

Z-Max Receiver

Z-Max Serial Commands

Supplement to the Z-Family Reference Manual

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This supplement is not a contractual document.

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1. Set Commands

RDP,CHN

Function:

Sets the radio channel index or, outside of the USA, the Thales radio frequency.

Command:

Format #1:

\$PASHS,RDP,CHN,d<CR><LF>

Format #2

\$PASHS,RDP,CHN,f<CR><LF>

Return message:

None.

Parameter	Description	Range
d	Radio channel index	0-15
f	Radio frequency (only for Thales radio)	410-470 MHz

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

\$PASHS,RDP,LSP,d<CR><LF>

\$PASHS,RDP,SST,d<CR><LF>

Comment:

Format #2 is only used outside of the USA to set the Thales radio frequency. In this case, the channel index is not used to select the Thales radio frequency.

Example:

\$PASHS,RDP,CHN,1<CR><LF>

(Sets radio channel index to 1)

\$PASHS,RDP,CHN,464.5<CR><LF>

(Sets Thales radio frequency to 464.5 MHz)

RDP,FRM

Function:

Turns on or off the Thales radio frame.

Command:

\$PASHS,RDP,FRM,s<CR><LF>

Return message:

None.

Parameter	Description	Range
s	Thales radio frame status	NONE or THL

See also:

\$PASHQ,RDP,FRM<CR><LF>

Example:

\$PASHS,RDP,FRM,NONE<CR><LF> (Turns Thales radio frame off)

RDP,LOD

Function:

Loads radio parameters.

Command:

\$PASHS,RDP,LOD,c<CR><LF>

Return message:

None.

Parameter	Description	Range
c	Port connected to the radio	A, B, D

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

Example:

\$PASHS,RDP,LOD,D<CR><LF> (Loads radio parameters through Port D)

RDP,LSP

Function:

Sets radio link speed.

Command:

\$PASHS,RDP,LSP,d<CR><LF>

Return message:

None.

Parameter	Description	Range
s	Radio link speed	4800, 9600, 19200

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

\$PASHS,RDP,SST,s<CR><LF>

\$PASHS,RDP,CHN,d<CR><LF>

Comment:

This command is only for PDL radios.

Example:

\$PASHS,RDP,LSP,9600<CR><LF> (sets PDL radio link speed to 9600 bps)

RDP,OFF

Function:

Powers off the internal radio.

Command:

\$PASHS,RDP,OFF<CR><LF>

Return message:

None.

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

Example:

\$PASHS,RDP,OFF<CR><LF> (Powers off the internal radio)

Comment:

This command is only for the internal radio (radio receiver). External radio cannot be turned off using this command.

RDP,ON

Function:

Powers on the internal radio.

Command:

\$PASHS,RDP,ON<CR><LF>

Return message:

None.

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

Example:

\$PASHS,RDP,ON<CR><LF> (Powers on the internal radio)

Comment:

This command is only for the internal radio (radio receiver). External radio cannot be turned on using this command.

RDP,PRG

Function:

Programs the radio with the user-set parameters.

Command:

\$PASHS,RDP,PRG,c<CR><LF>

Return message:

None.

Parameter	Description	Range
c	Port connected to the radio	A, B, D

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,SST,s<CR><LF>

\$PASHS,RDP,LSP,d<CR><LF>

\$PASHS,RDP,CHN,d<CR><LF>

\$PASHS,RDP,CHN,f<CR><LF>

Example:

\$PASHS,RDP,PRG,D<CR><LF> (Programs the radio through Port D)

RDP,SST

Function:

Sets radio sensitivity.

Command:

\$PASHS,RDP,SST,s<CR><LF>

Return message:

None.

Parameter	Description	Range
s	Radio sensitivity	"LOW", "MED", "HIG" or "OFF"

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

\$PASHS,RDP,LSP,d<CR><LF>

\$PASHS,RDP,CHN,d/f<CR><LF>

Comment:

This command is only for PDL radios.

Example:

\$PASHS,RDP,SST,HIG<CR><LF> (Sets PDL radio sensitivity to "high")

RDP,TYP

Function:

Set radio type for loading/programming/power-off (radio) through serial command.

Command:

\$PASHS,RDP,TYP,s<CR><LF>

Return message:

None.

Parameter	Description	Range
s	Radio type	"PDL" or "THL"

See also:

\$PASHS,RDP,LOD,c<CR><LF>

\$PASHS,RDP,PRG,c<CR><LF>

\$PASHS,RDP,OFF

Example:

\$PASHS,RDP,TYP,PDL<CR><LF> (Sets radio type to Pacific Crest Radio)

MDM,ON

Function:

Turns modem on.

Command:

\$PASHS,MDM,ON[,c,d1 [,d2]]<CR><LF>

Parameter	Description	Range
c (optional)	Serial port to which modem is connected	"A" or "D"
d1 (optional)	Modem type index: 0 – Robotics Sportster 1 – Telebit Worldblazer 2 – Telebit Trailblazer 3 – Telebit Cellblazer 4 – USER DEFINED 5 – Motorola g18 GSM Cellular (the only GSM Cellular supported by Z-Max)	0 - 5
d2 (optional)	Interface Baud Rate settings (index). Default: factory setting used	3 – 8 (2400 – 57600)

Note: GSM Cellular must be connected to port D on Z-Max at 19200 baud rate.

Return message:

ACK or NAK

See also:

\$PASHS,MDM,OFF

Example:

\$PASHS,MDM,ON,D,5,6 <CR><LF>

Option required:

Remote monitor option (M).

MDM,OFF

Function:

Turns modem off.

Command:

\$PASHS,MDM,OFF<CR><LF>

Return message:

ACK or NAK

See also:

\$PASHS,MDM,ON

Option required:

Remote monitor option (M).

MDM,PAR

Function:

Sets modem parameters.

Command:

\$PASHS,MDM,PAR[,PIN,s][,PHN,s][,BND,d][,ADL,c][,RNO,d]<CR><LF>

Parameter	Description	Range
PIN,s	Needed to enable the modem SIM Card. Some GSM modems are pin-ready and do not require PIN	4 – 8 digits
PHN,s	Phone number to call (Base station phone number)	1 – 11 digits
BND,d	0 for 1900 GSM band, 1 for 900/1800 MHz GSM band	0 - 1
ADL,c	Y for “Auto-dial” mode, or N for “manual-dial” mode	‘Y’ or ‘N’
RNO,d	Number of re-dials if it can't connect the first time. The default is 2, which means that modem will dial three times before it gives up	0 -15

Return message:

ACK or NAK

See also:

\$PASHQ,MDM

Example:

\$PASHS,MDM,PAR,PIN,283645,PHN,14086151234,BND,0<CR><LF>

Option required:

Remote monitor option (M).

MDM,INI

Function:

Initializes modem.

Command:

\$PASHS,MDM,INI<CR><LF>

Return message:

\$PASHR,MDM,INI,OK*7A<CR><LF>

\$PASHR,MDM,INI,FAIL*7C<CR><LF>

Option required:

Remote monitor option (M).

MDM,DAL

Function:

Dials number stored in memory or hangs up.

Command:

\$PASHS,MDM,DAL,c <CR><LF>

Parameter	Description	Range
c	1 – Dial number stored in memory 0 – Hang up	0 - 1

Return message:

ACK or NAK

Note: ACK is sent when modem starts dial or hang-up sequence. To verify if dial/hang-up was a success, check modem status using \$PASHQ,MDM command.

See also:

\$PASHQ,MDM

\$PASHS,MDM,PAR,PHN,s

Option required:

Remote monitor option (M).

PRT

Function:

Sets the communication mode for Port B (RS422 or RS232).

Command:

\$PASHS,PRT,B,s<CR><LF>

Return message:

None.

Parameter	Description	Range
s	Communication mode	"422" or "232"

See also:

\$PASHQ,MDP<CR><LF>

Example:

\$PASHS,PRT,B,422 Sets Port B to RS422 mode.

Comments:

This command only works for Port B.

RTC,WAT

Function:

Specifies transmission time delay between Type 18 and Type 19 messages (or between Type 20 and Type 21 messages).

Command:

\$PASHS,RTC,WAT,d<CR><LF>

Return message:

None.

Parameter	Description	Range
d	Time delay in milliseconds	d has to be less than the Type 18/19 (or 20/21) interval, and $d \% 1000 = 0$.

Example:

\$PASHS,RTC,WAT,1000<CR><LF> Sets 1-second transmission time delay between Type 18 and Type 19 (or Type 20/21).

Comment:

This command is used only when the Thales radio is used for the data link and RTCM18/19 or RTCM 20/21 are used.

2. Query Commands

BAT

Function:

Queries internal battery status.

Command:

\$PASHQ,BAT,[c1]<CR><LF>

(c1 - Response is sent out through the specified com. port A..C)

Return message:

\$PASHR,BAT,d1,d2,d3,d4,d5,d6*cc

Parameter	Description	Range
d1	d1 is the voltage in mV.	
d2	d2 is the average current in mA.	
d3	d3 is the consumed power in mW. Equal to d1×d2.	
d4	d4 is the average time to empty in minutes (If internal battery is not the current power source for Z-Max, this number is meaningless.)	
d5	d5 is the remaining capacity in mA hours. Roughly equal to d2×d4÷60	
d6	d6 is the internal battery status. Used for engineering troubleshooting only.	

See also:

\$PASHQ,POW<CR><LF>

Example:

\$PASHQ,BAT<CR><LF>

\$PASHR,BAT,V:8030,I:399,W:3203,T:1236MIN,C:7794MAH,C:0xc0*55

BEEP

Function:

Queries beeper status.

Command:

\$PASHQ,BEEP<CR><LF>

Return message:

\$PASHR,BEEP,s*h<CR><LF>

Parameter	Description	Range
s	Beeper status	ON/OFF

MDM

Function:

Queries current modem parameter settings.

Command:

\$PASHQ,MDM,[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Option required:

None.

Return message:

\$PASHR,MDM,port,baud,state,type,s1,s2,s3,s4,s5,s6, PIN=s7,PHN=s8, BND=s9,ADL=s10,RNO=s11
<cs><CR><LF>

Return Parameters	Description	Range
port	Modem port	'A' - 'D'
baud	Modem baud rate	3 - 8
state	Modem state	OFF,ON,INIT,DI ALING,ONLINE
type	Modem type index, 5 for GSM Cellular	0 - 5
s1	Initialization string	
s2	Configuration string	
s3	'to command mode' string	
s4	'to data mode' string	
s5	Hang up command	
s6	End of line indicator	CR, LF or CRLF
s7	Personal Identification Number	4 - 8 digits
s8	Base station phone number	1 - 20 digits
s9	GSM band	1900 or 800/1600
s10	Auto dial mode	'Y' or 'N'
s11	Max number or redial attempts	0 - 15
cs	checksum	

See also:

\$PASHS,MDM,PAR,...<CR><LF>

Example:

\$PASHR,MDM,D,6,OFF,5,AT&F0V1X4E0,ATS0=1,+++,ATO,ATH,CRLF,PIN=123456,PHN=1112222,BND=1
900,ADL=N,RNO=0*67

MDM,LVL

Function:

Queries current modem signal level.

Command:

\$PASHQ,MDM,LVL,[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Option required:

None

Return message:

\$PASHR,MDM,LVLlevel <cs><CR><LF>

Return Parameters	Description	Range
level	Signal level	-1: Information not available 0-5: current value of signal level

See also:

None.

Example:

\$PASHR,MDM,LVL,2*67

MDP

Function:

Queries Port B's communication mode status.

Command:

\$PASHQ,MDP,[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Return message:

\$PASHR,MDP,B,s*h

Return Parameters	Description	Range
s	Port B's communication mode	"RS422" or "RS232"

See also:

\$PASHS,PRT,B,s,<CR><LF>

Example

\$PASHR,MDP,B,RS232*5D<CR><LF>

RDP

Function:

Returns the current UHF radio parameters.

Command:

\$PASHQ,RDP,[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Return message:

PDL radio:

\$PASHR,RDP,s1,d1,d2,f1,f2,c1,d3,s2,c2*h

Thales radio:

US customer: \$PASHR,RDP,s1,d1,d2,f1,d3,s2,c1*h

European customer: \$PASHR,RDP,s1,d1,f1,d2,s2,c1*h

PDL radio:

Return Parameters	Description	Range
s1	Radio type	PDL
d1	Radio/receiver interface baud rate	bps: 1200, 2400, 4800, 9600, 19200, 38400
d2	Current channel index	00-15
f1	Current channel's receive frequency	410-470 MHz
f2	Current channel's transmit frequency	410-470 MHz
c1	Digisquelch/sensitivity	H: high M: medium L: low O: off
d3	Link speed	4800, 9600, and 19200 bps
s2	Serial number	
c2	Port connected to the radio	A,B,D
H	Checksum	

Thales Radio:

US customer:

Return Parameters	Description	Range
s1	Radio type	THL
d1	Radio/receiver interface baud rate	19200 bps, fixed
d2	Current channel index	0-15, if the frequency can be found in the channel table; 16, frequency cannot be found in the channel table
f1	Current frequency	410-470 MHz
d3	Link speed	4800 bps, fixed
s2	Version	RUHFV*****: receiver; EUHFV*****: transmitter
c1	Port connected to the radio	A,B,D
H	Checksum	

European customer

Return Parameters	Description	Range
s1	Radio type	THL
d1	Radio/receiver interface baud rate	19200 bps, fixed
f1	Current frequency	410-470 MHz
d2	Link speed	4800 bps, fixed
s2	Version	RUHFV*****: receiver; EUHFV*****: transmitter
c1	Port connected to the radio	A,B,D
H	Checksum	

See also:

\$PASHQ,RDP,USR

Example:

Query: \$PASHQ,RDP<CR><LF>

Response: \$PASHR,RDP,PDL,19200,00,464.5000,00.0000,H,9600,1094221,D*55<CR><LF>

Query: \$PASHQ,RDP<CR><LF> --- U.S. customer

Response: \$PASHR,RDP,THL,19200,00,464.5000,4800,RUHFV20100,D*69<CR><LF>

Query: \$PASHQ,RDP<CR><LF> --- European customer

Response: \$PASHR,RDP,THL,19200,464.0000,4800,EUHFV10300,B*50

Comment:

If the radio has never been loaded or the most recent loading was unsuccessful, the query will just return the radio type selected by the user.

Example:

\$PASHQ,RDP

\$PASHR,RDP,PDL*6A

RDP,CHT

Function:

Returns the radio channel table.

Command:

\$PASHQ,RDP,CHT[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Return message:

\$PASHR,RDP,CHT,s,d1,{d2,f1,f2}n*h

\$PASHR,RDP,CHT*h

Return Parameters	Description	Range
s	Radio type	"PDL" or "THL"
d1	Total available channels	1-16
d2	Channel index	0-15
f1	Receive frequency	410-470 MHz
f2	Transmit frequency	410-470 MHz
n	Loop times for this data set	n = d1
h	Checksum	

See also:

None

Comment:

If the radio has not been loaded or the radio is has no channel table (Thales radio for European customer), the response will be Format 2.

Example:

Query: \$PASHQ,RDP,CHT<CR><LF>

Response: \$PASHR,RDP,CHT,PDL,02,00,464.5000, 0.0000,01,464.5500, 0.0000*3B

Query: \$PASHQ,RDP,CHT<CR><LF>

Response: \$PASHR,RDP,CHT,THL,02,00,444.0000, 0.0000,01,444.5500, 0.0000*36

Query: \$PASHQ,RDP,CHT

Response: \$PASHR,RDP,CHT*65

RDP,FRM

Function:

Returns Thales radio's frame status.

Command:

\$PASHQ,RDP,FRM[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Return message:

\$PASHR,RDP,FRM,s*h

Return Parameters	Description	Range
s	Thales radio frame status	"ON", "OFF"
h	Checksum	

See also:

\$PASHS,RDP,FRM,s<CR><LF>

Example:

Query: \$PASHQ,RDP,FRM,<CR><LF>

Response \$PASHR,RDP,FRM,THL,OFF*7C

RDP,TYP

Function:

Returns the radio type selected by the user through the serial command or the radio type determined by the front panel loading process, whichever goes last.

Command:

\$PASHQ,RDP,TYP[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Return message:

\$PASHR,RDP,TYP,s*h

Return Parameters	Description	Range
s	Radio type	"PDL" or "THL", default is "THL"
h	Checksum	

See also:

\$PASHS,RDP,TYP,s<CR><LF>

Example:

Query: \$PASHQ,RDP,TYP<CR><LF>

Response: \$PASHR,RDP,TYP,THL*1B

RDP USR

Function:

Returns the user's current setting after a successful loading.

Command:

\$PASHQ,RDP,USR[c1]<CR><LF>

(c1 -Response message is sent to the specified com. port A..D)

Return message:

PDL radio:

\$PASHR,RDP,USR,s1,d1,f1,f2,c1,d2,c2*h

Thales radio:

US customer: \$PASHR,RDP,USR,s1,d1,f1,c1*h

European customer: \$PASHR,RDP,USR, s1,f1,c1*h

PDL radio:

Return Parameters	Description	Range
s1	Radio type	PDL
d1	Channel index set by user	00-15
f1	Receive frequency of user-selected channel	410-470 MHz
f2	Transmit frequency of user-selected channel	410-470 MHz
c1	Digisquelch/sensitivity set by user	H: high M: medium L: low O: off
d2	Link speed set by user	4800, 9600, 19200 bps
c2	Port connected to the radio	A, B, D
h	Checksum	

Thales Radio:

US customer:

Return Parameters	Description	Range
s1	Radio type	THL
d1	Channel index set by user	d1 = 0-15, if the frequency can be found in the channel table. d1 = 16, when radio is loaded, its frequency cannot be found in the channel table, and user hasn't set the channel number yet.
f1	Frequency of user-selected channel	410-470 MHz
c1	Port connected to the radio	A, B, D
h	Checksum	

European customer:

Return Parameters	Description	Range
s1	Radio type	THL
f1	Radio frequency set by user	410-470 MHz
c1	Port connected to the radio	A, B, D
h	Checksum	

See also:

\$PASHQ,RDP

Example:

Query: \$PASHQ,RDP,USR<CR><LF>

Response: \$PASHR,RDP,USR,PDL,00,464.5500,464.5500,O,4800,B*1B

Query: \$PASHQ,RDP,USR<CR><LF>

Response: \$PASHR,RDP,USR,THL,00,464.0000,B*64

Query: \$PASHQ,RDP,USR

Response: \$PASHR,RDP,USR,THL,16,464.0000,B*63

Query: \$PASHQ,RDP,USR<CR><LF>

Response: \$PASHR,RDP,USR,THL,464.0000,B*48

Comment:

If the radio has never been loaded or the most recent loading was unsuccessful, the query will just return the radio type selected by user.

Example:

\$PASHR,RDP,USR,PDL*1A

WARN,MDM

Function:

Queries current warning for GSM.

Command:

\$PASHQ,WARN,MDM<CR><LF>

Return message:

\$PASHR,WARN,MDM,a,b,c*h

Repeat of \$PASHR,WARN for all the pending errors and warnings.

Examples:

\$PASHR,WARN,MDM,1,2,3*55

\$PASHR,WARN,MDM,2,2,4*57

Return Parameters	Description	Range
a	Current line number	1-10
b	Total lines number	1-10
c	Warning number	0-32 0: no warning 1: Modem not detected 2: Modem not responding 3: Modem initialization error 4: Enter phone number 5: Modem no carrier 6: Modem line busy 7: Modem insert SIM card 8: Modem invalid Pin 9: Modem SIM card lock 10: Modem SIM card Failure

