**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:

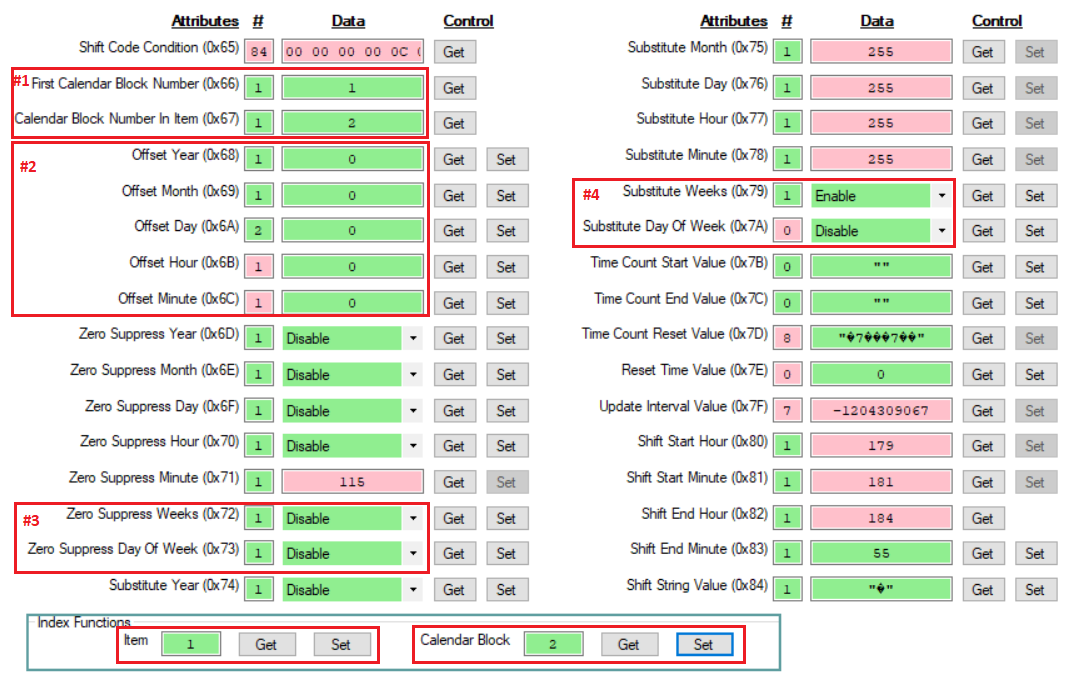
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Status/Path** | **Access** | **Class** | **Attribute** | **#Out** | **Data Out** | **Raw Out** |
| **Load Month and Day Substitutions Data** | | | | | | |
| 32 6C 01 66 | Set | Substitution\_rules | Start\_Year | 2 | 2010 | 07 DA |
| 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.:

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

1. Item 1 hase two calendar blocks starting a calandar 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.

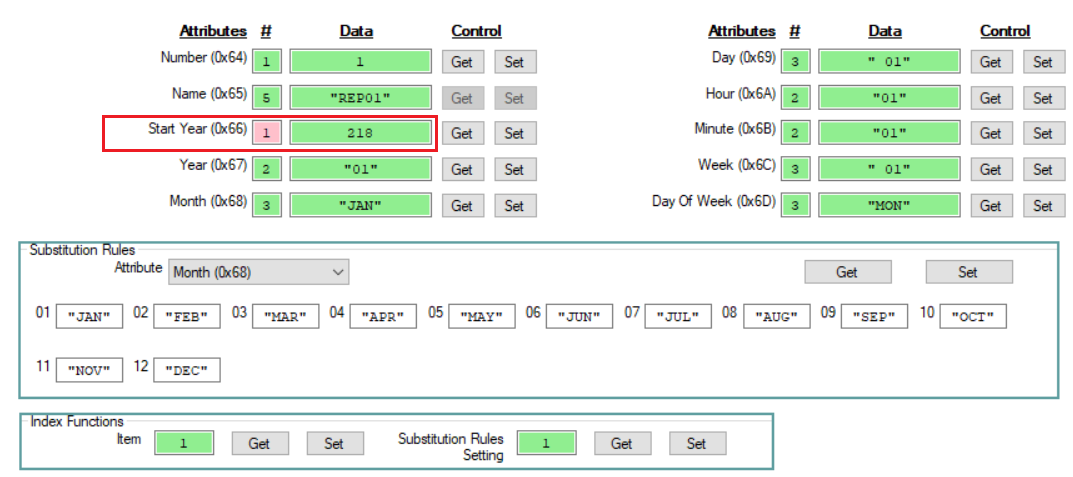
Browser screen == Item 1, Calendar block 2.:



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

1. Item 1 hase two calendar blocks starting a calandar 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.



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

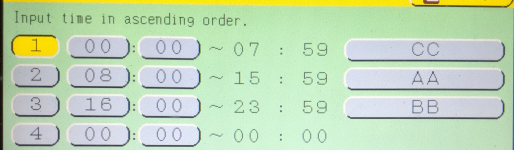
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Status/Path** | **Access** | **Class** | **Attribute** | **#In** | **Data In** | **Raw In** |
| 33 69 01 7B | Get | Calendar | Time\_Count\_Start\_Value | 2 | "00" | 30 30 |
| 33 69 01 7C | Get | Calendar | Time\_Count\_End\_Value | 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

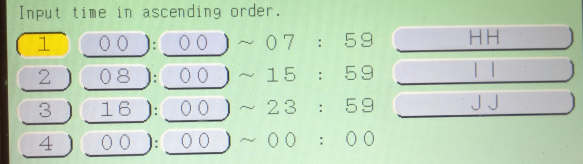
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Status/Path** | **Access** | **Class** | **Attribute** | **#Out** | **Data Out** | **Raw Out** |
| 00 -- O.K. -- 32 67 01 71 | Set | Print\_format | Print\_Character\_String | 11 | "=>{{EE}}<=" | 3D 3E 7B 7B … |
| 00 -- O.K. -- 32 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.

**Update**: I found the problem. The reading of the “Shift cont condition (0x65) was causing the issue. New table added.



Issues:

* Shift code comes back as 1 character, was set to 2
* How to read shifts 2 and 3.

**Update:** There is an issue with shift codes. Question: Is a shift code associated with a calendar block or is the shift code printer wide (applies to all calendar blocks)?

* To write the shift code values, you need to set calendar block number to the shift number (I tried setting index but it only updated shift 1).
* To read the shift codes back, you need to set index to the shift number (I tried using calendar block number, but it always read shift 1).

**So, how do you build a shift code for Calendar Block #2.**

Calendat blocks seem to be assigned by the printer. The application has no control over which calendar bloock is used for a specific item.

If a calendar function is used in text (say “{{EE}}”) and then more text is added using using “Add to end of string (0x67/0x6A), the printer does not assign two calendar blocks to the item.

New traffic display follows:

Traffic (New):

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Status/Path** | **Access** | **Class** | **Attribute** | **#In** | **Data In** | **Raw In** | **#Out** | **Data Out** | **Raw Out** |
| Write shift 1 using Calendar Block | | | | | | | | | |
| 32 67 01 71 | Set | Print\_format | Print\_Character\_String |  |  |  | 11 | "=>{{EE}}<=" | 3D 3E 7B … |
| 32 7A 01 6F | Set | Index | Calendar\_Block |  |  |  | 1 | 1 | 01 |
| 32 69 01 80 | Set | Calendar | Shift\_Start\_Hour |  |  |  | 1 | 0 | 00 |
| 32 69 01 81 | Set | Calendar | Shift\_Start\_Minute |  |  |  | 1 | 0 | 00 |
| 32 69 01 84 | Set | Calendar | Shift\_String\_Value |  |  |  | 3 | "HH" | 48 48 00 |
| Write shift 2 using Calendar Block | | | | | | | | | |
| 32 7A 01 6F | Set | Index | Calendar\_Block |  |  |  | 1 | 2 | 02 |
| 32 69 01 80 | Set | Calendar | Shift\_Start\_Hour |  |  |  | 1 | 8 | 08 |
| 32 69 01 81 | Set | Calendar | Shift\_Start\_Minute |  |  |  | 1 | 0 | 00 |
| 32 69 01 84 | Set | Calendar | Shift\_String\_Value |  |  |  | 3 | "II" | 49 49 00 |
| Write shift 3 using Calendar Block | | | | | | | | | |
| 32 7A 01 6F | Set | Index | Calendar\_Block |  |  |  | 1 | 3 | 03 |
| 32 69 01 80 | Set | Calendar | Shift\_Start\_Hour |  |  |  | 1 | 16 | 10 |
| 32 69 01 81 | Set | Calendar | Shift\_Start\_Minute |  |  |  | 1 | 0 | 00 |
| 32 69 01 84 | Set | Calendar | Shift\_String\_Value |  |  |  | 3 | "JJ" | 4A 4A 00 |
| Switch back to Calendar Block 1 | | | | | | | | | |
| 32 7A 01 6F | Set | Index | Calendar\_Block |  |  |  | 1 | 1 | 01 |
| Read shift 1 using Index | | | | | | | | | |
| 32 7A 01 66 | Set | Index | Item |  |  |  | 2 | 1 | 00 01 |
| 33 69 01 80 | Get | Calendar | Shift\_Start\_Hour | 1 | 0 | 00 |  |  |  |
| 33 69 01 81 | Get | Calendar | Shift\_Start\_Minute | 1 | 0 | 00 |  |  |  |
| 33 69 01 82 | Get | Calendar | Shift\_End\_Hour | 1 | 7 | 07 |  |  |  |
| 33 69 01 83 | Get | Calendar | Shift\_End\_Minute | 1 | 59 | 3B |  |  |  |
| 33 69 01 84 | Get | Calendar | Shift\_String\_Value | 1 | "H" | 48 |  |  |  |
| Read shift 2 using Index | | | | | | | | | |
| 32 7A 01 66 | Set | Index | Item |  |  |  | 2 | 2 | 00 02 |
| 33 69 01 80 | Get | Calendar | Shift\_Start\_Hour | 1 | 8 | 08 |  |  |  |
| 33 69 01 81 | Get | Calendar | Shift\_Start\_Minute | 1 | 0 | 00 |  |  |  |
| 33 69 01 82 | Get | Calendar | Shift\_End\_Hour | 1 | 15 | 0F |  |  |  |
| 33 69 01 83 | Get | Calendar | Shift\_End\_Minute | 1 | 59 | 3B |  |  |  |
| 33 69 01 84 | Get | Calendar | Shift\_String\_Value | 1 | "I" | 49 |  |  |  |
| Read shift 3 using Index | | | | | | | | | |
| 32 7A 01 66 | Set | Index | Item |  |  |  | 2 | 3 | 00 03 |
| 33 69 01 80 | Get | Calendar | Shift\_Start\_Hour | 1 | 16 | 10 |  |  |  |
| 33 69 01 81 | Get | Calendar | Shift\_Start\_Minute | 1 | 0 | 00 |  |  |  |
| 33 69 01 82 | Get | Calendar | Shift\_End\_Hour | 1 | 23 | 17 |  |  |  |
| 33 69 01 83 | Get | Calendar | Shift\_End\_Minute | 1 | 59 | 3B |  |  |  |
| 33 69 01 84 | Get | Calendar | Shift\_String\_Value | 1 | "J" | 4A |  |  |  |