Specifications for the Dash 4u Recorder

Summary of Features of the Dash 4u

Isolated, Single-ended Voltage Measurements
Ideal for a wide variety of voltage measurements, the input is designed for voltages between 0.1 and 400 V full scale

Differential Voltage Measurements
The isolated, differential input module accepts inputs from 5 mV to 1600 mV full scale

Thermocouple Measurements
The Thermocouple Input supports Type J, K, E and T thermocouples and has a 10 Hz bandwidth

Frequency Measurements
The Frequency-to-Voltage Input extends the Dash 4u's capability for frequency recording. Frequency range is from 5 Hz to 5 kHz.

Resistance Temperature Detector (RTD)
The Dash 4u supports both 2-wire and 4-wire RTD measurements, with linearization optimized for a temperature range from -100 °C to 450 °C

DC Bridge
Perfect for a wide variety of load cells and pressure transducers, the DC Bridge Input offers and isolated 10V excitation source at up to 30 mA

Chart Recorder
Recording method: Direct thermal
Chart size: 140mm W x 139mm L (5.5" W x 5.47" L); Z-fold, 300 sheets, 200'
Resolution: 12 dpm (300 dpi) amplitude and time axis

Waveform Inputs
Number of inputs: Four
Isolation: All signals isolated from chassis and other inputs to 250 Vrms
Bandwidth: 5 kHz (-3dB) except where noted

Data Capture
Media: Sample direct to disk
Sample rate: 0.0167 Hz (once per second) to 50 kHz per channel
Disk capacity: 2 billion samples, 1000 records

Digital Signal Processing
Sample rate: 50 kHz
ADC resolution: 14-bit
Functions: Filter, RMS

Front Panel Display
Type: Active matrix color LCD
Viewing area: 10.4" (diagonal); resolution 640 x 480

Record Review
Formats: Strip chart, numeric tabular, XY-plot
Display: Use cursors to select sections and make measurements

Storage Media
Internal hard drive: 4 GByte std
Removable drive: ZIP™ drive standard

Physical
Case material: Cast aluminum
Dimensions: 16.4" L x 11.2" W x 5.2" H
Weight: 22 lbs. (10 kg)

Isolated, Single-ended Voltage Measurements
Input types: Isolated, single-ended
Connector: Guarded banana jack
Max. rated input: ±250 Vrms
Measurement ranges: 10 to 400Vfs; 1 to 40 Vfs; 0.1 to 4 Vfs
Accuracy (25°C): ±0.5% of full scale
Input coupling: DC
Minimum input impedance: 1 Mohm
Filter choices: Low pass with stops from 1 Hz to 5 kHz; High pass with starts from 0.1Hz to 100 Hz; Notch with 50 or 60 Hz bandpass center
Zero suppression: Yes
User engineering units: Yes

Differential Voltage Measurements
Input type: Isolated, differential
Connector: Screw terminal header
Absolute max. input: ±40V, differential
Measurement range: 200 to 1600 mVfs; 50 to 500 mVfs; 5 to 50 mVfs
Accuracy (25°C): ±0.5% of f.s.±50µV
Input coupling: DC
Minimum input impedance:1 Mohm
Filter choices: Low pass with stops from 1 Hz to 5 kHz; high pass with starts from 0.1Hz to 100 Hz; Notch with 50 or 60 Hz bandpass center
Calibration: Semi-automated using calibration module
Autobalance: Yes (limited to max. span)
Zero suppression: Yes
User engineering units: Yes

Thermocouple Measurements
Input type: Isolated, differential
Connector: Screw terminal header
Absolute maximum input: ±40V
Specified ranges: Type J: 0°C to 760°C; Type K: 0°C to 1370°C; Type T: -100°C to 400°C; Type E: -100°C to 750°C
Accuracy (25°C): 0.5% of meas. +1°C
Bandwidth: 10 Hz (-3dB)
Linearization: NIST polynomial
User engineering units: °C or °F

Frequency Measurements
Channel: Channel 1 only
Input type: Any Dash 4U input type
Minimum signal amplitude: 20% of attenuator setting (p•p)
Specified range: 5 Hz to 5 kHz
Minimum/Maximum span: 50 Hz/5 kHz
Accuracy (25°C): 0.5% of span plus 0.1% of reading

Resistance Temperature Detector (RTD)
Input type: Isolated, differential
Connector: Screw terminal (4-wire)
Probe type: DIN 43760 (PT100)
Specified range: -100°C to 450°C
Menu limits: -100°C to 600°C
Minimum span: 50°C
Maximum span: 500°C
Excitation type: Current
Accuracy (25°C): 0.5% of meas. + 0.5°C
Bandwidth: 10 Hz (-3dB)
User engineering units: °C or °F

DC Bridge
Input type: Isolated, full bridge
Connector: Screw terminal header
Absolute max. input: ± 40V differential
Excitation: Isolated 10V @30 mA
Measuring ranges: 50-500 mV; 5-50 mVfs
Accuracy (25°C): ±0.5% of f.s. ±50 µV
Input coupling: DC
Minimum input impedance: 1 Megohm
Filter choices: Low pass with stops from 1 Hz to 5 kHz; High pass with starts from 0.1 Hz to 100 Hz; Notch with 50 or 60 Hz bandpass center
Autobalance: Yes (limited by max. span)
User engineering units: Yes

Dash 4u General Recorder Specifications

Chart Recorder

Recording method: Direct thermal

Chart size: 140mm W x 139mm L (5.5" W x 5.47" L); Z-fold, 300 sheets, 200'

Resolution: 12 dpm (300 dpi) amplitude and time axis

Chart speed: 1 mm/hr to 100 mm/s

Remote start/stop: TTL level or switch closure

Max. waveform size: 128 mm

Amplitude grids: 6 independent grids up to 125 mm wide; grid placement automatic or user-defined

Time marking: Tri-state (x1, x10, x100) mark on either chart edge; grid time lines can be synchronized to time mark; selectable time mark reference (0.02 to 1 sec.)

Annotation: System log printed automatically (time, date, speed); each grid has one line of text (128 ASCII characters); an on-demand text buffer available (128 characters)

Signal conditioner: Auto-annotation using end-of-grid text buffer

Channel ID: Each channel labeled with channel number; top and bottom grid values can be annotated

Data Capture

Media: Sample direct to disk (non-volatile)

Sample rate: 0.0167 Hz (once per second) to 50 kHz per channel

Disk capacity: 2 billion samples, 1000 records

Time stamp: Time and date automatically saved with data

Header: Information on units, range, sample rates, etc., saved with data

Events: All event inputs can be captured with waveforms

Trigger point location: Pre- and post-trigger percentage, user adjustable

Auto-arm: Automatic stacking of captures

Dual sample rate: Independent control over pre- and post-trigger sample rates

Auto playback and re-arm: Yes

Data Logger

Data logger: Numerical printout of waveform data in user-specified engineering units: up to 2 lines per second

Digital Signal Processing

Sample rate: 50 kHz

ADC resolution: 14-bit

Functions: Filter, RMS

Filter choices: Low pass with stops from 1 Hz to 1000 Hz; High pass with starts from 0.l Hz to 100 Hz; 50/60 Hz Notch.

Math channels: Addition, subtraction, multiplication, division, root mean square (rms), integration, differentiation with filter, true power, apparent power, power factor

Event Inputs

Number of inputs: 8 external event markers

Input type: TTL with pull-ups, 0V to 5V, 0.2 msec duration

Front Panel Display

Type: Active matrix color LCD

Viewing area: 10.4" (diagonal); resolution 640 x 480

Functions: Control menus, waveform review

Miscellaneous input/output

Output: Net trigger

Input: External sample rate; external arm; external chart run/halt; print-on-demand buffer; external trigger; external abort; external chart speed

Physical

Case material: Cast aluminum

Dimensions: 16.4" L x 11.2" W x 5.2" H

Weight: 22 lbs. (10 kg)

Input voltage: 120/240 VAC (50/60 Hz)

Safety standards: Meets UL 3101, CSA 1010, IEC 1010

EMI standards: Meets FCC Class A, EN55011, EN 50082-1

Record Review

Formats: Strip chart, numeric tabular, XY-plot

Display: Use cursors to select sections and make measurements

Chart: Playback at x1/8 to x8

ZIP archive: Up to 45 million samples

ASCII conversion: Direct conversion to PC/ASCII/Excel format

Storage Media

Internal hard drive: 4 GByte std

Removable drive: ZIP™ drive standard

Trigger

Basic: Trigger controls data capture and dual speed

Sources: Signal tests, events, clock, external TTL and menus

Combinations: Logic "OR" with limited "AND"

Trigger Acquisition Sources

Window: All active waveform channels simultaneously

Special: Slew rate; slope/level

Event : Binary combination of active event

Clock: Time of day or periodic

Other sources: Both manual and hard-wire trigger inputs

Waveform Inputs

Number of inputs: Four

Isolation: All signals isolated from chassis and other inputs to 250 Vrms

Bandwidth: 5 kHz (-3dB) except where noted

ZIP Drive

Format: MS-DOS® format

Function: Setup files, software upgrades and data transfer/archive

Menu functions: Format, rename, delete, copy, print (ASCII)