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| YL9120 Data Structure |

1. YL9020\_UVD\_INFORM

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| struct YL9020\_UVD\_INFORM {  char Model[32];  unsigned int version;  }; |

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| No. | Name | Offset | Size | Description |
| 1 | Model | 0 | 32 | Instrument information (Name, Version) |
| 2 | version | 32 | 4 | The version for Data structure (The current value is 100.) |

2. YL9020\_UVD\_CONFIG

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| struct YL9020\_UVD\_CONFIG {  unsigned short sCutWavelength0;  unsigned short sCutWavelength1;  unsigned int nD2LampElapse;  unsigned int nWLampElapse;  }; |

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| No. | Name | Offset | Size | Description |
| 1 | sCutWavelength0 | 0 | 2 | Wavelength for Cut Filter0 |
| 2 | sCutWavelength1 | 2 | 2 | Wavelength for Cut Filter1 |
| 3 | nD2LampElapse | 4 | 4 | Elapsed time for D2 lamp |
| 4 | nWLampElapse | 8 | 4 | Elapsed time for W lamp |

3. YL9020\_UVD\_SETUP

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| struct YL9020\_UVD\_SETUP {  struct YL9020\_UVD\_CHANNEL {  float fTimeConst;  unsigned char btAutoZero;  unsigned char btAutoOffset;  unsigned char btDataFilter;  };  struct YL9020\_UVD\_CHANNEL ChannelSetA;  struct YL9020\_UVD\_CHANNEL ChannelSetB;  unsigned int nProgramCount;  YL9020\_UVD\_EVENT InitEvent;  unsigned char btAZExtIn;  unsigned char btLampExtIn;  unsigned char btChartExtIn;  unsigned char btStartExtIn;  unsigned char btMarkExtIn;  unsigned char btReadyExtIn;  unsigned char btReadyExtOut;  unsigned char btStartExtOut;  unsigned char btDefaultMarkOut;  unsigned int nExtoutTime;  struct YL9020\_UVD\_SIGOUT {  unsigned char btSource;  unsigned char btType;  float fConversion;  float fOffset;  } SigOutSet[2];  struct YL9020\_UVD\_SCAN {  unsigned short sStartWavelength;  unsigned short sStopWavelength;  unsigned char btScanInterval;  unsigned char btSamplingCount;  char dum1, dum2;  } ScanSet;  YL9020\_UVD\_DIAGNOSIS DiagnosisSet;  }; |

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| No. | Name | Offset | Size | Description |
| 1 | btCommand | 0 | 1 | Command Type  0: None  1: Auto Zero  2: Acquisition Start  3: Scan Start  4: Diagnosis Start  5: Stop  6: Reset Error  7: Ready Init |
| 2 | ChannelSetA.fTimeConst | 4 | 4 | Channel A Time Constant (sec) |
| 3 | ChannelSetA.btAutoZero | 8 | 1 | Channel A Auto Zero  0: None  1: Starting acquisition  2: Changing wavelength |
| 4 | ChannelSetA.btAutoOffset | 9 | 1 | Channel A Auto Offset  0: None  1: Changing wavelength  2: Changing polarity |
| 5 | ChannelSetA.btDataFilter | 10 | 1 | Channel A Data Filter  0: Moving Average  1: RC Filter  2: Bessel Filter |
| 6 | ChannelSetB.fTimeConst | 12 | 4 | Channel B time constant (sec) |
| 7 | ChannelSetB.btAutoZero | 16 | 1 | Channel B Auto Zero  0: None  1: Starting acquisition  2: Changing wavelength |
| 8 | ChannelSetB.btAutoOffset | 17 | 1 | Channel B Auto Offset  0: None  1: Changing wavelength  2: Changing Polarity |
| 9 | ChannelSetB.btDataFilter | 18 | 1 | Channel B Data Filter  0: Moving Average  1: RC Filter  2: Bessel Filter |
| 10 | nProgramCount | 20 | 4 | The number of Event Table |
| 11 | InitEvent | 24 | 16 | Initial value of Event Table |
| 12 | btAZExtIn | 40 | 1 | External Auto Zero Input  0: None  1: Rising Edge  2: Falling Edge |
| 13 | btLampExtIn | 41 | 1 | External Lamp Input  0: None  1: Rising Edge  2: Falling Edge |
| 14 | btChartExtIn | 42 | 1 | External Chart Input  0: None  1: Rising Edge  2: Falling Edge |
| 15 | btStartExtIn | 43 | 1 | External Start Input  0: None  1: Rising Edge  2: Falling Edge |
| 16 | btReadyExtIn | 44 | 1 | External Ready Input  0: Level Low  1: Level High |
| 17 | btReadyExtOut | 45 | 1 | External Ready Output  0: Contact Close  1: Contact Open |
| 18 | btStartExtOut | 46 | 1 | External Start Output  0: Contact Close  1: Contact Open |
| 19 | btDefaultMarkOut | 47 | 1 | Default for Markout  0: Contact Close  1: Contact Open |
| 20 | nExtoutTime | 48 | 4 | External Output Time  (100~100,000msec) |
| 21 | SigOutSet.btSource | 52 | 1 | Source Channel  0: Channel A  1: Channel B  2: Channel A+Channel B  3: Channel A-Channel B  4: Channel B-Channel A |
| 22 | SigOutSet.btType | 53 | 1 | Signal Type  0: Absorbency  1:  2: Reference light intensity  4: Sample light intensity |
| 23 | SigOutSet.fConversion | 56 | 4 | Signal Value  (Unit is  Signal Type = 0: V/Abs  Signal Type = 1: V  Signal Type = 2: V/nA  Signal Type = 3: V/nA) |
| 24 | SigOutSet.fOffset | 60 | 4 | Signal Output Offset (V) |
| 25 | ScanSet.sStartWavelength | 76 | 2 | Beginning of Wavelength |
| 26 | ScanSet.sStopWavelength | 78 | 2 | End of Wavelength |
| 27 | ScanSet.btScanInterval | 80 | 1 | Bandwidth |
| 28 | ScanSet.btSamplingCount | 81 | 1 | Sampling Count (<=255) |
| 29 | ScanSet.dum1 | 82 | 1 | - |
| 30 | ScanSet.dum2 | 83 | 1 | - |
| 31 | DiagnosisSet | 84 | 11 | YL9020\_UVD\_DIAGNOSIS |

4. YL9020\_UVD\_EVENT

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| --- |
| struct YL9020\_UVD\_EVENT {  float fTime;  unsigned short sWavelengthA;  unsigned short sWavelengthB;  unsigned char btD2Lamp;  unsigned char btWLamp;  unsigned char btCutFilter;  unsigned char btPolarity;  unsigned char btAutoZero;  unsigned char btMarkOut;  }; |

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| --- | --- | --- | --- | --- |
| No. | Name | Offset | Size | Description |
| 1 | fTime | 0 | 4 | Time (min) |
| 2 | sWavelengthA | 4 | 2 | Channel A Wavelenth (190~1024) |
| 3 | sWavelengthB | 6 | 2 | Channel B Wavelength (190~1024) |
| 4 | btD2Lamp | 8 | 1 | D2 Lamp  0: Off  1: On |
| 5 | btWLamp | 9 | 1 | W Lamp  0: Off  1: On |
| 6 | btCutFilter | 10 | 1 | Cut Filter  0: Auto  1: None  2: 1st Filter  3: 2nd Filter  4: holium Filter |
| 7 | btPolarity | 11 | 1 | Polarity  0: Positive  1: Negative |
| 8 | btAutoZero | 12 | 1 | Auto Zero  0: Off  1: On |
| 9 | btMarkOut | 13 | 1 | Markout  0: Off  1: On  2: Pulse |

5. YL9020\_UVD\_STATE

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| --- |
| struct YL9020\_UVD\_STATE {  unsigned char btState;  unsigned char btD2Lamp;  unsigned char btWLamp;  unsigned char btCutFilter;  unsigned int uErrorCode;  unsigned int nEventStep;  float fElapseTime;  unsigned short sWavelengthA;  unsigned short sWavelengthB;  YL9020\_UVD\_SIGNAL SignalA;  YL9020\_UVD\_SIGNAL SignalB;  unsigned char btReadyExtIn;  }; |

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| No. | Name | Offset | Size | Description |
| 1 | btState | 0 | 1 | Current State of Instrument  0:Initializing  1: Ready  2: Run  3: Scanning  4: Diagnosis  5: Fault |
| 2 | btD2Lamp | 1 | 1 | Current D2 Lamp  0: Off  1: On |
| 3 | btWLamp | 2 | 1 | Current W Lamp  0: Off  1: On |
| 4 | btCutFilter | 3 | 1 | Current Cut Filter  0: Unknown  1: None  2: 1st Filter  3: 2nd Filter  4: Holium Filter |
| 5 | uErrorCode | 4 | 4 | Error Code  0: None  1: Invalid Config  2: Invalid Setup  3: Invalid Service  4: D2 Lamp Error  5: Leak  6: Power |
| 6 | nEventStep | 8 | 4 | Current Event Table Step No. |
| 7 | fElapseTime | 12 | 4 | Elapsed Time (Min) |
| 8 | sWavelengthA | 16 | 2 | Current Channel A’s Wavelength |
| 9 | sWavelengthB | 18 | 2 | Current Channel B’s Wavelength |
| 10 | SignalA.fAbsorbance | 20 | 4 | Current Channel A’s 흡광도 |
| 11 | SignalA.fReferenceE | 24 | 4 | Current Channel A’s Reference |
| 12 | SignalA.fSampleE | 28 | 4 | Current Channel A’s Sampling |
| 13 | SignalB.fAbsorbance | 32 | 4 | Current Channel B’s Absorbance |
| 14 | SignalB.fReferenceE | 36 | 4 | Current Channel B’s Reference |
| 15 | SignalB.fSampleE | 40 | 4 | Current Channel B’s Sampling |
| 16 | btReadyExtIn | 44 | 1 | Current External Ready Input  0: Low  1: High |

6. YL9020\_UVD\_SELFMSG

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| --- |
| struct YL9020\_UVD\_SELFMSG {  unsigned char uMessage;  unsigned short sOldValue, sNewValue;  unsigned int uErrorCode;  }; |

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| No. | Name | Offset | Size | Description |
| 1 | uMessage | 0 | 1 | Message Type  1: State  2: D2 Lamp  3: W Lamp  4: External Input  5: External Output  6: Error |
| 2 | sOldValue | 2 | 2 | - |
| 3 | sNewValue | 4 | 2 | Value  If Message == 2  0: D2 Lamp off  1: D2 Lamp On  2: D2 Lamp Fail  If Message == 3  0: W Lamp off  1: W Lamp On  If Message == 4  0: Auto Zero  1: Lamp  2: Chart  3: Start  4: Stop  5: Ready  6: Not Ready  If Message == 5  0: Markout Off  1: Markout On  2: Markout Pulse  3: Ready  4: Not Ready |
| 4 | uErrorCode | 8 | 4 | Error Code  0: None  1: Invalid Config  2: Invalid Setup  3: Invalid Service  4: D2 Lamp Error  5: Leak  6: Power |

7. YL9020\_UVD\_DIAGNOSIS

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| --- |
| struct YL9020\_UVD\_DIAGNOSIS {  unsigned char btVCCCheck;  unsigned char btVDDCheck;  unsigned char btVSSCheck;  unsigned char btDCCheck;  unsigned char btWPowerCheck;  unsigned char btSignal1Check;  unsigned char btSignal2Check;  unsigned char btD2LampON;  unsigned char btCalibration;  unsigned char btWLampON;  unsigned char btCutFilterCheck;  }; |

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| --- | --- | --- | --- | --- |
| No. | Name | Offset | Size | Description |
| 1 | btVCCCheck | 0 | 1 | +5V |
| 2 | btVDDCheck | 1 | 1 | +15V |
| 3 | btVSSCheck | 2 | 1 | -15V |
| 4 | btDCCheck | 3 | 1 | +12V |
| 5 | btWPowerCheck | 4 | 1 | Power |
| 6 | btSignal1Check | 5 | 1 | Signal1 |
| 7 | btSignal2Check | 6 | 1 | Signal2 |
| 8 | btD2LampON | 7 | 1 | D2 Lamp |
| 9 | btCalibration | 8 | 1 | Calibration |
| 10 | btWLampON | 9 | 1 | W Lamp |
| 11 | btCutFilterCheck | 10 | 1 | Cut Filter |

8. YL9020\_UVD\_DIAGDATA

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| --- |
| struct YL9020\_UVD\_DIAGDATA {  unsigned int nDiagnosis;  float fValue;  unsigned char btPass;  }; |

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| --- | --- | --- | --- | --- |
| No. | Name | Offset | Size | Description |
| 1 | nDiagnosis | 0 | 4 | Diagnosis Index |
| 2 | fValue | 4 | 4 | Value |
| 3 | btPass | 8 | 1 | Pass or Fail  0: Failed  1: Passed |

9. YL9020\_UVD\_ACQDATA

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| --- |
| struct YL9020\_UVD\_ACQDATA {  float fRunTime;  YL9020\_UVD\_SIGNAL SignalA[25];  YL9020\_UVD\_SIGNAL SignalB[25];  }; |

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| --- | --- | --- | --- | --- |
| No. | Name | Offset | Size | Description |
| 1 | fRunTime | 0 | 4 | Elapsed Time |
| 2 | SignalA.fAbsorbance | 4 | 4 | Channel A Absorbance |
| 3 | SignalA.fReferenceE | 8 | 4 | Channel A Reference |
| 4 | SignalA.fSampleE | 12 | 4 | Channel A Sampling |
| 5 | SignalB.fAbsorbance | 124 | 4 | Channel B Absorbance |
| 6 | SignalB.fReferenceE | 128 | 4 | Channel B Reference |
| 7 | SignalB.fSampleE | 132 | 4 | Channel B Sampling |

10. YL9020\_UVD\_SCANDATA

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| --- |
| struct YL9020\_UVD\_SCANDATA {  unsigned short sWavelength;  float fAbsorbance;  float fReferenceE;  float fSampleE;  }; |

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| --- | --- | --- | --- | --- |
| No. | Name | Offset | Size | Description |
| 1 | sWavelength | 0 | 2 | Wavelength |
| 2 | fAbsorbance | 4 | 4 | Absorbance |
| 3 | fReferenceE | 8 | 4 | Reference |
| 4 | fSampleE | 12 | 4 | Sampling |