Remote Control

UCS 200N / M

The ultra-compact simulator
and its system modules

This document describes the remote control commands for

UCS 200N
UCS 200M

- ISO 7637
- SAE J1113
- Manufacturer spec as per GM, Ford, Chrysler, Mercedes, BMW,VW, PSA, Renault, Fiat ......

The benchmark for emc

em test

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Interfaces

All following interfaces are standard features of the UCS 200N.

- **USB Schnittstelle**

   with COM Baudrate 1200 - 19200 ((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**

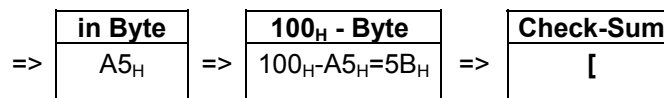   The parallel equipment interface controls the external coupling networks.

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: NW,180;[<LF>

command

parameter

comma   check sum

end of command

linefeed
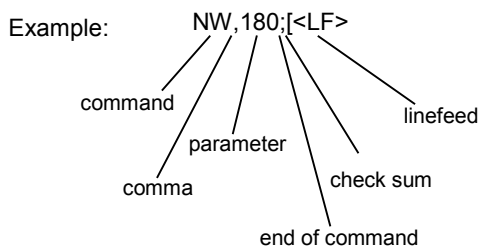
Sign	ASCII Hex
N	$4E_H$
W	57_H
,	$2C_H$
1	31_H
8	38_H
0	30_H
;	$3B_H$
SUM	$1A5_H$

in Byte
$A5_H$

100_H - Byte
100_H-$A5_H$=$5B_H$

Check-Sum
[

=> => =>

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 MPG 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.

The list below shows all commands awailable in each block

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All Blocks	Block 0	Block 1	Block 2	Block 3
UC	UC	AA AS AT AR AW NC ND NF NK NO NP NR NT NU NW UC UM US UU	AA AS AT AR AW NC ND NF NK NO NP NR NT NU NW UB UF UV UZ	

Error messages generated in block

All Blocks	Block 0	Block 1	Block 2	Block 3
RR10 RR15	RR10 RR15	RR00 RR01 RR02 RR05 RR06 RR07 RR08 RR09 RR10 RR11 RR13 RR14 RR15 RR20 RR30	RR00 RR01 RR02 RR05 RR06 RR07 RR08 RR09 RR10 RR11 RR13 RR14 RR15 RR20 RR30	

Parameter of the remote commands

Name	Description	Min – Max		Step	Unit	Parameters
Coupling	coup	supply	50 Ohm	-	-	0 – 1
Coupling	coup	50 Ohm	+	-	-	0 – 1
Frequence steps	df	0.1	150.0	1	kHz	1 – 1500
Voltage steps	dU	0	480	5	V	0 – 480
Voltage steps	dU	5	975	5	V	5 – 975
Frequence Start freq. Middle freq. End freq.	f, f1, f2, f3	0.1	200.0	0.1	kHz	1 – 2000
Events	N	1	99999/endl.	1		99999/100000
Polarity	Pol	+	-			0 – 1
Pulse	pul	Pulse 1 (1/1000)				0
		Pulse 1 (1/2000)				1
		Pulse 1 (1/6000)				2
		Pulse 1 (3/1000)				3
		Pulse 1 (3/2000)				4
		Pulse 2 (1/50)				5
		Pulse 2 (1/150)				6
		Pulse 3a				7
		Pulse 3b				8
		Jaso Pulse A2				9
		Jaso Pulse B2				10
		Jaso Pulse D2				11
		Nissan Pulse B 2				12
		Nissan Pulse C 8				13
		Nissan Pulse C 50				14
		Nissan Pulse C 300				15
		SAE Mutual				16
		SAE Inductive				17
		Freestyle				18
		Pulse 6 (60/300)				19
		Pulse DC11224 1b 12				20
		Pulse DC11224 1b 24				21
		Pulse Ford CI220				23
		PSA Pulse 1 (low side)				24
		MBN Pulse 1b 24V				25
Internal impedance	Rs	ext.		+ 10 Ohm internal	Ohm	0
Only available with Pulse Jaso A2		0.4			Ohm	4
Only available with Pulse Jaso D2		0.9			Ohm	9
		2			Ohm	20
		4			Ohm	40
		5			Ohm	50
		10			Ohm	100
		15			Ohm	150
		20			Ohm	200
		25			Ohm	250
		30			Ohm	300
		35			Ohm	350
		40			Ohm	400
		45			Ohm	450
		50			Ohm	500
		55			Ohm	550
		60			Ohm	600
		65			Ohm	650
		70			Ohm	700
		75			Ohm	750

			80		Ohm	800
			85		Ohm	850
			90		Ohm	900
			95		Ohm	950
			100		Ohm	1000
			200		Ohm	2000
			400		Ohm	4000
			450		Ohm	4500
Test time	T	00:01	999:59 / endl.	1	mm:ss	1 – 59999 / 60000
Repetition	t1	0.2	99.0	0.1	s	2 – 990
DC Off time	t2	0.00	10000.00	0.01	ms	0 – 1000000
Burst duration	t4	0.1	999.9	0.1	ms	1 – 9999
Time betw. Burst	t5	0	9999 / man	1	ms	0 – 9999 / 10000
Duration time	td	50	10000	50	us	50 – 10000
Rise time	tr	1	10		us	1 – 10
Triggering	tri	auto	man			0 – 1
Voltage, Start voltage, End voltage	U, Us, Ue	20	600	5	V	20 – 600
Voltage, Start voltage, End voltage	U, Us, Ue	25	1000	5	V	25 – 1000

Trigger mode

When AUTO trigger is pre-selected the events will be released by the simulator itself. In case of MAN trigger a single event is released via the interface or the external trigger connector.

If the simulator is ready to be triggered a command is sent out.

For the parameters f, td and tr please keep to care to the limitations of the UCS 200N.

$$\frac{f * td}{tr} \leq 10000 \ s^{-1} \qquad f * td \leq 1000$$

Otherwise the parameters will be limited as follows:

U	:	no change
td	:	15ms
tr	:	300ms
f	:	5kHz

Following a message at the interface that the generator has limited the actual test values.

Parameter of the remote commands

Technical Comments:

The firmware is internally organized in 3 blocks.

Block 0:   Setup / Coupling Network
Block 1:   Micropulses
Block 2:   Burst

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.
To use the **UCS200N as coupling network** for external devices, please switch to **block 0** (BS,0;)
After setting the equipment to remote mode (UCS200N: UC) it has to be checked which block is the actual one (BW command).

U commands (initalization)

Command	Syntax	Description
UC	UC;	UC checks the connection of the interface. Additionally it will be checked if an external coupling network is connected. The UCS sends back:
		UCS200N,SWN,Version,Class,Code
		- 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.

B commands (Initialization)

Command	Syntax	Description
BS	BS,1;	The BS command sets a new block:
	BS,2;	Block 0: Setup / Coupling Network
	BS,0;	Block 1: Micropulses
		Block 2: Burst
		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 LD200.

U commands (Setup)

Command	Syntax	Description
UC	UC;	UC checks the connection of the interface. Additionally it will be checked if an external coupling network is connected. The UCS sends back: UCS200N,SWN,Version,Class,Code - 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.
UM	UM,U,pul,pol,Rs,t1,t2,tri, coup,n	The UM command sends the parameters **for Micropulse**
US	US,U, tr,td,pol,Rs,t1,t2, tri,coup,n	The US command sends the parameters **for Freestyle**
UU	UU,Us,Ue,dU,pul,pol,Rs, t1,t2,tri,coup,n	The UU command sends the parameters for the routine change voltage; start is Us, after n pulses the voltage is changed by dU until Ue is reached. **Only for Micropulse**
UB	UB,U,f,t4,t5,coup,pul,T	The UB command sends the parameters **for Pulse 3a/3b**
UV	UV,Us,Ue,dU,f,t4,t5,coup, pul,T	The UV command sends the parameters for the routine change voltage; start is Us, after n pulses the voltage is changed by dU until Ue is reached. **Only for 3a/3b**
UF	UF,U,f1,f2,f3,df,t4,t5,coup, pul,T	The UF command handles the parameters for the mode 'frequency change' after T by Δf. **Only for 3a/3b**
UZ	ZU,U,f,t4,t5,coup,pul,T	The UZ command handles the parameters for 'random burst release' **Only for 3a/3b**

A commands (run)

Command	Syntax	Description
AA	AA;	The AA command starts the test procedure.
AT	AT;	The AT command triggers one single pulse, if the trigger mode has previously been set on the MAN mode.
AS	AS;	The AS command stops a running test.
AW	AW;	The AW command continues a stopped test (Pause).
AR	AR;	The AR command stops a running test and resets the equipment to the local mode (reset of the remote mode).

N commands (Change)

Command	Syntax	Description
NU	NU,U;	The NU command sends a new voltage level. The change is realized online.
NK	NK,pul;	The NK command changes the pulse type.
NW	NW,Rs;	The NW command sends a new value for the source impedance. The change is realized on-line.
NP	NP,pol;	The NP command changes the polarity. The change is realized on-line.
NR	NR,rep;	The NR command sends a new value for the repetition rate. The change is realized on-line.
NO	NO,to;	The NO command sends a new value for Toff. The change is realized on-line.
NT	NT,tri;	The NT command sends a new trigger mode. The change is realized online.
NF	NF,f;	The NF command sends a new frequency value. This handling can be realized on-line during a running test.
ND	ND,td;	The ND command sends a new value for burst duration. This handling can be realized on-line during a running test.
NC	NC,cpl;	The NC command sends a new value for coupling. This handling can be realized on-line during a running test.

Back Messages

Message	Description
RR,00;<LF>	The test procedure was stopped correctly.
RR,01;<LF>	One single pulse was triggered.
RR,02;<LF>	Ready, the simulator is ready to be discharged. MAN trigger mode.
RR,05;<LF>	Fail 1
RR,06;<LF>	Fail 2
RR,07;<LF>	Continue after Fail 2 RR,06;<LF>
RR,08;<LF>	Over temperature
RR,09;<LF>	Continue after over temperature
RR,10;<LF>	Error appears in a transmitted data string. Too much or too less parameters were transmitted.
RR,11;<LF>	Test Start is not possible. Test On key is not pushed in or the safety circuit is not closed.
RR,13;<LF>	No, or wrong CNA connected. The required coupling mode can not be selected.
RR,14;<LF>	Automatic limitation of transmitted data.
RR,15;<LF>	Check sum error.
RR,20;<LF>	Not correctable limitation error.
RR,30;<LF>	Fail 2 without break

Examples

Function	Send	Receive
Start Up	UC;5	
Set pulse parameters for one pulse and start. U (Vs) = 100 V pul (Pulse) = 1 (12V) pol (Polarity) = Negative Rs (Ri) = 10 Ohm rep (t1) = 0.5 s to (t2) = 200 ms tri (Trigger) = Auto cpl (Coupling) = + n (Events) = 8		
Set pulse parameters for an iteration and then program stop. U (Vs) = 25 - 30 V pul (Pulse) = 1 (12V) pol (Polarity) = Negative Rs (Ri) = 10 Ohm rep (t1) = 0.5 s to (t2) = 200 ms tri (Trigger) = Auto cpl (Coupling) = + n (Events) = 8		