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DSE®

Gencomm Control Keys and Remote Control Outputs

- ## DESCRIPTION

This document describes how to send System *Control Keys* and *Remote Control Outputs* to DSE Modbus enabled controllers. These functions allow 'remote control' over the DSE module from any Modbus Master (such as a PLC, Building Management System, PC or other embedded control system with Modbus Master functionality).

The complete DSE Gencomm Modbus Register Mapping specification document is obtainable from DSE upon request by email to support@deepseaplc.com.

- ## CONNECTIONS

Ensure you are using the RS485 version of the DSE5500 series controller or if you are using the DSE7300 / DSE7500 series, ensure the RS485 port has been selected in the module configuration.
Connect the controllers to the PLC using industry standard RS485 cabling. DSE recommend and supply BELDEN 9841 cable for RS485 use (DSE part number 016-030)
Remember that termination resistors must be correctly fitted and that the cable length must not exceed 1.2km (For cables other than Belden 9841, the maximum length may be different, depending upon cable specifications.
Use the DSE Config Suite (For DSE Controllers with a USB connection), Link7000 software (for 7500 series) or Link5000 (for 5500 series), to set the baud rate and slave address of the controller to match your PLC program.

For further details, refer to the DSE Gencomm document and the module's operator manual and configuration software manual.

- ## CONTROL

Control is performed by sending System Control Keys to the module, and also sending the bitwise opposite (or one's compliment) of the control key to another register 'in the same write operation' for security.

To modbus register 4104 (decimal) write the system control key as below
To modbus register 4105 (decimal) write the compliment of the system control key as below

Both of these registers MUST be written to the controller at the SAME TIME using the SAME MODBUS WRITE COMMAND.

A table of Control Keys and the ones compliment of the keys is included overleaf.

- **SYSTEM CONTROL KEYS**

Not all functions are supported by all modules. The Gencomm protocol includes a method of reading the list of supported functions from the connected controller. This is detailed in the full Gencomm Protocol Document, available from support@deepseaplc.com upon request.

Function code	System control function	System control key (decimal)	Ones compliment of control key (65535-control key)
0	Select Stop mode	35700	29835
1	Select Auto mode	35701	29834
2	Select Manual mode	35702	29833
3	Select Test on load mode	35703	29832
4	Select Auto with manual restore mode	35704	29831
5	Start engine if in manual or test modes	35705	29830
6	Mute alarm	35706	29829
7	Reset alarms	35707	29828
8	Transfer to generator	35708	29827
9	Transfer to mains	35709	29826
10	Reset mains failure	35710	29825
11	Close Bus (Bus Tie Controller)	35711	29824
12	Open Bus (Bus Tie Controller)	35712	29823
13	Toggle Bus Open/Closed (Bus Tie Controller)	35713	29822
14	Scroll through mode selections (mode button on 330/331/334/335)	35714	29821
15	Enable selected mode (scroll button on 330/331/334/335)	35715	29820
16-31	Reserved		
32	Telemetry start if in auto mode	35732	29803
33	Cancel telemetry start in auto mode	35733	29802
34	Reset alarms	35734	29801
35	Clear telemetry alarm flag	35735	29800
36	Lock the user controls	35736	29799
37	Unlock the user controls	35737	29798
38	Reset the maintenance alarm 1 due times	35738	29797
39	MSC alarm inhibit on	35739	29796
40	MSC alarm inhibit off	35740	29795
41	Reset the maintenance alarm 2 due times	35741	29794
42	Reset the maintenance alarm 3 due times	35742	29793
43	8721 Display unit registered/alive (pre-v6)	35743	29792
	8610 Remote start off load (sync lock)		65535
44	8711 Display unit registered/alive (pre-v6)	35744	29791
	8610 Remote start off load cancel (sync lock)		65535
45	8716 Display unit registered/alive (pre-v6)	35745	29790
	8610 MSC alarm inhibit on and switch to manual mode (sync lock)		65535
46	Start data logging (temporarily overrides the module state)	35746	29789
47	Stop data logging (temporarily overrides the module state)	35747	29788
48	Erase all data log files internal to the module (NOT on USB)	35748	29787
49	Force USB drive to stop logging, ready to eject	35749	29786
50	Control Processor Reset Lockout Enable (88xx/84xx only) – sent by the display processor to the control processor to signal when the control processor should lockout the reset signal from the display processor	35750	29785
51	8721 Display unit registered/alive (v6 & later)	35751	29784
52	8711 Display unit registered/alive (v6 & later)	35752	29783
53	8716 Display unit registered/alive (v6 & later)	35753	29782

Function code	System control function	System control key (decimal)	Ones compliment of control key (65535-control key)
54-59	Reserved		
60	SMS run on load signal (88xx/84xx only) - sent by the display processor to the control processor to signal when an SMS command to run the generator on load has been received	35760	29775
61	SMS run off load signal (88xx/84xx only) - sent by the display processor to the control processor to signal when an SMS command to run the generator off load has been received	35761	29774
62	SMS request auto mode (88xx/84xx only) - sent by the display processor to the control processor to signal when an SMS command to change to auto mode has been received	35762	29773
63	SMS request stop mode (88xx/84xx only) - sent by the display processor to the control processor to signal when an SMS command to change to stop mode has been received	35763	29772
64	SMS request clear run mode (88xx/84xx only) - sent by the display processor to the control processor to signal when an SMS command to clear the run request has been received	35764	29771
65	SMS run in island mode signal (8820/8860/8420 only) - sent by the display processor to the control processor to signal when an SMS command to run the generator in island mode has been received	35765	29770
66	Reset battery maintenance alarm 1	35766	29769
67	Reset battery maintenance alarm 2	35767	29768
68	Reset battery maintenance alarm 3	35768	29767
69	Auto DPF regeneration inhibit on	35769	29766
70	Auto DPF regeneration inhibit off	35770	29765
71	Start manual DPF regeneration	35771	29764
72	Battery Charger Boost Mode	35772	29763
73	Battery Charger Stop Charging	35773	29762
74	Battery Charger Battery Test	35774	29761
75	Battery Charger Select Alternative Charging Voltage	35775	29760
76	Select Off Mode	35776	29759
77	Throttle Down	35777	29758
78	Throttle Up	35778	29757
79	Wake ECU	35779	29756
80	Lamp Test	35780	29755
81	Battery Charger Auxiliary Boost Mode	35781	29754
82	Battery Charger Auxiliary Stop Charging	35782	29753
83	Battery Charger Auxiliary Battery Test	35783	29752
84	Battery Charger Auxiliary Select Alternative Charging Voltage	35784	29751
85-65535	Reserved		

- **REMOTE CONTROL OUTPUTS**

DSE7300 and DSE8000 series have the option of configuring outputs, expansion outputs and LEDs to *Remote Control* sources.

Example of configuration to *Remote Control* in DSE Config Suite Software

Remote control outputs are controlled by writing 0 (off) or 1 (on) to the following Gencomm registers.

Modbus page 193 (Address C100 Hex) (49408 decimal) and the following 9 registers:

Hex address	Decimal address	Output
C100	49408	Remote Control Output 1
C101	49409	Remote Control Output 2
C102	49410	Remote Control Output 3
C103	49411	Remote Control Output 4
C104	49412	Remote Control Output 5
C105	49413	Remote Control Output 6
C106	49414	Remote Control Output 7
C107	49415	Remote Control Output 8
C108	49416	Remote Control Output 9
C109	49417	Remote Control Output 10