Path: c:\directsoft5\projects\daylight savings\daylight savings.prj
Save Date: 02/14/07 14:30:58
Creation Date: 02/14/07 13:08:44
PLC Type: 05
Class ID: DirectLogic 05 Series
Description: Algorithm to determine if Daylight Savings Time is in effect.

Daylight Savings Time Calculation

Set control relay if current date indicates that Daylight Savings Time is in effect. This is for years 2007 and later, in USA only. DST begins 2nd Sun Mar at 0200, and ends 1st Sun Nov at 0200. Note that this algorithm ignores the 0200, and, effectively, signals DST at midnight (00:00).

This calculation of Daylight Savings Time uses one memory register (V2000), and sets a contorl relay (C0) if the current date implies DST.

Note, DST here begins at midnight, NOT 0200 However, this program independently determines if DST is in effect for each scan. That is, if the program initiates in, say, May, then DST will be noted as in effect. It does not rely on changing the clock. Rather, the clock is always on standard time, but a control relay is set if DST is in effect.

Result:
C0 (IS_DST) is on only if Daylight Savings is in effect.

Calculation:
If month is Nov, and day-of-month > day-of-week, then DST is in effect.
Else If month > Mar, and month < Nov, then DST is in effect.
Else if month == Mar, and day-of-month - 7 > day-of-week, then DST is in effect.
Else DST is NOT in effect.

Note: The first Sun of Nov is when day-of-month > day-of-week.
Note: The 2nd sun of Mar is when day-of-month - 7 > day-of-week.

1

NOP

Initialize Scratch. This is either 0, or day of month - 7. Used in dst calculation below (Rung 4) This rung loads default 0.

2

LD K0
OUT Scratch V2000

Find 2nd Sun in Mar:
If month == Mar and day-of-month > 7, set scratch = day of month - 7. Thus if day-of-month - 7 > day-of-week, it is dst. Note, dow(Sun) == 0.

3

Month V7773 = K3 AND Day of Month V7772 ≥ K8

LD Day of Month V7772
SUBD K7
OUT Scratch V2000

Calculate dst. If IS_DST is on, then daylight savings is in effect. This does NOT change the clock, but permits time changes as needed in other calculations. Clock is ALWAYS keeping standard time.

4

Month V7773 = K11 AND Day of Week V7771 < Day of Month V7772

OR Month V7773 ≥ K4 AND Month V7773 < K11

OR Month V7773 = K3 AND Day of Week V7771 < Scratch V2000

IS_DST C0 OUT

This is the end of the DST algorithm.

5

NOP

This section shows an example of using the algorithm above in a DST calculation.

If time calculations are desired, then V2001 has 0 if using Standard Time, else has 1 if using DST. The "real" current hour (including DST) is then placed in V2002.

6

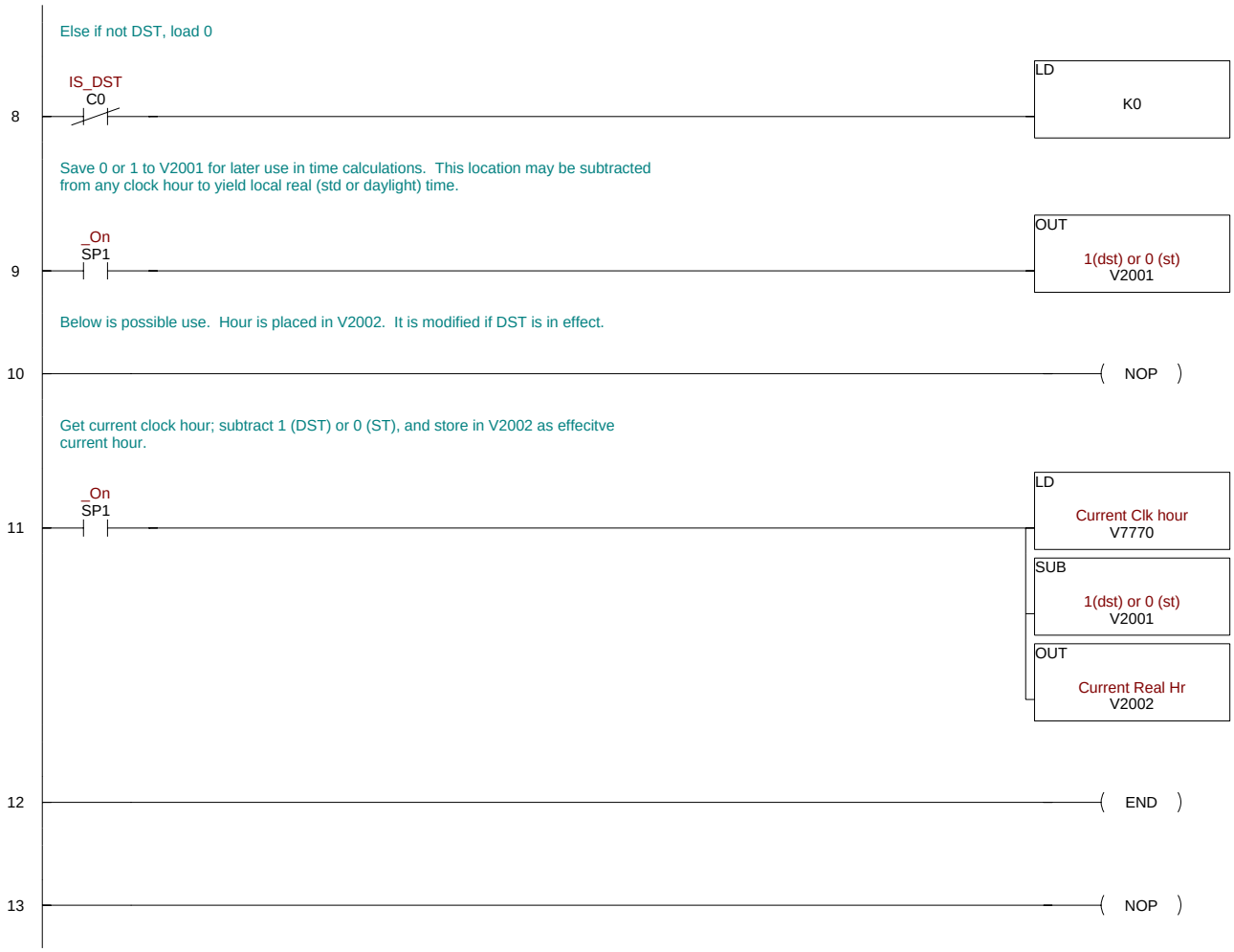
NOP

If is DST, then load 1.

7

IS_DST C0

LD K1


Else if not DST, load 0
IS_DST
C0
8
LD
K0
Save 0 or 1 to V2001 for later use in time calculations. This location may be subtracted from any clock hour to yield local real (std or daylight) time.
_On
SP1
9
OUT
1(dst) or 0 (st)
V2001
Below is possible use. Hour is placed in V2002. It is modified if DST is in effect.
10
NOP
Get current clock hour; subtract 1 (DST) or 0 (ST), and store in V2002 as effecitve current hour.
_On
SP1
11
LD
Current Clk hour
V7770
SUB
1(dst) or 0 (st)
V2001
OUT
Current Real Hr
V2002
12
END
13
NOP