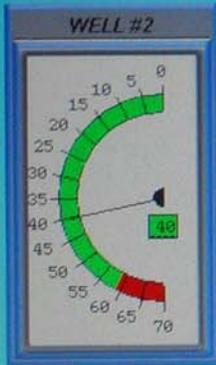


Hagerman Hatchery Re-use Alarm System Monitor

IRRIGON FISH HATCHERY



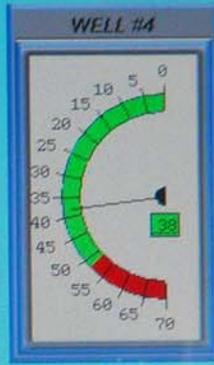
4,561 GPM
VFD 59.3 hz
MAXIMUM SPEED



6,334 GPM
VFD 59.7 hz



0 GPM
VFD 0.0 hz

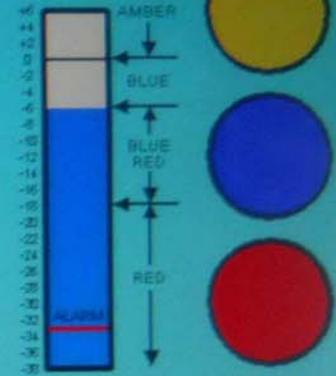


0 GPM
VFD 60.0 hz
MAXIMUM SPEED



0 GPM
VFD 0.0 hz

AERATION BUILDING WATER LEVEL



AERATION WATER LEVEL - 6"
AERATION WATER TEMP 55°
O2 SATURATION 0%

03:22 PM
02/17/15

RESIDENCE ALARMS

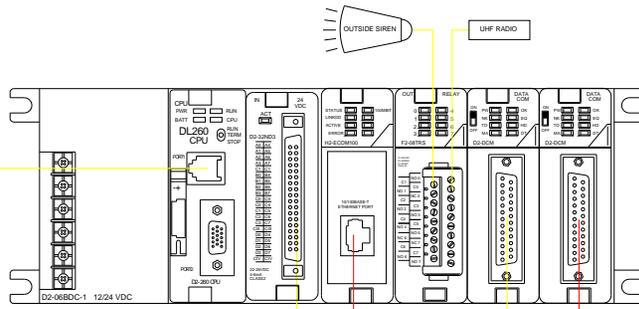
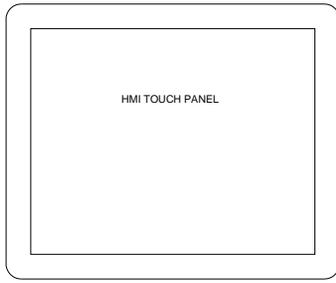
RESIDENCE #1 OFF ON
RESIDENCE #2 OFF ON
RESIDENCE #3 OFF ON
RESIDENCE #4 OFF ON
RESIDENCE #5 OFF ON
RESIDENCE #6 OFF ON

- PUMP STATIONS
- RECORDERS
- ALARMS
- USB DEVICE
- DO MONITORS
- ALARM HISTORY
- MAINTENANCE



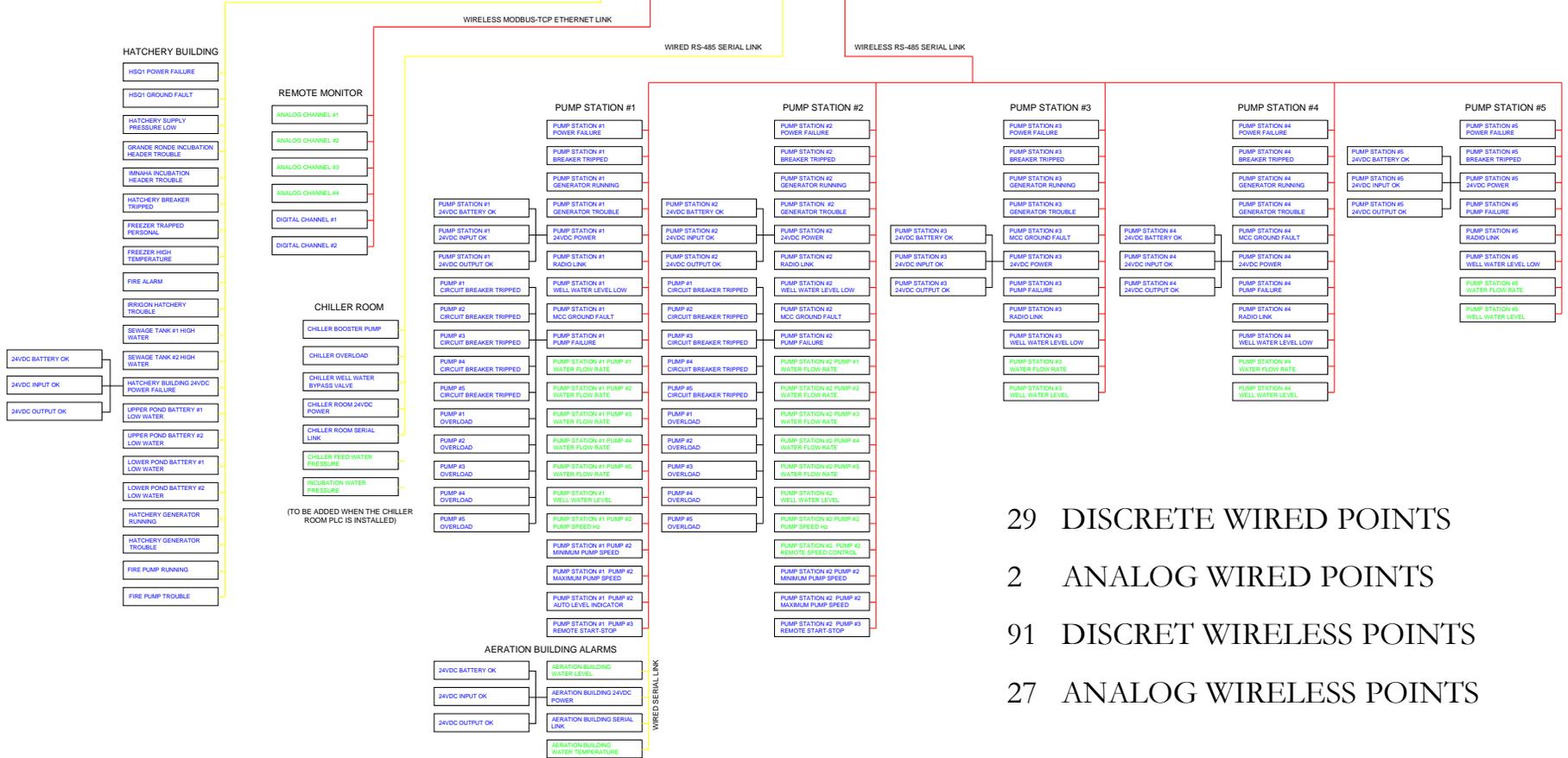
INCUBATION HEADER ALARMS

IMNAHA OFF ON
GRANDE RONDE N OFF ON
GRANDE RONDE S OFF ON



IRRIGON FISH HATCHERY ANNUNCIATION PLAN

YELLOW = WIRED COMMUNICATION LINK
 RED = WIRELESS COMMUNICATION LINK
 BLUE = DIGITAL DATA
 GREEN = ANALOG DATA



- 29 DISCRETE WIRED POINTS
- 2 ANALOG WIRED POINTS
- 91 DISCRETE WIRELESS POINTS
- 27 ANALOG WIRELESS POINTS



Irrigon Hatchery Pump Station #1





Irrigon Hatchery Remote DO Monitor



Questions



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Yummy !!!