DATA COLLECTOR

◆ YOKOGAWA

Data Collector DC100

Stand-alone Model

DC100-1
338 × 236 × 157mm 5.3kg
(13-3/8 × 9-3/8 × 6-1/4" 11.7 lbs)

Expandable Model

DC100-2
338 × 236 × 157mm 5.3kg
(13-3/8 × 9-3/8 × 6-1/4" 11.7 lbs)

DS600

★
Safety Standards : CSA22.2 No.1010.1 (CSA NRTL/C)
                   EN61010-1
EMC Standards :   Emission EN61326 Class A
                            EN61000-3-2 Class D
                            EN61000-3-3
                  Immunity EN61326

RS-232-C
RS-422-A/485

GP-IB
Ethernet

CE

Whether in the field or laboratory, the DC100's memory function is ideal for all data acquisition and recording needs.

The DC100 features a large display with a whole range of functions, allowing you to monitor data while storing them in memory. With its sophisticated memory, the DC100 offers simple data acquisition and recording in a single device, yet it's still fully portable and packed with features. No PC needed. No chart paper. No environmental impact. A cost-effective solution to your measurement needs.

FEATURES

● **Flexible expandability**
From 10 to 300 channels, the DC100 can be flexibly modified and expanded. It handles a variety of input signals such as DC voltages, thermocouples, RTDs, contacts, power monitors, pulses, strains, and DC currents (mA).

● **Dependable durability**
Durability against harsh environments is assured by YOKOGAWA's unique technologies such as the planar trans-

former and high-breakdown-voltage solid-state relay. The DC100 also complies with various international safety standards.

● **Effective data processing**
The various memory functions (memory size: 1, 2, or 4 MB: specified when ordering) allow effective data acquisition and recording. Data can be transferred to a personal computer while making a backup in the memory. The standard features include a 3.5-inch floppy disk drive and DAQ32 software.

● **External Mass Storage Interface (/C5)**
The external mass storage interface (SCSI) option is a communication interface for saving files created in the DC100 internal RAM to the MO / Zip / Jaz / PD disk.

● **Report Function (/M3)**
Report files can be created hourly, daily, monthly or at designated time/date independently.

● **Complete Application Software**
In addition to YOKOGAWA's original software packages such as DARWIN DAQ32, a huge range of software packages for DARWIN as well as driver software such as LabVIEW®, FixDmacs®, and InTouch® can be used.

STAND-ALONE MODEL

Suitable for small-scale data logging, with a portable, lightweight design that fits anywhere. Quick and easy data logging – a handy data collector!
• Measuring interval:
  500 ms/40 channels minimum
• Number of input channels:
  10 to 40 channels. Various I/O modules are directly connected to the main unit.
• Compact and light weight (Depth : approx.20cm / Weight : approx.5kg)
• ACV and DCV powered models avai-lable.

EXPANDABLE MODEL

The expandable model consists of a main unit and subunits connected by the DARWIN cables, and can be expanded to handle up to 300 channels of measuring points.
• Measuring interval:
  500 ms/300 channels minimum
• Number of input channels:
  10 to 300 channels. Expansion and modification via subunits.
• Expandability:
  Up to six subunits can be connected to the main unit. The cable length between the main unit and subunits can be extended up to 500 m.
• ACV and DCV powered models avai-lable.

FUNCTIONS

■ **VERSATILE MEMORY**
Instead of PC-based, hard-disk data acquisition and the recording mechanism of a hybrid recorder, a large memory (1, 2, or 4 MB, specified when ordering) is provided. The DC100's versatile memory system offers sophisticated data acquisition and recording by simple operations.
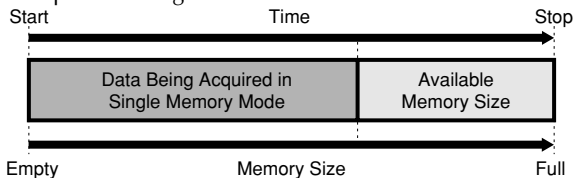
DATA COLLECTOR

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● **Single Memory — using the entire memory as one data file**
Data acquisition and recording are performed with the entire memory used as a single data file(file size : up to 1MB). Simply pressing the START key starts data acquisition and recording until the specified length of data has been recorded.


● **Repeat Memory — continuous data saving**
The memory is divided into multiple data files for data acquisition and recording. When the first file becomes full, the next file is selected automatically and used to record data. There are two ways of dividing the memory.
• Dividing the entire memory into 2, 4, 8, or 16 files of identical size
Example: When dividing into four files
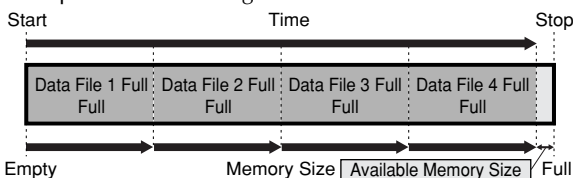
• Dividing the entire memory arbitrarily by specifying the data length of each file
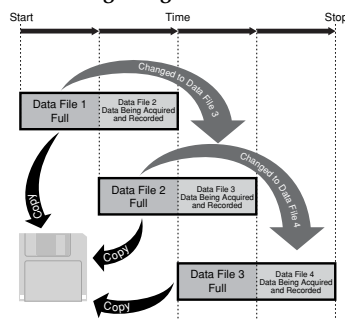Example: When making a file of 1 MB
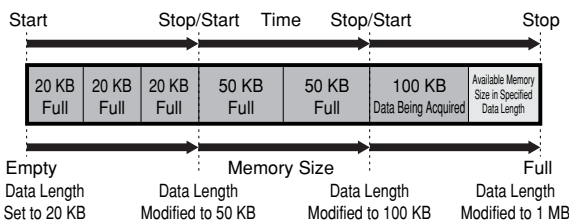
● **Rotary Memory — automatically deleting and updating the oldest file**
When all the divided data files become full, the data file containing the oldest data is automatically updated with new data and data acquisition and recording continues.
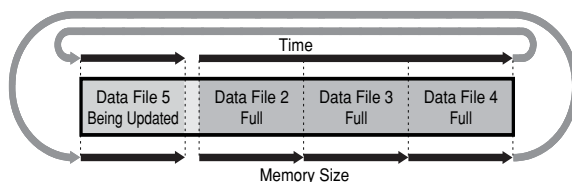

● **Continuous data acquisition and recording using external medium**
When performing data acquisition and recording with the divided memory, a full file of recorded data can be transferred to a floppy disk while data acquisition and recording continues with the next file. The data file which was copied to the floppy disk is then updated and will be used for recording new data.

Stand-Alone Type				
Setting condition	1	Measurment channels 1ch+Computation channels 0ch		
	2	Measurment channels 10ch+Computation channels 0ch		
	3	Measurment channels 20ch+Computation channels 0ch		
	4	Measurment channels 40ch+Computation channels 0ch		
	5	Measurment channels 40ch+Computation channels 30ch		
Memorysize / Sampling Period	Setting Condition	**1MB**	**2MB**	**4MB**
		Data saving time (Approx : □□□d(days) : □□ h(hours) : □□ m(minutes) :)		
0.5 sec	1	18h : 2m	1d : 12h : 20m	3d : 00h : 34m
	2	5h : 32m	11h : 8m	22h : 19m
	3	3h : 8m	6h : 17m	12h : 37m
	4	1h : 40m	3h : 21m	6h : 44m
	5	41m	1h : 24m	2h : 48m
1sec	1	1d : 12h : 00m	3d : 00h : 27m	6d : 00h : 9m
	2	11h : 5m	22h : 17m	1d : 19h : 39m
	3	6h : 15m	12h : 35m	1d : 1h : 14m
	4	2h : 45m	6h : 43m	13h : 29m
	5	1h : 57m	2h : 48m	5h : 37m
2 sec	1	3d : 00h : 9m	6d : 00h : 54m	12d : 00h : 19m
	2	22h : 10m	1d : 20h : 34m	3d : 16h : 19m
	3	12h : 30m	1d : 1h : 11m	2d : 2h : 28m
	4	6h : 40m	13h : 27m	1d : 2h : 59m
	5	2h : 47m	5h : 36m	11h : 15m
5 sec	1	7d : 12h : 23m	15d : 2h : 15m	30d : 4h : 48m
	2	2d : 7h : 28m	4d : 14h : 49m	9d : 4h : 17m
	3	1d : 7h : 20m	2d : 13h : 57m	5d : 6h : 11m
	4	16h : 44m	1d : 7h : 51m	2d : 19h : 28m
	5	6h : 58m	14h : 2m	1d : 4h : 9m
10 sec	1	15d : 00h : 46m	30d : 3h : 30m	60d : 12h : 37m
	2	4d : 14h : 56m	9d : 5h : 51m	18d : 14h : 35m
	3	2d : 14h : 40m	5d : 5h : 00m	252h : 22m
	4	1d : 9h : 28m	2d : 19h : 20m	10d : 12h : 57m
	5	13h : 57m	1d : 4h : 4m	2d : 7h : 18m
60 sec	1	90d : 4h : 40m	181d : 2h : 4m	362d : 20h : 44m
	2	27d : 17h : 09m	55d : 16h : 11m	111d : 14h : 32m
	3	15d : 16h : 00m	31d : 10h : 34m	63d : 2h : 17m
	4	8d : 8h : 52m	16d : 19h : 53m	33d : 17h : 43m
	5	3d : 11h : 42m	7d : 00h : 27m	14d : 9h : 53m

Expandable Type				
Setting condition	1	Measurment channels 60ch+Computation channels 0ch		
	2	Measurment channels 100ch+Computation channels 0ch		
	3	Measurment channels 100ch+Computation channels 60ch		
	4	Measurment channels 300ch+Computation channels 0ch		
	5	Measurment channels 300ch+Computation channels 60ch		
Memorysize / Sampling Period	Setting Condition	**1MB**	**2MB**	**4MB**
		Data saving time (Approx : □□□d(days) : □□ h(hours) : □□ m(minutes) :)		
0.5 sec	1	1h : 8m	2h : 17m	4h : 36m
	2	41m	1h : 24m	2h : 48m
	3	19m	38m	1h : 17m
	4	14m	28m	57m
	5	10m	20m	40m
1sec	1	2h : 16m	4h : 35m	9h : 12m
	2	1h : 23m	2h : 48m	5h : 37m
	3	38m	1h : 17m	2h : 35m
	4	28m	56m	1h : 54m
	5	20m	40m	1h : 21m
2 sec	1	4h : 33m	9h : 10m	18h : 24m
	2	2h : 47m	5h : 36m	11h : 15m
	3	1h : 16m	2h : 35m	5h : 11m
	4	56m	1h : 53m	3h : 48m
	5	40m	1h : 21m	2h : 43m
5 sec	1	11h : 24m	22h : 57m	1d : 22h : 2m
	2	6h : 57m	14h : 1m	1d : 4h : 8m
	3	3h : 12m	6h : 27m	12h : 59m
	4	2h : 20m	4h : 44m	9h : 32m
	5	1h : 40m	3h : 23m	6h : 49m
10 sec	1	22h : 48m	1d : 21h : 54m	3d : 20h : 4m
	2	13h : 55m	1d : 4h : 00m	2d : 8h : 17m
	3	6h : 24m	12h : 55m	1d : 1h : 58m
	4	4h : 40m	9h : 28m	19h : 4m
	5	3h : 20m	6h : 46m	13h : 39m
60 sec	1	5d : 6h : 53m	11d : 11h : 27m	23d : 00h : 27m
	2	3d : 11h : 30m	7d : 00h : 16m	14d : 1h : 42m
	3	1d : 14h : 26m	3d : 5h : 34m	6d : 11h : 50m
	4	1d : 4h : 00m	2d : 2h : 51m	4d : 18h : 26m
	5	20h : 00m	1d : 16h : 38m	3d : 9h : 54m

DATA COLLECTOR

DC100

(PD) (Jaz) (Zip) (MO)
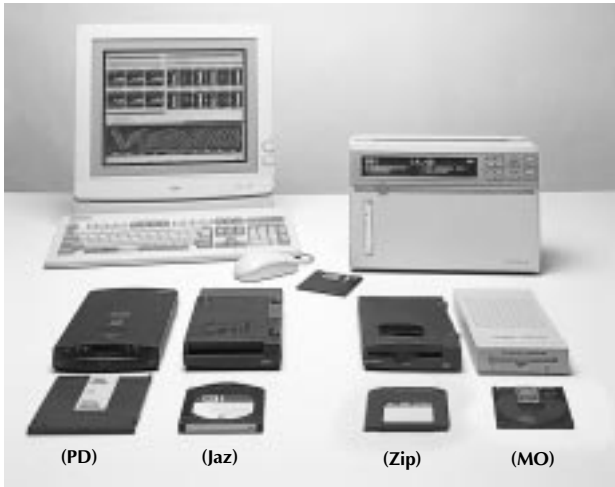
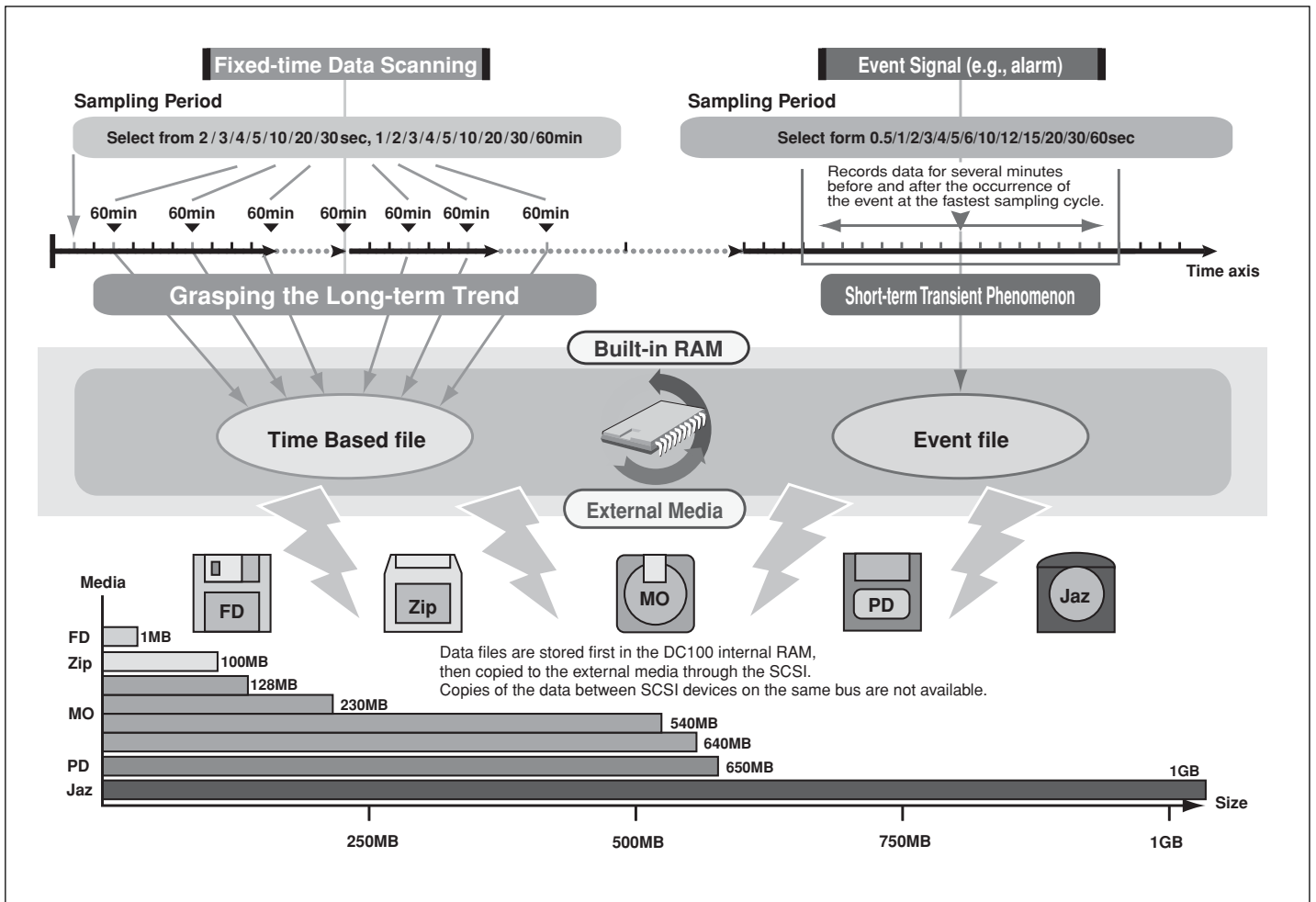■ **/C5 : EXTERNAL MASS STORAGE INTERFACE FUNCTION (SCSI)**
● **Main Function**
  • By installing the external mass storage interface (SCSI) option to the DC100, you can connect MO / Zip / Jaz / PD disk drives.
  • The external mass storage interface (SCSI) option is a communication interface for saving files (such as measurement data files, report files, and periodic files) created in the DC100 internal RAM to the MO / Zip / Jaz / PD disk.
  • MO / Zip / Jaz / PD disks allow transferring of files between the DC100 and the PC without physically connecting the two using communication cables.

■ **/M3: REPORT COMPUTATION AND PERIODICAL FILING FUNCTION**

The report computation function performs computations for hourly, daily, and / or monthly reports using the DC100 data collector, the results are recorded in the internal RAM.

The data file sampling intervals can be set different from the primary measuring interval. Both of the long-term trend recognition and short-term transient phenomena can be acquired with this option.

Fixed-time Data Scanning

Sampling Period

Select from 2 / 3 / 4 / 5 / 10 / 20 / 30 sec, 1 / 2 / 3 / 4 / 5 / 10 / 20 / 30 / 60min

60min 60min 60min 60min 60min 60min 60min

Grasping the Long-term Trend

Event Signal (e.g., alarm)

Sampling Period

Select form 0.5 / 1 / 2 / 3 / 4 / 5 / 6 / 10 / 12 / 15 / 20 / 30 / 60sec

Records data for several minutes before and after the occurrence of the event at the fastest sampling cycle.

Time axis

Short-term Transient Phenomenon

Built-in RAM

Time Based file

External Media

Event file

Media

FD Zip MO PD Jaz

FD 1MB
Zip 100MB
        128MB
MO 230MB
        540MB
        640MB
PD 650MB
Jaz 1GB

Data files are stored first in the DC100 internal RAM, then copied to the external media through the SCSI. Copies of the data between SCSI devices on the same bus are not available.

Size

250MB 500MB 750MB 1GB

DATA COLLECTOR

DC100

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SPECIFICATIONS

DC100 Main Unit
● Stand-alone model (DC100-1)
● Expandable model (DC100-2)

Subunit
● DS400
● DS600

General Specifications
● External Dimensions (when I/O modules are installed)
DC100-1: Approximately 338 (W) × 236 (H) × 157 (D) mm
DC100-2: Approximately 338 (W) × 236 (H) × 157 (D) mm
DS400: Approximately 336 (W) × 165 (H) × 100 (D) mm
DS600: Approximately 422 (W) × 176 (H) × 100 (D) mm
● Weight (when I/O modules are installed)
DC100-1: Approximately 5.3 kg
DC100-2: Approximately 5.3 kg
DS400: Approximately 2.5 kg
DS600: Approximately 3.5 kg
● AC Power Supply
Rated supply voltage: 100 to 240 VAC
Usable supply voltage range: 90 to 250 VAC
Rated supply frequency: 50/60 Hz
● DC Power Supply
Rated supply voltage: 12 to 28 VDC
Usable supply voltage range: 10 to 32 VDC
Power Connection: Dedicated connector (Standard accecsory: AC adspter DV500)
● Insulation Resistance: At least 20 MΩ at 500 VDC between the power supply and ground, between each terminal and the ground, and between input terminals
● Withstanding Voltage
Between power supply terminal and ground: 1,500 VAC (50/60 Hz) for one minute
Between input/output terminal and ground: 1,500 VAC (50/60 Hz) for one minute
● Normal Operating Conditions
Supply frequency: 50 Hz ±2% or 60 Hz ±2%
Ambient temperature: DC100: 5˚ to 40˚C
DS400, DS600; Panel mount −10 to 60˚C
Desk top −10 to 50˚C
DC power operation 0 to 50˚C
Ambient humidity: 20 to 80% R.H. (between -10˚C and 40˚C)
● Safety Standards : CSA22.2 No.1010.1 (CSA NRTL/C) EN61010-1
● EMC Standard s:
Emission EN61326 Class A
EN61000-3-2 Class D
EN61000-3-3
Immunity EN61326
● Others
Clock: With calendar function (Western calendar)
Clock accuracy: ±100 ppm (excluding a delay due to power-on/off)
Set value backup: approximately 10 years, excluding clock function

Connecting Modules and Subunits
● Standard Configuration Modules and Software
The following modules can be installed in a main unit or subunit to configure a data acquisition system.
Input Modules: Universal (mV, TC, RTD and DI), DCV/TC/DI dedicated, power monitor, strain, pulse, direct current (mA), digital input (DI)
Connectable to DC100-1, DS400 and DS600
Communications Modules: GP-IB, RS-232-C, RS-422-A/485, Ethernet
Connectable to DC100-1 and DC100-2
Alarm Contact Output Modules: 4 contacts (C contact: NO-C-NC) and 10 contacts (A contact: NO-C)
Connectable to DC100-1, DC100-2, DS400 and DS600
DI/DO Modules: Two alarm output contacts (NO-C-NC) and fail output
Connectable to DC100-1, DC100-2, DS400 and DS600
1 module/1 system
Retransmission module: This module deals with data that are measured or computed by the product, or set by a personal computer via a communication interface. The modules convert them to 1-5 V analog voltage or 4-20 mA analog current signals for output. The module cannot be connected to the expanable model's main unit.
Extension Modules: Interfaces for remote power supply
One extension module can be connected to each DC100-2, DS400 and DS600.
(should be used with extension base units)
Software: DARWIN DAQ32 (included)
DARWIN DAQ32 Plus (ordered separately)
● Types and Numbers of Modules That Can Be Connected
DC100-1: Input modules, communications modules, alarm contact output modules, DI/DO module and extension modules
A maximum of four modules can be connected.
DC100-2: Communications modules, alarm contact output modules, DI/DO module
A maximum of four modules can be connected. Input modules must be connected to a subunit.
DS400/600: Input modules, alarm contact output modules, DI/DO module and extension module
Four or six modules can be connected.
● Connection of Subunits
DC100-1: Cannot be connected.
DC100-2: Up to 6 subunits can be connected.

Input Section
● Number of Input Channels
DC100-1: 10 to 40 channels. Expandable on a module basis.
DC100-2: 0 channel. Expandable up to 300 channels by connecting subunits.
● Types of Input Modules
Universal (DC voltage, thermocouple, RTD and contact), DCV/TC/DI dedicated, power, strain, pulse, direct current (mA), digital input (DI)

● Measurement Range: See the specifications for each input module.
● Measurement Interval
0.5, 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60 seconds
DC100-1: Minimum of 500 ms per 40 channels
DC100-2: Minimum of 500 ms per 300 channels (including the subunit)
The measurement interval is dependent on the slowest input module if input modules of different measurement intervals are connected at the same time.
● A/D Integration Period
Manual selection or automatic switchover between 20 ms (50 Hz), 16.7 ms (60 Hz) and 100 ms (10 Hz)
Minimum measurement interval for the 100-ms integration mode
DC100-1: 4 seconds per 40 channels
DC100-2: 4 seconds per 300 channels (including the subunit)
(depends on the input modules)

Alarms
● Number of Settings
Up to four settings can be made for each channel.
● Types of Alarms
Selection from upper limit, lower limit, delta upper limit, delta lower limit, upper limit of percentage change, lower limit of percentage change (upper or lower limit only for the results of computation)
Percentage change time interval: 1 to 15 scans
● Number of Alarm Output Points (when alarm contact output modules are connected)
DC100-1: a total of 40; DC100-2: a total of 40; DS400/600:
The number of alarm points can be increased in module unit

Standard Computation Functions
● Types of Computations
Difference between arbitrary channels, linear scaling, moving average and pulse integration
Difference between arbitrary channels: For channels of the same range
Ranges for which scaling can be done: DC voltage, thermocouple, RTD, contact
Scaling range: −30,000 to +30,000
Moving average: 2 to 64 scans
Pulse integration: Effective when pulse input module is recognized.
up to 30 ch (stand-alone model)
up to 60 ch (expandable model)

Memory Function Section
Buffer memory: SRAM buffer memory (lithium battery backup for 10 years)
Measured values are saved in internal memory and then transferred to a floppy disk.
Number of Floppy Disk Drive: 3.5-inch floppy disk drive×1
Floppy Disk Recording Density: 2HD or 2DD
Floppy Disk Capacity: 1.2 MB, 1.44 MB or 720 kB
Memory Capacity: Selected from 1 MB (standard), 2 MB or 4 MB at time of order
Data save: Setting values, measured values and computed values
Data save Format: Binary for measured and computed values
ASCII for setting values
Data Acquisition Method: Division (division into 2, 4, 8, or 16) or Data length
Data Acquisition Operations: Single or repeat
Data Acquisition Triggers: Free or trigger mode (utilizes the event/action function)
Sample Rate: 0.5 s, 1 s, 2 s, 3 s, 4 s, 5 s, 6 s, 10 s, 12 s, 15 s, 20 s, 30 s, 1 min., 2 min., 3 min., 4 min., 5 min., 10 min., 30 min., or 60 min.
LOGIC (event/action function)
Recording Data Length in the Data Length Data Acquisition Method
(unit: data item/channel): 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1k, 2k, 3k, 4k, 5k, 10k, 20k, 30k, 40k, 50k, 100k

Optional Specifications

General Purpose Computation Functions (/M1)
● Number of Computation Channels
DC100-1: Maximum of 30 channels
DC100-2: Maximum of 60 channels
● Types
Remote RJC, four arithmetic operations, SQR (square root), ABS (absolute value), LOG (common or natural logarithm), EXP (exponential), statistics processing (CLOG, TLOG), logic (AND, OR, NOT, XOR), relative computation, previous data reference
CLOG: Mathematical processing within a group of data that were measured at the same time (total, maximum, minimum, average, max - min)
TLOG: Time-series mathematical processing of data for a particular channel (maximum of 24 hours) (total, maximum, minimum, average, max - min)

Report Computation and Multiple Sampling Interval Function (/M3)
● Supported models
Data Collector DC100 (DC100-1, DC100-2 with /M3 option)
● Report computation channels
DC100-2: R01 to R60
● Sampling channels
measurement channels and mathematical channels
● Kinds of report computation
AVE: Average, minimum and maximum value at measuring interval.
INST: Instant value at the file generation.
SUM: Cumulative value at each measuring interval and totalizing value. (Not available in case of monthly report)
Hourly report: Cumulative value...cumulative value at every hour
Totalizing value... cumulative value at 24-hour. It is to be reset on the startinghour of every day.
Daily report: Cumulative value...cumulative value at every day
Totalizing value...cumulative value at one-month. It is to be reset on the starting date of every month.
Monthly report: Cumulative value ...cumulative value at one-month
● Report computation mode
Hourly report: Basic mode only
Daily report: Basic mode or extension mode
Basic mode:Only daily report computation results are output
Extension mode ; Daily report results + hourly report data
Monthly report: Basic mode or extension mode
Basic mode ; Only the results of monthly report computations are output
Extension mode ; Monthly report results + daily report data
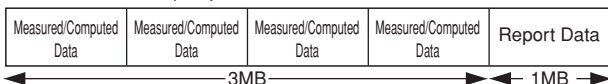• If the daily report and monthly report are both ON, it is possible to specify the extension mode for either report.

● File size
• File size is fixed by each computation mode
• The internal ram area is researved in blocks of 1KB(1024bytes). The value within
( ) shown the actual memory reserved.
Hourly report : 3634bytes(4096bytes)Records data for several minutes before and after
the occurrence of the event at the fastest sampling cycle.
Basic mode of Daily report : 3634bytes(4096bytes).
Extension mode of Daily report : 15346bytes(15360bytes)
Basic mode of Monthly report : 3634bytes(4096bytes)
Extension mode : 18762bytes(19456bytes)
● Using built-in RAM disk
• If the instrument is equipped with the report option (/M3), partition of the built-in RAM is as
follows.
• In case of Built-in RAM capacity 1MB or 2MB

Measured/Computed Data	Measured/Computed Data	Report Data
← 512KB or 1MB →	→	← 512KB or 1MB →

• In case of Built-in RAM capacity 4MB

Measured/Computed Data	Measured/Computed Data	Measured/Computed Data	Measured/Computed Data	Report Data
←	3MB	→		← 1MB →

● Note
You can use the entire RAM disk for saving report data or periodic file by not saving
measured/computed data.
*Report data and periodic file cannot be saved simultaneously.
● Supported models
Data Collector DC100 (DC100-1, DC100-2 with /M3 option)
● Sampling channels
Only measurement channels and mathematical channels which are write enabled can be
used.
● Kinds of periodic file
Hourly (at every o' clock), Daily (at designated hour), Monthly (at designated time of the
date)
(Each files can be set to on or off)
● Sampling interval
Select from 2sec, 3sec, 4sec, 5sec,10sec, 20sec, 30sec,
1min, 2min, 3min, 4min, 5min, 10min, 20min, 30min, 60min
• In case of "10sec" is selected, writing interval is as follows: I.E. 00sec, 10sec,
20sec,.....60sec.
• When selected interval is not synchronized to the measuring interval, the next measured
data to the assigned interval is written.
● Method of file generation
Hourly :One file is generated at every o'clock
Daily : One file is generated at designated hour
Monthly : One file is generated at designated time of the date
• ON/OFF setting of each files are possible independently designated time/date are same as
time-up settint time/data of report file.
• Data-length assignment is not available.
● Using built-in RAM disk in case of normal file and periodical data file generation
• Half of internal RAM area of 1M, 2M, and 4M is assigned to each file.
• All internal RAM area can be used for only periodical data file.
• In case of Built-in RAM capacity 4MB

Measured/Computed Data	Periodical File
← 2MB →	← 2MB →

● Supported models
Data Collector DC100 (DC100-1,DC100-2 with /C5 option)
● SCSI controller
WD33C93A made by Western Digital
● SCSI BUS
SCSI-1 (conforms to ANSI X3.131-1986)
● Terminating resistance
Built-in SCSI terminator (Terminator ON fixed)
● SCSI connector on the DC100
D-sub half-pitch connector 50-pins female
● Connector Pin Assignment
Unbalanced circuit (single-ended; one end grounded)
● SCSI cable (not supplied by YOKOGAWA)
Only cables less than 3m can be used for connecting DC100 and the SCSI device.
● Maximum connections
Up to 7 devices excluding the DC100
● DC100 SCSI ID number
Permanently set at address 7.
● Magnetic optical disk standard
•128MB, 230MB, 540MB, 640MB magnetic optical disks are standard sized* media.
•Media from different manufactures are compatible as long as they conform to the standard.
•Please refer to the instruction manual for the MO drive regarding the media which can be
supported.

Storage Space of Media (Bytes)	128M	230M	540M	640M
CONFORMABLE Standard	ISO10090	ECMA-201	ISO15041	ISO15041
Rotation Control Method	CAV	ZCAV	ZCAV	ZCAV
Bytes per sector	512	512	512	2,048
Track Pitch (μ)	1.6	1.39	1.1	1.1

* : The other magnetic optical disk formats are HS standard (Medium is 90mm in diameter
and holds 650MB) which uses magnetic modulation method and PD format (Medium is
120mm in diameter and holds 650MB) which is a phase change type.
● Compatible devices

Product Name	Model No.	Manufacturer
MO drive	Deltis 640 TURBOIII	OLYMPUS
ZIP drive	Iomega ZIP 100	iomega
Jaz drive	Iomege Jaz	iomega
PD drive	Panasonic PD/CD-ROM	Panasonic

Note: Some of the MO/ZIP disk drives need terminators.
Follow the instruction manual for the particular disk drive.

● Media
MO/Zip/Jaz/PD
● Features for the media
• The DC100 recognizes up to 272 files for each MO/Zip/Jaz/PD disk.
• Setting data files can be directly written to the MO/Zip/Jaz/PD disk through the SCSI.
• Measurement data file, report computation files, and periodic files are stored first in the
DC100 internal RAM, then copied to the MO/Zip/Jaz/PD disk through the SCSI. Copies of
the data between SCSI devices on the same bus are not available.
• Deleting data files.
• Formatting the MO/Zip/Jaz/PD disk.
● Data processing with the personal computer
• Data file can be displayed, analyzed, and converted (Excel/Lotus/ASCII)with the software
that is provided with the DC100.

Input Module

Specifications Common to Input Module
● Normal Operating Temperature/Humidity Range
Universal or DCV/TC/DI input module:
–10˚ to 60˚C, 20 to 80% RH(no condensation)
mA, power monitor, strain, pulse input module:
0 to 50˚C, 20 to 80%RH(no condensation)
● Withstanding Voltage
Between input terminals: 1,000 VAC (50/60 Hz) for one minute
Strain modules; 50 VDC (50/60 Hz) for one minute
(except DU 500-14)
Between input terminal and ground: 1,500 VAC (50/60 Hz) for one minute
External Mass Storage Interface Function (/C5)

Universal Input Modules
DCV/TC/DI Input Modules
● Model, Number of Channels, Type of Terminal and Shortest Measurement Interval

Module	Model	Number of Channels	Type of Terminal	Measurement Interval
Universal input	DU100-11	10	Screw	0.5s
	DU100-12	10	Clamp	0.5s
	DU100-21	20	Screw	2s
	DU100-22	20	Clamp	2s
	DU100-31	30	Screw	2s
	DU100-32	30	Clamp	2s
DCV/TC/DI input	DU200-11	10	Screw	0.5s
	DU200-12	10	Clamp	0.5s
	DU200-21	20	Screw	2s
	DU200-22	20	Clamp	2s
	DU200-31	30	Screw	2s
	DU200-32	30	Clamp	2s

● General Specifications

Input Method:
Floating unbalanced input, and inter-channel isolation
RTD inputs are of the same potential within the same input module.
A/D resolution: ±20,000
A/D integration time: Manual selection or automatic switchover between 20 ms (50
Hz), 16.7 ms (60 Hz) and 100 ms (10 Hz)
Measurement range:
DC voltage range: 20 mV to 50 V
Thermocouple: R, S, B, K, E, J, T, L, U, N, W, KP-Au7Fe
RTD: Pt100, JPt100, Ni100, Ni120, Cu10 and J263*B
Contact input: Non-voltage contact input or voltage input
Mixed input is allowed for DC voltage, thermocouple, RTD and contact inputs (For an
DCV/TC/DI input module, RTD input is not allowed.)
Measurement accuracy: ±(0.05% of reading + 2 digits)
(at 2-V range, 23˚ ±2˚C and 55% ±10% RH)
Noise rejection: By means of integrating A/D, low-pass filter or moving average
Minimum measurement interval when the low-pass filter is
working becomes 3 s. (depends on the input modules).
Burnout: Detected within thermocouple-input range

Power Monitor Modules
● Model, Number of Channels, Type of Terminal and Shortest Measurement Interval

Model	Number of Channels	Type of Terminal	Measurement Interval
DU400-12	For single phase (one for voltage and the other for current)	Clamp	2 s
DU400-22	For 3 phase (three for voltage and three for current)	Clamp	2 s

● General Specifications
Input method: Transformer isolation
Measured variables: Six items can be selected from the following: RMS value of AC
voltage/current, active power, apparent power, reactive power,
frequency, power factor and phase angle (Certain combinations
are restricted.)
Measurement range (resolution):
Voltage: 250 V (0.1 Vrms), 25 V (0.01 Vrms)
Current: 5 A (0.001 Arms), 0.5 A (0.0001 Arms)
Measurement accuracy: ±(0.5% of span when RMS value of voltage and current is
measured)
Measured frequency: 45 to 65 Hz (all channels must have the same frequency)
Crest factor: Maximum of 3
Power integration: Calculated by /M1(computation function) option. /M1 must be
specified for the DC100.

Strain Measurement Modules
● Model, Number of Channels, Type of Terminal and Shortest Measurement Interval

Model	Number of Channels	Type of Terminal	Measurement Interval
DU500-12	10*, with built-in 120-Ω resistance	Clamp	0.5 s
DU500-13	10*, with built-in 350-Ω resistance	Clamp	0.5 s
DU500-14	10*, for external bridge box	NDIS	0.5 s

*: Occupies the width of two modules.

● General Specifications
Measurement range (resolution): 2,000 με (0.11 με)
20,000 με (1 με)
200,000 με (10 με)

Built-in bridge resistance: 120Ω, 350Ω, or none (for an external bridge box)
Wiring: 1/4 bridge 1/2 bridge (neighbor), 1/2 bridge (opposite), full bridge
Applicable gauge resistance:
  1/4 or 1/2 bridge: 120 or 350Ω
  Full bridge: 100 to 1,000Ω
Bridge voltage: Fixed at 2 V
Gauge factor: 2.00 (with scaling function)
Strain balance: Electronic auto-balancing (can be turned on or off),within ±10,000 με (1/4 bridge)

Pulse Measurement Modules
● Model, Number of Channels, Type of Terminal and Shortest Measurement Interval

Model	Number of Channels	Type of Terminal	Measurement Interval
DU600-11	10	Screw	0.5 s*

*: Rate of data update is fixed at 1-second intervals.

● General Specifications
Input method: Shared common line within the same module
Type of input: Non-voltage contact or open collector (TTL or transistor)
Measurement modes
RATE (count value instantaneous mode):
  The number of pulses input during the most recent 1-second period of measurement is output as the scale set value.
GATE (ON time instantaneous mode):
  The ON (make)/OFF (break) state (ON = 1, OFF = 0) of the contact input during the most recent 1-second period of measurement is output as the scale set value.
Pulse integration: The computation function is used when integrating either the count value each second or the ON period.
  Computation formula: TLOG.PSUM (XXX)
  Number of computation channels:
    Max. 30 channels for stand-alone model
    Max. 60 channels for expandable model
  Max. count value/ON period: 99999999
    (/M1 (computation option) need not be specified for the DC100 main unit. Pulse integration can be used automatically when a pulse module is recognized.)
Maximum input frequency: 6 kP/s (10 P/s for voltage-free contact)
Filter: For rejection of chattering up to 5 ms (can be turned on and off for every channel)

DC Current Input Modules
● Model, Number of Channels. Type of Terminal and Shortest Measurement Interval

Model	Number of Channels	Type of Terminal	Measurement Interval
DU300-11	10	Screw	0.5 s
DU300-12	10	Clamp	0.5 s

● General Specifications
Input method: Floating imbalance input, and inter-channel isolation
  Shunt resistor (100 Ω) is pre-installed.
A/D resolution: ±20,000
A/D integration time: Manual selection or automatic switchover between 20 ms (50 Hz), 16.7 ms (60 Hz) and 100 ms (10 Hz)
Measurement range and resolution:
  ±20 mA(1 μA)
Noise rejection: By means of integrating A/D, low-pass filter or moving average
  Minimum measurement interval when the low-pass filter is working becomes 3 s (depends on the input modules).

Digital Input Modules
● Model, Number of Channels, Type of Terminal and Shortest Measurement Interral

Model	Number of Channels	Type of Terminals	Measurement Interval
DU700-11	10	Screw	0.5 s

● General Specifications
Input method: Floating unbalanced input, each channel mutually isolated (channel independent)
  The RTD range has a common potential (terminal b).
A/D integration time: Selectable from 20 msec.(50Hz), 16.7 msec.(60Hz), 100 msec.(10 Hz) and auto switching.
Maximum allowable input voltage:
  DI (CONT) / ±10VDC
  DI (LEVEL) / ±60VDC
Measurement operation: At normal operating temperature/relative humidity:
  Voltage input: Off ≤ 2.3 V, On ≥2.5 V
  No-voltage contact input: contact On/Off*
  *: Contact resistance: On ≤ 2 kΩ, Off ≤ 100 kΩ
Insulation resistance: Min. 20MΩ at 500VDC between the input terminal and ground
Input bias current: Max.10 nA

Alarm, DI/DO and Other Modules

Alarm Contact Output Modules
● Model, Number of Outputs, Contact Mode and Type of Terminal

Model	Number of Outputs	Contact Model	Type of Terminal
DT200-11	4	C contact (NO-C-NC)	Screw
DT200-21	10	A contact (NO-C)	Screw

● General Specifications
Output mode: Selection between excitation and non-excitation, output hold and non-hold and AND and OR modes
  Re-breakdown re-alarm: Maximum of 6 contacts can be selected.
Contact capacity: 250 VDC/0.1 A (resistive load)
  30 VDC/2 A (resistive load)
  250 VAC/2 A (resistive load)
● Withstanding Voltage:
Between output terminal and ground: 1,500 VAC (50/60 Hz) for one minute
DI/DO Modules
● Common Specifications
Model: DT100-11
Up to one module can be connected to one DC100 system.

● Alarm Contact Output
Number of outputs: 2
Contact mode: C contact—NO-C-NO terminal
Contact capacity: 250 VDC/0.1 A (resistive load)
  30 VDC/2 A (resistive load)
  250 VAC/2 A (resistive load)
● Fail Output
Function: If an abnormality is found in the total system, the fail output terminal is de-energized.
Output mode: A contact. Cannot be switched between excited and non-excited.
Contact capacity: 250 VDC/0.1 A (resistive load)
  30 VDC/2 A (resistive load)
  250 VAC/2 A (resistive load)
● Remote control function
Starting, resetting and temporary hold of statistical computation
Input signal: Non-voltage contact or open collector (TTL or transistor)

Retransmission Modules

	DT500–11	DT500–21
Applicable instruments	Both stand-alone and expandable models of DA100 and DC100. With expandable models, the module can only be installed in the sub-unit DS400 or DS600.[Note 1]	
Maximum number of connectable modules	30 (Max. 4: Standalone Models)	
Number of channels	10	2
Terminal type	Screw	
Output signal	1-5 V DC [Note 2]	4-20 mA DC [Note 2]
Output range	0.8-5.4 V DC (−5% to +110% of span)	3.2-21.6 mA DC (−5% to +110% of span)
Load resistance	10kΩmin.	600Ωmax.
Output accuracy	±0.2% of span	±0.2% of span
Temperature coefficient	0.01% of span/°C	0.01% of span/°C
Maximum resolution	12 bits (approx. 1.46 mV)	12 bits (about 5.86 μA)
Update period	Same as the measurement period [Note 3]	
Output for SKIP	0.05 V max.	0.15 mA max.

Note1: A retransmission module must be installed on the left side of the input module.
Note2: Output signals do not support control output signals for mode control.
Note3: Update may not be completed within the measurement period, depending on the number of modules installed, computations performed, and the state of external media.

Extension Modules (used with extension base units)
Unit to connect with: DC100-2, DS400 or DS600 (one for each unit)
Number of input modules: One input module can be mounted on an extension base unit and up to 3 extension base units can be connected to an extension module in series. However, the number of input modules connected to an extension module and the number of input/output modules directly connected to a main or subunit where the extension module is connected must not exceed the total number of modules that can be connected to the subunit.
Extensible distance: Within an overall length of 30 m
Connectable input module: 10 ch universal input module
  10 ch DCV/TC/DI input module

Communications Modules

● Functions, Common Specifications
Outline of functions:
  (1) Functions as a talker
    Output of measured values, output of setting values
  (2) Functions as a listener
    Setup of measurement conditions, control of start/stop of measurement, etc.
Withstanding voltage: 1,500 VAC (50/60 Hz) for one minute between output terminal and ground
● GP-IB Modules
Electrical and mechanical specifications: Based on IEEE standard 488-1978
Addresses: 0 to 15
● RS-232-C Modules
Electrical and mechanical specifications: Based on EIA RS-232-C
Communications format: Half duplex
Synchronization: Start-stop synchronization (synchronization by means of the start and stop bits)
Baud rate: 150, 300, 600, 1200, 2400, 4800, 9600 19200, 38400 bps
Transmission distance: Maximum of 15 m
Connector: D-sub 25-pin connector
● RS-422A/485 Modules
Electrical and mechanical specifications: Based on EIA RS-422-A and EIA RS-485
Connection method: Multi-drop
Address: 1 to 31
Communications format: Half-duplex, 4-wire method/2-wire method
Synchronization: Start-stop synchronization (synchronization by means of start and stop bits)
Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 bps

Transmission distance: Maximum of 1200 m
Connector: 6-screw terminal
● Ethernet Modules
Electrical and mechanical specifications: Conform to standard IEEE802.3
Number of communication port: 1
Connection method: Ethernet
Transfer specification: 10 Base-T (CSMA/CD, 10Mbps, Base band)
Transfer speed: 10 Mbps
Communication protocol: TCP, UDP, IP, ARP, ICMP
PC number that is able to gain access to 1 Darwin unit:
Max. 4units
Input data: ASCII Supports all the commands of RS-232-C module (DT300-21)
Output data: ASCII, Binary

Software Section

DARWIN DAQ32

Model	OS	PC type
DP120-11	Windows 95/98/2000/NT4.0	IBM PC/AT Compatible Models.

● System Requirements
Personal Computer: A personal computer with either a Microsoft Windows 95, Windows 98, Windows 2000 or Windows NT 4.0 operating system.
• For DAQ32 (model code DP120-11), a pentium MMX 133 MHz or higher is required (pentium-II recommended) for the processor.
• For DAQ32 Plus (model code DP320-11), a pentium MMX 166 MH zor higher is required (pentium-II recommended) for the processor.
RAM: At least 32 megabytes (MB)(64 MB or larger recommended)
Hard Disk: 100 MB of free hard disk space is required for installation.
The program size is 10 MB

AVAILABLE MODELS

● DC100 Main Unit

Model	Suffix code	Optional Code	Description
DC100			Data collector
Type	-1		Stand-alone type
	-2		Expandable type main unit
Software	2		DARWIN DAQ32 (English)
Memory	-1		Internal memory 1M byte (standard specification)
	-2		Internal memory 2M byte
	-3		Internal memory 4M byte
FDD	1		Floppy disk drive
Power supply voltage	-1		100V AC to 240V AC
	-2		12V DC to 28V DC (Standard : AC adapter)*1
Power inlet & power cable	D		3-pin power inlet w/UL,CSA cable
	F		3-pin power inlet w/VDE cable
	R		3-pin power inlet w/AS cable
	S		3-pin power inlet w/BS cable
	H		3-pin power intel w/GB cable
	W		3-pin power inlet w/screw terminal*2
Optional feature		/M1	Mathematical function
		/M3	Report and Periodical Filing function
		/C5	External Mass Storage Interface function
		/D2	F degree display
		/L1	Summer/winter time

*1 All DC-powered models having this suffix code come with an AC adapter as standard.
Choose the type of power cable of the AC adapter from the suffix codes D, F, R and S.
*2 This suffix code cannot be specified for any DC-powered model.
(1) The DARWIN extension cable must be ordered separately when the expandable model is specified.
(2) The subunit and input/output module must be ordered separately when the expandable model is specified.

● DS400/DS600 Subunit

Model	Suffix code	Description
DS400		4-module connection subunit
DS600		6-module connection subunit
Type	-00	Always 00
Supply voltage	-1	100 V AC to 240 V AC
	-2	12 V DC to 28 V DC
Supply section inlet socket, power cable	D	3-pin inlet w/UL, CSA cable
	F	3-pin inlet w/VDE cable
	R	3-pin inlet w/AS cable
	S	3-pin inlet w/BS cable
	H	3-pin power intel w/GB cable
	W	3-pin inlet, with screw conversion terminal
	Y	DC power supply specify

● I/O Terminal Modules

Model	Description
DT100-11	DI/DO module (2 alarm outputs, remote control signal input, fail/chart end output)
DT200-11	Alarm output module (4 transfer contacts)
DT200-21	Alarm output module (10 make contacts)
DT300-11	GP-IB module
DT300-21	RS-232C module
DT300-31	RS-422-A/485 module (screw terminal)
DT300-41	Ethernet module (10 Base-T)
DT500-11	Retransmission module, 1 to 5 VDC output
DT500-21	Retransmission module, 4 to 20 mADC output

● Input Modules

Model	Description	Requited No. of slots	Terminal	Maximum measurement period
DU100-11	10 ch universal input (DCV, TC, DI and RTD)	1	Screw	0.5 s
DU100-21	20 ch universal input (DCV, TC, DI and RTD)	2	Screw	2 s
DU100-31	30 ch universal input (DCV, TC, DI and RTD)	3	Screw	2 s
DU100-12	10 ch universal input (DCV, TC, DI and RTD)	1	Clamp	0.5 s
DU100-22	20 ch universal input (DCV, TC, DI and RTD)	2	Clamp	2 s
DU100-32	30 ch universal input (DCV, TC, DI and RTD)	3	Clamp	2 s
DU200-11	10 ch DCV/TC/DI input	1	Screw	0.5 s
DU200-21	20 ch DCV/TC/DI input	2	Screw	2 s
DU200-31	30 ch DCV/TC/DI input	3	Screw	2 s
DU200-12	10 ch DCV/TC/DI input	1	Clamp	0.5 s
DU200-22	20 ch DCV/TC/DI input	2	Clamp	2 s
DU200-32	30 ch DCV/TC/DI input	3	Clamp	2 s
DU300-11	10ch mA input module	1	Screw	0.5S
DU300-12	10ch mA input module	1	Clamp	0.5S
DU400-12	Power monitor module for single phase	1	Clamp	2S
DU400-02	Power monitor module for 3 phase	1	Clamp	2S
DU500-12	10ch strain input module (120 Ω)	2	Clamp	0.5S
DU500-13	10ch strain input module (350 Ω)	2	Clamp	0.5S
DU500-14	10ch strain input module (External bridge box)	2	NDIS	0.5S
DU600-11	10 ch pulse input	1	Screw	0.5 s
DU700-11	10 ch DI input	1	Screw	0.5 s

● Accessories

Model	Description
DV100-011	DARWIN Extension module
DV100-012	DARWIN Extension base unit
DV200-000	DARWIN Extension cable (0.5 m)
DV200-001	DARWIN Extension cable (1 m)
DV200-002	DARWIN Extension cable (2 m)
DV200-005	DARWIN Extension cable (5 m)
DV200-010	DARWIN Extension cable (10 m)
DV200-020	DARWIN Extension cable (20 m)
DV200-050	DARWIN Extension cable (50 m)
DV200-100	DARWIN Extension cable (100 m)
DV200-200	DARWIN Extension cable (200 m)
DV200-300	DARWIN Extension cable (300 m)
DV200-400	DARWIN Extension cable (400 m)
DV200-500	DARWIN Extension cable (500 m)
DV250-001	Cable adapter
DV300-011	Shunt resistance, 10 Ω, for screw
DV300-012	Shunt resistance, 10 Ω, for clamp
DV300-101	Shunt resistance, 100 Ω, for screw
DV300-102	Shunt resistance, 100 Ω, for clamp
DV300-251	Shunt resistance, 250 Ω, for screw
DV300-252	Shunt resistance, 250 Ω, for clamp
DV400-011	Rack mounting kits for DA100, DS400/DS600
DV400-015	Rack mounting kits for DC100, DR130
DV400-071	Panel mounting kits for DC100
DV450-001	Strain conversion cable (DIS-NDIS)
DV500-001	AC adapter for DC100/DS400/DS600 (DC power supply) with UL/CSA cable
DV500-002	AC adapter for DC100/DS400/DS600 (DC power supply) with VDE cable
DV500-003	AC adapter for DC100/DS400/DS600 (DC power supply) with AS cable
DV500-004	AC adapter for DC100/DS400/DS600 (DC power supply) with BS cable
DV500-005	AC adapter for DC100/DS400/DS600 (DC power supply) with GB cable

● Package Software

Model	Description
DP120-13*	DARWIN DAQ32 software (Windows95/98/2000/NT 4.0)
DP320-13	DARWIN DAQ32 Plus software (Windows95/98/2000/NT 4.0)
DP350-13	Enhanced multi data logging software (Windows3.1/95/98)
DP380-13	Report software for /M3 report function (Windows3.1/95/98)

*when purchasing the DA100, the DP120-13 is attached as standard accessory.

● Configuration Example of The Expandable Model

● 100 ch, 0.5 s universal input, with GP-IB and 20 ch alarm output
• DC100 expandable main-unit: DC100-2 × 1
• Sub unit: DS600 × 1
• Sub unit: DS400 × 1
• Universal input module: DU100-11 or -12 × 10
• Communication module: DT300-11 (GP-IB) × 1
• Alarm output module: DT200-21 × 2
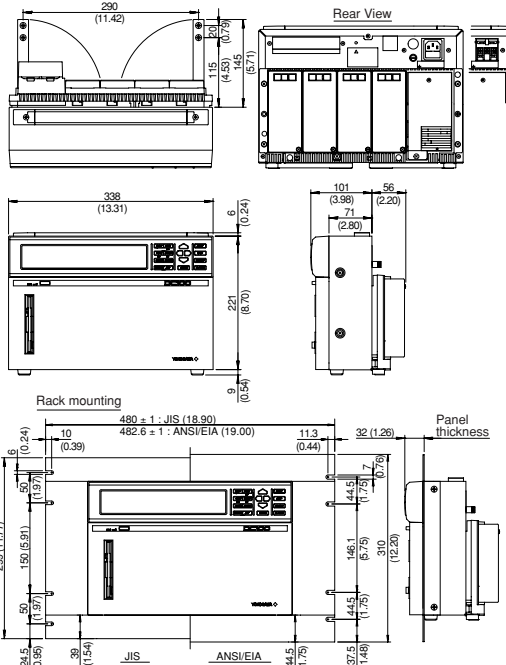• DARWIN Extension cable × 2

DATA COLLECTOR

DC100

YOKOGAWA

DIMENSIONS

● **DC100 main unit**   Unit : mm (inch)

Rear View

290 (11.42)
115 (4.53)
145 (5.71)
338 (13.31)
6 (0.24)
221 (8.70)
101 (3.98)
56 (2.20)
71 (2.80)
9 (0.54)

Rack mounting

480 ± 1 : JIS (18.90)
482.6 ± 1 : ANSI/EIA (19.00)
10 (0.39)
11.3 (0.44)
32 (1.26)
Panel thickness
6 (0.24)
50 (1.97)
299 (11.77)
150 (5.91)
50 (1.97)
44.5 (1.75)
146.1 (5.75)
310 (12.20)
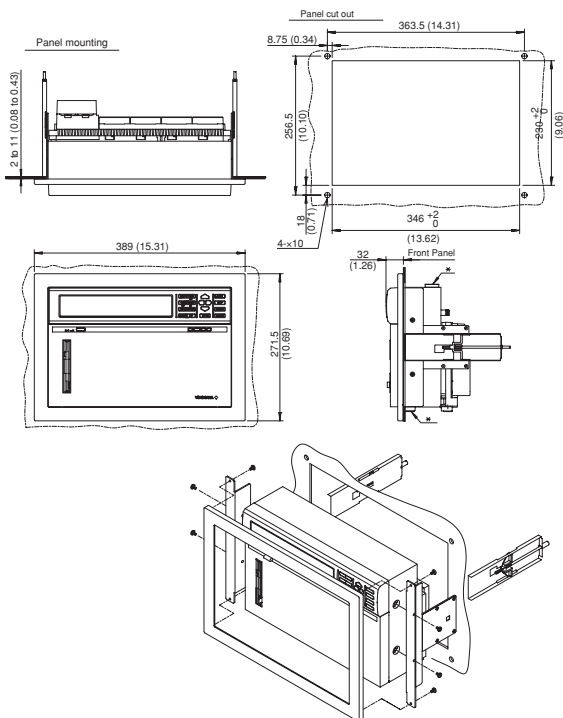44.5 (1.75)
24.5 (0.95)
39 (1.54)
37.5 (1.48)
44.5 (1.75)
JIS
ANSI/EIA

Note: Where a tolerance is not specified, use ±3%
(use ±0.3 mm if the dimension concerned is less than 10 mm).
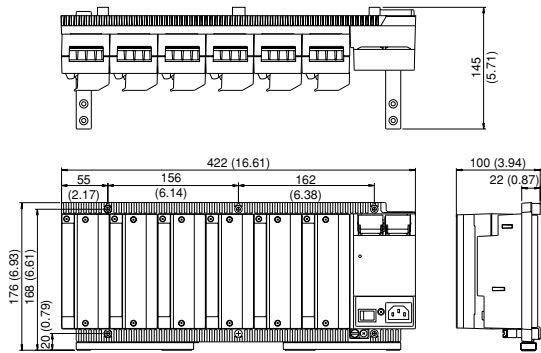
● **Panel mount fittings for DC100**   Unit : mm (inch)

Panel mounting

2 to 11 (0.08 to 0.43)
389 (15.31)
271.5 (10.69)

Panel cut out

8.75 (0.34)
363.5 (14.31)
256.5 (10.10)
230 +2 0 (9.06)
18 (0.71)
346 +2 0 (13.62)
4-×10
32 (1.26)
Front Panel

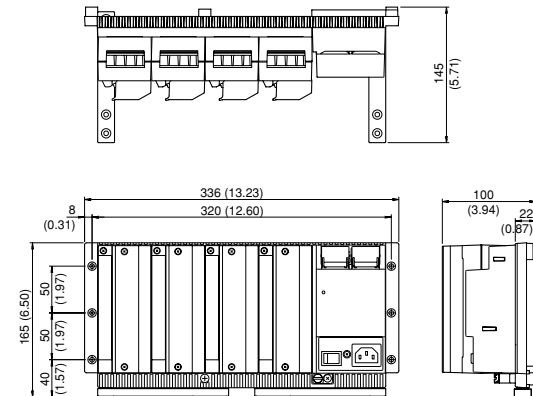Note : Where a tolerance is not specified, use ±3%(Use ±0.3mm if the dimension concerned is less than 10 mm)

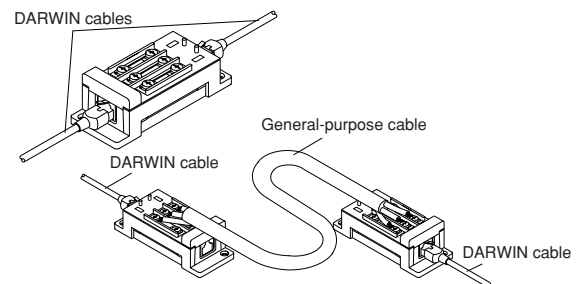● **DS600**   Unit : mm (inch)

145 (5.71)
422 (16.61)
55 (2.17)
156 (6.14)
162 (6.38)
100 (3.94)
22 (0.87)
176 (6.93)
168 (6.61)
20 (0.79)

● **DS400**   Unit : mm (inch)

145 (5.71)
336 (13.23)
320 (12.60)
8 (0.31)
100 (3.94)
22 (0.87)
165 (6.50)
50 (1.97)
50 (1.97)
40 (1.57)

● **DV250-001 Cable Adapter**

DARWIN cables
General-purpose cable
DARWIN cable
DARWIN cable

The DV250-001 cable adapter can be used at each joint of DARWIN cables to extend the overall length. Cables other than DARWIN cables can be used to connect between two DV250-001 cable adapters.