How to send a command

Each command comprises of two upper case letters (header) along with options as required. All commands use ASCII code which **MUST BE IN UPPER CASE** (except for the ⇧⇩⇦⇨ arrow keys and remote ID command (^A) which are non-printable and use the control codes of ASCII).

A multiple command entry is only valid where specified. Where a multiple command entry is allowed, each command MUST be separated with a space "h20" (HEX DECIMAL). Each command is completed with a [CR] or [CR] [LF]. Although there is no local echo, either [CR] or specified response should come back from the receiver after confirming the correct command.

If no response has been gained after a short while, the receiver has failed to receive the command properly. Send a [CR] then re-send the command. Should problems persist, check your connections and try reducing the RS232 baud rate.

AR8200 remote indication

When the AR8200 has received a command via the RS232C port the receiver's LCD will display the ⊙ symbol. The AR8200 will appear frozen while RS232 operation is in progress. To return operation to the radio keyboard, PUSH☞ (ENT) on the AR8200.

Command index

^A	Remote ID	PP	Priority channel
AF	Automatic Frequency Control	PQ	Wait time for LC2
AM	Bandscope analyser	PR	List pass frequencies
AP	Auto power off	PW	Write search pass frequency
AS	Search auto store	QM	Quick memory
AT	Attenuator	QP	Power off
AU	Auto mode	QS	Delete search bank
BM	Scan bank linking	RF	Set receive frequency
BP	Search bank protect	RX	Respond with current data
BS	Search bank linking	SA	Search audio squelch
CF	Bandscope centre frequency	SB	Search level squelch
CN	CTCSS operation	SC	Voice invertor frequency
DA	Dial (VFO) audio squelch		(requires the optional VI8200 slot card)
DB	Dial (VFO) level squelch	SD	Search hold / delay time
DC	Bandscope date centre frequency	SE	Set search data
DD	Dial (VFO) delay	SH	Set offset step
DP	Dial (VFO) pause	SI	Voice invertor on/off
DS	Bandscope ****		(requires the optional VI8200 slot card)
DT	Display frequency (on/off)	SL	Lower search frequency limit
EX	Exit RS232	SM	Start select scan
GA	Select scan	SP	Search pause time
GD	Release select scan channels	SR	Recall search parameters
GM	Scan parameter selection	SS	Start search
GR	Select scan recall	ST	Tuning step size
GS	Search parameter selection	SU	Upper search frequency limit
GV	VFO status list	SW	Bandscope span width
LB	LCD contrast	TB	Set text description for bank
LC	Frequency & level status	TI	Set priority interval
LM	Signal meter reading	TM	Memory text
LS	Tone eliminator frequency	TS	Text search
	(requires optional TE8200 slot card)	TT	Search bank text
MA	List a block of memory channels	VA	Set VFO A
MC	Monitor control (forced squelch)	VB	Set VFO B
MD	Receive mode	VF	Select 1-VFO mode
MF	Bandscope set marker frequency	VL	Beep volume
MP	Set memory channel pass	VR	Firmware version
MQ	Delete memory channel or bank	VS	VFO search
MR	Memory recall	VT	VFO auto-store
MS	Scan mode	VV	VFO scan
MW	Memory bank resizing	WM	Write protect bank
MX	Memory write	WP	Write protect enable
NL	Noise limiter	XA	Scan audio squelch
OF	Frequency offset	XB	Scan level squelch
OL	Set and list frequency offset	XD	Memory scan delay time
OM	Opening message	XM	Mode scan
PA	Power save	XP	Scan pause setting
PC	Protect memory channel	UP/DOWN	Tuning arrows
PD	Delete pass frequency		
PH	Bandscope peak hold		
PI	Power save interval		

Detailed command listing for the AR8200

^A   Remote ID

Hex value 0x01
Accepts a value *nn* in the range 01-99

AF   AFC

To set: AF*n*<CR>
n=0 (off), *n*=1 (on)
To read: AF<CR>
Response is AF*n*
Note: Not valid in WFM, USB, LSB or CW

AM   Bandscope Analyser Mode

AM<CR> starts bandscope mode
AM<CR> repeated when in bandscope mode generates a report
in the following format:
AM PH0 CF0091000000 MF0091000000 SW1

AP   Auto Power off

AP*nn*<CR>
nn=00 (off)
nn=05-95 (sets 0.5 - 9.5 hours to power off following last active transmission)
To read: AP<CR>
Responds with AP*n.n* (where *n.n* is the delay time in hours or 0.0 = off)
Note: nn must be in multiples of 0.5 hours

AS   Search auto-store on/off

To set: AS*n*<CR>
n=0 (off),
n=1 (on - write frequency into bank J),
n=2 (on - same as 1 but erase previous channels to create space
for new entries),
To read: AS<CR>
Response is either *n*=0 (off) or *n*=1 (on)
Note: Stores into the search group nominated by GS

AT   Attenuator

To set: AT*n*<CR>
n=0 (off),
n=1 (on)
To read: AT<CR>
Response is AT*n*, where *n*=0 (off) or 1 (on)

AU   Auto mode

To set: AU*n*<CR>
n=0 (off), *n*=1 (on)
To read: AU<CR>
Response is AU*n* MD*m*

BM   Scan bank link setting

To read: BM<CR>
Responds with: BM *nnnnnnnnnnnnnnnnnnnn*,
where *n* = character corresponding to linked bank (A - J or a - j), or - (not linked)
Example: BM-BCD--------------- indicates that banks B, C & D are linked
To set: BM *nnnnnnnnnnnnnnnnnnnn*<CR>
Where *n* is a character which specifies a bank which will have its link status
toggled (A - J or a - j). There is no need to enter a "-" to avoid changing a
bank link
BM%%<CR> clears all link settings
BM%% *nnnnnnnnnnnnnnnnnnnn*<CR> clears all links except those specified
Examples: BM abc toggles the link status for banks a, b & c
BM%% bc clears the link status for all banks except b & c
Note: As defined by GM.

BP   Search Bank Protect

To set: BP*n*
n=0 (off), *n*=1 (on)
To read: BP<CR>
Response is BN*n*

BS   Bank link search

To read: BS<CR>
Responds with: BS *nnn...n*, where *n* = character corresponding to linked bank,
or - (not linked). The search bank indicators range from A - T and a - t
(40 search banks in all)
Example: BS-BC---F-HIJ-------R--a---e--h-j----no---st
Indicates that the banks shown are linked.

To set: BS *nnn...n*<CR>
Where *n* is a bank indicator in the range A-T or a-t
BS%%<CR> clears all link settings
BS%%*nnn...n*<CR> clears all link settings except those listed

Examples:
BSABRabcmp<CR> toggles the link state for the banks shown
BS%% BFT<CR> clears all links except for the banks B, F & T
Note: As defined by GS.

CF	Bandscope centre frequency	To read: CF<CR> Responds with CF*nnnnnnnnnn* To set: CF*nnnnnnnnnn*<CR> or CF*nn.nnn* Set the bandscope centre frequency to the specified frequency (expressed in Hz or MHz depending on format) *Note: Maximum resolution is 10kHz for spans 10MHz - 500kHz; maximum resolution is 2kHz for spans 200kHz-100kHz. Frequencies below 2kHz are not accepted.*

CN   CTCSS operation

Requires CT8200 option
To read: CN<CR>
Responds with CN*nn* *nn*=0 (off), *nn*=01 (auto), *nn*=06-37
(a frequency from the following table)

nn	freq	*nn*	freq	*nn*	freq	*nn*	freq
00	off	10	136.5	20	241.8	30	177.3
01	auto	11	141.3	21	250.3	31	183.5
		12	146.2	22	67.0	32	189.9
		13	151.4	23	71.9	33	196.6
		14	156.7	24	74.4	34	199.5
		15	162.2	25	77.0	35	206.5
06	94.8	16	167.9	26	79.7	36	229.1
07	100.0	17	173.8	27	82.5	37	254.1
08	103.5	18	179.9	28	85.4		
09	107.2	19	186.2	29	88.5		
0A	110.9	1A	192.8	2A	91.5		
0B	114.8	1B	203.5	2B	97.4		
0C	118.8	1C	210.7	2C	69.4		
0D	123.0	1D	218.1	2D	159.8		
0E	127.3	1E	225.7	2E	165.5		
0F	131.8	1F	233.6	2F	171.3		

To set: CN*nn*<CR>, where *nn* is a two digit value from the table

DA   Dial (VFO) audio squelch

To set: DA*nnn*<CR>
nnn=000 - 255 (where 000=audio squelch off)
To read: DA<CR>
Responds with DA *nnn* or DA+*nnn* (+ = current audio squelch level >= *nnn*)

DB   Dial (VFO) level squelch

To set: DB*nnn*<CR>
nnn=000 - 255 (where 000=level squelch off)
To read: DB<CR>
Responds with DB *nnn* or DB+*nnn* (+ = current level >= *nnn*)

DC   Data centre Frequency

To read: DC<CR>
Responds with DC *nnn*
Example: *DC000*
Note: Valid only when bandscope is on
Note: Refer to the LM command

DD   Dial (VFO) delay

To set: DD*nn*<CR>
Where *nn* = 00 - 99 or FF (indicating 0.0 - 99 seconds or FF=hold)
To read: DD<CR>
Responds with DD*n.n*

DP   Dial (VFO) pause

To set: DP*nn*<CR>
Where *nn* = 00 or 01 - 60 (indicating 1 - 60 seconds or off)
To read: DP<CR>
Responds with DD*nn*

DS   Data analysis (bandscope)   DS<CR>

Responds with wave form data from the bandscope. This is valid only when the bandscope is functioning. Data is output on completion of each sweep over the span, data is not continuous so response will not be instantaneous.
Each datum is assigned a number totalling 1024 with 16HEX.
The minimum value of each datum is [2] and maximum [F] by 16HEX.
[0] = not measuring, out of span (not 10MHz or 200kHz span).
[1] = out of specification of receive frequency.
Note: *When the span has been narrowed while measuring takes place, only the newly selected span range will be renewed with fresh data. Care must be taken when the marker frequency is replaced with the centre frequency.*
Example of data analysis response:

```
DS<CR>
DS1023 : 2222222222222222 2222222222222222
DS0991 : 2223344443222222 2233322334432233
DS0959 : 2223AFB722223322 2222354222222233
DS0927 : 2222222248A9632 2222222498532222
DS0895 : 2232222456522222 2389A64223344322
DS0863 : 2222222233343222 2222442222333222
   ~     ~    ~    ~    ~    ~     ~     ~    ~
DS0095 : C862222552224652 2222235422222222
DS0063 : 2238B96322255222 2233322233223332
DS0031 : 23345F9654222222 3334334332222222
```
Note: *Data is always sent 32 lines at a time.*

Frequency is obtained from the data of the centre frequency. Even if the span is selected as 5MHz, 500kHz or 100kHz, the response is always based on 10MHz or 20kHz.
When the marker is moved, the data between the centre frequency and the new marker frequency will be renewed.
Frequency data is still obtainable from the centre frequency.
Note: *When a centre frequency is entered, all figures (numbers) except the sweep range (upper and lower frequencies) will be void.*

```
                        ⇩ centre frequency
DS1023 : 2222222222222483 224535AD83332142
                        ⇧ centre frequency
```

There are 1000 pieces of data over a 10MHz span in 10kHz steps, plus 24 pieces in reserve.
Note: *Data is sent continuously, either buffer memory is required or high speed processing is required in order not to miss data.*

```
DS0543 : 345354339AFD9633 59564323433379AD
DS0511 : 8634345443369642 2532423333458423
                        ⇩ -10MHz
DS0031 : 233459A654222222 3334334332222222
```

All figures are data number (marker frequency = centre frequency)

Span	10MHz	5MHz	2MHz	1MHz	50kHz
Upper frequency	1023	800	620	572	545
Centre frequency	512	512	512	512	512
Lower frequency	12	260	410	442	482

Each one represents 10kHz

Span	200kHz	100kHz
Upper frequency	118	92
Centre frequency	64	64
Lower frequency	00	29

Each one represents 2kHz

DT   Display frequency text   To set: DT*n*

n=0 (off), *n*=1 (on)
Note: *Frequency display is blank when n=1*
To read: DT<CR>
Response is DT*n*

EX   Exit RS-232   EX<CR>

Terminates remote operation via the RS-232 and restores normal operation from the radio's front panel.

GA	Select Scan on/off	To set: GA*n*<CR> *n*=0 (off), *n*=1 (on)
GD	Release select scan channel	To set: GD*nn*<CR> *nn* = channel (00-49) To clear all memory select scan settings, use GD%%<CR> To read: GD<CR> Response is GD*nn* **Note:** *A select scan channel number will be incremented each time select scan channel has been released. Confirmation is via the GR command*
GM	Scan parameter selection/status	To set: GM*n*<CR> Tags the current memory with label *n* = 0 (fixed presets only) - 9 (user definable) To read: GM<CR> **Example:** GM GM0 XD2.0 XB 000 XA 000 XP00 XMF BM -------------------- **Note:** *Refer to individual commands for details of each field.*
GR	Recall tagged channels for select scan	GR<CR> Lists selected channels from those available for select scan. Response is of the form: GR*nn* MX*mnn* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n* TM*xxxxxxxxxx* **Note:** *Refer to individual commands for details of each field.*
GS	Search parameter selection/status	To set: GS*n*<CR> Where *n*=0 (fixed presets only) - 9 (user definable) To read: GS<CR> **Example:** GS GS0 SD2.0 SB 000 SA 000 SP00 AS0 BS -- **Note:** *Refer to individual commands for details of each field.*
GV	VFO set list	To read: GV<CR> Reads current status of the VFO as a list of parameters **Example:** GV GV DD0.0 DB 000 DA 000 DP00 VT0 **Note:** *Refer to individual commands for details of each field.*
LB	LCD contrast	To set: LB*nn*<CR> *nn*=00 - 31 To read: LB<CR> Responds with LB*nn*
LC	Respond with frequency and level when squelch opens	To set: LC*n*<CR> *n*=0 (off), *n*=1 (on), *n*=2 (special mode) To read: LC<CR> Responds with LC*n* When active, data in the following format is returned when the squelch opens: LC*nnn* V*x* RF*nnn...n* or LC*nnn* SR*x* RF*nnn...n* or LC*nnn* M*nxx* RF*nnn...n* When inactive, the radio returns LC data indicating the end of the transmission as follows: LC%*nnn* V*x* or LC%*nnn* V*x* or LC%*nnn* V*x* **Notes:** *1. Receive frequency and S-meter level are output when squelch opens (range of nnn reported by LC is 120-220 approx but varies from set to set)* *2. Response is made automatically every time squelch opens or closes and is*

affected by squelch parameters such as level and voice scan
3. Special mode (LC2) enables a continuous stream of frequency data to be output when squelch is open. This allows shift to next frequency after a pre-defined delay specified by PQ in search/scan. This also allows for high resolution spectrum analysis.
4. Signal level values may be specified 000-255, but only 100-255 is used. The AGC voltage is processed in 256 steps internally.
Note: Refer to individual commands for details of each field.

LM Respond with S-meter reading

To read: LM<CR>
Responds with a 256-level s-meter sample in hexadecimal, LM*mnnn*,
where *nnn* = 128-256 and *m* is either " " (squelch open) or "%" (squelch closed)

LS Tone eliminate frequency

Requires TE8200 option
To set: LS*nnn* (000-255) (000=off)
The following mapping is used between *nnn* and tone frequency:

Tone Freq	*nnn*	**Tone Freq**	*nnn*
0.4 (kHz)	0-60	2.6 (kHz)	230-235
0.6	70-110	3.0	237-240
1.0	160-170	3.4	240-245
1.4	190-200	3.8	245-248
1.8	210-220	4.2	248-250
2.2	220-230		

To read: LS<CR>
Responds with LS *nnn* or LS+*nnn* (for mute on)

MA List a block of ten memory channels

To read: MA<CR> or MA*n*<CR> (n= bank A-J or a-j)
Example:
MA
MXA00 MP0 RF0101100000 ST100000 AU0 MD0 AT0 TM
MXA01 MP0 RF0460900000 ST010000 AU0 MD1 AT0 TMTest 2
MXA02 MP0 RF0085900000 ST100000 AU0 MD0 AT0 TMTest 3
MXA03 MP0 RF0085900000 ST020000 AU0 MD1 AT0 TMTest 4
MXA04 MP0 RF0085900000 ST020000 AU0 MD6 AT0 TMTest 5
MXA05 MP0 RF0085900000 ST020000 AU0 MD7 AT0 TMTest 6
MXA06 MP0 RF0085900000 ST010000 AU0 MD2 AT0 TMTest 7
MXA07 MP0 RF0085900000 ST001000 AU0 MD8 AT0 TMTest 8
MXA08 MP0 RF0085900000 ST000050 AU0 MD4 AT0 TMTest 9
MXA09 MP0 RF0085900000 ST000050 AU0 MD3 AT0 TMTest 10
Note: Refer to individual commands for details of each field.

MC Monitor Control

To set: MC*n*<CR>
0   normal squelch operation
1   squelch forced closed
2   squelch forced open

MD Receive mode

To set: MD*n*<CR>
0   WFM
1   NFM
2   AM
3   USB
4   LSB
5   CW
6   SFM
7   WAM
8   NAM

To read: MD<CR>
Responds with mode value as above

MF Set Marker Frequency

To read: MF<CR>
Responds with MF*nnnnnnnnnn*
To set: MF*nnnnnnnnnn*<CR> or MF*nn.nnn*
Set the bandscope marker frequency to the specified frequency (expressed in Hz or MHz depending on format)
Note: Maximum resolution is 10kHz for spans 10MHz - 500kHz; maximum resolution is 2kHz for spans 200kHz-100kHz

MP	Set memory channel as pass	To set: MP*n*<CR> *n* = 0 (pass off), *n* = 1 (pass on) To read: MP<CR> (when in memory read mode) **Note:** *Setting pass on a memory channel excludes it from scans* **Note:** *"?" is returned when not in M.RD mode*
MQ	Delete bank or memory channel	MQ<CR> Deletes the current memory channel (when in memory recall mode) MQ*nn*<CR> Deletes memory channel *nn* MQ*x*%%<CR> Deletes all memory channels from bank *x*. **Note:** *Responds with "?" when a memory channel is protected. Refer to PC, WM and WP commands*
MR	Recall memory channel	MR*xnn*<CR> recalls memory channel *nn* from bank *x* (A-J or a-j) To read the current memory channel: MR<CR> **Note:** *Responds with "?" if the channel is blank*
MS	Scan mode	MS<CR> Starts scan using the current memory bank MS*x*<CR> Starts scan using memory bank *x* (A-J or a-j) **Note:** *to scan and report active frequencies, see LC command* **Note:** *Responds with "?" if the channel is blank*
MW	Memory Bank resizing	MW*xnn*<CR> Sets number of channels in bank *x* to *nn* (where *nn*=10-90) MW*x*<CR> Responds with the current allocation for bank *x*: MW *x*:*nn* *y*:*mm* **Example:** MWA MW A:50 a:50 MW%%<CR> or MW<CR> Responds with a list of 10 allocations **Example:** MW%% MW A:50 TBAAOR Test MW a:50 TBa MW B:50 TBBAOR Test MW b:50 TBbaer band MW C:50 TBCham call MW c:50 TBcair band MW D:50 TBDrepeater MW d:50 TBdaer band MW E:50 TBEMARINEch MW e:50 TBeair band **Notes:** *1. This feature allows the size of memory banks to be changed in size from 10 to 90 channels. Note, the total number of channels allocated to each bank pair (upper and lower case) remains 100 channels (ie size of A + size of a = 100).* *2. It takes a significant amount of time to execute this command. Do not attempt to send another command until the radio responds with a <CR>.* *3. When the size of a bank is changed, any channels that are allocated from the smaller bank to the larger are erased (ie setting bank B to 80 channels and b to 20 channels, then resetting B to 30 channels will cause the last 50 channels of B to be erased)*
MX	Write data to memory	MX*xnn* RF*nnnnnnnnnn* AU*n* ST*nnnnnn* MD*n* AT*n* TM*xxxxxxxx*<CR> Writes data of the format shown into memory channel *nn* in bank *x* Fields are separated by a space. TM permits a 12-character alphanumeric ASCII comment Automode will be selected if any fields are skipped *but* MX, RF & TM cannot be skipped. (MX cannot be sent on its own). **Note:** *Refer to the individual commands for further details* **Note:** *Do not use while scanning or searching.*

NL	Noise Limiter	To set: NL*n*<CR> *n* = 0 (off), *n* = 1 (on) To read: NL<CR> Response is NL*n*
OF	Select offset frequency	OF*nnx*<CR> Selects offset frequency at index *nn* (00-47, 00=off) and defines offset to be *x* (+/-) OF<CR> Returns with the current offset frequency data as follows: OF*mmx* RF0*nnnnnnnn*00 (where *mm* is the offset index value and *x* is + or -) *Notes:* 1. *OF can be used on its own or with MX and SE* 2. *Allows access to a table of offset frequencies defined by OL* 3. *Automode operation is switched off when an offset frequency is entered* 4. *The offset frequency range is 0.1 -999.99 MHz* 5. *Index 00 specifies offset operation off* 6. *Indexes 20-47 are reserved for automode and cannot be altered*
OL	Set and list offset frequencies	OL<CR> Lists ten offset frequencies from the table OL*mm*<CR> Lists ten offset frequencies starting from index *mm* (00-47) Format of listing is: OL*mm* RF0*nnnnnnn*00<CR> OL*mm* 0*nnnnnnn*00<CR> Specifies the stated offset frequency for offset mm *Note: See notes for OF*
OM	Opening message	To set: OM*n*<CR> Where: *n*=0 display the standard default message *n*=1 display no opening message *n*=2 display a custom 48-character message defined as follows: OM2 *xxx...x*
PA	Set delay for power save mode	To set: PA*nn*<CR> Sets the power save delay time in seconds (*nn* = 01-99, 00=off) To read: PA<CR> Responds with PA*nn* (*nn* = current value in seconds) *Note: used on conjunction with PI command*
PC	Protect memory channel	To set: PC*n*<CR> *n* = 0 (off), *n* = 1 (on) PC%%<CR> Turns off protection on all channels in the current bank. To read: PC<CR> Response is PC*n* *Note: Use WM command to protect a bank*
PD	Delete pass frequency	PD*xnn*<CR> Deletes pass frequency *nn* (00-49) in search bank *x* (A-T or a-t) PD*x*%%<CR> Deletes all pass channels in bank *x* (A-T or a-t) *Note: The list of pass frequencies is shifted down each time a channel is deleted*
PH	Bandscope Peak Hold	To set: PH*n*<CR> *n* = 0 (off), *n* = 1 (on) To read: PH<CR> Response is PH*n*
PI	Set interval time for power save mode	To set: PI*nm*<CR> Sets interval time in seconds (*n*=1-9, *m*=0/5) **Example:** PI*15*<CR> Sets power save interval to 1.5 seconds To read: PI<CR> Responds with PI*n.n* (*n.n*= current interval value in seconds) *Note: used on conjunction with PA command*

PP	Set priority channel	To set: PP*xnn*<CR> Selects channel *xnn* as the priority channel, where x is a bank A-J or a-j and nn is a channel number To read: PP<CR> Responds with PP*xnn*
PQ	Wait time for LC2	To set: PQnn<CR> Sets time nn (00-99 corresponding to 000-990 mS in steps of 10 mS) To read: PQ<CR> Responds with PQnnn (000-999 mS) *Note: This wait time is used as a buffer.*
PR	List pass frequencies	PR*xnn*<CR> Lists the pass frequency stored in pass channel nn of bank *x* (A-T, a-t or V) PR*x*<CR> Lists all pass frequencies for bank *x* (A-T, or a-t, V = VFO) PR<CR> Lists all pass frequencies in the current bank (or the VFO)??? Responds with: PR*xnn ffffffffff* Where *x* = bank, *nn* = channel, *ffffffffff* = frequency (in Hz) Example: PR PRV00 0147455000 PRV01 ---
PW	Write search pass frequency	PW<CR> Write the current frequency to the next available pass channel PW*x*<CR> Write the current frequency to the next available channel in bank *x* (A-T, a-t or V=VFO) PW*nnnnnnnnnn*<CR> or PS*nnnn.nn*<CR> Adds the frequency *nnnnnnnnnn* (in Hz) or *nnnn.nn* (in MHz) to the next available pass channel PW*xnnnnnnnnnn*<CR> or PS*xnnnn.nn*<CR> Adds the frequency *nnnnnnnnnn* (in Hz) or *nnnn.nn* (in MHz) to the next available pass channel in bank *x*
QM	Quick Memo	To Read: QM<CR> Responds with ten quick memory frequencies stored within the radio in for the format: QM QM0 RF0086450000 QM1 RF0087310000 QM2 RF0087310000 QM3 RF0000950000 QM4 RF0000750000 QM5 RF0087320000 QM6 RF0087320000 QM7 RF0087320000 QM8 RF0087320000 QM9 RF0087320000 *Note: This command is read only*
QP	Power Off	QP<CR> Turns off power to the AR-8200 *Note: there is no way to turn it on again via RS-232*
QS	Delete search bank	QS*x*<CR> Delete search bank x=A-T or a-t
RF	Set frequency	RF*nnnnnnnnnm0*<CR> Tune to the specified frequency (expressed in Hz) RF*nnnn.nnnnm*<CR> Tune to the specified frequency (expressed in MHz) *m* must either be '5' (for 50Hz) or '0'. Any other digit is ignored. *Note: Frequencies below 3.0MHz are specified in kHz*

RX Respond with current data RX\<CR\>
Recalls current operating parameters in the following formats

VFO mode
VF RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n*

2-VFO mode
V*x* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n*

VFO search mode
VS V*x* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n*

VFO scan mode
VV V*x* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n*

Memory manual mode
MR MX*xnn* MP*n* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n* TM*xxx...x*

Scan mode
MS MX*xnn* MP*n* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n* TM*xxx...x*

Select scan mode
SM MX*xnn* MP*n* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n* TM*xxx...x*

Search mode
SR*x* RF*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* AT*n* TT*xxx...x*
Note: Refer to individual commands for details of each field.

SA Search Audio To set: SA*nnn*\<CR\>
nnn = 0 (audio search off), *nnn* = 001-255 (level value)
To read: SA\<CR\>
Responds with SA *nnn* or SA+*nnn* (current voice level >= *nnn*)
Note: Applies to search group specified by GS
Note: Search will resume when signal strength drops below pre-set level and delay time set by SD has elapsed.

SB Search level squelch To set: SB*nnn*\<CR\>
nnn = 0 (level search off), *nnn* = 001-255 (audio search value)
To read: SB\<CR\>
Responds with SB *nnn* or SB+*nnn* (current level >= *nnn*)

SC Change voice invertor frequency *Note: Requires VI8200*
To Set: SC*nnn*\<CR\>
Where *nnn* (000-156) defines the voice inversion frequency from the following conversion table:

nnn	Freq	*nnn*	Freq	*nnn*	Freq
0	2.4k	37	2.8k	64	3.2k
86	3.6k	102	4.0k	116	4.4k
128	4.8k	138	5.2k	146	5.6k
154	6.0k	156	6.15k		

To Read: SC\<CR\>
Responds with: SC*nnn*

SD Set hold/delay time in search mode To set: SD*nn*\<CR\>
where
01-99 Delay in 1/10ths of a second
FF hold
00 delay off
To read: SD\<CR\>
Responds with SD*n.n*, as above
Note: Writes to the search group as specified by 'GS', you cannot write to search group 0.

SE Set search data SE*x* SL*nnnnnnnnnn* SU*nnnnnnnnnn* AU*n* ST*nnnnnn* MD*n* AT*n* TT*xxx...x*
Sets search parameters for search bank *x*=A-T or a-t
TT permits a 12-character alphanumeric ASCII comment to be specified
Parameters ST, MD, AT, TT are all optional and need only be specifies if required.
Note: Refer to the individual commands for further details

SH	Set offset step	To set: SH*nnnnm0*<CR> Set the tuning step size in Hz To set: SH*nnn.nm*<CR> Set the tuning step size in kHz SH+*nnnnm0*, SH+*nnn.nm* or SH+ turns on step adjust *m* is either 0 or 5 To read: SH<CR> Responds with value, format: SH*nnnnm0x* (*x*=+ step adjust on)
SI	Voice Invertor on/off	***Note:** Requires VI8200* To Set: SI*n*<CR> *n*=0 (off), *n*=1 (on) To read: SI<CR> Responds with SI*n* SC*nnn* **Example:** *SI1w SC051* when the invertor value is 051 ***Note:** Refer to individual commands for details of each field.*
SL	Lower search frequency limit	See RF command for format of frequency
SM	Start select scan	SM<CR> Starts select scan using the parameters selected ***Note:** Up to 100 select scan channels*
SP	Search pause time setting	To set: SP*nn*<CR> where, *nn* = 01 - 99 seconds free search time, *nn* = 00 pause off To read: SP<CR> Returns with SP*nn* (as above) ***Note:** Applies to the search group set by 'GS'.*
SR	Recall search parameters	SR<CR> Recalls the currently selected search bank SR*x*<CR> where *x* = A-T or a-t Recalls search bank *x* SR%%<CR> Responds with a listing of all search banks A-J Responds with: SR*x* SL*nnnnnnnnnn* SU*nnnnnnnnnn* ST*nnnnnn* AU*n* MD*n* TT*xxx...x* or SRR --- for a blank bank ***Note:** Refer to the individual commands for further details*
SS	Start search	SS<CR> Start searching using the current search bank SS*x*<CR> Start searching using the parameters stored in search bank *x* (A-T or a-t)
ST	Tuning step size	To set: ST*nnnnm0*<CR> Set the tuning step size in Hz To set: ST*nnn.nm*<CR> Set the tuning step size in kHz ST+*nnnnm0*, ST+*nnn.nm* or ST+ turns on step adjust To read: ST<CR> Responds with value, format: ST*nnnnm0x* (*x*=+ step adjust on)
SU	Upper search frequency limit	See RF command for format of frequency
SW	Bandscope Span Width	To set: SW*n*<CR> Where *n* = 1 - 7 as follows: 1 10.0MHz 2 5.0MHz 3 2.0MHz 4 1.0MHz 5 500kHz 6 200kHz 7 100kHz To read: SW<CR> Responds with SW*n* (where *n* has a value as above)

TB	Set Text Description for Bank	To set: TBnxxxxxxxx<CR> Sets the text for bank n (A-J or a-j) to be the 8-character ASCII comment specified TB<CR> or TB%%<CR> Responds with a complete listing of the comments for each bank in the following form: TB MW A:50 TBAAOR Test MW a:50 TBa MW B:50 TBBAOR MW b:50 TBb MW C:10 TBCAOR Test MW c:90 TBc MW D:50 TBDAOR Test MW d:50 TBd MW E:50 TBE MW e:50 TBe TBx<CR> Responds with the text for bank x in the following format: TBA TBAAOR Test
TI	Set priority interval	To set: TInn<CR> Sets priority interval nn (01-19) in seconds To read: TI<CR> Responds with TDnn (nn is current priority interval value expressed in seconds)
TM	Memory Text	To write: TMxxx...x<CR> Where xxx...x is a 12-character ASCII text comment **Note: See TT command.**
TS	Text Search	TSxxx...x<CR> Searches for the specified text in a memory channel Where xxx...x is a minimum of 2 characters and a maximum of 11 characters of ASCII text comment **Note: The more characters specified the faster the search** **Note: When the text search has completed, <CR> is returned** **Note: When the RX<CR> command is issued with TS, the relative bank and channel number will be shown**
TT	Search Bank Text	To set: TTxxx...x<CR> Where xxx...x is a 12-character ASCII text comment **Note: See SE command**
VA/VB	Set VFO A - B	To set: Vxnnnnnnnnnm0<CR> (in Hz) or Vxnnnn.nnnnm<CR> (in MHz) Where: x is A or B for VFO A or B, frequency data is expressed in the format used by the RF command Vx<CR> Selects VFO x (A or B), there is no data returned from the radio
VF	Select 1-VFO mode	To set: VF<CR>
VL	Beep volume level	To set: VLn<CR> Where, n = 0 - 9 (0=off) To read: VL<CR> Responds with VLn as above
VR	Firmware Version	To read: VR<CR> Responds with data of the form: VR VR0101
VS		VFO search VS<CR> Starts a VFO based search with limits defined by the frequencies in VFO A & B

VT	VFO auto-store	To set: VT*n*<CR>

VT   VFO auto-store

To set: VT*n*<CR>
Where *n* is defined as follows:
0   Off
1   On, Auto-store to bank J
2   On, erase bank J
To read: VT<CR>
Responds with VT*n* as above
Note: *VT2 response is equivalent to VT1*

VV   VFO Scan

To set: VV*n*<CR>
Where *n*=0 (2-VFO mode) or *n*=1 (VFO scan mode)

WM   Write Protect Bank

To set:
WM*xn*<CR>
Where *x* is bank (A-J or a-j) and *n*=0 (protect off), *n*=1 (protect on)
To read:
WM<CR> or WM%%<CR>
Responds with a listing of 10 banks starting from the last queried bank.
Example:
WM
WM F0
WM f0
WM G0
WM g0
WM H0
WM h0
WM I0
WM i0
WM J0
WM j0

WP   Write protect enable

To set: WP*n*<CR>
Where *n*=0 (disabled) or n=1 (enabled)
To read: WP<CR>
Responds with WP*n* as above

XA   Audio scan setting

To set: XA*nnn*<CR>
Where, *nnn* = 000 (audio scan off), *nnn* = 001-255 (audio scan value)
To read: XA<CR>
Responds with XA *nnn* or XA+*nnn* (if current voice level >= *nnn*)
Note: *Applies to the scan group set by 'GM'.*

XB   Level scan setting

To set: XB*nnn*<CR>
Where, *nnn* = 0 (level scan off), *nnn* = 001-255 (level scan value)
To read: XB<CR>
Responds with XB *nnn* or XB+*nnn* (if current level >= *nnn*)
Note: *Applies to the scan group set by 'GM'.*

XD   Memory scan delay time

To set: XD*nn*<CR>
nn=00 (off) or *nn* = 01 - 99 representing 100ms increments (0.1 - 9.9s)
To read: XD<CR>
Responds with XD*n.n* as above

XM   Mode scan

To set: XM*n*<CR>

0 WFM	1 NFM
2 AM	3 USB
4 LSB	5 CW
6 SFM	7 WFM
8 NAM	F All mode

To read: XM<CR>
Responds with XM*n* as above

XP   Free scan pause setting

To set: XP*nn*<CR>

00   pause off
01-99   pause time in seconds

To read: XP<CR>
Responds with XP*nn* as above

Up/Down	Increment	n<CR>

where n is a binary byte value as follows

⇨	0x1c
⇦	0x1d
⇧	0x1e
⇩	0x1f