

Standard Specifications

General Specifications

Attachment: Embedded panel (vertical panel)
The attachment angle may be slanted 30° to the rear. Left-right horizontal.

Attached panel thickness: 2-26 mm

Materials: Case: Steel
Bezel: Polycarbonate
Front filter: Polycarbonate

Paint colors: Bezel: Charcoal gray light (Munsell 10.0B 3.6/0.3 or equivalent)
Case: Grayish blue-green (Munsell 2.0B 5.0/1.7 or equivalent)

Front panel dustproof/water resistance specifications:
Compliant with IEC529-IP65
Compliant with NEMA No. 250 TYPE4 (except icing test)

Input unit

Number of inputs and measurement periods

Model	Inputs	Measurement period	Event file sampling period
DX102	2	125 ms	125,250,500 ms,
DX104	4		1,2,5,10,30,60,120,300,600 s
DX106	6	1 second (2 seconds for A/D integration time of 100 ms)	1,2,5,10,30,60,120,300,600 s
DX112	12		
DX204	4	125 ms	125,250,500 ms,
DX208	8		1,2,5,10,30,60,120,300,600 s
DX210	10	1 second (2 seconds for A/D integration time of 100 ms)	1,2,5,10,30,60,120,300,600 s
DX220	20		
DX230	30		

Measurement range :

Input type	Range	Measuring range
DCV	20 mV	-20.00 to 20.00 mV
	60 mV	-60.00 to 60.00 mV
	200 mV	-200.0 to 200.0 mV
	2 V	-2.000 to 2.000 V
	6 V	-6.000 to 6.000 V
	20 V	-20.00 to 20.00 V
	50 V	-50.00 to 50.00 V
TC	R *1	0.0 to 1760°C 32 to 3200°F
	S *1	0.0 to 1760°C 32 to 3200°F
	B *1	0.0 to 1820°C 32 to 3200°F
	K *1	-200.0 to 1370°C -328 to 2498°F
	E *1	-200.0 to 800°C -328.0 to 1472.0°F
	J *1	-200.0 to 1100°C -328.0 to 2012.0°F
	T *1	-200.0 to 400°C -328.0 to 752.0°F
	N *1	0.0 to 1300°C 32 to 2372°F
	W *2	0.0 to 2315°C -328.0 to 4199°F
	L *3	-200.0 to 900°C -328.0 to 1652.0°F
	U *3	-200.0 to 400°C -328.0 to 752.0°F
RTD *5	Pt100 *4	-200.0 to 600°C -328.0 to 1112.0°F
	JPt100 *4	-200.0 to 550°C -328.0 to 1022.0°F
DI	DCV input (TTL)	OFF: less than 2.4 V ON: more than 2.4 V
	Contact input	Contact on/off

*1 R, S, B, K, E, J, T, N: IEC584-1 (1995); DIN IEC584, JIS C 1602-1995
*2 W: W-5%, Rd/W-26% Rd (Hoskins Mtg. Co.), ASTM E988
*3 L: Fe-CuNi, DIN43710, U: Cu-CuNi, DIN43710
*4 Pt100: JIS C 1604-1997, IEC 751-1995, DIN IEC751-1996, JPt100: JIS C 1604-1989, JIS C 1606-1989
*5 Measuring current: i = 1 mA

Thermocouple burnout : Detector ON/OFF switching
Burnout upscale/downscale switching

Calculations :

Differential calculation : The difference between any two channels can be calculated.
Calculable inputs : DCV, TC, RTD

Linear scaling :
Scalable inputs : DCV, TC, RTD
Scalable range : -30,000 to 30,000

Square root :
Scalable input : DCV
Scalable range : -30,000 to 30,000

Display

Display: DX100: 5.5-inch color TFT LCD (320 X 240 pixels)
DX200: 10.4-inch color TFT LCD (640 X 480 pixels)
* Some LCD display pixels may remain constantly on or constantly off, and brightness variations may occur due to the properties of the liquid crystal. Please note that this does not mean the display is broken.

Trend/bar graph display colors: DX100: Any of 12 colors
DX200: Any of 16 colors

Background: White or black

Status display: Display group name, login user name (when using login function), time (year/month/date, hour:minute:second), batch name (with BT1), recording operation, memory status, media status, calculation status, key lock status, email status, main alarm display

Display types: Measurement data display (trend display, digital display, bar graph display), overview display, information display (alarm summary, message summary, memory summary), historical display

Trend display: Number of screens: 4 (4 groups)
Number of display channels:
DX100: Up to 6 channels per screen or all channels
DX200: Up to 10 channels per screen or all channels
Waveform update rates:
DX102, DX104: 15/30 seconds; 1/2/5/10/20/30 minutes; 1/2/4/10 hours/div
DX106, DX112: 1/2/5/10/20/30 minutes; 1/2/4/10 hours/div
DX204, DX208: 15/30 seconds; 1/2/5/10/20/30 minutes; 1/2/4/10 hours/div
DX210, DX220, DX230: 1/2/5/10/20/30 minutes; 1/2/4/10 hours/div

Direction: Vertical or horizontal
Thickness: 1, 2, or 3 dots
Scale: DX100: 6
DX200: 10

Message display: Display of messages input through key input, communication, or remote input

Other displayed information: Digital value display, tripline, grid, hour:minute, update rate
Digital display
Number of screens: 4 (4 groups)
Number of display channels:
DX100: Up to 6 channels per screen or all channels
DX200: Up to 10 channels per screen or all channels
Update rate: 1 second
Display contents:
Measurements, channel/tag names, units, alarm statuses

Bar graph display
Number of screens: 4 (4 groups)
Number of display channels:
DX100: Up to 6 channels per screen or all channels
DX200: Up to 10 channels per screen or all channels
Update rate: 1 second
Direction: Vertical or horizontal
Scale: 4 to 12
Reference position:
Edge or center (only during horizontal display)
Display contents:
Measurements, channel/tag names, scale upper/lower limits, units, alarm statuses, upper/lower limit alarm points

Overview display
Update rate: 1 second
Display contents:
Measurements and alarm statuses on all channels

Information display
Display types:
Alarm summary, message summary, memory information, etc.

Split screen display (DX200)
Display contents:
The screen is divided into four windows. Any display type/ display group may be displayed in the windows from measurement data display or information display.
Number of stored display types: 4 maximum

Data reference functions
Function:
Redisplay of data from internal memory or removable storage media
Display data: Display data files, event data files
Display layout: Split screen (two parts) or full screen
Time-axis actions: Reducing, enlarging, scrolling

Storage functions

Removable storage media: The following removable storage media options are available when ordering a system:
• 3.5-inch floppy drive (2HD)
• Zip drive (100MB)
• PCMCIA ATA flash memory card (up to 440MB; 20MB card included)

File types The following data are saved on removable storage media:

File type	Data contents	Format
Display data	Maximum and minimum values in the waveform update period, from data sampled in the measurement period	Binary
Event data	Instantaneous values sampled in specified sampling period	Binary
Manual sample data	Instantaneous values for each key input or contact input	ASCII
Statistical calculation (TLOG) data*	Data at TLOG time-out	Binary
Report data*	Data at report time-out	ASCII
Settings file	Settings for set mode/setup mode	ASCII

* When using calculation option (IM1)

Data saving period: Display data: Linked to waveform update rate.
Event data: Specify the sampling period.

Event data file trigger: Free, trigger, or rotate

Measurement data file combinations:
The following combinations of display data files and event files are permitted:
• Display data file only
• Event file (trigger, rotate, free) only
• Display data file + event file (trigger, rotate)

Data size: Display data: Measurement data: 4 bytes/record
Calculation data: 8 bytes/record
Event data: Event data: Measurement data: 2 bytes/record
Calculation data: 4 bytes/record

Display data files only

Display updating (min/div)	1 minute	5 minutes	20 minutes	30 minutes	60 minutes	240 minutes
Saving interval (seconds)	2 seconds	10 seconds	40 seconds	60 seconds	120 seconds	480 seconds
Sampling time	Approx. 27 days	Approx. 5 days	Approx. 23 days	Approx. 34 days	Approx. 69 days	Approx. 277 days

Event data files only

Saving interval	1 second	5 seconds	10 seconds	30 seconds	60 seconds	120 seconds
Sampling time	Approx. 27 hours	Approx. 5 days	Approx. 11 days	Approx. 34 days	Approx. 69 days	Approx. 138 days

Displays data files + event files / Display data files

Display updating (min/div)	1 minute	5 minutes	20 minutes	30 minutes	60 minutes	240 minutes
Saving interval (seconds)	2 seconds	10 seconds	40 seconds	60 seconds	120 seconds	480 seconds
Sampling time	Approx. 20 hours	Approx. 4 days	Approx. 17 days	Approx. 26 days	Approx. 52 days	Approx. 208 days

Display data files + event files/Event files

Saving interval	1 seconds	5 seconds	10 seconds	30 seconds	60 seconds	120 seconds
Sampling time	Approx. 6.9 hours	Approx. 34 hours	Approx. 2 days	Approx. 8 days	Approx. 17 days	Approx. 34 days

File saving method: Auto save or manual
 Auto save: Display data file: Saved to removable storage media at fixed intervals (10 minutes to 31 days).
 Event file: Saved to removable storage media at fixed intervals (3 minutes to 31 days) with free trigger, or saved at end of sampling with trigger or repeat.

Manual save: Data saved when removable storage media is inserted.

Alarm functions

Number of settings: Maximum 4 per channel
 Alarm types: Upper/lower limits, difference upper/lower limits, change rate increase/decrease limits, delay upper/lower limits (alarm delay)

Change rate alarm interval: Measurement period X 1-15
 Hysteresis: Switched between ON (0.5% of display span) and OFF (same for all channels/levels)

Display: Status (alarm type) display and common alarm display shown on digital display unit when alarm occurs.
 Switching between display holding/non-holding.

Notification: Email notification
 Storage: Stored information: Alarm occurrence/clear time, alarm type
 Number of stored records: Most recent 120 records maximum

Output: Output points: DX100 (with option): 2, 4, or 6 points
 DX200 (with option): 2, 4, 6, 12, or 24 points
 Operations: Switching between excitation/non-excitation, holding/non-holding

Communication functions

Medium: 10BASE-T
 Protocols: SMTP, HTTP, FTP, TCP, UDP, IP, ARP, ICMP
 Email sending function: Notification types:

The following information is presented by email:
 Alarm notification: Alarm information is presented when an alarm occurs or is cleared.

System notification: Notification of time when power is interrupted/restored. Notification of time remaining when internal memory overwriting starts. Notification of remaining free space when remaining space in storage media falls to 10%.

Periodic notification: Periodic notification of instantaneous values at preset times or intervals.

Report notification: Notification of report data when report time-out occurs (with M1 option)

Notification addressee: 2 address groups (multiple addresses may be specified in each group, with a maximum of 150 characters per group)

Web server function: Displays the DX unit's screen, alarm information, instantaneous values, etc. on a browser. Messages can be input to the DX unit from the browser.

FTP client function: Automatic file transfer from DX unit (display data files, event files, report file)

FTP server function: Manual file transfer of information on removable storage media, directory editing, file deletion, and checking free space on removable storage media, working through a host computer

Real-time monitor function: Real-time remote monitoring of DX unit measurement data (special protocol)

Power supply

Rated supply voltage: 100-240 VAC (automatic switching)

Operating supply voltage range: 90-132, 180-264 VAC

Rated supply frequency: 50/60 Hz (automatic switching)

DX100 power consumption

Supply voltage	With LCD saver ON	Normal mode	Maximum
100 VAC	Approximately 30 VA	Approximately 32 VA	Approximately 45 VA
240 VAC	Approximately 42 VA	Approximately 47 VA	Approximately 62 VA

DX200 power consumption

Supply voltage	With LCD saver ON	Normal mode	Maximum
100 VAC	Approximately 50 VA	Approximately 53 VA	Approximately 75 VA
240 VAC	Approximately 78 VA	Approximately 80 VA	Approximately 106 VA

Normal operating requirements

Supply voltage ranges : 90 to 132, 180 to 250 V AC
 Supply frequencies : 50 Hz ± 2%, 60 Hz ± 2%
 Ambient temperature : 0 to 50°C
 Ambient humidity : 20 to 80% RH (at 5 to 40°C)

Reference performance specifications

Measurement and display accuracy :
 (reference operating conditions: temperature of 23 ± 2°C, humidity 55 ± 10% RH, supply voltage of 90 to 132 or 180 to 250 V AC, supply frequency of 50/60 Hz ± 1%, minimum 30 minutes warmup time; no vibrations or other which would adversely affect the performance of measuring instruments)

Input type	Input	Measurement accuracy (digital reading)	Maximum digital reading resolution
DC voltage	20 mV	±(0.1% of rdg + 2 digits)	10 μV
	60 mV		10 μV
	200 mV		100 μV
	2 V		1 mV
	6 V		1 mV
	20 V		10 mV
Thermocouple (without reference junction compensation accuracy)	R	±(0.15% of rdg + 1°C) R and S are ±3.7°C for 0 to 100°C, and ±1.5 for 100 to 300°C And B is ±2°C for 400 to 600°C; accuracy not guaranteed for less than 400°C	0.1°C
	S		
	B		
	K		±(0.15% of rdg + 0.7°C) ±(0.15% of rdg + 1°C) for -200 to -100°C
	E		±(0.15% of rdg + 0.5°C)
	J		±(0.15% of rdg + 0.5°C) ±(0.15% of rdg + 0.7°C) for -200 to -100°C
	T		
	N		±(0.15% of rdg + 0.7°C)
	W		±(0.15% of rdg + 1°C)
	L		±(0.15% of rdg + 0.5°C) ±(0.15% of rdg + 0.7°C) for -200 to 100°C
	U		
RTD	Pt100	±(0.15% of rdg + 0.38C)	
	JPt100		

Reference junction compensation: INT (internal)/EXT (external) switching (common to all channels)

Reference junction compensation accuracy

Types R, S, B, W: ± 1°C

Types K, J, E, T, N, L, U: ± 0.5°C (for measurement at 0°C or higher)

Maximum input voltage: 2 VDC or lower voltage range and thermocouple: ±10 VDC (continuous)
 6 VDC or higher voltage range: ±60 VDC (continuous)

Input resistance: 2 VDC or lower voltage range and thermocouple: 10 MΩ or higher
 6 VDC or higher voltage range: Approximately 1 MΩ

Input external resistance: DC voltage, thermocouple input: 2 kΩ or lower
 RTD input: 1 wire, 10 Ω or less (all three wires equal)

Input bias current: 10 nA or less
 Maximum common mode noise voltage: 250 VAC rms (50/60 Hz)

Common mode rejection ratio (CMRR): 120 dB (50/60 Hz ± 0.1%, 500 Ω unbalanced, across minus terminal and ground)
 Normal mode rejection ratio (NMRR): 40 dB (50/60 Hz ± 0.1%)

Maximum noise voltage across channels: 250 VAC rms (50/60 Hz)
 Interference across channels: 120 dB (for 500 Ω input external resistance and 60 V input to other channel)

Specifications for options

Alarm relay contact output (/AR1, /AR2, /A3, /A4*, /A5*)

Function: Relay output through back side when alarm occurs
 Outputs: 2, 4, 6, 12* or 24*
 Relay contact capacitance: 250 VDC/0.1 A (resistance load), 250 VAC (50/60 Hz)/3 A
 Output form: NO-C-NC (switching between excitation/non-excitation, AND/OR, holding/non-holding)
 * /A4 and /A5 are for DX200 only.

Batch functions

Batch number functions: In operation mode, batch names and comments can be input. Automatic incrementing of lot numbers at each batch start. Preset application names, supervisor names, and manager names can be viewed on the batch input screen.

Data files: The following information is added to the data file header:
 • User name
 • Application name
 • Supervisor name
 • Manager name
 • Batch name (text string with up to 16 characters, plus 4-digit lot number)
 • Comments (up to 32 characters X 3 lines)

Serial communications (/C2, /C3)

Functions: Control and settings through host computer, data output to host
 Media: EIA RS-232 (/C2) or RS-422-A/485 (4-wire) (/C3) compliant
 Protocol: Special protocol or Modbus
 Synchronization method: Start-stop synchronization
 Communication method (RS-422-A/485): 4-wire half-duplex multi-drop connection (1:N, where N is 1-32)
 Transfer rate: 1200, 2400, 4800, 9600, 19,200, 38,400 bps
 Data length: 7/8 bits
 Stop bit: 1 bit
 Parity: ODD, EVEN, NONE
 Maximum communication distance: 1.2 km (RS-422-A/485)
 Communication mode: Control and settings I/O are in ASCII mode. Measurement data are output in ASCII or binary mode.
 Modbus communication: Operation mode: RTU MASTER or RTU SLAVE
 RTU MASTER: Capable of data acquisition for 8 packet groups. Registers of a continuous data type in the same slave can be registered in a single packet group.
 RTU SLAVE: Outputs measurement/calculation data and alarm statuses.

FOUNDATION Fieldbus communication functions (/CF1)

Interface: FOUNDATION™ Fieldbus H1 (transfer rate: 31.25 kbps)

Options

DX100

Model code	Suffix code	Optional code	Description
DX102			DAQSTATION DX100 (2 ch)
DX104			DAQSTATION DX100 (4 ch)
DX106			DAQSTATION DX100 (6 ch)
DX112			DAQSTATION DX100 (12 ch)
External memory	-1		FDD
	-2		Zip (with medium)
	-3		ATA flash memory card (with medium)
Display language	-2		English/Germany/French, deg F & Summer/winter time (with English DAQSTANDARD)
Options	/AR1		Alarm output 2 points/Remote control*1*2
	/AR2		Alarm output 4 points/Remote control*1*2
	/A3		Alarm output 6 points*1*3
	/BT1		Batch function
	/C2		RS-232 interface (including Modbus Master/Slave protocol)*4*5
	/C3		RS-422-A/485 interface (including Modbus Master/Slave protocol)*4*5
	/CF1		FOUNDATION Fieldbus*4*6
	/F1		Fail/memory end detection and output*3
	/H2		Clamped input terminal
	/H5		Desktop type (without power code, screw type power terminal)*7
	/H5[]		Desktop type (with power code)*8
	/M1		Mathematical function (with report function)
	/N1		Cu10, Cu25 RTD input/3 legs isolated RTD
	/N2		3 legs isolated RTD*9
	/P1		24 VDC/AC power supply
	/TPS2		24 VDC transmitter power supply (2 loops)*10
/TPS4		24 VDC transmitter power supply (4 loops)*11	
/R1		Remote control	

- *1 /AR1, /AR2, and /A3 cannot be specified together.
- *2 If /AR1 or /AR2 is specified, /R1 cannot be specified.
- *3 If /A3 is specified, /F1 cannot be specified.
- *4 /C2, /C3, and /CF1 cannot be specified together.
- *5 In case that Modbus master function is utilized, /M1 must be specified.
- *6 In case that FOUNDATION Fieldbus (/CF1) is specified, /M1 must be specified together.
- *7 In case that 24 VDC/AC power supply (/P1) and desktop type are specified together, /H5 must be specified.
- *8 /P1 and /H5[] cannot be specified together.
- *9 /N2 cannot be specified for DX102, DX104.
- *10 In case that /TPS2 is specified, /TPS4, /AR2, /A3, or /F1 cannot be specified.
- *11 In case that /TPS4 is specified, /TPS2, /AR1, /AR2, /A3, or /F1 cannot be specified.

DX200

Model code	Suffix code	Optional code	Description
DX204			DAQSTATION DX200 (4 ch)
DX208			DAQSTATION DX200 (8 ch)
DX210			DAQSTATION DX200 (10 ch)
DX220			DAQSTATION DX200 (20 ch)
DX230			DAQSTATION DX200 (30 ch)
External memory	-1		FDD
	-2		Zip (with medium)
	-3		ATA flash memory card (with medium)
Display language	-2		English/Germany/French, deg F & Summer/winter time (with English DAQSTANDARD)
Options	/AR1		Alarm output 2 points/Remote control*1*2
	/AR2		Alarm output 4 points/Remote control*1*2
	/A3		Alarm output 6 points*1
	/A4		Alarm output 12 points*1
	/A5		Alarm output 24 points*1*3
	/BT1		Batch function
	/C2		RS-232 interface (including Modbus Master/Slave protocol)*4*5
	/C3		RS-422-A/485 interface (including Modbus Master/Slave protocol)*4*5
	/CF1		FOUNDATION Fieldbus*4*6
	/D5		VGA video output
	/F1		Fail/memory end detection and output*3
	/H2		Clamped input terminal
	/H5		Desktop type (without power code, screw type power terminal)*7
	/H5[]		Desktop type (with power code)*8
	/M1		Mathematical function (with report function)
	/N1		Cu10, Cu25 RTD input/3 legs isolated RTD
/N2		3 legs isolated RTD*9	
/P1		24 VDC/AC power supply	
/TPS4		24 VDC transmitter power supply (4 loops)*10	
/TPS8		24 VDC transmitter power supply (8 loops)*11	
/R1		Remote control	

- *1 /AR1, /AR2, /A3, /A4, /A5 cannot be specified together.
- *2 If /AR1 or /AR2 is specified, /R1 cannot be specified.
- *3 If /A5 is specified, /F1 cannot be specified.
- *4 /C2, /C3, and /CF1 cannot be specified together.
- *5 In case that Modbus master function is utilized, /M1 must be specified.
- *6 In case that FOUNDATION Fieldbus (/CF1) is specified, /M1 must be specified together.
- *7 In case that 24 VDC/AC power supply (/P1) and desktop type are specified together, /H5 must be specified.
- *8 /P1 and /H5[] cannot be specified together.
- *9 /N2 cannot be specified for DX204, DX208
- *10 In case that /TPS4 is specified, /TPS8 or /A5 cannot be specified.
- *11 In case that /TPS8 is specified, /TPS4 or /A5 cannot be specified.
- In case that /TPS8 is specified, /F1 and /A4 cannot be specified together.

Application Software

Model	Description	Operating System
DXA100-02	DAQSTANDARD	Windows 95/98/Me/NT4.0/2000
DXA200-02	DAQEXPLORER	Windows 95/98/Me/NT4.0/2000
DXA200-02/XF1	DAQEXPLORER auto-file-conversion function included	Windows 95/98/Me/NT4.0/2000
DXA310-021	DAQ-PharmBio	Windows 95/98/Me/NT4.0/2000
DXA410-02	DAQOPC	Windows NT4.0
VA510-01-2	DAQLOGGER (400 channels)	Windows 95/98/NT4.0/2000
VA510-02-2	DAQLOGGER (1000 channels)	Windows 95/98/NT4.0/2000
VA510-03-2	DAQLOGGER (1600 channels)	Windows 95/98/NT4.0/2000
VA520-01-2	DAQLOGGER Client (1600 channels)	Windows 95/98/NT4.0/2000

Accessories

Accessories (sold separately)

Product	Product Model (part number)	Specification
Shunt resistor for screw terminal (standard)	415920	250 Ω ± 0.1%
	415921	100 Ω ± 0.1%
	415922	10 Ω ± 0.1%
Shunt resistor for clamp terminal (for/H2)	438920	250 Ω ± 0.1%
	438921	100 Ω ± 0.1%
	438922	10 Ω ± 0.1%
3.5-inch floppy disks	705900	2HD (10 disks)
Zip disk	A1053MP	100 MB
ATA flash memory card	A1134UN	20 MB
	A1347EF(DX100)	250V 1A TL
Fuse	A1423EF(DX200)	250V 1.25A TL
	A1352EF(DX100)	250V 4A TL (for /P1)
	A1354EF(DX200)	250V 6.3A TL (for /P1)
Bracket	B9900CW	-
Module removal handle	790581	-

Related Products

DX100L DAQSTATION Special Housing Model



- Special housing model for advanced network functions
- ◆ Works with recorders with different panel cuts and depths than the standard DX100.
 - ◆ Foxboro(SPEC200),

DX200C DAQSTATION Circular Display Model



- Circular display model for advanced network functions
- ◆ Enables circular display in addition to ordinary T-Y trend display.
 - ◆ Period settings: 1/2/6/8/12/16 hours; 1/2 days; 1/2/4 weeks
 - ◆ 4 or 8 input channels

NOTICE

- Before operating the product, read the instruction manual thoroughly for proper and safe operation.
- If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.