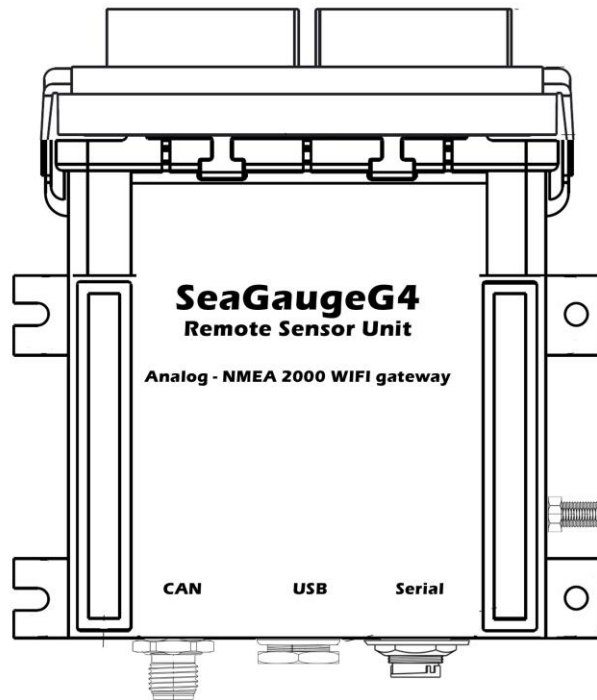# Application Note

ANSS024063001 – SeaGauge G4 Indicator Runtime


Chetco Digital Instruments, Inc

Revision 102324

SeaGaugeG4 supports up to 12 resistive or voltage style analog sensor inputs and 3 pulse style inputs.

SeaGaugeG4 also provides 4 additional indicator/status inputs (18VDC max) and 4 relay driver (12VDC) outputs

Sensors are connected to the dual 20 pin Molex style connectors and analog voltages converted to digital protocol compatible with CAN bus and WIFI interfaces.

SeaGaugeG4 can trigger multiple alarms based on sensor voltages from any of the 12 analog inputs and 3 pulse inputs

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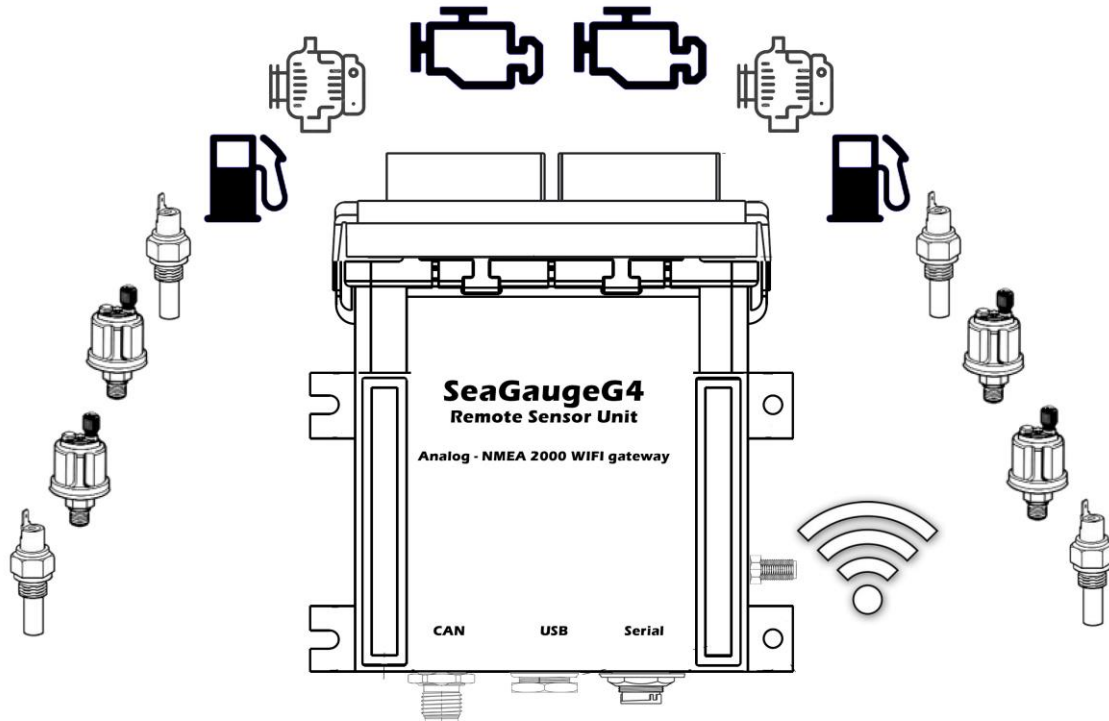
SeaGaugeG4 supports up to 12 analog sensor inputs and 4 indicator inputs via a 20 pin Molex MX150 plug (black) and 3 pulse style inputs via separate 20 pin Molex MX150 plug (white).

Molex style crimp pins are provided to attach 18 gauge tinned wire and insert into appropriate locations in supplied plugs.

The 4 indicator inputs (INC00-INC03) are used to provide on/off status for 12VDC circuits. When voltages of 10V to 18VDC are applied, the associated indicator channel will be set. When no voltage is applied, the indicator channel is cleared.

Each indicator channel has a runtime accumulator that counts the number of seconds the channel is active up to 16,777,216 seconds

SeaGaugeG4 Header
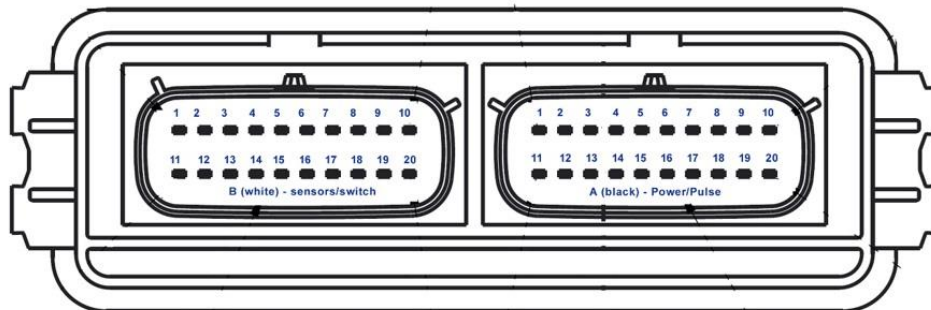
B1 - NC	B11 - NC	A1 - SW5	A11 – SW4
B2 - NC	B12 - NC	A2 - SW7	A12 – SW6
B3 – SEN10 (SBOOST)	B13 – SEN11 (STRAN)	A3 - NC	A13 - NC
B4 – SEN04 (STEMP)	B14 – SEN05 (SOIL)	A4 – P1 (SRPM)	A14 - GND
B5 – SEN06 (SFUEL)	B15 – SEN07 (SBAT)	A5 – P0 (PRPM)	A15 - GND
B6 – SEN00 (PBAT)	B16 – SEN01 (PFUEL)	A6 – P2	A16 - GND
B7 – SEN02 (PTEMP)	B17 – SEN03 (POIL)	A7 – 5VOUT	A17 – 5VOUT
B8 – SEN08 (PBOOST)	B18 – SEN09 (PTRAN)	A8 - GND	A18 - GND
B9 – INC03	B19 – INC02	A9 – 12VIN	A19 = 12VIN
B10 – INC01	B20 – INC00	A10 - NC	A20 - NC

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Indicator inputs (INC00-INC03) use a voltage divider with clamping diode. NEVER APPLY MORE THEN 18VDC to any indicator input.

Indicator inputs are mapped to the first 4 switch positions (SW0-SW3) as part of the CAN BUS PGN 127501 (0x01F20D)

$PCDIN,01F20D,DTQEFO0B,AB,00**01**14FFFFFFFFFF*29

Four relay drive (12VDC) outputs (SW4-SW7) can be used as alarm drivers based on user configurable triggers. Alarm outputs are capable of sinking up to 470mA to ground when active - suitable for driving 12VDC relays, indicator lights, or audio buzzers.

Relay drive outputs are map to the next 4 switch positions of PGN 127501 (0x01F20D)

$PCDIN,01F20D,DTQEFO0B,AB,0001**14**FFFFFFFFFF*29

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SeaGaugeG4 Alarm Output
BE SURE TO USE A COMMON GROUND
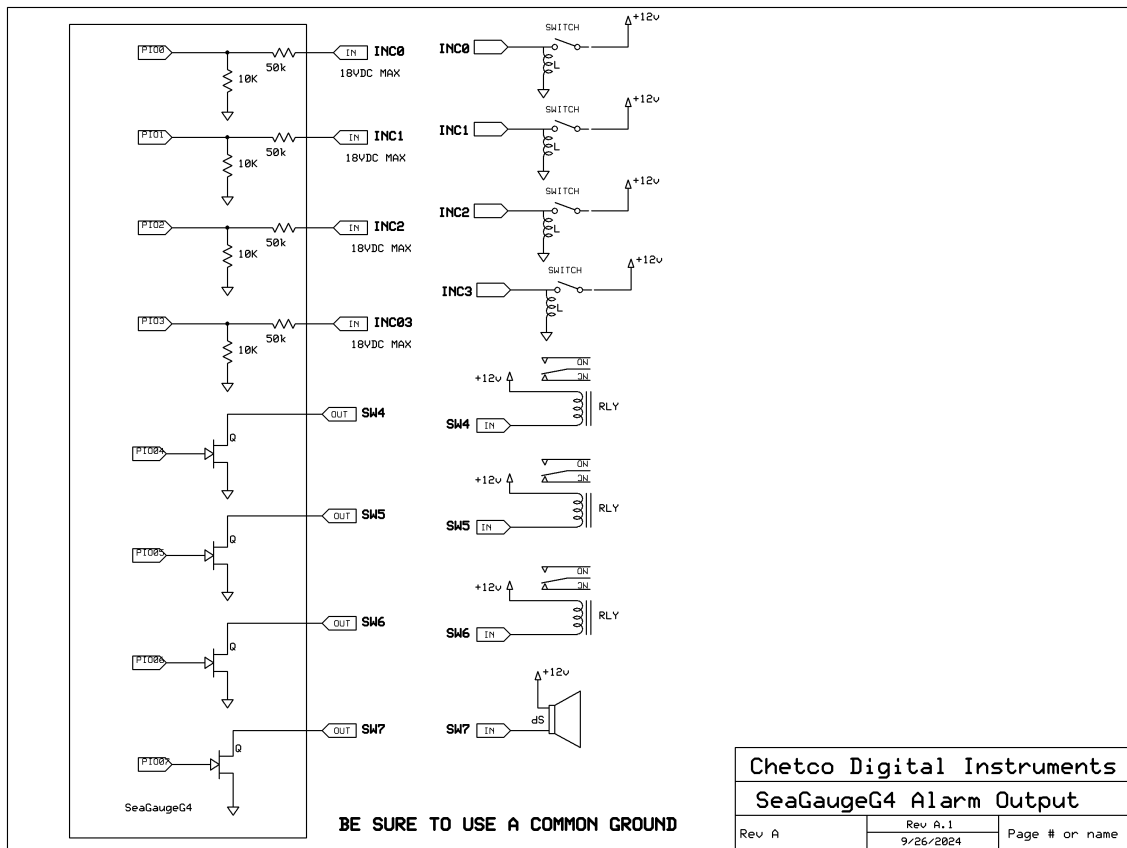
Indicator inputs (INC00-INC03) have individual attached runtime timers with a resolution of 1 second and range to 16,777,216 seconds (194 days)

They also have a individual attached state counter that tracks the number of OFF to ON cycles with a range up to 255 cycles.

The runtime values are stored in battery backed RAM and transmitted via CAN bus and embedded Web server using a custom PGN 65292 (0x00FF0C)

$PCDIN,00FF0C,DTQID601,AB,99E10000B7060004*58
$PCDIN,00FF0C,DTQID602,AB,99E10001C8000003*55
$PCDIN,00FF0C,DTQID603,AB,99E100022C010004*5B
$PCDIN,00FF0C,DTQID604,AB,99E1000390010004*25

$PCDIN,00FF0C,DTQID601,AB,**99E1**0000B7060004*58
Custom CDI PGN prefix

$PCDIN,00FF0C,DTQID601,AB,99E1**00**00B7060004*58
Indicator Instance

$PCDIN,00FF0C,DTQID601,AB,99E100**00**B7060004*58
Indicator Channel number (INC00-INC03)

$PCDIN,00FF0C,DTQID601,AB,99E10000**B70600**04*58
Runtime value in seconds (Hexadecimal)

$PCDIN,00FF0C,DTQID601,AB,99E10000B70600**04**58
Indicator Cycles

The Custom Indicator Runtime PGN can be displayed using the embedded Web server pages or uploaded to the HelmSmart Cloud service.

Thu Oct 24 2024 11:16:41	01F010	AA	system_time	{"datetime":"2024-10-24T18:09:41","days":20020,"ms":65381000000
Thu Oct 24 2024 11:16:42	00FF0C	AB	indicator_runtime	{"channel":0,"cycles":4,"instance":0,"pgntype":57753,"runtime_sec":2
Thu Oct 24 2024 11:16:42	00FF0C	AB	indicator_runtime	{"channel":1,"cycles":3,"instance":0,"pgntype":57753,"runtime_sec":2
Thu Oct 24 2024 11:16:42	00FF0C	AB	indicator_runtime	{"channel":2,"cycles":4,"instance":0,"pgntype":57753,"runtime_sec":3
Thu Oct 24 2024 11:16:42	00FF0C	AB	indicator_runtime	{"channel":3,"cycles":4,"instance":0,"pgntype":57753,"runtime_sec":4
Thu Oct 24 2024 11:16:42	01F200	AB	engine_parameters_rapid_update	{"boost_presure":10341,"engine_id":0,"raw":"00100E000A7FFFFF*5(
Thu Oct 24 2024 11:16:42	01F200	AB	engine_parameters_rapid_update	{"boost_presure":10341,"engine_id":1,"raw":"00100E000A7FFFFF*5(
Thu Oct 24 2024 11:16:42	01F214	AB	battery_status	{"instance":0,"voltage":0}
Thu Oct 24 2024 11:16:42	01F211	AB	fluid_level	{"instance":0,"level":0,"type":0}

Indicator status and runtime can be displayed locally by using any web browser and selecting the Indicator link from the main Home page
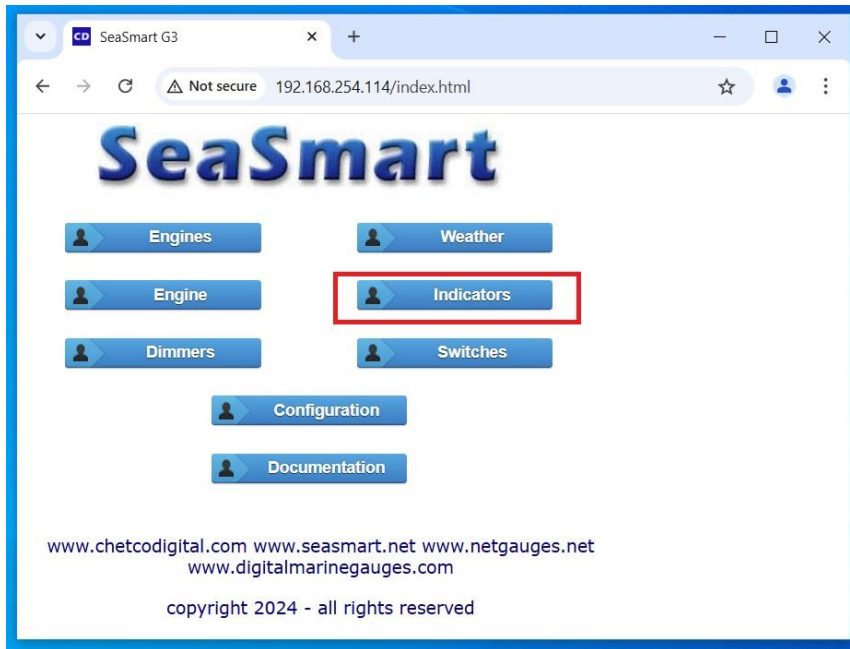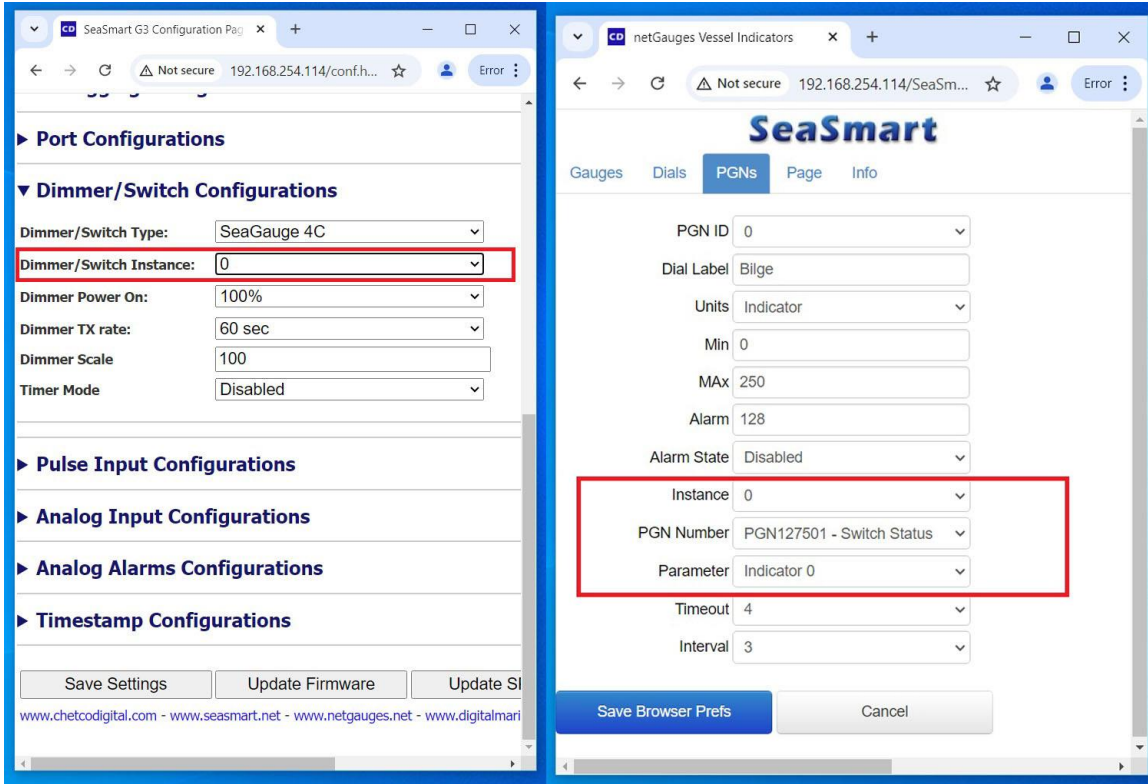

The current ON/OFF state of the indicator input is shown at the top (red highlight is ON) and runtime value underneath

Individual indicator names can set using the PGN tab link as well as other user defined parameters.

It is important to match the indicator instance from the SeaGaugeG4 to the instance used by the embedded web pages

The instance can be set/viewed by the config page under Dimmer/Switch Instance and set under the PGN tab on the Indicator view page
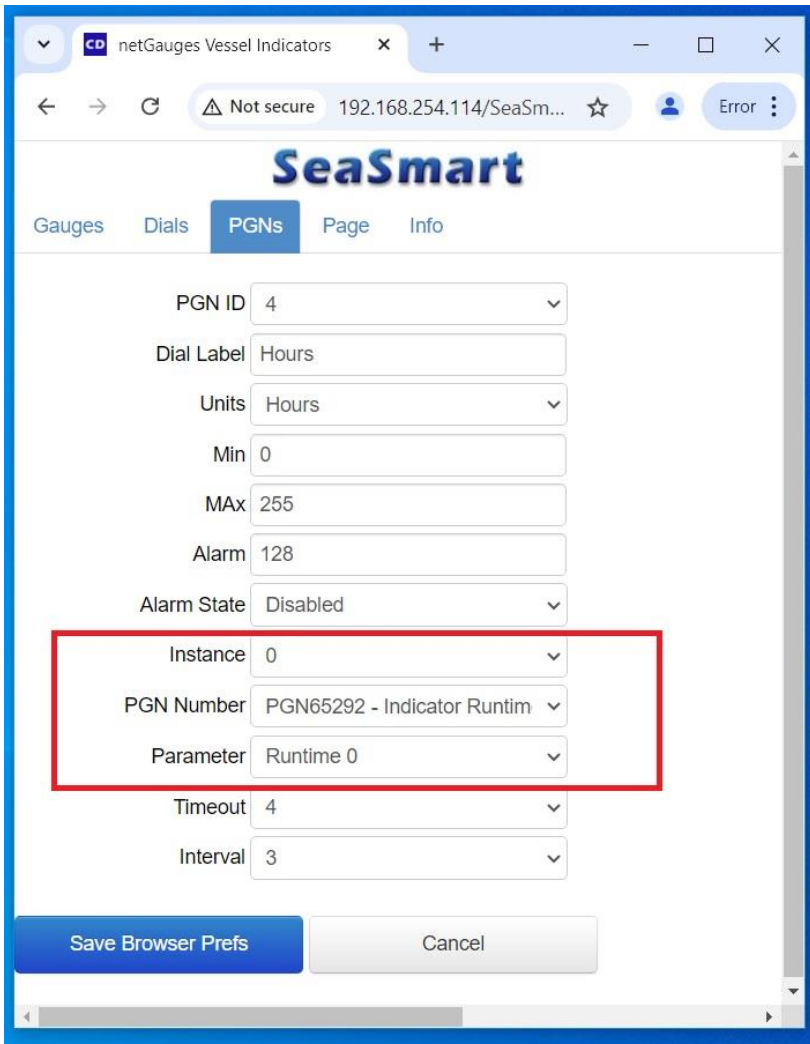
Note that the PGN Number to view Indicator Status is the standard Switch PGN127501

Also be sure to set the PARAMETER to match the desired indicator input as all 4 indicators and 4 switch outputs are combined in the same single PGN sentence.

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Indicator runtimes are displayed using a different PGN 65292 then the indicator status PGN 127501 and therefore need to be selected separately on the PGN config page.

Again, be sure to select the correct INSTANCE and PARAMETER for the runtime

UNITS can be in HOURS or MINUTES (H:M:S) or SECONDS (INDICATOR)

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SeaGaugeG4 contains a separate embedded WEB for displaying and controlling 4 internal switch output drivers using the PGN 127501/127502
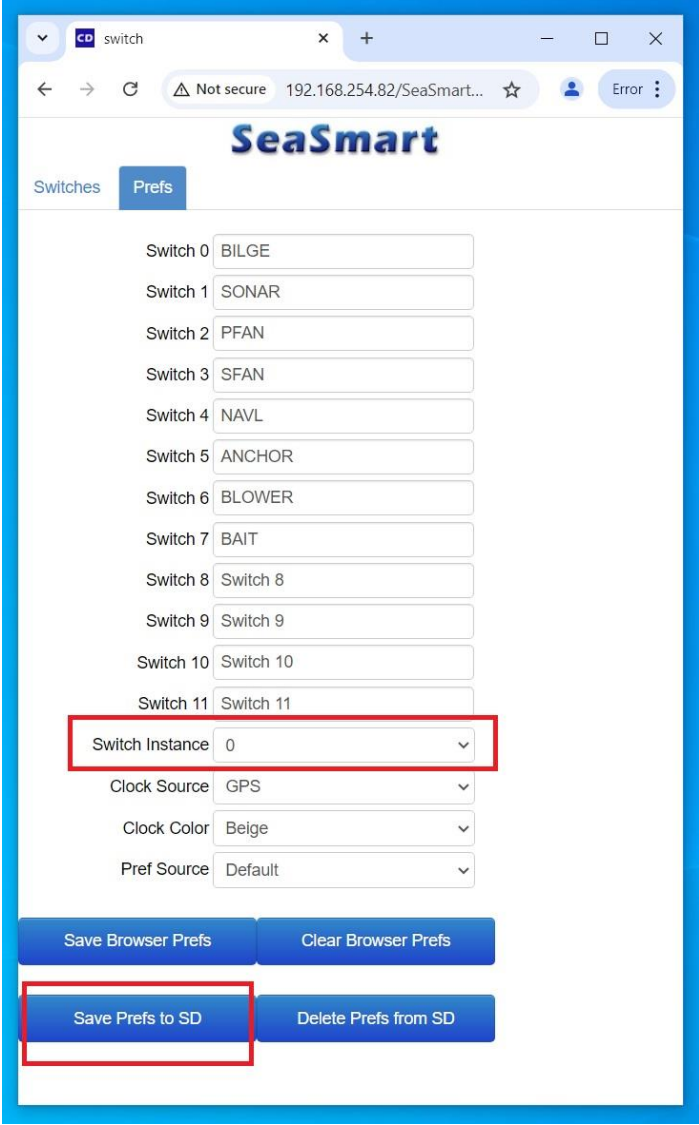
Since Indicator states are transmitted using the first 4 switch status positions, they will also show on the Switch Status page as ON/OFF. You will not be able to set the first 4 positions for this reason.

The 4 relay driver outputs can be controlled by SW4-SW7 if not already assigned to a alarm output. If an alarm is configured to use any of SW4-SW7 then the current alarm state will be shown. Otherwise selecting a new switch state will activate the assigned relay diver output

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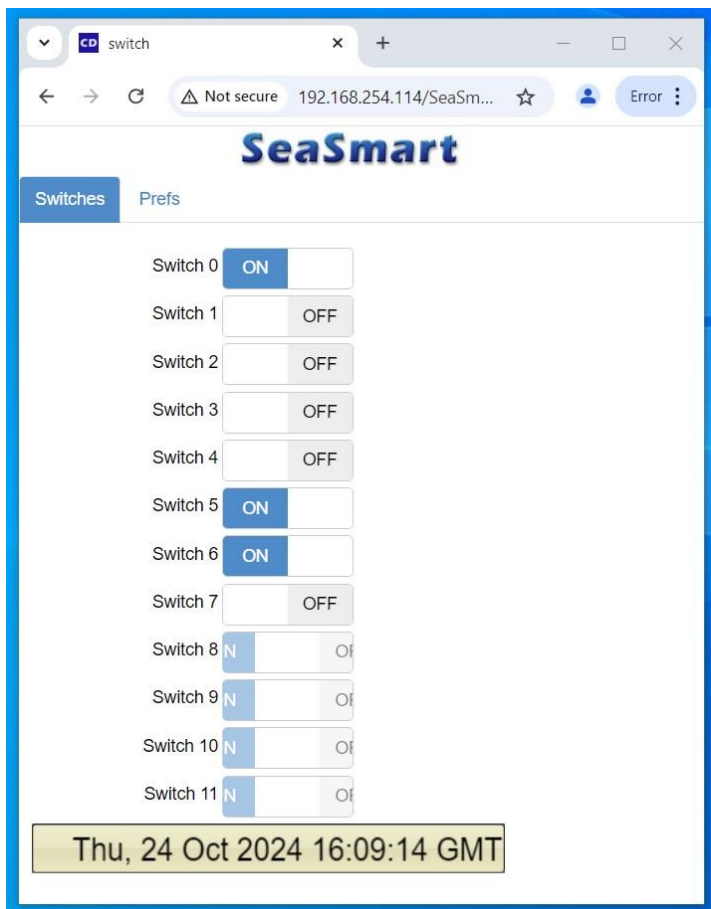
Using the Switches PREF tab will allow assigning labels and setting the matching Instance number

When completed changing labels or instance, select the SAVE PRES TO SD button to upload the changes to the SeaGaugeG4 internal SD card

Selecting BROWSER PREFS will only save to current browser cookies and will not be global if a new browser session is started by another device.
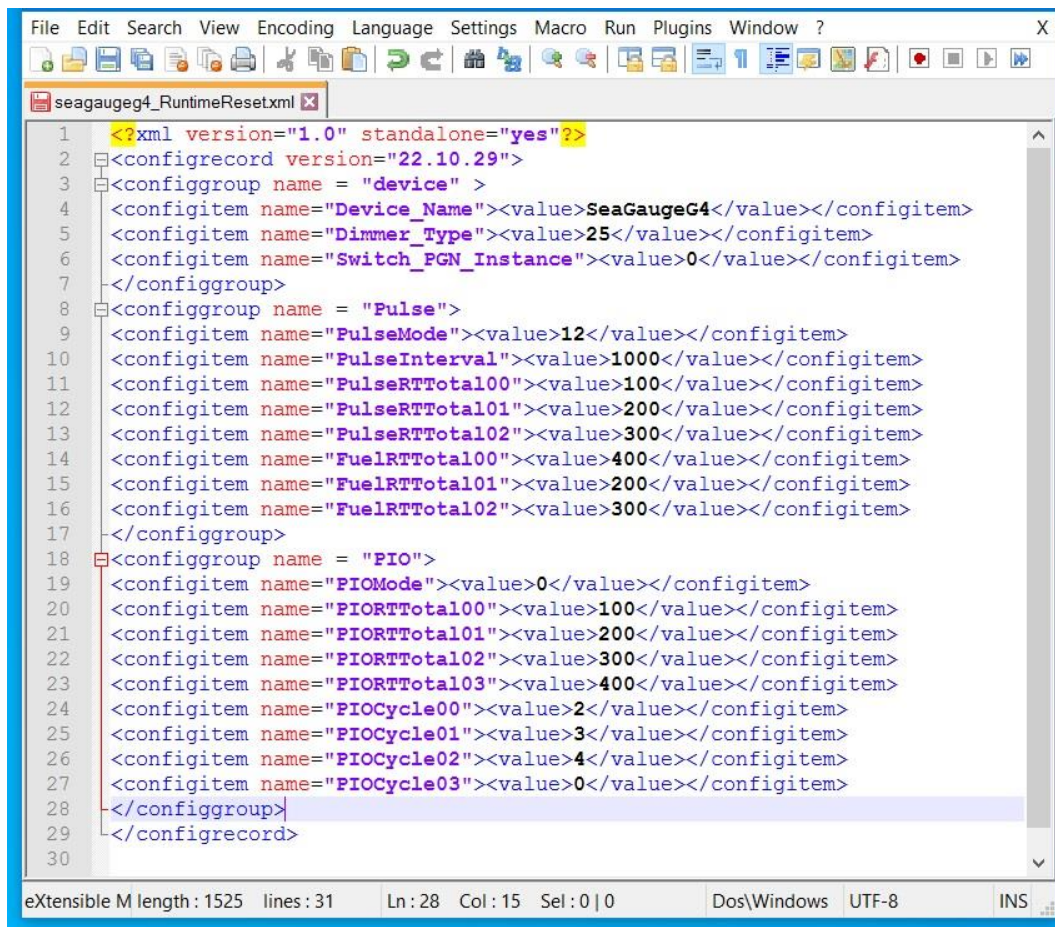
Indicator runtime and cycles can be reset by using a config.xml file loaded into the CONFIG directory of the internal SD card

Since you can have multiple config.xml files in the directory – it is best to use a separate file just for resetting runtime values since you will need to delete the file after the unit is rebooted or else the values will reset on each power cycle.

If you do not want to reset a runtime timer or cycle, remove the appropriate line from the config file

When SeaGaugeG4 is repowered, it will read the contents of the file and reset the appropriate values.

NOTE that the indicator runtime values are set in the PIO section and the RPM Hour meters/fuel flow totals are in the PULSE section.