Nadcap Solutions

Instrument and Software Solutions for
Nadcap Pyrometry Applications (AMS2750D)

COREMA

vigilantplant.®
The clear path to operational excellence

YOKOGAWA ◆
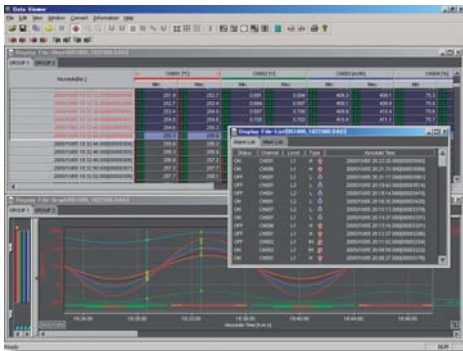
Video Graphic Recorders

(Field Test and Recording Instruments)

All-purpose recorder for TUS, SAT & process recording.
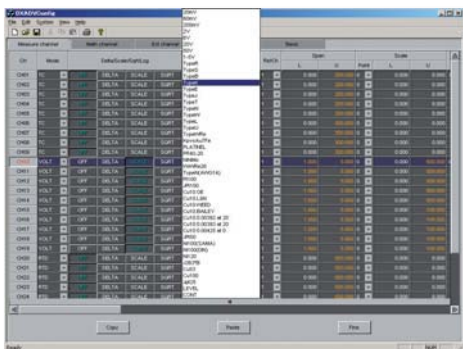**TUS Reporting Tool ready to minimize your report work.**

DAQStation DX1000/DX2000
Advanced Paperless Recorder

DAQStandard Viewer Software
For analysis, print & conversion

DAQStandard Configuration Software
For configuring online/offline

Accurate Measurement

● Minimum sensitivity and readability are 0.1 °F and 0.1 °C

AMS2750D 3.2.3 Minimum Readability – Test Instruments
Test instruments shall be digital and have a minimum readability of 1 °F or 1 °C.

AMS2750D 3.2.4.1 Minimum Readability – Recording Instruments
At least one recording and/or controlling instrument for each zone shall have a minimum readability of 1 °F or 1 °C.

AMS2750D 3.2.5.5 Sensitivity
Sensitivity shall be checked during calibration. See Table 3 footnote 4.
Table 3 footnote 4:
Class 1 & 2 instruments shall have a minimum sensitivity of 1 °F (1 ° C)
Class 3 through 6 instruments shall have a minimum sensitivity of 3 °F (2 °C).

● 16-point Lineariser function to achieve 1 °F (0.6 °C) accuracy

AMS2750D 3.2.5.2 Calibration Accuracy
Calibration accuracy and frequency requirements shall be in accordance with Table 3.

AMS2750D Table 3 Instruments and Instrument Calibration
Field Test Instruments: ±1 °F (±0.6 °C) or ±0.1% of reading in °F, whichever is greater
Recording Instrument – Digital instruments: ±2 °F (±1.1 °C)

● Modbus connectivity to receive Controller's data digitally

AMS2750D 3.2.4.4 Data Retransmission
Controlling, monitoring and recording instruments shall receive an unmodified signal from sensors except for analog to digital and digital to analog conversions, or a digitally-processed, error-checked equivalent representation of a direct measured value.

Electric Data

● Binary-encrypted measurement data files ➡ No way to manipulate

AMS2750D 3.2.7.1.1 Electric Record – Manipulation
The system must create write-once, read only electronic records that cannot be altered without detection.

● Data play-back on instruments as well as on PC (PC software bundled)

AMS2750D 3.2.7.1.2 Electric Record – Playback
The system software and playback utilities shall provide a means of examining and/or compiling the record data, but shall not provide any means for altering the source data.

AMS2750D 3.2.7.1.3 Electric Record – Data Output
The system shall provide the ability to generate accurate and complete copies of records in both human readable and electronic form suitable for inspection, review, and copying.

● Batch header information for controlling data with batch name

Security

● Log-in authentication: User Name, User ID(optional) & Password
● User-group to control operational access limits

AMS2750D 3.2.7.1.5 Electric Record – Data Access
The system shall provide methods (e.g., passwords) to limit system access to only individuals whose authorization is documented.
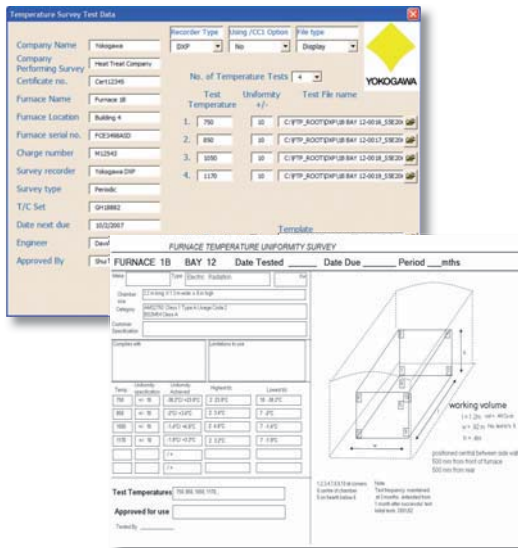
Other Optional Features

● Logarithmic (LOG) scale, e.g. for vacuum furnace

AMS2750D describes the pyrometric requirements for thermal processing equipment used for heat treatment. There are many requirements surrounding SAT (System Accuracy Test) and TUS(Temperature Uniformity Survey) and the frequency that they have to be carried out. Yokogawa can provide a full range of products including software solutions for SAT, TUS testing and the furnace instrumentation fulfilling the requirements of AMS2750D. Our long term contribution to temperature monitoring and controlling ensures accurate and reliable furnace operation.
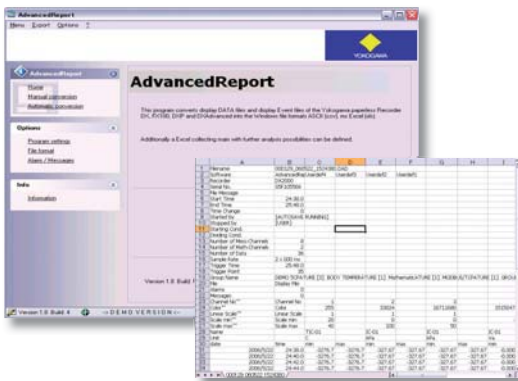
Nadcap Solution

TUS Reporting Software

Automatic reporting tool produces a comprehensive fully formatted document in-line with the requirements of AMS2750D. The report takes minutes to generate, compared to the hours of work needed to produce the report manually.

- Produces a report based on a number of files from a DXP/DX/DXA from its binary data files. No manipulation.
- Produces Test Data sheet showing all of the test details
- Test Overview gives
  - *min/max data per test per T/C (last 30 – 120 minutes)*
  - *Max overshoot of test per test per T/C*
  - *Maximum deviation of min/max/overshoot per test + which T/C*
  - *Pass/Fail based on the uniformity*
  - *Time taken for 1st T/C in specification to last T/C in specification*
  - *Out of spec low blue font out of spec high red font*
- Caters for number of T/C's and number of tests performed
- User can add template e.g. Furnace layout filled in by the report
- Auto formats each page ready to be printed out

Process Record Reporting Software

AdvancedReport is a software tool for creating customised reports. Utilising original binary data files from the DAQStation recorders, reports are generated based on user templates. Reports are created in minutes.

- Produces a report based on a number of files from a DXP/DX/DXA from its binary data files. No manipulation.
- Supports both automatic and manual conversion
  - *Automatic Conversion*
    Periodically check the target folder, and generate reports from new data files
  - *Manual Conversion*
    Users select target data files manually to generate reports
- Users can create templates to produce customized layouts.

Associated Products

CX1000/CX2000 *(Control and Recording Instruments)*
Control and Measurement Station

- Paperless recorder with embedded PID loops
- Up to 6 embedded loops and up to 16 external control loops
- Logic control functionality
- Carbon Potential computation function (/S35 option)

MX100/MW100
(Field Test Instrument, Recording Instruments)
Online-/Offline-Data Acquisition Units

- Durability design for field use
- Flexible system configuration

CX1000/CX2000   **MX100/MW100**

Strip Chart Recorders

μR10000/μR20000
Industrial Recorders

DARWIN DR240
Hybrid Recorder

Accurate Measurement

- Minimum sensitivity and readability are 0.1 °F, 0.1 °C
- 16-point Lineariser to achieve 2 °F (1.1 °C) accuracy[*]

Chart Printing

- Flexible Chart Speed
- Digital printing for instantaneous values, good for SAT
- Batch Header Function[*]
- Pen position and digital display can be calibrated by users.[*]

(*): μR10000/μR20000

Temperature Controllers

Green series controllers
Temperature controllers & limiters

Temperature Controllers

- Supports multi-zone temperature applications
- Max 300 program patterns, 99 segments per pattern
- "Super" function for overshoot suppression
- "Super2" function to prevent hunting
- Modbus communications to retransmit control temperature digitally to a recording instrument

High Limit Devices

- Latching action for control output relay (UT350L)

Ensure Reliability

ASIC as measurement engine

Dust-proof and water-proof
IEC529-IP65, NEMA4
(DXAdvanced)

YOKOGAWA EMC laboratory

**High-breakdown-voltage
solid-state relays**

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vigilance®

quality   innovation   foresight

What does Yokogawa **vigilance** mean to the future of your business? *Quality.* Through products that are built from the ground up and tested to the last hour, you're ensured continuous operation and more uptime. *Innovation.* Your business will benefit from new insights and capabilities, bringing true predictability to your process. *Foresight.* As the market changes, you'll have solutions that give you the continuity and flexibility to plan ahead and grow. Our partners know the difference. With Yokogawa, you can count on a lifetime of plant efficiency, from instrumentation to operation support. Let us be vigilant about your business.