

EtherNet/IP Level 2.06 Calendar Conditions

This test concentrates on sending several settings to the printer and then reading all settings back to see what changed. For the general case of trying to upload a message, it would be nice if all values read reflected an initialized calendar block. Otherwise, it would be necessary to decode all the text to decide what needed to be retrieved.

There are many parts to this test. The plan was to build a single item using a single calendar block.

```
"{{MMM}}/{DD}/{YY} {hh}:{mm}:{ss} {TTT} {WW} {777} {EE} {FF}}"
```

However, the printer would not accept this as text in a single item using a single calendar block. I broke it into three calendar blocks.

```
"{{MMM}}/{DD}/{YY} {hh}:{mm}:{ss}} {{TTT} {WW} {777}} {{EE} {FF}}"
```

The printer again would not accept the message. The “EE” (Shift code) and “FF” (Time Count) caused the message to be rejected. The only indication was the message contained no text. Splitting the message into two items also failed. There should now two tests instead of one. However, setting the shift code causes the printer to start rejecting requests and requiring cycling of power on the printer to recover.

```
"{{MMM}}/{DD}/{YY} {hh}:{mm}:{ss}} {{TTT} {WW} {777}}"
```

```
" {{FF}}"
```

```
" {{EE}}"
```

Test 1.

Starting with test 1, building the message involved:

| Status/Path | Access | Class | Attribute | #Out | Data Out | Raw Out |
|--|--------|--------------------|----------------------------|------|--|--------------------|
| Load Month and Day Substitutions Data | | | | | | |
| 32 6C 01 66 | Set | Substitution_rules | Start_Year | 2 | 2010 | 07 DA |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 1,JAN | 01 4A 41 4E 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 2,FEB | 02 46 45 42 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 3,MAR | 03 4D 41 52 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 4,APR | 04 41 50 52 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 5,MAY | 05 4D 41 59 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 6,JUN | 06 4A 55 4E 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 7,JUL | 07 4A 55 4C 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 8,AUG | 08 41 55 47 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 9,SEP | 09 53 45 50 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 10,OCT | 0A 4F 43 54 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 11,NOV | 0B 4E 4F 56 00 |
| 32 6C 01 68 | Set | Substitution_rules | Month | 5 | 12,DEC | 0C 44 45 43 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 1,MON | 01 4D 4F 4E 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 2,TUE | 02 54 55 45 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 3,WED | 03 57 45 44 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 4,THU | 04 54 48 55 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 5,FRI | 05 46 52 49 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 6,SAT | 06 53 41 54 00 |
| 32 6C 01 6D | Set | Substitution_rules | Day_Of_Week | 5 | 7,SUN | 07 53 55 4E 00 |
| Build the Message | | | | | | |
| 32 7A 01 65 | Set | Index | Automatic_reflection | 1 | 1 | 01 |
| 32 7A 01 66 | Set | Index | Item | 2 | 1 | 00 01 |
| 32 67 01 74 | Set | Print_format | Dot_Matrix | 1 | 5x8(5x7) | 03 |
| 32 67 01 77 | Set | Print_format | Barcode_Type | 1 | None | 00 |
| 32 67 01 75 | Set | Print_format | InterCharacter_Space | 1 | 1 | 01 |
| 32 67 01 71 | Set | Print_format | Print_Character_String | 64 | {{MMM}}/{DD}}/{YY} {hh}:{mm}:{ss}} {{TTT}} {WW} {777}} | 7B 7B 4D 4D 4D ... |
| Enable the Desired Substitutions | | | | | | |
| 32 7A 01 6F | Set | Index | Calendar_Block | 1 | 1 | 01 |
| 32 69 01 75 | Set | Calendar | Substitute_Month | 1 | Enable | 01 |
| 32 69 01 7A | Set | Calendar | Substitute_Day_Of_Week | 1 | Enable | 01 |
| 32 7A 01 65 | Set | Index | Automatic_reflection | 1 | 0 | 00 |
| 32 7A 01 64 | Set | Index | Start_Stop_Management_Flag | 1 | 2 | 02 |

Browser screen == Item 1, Calendar block 1.:

| Attributes | # | Data | Control |
|---------------------------------------|----|----------------|---------|
| Shift Code Condition (0x65) | 84 | 00 00 00 00 0C | Get |
| #1 First Calendar Block Number (0x66) | 1 | 1 | Get |
| Calendar Block Number In Item (0x67) | 1 | 2 | Get |
| #2 Offset Year (0x68) | 1 | 0 | Get Set |
| Offset Month (0x69) | 1 | 0 | Get Set |
| Offset Day (0x6A) | 2 | 0 | Get Set |
| Offset Hour (0x6B) | 1 | 0 | Get Set |
| Offset Minute (0x6C) | 1 | 0 | Get Set |
| #3 Zero Suppress Year (0x6D) | 1 | Disable | Get Set |
| Zero Suppress Month (0x6E) | 1 | Disable | Get Set |
| Zero Suppress Day (0x6F) | 1 | Disable | Get Set |
| Zero Suppress Hour (0x70) | 1 | Disable | Get Set |
| Zero Suppress Minute (0x71) | 1 | Disable | Get Set |
| Zero Suppress Weeks (0x72) | 1 | 30 | Get Set |
| Zero Suppress Day Of Week (0x73) | 1 | 3 | Get Set |
| #4 Substitute Year (0x74) | 1 | Disable | Get Set |

| Attributes | # | Data | Control |
|-------------------------------|---|-------------|---------|
| #4 Substitute Month (0x75) | 1 | Enable | Get Set |
| Substitute Day (0x76) | 1 | Disable | Get Set |
| Substitute Hour (0x77) | 1 | Disable | Get Set |
| Substitute Minute (0x78) | 1 | Disable | Get Set |
| Substitute Weeks (0x79) | 1 | Disable | Get Set |
| Substitute Day Of Week (0x7A) | 0 | Disable | Get Set |
| Time Count Start Value (0x7B) | 0 | "" | Get Set |
| Time Count End Value (0x7C) | 0 | "" | Get Set |
| Time Count Reset Value (0x7D) | 8 | "77777777" | Get Set |
| Reset Time Value (0x7E) | 0 | 0 | Get Set |
| Update Interval Value (0x7F) | 7 | -1204309067 | Get Set |
| Shift Start Hour (0x80) | 1 | 179 | Get Set |
| Shift Start Minute (0x81) | 1 | 181 | Get Set |
| Shift End Hour (0x82) | 1 | 184 | Get |
| Shift End Minute (0x83) | 1 | 55 | Get Set |
| Shift String Value (0x84) | 1 | "7" | Get Set |

| Index Functions | |
|-----------------|---|
| Item | 1 |
| Calendar Block | 1 |

Observations (only areas outlined in red are pertinent to this test):

1. Item 1 has two calendar blocks starting a calendar block 1.
2. Offset Hour and Offset Minute only returned 1 byte. I tried sending out a -20 (0xFF 0xEC) and the value returned was 0.
3. Worked.
4. Worked.

Browser screen == Item 1, Calendar block 2.:

| Attributes | # | Data | Control |
|---------------------------------------|----|----------------|---------|
| Shift Code Condition (0x65) | 84 | 00 00 00 00 0C | Get |
| #1 First Calendar Block Number (0x66) | 1 | 1 | Get |
| Calendar Block Number In Item (0x67) | 1 | 2 | Get |
| #2 Offset Year (0x68) | 1 | 0 | Get Set |
| Offset Month (0x69) | 1 | 0 | Get Set |
| Offset Day (0x6A) | 2 | 0 | Get Set |
| Offset Hour (0x6B) | 1 | 0 | Get Set |
| Offset Minute (0x6C) | 1 | 0 | Get Set |
| Zero Suppress Year (0x6D) | 1 | Disable | Get Set |
| Zero Suppress Month (0x6E) | 1 | Disable | Get Set |
| Zero Suppress Day (0x6F) | 1 | Disable | Get Set |
| Zero Suppress Hour (0x70) | 1 | Disable | Get Set |
| Zero Suppress Minute (0x71) | 1 | 115 | Get Set |
| #3 Zero Suppress Weeks (0x72) | 1 | Disable | Get Set |
| Zero Suppress Day Of Week (0x73) | 1 | Disable | Get Set |
| Substitute Year (0x74) | 1 | Disable | Get Set |
| Substitute Month (0x75) | 1 | 255 | Get Set |
| Substitute Day (0x76) | 1 | 255 | Get Set |
| Substitute Hour (0x77) | 1 | 255 | Get Set |
| Substitute Minute (0x78) | 1 | 255 | Get Set |
| #4 Substitute Weeks (0x79) | 1 | Enable | Get Set |
| Substitute Day Of Week (0x7A) | 0 | Disable | Get Set |
| Time Count Start Value (0x7B) | 0 | "" | Get Set |
| Time Count End Value (0x7C) | 0 | "" | Get Set |
| Time Count Reset Value (0x7D) | 8 | "77777777" | Get Set |
| Reset Time Value (0x7E) | 0 | 0 | Get Set |
| Update Interval Value (0x7F) | 7 | -1204309067 | Get Set |
| Shift Start Hour (0x80) | 1 | 179 | Get Set |
| Shift Start Minute (0x81) | 1 | 181 | Get Set |
| Shift End Hour (0x82) | 1 | 184 | Get Set |
| Shift End Minute (0x83) | 1 | 55 | Get Set |
| Shift String Value (0x84) | 1 | "" | Get Set |

| Index Functions | | | |
|-----------------|---|-----|-----|
| Item | 1 | Get | Set |
| Calendar Block | 2 | Get | Set |

Observations (only areas outlined in red are pertinent to this test):

1. Item 1 has two calendar blocks starting a calendar block 1.
2. Offset Hour and Offset Minute only returned 1 byte. . I tried sending out a -20 (0xFF 0xEC) and the value returned was 0.
3. Worked.
4. Substitute day of week returned 0 bytes.
5. Substitute Day of Week was set. On the screen, it was Substitute Weeks that was enabled. It was also set without Substitute rule number set to 2.
6. After a recovery of the printer and a reload of 2.06, the enables for Month and Day of Week substitution are ignored. After manually setting them in the printer, they are honored. But, not setting the enables, the substitutions remain on the printer screen.

Browser substitution screen.

| Attributes | # | Data | Control | |
|-------------------|---|---------|---------|-----|
| Number (0x64) | 1 | 1 | Get | Set |
| Name (0x65) | 5 | "REP01" | Get | Set |
| Start Year (0x66) | 1 | 218 | Get | Set |
| Year (0x67) | 2 | "01" | Get | Set |
| Month (0x68) | 3 | "JAN" | Get | Set |

| Attributes | # | Data | Control | |
|--------------------|---|-------|---------|-----|
| Day (0x69) | 3 | "01" | Get | Set |
| Hour (0x6A) | 2 | "01" | Get | Set |
| Minute (0x6B) | 2 | "01" | Get | Set |
| Week (0x6C) | 3 | "01" | Get | Set |
| Day Of Week (0x6D) | 3 | "MON" | Get | Set |

Substitution Rules

Attribute Month (0x68) Get Set

01 "JAN" 02 "FEB" 03 "MAR" 04 "APR" 05 "MAY" 06 "JUN" 07 "JUL" 08 "AUG" 09 "SEP" 10 "OCT"

11 "NOV" 12 "DEC"

Index Functions

Item 1 Get Set Substitution Rules Setting 1 Get Set

Issues:

- .The date start was sent as 2010 (0x07 0xDA). The date code returned as 1 byte (0xDA).

All other controls on the form worked.

Test 1 Continued.

A more comprehensive look at test 1.

Test results:

- All worked except hour and minute offsets.

Traffic out

| Status/Path | Access | Class | Attribute | #Out | Data Out | Raw Out |
|-------------|--------|----------|----------------------|------|----------------|---------|
| 32 69 01 68 | Set | Calendar | Offset_Year | 1 | 1 | 01 |
| 32 69 01 69 | Set | Calendar | Offset_Month | 1 | 2 | 02 |
| 32 69 01 6A | Set | Calendar | Offset_Day | 2 | 3 | 00 03 |
| 32 69 01 6B | Set | Calendar | Offset_Hour | 2 | 4 | 00 04 |
| 32 69 01 6C | Set | Calendar | Offset_Minute | 2 | -5 | FF FB |
| 32 69 01 6D | Set | Calendar | Zero_Suppress_Year | 1 | Disable | 00 |
| 32 69 01 6E | Set | Calendar | Zero_Suppress_Month | 1 | Disable | 00 |
| 32 69 01 6F | Set | Calendar | Zero_Suppress_Day | 1 | Disable | 00 |
| 32 69 01 70 | Set | Calendar | Zero_Suppress_Hour | 1 | Space Fill | 01 |
| 32 69 01 71 | Set | Calendar | Zero_Suppress_Minute | 1 | Character Fill | 02 |
| 32 69 01 74 | Set | Calendar | Substitute_Year | 1 | Disable | 00 |
| 32 69 01 75 | Set | Calendar | Substitute_Month | 1 | Enable | 01 |
| 32 69 01 76 | Set | Calendar | Substitute_Day | 1 | Disable | 00 |
| 32 69 01 77 | Set | Calendar | Substitute_Hour | 1 | Disable | 00 |
| 32 69 01 78 | Set | Calendar | Substitute_Minute | 1 | Disable | 00 |

Traffic in

| Status/Path | Access | Class | Attribute | #In | Data In | Raw In |
|-------------|--------|----------|----------------------|-----|----------------|--------|
| 33 69 01 68 | Get | Calendar | Offset_Year | 1 | 1 | 01 |
| 33 69 01 69 | Get | Calendar | Offset_Month | 1 | 2 | 02 |
| 33 69 01 6A | Get | Calendar | Offset_Day | 2 | 3 | 00 03 |
| 33 69 01 6B | Get | Calendar | Offset_Hour | 1 | 0 | 00 |
| 33 69 01 6C | Get | Calendar | Offset_Minute | 1 | 0 | 00 |
| 33 69 01 6D | Get | Calendar | Zero_Suppress_Year | 1 | Disable | 00 |
| 33 69 01 6E | Get | Calendar | Zero_Suppress_Month | 1 | Disable | 00 |
| 33 69 01 6F | Get | Calendar | Zero_Suppress_Day | 1 | Disable | 00 |
| 33 69 01 70 | Get | Calendar | Zero_Suppress_Hour | 1 | Space Fill | 01 |
| 33 69 01 71 | Get | Calendar | Zero_Suppress_Minute | 1 | Character Fill | 02 |
| 33 69 01 74 | Get | Calendar | Substitute_Year | 1 | Disable | 00 |
| 33 69 01 75 | Get | Calendar | Substitute_Month | 1 | Enable | 01 |
| 33 69 01 76 | Get | Calendar | Substitute_Day | 1 | Disable | 00 |
| 33 69 01 77 | Get | Calendar | Substitute_Hour | 1 | Disable | 00 |
| 33 69 01 78 | Get | Calendar | Substitute_Minute | 1 | Disable | 00 |

Test 2 Time/Count function:

This is a simple test of the time count function

Traffic Out

| Status/Path | Access | Class | Attribute | #Out | Data Out | Raw Out |
|-------------|--------|--------------|------------------------|------|--------------|--------------------|
| 32 67 01 71 | Set | Print_format | Print_Character_String | 11 | "=>{{FF}}<=" | 3D 3E 7B 7B 46 ... |
| 32 69 01 7B | Set | Calendar | Time_Count_Start_Value | 3 | "AA" | 41 41 00 |
| 32 69 01 7C | Set | Calendar | Time_Count_End_Value | 3 | "KK" | 4B 4B 00 |
| 32 69 01 7D | Set | Calendar | Time_Count_Reset_Value | 3 | "AA" | 41 41 00 |
| 32 69 01 7E | Set | Calendar | Reset_Time_Value | 1 | 6 | 06 |
| 32 69 01 7F | Set | Calendar | Update_Interval_Value | 1 | 30 Minutes | 06 |

Traffic In

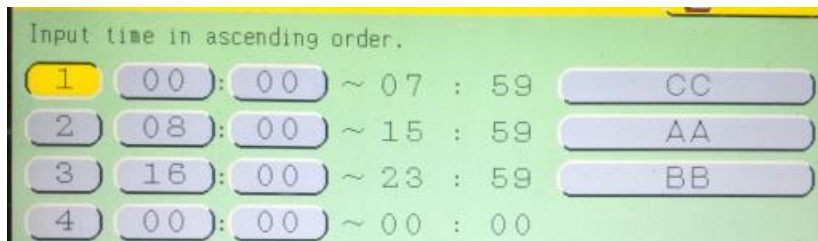
| Status/Path | Access | Class | Attribute | #In | Data In | Raw In |
|-------------|--------|----------|------------------------|-----|------------|--------|
| 33 69 01 7B | Get | Calendar | Time_Count_Start_Value | 2 | "00" | 30 30 |
| 33 69 01 7C | Get | Calendar | Time_Count_End_Value | 2 | "KK" | 4B 4B |
| 33 69 01 7D | Get | Calendar | Time_Count_Reset_Value | 2 | "AA" | 41 41 |
| 33 69 01 7E | Get | Calendar | Reset_Time_Value | 1 | 30 Minutes | 06 |

Test 3 Shift Code

Traffic Out

| Status/Path | Access | Class | Attribute | #Out | Data Out | Raw Out |
|---------------------------|--------|--------------|------------------------|------|--------------|-----------------|
| 00 -- O.K. -- 32 67 01 71 | Set | Print_format | Print_Character_String | 11 | "=>{{EE}}<=" | 3D 3E 7B 7B ... |
| 00 -- O.K. -- 32 7A 01 6F | Set | Index | Calendar_Block | 1 | 1 | 01 |
| 00 -- O.K. -- 32 69 01 80 | Set | Calendar | Shift_Start_Hour | 1 | 0 | 00 |
| 00 -- O.K. -- 32 69 01 81 | Set | Calendar | Shift_Start_Minute | 1 | 0 | 00 |
| 00 -- O.K. -- 32 69 01 84 | Set | Calendar | Shift_String_Value | 3 | "CC" | 43 43 00 |
| 00 -- O.K. -- 32 7A 01 6F | Set | Index | Calendar_Block | 1 | 2 | 02 |
| 00 -- O.K. -- 32 69 01 80 | Set | Calendar | Shift_Start_Hour | 1 | 8 | 08 |
| 00 -- O.K. -- 32 69 01 81 | Set | Calendar | Shift_Start_Minute | 1 | 0 | 00 |
| 00 -- O.K. -- 32 69 01 84 | Set | Calendar | Shift_String_Value | 3 | "AA" | 41 41 00 |
| 00 -- O.K. -- 32 7A 01 6F | Set | Index | Calendar_Block | 1 | 3 | 03 |
| 00 -- O.K. -- 32 69 01 80 | Set | Calendar | Shift_Start_Hour | 1 | 16 | 10 |
| 00 -- O.K. -- 32 69 01 81 | Set | Calendar | Shift_Start_Minute | 1 | 0 | 00 |
| 00 -- O.K. -- 32 69 01 84 | Set | Calendar | Shift_String_Value | 3 | "BB" | 42 42 00 |

In printer



Input traffic could not be shown. Any attempt to read from the printer calendar settings results in a printer hang. Cycling power is required to recover.

Other functions can be displayed. Just not the Calendar Function.