

Remote Control



VDS 200Qx.2 Series

4 Quadrants Voltage Drop Simulator

This document describes the remote-control commands for the VDS 200Qx.2 Series.



AMETEK CTS GmbH

Sternenhofstrasse 15
4153 Reinach BL1
Switzerland

Phone: +41 61 204 41 11
Fax: +41 61 204 41 00
URL: <http://www.emtest.com>
www.ametek-cts.com

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Specifications subject to change

Interfaces

All following interfaces are standard features of the VDS 200Qx.2 Series with firmware V2.00.00 or bigger.

• USB Interface

Device

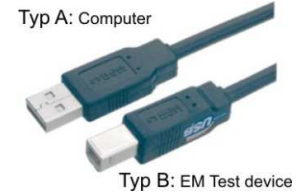
Computer - VDS200Qx

Interface

USB A / B

Communication via COM Port

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



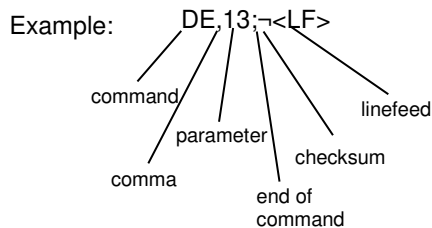
• Parallel IEEE 488 interface, addresses 1 - 30 selectable

- 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

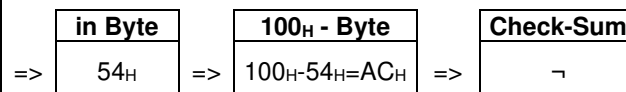
General information

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)



Sign	ASCII Hex
D	44 _H
E	45 _H
,	2C _H
1	31 _H
3	33 _H
;	3B _H
SUM	154_H



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 4 blocks.

Block 0:	Setup (no relevance in remote mode)
Block 1:	DC source
Block 2:	Arbitrary
Block 3:	Remote generator

D commands (Block 0,1 and 2)

Command	Syntax	Description
DC	DC;	<p>DC checks the connection of the interface.</p> <p>The VDS sends back:</p> <p><i>"VDS200Q,0,SWN,Version,Class,Code,fmax,lmax,Vmax,lpeak,Vmin,"</i></p> <ul style="list-style-type: none"> - SWN: the software number of the equipment. (ex.: "000016") - Version: the version of the firmware. (ex. "V1.04.00") - Class: definition of function capability of the instrument. - Code: definition of the system capability of the instrument. - fmax: the maximum frequency. (ex. "200000" = 200kHz) - lmax: the maximum current (ex. "100" = 100A) - Vmax: the maximum voltage. (ex. "600" = +60V) - lpeak: the maximum peak current. (ex. "300" = 300A) - Vmin: the minimum voltage. (ex. "-150" = -15V)

Examples:

- VDS200Q25.2: VDS200Q25.2,0,xxxxxx,V2.00.00,2147483705,8191,250000,25,800,75,-200
- VDS200Q50.2: VDS200Q50.2,0,xxxxxx,V2.00.00,2147483705,8191,250000,50,800,150,-200
- VDS200Q100.2: VDS200Q100.2,0,xxxxxx,V2.00.00,2147483705,8191,250000,100,800,300,-200
- VDS200Q150.2: VDS200Q150.2,0,xxxxxx,V2.00.00,2147483705,8191,250000,150,800,450,-200
- VDS200Q200.2: VDS200Q200.2,0,xxxxxx,V2.00.00,2147483705,8191,250000,200,800,600,-200

B commands

Command	Syntax	Description
BS	BS,0; BS,1; BS,2; BS,3;	<p>The BS command sets a new block:</p> <p>Block 0: Setup => no remote function available</p> <p>Block 1: DC source and Extern modus</p> <p>Block 2: Arbitrary Waves programs</p> <p>Block 3: Direct control of the generator (new commands set)</p> <p>The answer is BS,x; where x is the number of the actual block</p>
BW	BW;	<p>The BW command asks the actual block. The answer is BW,x; where x is the number of the actual block.</p>

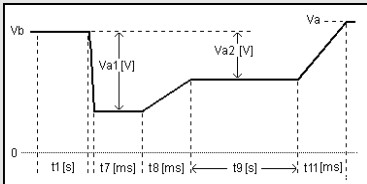
Note: After a B command no further command should be sent before the answer is received. Otherwise there is no guarantee for the proper function of the VDS 200Q

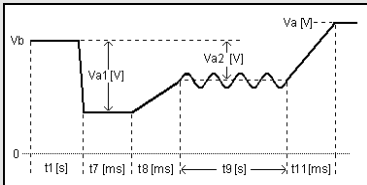
D commands (DC source, Block 1)

DC Source	DQ,Ub,I				
		Min	Max	Step	Parameter
	Ub	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10
I	1	I _{max}	1	1 .. I _{max}	

Extern	DE,I				
		Min	Max	Step	Parameter
	I	1	I _{max}	1	1 .. I _{max}

D commands (Arbitrary, Block 2)

ISO Pulse 4	DI,Vb,Va1,Va2,t1,t7,t8,t9,t11,Va,tri,I,n,t6				
		Min	Max	Step	Parameter
	Vb	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10
	Va1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. (Vmax * 10)
	Va2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	1 .. (Vmax * 10)
	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
	Va	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10
	tri	Auto (0)	Man (1)		0 / 1
	I	1	I _{max}	1	1 .. I _{max}
	n	1	30000 / endless	1	1 .. 30000 / 30001
t6	2	999 ms	1	2 .. 999	

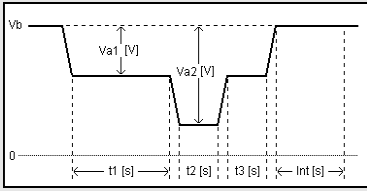
Starting Profile	DT,Vb,Va1,Va2,t1,t7,t8,t9,t11,Va,Tri,n,I,t6				
		Min	Max	Step	Parameter
	Vb	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10
	Va1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. Vmax * 10
	Va2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. Vmax * 10
	t1	0.1 s	99.9 s	0.1	1 .. 999
	t7	5 ms	999 ms	1	5 .. 999
	t8	5 ms	999 ms	1	5 .. 999
	t9	0.5 s	99.5 s	0.1	5 .. 995
	t11	5 ms	999 ms	1	5 .. 999
	Va	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10
	tri	Auto (0)	Man (1)		0 / 1
	I	1	I _{max}	1	1 .. I _{max}
	n	1	30000 / endless	1	1 .. 30000 / 30001
t6	2	999 ms	1	2 .. 999	

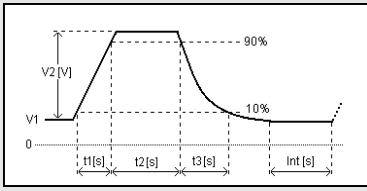
Pulse 4 (GM 9105P)		DP,Vb,Va1,Va2,t1,t7,t8,t9,t11,Va,tri,l,n,t6			
	Min	Max	Step	Parameter	
	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Vb	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Va1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. Vmax * 10	
Va2	-(Vmax-Vmin)+.5	(Vmax-Vmin)-.5	0.1	0 .. Vmax * 10	
t1	0.1 s	99.9 s	0.1	1 .. 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	
Va	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
tri	Auto (0)	Man (1)		0 / 1	
l	1	lmax	1	1 .. lmax	
n	1	30000 / endless	1	1 .. 30000 / 30001	
t6	2	999 ms	1	2 .. 999	

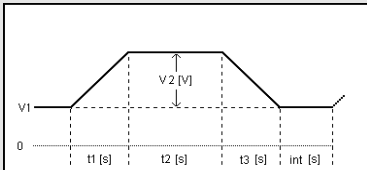
ISO Pulse 2b		DA,Vb,Va1,t1,t6,td,Int,n,tri,l			
	Min	Max	Step	Parameter	
	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Vb	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Va1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. (Vmax * 10)	
t1	0.1 s	99.9 s	0.1	1 .. 999	
t6	1 ms	999 ms	1	1 .. 999	
Td	5 ms	9999 ms	1	5 .. 9999	
Int	0.1 s	99.9 s	0.1	1 .. 999	
n	1	30000 / endless	1	1 .. 30000 / 30001	
tri	Auto (0)	Man (1)		0 / 1	
l	1	lmax	1	1 .. lmax	

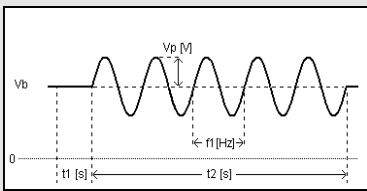
Supply Voltage Profile		DV,Vb,Va1,Va2,Ve,dVa,t1,t2,t3,n,tri,l			
	Min	Max	Step	Parameter	
	0.2	Vmax	0.1	2 .. Vmax * 10	
Vb	0.2	Vmax	0.1	2 .. Vmax * 10	
Va1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. (Vmax * 10) - 1	
Va2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	1 .. (Vmax * 10) - 1	
Ve	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. (Vmax * 10) - 2	
dVa	0.2	Vmax	0.1	1 .. Vmax * 10	
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	
l	1	lmax	1	1 .. lmax	

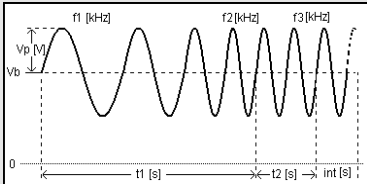
Ramp		DR,V1,V2,t1,t2,l			
	Min	Max	Step	Parameter	
	0	Vmax	0.1	0 .. Vmax * 10	
V1	0	Vmax	0.1	0 .. Vmax * 10	
V2	-Vmax	Vmax	0.1	0 .. (Vmax * 10)	
t1	0.1 s	99.9 s	0.1	1 .. 999	
t2	5 ms	99999 ms	1	5 .. 99999	
l	1	lmax	1	1 .. lmax	

Short Voltage Drop		DB,Vb,Va1,Va2,t1,t2,t3,Int,n			
	Min	Max	Step	Parameter	
	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Vb	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Va1	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. (Vmax * 10)	
Va2	-(Vmax - Vmin)	(Vmax - Vmin)	0.1	0 .. (Vmax * 10)	
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	
l	1	lmax	1	1 .. lmax	

Overvoltage		DO,V1,V2,t1,t2,t3,Int,n,tri,l,t0			
	Min	Max	Step	Parameter	
	0	Vmax	0.1	0 .. Vmax * 10	
V1	0	Vmax	0.1	0 .. Vmax * 10	
V2	-Vmax	Vmax	0.1	0 .. (Vmax * 10)	
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	
l	1	lmax	1	1 .. lmax	
t0	0 s	99.9 s	0.1	0 .. 999	

Jumpstart		DL,V1,V2,t1,t2,t3,Int,n,tri,l,t0			
	Min	Max	Step	Parameter	
	0	Vmax	0.1	0 .. Vmax * 10	
V1	0	Vmax	0.1	0 .. Vmax * 10	
V2	-Vmax	Vmax	0.1	0 .. (Vmax * 10)	
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	
l	1	lmax	1	1 .. lmax	
t0	0 s	99.9 s	0.1	0 .. 999	

Sinus		DS,Vb,Vp,t1,f0,t2,n,l			
	Min	Max	Step	Parameter	
	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
V1	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10	
Vp	0.25	Vmax / 2	0.05	25 .. (Vmax / 2) * 100	
t1	0.1 s	99.9 s	0.1	1 .. 999	
f0	1 Hz	fmax	1	1 .. fmax	
t2	1 s	999.9 s	0.1	10 .. 9999	
n	1	30000 / endless	1	1 .. 30000 / 30001	
l	1	lmax	1	1 .. lmax	

Sweep	DW,Vb,Vp,f1,f2,f3,t1,t2,Int,n,I				
		Min	Max	Step	Parameter
	V1	Vmin	Vmax	0.1	Vmin * 10 .. Vmax * 10
	Vp	0.25	Vmax / 2	0.05	25 .. (Vmax / 2)*100
	f1	1 Hz	fmax	1	1 .. fmax
	f2	1 Hz	fmax	1	1 .. fmax
	f3	1 Hz	fmax	1	1 .. fmax
	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	1 .. Imax

U commands (Block 1 & Block 2)

Command	Syntax	Description
UR	UR,Ub,I;	The UR command sets the actual selected voltage level. ($U_b \leq 30V$) and the max. dc current.

Note: The UR command must be set before programming a test.

N commands (Block 1 & Block 2)

Command	Syntax	Description
NU	NU,Ub;	The NU command transmits the value for the voltage U_b . This transmission can be realized on-line during testing. <i>Only available in block 1 in DC source mode</i>
NI	NI,I;	The NI command transmits the value for the current I . This transmission can be realized on-line during testing. <i>Only available in block 1 in DC source mode</i>
NS	NS,Range,Gain, Ilimit,Fcomp;	The NS command transmits the setup of the source : for VDS200Qxxx.2: Range: 1 : Fix Gain: 1 : Low gain (x4) 2 : High gain (x8) Ilimit: 1 : Peak OFF (no inrush current) 2 : $3 \cdot I$ (inrush of 3x programmed current limit for 200ms) 3 : $3 \cdot I_{max}$ (inrush of 3x maximum current of device for 200ms) Fcomp: 1 : Standard (bw $\approx 40kHz$) 2 : Capacitive (bw $\approx 3kHz$) 3 : High frequency (bw $\approx 250kHz$)
NV	NV,VmaxPos, VmaxNeg;	Set the voltage limits positive and negative (VDS 200Qx.2 Only) VmaxPos : 0 – Device Vmax VmaxNeg : Device Vmin – 0
NR	NR,OutImp;	Set the output impedance (VDS 200Qx.2 Only) OutImp : Off (0) / 10m Ω – 200m Ω (10m Ω setp)

Note: After a NS, NV or NR command no further command should be sent before the answer is received. Otherwise there is no guarantee for the proper function of the VDS 200Qx.2

A commands (Block 1 & Block 2)

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).

Back Messages (All Blocks)

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,10;<LF>	Transmitting error: wrong number of characters or command unknown.
RR,11;<LF>	Test Start is not possible, because TEST ON is not pushed in.
RR,14;<LF>	One or 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,18;<LF>	Power fail error.
RR,19;<LF>	Module in BootLoader mode.
RR,20;<LF>	Not correctable limitation error.
RR,21;<LF>	Command can not be accepted: wrong remote mode (FrameBus) or already started.
RR,22;<LF>	Generator in wrong mode (Block 3). Ex.: cannot send a segment in Generator Extern mode.
RR,23;<LF>	Cannot accept the command due to a source error (Block 3). Read the device status.
RR,25;<LF>	Command accepted (Acknowledge for generator remote in Block 3)
BS,x;<LF>	Answer after block switch where "x" is the number of the actual block
BW,x;<LF>	Answer to BW command where "x" is the number of the actual block
NS,r,g,i,f;<LF>	Acknowledge answer to NS command with current parameter (Range, Gain, I limit, F mode)
NV,p,n;<LF>	Acknowledge answer to NV command with current parameter (positive limit, negative limit)
NR,imp;<LF>	Acknowledge answer to NR command with current parameter (output impedance)

Examples of command from Block 1 and 2

Function	Send	Receive
Start Up	DC;><LF>	VDS200Q100.2,0,xxxxxx,V2.00.00,21474 83705,8191,250000,100,800,300,-200
Source setup Range = 1 Gain = x8 Current = 3 x I _{max} Freq comp. = HF	NS,1,2,3,3;<LF>	NS,1,2,3,3;
Voltage limits [-10V .. 60V]	NV,-100,600;u<LF>	NV,-100,600;
Output impedance OFF	NR,0;É<LF>	NR,0;
Set to Block 2	BS,2;Ö<LF>	BS,2
Set Voltage V _b (V _b) = 28.5 V I (I _{max}) = 30 A	UR,285,30;Ä<LF>	RR,00;
Set pulse parameters for pulse 2b. V _b (V _a) = 28.5 V V _{a1} (V _s) = -10 V t ₁ (t ₁) = 1 s t ₆ (t ₆) = 1 ms t _d (t _d) = 200 ms Int (Int) = 1 s n (Events) = 5 tri (Trigger) = Auto I (I _{max}) = 50 A	DA,285,615,10,1,200,10,5,0,50;* <LF>	
Start the pulse	AA;C<LF>	RR,00; (at end of the fives pulses)

Block 3: New command set for remote generator

Technical Comments:

In this block the user can directly control the internal generator with a new set of command. The checksum calculation is the same as for the other commands.

Identification and status commands

Command	Syntax	Description
IDN?	IDN?;<<<LF>	Ask for device identification Answer: "VDS200Qx,EMTEST,FWvers,GenVers,Vmax,Vmin,Imax,Fmax;" - x: device version ex.: "Q100.2" - FWvers: version of the firmware ex.: "V2.00.00" - GenVers: version of the internal generator ex.: "V2.00.00" - Vmax: maximum voltage in mV ex.: "80000" = +80V - Vmin: minimum voltage in mV ex.: "-20000" = -20V - Imax: maximum current in A ex.: "100" = 100A - fmax: maximum frequency in mHz ex.: "250000000" = 250kHz
LIM?	LIM?;<<<LF>	Ask for device limits Answer: "Vmin,Vmax,Imax,lpeak,Fmax;" - Vmin: current minimum voltage in mV ex.: "-20000" = -20V - Vmax: current maximum voltage in mV ex.: "40000" = +40V - Imax: maximum current in A ex.: "100" = 100A - lpeak: the maximum peak current. ex.: "300" = 300A - fmax: maximum frequency in mHz ex.: "250000000" = 250kHz
MEAS?	MEAS?;<<LF>	Ask for measure values Answer: "Imeas,Vmeas;" - Imeas: last measured current Arms - Vmeas: last measured voltage in Vrms
STAT?	STAT?;<J<LF>	Ask for device status Answer: "LocalStat,SourceStat,GeneStat,TestStat,NbEvents,"

Status	Parameter	Values
Device status	<i>LocalStat</i>	Bit 0: Test ON status 0=off; 1=on Bit 1: EUT 1 input status 1= active Bit 2: EUT 2 input status 1= active
Source status	<i>SourceStat</i>	0x00: no source error 0x01: current limitation active 0x02: over temperature error 0x04: power fail error 0x08: amplifier error (no amplifier detected) 0x10: amplifier power supply error
Generator status	<i>GeneStat</i>	0x00: generator ready 0x01: generator controlled by FrameBus 0x02: generator is busy (internal setting in progress) 0x04: generator is in test modus (internal use only) 0x08: generator is in bootloader modus
Test status	<i>TestStat</i>	0: test stopped 1: segment test runs 2: segment test waits for trigger 3: segment test is paused 4: segment test initialisation 5: DC or AC signal 6: Extern signal (amplifier only)
Number of events	<i>NbEvents</i>	In case of test with segments: cycles counter

Setup commands (prefix "SETUP:")

Command	Syntax
SRCE	Set SETUP:SRCE <Gain>,<Ilimit>,<Fcomp>;<cks><LF>
	Get SETUP:SRCE?;Z<LF> Answer: "<Gain>,<Ilimit>,<Fcomp>;"
	Source setup
	Gain: 1 : Low gain (x4) 2 : High gain (x8) Ilimit: 1 : Peak OFF (no inrush current) 2 : 3*I (inrush of 3x programmed current limit for 200ms) 3 : 3*I _{max} (inrush of 3x maximum current of device for 200ms) Fcomp: 1 : Standard (bw ≈ 40 kHz) 2 : Capacitive (bw ≈ 3 kHz) 3 : High frequency (bw ≈ 250 kHz)
IMAX	Set SETUP:IMAX <I _{max} >;<cks><LF>
	Get SETUP:IMAX?;C<LF> Answer: "<I _{max} >;"
	Current limitation value I _{max} : current limitation value in A
VLIM	Set SETUP:VLIM <V _{max} Neg>,<V _{max} Pos>;<cks><LF>
	Get SETUP:VLIM?;f<LF> Answer: "<V _{max} Neg>,<V _{max} Pos>;"
	Voltage limits positive and negative in mV V _{max} Pos: 0 – Device V _{max} V _{max} Neg: Device V _{min} – 0
OIMP	Set SETUP:OIMP <OutImp>;<cks><LF>
	Get SETUP:OIMP?;†<LF> Answer: "<OutImp>;"
	Output impedance OutImp: Off (0) / 10 mΩ – 200 mΩ (10 mΩ setp) Ex.: Set output impedance to 10 mΩ: SETUP:OIMP 10;D<LF>

Signal commands (prefix "SGNL:")

Command	Syntax
OFF	SGNL:OFF; <LF> Go back to standby module. Mute relay active.
EXTR	SGNL:EXTR;<cks><LF> Set generator in external modus: signal from analogue input (only set the mode, need a start command to play signal)
DATA	SGNL:DATA <V _{dc} >,<Freq>,<V _p >;<cks><LF> Set a continuous signal at output V _{dc} : DC voltage or offset of AC signal in mV range: [V _{min} .. V _{max}] Freq: frequency of AC signal in mHz range: 0 if DC signal; [1000 .. F _{max}] V _p : peak voltage of AC signal in mV _{peak} range: 0 if DC signal; [100 .. (V _{max} -V _{min})/2] Need a start command to play the signal. If the signal is already started this command update the signal with the new parameters.
STAR	SGNL:STAR;<cks><LF> Activate the output and start the current signal / mode / sequence of segments
STOP	SGNL:STOP;<cks><LF> Stop the current signal / mode / sequence of segments but don't deactivate the output. To deactivate the output (mute mode) send a command signal OFF after the stop command.

Sequence and Segment commands (prefix "SEGM:")

Command	Syntax
STDL	SEGM:STDL;<cks><LF> Initialise a new download of segment. This command must be send before any new sequence.
DC	SEGM:DC <stVdc>,<endVdc>,<dur>;<cks><LF> Send parameter for a DC segment
SINE	SEGM:SINE <stVdc>,<endVdc>,<stFreq>,<endFreq>,<strVp>,<endVp>,<type>,<dur>;<cks><LF> Send parameter for a sine segment
EXPO	SEGM:EXPO <stV>,<endV>,<dur>;<cks><LF> Send parameter for an exponent segment
CYCL	SEGM:CYCL <nbCycle>,<trig>,<endVoltage>;<cks><LF> Send global parameter for the sequence.

Parameter	Description	Values
stVdc	DC voltage at start of segment (offset) in mV	[Vmin .. Vmax] (mV)
endVdc	DC voltage at end of segment (offset) in mV	[Vmin .. Vmax] (mV)
stFreq	Frequency at start of sine segment in mHz	[1000 .. Fmax] (mHz)
endFreq	Frequency at end of sine segment in mHz	[1000 .. Fmax] (mHz)
strVp	Peak voltage at start of sine segment in mVpeak	[100 .. (Vmax-Vmin)/2] (mVpeak)
endVp	Peak voltage at end of sine segment in mVpeak	[100 .. (Vmax-Vmin)/2] (mVpeak)
stV	Start voltage of exponent segment in mV	[0 .. Vmax] (mV)
endV	End voltage of exponent segment in mV	[0 .. Vmax] (mV)
type	Sweep type for sine segment	0 = linear; 1 = logarithm
dur	Duration of the segment in ms	[1 .. 3600000 (1h)] (ms)
nbCycle	Number of cycles (repetition of the full sequence)	0 = infinite; [1 .. 99999]
trig	Start trigger mode	0 = trigger auto; 1 = trigger manual
endVoltage	Voltage to set at end of the sequence	[Vmin .. Vmax] (mV)

Example how to play a sequence with the internal generator

Function	Send	Receive
Start Up	DC;><LF>	VDS200Q100.2.0,xxxxxx,V2.00.00,214748 3705,8191,250000,100,800,300,-200;<LF>
Set to Block 3	BS,3;Ñ<LF>	BS,3;<LF>
Set source setup: Gain = x8 Current = 3 x I _{max} Freq comp. = HF	SETUP:SRCE 2,3,3;½<LF>	RR,25;<LF>
Set current limit to 25 A	SETUP:IMAX 25;D<LF>	RR,25;<LF>
Get device status	STAT?;J<LF>	1,0,0,0,0;<LF>
Set DC signal (12 V)	SGNL:DATA 12000,0000,0000; R<LF>	RR,25;<LF>
Start DC signal	SGNL:STAR;<LF>	RR,25;<LF>
Get device status	STAT?;J<LF>	1,0,0,5,0;<LF>
Start sequence download	SEGM:STDL;(<LF>	RR,25;<LF>
Send DC segment 20 V, 1 s	SEGM:DC 20000,20000,1000;»<LF>	RR,25;<LF>
Send DC (ramp) segment 20 V – 10 V, 500 ms	SEGM:DC 20000,10000,500;è<LF>	RR,25;<LF>
Send Sine segment Offset 10 V Amplitude 5 V Freq. start 15 Hz Freq. end 50 kHz Sweep type linear Duration 20 s	SEGM:SINE 20000,20000,15000, 50000000,2500,2500,0,20000;í<LF>	RR,25;<LF>
Send DC (ramp) segment 10 V – 15 V, 200 ms	SEGM:DC 10000,20000,200;ë<LF>	RR,25;<LF>
Send sequence parameters 5 cycles Trigger auto End voltage 12 V	SEGM:CYCL 5,0,12000;d<LF>	RR,25;<LF>
Start the sequence	SGNL:STAR;<LF>	RR,25;<LF>
Get status	STAT?;J<LF>	1,0,0,1,0;<LF>
Get status	STAT?;J<LF>	1,0,0,1,0;<LF>
...		
Get status	STAT?;J<LF>	1,0,0,1,1;<LF>
...		
Get status	STAT?;J<LF>	1,0,0,1,2;<LF>
...		
Get status	STAT?;J<LF>	1,0,0,0,0;<LF>