Special Relays

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In This Appendix. . . .

DL105 PLC Special Relays

"Special Relays" are just contacts that are set by the CPU operating system to indicate a particular system event has occurred. These contacts are available for use in your ladder program. Knowing just the right special relay contact to use for a particular situation can save lot of programming time. Since the CPU operating system sets and clears special relay contacts, the ladder program only has to use them as inputs in ladder logic.

Startup and Real-Time Relays

SP0	First scan	on for the first scan after a power cycle or program to run transition only. The relay is reset to off on the second scan. It is useful where a function needs to be performed only on program startup.
SP1	Always ON	provides a contact to insure an instruction is executed every scan.
SP3	1 minute clock	on for 30 seconds and off for 30 seconds.
SP4	1 second clock	on for 0.5 second and off for 0.5 second.
SP5	100 ms clock	on for 50 ms. and off for 50 ms.
SP6	50 ms clock	on for 25 ms. and off for 25 ms.
SP7	Alternate scan	on every other scan.

CPU Status Relays

SP12	Terminal run mode	on when the CPU is in the run mode.
SP16	Terminal program mode	on when the CPU is in the program mode.
SP20	Forced stop mode	on when the STOP instruction is executed.
SP22	Interrupt enabled	on when interrupts have been enabled using the ENI instruction.

System Monitoring

SP40	Critical error	on when a critical error such as I/O communication loss has occurred.
SP41	Warning	on when a non critical error such as a low battery has occurred.
SP44	Program memory error	on when a memory error such as a memory parity error has occurred.
SP50	Fault instruction	on when a Fault Instruction is executed.
SP51	Watch Dog timeout	on if the CPU Watch Dog timer times out.
SP52	Grammatical error	on if a grammatical error has occurred either while the CPU is running or if the syntax check is run. V7755 will hold the exact error code.
SP53	Solve logic error	on if CPU cannot solve the logic.

Accumulator Status

SP60	Value less than	on when the accumulator value is less than the instruction value.
SP61	Value equal to	on when the accumulator value is equal to the instruction value.
SP62	Greater than	on when the accumulator value is greater than the instruction value.
SP63	Zero	on when the result of the instruction is zero (in the accumulator.)
SP64	Half borrow	on when the 16 bit subtraction instruction results in a borrow.
SP65	Borrow	on when the 32 bit subtraction instruction results in a borrow.
SP66	Half carry	on when the 16 bit addition instruction results in a carry.
SP67	Carry	when the 32 bit addition instruction results in a carry.
SP70	Sign	on anytime the value in the accumulator is negative.
SP71	Invalid octal number	on when an Invalid octal number was entered. This also occurs when the V-memory specified by a pointer (P) is not valid.
SP73	Overflow	on if overflow occurs in the accumulator when a signed addition or subtraction results in an incorrect sign bit.
SP75	Data error	on if a BCD number is expected and a non-BCD number is encountered.
SP76	Load zero	on when any instruction loads a value of zero into the accumulator.

HSIO Pulse Catch Relay

SP100	X0 is on	X0 — on for 1 scan after a pulse on X0 occurs.

Equal Relays for HSIO Mode 10 Counter Presets

SP540	Current = target value	on when the counter current value equals the value in V2320.
SP541	Current = target value	on when the counter current value equals the value in V2322.
SP542	Current = target value	on when the counter current value equals the value in V2324.
SP543	Current = target value	on when the counter current value equals the value in V2326.
SP544	Current = target value	on when the counter current value equals the value in V2330.
SP545	Current = target value	on when the counter current value equals the value in V2332.
SP546	Current = target value	on when the counter current value equals the value in V2334.
SP547	Current = target value	on when the counter current value equals the value in V2336.
SP550	Current = target value	on when the counter current value equals the value in V2340.
SP551	Current = target value	on when the counter current value equals the value in V2342.
SP552	Current = target value	on when the counter current value equals the value in V2344.
SP553	Current = target value	on when the counter current value equals the value in V2346
SP554	Current = target value	on when the counter current value equals the value in V2350.
SP555	Current = target value	on when the counter current value equals the value in V2352.
SP556	Current = target value	on when the counter current value equals the value in V2354.
SP557	Current = target value	on when the counter current value equals the value in V2356.
SP560	Current = target value	on when the counter current value equals the value in V2360.
SP561	Current = target value	on when the counter current value equals the value in V2362.
SP562	Current = target value	on when the counter current value equals the value in V2364.
SP563	Current = target value	on when the counter current value equals the value in V2366.
SP564	Current = target value	on when the counter current value equals the value in V2370.
SP565	Current = target value	on when the counter current value equals the value in V2372.
SP566	Current = target value	on when the counter current value equals the value in V2374.
SP567	Current = target value	on when the counter current value equals the value in V2376.