

# CDI Diode Array – DM-1000 Driver/Interface

This document describes the driver/interface for the CDI diode array – DM-1000 moisture and solvent analyzer.

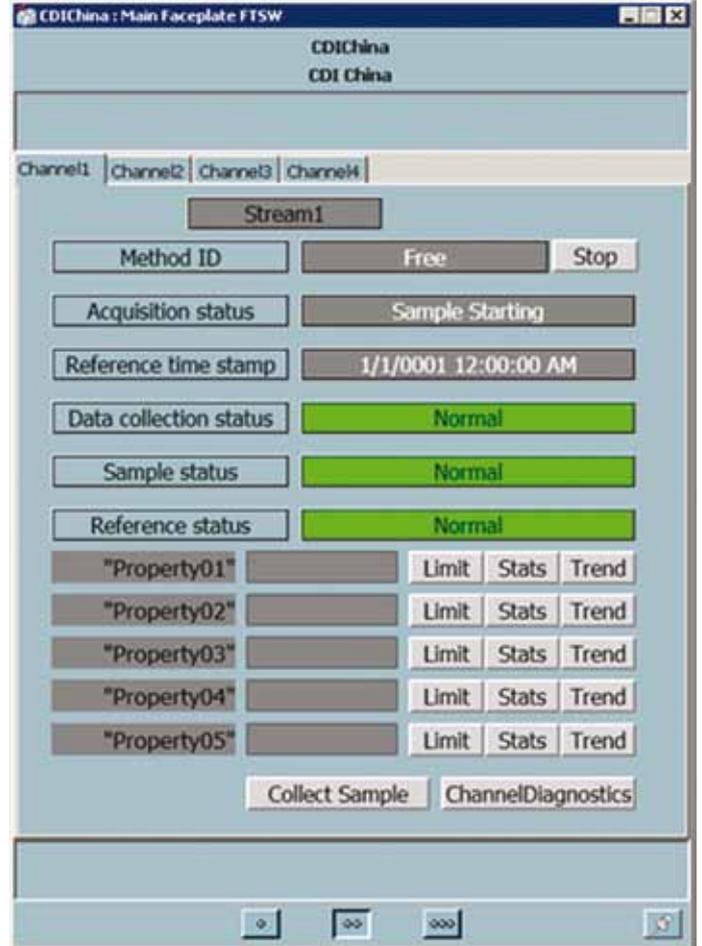
## Product Description

The interface provides data collection and control of all instrument parameters. This allows acquisition of sample spectra and calibration spectra (white and dark background). The interface is compatible with all DM-1000 spectrometers running CDI Spec32 software version 1.5.7.3 and using a wired Ethernet connection.

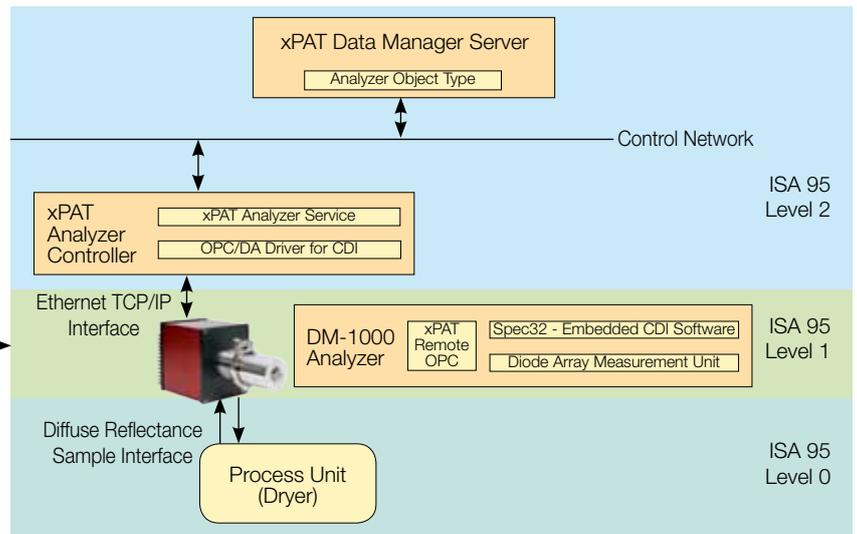
The software interface is made up of the CDI Spec32 software that runs on the analyzer on-board computer and interfaces to the analyzer hardware, an interface driver that links to the CDI Spec32 software over Ethernet using tunneled OPC/DA, the xPAT analyzer service, the xPAT configuration template for CDI DM-1000 and the xPAT object type for CDI DM-1000.

The DM-1000 has an automated self-test function that serves to validate correct operation of the analyzer (OQ). The xPAT system takes control of the analyzer through the CDI Spec32 software for all analyzer operations; including validation (automated OQ tests), calibration (collection of white and dark background spectra) and sample acquisition.

Manual control and status display of the analyzer is provided by a standard faceplate associated with each instance of the analyzer on the xPAT workplace.



CDI diode array – DM-1000 moisture and solvent analyzer



## Specifications

Analyzer Class	NIR spectrometer
Subclass	Diode array spectrometer
Interface	Ethernet TCP/IP with tunneled OPC/DA
Compatibility	All models using wired Ethernet and CDI Spec32 embedded software version 1.5.7.3
Throughput	Max 1 sample every 10 seconds
Spectrum Size	Nominal 770 points with 1024 element standard InGaAs Detector
<b>Control Parameters &amp; Commands</b>	Read/write control parameters and analyzer commands
Channels	1 channel
Number of Scans	Number of scans to average per sample measurement / per reference measurement; Default 1
Fast Reference	Places 100% reflectance standard in beam and collects new white background spectrum
Wavelength Calibration	Perform automatic wavelength calibration against Mercury-Argon line source
Pause	Switch analyzer to inactive state – source off, interrupt all data acquisition
Reference and Sample	Collect dark background then white background spectra, turn on source and start collecting samples
Standardize	Run complete auto calibration and validation test set (OQ)
Standardize, Reference and Sample	Equivalent to Standardize command followed by Reference and Sample Command
<b>Signal Processing Parameters</b>	
Spectral Range	Minimum and Maximum of desired spectral range in nm For standard InGaAs Detector maximum range is 900 to 1700nm; Default 910 to 1680nm For extended InGaAs Detector maximum range is 1100 to 2200nm
Point Spacing	Point spacing in nm, should be similar to the physical nm/pixel density of the device Default 1.0nm
<b>Faceplate Status Indicators – analyzer</b>	
Connection Status	Status of Ethernet link to analyzer: good or bad
Analyzer Status	Status of analyzer: good or bad
Acquisition Status	Idle, Sample starting, Sample, Reference starting or Reference
Reference Time Stamps	Date time for last dark background and white background spectra
Data Collection Status (for sample or reference)	Normal, Maintenance, Fault
Faceplate Commands per channel	Collect Sample, Collect Reference
Control Type	xPAT provides start/stop signal for all analyzer functions
Data Acquisition	Collect wavelength calibration, dark background and white background spectra for calibration and absorbance spectra for samples
Data Analysis	Up to 5 properties with statistics from Peak height or PLS model (PLSplusIQ or SimcaP+)
Calibration	Perform wavelength autocalibration, dark background and white background
Validation	Operational Qualification (OQ) of analyzer built in. Performance Qualification (PQ) implemented by method specific configuration
Spectral Diagnostics	Available on reference and sample spectra: Spectral Noise (RMS noise over a spectral region), Frequency Validation (check correct location of a known band), Spectral Band Intensity (Check a band for minimum intensity)
Health Monitoring	Monitors analyzer hardware status; e.g. TCP/IP connection to analyzer, Analyzer status
Asset Management	Not implemented

For more information about this analyzer please visit [www.cdipharma.com](http://www.cdipharma.com). For more information on ABB Life Sciences solutions visit [www.abb.com/lifesciences](http://www.abb.com/lifesciences).

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