Remote Control

VDS 200N Series

Voltage Drop Simulator

This document describes the remote control commands for the VDS 200N Series.

the benchmark for emc

Version: 6.01 / 14.04.2016
Replaces: 6.00 / 12.08.2014
Filename: RemoteManual-VDS200Nx-E-V6.01.doc
Printdate: 22.04.16

emtest

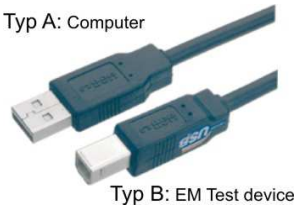
Interfaces

All following interfaces are standard features of the VDS 200 Series.

- **USB Interface**

Device			**Interface**
Computer	-	VDS200Nx	USB A / B

Communication via COM Port
Baudrate 1200 – 19200 Baud (8-databit, 1 start/stop bit)



- **Parallel IEEE 488 interface, addresses 1 - 30 selectable**

  - Command: (SH1, AH1, T4, L2, SR1, RL2, PP1, DC0, DT0, C0, E1)
  - Connector and pin layout as per to IEEE - 488 - 1975
  - 24-pin Amphenol connector
  - 8 ground pins

- **Equipment interface**

  The parallel equipment interface controls the external coupling networks.

- **Printer**

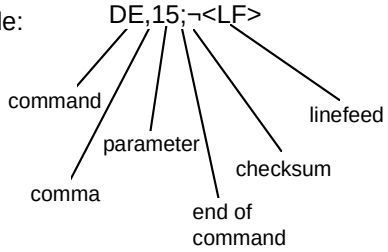
  The printer may be connected to the serial RS 232 interface.

General information

The commands must be closed by an <LF>. Just before the <LF> the check sum of the complete string must be transmitted.

Calculating : check sum = 100_H - (sum of all ASCII codes in one byte)

Example: DE,15;¬<LF>



Sign	ASCII Hex
D	44_H
E	45_H
,	$2C_H$
1	31_H
5	35_H
;	$3B_H$
SUM	156_H

=>

in Byte
56_H

=>

100_H - Byte
100_H-56_H=AA_H

=>

Check-Sum
¬

The commands must be closed by an <LF>. Just before the <LF> the check sum of the complete string must be transmitted.

Remark:

- Sum of all ASCII codes in one byte.
- Only the last 2 Digits of the sum of all ASCII codes in HEX will be considered.
- The messages coming back from the VDS are sent without check sum. At the end of the message there is also an <LF>.
- The checksum values 00H and 0AH are not valid. If the Checksum value is equal to 00H then add * and D6H. If the Checksum value is equal to 0AH then add * and E0H.

Parameter of the remote commands

Technical Comments:

The firmware is internally organized in 3 blocks.
Block 0: Setup (no relevance in remote mode)
Block 1: Arbitrary

To access the desired program the correct block has to be set via remote commands (BS command).
To start the remote mode it is not necessary to switch to a default block.
After setting the equipment to remote mode (VDS200: DC) it has to be checked which block is the actual one (BW command).

D commands (Block 0, 1)

Command	Syntax	Description
DC	DC;	DC checks the connection of the interface. The VDS sends back: VDS200,0,SWN,Version,Class,Code,fmax,Imax,Vmax,Ipeak - Instead of SWN the software no. of the equipment is sent: e.g. 000016 - Instead of Version the version no. of the firmware is send; e.g. V 2.30 - Instead of Class an instrument specific number is send defining the function capability of the instrument. - Instead of Code an instrument specific number is send defining the system capability of the instrument. - Instead of fmax the maximum frequency is set - Instead of Imax the maximum current is set - Instead of Vmax the maximum voltage is set - Instead of Ipeak the maximum peak current is set

B commands

Command	Syntax	Description
BS	BS,1; BS,0;	The BS command sets a new block: - Block 1: Arbitrary Waves programs - Block 0: Setup => no remote function available The answer is BS,x; where x is the number of the actual block
BW	BW;	The BW command asks the actual block. The answer is BW,x; where x is the number of the actual block.

Note: After a B command no further command should be sent before the answer is received. Otherwise there is no guarantee for the proper function of the VDS200

R commands (Block 0, Only VDS 200N30.1 and VDS 200N50.1)

Command	Syntax	Description
RS	RS,0; RS,1;	The RS command sets the output range (only for VDS 200N30.1 and VDS 200N50.1): - Range 0: VDS 200N30.1 = 60V, 30A / VDS 200N50.1 = 60V, 50A - Range 1: VDS 200N30.1 = 30V, 50A / VDS 200N50.1 = 30V, 85A
RW	RW;	The RW command asks the actual range. The answer is RW,x; where x is the number of the actual range.

D commands (Arbitrary, Block 1)

ISO Pulse 4	DI,Ub,Ua1,Ua2,t1,t7,t8,t9,t11,Ua,tri,I,n,5				
		Min	Max	Step	Parameter
	Ub	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	Ua1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 - (Vmax * 20)
	Ua2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	1 - (Vmax * 20)
	t1	0.1 s	99.9 s	0.1	1 – 999
	t7	5 ms	99999 ms	1	5 – 99999
	t8	5 ms	999 ms	1	5 – 999
	t9	0.1 s	99.9 s	0.1	1 – 999
	t11	5 ms	999 ms	1	5 – 999
	Ua	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	tri	Auto (0)	Man (1)		0 / 1
	I	1	Imax	1	0 – Imax
	n	1	30000 / endless	1	1 – 30000 / 30001
	5				

Starting Profile	DT,Ub,Ua1,Ua2,t1,t7,t8,t9,t11,Int,n,I,5				
		Min	Max	Step	Parameter
	Ub	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	Ua1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 – Vmax * 20
	Ua2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 – Vmax * 20
	t1	0.1 s	99.9 s	0.1	1 – 999
	t7	5 ms	999 ms	1	5 – 999
	t8	5 ms	999 ms	1	5 – 999
	t9	0.5 s	99.5 s	0.1	5 – 995
	t11	5 ms	999 ms	1	5 – 999
	Ua	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	I	1	Imax	1	0 – Imax
	n	1	30000 / endless	1	1 – 30000 / 30001
	5				default variable

Pulse 4 (GM 9105P)	DP,Ub,Ua1,Ua2,t1,t7,t8,t9,t11,Ua,tri,I,n,5				
	Min	**Max**	**Step**	**Parameter**
Ub	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
Ua1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 – Vmax * 20
Ua2	-(Vmax - Vmin)+ .5	(Vmax - Vmin) - .5	0.1	0 – Vmax * 20
t1	0.1 s	99.9 s	0.1	1 – 999
t7	5 ms	999 ms	1	5 – 999
t8	5 ms	999 ms	1	5 – 999
t9	0.4 s	99.8 s	0.1	4 – 998
t11	5 ms	999 ms	1	1 – 999
Ua	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
tri	Auto (0)	Man (1)		0 / 1
I	1	Imax	1	0 – Imax
n	1	30000 / endless	1	1 – 30000 / 30001
5				default variable

ISO Pulse 2b	DA,Ub,Ua1,t1,t6,td,Int,n,tri,I,tdstep, tdstop			
	Min	**Max**	**Step**	**Parameter**
Ub	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
Ua1	-(Vmax – Vmin)	(Vmax - Vmin)	0.1	0 - (Vmax * 20)
t1	0.1 s	99.9 s	0.1	1 – 999
t6	1 ms	999 ms	1	1 – 999
Td	5 ms	9999 ms	1	5 – 9999
Int	0.1 s	99.9 s	0.1	1 – 999
n	1	30000 / endless	1	1 – 30000 / 30001
tri	Auto (0)	Man (1)		0 / 1
I	1	Imax	1	0 – Imax
TdStep	5 ms	9999 ms	1	5 – 9999
TdStop	5 ms	9999 ms	1	5 – 9999

Supply Voltage Profile	DV,Ub,Ua1,Ua2,Ue,dUa,t1,t2,t3,			
	Min	**Max**	**Step**	**Parameter**
Ub	0.2	Vmax	0.1	2 – Vmax * 20
Ua1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 - (Vmax * 20) - 1
Ua2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	1 - (Vmax * 20) - 1
Ue	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 - (Vmax * 20) - 2
dUa	0.2	Vmax	0.1	1 – Vmax * 20
t1	0.1 s	99.9 s	0.1	1 – 999
t2	0.1 s	99.9 s	0.1	1 – 999
t3	0.1 s	99.9 s	0.1	1 – 999
n	1	30000 / endless	1	1 – 30000 / 30001
tri	Auto (0)	Man (1)		0 / 1
I	1	Imax	1	0 – Imax

Short Voltage Drop	DB,Ub,Ua1,Ua2,t1,t2,t3,Int,n				
		Min	Max	Step	Parameter
	Ub	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	Ua1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 - (Vmax * 20)
	Ua2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 - (Vmax * 20)
	t1	0.1 s	99.9 s	0.1	1 – 999
	t2	0.1 s	99.9 s	0.1	1 – 999
	t3	0.1 s	99.9 s	0.1	1 – 999
	Int	0.1 s	99.9 s	0.1	1 – 999
	n	1	30000 / endless	1	1 – 30000 / 30001
	tri	Auto (0)	Man (1)		0 / 1
	I	1	Imax	1	0 – Imax

Overvoltage	DO,U1,U2,t1,t2,t3,Int,n,tri,I,0				
		Min	Max	Step	Parameter
	U1	0	Vmax	0.1	0 – Vmax * 10
	U2	-Vmax	Vmax	0.1	0 – Vmax * 20
	t1	5 ms	99999 ms	1	5 – 99999
	t2	5 ms	99999 ms	1	5 – 99999
	t3	5 ms	99999 ms	1	5 – 99999
	Int	0.1 s	99.9 s	0.1	1 – 999
	n	1	30000 / endless	1	1 – 30000 / 30001
	tri	Auto (0)	Man (1)		0 / 1
	I	1	Imax	1	0 – Imax
	0				default variable

Jumpstart	DL,U1,U2,t1,t2,t3,Int,n,tri,I,0				
		Min	Max	Step	Parameter
	U1	0	Vmax	0.1	0 – Vmax * 10
	U2	-Vmax	Vmax	0.1	0 - (Vmax * 20)
	t1	5 ms	99999 ms	1	5 – 99999
	t2	5 ms	99999 ms	1	5 – 99999
	t3	5 ms	99999 ms	1	5 – 99999
	Int	0.1 s	99.9 s	0.1	1 – 999
	n	1	30000 / endless	1	1 – 30000 / 30001
	tri	Auto (0)	Man (1)		0 / 1
	I	1	Imax	1	0 – Imax
	0				default variable

Ramp	DR,U1,U2,t1,t2,I				
		Min	Max	Step	Parameter
	U1	0	Vmax	0.1	0 – Vmax * 10
	U2	-Vmax	Vmax	0.1	0 – Vmax * 20
	t1	0.1 s	99.9 s	0.1	1 – 999
	t2	5 ms	99999 ms	1	5 – 99999
	I	1	Imax	1	0 – Imax

DC Source	DQ,Ub,I				
		Min	Max	Step	Parameter
	U1	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	I	1	Imax	1	0 - Imax

Sweep	DW,Ub,Up,f1,f2,f3,t1,t2,Int,n,I				
		Min	Max	Step	Parameter
	U1	Vmin	Vmax	0.1	Vmin * 10 - Vmax * 10
	Up	0.25	4.00 (10kHz) 5.00 (50kHz) 6.00 (Bserie)	0.05	25 – 500 (10kHz) 25 – 400 (50kHz) 25 – 600 (Bserie)
	f1	1 Hz	50 kHz	1	1 – 50000
	f2	1 Hz	50 kHz	1	1 – 50000
	f3	1 Hz	50 kHz	1	1 – 50000
	t1	0.1 s	999.9 s	0.1	1 – 9999
	t2	0.1 s	999.9 s	0.1	1 – 9999
	Int	0.1 s	2000 s	1	1 – 2000
	n	1	30000 / endless	1	1 – 30000 / 30001
	I	1	Imax	1	0 – Imax

Jaso	DJ,Ub1,Ub2,Ub3,t1,t2,f1,fn,n,I				
		Min	Max	Step	Parameter
	Ub1	Vmin	Vmax	0.1	Vmin *10 - Vmax * 10
	Ub2	Vmin	Vmax	0.1	Vmin *10 - Vmax * 10
	Ub3	Vmin	Vmax	0.1	Vmin *10 - Vmax * 10
	t1	0.1 s	99.9 s	0.1	1 – 999
	t2	0.1 s	99.9 s	0.1	1 – 999
	f1	0.1 Hz	99.9 Hz	0.1	1 – 999
	fn	0.1 Hz	99.9 Hz	0.2	1 – 1000
	n	1	30000 / endless	1	1 – 30000 / 30001
	tri	Auto (0)	Man (1)		0 / 1
	I	1	Imax	1	0 – Imax

Sinus	DS,Ub,Up,t1,f0,t2,n,I				
		Min	Max	Step	Parameter
	U1	Vmin	Vmax	0.1	Vmin *10 - Vmax * 10
	Up	0.25	4.00 (10kHz) 5.00 (50kHz)	0.05	25 – 500 (10kHz) 25 – 400 (50kHz)
	t1	0.1 s	99.9 s	0.1	1 – 999
	f0	1 Hz	50 kHz	1	1 – 50000
	t2	1 s	999.9 s	0.1	10 – 9999
	n	1	30000 / endless	1	1 – 30000 / 30001
	I	1	Imax	1	0 – Imax

Extern	DE,I				
		Min	Max	Step	Parameter
	I	1	Imax	1	0 – Imax

U commands

Command	Syntax	Description
UR	UR,Ub,I, modUR;	The UR command sets the actual selected voltage level. (Ub < = 30V), the max. dc current and the desired mode
UR	UR,Ub;	The UR command sets the actual selected voltage level of an external power supply (i.e. VDS200) via BNC-output at the rear panel.

Note: The UR command must be set before programming a test.
Otherwise the internal relays will not be set correctly (no output voltage).
The UR command can only be used in block 1 (see B commands).
After every changing of a block the UR command has to be set again.
After a UM command the UR command has to be set again.
In block 1 the only possibility for the parameter modUR is 2 (arbitrary waves).
The parameter modUR is depending on the desired test program:

Test Program	Mode	modUr
voltage drop	drop	0
voltage dip	dip	1
Mercedes S1	arbitrary wave	2
Mercedes S2	arbitrary wave	2
Mercedes S3	arbitrary wave	2
Mercedes S4	arbitrary wave	2
Mercedes S5	arbitrary wave	2
Ford A	drop	0
Ford B	drop	0
Ford C	drop	0
Ford D	dip	1
Micro Drops	drop	0

N commands

Command	Syntax	Description
ND	ND,td;	The ND command transmits the value for duration td. This transmission can be realized on-line during testing.
NR	NR,Rep;	The NR command transmits the value for the repetition. This transmission can be realized on-line during testing.
NM	NM,modQuick;	The NM command transmits the value for the mode. This transmission can be realized on-line during testing.
NT	NT,tri;	The NT command transmits the value for the trigger mode. This transmission can be realized on-line during testing.
NU	NU,Ub;	The NU command transmits the value for the voltage Ub. This transmission can be realized on-line during testing.
NI	NI,I;	The NI command transmits the value for the current I. This transmission can be realized on-line during testing.

Note: The ND, NR, NM, NT commands are only available for Quick Start program in block 2 (Power Fail).
The NU command is available for Quick Start (block 2) and for dc power supply program (block 1).
The NI command is only available for dc power supply program in block 1.

A commands

Command	Syntax	Description
AA	AA;	The AA command starts the test.
AT	AT;	The AT command releases one single event, if the trigger mode has been set to MAN in advance.
AS	AS;	The AS command stops a running test.
AW	AW;	The AW command restarts a stopped test procedure (Pause).
AR	AR;	The AR command stops a running test and resets the instrument to local mode (Reset of Remote).

K commands

Command	Syntax	Description
KV	KV,0;	Read the calibration version (only for Ford EMC-CS-2009 CI210)
KC	KC,0;	Read the calibration counter (only for Ford EMC-CS-2009 CI210)

Back Messages

Message	Description
RR,00;<LF>	The test procedure was stopped correctly.
RR,02;<LF>	Ready, the generator is ready to release a single event (only in case of MAN trigger).
RR,05;<LF>	Fail 1
RR,06;<LF>	Fail 2
RR,07;<LF>	Continue after Fail 2 RR 06<LF>
RR,08;<LF>	Overcurrent of the Powerfail switches
RR,09;<LF>	Continue after Overcurrent
RR,10;<LF>	A transmitting error was detected. The number of transmitted characters was incorrect.
RR,11;<LF>	Test Start is not possible, because TEST ON is not pushed in.
RR,14;<LF>	One ore more transmitted values are limited
RR,15;<LF>	Check sum error. The string is deleted and must be transmitted once again.
RR,17;<LF>	Overvoltage / Overtemperature of the built in source
RR,20;<LF>	Not correctable limitation error.

Message	Description
BS,x;<LF>	The answer after a BS command. Where x is the number of the actual block. No further command should be sent before this message is received. Otherwise there is no guarantee for the proper function of the VDS200
BW,x<LF>	The answer after a BW command. Where x is the number of the actual block. No further command should be sent before this message is received. Otherwise there is no guarantee for the proper function of the VDS200

Examples

Function	Send	Receive
Start Up	DC;>	VDS200N 50,0,000000,V 1.20,1, 4294934527,50000,50,600,50;
Set to Block 1	BS,1;Ó	BS,1
Set Voltage Ub (Vb) = 28.5 V I (Imax) = 30 A modUR = Arbitrary Wave	UR,285,30,2;h UR,Ub,I, modUR;	RR 00;
Set pulse parameters for pulse 2b and start. Ub (Va) = 28.5 V Ua1 (Vs) = 10 V t1 (t1) = 1 s t6 (t6) = 1 ms td (td) = 200 ms Int (Int) = 1 s n (Events) = 1 tri (Trigger) = Auto I (Imax) = 50 A Checksum =2	DA,285,415,10,1,200,10,1,0,50;2 AA;C	RR 00;
Set pulse parameters for Pulse 4, Start and Stop Ub (Vb) = 24.7 V Ua1 (Va1) = 7.0 V Ua2 (Va2) = 2.5 V t1 (t1) = 1 s t7 (t7) = 15 ms t8 (t8) = 50 ms t9 (t9) = 0.5 s t11 (t11) = 5 ms Ua (Va) = 24.7 V tri (Trigger) = Auto I (Imax) = 30 A n (Events) = 1 Checksum = [	DI,247,530,575,10,15,50,5,5,247,0,30,1,5;[AS;1	