

MOOS MMC SYSTEM “NODE DIAGNOSTIC” FUNCTIONAL REQUIREMENTS

Rev. 1.0 26JAN04 mrc

Rev. 1.1 29JAN04 Added GF scan enable function. Added return optical transceiver internal “data values”, added GF alarm threshold. Mrc

Rev. 1.1 29JAN04 Minor changes – not redistributed.

1. The commands and diagnostic data items listed below shall be included in the MMC functional hardware/software system associated with each node.
2. The data items shall be read and logged on the mooring once per hour.
3. The last data read value shall be routinely transmitted to shore once per hour and available through SSDS.
4. The data items shall be read and transmitted to a shore-side user within 2 minutes of establishing a modem connection to the mooring and issuing a user command.
5. Sub-system commands and data items:
 - a. SA4/MSP430 board.
 - i. Command: Enable (disable) ground fault autonomous scan.
 - ii. Command: Initiate ground fault scan and return current data value.
 - iii. Command: Initiate ground fault test and return current data value.
 - iv. Command: Set GF alarm threshold value.
 - v. Data: Humidity
 - vi. Data: Temperature
 - vii. Data: Pressure
 - viii. Data: Compass heading
 - ix. Data: Compass turns count
 - x. Command: Load compass turns count with value XX.
 - b. DPA isolation board.
 - i. Data: DPA channel (0-11) heatsink temperature (counts)¹
 - ii. Data: DPA channel (0-11) voltage (counts)²
 - iii. Data: DPA channel (0-11) current (counts)³
 - iv. Data: DPA channel (0-11) current trip value
 - v. Command: Set channel (0-11) current trip value
 - vi. Command: Set channel(0-11) mode (232 or 485).
 - vii. Command: Switch channel (0-11) power.
 - c. “Medusa” MMC comms board.
 - i. Data: Channel (0-3) transceiver temperature⁴ (degrees)
 - ii. Data: Channel (0-3) transceiver supply voltage⁵ (uV)
 - iii. Data: Channel (0-3) TX laser bias current⁶ (uA)
 - iv. Data: Channel (0-3) TX output power⁷

¹ Should this be processed into degrees C in SA4?

² Should this be processed into millivolts in SA4?

³ Should this be processed into milliamperes in SA4?

⁴ MSP4340 converts from counts to degrees C after reading module calibration values.

⁵ MSP4340 converts from counts to microVolts after reading module calibration values.

⁶ MSP4340 converts from counts to microAmps after reading module calibration values.

- v. Data: Channel (0-3) RX power⁸
- vi. Data n: From Ethernet switch controller TBD.
- vii. Command n: To Ethernet switch controller TBD.
- viii. Command n: Return string of optical transceiver internal “serial ID: data fields” that includes date code, PN, manufacturer, etc. etc.
- d. RF I/O board.
 - i. Command: Enable (disable) ground fault autonomous scan.
 - ii. Command: Initiate ground fault scan and return current data value.
 - iii. Command: Initiate ground fault test and return current data value.
 - iv. Command: Set GF alarm threshold value.
 - v. Command: Switch power to primary radio.
 - vi. Command: Switch power to secondary radio.
 - vii. More to come pending input from Lance.....

<i>Isolation</i>	
	Isolate all interfaces
	Isolate/Disable Long-range Radio
	Isolate Short-range Radio
	Isolate Console
	Isolate Pager
<i>Ground Fault</i>	
	Test long range radio ground fault circuit
	Enable long-range radio ground fault circuit
	Read 12-bit long range radio high side ground-fault value
	Read 12-bit long range radio low side ground-fault value
<i>Power Saving</i>	
	Shutdown long range radio port (power saving mode)
	Disable console power (power saving mode)
<i>Status</i>	
	Read Status registers
<i>Pager Serial</i>	
	Write byte to Pager serial port
	Read byte from pager serial port
<i>Analog</i>	
	Read 12-bit analog channel 2
	Read 12-bit analog channel 3
	Read 12-bit analog channel 4
	Read 12-bit analog channel 5
	Read 12-bit analog channel 6
	Read 12-bit analog channel 7

⁷ MSP4340 converts from counts to units of 0.1uW after reading module calibration values.

⁸ MSP4340 converts from counts to units of 0.1uW after reading module calibration values.

- e. 400 – 12 Volt downconverter board (not to be confused with surface power systems instrument).
 - i. Ed – “I haven't defined exact functionality but expect the downconverter interface will be broadly similar to a DPA, or at least to the power-control parts of the DPA. A couple of control lines to assert, a couple of pieces of status information to read periodically.”