

Full class **d-SMART** Marine Generator Control System Information Sheet

Local Control Panel (LCP):

- The **d-SMART** full class control system is housed in a painted mild steel IP65 enclosure with hinged door or lid. Mounting is either (horizontal) alternator top mounting (via rubber A/V mounts) or remote (vertical) wall mounting to suit customer specific requirements.
- The full class control system is managed by a microprocessor controller c/w backlit LCD operator interface and control pushbuttons. The controller handles operational control, alarms and shutdowns for the generator set.
- From the local control panel the following functions are available on the microprocessor controller:
 - Start generator.
 - Stop generator.
 - Mode select.
 - Horn/fault reset.
 - Full interrogation of the controller menus on the LCD interface.
- Additionally to the microprocessor controller the control panel facia includes the following:
 - Emergency stop pushbutton with shroud.
 - Local/remote access key switch.
 - 80dBa @ 0.1m audible alarm sounder.



Shutdown Events:

- Digital input for low lubricating oil pressure (*not on emergency sets*).
- Digital input for high coolant temperature (*not on emergency sets*).
- Digital input for coolant pressure.
- Digital input for emergency stop.
- Mag Pickup Input for overspeed & underspeed shutdown.
- Any other user configured shutdown inputs.
- Any shutdown event will activate the common shutdown telemetry V.F.C.

Alarms:

- Battery volts out of limits.
- Start failure.
- Stop failure.
- Pick-up failure.
- Analogue input monitoring for low lubricating oil pressure.
- Analogue input monitoring for high lubricating oil temperature.
- Analogue input monitoring for low coolant pressure.
- Analogue input monitoring for high coolant temperature.
- Any other user configured alarm inputs.
- Any alarm event will activate the common alarm telemetry V.F.C.



Analogue Data Displayed on Controller LCD:

- Engine R.P.M. viewable via LCD graphic gauge with value text.
- All configured hardwired analogue inputs viewable via bar graph indicators with value text.
- Analogue information from the engine ECM viewable via bar graph indicators with value text.
- Battery volts viewable via bar graph indicators with value text.

Statistics Displayed On Controller LCD:

- Hours Run.
- Number of successful starts.
- Number of un-successful starts.
- Time remaining to service requirement – Not set as standard – (Client to advise if required).

Miscellaneous Information Displayed on Controller LCD:

- Digital I/O point's status (input/output channel on/off status).
- Alarm Lists.
- Engine Basic Settings / Alarm Parameters.

Telemetry Signals (Volt Free Changeover Contacts):

- Common Shutdown 1.
- Common Shutdown 2.
- Common Alarm 1.
- Common Alarm 2.
- Emergency Stop Activated (Shutdown).
- Remote Klaxon / Common Alarm 3.
- Engine Running.
- Ready For Remote Start.
- DC Supply Failure.

Engine ECM Canbus (J1939):

- Optional canbus connection (J1939) for communication to engine ECM.

Remote Operation & Monitoring and Optional Equipment:

- Digital inputs for remote start, remote stop, & remote acknowledge. Remote signals should be pulsed (1 Second Minimum) N/O volt free contacts.
- Digital input for remote emergency stop, signal should be held N/C healthy, open to stop volt free contact.
- Optional Modbus connection via RS232 (max 10m cable length) for remote control and system monitoring of the *SMART* control system. Note: The range can be extended to 1000m cable length by the use of an optional RS232 to RS485 converter.
- G&M will provide Modbus registers, Modbus manual section and the contact details of the controller manufacturer technical support line to assist in the Modbus integration with the Client's monitoring system.
- Optional canbus connection for communication to multiple optional remote mimic screens.

Optional Remote **d-SMART** Mimic Screen – a digital 5.7” Colour Display Unit approved for use with the main **d-SMART** panel. The mimic screen will display all the parameters that are available on the local control panel screen and also includes the facility to start and stop the generator.



Connectivity for the screen is by way of a standard twin paired 120Ω screened comms cable. The unit features automatic configuration driven by the main control panel microprocessor. The screen also provides five configurable soft keys and is equipped with backlit buttons.

Another remote indicator option is the 15 way Annunciator Panel which monitors up to 15 critical functions.



The unit is equipped with a fully configurable tri color (red, orange, green) LED for intuitive operation together with high functionality.

Connectivity for the panel is by way of a standard twin paired 120Ω screened comms cable.

Expandability:

- Up to 4 spare analogue inputs configurable for resistance 4-20mA or thermocouple signals.
- Up to 3 spare digital inputs for shutdown signals.
- Up to 5 spare user configurable digital inputs.
- Up to 5 spare user configurable digital outputs.
- If additional digital or analogue I/O is required this can be achieved by optional expansion modules.

(Note: Spare I/O is not wired from the controller to terminals unless requested at the time of order).

Engine sensors and switches used within the full class **d-SMART** system are class type approved and individually calibrated prior to installation and their functionality checked as part of the factory testing of the generator. The system leaves the factory fully tested thereby facilitating easy commissioning of the generator(s) on board the vessel/platform.

Low Smoke and Fume (LSF) halogen free wiring is used throughout the **d-SMART** system with the wiring harness configured within flexible conduit with corrosion resistant components.

The complete **d-SMART** Full Class System has been appraised and accepted for the certification of marine generators by all the major IACS members.