# PURPOSE

This document defines National Transportation Communications for ITS Protocol (NTCIP) requirements for portable changeable message signs (PCMS). Please note that if the group is mandatory, then all objects within that group listed as mandatory shall be supported. If the PCMS does not support the functionality associated with a specific object or group of objects, yet still meets Florida Department of Transportation (FDOT) specifications, then the device must respond with a noSuchName error response when requests are made for those objects.

# NTCIP REQUIREMENTS

Ensure that the device complies with NTCIP 1102v01.15, 2101v01.19, 2103v02.07, 2201v01.15, 2202v01.05, and 2301v02.19, and section 3 of NTCIP 1103v03.52.

**Table 1: Abbreviations used in this document**

|  |  |
| --- | --- |
| **Abbreviation** | **Description** |
| M | *Mandatory* |
| O | *Optional* |
| D | *Deprecated* |

**Table 2: Supplemental PCMS NTCIP Requirements Table**

| **Conformance Group /**  **Object Name** | **Reference** | **FDOT**  **Requirement** | **Additional Notes and Requirements** |
| --- | --- | --- | --- |
| **dmsSignCfg** | **NTCIP 1203v03.05**  **5.2** | **M** |  |
| dmsSignAccess | 5.2.1 | M |  |
| dmsSignType | 5.2.2 | M |  |
| dmsSignHeight | 5.2.3 | M |  |
| dmsSignWidth | 5.2.4 | M |  |
| dmsHorizontalBorder | 5.2.5 | M |  |
| dmsVerticalBorder | 5.2.6 | M |  |
| dmsLegend | 5.2.7 | M |  |
| dmsBeaconType | 5.2.8 | M |  |
| dmsSignTechnology | 5.2.9 | M |  |
| **vmsCfg** | **5.3** | **M** |  |
| vmsCharacterHeightPixels | 5.3.1 | M |  |
| vmsCharacterWidthPixels | 5.3.2 | M |  |
| vmsSignHeightPixels | 5.3.3 | M |  |
| vmsSignWidthPixels | 5.3.4 | M |  |
| vmsHorizontalPitch | 5.3.5 | M |  |
| vmsVerticalPitch | 5.3.6 | M |  |
| monochromeColor | 5.3.7 | M |  |
| **fontDefinition** | **5.4** | **M** |  |
| numFonts | 5.4.1 | M | The device must support a minimum of 4 fonts. |
| fontTable | 5.4.2 | M |  |
| fontIndex | 5.4.2.1 | M |  |
| fontNumber | 5.4.2.2 | M |  |
| fontName | 5.4.2.3 | M |  |
| fontHeight | 5.4.2.4 | M |  |
| fontCharSpacing | 5.4.2.5 | M |  |
| fontLineSpacing | 5.4.2.6 | M |  |
| fontVersionID | 5.4.2.7 | M |  |
| fontStatus | 5.4.2.8 | M |  |
| maxFontCharacters | 5.4.3 | M | The device must support a minimum of 255 font characters. |
| characterTable | 5.4.4 | M |  |
| characterNumber | 5.4.4.1 | M |  |
| characterWidth | 5.4.4.2 | M |  |
| characterBitmap | 5.4.4.3 | M |  |
| fontMaxCharacterSize | 5.4.5 | M |  |
| **multiCfg** | **5.5** | **M** |  |
| defaultBackgroundColor | 5.5.1 | M |  |
| defaultForegroundColor | 5.5.2 | M |  |
| defaultFlashOn | 5.5.3 | M |  |
| defaultFlashOnActivate | 5.5.4 | M |  |
| defaultFlashOff | 5.5.5 | M |  |
| defaultFlashOffActivate | 5.5.6 | M |  |
| defaultFont | 5.5.7 | M |  |
| defaultFontActivate | 5.5.8 | M |  |
| defaultJustificationLine | 5.5.9 | M |  |
| defaultJustificationLineActivate | 5.5.10 | M |  |
| defaultJustificationPage | 5.5.11 | M |  |
| defaultJustificationPageActivate | 5.5.12 | M |  |
| defaultPageOnTime | 5.5.13 | M |  |
| defaultPageOnTimeActivate | 5.5.14 | M |  |
| defaultPageOffTime | 5.5.15 | M |  |
| defaultPageOffTimeActivate | 5.5.16 | M |  |
| defaultBackgroundRGB | 5.5.17 | M |  |
| defaultBackgroundRGBActivate | 5.5.18 | M |  |
| defaultForegroundRGB | 5.5.19 | M |  |
| defaultForegroundRGBActivate | 5.5.20 | M |  |
| defaultCharacterSet | 5.5.21 | M |  |
| dmsColorScheme | 5.5.22 | M |  |
| dmsSupportedMultiTags | 5.5.23 | M |  |
| dmsMaxNumberPages | 5.5.24 | M |  |
| dmsMaxMultiStringLength | 5.5.25 | M |  |
| **dmsMessage** | **5.6** | **M** |  |
| dmsNumPermanentMsg | 5.6.1 | M |  |
| dmsNumChangeableMsg | 5.6.2 | M |  |
| dmsMaxChangeableMsg | 5.6.3 | M | The device must support a minimum of 50 changeable messages. |
| dmsFreeChangeableMemory | 5.6.4 | M |  |
| dmsNumVolatileMsg | 5.6.5 | M |  |
| dmsMaxVolatileMsg | 5.6.6 | M |  |
| dmsFreeVolatileMemory | 5.6.7 | M |  |
| dmsMessageTable | 5.6.8 | M |  |
| dmsMessageMemoryType | 5.6.8.1 | M |  |
| dmsMessageNumber | 5.6.8.2 | M |  |
| dmsMessageMultiString | 5.6.8.3 | M |  |
| dmsMessageOwner | 5.6.8.4 | M |  |
| dmsMessageCRC | 5.6.8.5 | M |  |
| dmsMessageBeacon | 5.6.8.6 | M |  |
| dmsMessagePixelService | 5.6.8.7 | O |  |
| dmsMessageRunTimePriority | 5.6.8.8 | M |  |
| dmsMessageStatus | 5.6.8.9 | M |  |
| dmsValidateMessageError | 5.6.9 | M |  |
| **signControl** | **5.7** | **M** |  |
| dmsControlMode | 5.7.1 | M |  |
| dmsSWReset | 5.7.2 | M |  |
| dmsActivateMessage | 5.7.3 | M |  |
| dmsMessageTimeRemaining | 5.7.4 | M |  |
| dmsMsgTableSource | 5.7.5 | M |  |
| dmsMsgRequesterID | 5.7.6 | M |  |
| dmsMsgSourceMode | 5.7.7 | M |  |
| dmsShortPowerRecoveryMessage | 5.7.8 | M |  |
| dmsEndDurationMessage | 5.7.15 | M |  |
| dmsMemoryMgmt | 5.7.16 | M |  |
| dmsActivateMsgError | 5.7.17 | M |  |
| dmsMultiSyntaxError | 5.7.18 | M |  |
| dmsMultiSyntaxErrorPosition | 5.7.19 | M |  |
| dmsMultiOtherErrorDescription | 5.7.20 | M |  |
| vmsPixelServiceDuration | 5.7.21 | O |  |
| vmsPixelServiceFrequency | 5.7.22 | O |  |
| vmsPixelServiceTime | 5.7.23 | O |  |
| dmsActivateErrorMsgCode | 5.7.24 | M |  |
| dmsActivateMessageState | 5.7.25 | M |  |
| **statError** | **5.11.2** | **M** |  |
| ***Controller Errors*** | ***5.11.2.1*** | ***M*** |  |
| shortErrorStatus | 5.11.2.1.1 | M |  |
| controllerErrorStatus | 5.11.2.1.2 | M |  |
| ***Power Status Data*** | ***5.11.2.2*** | ***M*** |  |
| dmsPowerFailureStatusMap | 5.11.2.2.1 | M |  |
| dmsPowerNumRows | 5.11.2.2.2 | M |  |
| dmsPowerStatusTable | 5.11.2.2.3 | M |  |
| dmsPowerIndex | 5.11.2.2.3.1 | M |  |
| dmsPowerDescription | 5.11.2.2.3.2 | M |  |
| dmsPowerMfrStatus | 5.11.2.2.3.3 | M |  |
| dmsPowerStatus | 5.11.2.2.3.4 | M |  |
| dmsPowerVoltage | 5.11.2.2.3.5 | M |  |
| dmsPowerType | 5.11.2.2.3.6 | M |  |
| ***Pixel Failure Data*** | ***5.11.2.4*** | ***M*** |  |
| pixelFailureTableNumRows | 5.11.2.4.1 | M |  |
| pixelFailureTable | 5.11.2.4.2 | M |  |
| pixelFailureDetectionType | 5.11.2.4.2.1 | M |  |
| pixelFailureIndex | 5.11.2.4.2.2 | M |  |
| pixelFailureXLocation | 5.11.2.4.2.3 | M |  |
| pixelFailureYLocation | 5.11.2.4.2.4 | M |  |
| pixelFailureStatus | 5.11.2.4.2.5 | M |  |
| pixelTestActivation | 5.11.2.4.3 | M |  |
| pixelStatusTable | 5.11.2.4.4 | M |  |
| dmsPixelStatusIndex | 5.11.2.4.4.1 | M |  |
| dmsPixelStatus | 5.11.2.4.4.2 | M |  |
| dmsPixelFailureTestRows | 5.11.2.4.5 | M |  |
| dmsPixelFailureMessageRows | 5.11.2.4.6 | M |  |
| ***statPower*** | ***5.11.3*** | ***M*** |  |
| signVolts | 5.11.3.1 | M |  |
| lowFuelThreshold | 5.11.3.2 | O |  |
| fuelLevel | 5.11.3.3 | O |  |
| engineRPM | 5.11.3.4 | O |  |
| lineVolts | 5.11.3.5 | M |  |
| powerSource | 5.11.3.6 | M |  |
| **graphicDefinition** | **5.12** | **O** |  |
| dmsGraphicMaxEntries | 5.12.1 | M |  |
| dmsGraphicNumEntries | 5.12.2 | M |  |
| dmsGraphicMaxSize | 5.12.3 | M | FDOT permits values larger than 65535 in order for this object to accurately reflect the true capabilities of the sign. |
| availableGraphicMemory | 5.12.4 | M |  |
| dmsGraphicBlockSize | 5.12.5 | M |  |
| dmsGraphicTable | 5.12.6 | M |  |
| dmsGraphicIndex | 5.12.6.1 | M |  |
| dmsGraphicNumber | 5.12.6.2 | M |  |
| dmsGraphicName | 5.12.6.3 | M |  |
| dmsGraphicHeight | 5.12.6.4 | M |  |
| dmsGraphicWidth | 5.12.6.5 | M |  |
| dmsGraphicType | 5.12.6.6 | M |  |
| dmsGraphicID | 5.12.6.7 | M |  |
| dmsGraphicTransparentEnabled | 5.12.6.8 | M |  |
| dmsGraphicTransparentColor | 5.12.6.9 | M |  |
| dmsGraphicStatus | 5.12.6.10 | M |  |
| dmsGraphicBitmapTable | 5.12.7 | M |  |
| dmsGraphicBitmapIndex | 5.12.7.1 | M |  |
| dmsGraphicBlockNumber | 5.12.7.2 | M |  |
| dmsGraphicBlockBitmap | 5.12.7.3 | M |  |
| **FDOT Specific Objects** | **FDOT-Specific Dynamic Message Sign MIB v02** | **M** |  |
| fdotMsgSourceModeExtension |  | M |  |
| **globalConfiguration** | **NTCIP 1201v03.15**  **2.2** | **M** |  |
| globalSetIDParameter | 2.2.1 | M |  |
| globalMaxModules | 2.2.2 | M | The device must support at least two modules. At least one must be software version information. At least one must be hardware version information. |
| globalModuleTable | 2.2.3 | M |  |
| moduleNumber | 2.2.3.1 | M |  |
| moduleDeviceNode | 2.2.3.2 | M |  |
| moduleMake | 2.2.3.3 | M |  |
| moduleModel | 2.2.3.4 | M |  |
| moduleVersion | 2.2.3.5 | M |  |
| moduleType | 2.2.3.6 | M |  |
| controllerBaseStandards | 2.2.4 | M |  |
| **Security** | **A.8** | **O** |  |
| communityNameAdmin | A.8.1 | M |  |
| communityNamesMax | A.8.2 | M | The device shall support a minimum of 2 community names. |

**Table 3: Required MULTI Tags**

|  |  |
| --- | --- |
| **NTCIP 1203v03.05 Required MULTI Tag** | **Required Values** |
| [np] |  |
| [jpx] | 2, 3, 4 |
| [nlx] |  |
| [jlx] | 2, 3, 4, 5 |
| [cfx] or [cfr,g,b] |  |
| [pbz] or [pbr,g,b] |  |
| [fox] |  |
| [scx] |  |
| [ptxoy] |  |

**Document History**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Rev** | **Description** | **Authored and Checked** | **Reviewed** | **Approved** | **Approval Date** | **Rev More Stringent?** |
| 1.0 | Supplemental Requirements for Portable Changeable Message Signs | A. Cramer | D. Vollmer | D. Vollmer | 06/09/2025 | N/A |
|  |  |  |  |  |  |  |