

GEK-90842

9. Peripheral Jack

This is a serial port which allows connection of an audio cassette tape recorder to record (save) the program stored in user memory, verify the contents of a tape against the contents of user memory, and load a program stored on tape into user memory. It is recommended that programs entered into user memory be saved on tape, once they have been verified as being correct. Note that when recording a Series One Plus program on tape, the contents of the data registers are not saved.

Program Checking and Error Codes

When entering ladder logic programs with the programmer, the CPU automatically performs many checks on the data and operations selected by the programmer. Functions entered are checked for proper key sequence, proper range of references entered, etc. Errors detected during these checks are indicated in the data display by the letter E followed by a two digit code (01-99). The CPU also performs a partial program error check any time that the PC is switched to the RUN mode. After entering a program, a manual error check should be performed, which checks the entire program.

Table 4-1 summarizes the meaning of each error code, its cause, and possible methods of clearing the error. The use of the programmer to enter logic is documented in Chapter 5 as part of programming. However, there are many other valuable functions it provides which are shown in the following table:

Table 4-1. Error Code Definitions

Code	Applicable Mode			Significance	Cause	Corrective Action
	Run	Prog	Load			
E1	X	X	X	Incorrect Operation	Operator attempted to perform illegal operation such as changing program in RUN mode.	Examine operation. Depress CLR. Reinitiate proper function.
E2	X			Fault in Program Structure. Series One.	CPU has detected error in program when placed into RUN mode. Example: Input module reference used as coil	Go to Program mode. Depress CLR. Address of faulty logic will be shown. Depress NXT to display content.
E2	X			Fault in Program Structure. Series One Plus.	CPU has detected error in program when placed into RUN mode. Example: Input module reference used as coil.	Go to Program mode. Depress CLR-SCH-CLR. Address of faulty logic will be shown. Depress NXT to display content.
E3	X			Stack Capacity Exceeded	More than eight status levels attempted to be stored in pushdown stack.	Go to Program mode. Depress CLR. Programmer will display location of first 9th STR error. Examine logic and reprogram as necessary.
E5	X			Duplicate Coil Reference	Coil (output, internal, timer, or counter) used as an OUT more than once.	Go to Program mode. Depress CLR. Programmer will display location of second coil of pair using same reference. Enter another coil reference.

Table 4-1. Error Code Definitions - Continued

Code	Applicable Mode			Significance	Cause	Corrective Action
	Run	Prog	Load			
E6	X			Incomplete Master Control	More MCR references than MCS in program.	Go to Program mode. Depress CLR. Programmer will display first unmatched MCR. Correct program by deleting MCR or adding MCS.
E7	X			Incomplete Counter or Shift Register.	All control lines not provided to one or more Counters and/or Shift Registers.	Go to Program mode. Depress CLR. Programmer will display errant function. Add required reset, clock or clear lines.
E8		X		Incorrect Operation.	Operator attempted to write instruction on second word of a 2-word instruction.	Depress CLR.
E9	X			Incomplete Logic.	Relay ladder line not connected to coil; relay contact(s) left incomplete or hanging.	Go to Program Mode. Depress CLR. Programmer will display first unfinished logic element. Add logic to tie this element into stored logic, or delete element(s) to remove incomplete logic.
E11		X		Memory Full.	Operator attempting to add logic to CPU already at limit.	Depress CLR. Restructure program so that logic limits will not be exceeded.
E21	X	X		Parity Failure.	CPU has detected a fault in the parity structure of its internal memory.	Go to Load Mode. Depress CLR. Reload memory from previously recorded tape or clear entire memory and reload manually. If BATT light not ON and fault cannot be cleared, replace CPU module.
E25			X	Faulty Comparison.	External device such as tape cassette has content that does not agree with CPU memory.	Depress CLR. Verify correct program number or tape. If correct, either re-record tape or reload CPU.
E28			X	Weak Record Signal.	Playback Signal level, such as from tape recorder, is below acceptable level.	Adjust volume level on tape recorder or other peripheral device. If ON steady for extended period of time, restart function to obtain reliable operation.
E99	X	X		Unsuccessful Search.	Search function has reviewed all memory and has not located required.	Depress CLR. To cause an additional search, re-enter function and restart.

Operation Sequences

An understanding of the basic PC operation sequences is necessary in order to effectively and efficiently enter ladder diagram programs. You should be familiar with the use of each key, alone and in sequence