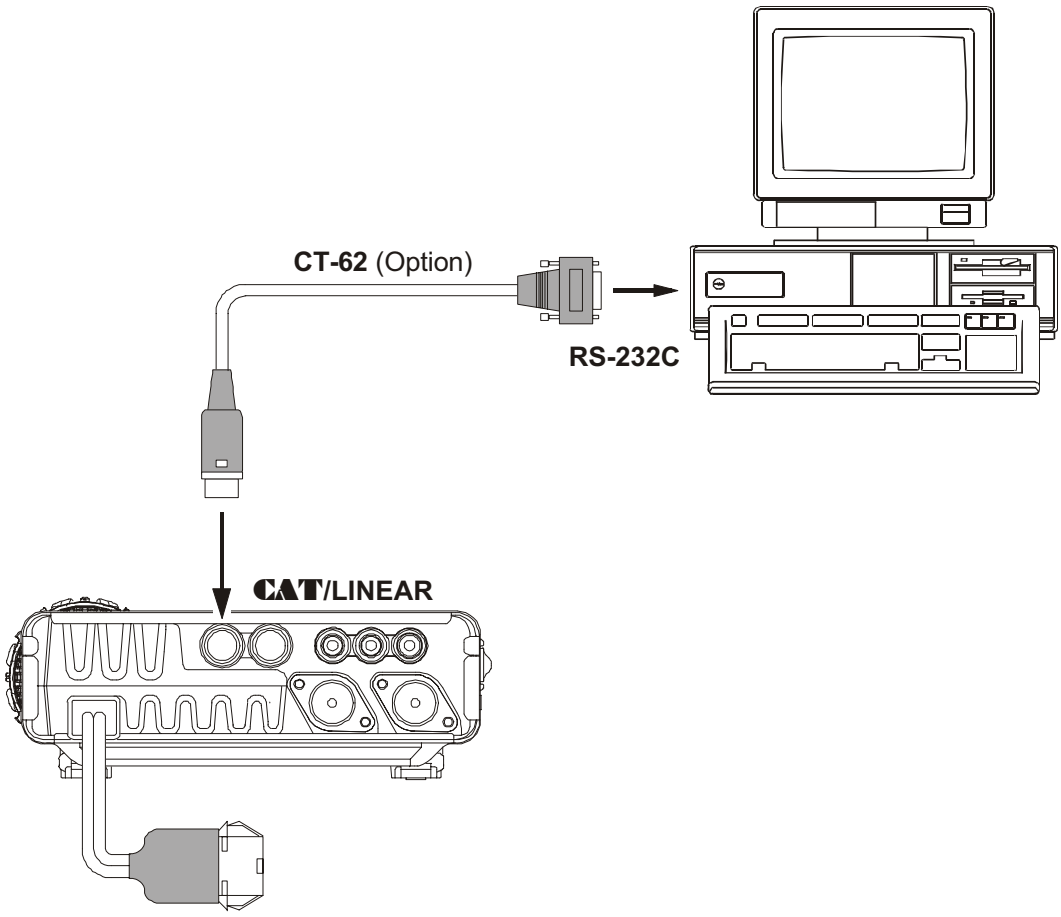
The **FT-857**'s CAT System allows the transceiver to be controlled by a personal computer. This allows multiple control operations to be fully automated as a single mouse click, or it allows a third-party software package (such as contest logging software) to communicate with the **FT-857** without (redundant) operator intervention.

The Optional CAT Interface Cable **CT-62** is a connection cable for the **FT-857** and your computer. The **CT-62** has a built-in level converter, allowing direct connection from the rear panel **CAT/LINEA**R jack to the serial port of your computer, without the need for an external RS-232C level converter box.

Vertex Standard does not produce CAT System operating software, due to the wide variety of personal computers, operating systems, and applications in use today.

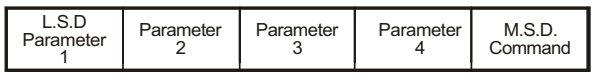
The information presented in this section will allow the programmer to understand the command structure and opcodes used in the **FT-857**'s CAT System.



CAT Data Protocol

All commands sent from the computer to the transceiver consist of five-byte blocks, with up to 200 ms between each byte. The last byte in each block is the instruction opcode, while the first four bytes of each block are arguments (either parameters for that instruction, or dummy values required to pad the block out to five bytes). Each byte consists of 1 start bit, 8 data bits, no parity bit, and two stop bits.

⇦ **CAT DATA BYTE FORMAT**



⇦ **CAT 5-BYTE COMMAND STRUCTURE**

There are 17 instruction opcodes for the **FT-857**, listed in the chart on next page. Many of these opcodes are On/Off toggle commands for the same action (e.g. "PTT On" and "PTT Off") Most of these commands require some parameter or parameters to be set. Irrespective of the number of parameters present, every Command Block sent must consist of five bytes.

Accordingly, any **CAT** control program must construct the five-byte block by selecting the appropriate instruction opcode, organizing the parameters as needed, and providing unused "dummy" argument bytes to pad the block to its required five-byte length (the dummy bytes can contain any value). The resulting five bytes are then sent, opcode last, from the computer to the **FT-857** CPU via the computer's serial port and the transceiver's **CAT/LINEAR** jack.

All **CAT** data values are hexadecimal

Constructing and Sending CAT Commands

Example #1: Set the VFO frequency to 439.70 MHz

Per the CAT command table, the opcode for "Set Frequency" is **01**. Placing the opcode into the 5th data bit position, we then enter the frequency into the first four data bit positions:

	DATA 1	DATA 2	DATA 3	DATA 4	DATA 5
⇦	**43**	**97**	**00**	**00**	**01**
	Parameter				Command

Send these five bytes to the transceiver, in the order shown above.

Example #2: Turn the Split Mode "On"

Per the CAT command table, the opcode for "Split On" is **02**. Placing the opcode into the 5th data bit position, we then enter dummy values into all other parameter locations:

	DATA 1	DATA 2	DATA 3	DATA 4	DATA 5
⇦	**00**	**00**	**00**	**00**	**02**
	Dummy Data				Command

OPCODE COMMAND CHART

Command Title	Parameter				Opcode	Notes
LOCK ON/OFF	※	※	※	※	**CMD**	CMD = 00: LOCK ON CMD = 80: LOCK OFF
PTT ON/OFF	※	※	※	※	**CMD**	CMD = 08: PTT ON CMD = 88: PTT OFF
Set Frequency	P1	P2	P3	P4	**01**	P1 ~ P4: Frequency Digits 01, 42, 34, 56, [**01**] = 14.23456 MHz
Operating Mode	P1	※	※	※	**07**	P1 = 00: LSB, P1 = 01: USB, P1 = 02: CW, P1 = 03: CWR, P1 = 04: AM, P1 = 08: FM, P1 = 88: FM-N, P1 = 0A: DIG, P1 = 0C: PKT
CLAR ON/OFF	※	※	※	※	**CMD**	CMD = 05: CLAR ON CMD = 85: CLAR OFF
CLAR Frequency	P1	※	P3	P4	**F5**	P1 = 00: "+" OFFSET P1 ≠ 00: "–" OFFSET P3, P4: CLAR Frequency 12, 34 = 12.34 kHz
VFO-A/B	※	※	※	※	**81**	Toggle
SPLIT ON/OFF	※	※	※	※	**CMD**	CMD = 02: SPLIT ON CMD = 82: SPLIT OFF
Repeater Offset Frequency	P1	※	※	※	**09**	P1 = 09: "–" SHIFT P1 = 49: "+" SHIFT P1 = 89: SIMPLEX
Repeater Offset	P1	P2	P3	P4	**F9**	P1 ~ P4: Frequency Digits 05, 43, 21, 00, [**F9**] = 5.4321 MHz
CTCSS/DCS Mode	P1	※	※	※	**0A**	P1 = 0A: DCS ON P1 = 0B: DCS DECODER ON P1 = 0C: DCS ENCODER ON P1 = 2A: CTCSS ON P1 = 3A: CTCSS DECODER ON P1 = 4A: CTCSS ENCODER ON P1 = 8A: OFF
CTCSS Tone	P1	P2	P3	P4	**0B**	P1 ~ P2: CTCSS Tone Frequency for TX (Note 1) P3 ~ P4: CTCSS Tone Frequency for RX (Note 1)
DCS Code	P1	P2	P3	P4	**0C**	P1 ~ P2: DCS Code for TX (Note 2) P3 ~ P4: DCS Code for RX (Note 2)
Read RX Status	※	※	※	※	**E7**	(Note 3)
Read TX Status	※	※	※	※	**F7**	(Note 4)
Read Frequency & Mode Status	※	※	※	※	**03**	(Note 5)

Note 1: CTCSS Tone

Example: Set the CTCSS Tone Frequncy to 88.5 Hz (TX) and 100.0 Hz (RX)

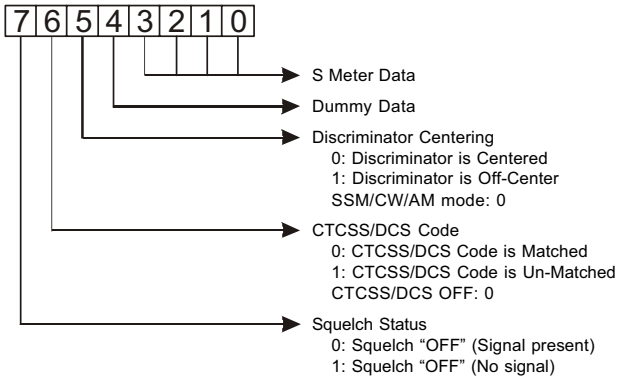
P1	P2	P3	P4	
↓	↓	↓	↓	
08	**85**	**10**	**00**	= **88.5** Hz (TX), **100.0** Hz (RX)

Note 2: DCS Code

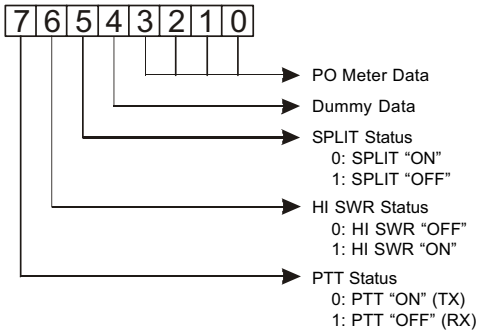
Example: Set the DCS Code to 023 (TX) and 371 (RX)

P1	P2	P3	P4	
↓	↓	↓	↓	
00	**23**	**03**	**71**	= **023** (TX), **371** (RX)

Note 3: Read RX Status



Note 4: Read TX Status



Note 5: Read Frequency & Mode Status