

DATA LOGGING & MODBUS REGISTERS FOR THE DE-1500

5/8/03

The following document describes the spacing for the fields of the DE-1500 data logging command.

This command is functional from the RS-232 and the RS-485 data logging port. The communications settings are 9600, 8, N and 1. The node number must be correct for the DE-1500 to respond on the RS-485 port. The node number field is ignored on the RS-232 port and responds accordingly.

The command to access a particular record is as follows:

>(XX DL YYYY)

COMMAND HEADER ">" (0) - ASCII value 3Eh.

BEGIN TEXT "(" (1) - ASCII value 28h.

DE-1500 NODE NUMBER (2-3) - This field consists of the node number associated with the particular DE-1500. The range is from 01 to 99.

SPACE (4), (7) - ASCII value 20h.

COMMAND (5, 6) - The letters "D" and "L", which stand for "data log".

REQUESTED RECORD NUMBER (8-10) -

Table I: This value will be between 001 and 100 and represents the requested record number. Record number 001 will always contain the most recent data log event. Record number 002 contains the second most recent data log event and so on. Requesting record number 999 gives a response which occurred due to a first fault condition. If there is no faults and 999 is requested, the "NO DATA AVAILABLE" message occurs. Requesting record number 000 transmits current status information.

Table II: Table II shows the structure of data log command 998. This is for the Hourmeter.

END TEXT ")" (11) - ASCII value 29h.

Table I

The following is the response:

FIELD DESCRIPTION	EXAMPLES OF LOGGED DATA	AMT OF CHARACTERS	CHARACTER LOCATION
SITE LOCATION	Cherokee engine #22	30	0-29
CR, LF		2	30, 31
REC NUM / HOURS	022 12345 HRS	14	32 - 45
CR, LF		2	46, 47
TIME AND DATE	06-16-2003 12:02 PM	20	48 - 67
CR, LF		2	68, 69
STATUS DISPLAY	STATUS RUNNING	20	70 - 89
CR, LF		2	90, 91
HOME LINE 2	ACT 57.7 PSIG	20	92 - 111
CR, LF		2	112, 113
HOME LINE 3	GSP 12.3 PSIG	20	114 - 133
CR, LF		2	134, 135
HOME LINE 4	MAP1 12.5 PSIG	20	136 - 155
CR, LF		2	156, 157
VIEW scn #1, L1	VAC1 67.9 PSIG	20	158 - 177
CR, LF		2	178, 179
VIEW scn #1, L2	MAT1 145 F	20	180 - 199
CR, LF		2	200, 201
VIEW scn #1, L3	EGT1 1022 F	20	202 - 221
CR, LF		2	222, 223
VIEW scn #1, L4	T1 1020 F	20	224 - 243
CR, LF		2	244, 245
VIEW scn #2, L1	T2 1221 F	20	246 - 265
CR, LF		2	266, 267
VIEW scn #2, L2		20	268 - 287
CR, LF		2	288, 289
VIEW scn #2, L3		20	290 - 309
CR, LF		2	310, 311
VIEW scn #2, L4		20	312 - 331
CR, LF		2	332, 333
L12		20	334 - 353
CR, LF		2	354, 355
L13		20	356 - 375
CR, LF		2	376, 377
L14		20	378 - 397
CR, LF		2	398, 399
L15		20	400 - 419
CR, LF		2	420, 421
POSS. 1ST FAULT	1ST FAULT	20	422 - 441

CR, LF		2	442, 443
POSS. FAULT CH	CHAN 23	20	444 - 463
CR, LF		2	464, 465
FAULT LABEL	MAP1 ENG MAN PRESS 1	20	466 - 485
CR, LF		2	486, 487
1ST FAULT TIME	06-06-2003 11:07AM	20	488, 507
CR, LF		2	508, 509
CR, LF		2	510, 511
TOTAL CHARACTERS		512	

The following will be displayed when there is no information in the data log.

“NO DATA AVAILABLE

(CR, LF)

(CR, LF)”

Note that the spacing for the analog labels and values on the 20 character line is as follows:

Location 1-? occupy the label associated with that channel. (? dependant upon label name)

Location 12-16 occupy the analog value. (100.4)

Location 17 contains a space.

Location 18-20 contain the units of measure. (PSI)

TABLE II

FIELD DESCRIPTION	EXAMPLES OF LOGGED DATA	AMT OF CHAR.	CHARACTER LOCATION	HOUR LOCATION
SITE LOCATION	Cherokee engine #22	30	0-29	
CR, LF		2	30, 31	
REC NUM/HOURS	998 12345 HRS	14	32 - 45	
CR, LF		2	46, 47	
TIME AND DATE	06-16-2003 12:02 PM	20	48 - 67	
CR, LF		2	68, 69	
HOURLMETER	RUN-TIME HOURS 12345	26	70 - 95	91-95
CR, LF		2	96, 97	
CR, LF		2	98, 99	
LABEL MESSAGE	SERVICE HOURS LEFT:	19	100-118	
CR, LF		2	119, 120	
SERV. MSG. 1	NOT USED	26	121-146	142-146
CR, LF		2	147, 148	
SERV. MSG. 2	NOT USED	26	149-174	170-174
CR, LF		2	175, 176	
SERV. MSG. 3	NOT USED	26	177-202	198-202
CR, LF		2	203, 204	

SERV. MSG. 4	NOT USED	26	205-230	226-230
CR, LF		2	231, 232	
SERV. MSG. 5	NOT USED	26	233-258	254-258
CR, LF		2	259, 260	
SERV. MSG. 6	NOT USED	26	261-286	282-286
CR, LF		2	287, 288	
SERV. MSG. 7	NOT USED	26	289-314	310-314
CR, LF		2	315, 316	
SERV. MSG. 8	NOT USED	26	317-342	338-342
CR, LF		2	343, 344	
SERV. MSG. 9	NOT USED	26	345-370	366-370
CR, LF		2	371, 372	
SERV. MSG.10	NOT USED	26	373-398	394-398
CR, LF		2	399, 400	
SERV. MSG.11	NOT USED	26	401-426	422-426
CR, LF		2	427, 428	
RESERVED		26	429-454	
CR, LF		2	455, 456	
RESERVED		26	457-482	
CR, LF		2	483, 484	
RESERVED		25	485-509	
CR, LF		2	510, 511	

The CHARACTER LOCATION for the service messages consists of 20 characters which was previously programmed into the DE-2510. The HOUR LOCATION describes the position of the hours associated with the service message or with the hourmeter function. If a service message is “NOT USED”, then there will be “-----” in the HOUR LOCATION field. Values less than 10000 hours are right justified with spaces in locations to the left. For example, the hour value of 12345 will be displayed as “12345” and an hour value of 477 will be shown as “ 477”.

Overview:

The DE-1500 includes a RS-232 / RS-485 feature that allows a remote user to "emulate" the keypad and receive the contents of the display.

Remote Keypad Emulation:**Query:**

>(01 KP 0)

01 = node number, KP = keypress function, 0 is the single ASCII "Key Press" from the table below.

"Key Press" Table

0 = NONE (no keypress, returns current display)

C = CANCEL TIMERS

T = TEST

R = RESET

S = STOP

P = VIEW

N = NEXT

U = UP/UNITS

V = VIEW CHAN

1 = F1

A = RIGHT/TENS

X = ENTER

L = LEFT/TENS

2 = F2

M = MENU

D = DOWN/UNITS

E = ESC

Response:

CR LF (20bytes 1st line of display) CR LF (20 bytes 2nd line)

CR LF (20bytes 3rd line) CR LF (20bytes 4th line) CR LF

CR = Carriage Return, LF = Linefeed, 4 20 byte ASCII blocks that is the display. The total number of returned characters is 90.

MODBUS REGISTERS

Communications Parameters:

All communications are at 9600 baud, 8 Data bits, No Parity, 1 Stop bits. (9600 8N1)

Overview:

The DE-1500 is compliant to the Modicon Modbus RTU standard. The DE-1500 supports **DE-1500 Display Modbus Communications**

Register reads and data is duplicated for the 30000's & 40000's address range.
Maximum number of registers that can be read at one time has been limited to 32.

Address List:

40002	Hourmeter; range from 0-65535
40003	Null, will always read 0
40004	Status (10-13, 20-27, 30) For a shutdown on that channel. 00 = TIMERS ACTIVE, 01 = RUNNING, 60=STOP.
40005	Reserved
40006	Reserved
40007	Reserved
40008	Reserved
40009	Bit 0 = Low fault shutdown. Bit 1 = High fault shutdown. Only applicable when fault exists.
40100	Analog Channel 20; range from -9999 to 9999
40101	Analog Channel 21; range from -9999 to 9999
40102	Analog Channel 22; range from -9999 to 9999
40103	Analog Channel 23; range from -9999 to 9999
40104	Analog Channel 24; range from -9999 to 9999
40105	Analog Channel 25; range from -9999 to 9999
40106	Analog Channel 26; range from -9999 to 9999
40107	Analog Channel 27; range from -9999 to 9999
40108	RPM Channel 30; range from 0 to 9999
40109	Current Channel 90; range from 0 to 100
40110	Current Channel 91; range from 0 to 100
40115	Decimal point location for Analog Channel 20; range from 0-3. 0 = no decimal place, 1 = 1 decimal place etc.
40116	Decimal point location for Analog Channel 21; range from 0-3
40117	Decimal point location for Analog Channel 22; range from 0-3
40118	Decimal point location for Analog Channel 23; range from 0-3
40119	Decimal point location for Analog Channel 24; range from 0-3
40120	Decimal point location for Analog Channel 25;

	range from 0-3
40121	Decimal point location for Analog Channel 26; range from 0-3
40122	Decimal point location for Analog Channel 27; range from 0-3
40123	Decimal point location for Analog Channel 30; range from 0-3
40124	Decimal point location for Analog Channel 90; range from 0-3
40125	Decimal point location for Analog Channel 91; range from 0-3

Identification:

In addition to the above, the DE-1500 will respond to function code 17 with an identification string as follows:

Query:

NN 17 CRC CRC

NN = node number, 17 = ID function code, CRC CRC = two byte Modbus RTU CRC.

Response:

NN 17 07 D E - 1 5 0 0 CRC CRC

NN = node number, 17 = ID function code, 07 = number of bytes to follow, DE-1500 (seven byte ASCII ID string), CRC CRC = two byte Modbus RTU CRC

Stop/Reset:

Register 40999 can be written to to remotely trigger the STOP & RESET functions. It will only respond to a single write (function code 06). The stop Command is 0xAC53. The reset command is 0xBE41.

Remote Keypad Emulation:

The DE has a feature called the "Remote Keypad Emulation" that can be accessed through function code 20 as follows

Query:

NN 20 KP CRC CRC

NN = node number, 20 = KP function code, KP is the single byte "Key Press" from the table below, CRC CRC = two byte Modbus RTU CRC.

"Key Press" Table
00 = NONE (no keypress, returns current display)

01 = CANCEL TIMERS
02 = TEST
03 = RESET
04 = STOP
05 = VIEW
06 = NEXT
07 = UP/UNITS
08 = VIEW CHAN
09 = F1
10 = RIGHT/TENS
11 = ENTER
12 = LEFT/TENS
13 = F2
14 = MENU
15 = DOWN/UNITS
16 = ESC

Response:

NN 20 88 (20bytes 1st line of display) CR LF (20 bytes 2nd line) CR LF (20bytes 3rd line) CR LF (20bytes 4th line) CR LF CRC CRC

NN = node number, 20 = KP function code, 88 = number of bytes to follow,

CR = Carriage Return, LF = Linefeed, 4 20 byte ASCII blocks that is the display, CRC CRC = two byte Modbus RTU CRC