PACKET OPERATION

Connect this transceiver to your personal computer via a Terminal Node Controller (TNC). You can send messages or commands to far away stations, obtain a variety of information via your local bulletin boards, or enjoy other Packet applications. Reference material for starting Packet operation should be available at any store that handles Amateur Radio equipment.

Note: When the distance between the radio antenna and your personal computer is too close, interference may occur.
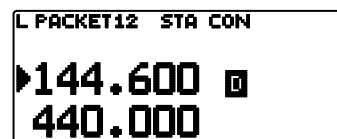
PACKET MODE

This transceiver has a built-in TNC which conforms to the AX.25 protocol. This protocol is used for communications between TNCs.

The baud rate of the PC (USB) port is 9600 bps for the PACKET mode operation.

For the commands supported by the built-in TNC, see "TNC COMMANDS LIST".

Press **[TNC]** 2 times to enter PACKET mode.

```
L PACKET12  STA CON
▶144.600 ▯
 440.000
```

The following indicators appear on the transceiver display to show the current TNC status:

Indicator	Status
PACKET	The TNC is in Packet mode.
STA	Packets to be transmitted still remain in the buffer.
CON	The TNC is in connection with the target station.
12	1200 bps packet transfer rate selected.
96	9600 bps packet transfer rate selected. (To set it to 9600bps, use the HB 9600 (or HBAUD 9600) TNC command. This cannot be changed through the TH-D72 menu.)

Note:

◆ Not all functions available via conventional TNC's are supported by the TNC built in this transceiver.

◆ The built-in TNC could be automatically reinitiated when its malfunction is detected; this does not designate that the transceiver is defective.

◆ The internal TNC is a 2-chip type that does not have an SRAM backup. Therefore, the settings made using commands in Packet mode (except MYCALL (Menu.300: My Callsign will be set) and DAYTIME (Internal clock time will be set)) will be reset when the power is switched Off and then back On.

◆ The built-in TNC has 2k byte KISS mode data buffers for TX and RX.

◆ To distinguish your various stations or nodes, you can have up to 15 Secondary Station Identifiers (SSIDs); ex. W6DJY-1 to W6DJY-15. You always have to put a dash between your callsign and SSID number.

◆ Packet operation, easily affected by transmit and receive conditions, requires a full-scale S-meter reading for reliable communication. When the S-meter reads less than maximum during 9600 bps operation, communication errors are frequent.

DATA BAND

Select how data will be transmitted and received on your transceiver.

1 Enter Menu mode and access Menu 197.

```
Auxiliary     197
▶Packet Band
      A:TX B:RX
```

2 Set the data band to "A-Band" (A band receives and transmits), "B-Band" (B band receives and transmits), "A: TX B:RX" (A band transmits (T▪▯) and B band receives (R▪▯)), or "A: RX B:TX" (A band receives (R▪▯) and B band transmits (T▪▯)).

TNC COMMANDS LIST

The commands supported by the built-in TNC are listed below. You must enter a space between a command name (or short-form) and a parameter, or between two parameters; ex. AU OFF, BEACON EVERY 18.

Command Name	Short	Description	Parameter	Default
AUTOLF	AU	When ON, sends a line feed (LF) to the computer after each carriage return (CR).	ON/ OFF	ON
AXDELAY	AXD	Specifies the delay time to be added to TXDELAY between PTT ON and start of transmission. The unit of the parameter is 10 milliseconds.	0 ~ 120	0
AXHANG	AXH	Specifies the voice repeater hang time. The unit of the parameter is 100 milliseconds.	0 ~ 250	0
BEACON	B	If set to EVERY, sends a beacon packet at intervals of the specified period (n). If set to AFTER, sends a beacon packet only once after the specified period (n). The unit of n is 10 seconds.	EVERY/ AFTER n (n = 0 ~ 250)	EVERY 0
BTEXT	BT	Specifies the content of the data portion of a beacon packet.	0 ~ 159 characters	–
CALIBRAT	CAL	Sends a space/mark square wave (50/50 ratio). Enter Q to exit Calibrate mode and restore the Command mode.	–	–
CHECK	CH	Specifies the interval from signal drop-out until execution of disconnection. The unit of the parameter is 10 seconds.	0 ~ 250	30
CMSG	CMS	When a connection is made, the message is automatically transmitted.	ON/ OFF	OFF
CMSGDISC	CMSGD	When a connection is made, it automatically disconnects.	ON/ OFF	OFF
CONMODE	CONM	With NOMODE set to OFF, causes the TNC to automatically enter Converse or Transparent mode when connection is completed.	CONVERSE/ TRANS	CONVERSE
CONNECT	C	Sends a connect request. Call is the callsign of the station to be connected to. VIA Call1 to call8 are callsigns of stations to be digipeated through.	Call (VIA call1, call2 ... call8)	–
CONOK	CONO	When ON, accepts a connect request and returns a UA packet. When OFF, rejects a connect request and returns a DM packet.	ON/ OFF	ON
CONSTAMP	CONS	When ON, displays the current date and time when connection is completed. The correct date and time must be set using DAYTIME.	ON/ OFF	OFF
CONVERSE	CONV or K	Causes the TNC to enter Converse mode. Press [Ctrl]+[C] to restore the Command mode.	–	–
CPACTIME	CP	When ON and in Converse mode, sends a packet at intervals of the period determined by PACTIME.	ON/ OFF	OFF
CR	CR	When ON, appends a carriage return (CR) to all packets to be sent.	ON/ OFF	ON
DAYSTAMP	DAYS	When ON, pressing [Ctrl]+[T] in Converse mode causes the TNC to send date data in addition to time data.	ON/ OFF	OFF
DAYTIME	DA	Sets the current date and time. Enter YYMMDDhhmmss. Sets 00 as the second if entry of the second is omitted.	–	–
DAYUSA	DAYU	When ON, displays the date like MM/DD/YY. When OFF, displays the date like DD-MM-YY.	ON/ OFF	ON
DIGIPEAT	DIG	When ON, allows the TNC to function as a digipeater.	ON/ OFF	ON
DISCONNE	D	Sends a disconnect request.	–	–

Command Name	Short	Description	Parameter	Default
DISPLAY	DISP	Causes the TNC to display the current status of all the commands. You can also specify a class identifier A, C, H, I, L, M, or T to display the status of only the desired command class. Enter a space between the command name and a class identifier; ex. DISPLAY H. A (ASYNC): RS-232C port parameters C (CHAR): Special TNC characters H (HEALTH): Counter parameters I (ID): ID parameters L (LINK): TNC-to-TNC link status M (MONITOR): Monitor parameters T (TIMING): Timing parameters	–	–
DWAIT	DW	Specifies the interval from no carrier detection until execution of transmission. The unit of the parameter is 10 milliseconds.	0 ~ 250	30
ECHO	E	When ON, causes the TNC to echo received characters to the computer.	ON/ OFF	ON
EPATH	EPATH	Specifies digipeater callsigns to be added when the UISSID parameter in a received packet is 10 or 14.	Call1, ... call7	–
FLOVER	FL	Specifies the time deday from when the TNC buffer becomes full until the TNC buffer is cleared. The unit of the parameter is 1 minute.	0 ~ 120	0
FLOW	F	When ON, starting key entry causes the computer to stop displaying received packets.	ON/ OFF	ON
FRACK	FR	Specifies the interval from one transmission until retry of transmission. The unit of the parameter is 1 second.	0 ~ 15	3
FULLDUP	FU	When ON, allows the TNC to function in full duplex. When OFF, allows it to use data carrier detect signals to avoid packet collision.	ON/ OFF	OFF
GBAUD	GB	Selects 2400, 4800 or 9600 bps as the transfer rate between the TNC and the GPS receiver.	2400/ 4800/ 9600	4800
GPSFILT1	GPSFILT1	Filter setting of the GPS input data.	0 ~ 6 characters	–
GPSFILT2	GPSFILT2	Filter setting of the GPS input data.	0 ~ 6 characters	–
GPSFILT3	GPSFILT3	Filter setting of the GPS input data.	0 ~ 6 characters	–
GPSFILT4	GPSFILT4	Filter setting of the GPS input data.	0 ~ 6 characters	–
GPSSEND	GPSS	Specifies the content of data to be output to the GPS receiver; this data is used to program the default settings on the receiver. The output data is not stored in memory.	0 ~ 32 characters (recommended)	–
GPSTEXT	GPST	Specifies the type of a message to be determined by LTEXT.	0 ~ 6 characters	$PNTS
HBAUD	HB	Selects 1200 or 9600 bps as the transfer rate between packet stations.	1200/ 9600	1200
HEALLED	HEAL	Determines whether or not normal operations of the ROM are checked. When ON and if normal operations are detected, "STA" and "CON" appear and blink alternately.	ON/ OFF	OFF
HID	HI	When ON, causes the TNC to send an ID packet every 9.5 minutes after digipeating.	ON/ OFF	ON
ID	I	Causes the TNC to send an ID packet.	–	–
KISS	KISS	When ON, entering a RESTART command causes the TNC to enter (or exit) KISS mode.	ON/ OFF	OFF

Command Name	Short	Description	Parameter	Default
LOCATION	LOC	If set to EVERY, sends GPS data at intervals of the specified period (n). If set to AFTER, sends GPS data only once after the specified period (n). The unit of n is 10 seconds.	EVERY/ AFTER n (n = 0 ~ 250)	EVERY 0
LPATH	LPA	Specifies callsigns to send GPS data. Call1 is the callsign of the destination. Call2 to call8 are callsigns of stations to be digipeated through.	Call (VIA call1, call2, ... call8)	GPS
LTEXT	LT	Specifies the content of a message to be included in GPS data.	0 ~ 159 characters	–
LTMON	LTM	Specifies the interval for displaying a message determined by LTEXT on the screen; a message appears like a received beacon packet. The unit of the parameter is 1 second.	0 ~ 250	0
MALL	MA	When ON, all stations is monitored. When OFF, only the station which transmitted and has not yet connected with the packet is monitored.	ON/ OFF	ON
MAXFRAME	MAX	Specifies the maximum number of packets to be transmitted at one time.	1 (fixexd value)	1
MCOM	MCOM	When ON, causes the TNC to also monitor control packets. When OFF, causes it to monitor only information packets.	ON/ OFF	OFF
MCON	MC	When ON, causes the TNC to monitor other stations while in connection with the target station.	ON/ OFF	OFF
MONITOR	M	When ON, causes the TNC to monitor packets.	ON/ OFF	ON
MRPT	MR	When ON, causes the TNC to display the entire digipeat list for monitored packets.	ON/ OFF	ON
MSTAMP	MS	When ON, causes the TNC to display data and time information for monitored packets.	ON/ OFF	OFF
MYALIAS	MYA	Specifies a callsign for using your station as a digipeater.	6 characters + SSID	–
MYCALL	MY	Specifies your callsign.	6 characters + SSID	–
NEWMODE	NE	When ON, entering a CONNECT command causes the TNC to immediately enter the other mode.	ON/ OFF	OFF
NOMODE	NO	When ON, does not cause the TNC to automatically enter the other mode. When OFF, causes it to automatically enter the other mode as specified by NEWMODE.	ON/ OFF	OFF
NPATH	NPATH	Specifies digipeater callsigns to be added when the UISSID parameter in a received packet is 8 or 12.	Call1, ... call7	–
NTSGRP	NTSGRP	Specifies a group code to be used for making a $PNTS sentence.	0 ~ 3 characters	–
NTSMRK	NTSMRK	Specifies a mark number to be used for making a $PNTS sentence.	0 ~ 14	0
NTSMSG	NTSMSG	Specifies a message to be used for making a $PNTS sentence.	0 ~ 20 characters	–
PACLEN	P	Specifies the maximum length of the data portion of a packet.	0 ~ 255	128
PACTIME	PACT	If set to EVERY, sends a packet at intervals of the specified period (n). If set to AFTER, sends a packet only once after the specified period (n). The unit of n is 100 milliseconds.	EVERY/ AFTER n (n = 0 ~ 250)	AFTER 10

Command Name	Short	Description	Parameter	Default
PASSALL	PASSA	When ON, only the frame for which an error has been detected is accepted. When OFF, only correct frames are accepted; frames for which an error has been detected are canceled.	ON/ OFF	OFF
PERSIST	PE	Specifies a parameter to calculate probability for the PERSIST/SLOTTIME method.	0 ~ 255	128
PPERSIST	PP	Causes the TNC to use the PERSIST/SLOTTIME method when ON, or the DWAIT method when OFF.	ON/ OFF	ON
RESET	RESET	Restores the default status for all the commands.	–	–
RESPTIME	RES	Specifies the acknowledgment packet transmission delay. The unit of the parameter is 100 milliseconds.	0 ~ 250	0
RESTART	RESTART	Causes the TNC to function as if it is switched OFF then ON.	–	–
RETRY	RE	Specifies the number of transmission retries.	0 ~ 15	10
SENDPAC	SE	Specifies a character which forces a packet to be sent.	0 ~ $7F	$0D
SLOTTIME	SL	Specifies the period of random number generation intervals for the PERSIST/SLOTTIME method. The unit of the parameter is 10 milliseconds.	0 ~ 250	3
SPATH	SPATH	Specifies digipeater callsigns to be added when the UISSID parameter in a received packet is 9 or 13.	Call1, ... call7	–
TRACE	TRAC	When ON, causes the TNC to display all received packets in their entirety.	ON/ OFF	OFF
TRANS	T	Causes the TNC to exit Command mode and enter Transparent mode. To restore Command mode, press and hold [Ctrl], then press [C] three times.	–	–
TRIES	TRI	Specifies the number of transmission retries programmed in the retry counter.	0 ~ 15	0
TXDELAY	TX	Specifies the time delay between PTT ON and start of transmission. The unit of the parameter is 10 milliseconds.	0 ~ 120	30
UICHECK	UIC	Does not forward the same UI packet as one received within the time specified by this command. The unit of the parameter is 1 second.	0 ~ 250	28
UIDIGI	UI	When receiving a UI packet which includes the parameter specified by this command, replaces the parameter with the MYCALL parameter and forwards the packet.	ON/ OFF, Call1, ... call4	OFF
UIDWAIT	UIDW	When ON and digipeating, causes the TNC to use the DWAIT and PPERSIST settings.	ON/ OFF	OFF
UIFLOOD	UIF	Specifies how received UI packets, which include WIDEN-N or TRACEN-N parameters, are processed. Enter WIDE or TRACE before ID, NOID, or FIRST; ex. WIDE,FIRST. With ID selected, deletes the relayed digipeaters and adds the MYCALL parameter. With NOID, merely decrements N-N; ex. 4-3 to 4-2. With FIRST, adds the MYCALL parameter only when serving as the first digipeater.	Name, ID/ NOID/ FIRST	–
UISSID	UIS	When ON, causes the TNC to process received UI packets depending on included destination SSIDs.	ON/ OFF	OFF
UITRACE	UIT	The command name must be followed by up to 5 alphanumeric characters; normally WIDE or TRACE. Causes the TNC to forward received UI packets which include WIDEN-N or TRACEN-N parameters.	Name	–

Command Name	Short	Description	Parameter	Default
UNPROTO	U	Specifies callsigns to send a packet in Unprotocol mode. Call1 is the callsign of the destination. Call2 to call8 are callsigns of stations to be digipeated through.	Call (VIA call1, call2,... call8	CQ
VERSION	VER	Version display inquiry.		
WPATH	WPATH	Setting for changing the relay exchange list when relaying with UISSID.	Call1, ... call7	–
XFLOW	X	Causes the TNC to perform software flow control when ON, or hardware flow control when OFF.	ON/ OFF	OFF