# PURPOSE

This document defines the high resolution data logging requirements for traffic signal controller systems.

# FIRMWARE REQUIREMENTS

Traffic signal controllers shall meet the requirements as listed.

**Table 1: Legends and Abbreviations used in this section**

|  |  |
| --- | --- |
| **Legend** | |
| X | Enumeration CAPTURED - not present in all controllers' outputs. |
| X | Enumeration CAPTURED - present in all controllers' outputs. |
| X | Enumeration not CAPTURED. |
| **Abbreviation** | **Description** |
| M | Mandatory (Operation and command shall be implemented) |
| O | Optional (Operation and command may be implemented) |
| D | Deprecated |

**Table 2: Controller Vendor Formats**

|  |  |
| --- | --- |
| **Controller** | **Time Format (Timestamp)** |
| Econolite | 1/21/2016 3:00:40 PM (00:40.1 - Column A) |
| Siemens | 11/3/2015 7:00:00 AM (00:00.5 - Column A) |
| PEEK | 03/28/2016 06:00:00.5 - Column A |
| Trafficware | 3/16/2016 3:00:09 PM (00:08.7 - Column A) |
| McCain | 2016-03-21 09:45:23.9 - Column A |
| Intelight | Column A (11/24/2015 - Date) Column B (12:30:21 PM - Time) Column C (1 - Tick) |

**Table 3: Requirements Table**

| **Code Explanation** | **Parameter** | **Code** | **FDOT Requirement** | **Additional Notes and Requirements** |
| --- | --- | --- | --- | --- |
| Phase On | Phase # (1-16) | 0 | O |  |
| Phase Begin Green | Phase # (1-16) | 1 | M |  |
| Phase Check | Phase # (1-16) | 2 | M |  |
| Phase Min Complete | Phase # (1-16) | 3 | O |  |
| Phase Gap Out | Phase # (1-16) | 4 | M |  |
| Phase Max Out | Phase # (1-16) | 5 | M |  |
| Phase Force Off | Phase # (1-16) | 6 | O |  |
| Phase Green Termination | Phase # (1-16) | 7 | O |  |
| Phase Begin Yellow Clearance | Phase # (1-16) | 8 | M |  |
| Phase End Yellow Clearance | Phase # (1-16) | 9 | M |  |
| Phase Begin Red Clearance | Phase # (1-16) | 10 | M |  |
| Phase End Red Clearance | Phase # (1-16) | 11 | M |  |
| Phase Inactive | Phase # (1-16) | 12 | M |  |
| Phase events reserved for future use. | Phase # (1-16) | 13-20 | O |  |
| Pedestrian Begin Walk | Phase # (1-16) | 21 | O |  |
| Pedestrian Begin Clearance | Phase # (1-16) | 22 | O |  |
| Pedestrian Begin Solid Don't Walk | Phase # (1-16) | 23 | O |  |
| Pedestrian Dark | Phase # (1-16) | 24 | O |  |
| Pedestrian events reserved for future use. |  | 25-30 | O |  |
| Barrier Termination | Barrier #(1-8) | 31 | O |  |
| FYA – Begin Permissive | FYA # (1-4) | 32 | O |  |
| FYA – End Permissive | FYA # (1-4) | 33 | O |  |
| Barrier events reserve for future use. |  | 34-40 | O |  |
| Phase Hold Active | Phase # (1-16) | 41 | O |  |
| Phase Hold Released | Phase # (1-16) | 42 | O |  |
| Phase Call Registered | Phase # (1-16) | 43 | M |  |
| Phase Call Dropped | Phase # (1-16) | 44 | M |  |
| Pedestrian Call Registered | Phase # (1-16) | 45 | O |  |
| Phase Omit On | Phase # (1-16) | 46 | O |  |
| Phase Omit Off | Phase # (1-16) | 47 | O |  |
| Pedestrian Omit On | Phase # (1-16) | 48 | M |  |
| Pedestrian Omit Off | Phase # (1-16) | 49 | O |  |
| Phase Control Events reserved for future use. |  | 50-60 | O |  |
| Overlap Begin Green | Overlap # (as number A=1 B=2, etc) | 61 | O |  |
| Overlap Begin Trailing Green (Extension) | Overlap # (as number A=1 B=2, etc) | 62 | O |  |
| Overlap Begin Yellow | Overlap # (as number A=1 B=2, etc) | 63 | O |  |
| Overlap Begin Red Clearance | Overlap # (as number A=1 B=2, etc) | 64 | O |  |
| Overlap Off (Inactive with red indication) | Overlap # (as number A=1 B=2, etc) | 65 | O |  |
| Overlap Dark | Overlap # (as number A=1 B=2, etc) | 66 | O |  |
| Pedestrian Overlap Begin Walk | Overlap # (as number A=1 B=2, etc) | 67 | O |  |
| Pedestrian Overlap Begin Clearance | Overlap # (as number A=1 B=2, etc) | 68 | O |  |
| Pedestrian Overlap Begin Solid Don’t Walk | Overlap # (as number A=1 B=2, etc) | 69 | O |  |
| Pedestrian Overlap Dark | Overlap # (as number A=1 B=2, etc) | 70 | O |  |
| Overlap events reserved for future use. | Overlap # (as number A=1 B=2, etc) | 71-80 | O |  |
| Detector Off | DET Channel # (1- 64) | 81 | M |  |
| Detector On | DET Channel # (1- 64) | 82 | M |  |
| Detector Restored | DET Channel # (1- 64) | 83 | O |  |
| Detector Fault- Other | DET Channel # (1- 64) | 84 | O |  |
| Detector Fault- Watchdog Fault | DET Channel # (1- 64) | 85 | O |  |
| Detector Fault- Open Loop Fault | DET Channel # (1- 64) | 86 | O |  |
| Detector Fault- Shorted Loop Fault | DET Channel # (1- 64) | 87 | O |  |
| Detector Fault- Excessive Change Fault | DET Channel # (1- 64) | 88 | O |  |
| PedDetector Off | DET Channel # (1- 64) | 89 | O |  |
| PedDetector On | DET Channel # (1- 64) | 90 | O |  |
| Pedestrian Detector Failed | DET Channel # (1- 64) | 91 | O |  |
| Pedestrian Detector Restored | DET Channel # (1- 64) | 92 | O |  |
| Detector events reserved for future use. |  | 93-100 | O |  |
| Preempt Advance Warning Input | Preempt # (1-10) | 101 | O |  |
| Preempt (Call) Input On | Preempt # (1-10) | 102 | O |  |
| Preempt Gate Down Input Received | Preempt # (1-10) | 103 | O |  |
| Preempt (Call) Input Off | Preempt # (1-10) | 104 | O |  |
| Preempt Entry Started | Preempt # (1-10) | 105 | O |  |
| Preemption Begin Track Clearance | Preempt # (1-10) | 106 | O |  |
| Preemption Begin Dwell Service | Preempt # (1-10) | 107 | O |  |
| Preemption Link Active On | Preempt # (1-10) | 108 | O |  |
| Preemption Link Active Off | Preempt # (1-10) | 109 | O |  |
| Preemption Max Presence Exceeded | Preempt # (1-10) | 110 | O |  |
| Preemption Begin Exit Interval | Preempt # (1-10) | 111 | O |  |
| TSP Check In | TSP #(1-10) | 112 | O |  |
| TSP Adjustment to Early Green | TSP #(1-10) | 113 | O |  |
| TSP Adjustment to Extend Green | TSP #(1-10) | 114 | O |  |
| TSP Check Out | TSP #(1-10) | 115 | O |  |
| Preemption Events reserved for future use |  | 116-130 | O |  |
| Coord Pattern Change | Pattern # (0-255) | 131 | M |  |
| Cycle Length Change | Pattern # (0-255) | 132 | M |  |
| Offset Length Change | Pattern # (0-255) | 133 | M |  |
| Split 1 Change | New Split Time in Seconds (0-255) | 134 | M |  |
| Split 2 Change | New Split Time in Seconds (0-255) | 135 | M |  |
| Split 3 Change | New Split Time in Seconds (0-255) | 136 | M |  |
| Split 4 Change | New Split Time in Seconds (0-255) | 137 | M |  |
| Split 5 Change | New Split Time in Seconds (0-255) | 138 | M |  |
| Split 6 Change | New Split Time in Seconds (0-255) | 139 | M |  |
| Split 7 Change | New Split Time in Seconds (0-255) | 140 | M |  |
| Split 8 Change | New Split Time in Seconds (0-255) | 141 | M |  |
| Split 9 Change | New Split Time in Seconds (0-255) | 142 | O |  |
| Split 10 Change | New Split Time in Seconds (0-255) | 143 | O |  |
| Split 11 Change | New Split Time in Seconds (0-255) | 144 | O |  |
| Split 12 Change | New Split Time in Seconds (0-255) | 145 | O |  |
| Split 13 Change | New Split Time in Seconds (0-255) | 146 | O |  |
| Split 14 Change | New Split Time in Seconds (0-255) | 147 | O |  |
| Split 15 Change | New Split Time in Seconds (0-255) | 148 | O |  |
| Split 16 Change | New Split Time in Seconds (0-255) | 149 | O |  |
| Coord cycle state change | Parameter (0-6) defined as:  0 = Free  1 = In Step  2 = Transition - Add  3 = Transition - Subtract  4 = Transition - Dwell  5 = Local Zero  6 = Begin Pickup | 150 | O |  |
| Coordinated phase yield point | Phase # (1-16) | 151 | O |  |
| Coordination events reserved for future use. |  | 162-170 | O |  |
| Test Input on | Test Input # (as number A=1 B=2, etc) | 171 | O |  |
| Test Input off | Test Input # (as number A=1 B=2, etc) | 172 | O |  |
| Unit Flash Status change | NTCIP Flash state # (0-255) | 173 | M |  |
| Unit Alarm Status 1 Change | NTCIP Flash state # (0-255) | 174 | M |  |
| Alarm Group State Change | NTCIP Flash state # (0-255) | 175 | O |  |
| Special Function Output on | Special Function # (0-255) | 176 | O |  |
| Special Function Output off | Special Function # (0-255) | 177 | O |  |
| Manual control enable off/on | Manual control enable off/on # (0,1) | 178 | O |  |
| Interval Advance off/on | Interval Advance off/on # (0,1) | 179 | O |  |
| Stop Time Input off/on | Stop Time Input Advance off/on # (0,1) | 180 | O |  |
| Controller Clock Updated | Optional parameter: Time correction in Seconds (0-255) | 181 | O |  |
| Power Failure Detected | True (1) | 182 | O |  |
| Power Restored |  | 184 | O |  |
| Vendor Specific Alarm | Vendor defined parameter | 185 | O |  |
| Cabinet/System events reserved for future use. |  | 186-199 | O |  |
| Reserved for future use. |  | 200-255 | O |  |
| ACTUAL\_SPLIT1 |  | 300 |  |  |
| ACTUAL\_SPLIT2 |  | 301 |  |  |
| ACTUAL\_SPLIT3 |  | 302 |  |  |
| ACTUAL\_SPLIT4 |  | 303 |  |  |
| ACTUAL\_SPLIT5 |  | 304 |  |  |
| ACTUAL\_SPLIT6 |  | 305 |  |  |
| ACTUAL\_SPLIT7 |  | 306 |  |  |
| ACTUAL\_SPLIT8 |  | 307 |  |  |
| ACTUAL\_SPLIT9 |  | 308 |  |  |
| ACTUAL\_SPLIT10 |  | 309 |  |  |
| ACTUAL\_SPLIT11 |  | 310 |  |  |
| ACTUAL\_SPLIT12 |  | 311 |  |  |
| ACTUAL\_SPLIT13 |  | 312 |  |  |
| ACTUAL\_SPLIT14 |  | 313 |  |  |
| ACTUAL\_SPLIT15 |  | 314 |  |  |
| ACTUAL\_SPLIT16 |  | 315 |  |  |
| ACTUAL\_NATURAL\_CYCLE |  | 317 |  |  |
| ACTUAL\_OFFSET |  | 318 |  |  |
| BARRIER\_ENTRY\_RING1 |  | 501 |  |  |
| BARRIER\_ENTRY\_RING2 |  | 502 |  |  |
|  |  |  |  |  |

**Document History**

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| --- | --- | --- | --- | --- | --- | --- |
| Rev | Description | Authored and Checked | Reviewed | Approved | Approval Date | Rev More Stringent? |
| 1.0 | Supplemental Requirements for Traffic Controllers | R. Meyer  D. Bremer | J. Morgan | E. Urfali | 01/01/2017 | N/A |
|  |  |  |  |  |  |  |
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