Operator Interface

■ Overview

This product (model QJ-1101D0000) is a user terminal that is installed on the panel for the Advanced Controller for Chiller Units and Advanced Controller for Pump Units (model WJ-1102_) and Advanced Controller (model WJ-1103W0000).
It allows users to operate, monitor, and change settings of the sequence control screen*1, trend graphs, and history of operator actions. Also, it can be used to set control parameters.
Heat source equipment can be operated and managed using this panel and the savic-net G5 central monitoring unit. The Operator Interface (OI) allows standalone*2 operation without the central monitoring unit.

*1 Available for model WJ-1102 only.

*2 Available for non-redundantly configured models WJ-1102 and WJ-1103 only

■ Features

- High visibility
  The 8.4-inch SVGA (800 × 600) LCD touch panel displays 65,536 colors. High luminance provides high visibility in daylight conditions.
- Managing multiple controllers
  Up to four controllers can be managed.
- SD card
  An SD card slot is provided so that trend graph data in CSV file format can be output for external storage.
- Functions for standalone operation
  If heat source controllers are operated in a standalone environment, calendar and schedule functions are available.

  Note: Only non-redundantly configured models WJ-1102 and WJ-1103 can be used.

Safety Precautions

Please read instructions carefully and use the product as specified in this manual.
Be sure to keep this manual nearby for quick reference.

Restrictions on Use

This product was developed, designed, and manufactured for general air conditioning use.

Do not use the product in a situation where human life may be at risk or for nuclear applications in radiation-controlled areas. If you wish to use the product in a radiation-controlled area, please contact Azbil Corporation.

Particularly when the product is used in applications like the following where safety is especially required, implementation of fail-safe design, redundant design, regular maintenance, etc., should receive appropriate consideration so that the product can be used safely and reliably.

- Safety devices for protecting the human body
- Start/stop control devices for transportation machines
- Aeronautical/aerospace machines

For system design, application design, instructions for use, or product applications, please contact Azbil Corporation.

Azbil Corporation bears no responsibility for any result, or lack of result, deriving from the customer's use of the product.

Caution for Instrumentation Design

Considering unexpected failures or contingencies, be sure to design and check safety of the system and equipment.

■ Recommended Design Life (Recommended Period of Use)

It is recommended that this product be used within its design life. The design life is the period during which you can use the product safely and reliably based on the design specifications. If the product is used beyond this period, its failure ratio may increase due to time-related deterioration of parts, etc. The design life during which the product can operate reliably with the lowest failure ratio and least deterioration over time is estimated scientifically based on acceleration tests, endurance tests, etc., taking into consideration the operating environment, conditions, and frequency of use as basic parameters.

The design life of this product (for H. code 1 or later) is 11 years (10 years for earlier H. codes).

The design life specified for this product assumes that maintenance, such as replacement of the limited-life parts, is carried out properly. Refer to the section on maintenance in this manual.

■ Warnings and Cautions

 WARNING	Alerts users that improper handling may cause death or serious injury.
 CAUTION	Alerts users that improper handling may cause minor injury or material loss.

■ Symbols

	Alerts users to possible hazardous conditions caused by erroneous operation or erroneous use. The symbol inside △ indicates the specific type of danger. (For example, the sign on the left warns of the risk of electric shock.)
	Notifies users that specific actions are prohibited to prevent possible danger. The symbol inside ⃠ graphically indicates the prohibited action. (For example, the sign on the left means that disassembly is prohibited.)
	Instructs users to carry out a specific obligatory action to prevent possible danger. The symbol inside ● graphically indicates the actual action to be carried out. (For example, the sign on the left indicates general instructions.)

⚠ CAUTION	
	Take anti-lightning surge measures based on regional and building characteristics. Lightning may cause fire or critical damage to this product if protective measures are not taken.
	Install, wire, and use this product under the conditions specified by this manual. Failure to do so may cause fire or device failure.

■ System Configuration

● Operation connected to the system

Without redundancy

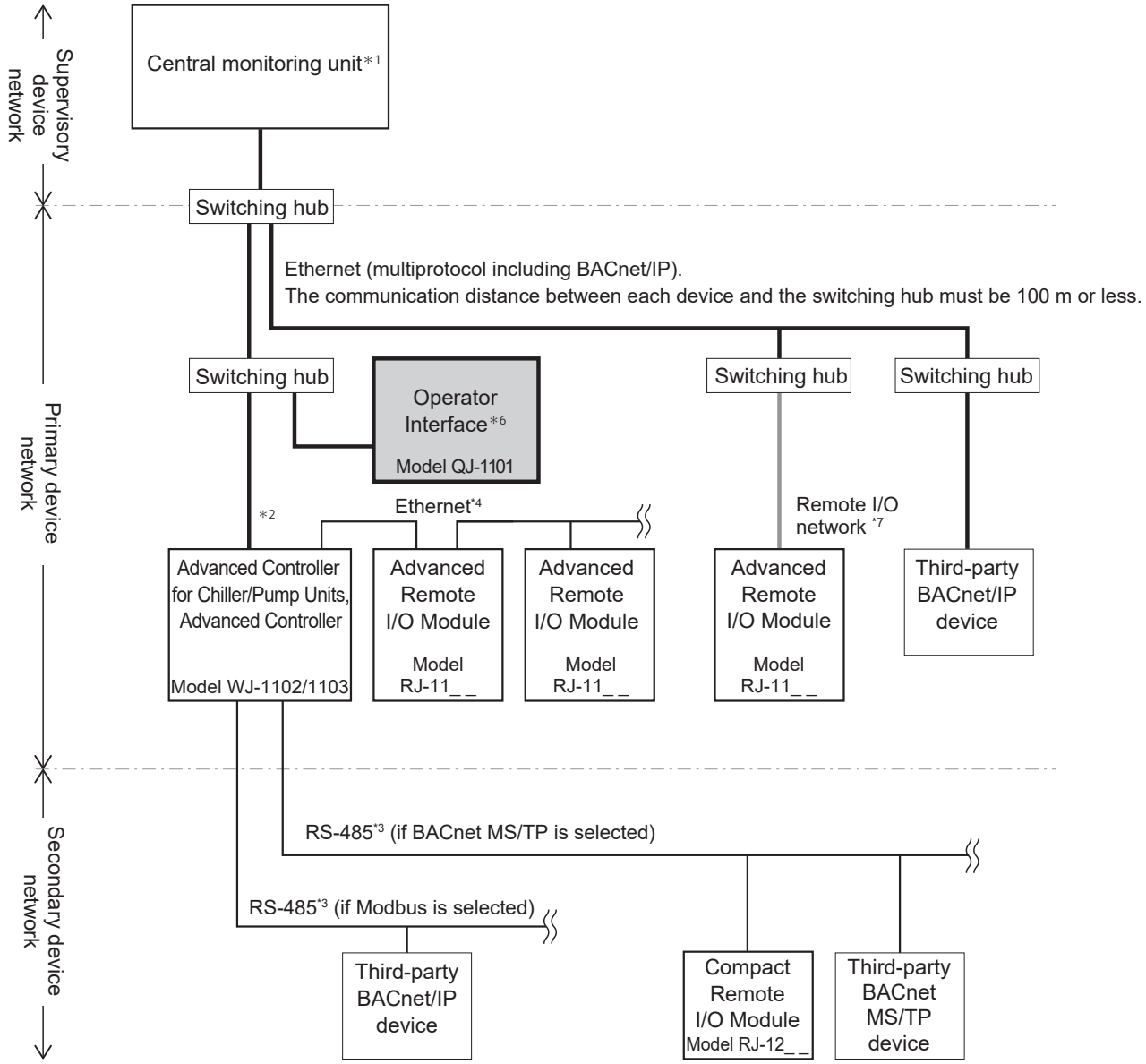


Figure 1 System Configuration Example

*1 The Advanced Controllers can be connected to an Azbil Supervisory Controller (model BH-101G0W0000) or a third-party central monitoring unit using BACnet/IP communications.

*2 The Advanced Controller for Chiller Units, Advanced Controller for Pump Units, and Advanced Controllers (model WJ-1103W000) use BACnet/IPv4 or BACnet/IPv6.
The IPv6 specification is based on BACnet-2012 (ANSI/ASHRAE 135-2012) with ANNEX U (BACnet/IPv6) of BACnet-2016 (ANSI/ASHRAE 135-2016).

*3 The General Controller and Advanced Controller have two RS-485 communication channels.
For each channel, communication protocol can be selected from BACnet MS/TP, Modbus™ RTU, or Modbus™ ASCII.
- The number of devices that can be connected for BACnet MS/TP
  If only the Azbil devices are connected:
  50 devices per channel (Compact Remote I/O Modules, etc.)
  The maximum number of the secondary devices that can be connected to one General Controller is 70 , or 50 which is the sum of Azbil VAV and FCU Controllers. The Advanced Controller has no restrictions.
  If only the third-party devices are connected:
  31 devices per channel (when transmission speed is 76.8 kbps, 30 objects/device)
- The number of devices that can be connected for Modbus™
  31 devices per channel (when transmission speed is 76.8 kbps, 30 objects/device)

If the transmission speed and the number of objects are different among the third-party devices, or if the Azbil devices and third-party devices coexist on the same channel, the number of connected devices will vary. For details, please contact one of Azbil salespersons.

*4 A network that connects the Advanced Controller and Advanced Remote I/O Modules under its control is referred to as a local I/O network.
A switching hub is not required for the local I/O network since a daisy chain Ethernet is used between the Advanced Controller and the Advanced Remote I/O Modules under its control, as well as between the Advanced Remote I/O Modules and the I/O modules for the Advanced Controller.

*5 A network that connects the Advanced Controller and Advanced Remote I/O Modules through a host network is referred to as a remote I/O network.
A switching hub is required to connect the Advanced Remote I/O Modules to the remote I/O network.
The maximum number of the Advanced Remote I/O Modules connected to this network is 3 per Advanced Controller.

When using IPv6 for BACnet communication, the Advanced Remote I/O Module cannot be connected via a remote I/O network.

*6 The Operator Interface (model number QJ-1101) can manage a maximum of four controllers (model number WJ-1102_ and WJ-1103 W000).

● Standalone

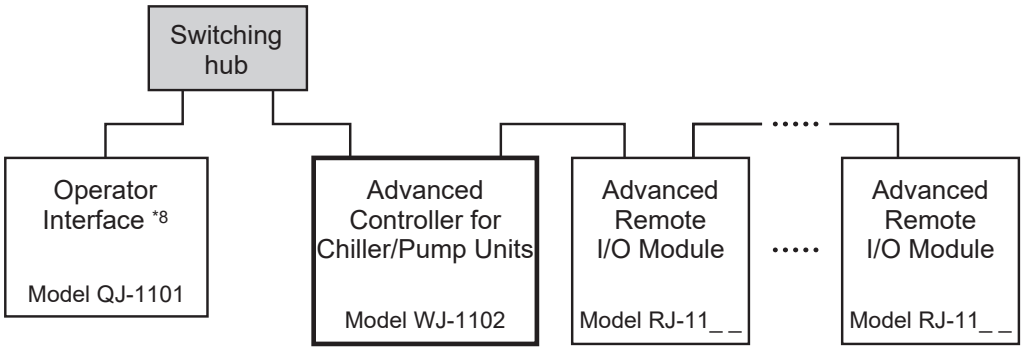


Figure 2 System Configuration Example

● Operation connected to the system

With redundancy

When the Advanced Controller is used in a redundant configuration, standalone operation is not possible.

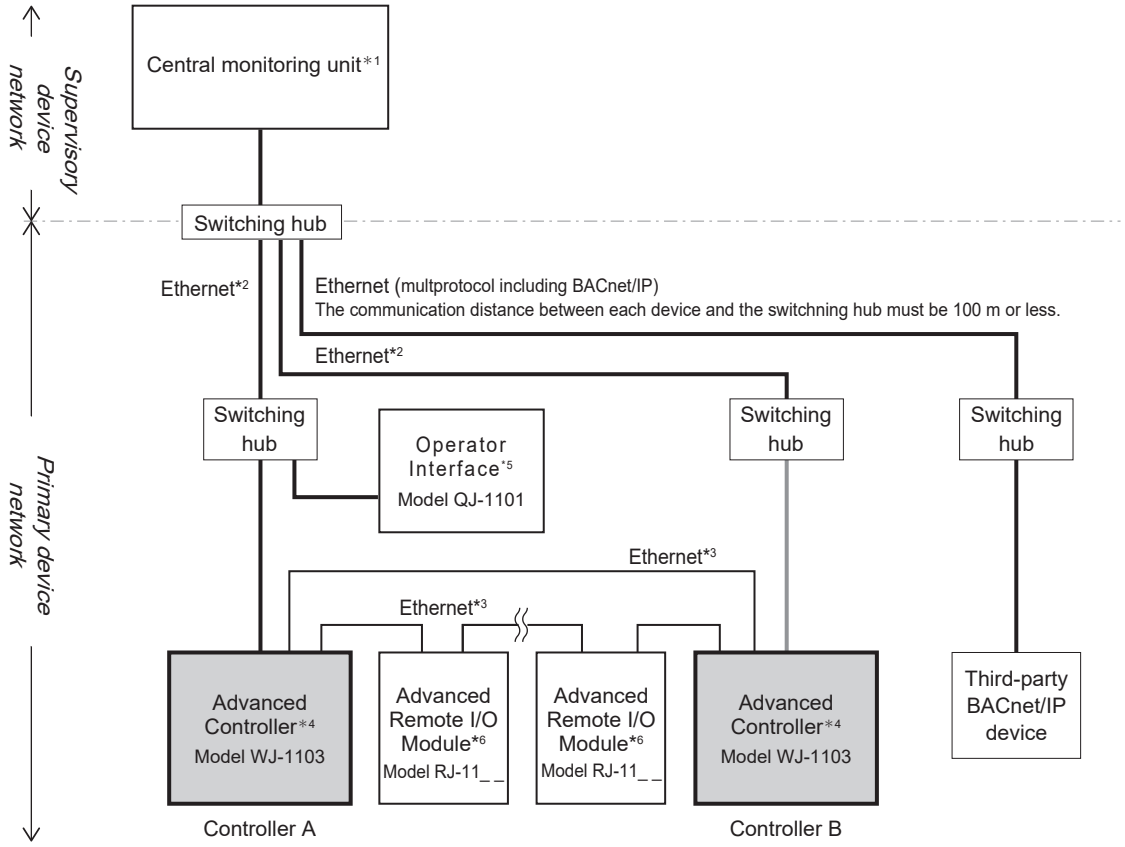


Figure 3 System Configuration Example

*1 The Advanced Controllers can be connected to Azbil's Supervisory Controller (model BH-101G0W0000).
The Supervisory Controller can be used redundantly, depending on the requirements of the job.

*2 A redundant network can be configured depending on the requirements of the job.

*3 A total of 20 Advanced Remote I/O Modules can be connected to two Advanced Controllers in a redundant configuration.
Connect the Advanced Controllers to the Advanced Remote I/O Modules in a ring network using Ethernet.
Advanced Remote I/O Modules cannot be connected to the remote I/O network Ethernet connection that connects this product to the host.

*4 The Advanced Controllers cannot connect to secondary devices using the RS-485 line.

*5 A set of controllers (A and B) can be managed by one Operator Interface.
The Operator Interface can be connected anywhere on the same network as the Advanced Controllers.

*6 The following Advanced Remote I/O Module firmware versions (and later) support redundancy.
Model RJ-1101: version 2.0.5. Model RJ-1102: version 2.0.5. Model RJ-1103: version 1.0.7.

■ Model Numbers

Model number						Description
QJ-1101						Operator Interface
	D					24 V DC
		0	0	0	0	Fixed

Note: An SD card for data collection is optional. Please order it separately if necessary.

● Optional parts

Part name	Drawing No. for order	Remarks
SD card for data collection	84500408-001	4 GB

* The user can procure an SD card that meets the requirements shown below.
However, in that case data collection and any other functions or performance using the SD card are not covered by the warranty.

Requirements for SD card for data collection

Item	Requirement	Remarks
Type	SD card	A miniSD or microSD card requires an adapter.
SD card standard	SDHC	The SDHC logo should be displayed on the card. A card with an SD or SDXC logo cannot be used.
Capacity	4–32 GB	–
Speed class	Class 10 or UHS-I	The OI does not support UHS but a UHS-compatible SD card can be used. If a UHS-compatible card is used, the speed class will be Class 10.

● Replacement parts

Part name	Drawing No. for order	Remarks
Power plug	84500489-001	
Mounting bracket	83104399-001	1 included

■ Power Supply

IMPORTANT! • The 24 V DC power supply for the Operator Interface must meet the following specifications and be installed for exclusive use of the OI.

Note: If a switch is installed for maintenance, the Operator Interface can be replaced without turning off the power of other devices.

Requirements of the 24 V DC switch-mode power supply for the Operator Interface

The 24 V DC power supply for the Operator Interface must meet the following specifications and be connected to the Operator Interface only. Do not connect other devices to the power supply.

Item	Requirement	Remarks
Capacity	40 W or more	
Ripple noise voltage	2 % or less	
Input variance	0.5 % or less	
Load variance	1.5 % or less	
Temperature variance	0.05 % /°C or less	
Startup time	1 s max.	
Output hold-up time	Min. 10 ms	
Overcurrent protection function	Yes	

■ Dimensions

170 mm (H) × 220 mm (W) × 50.5 mm (D)

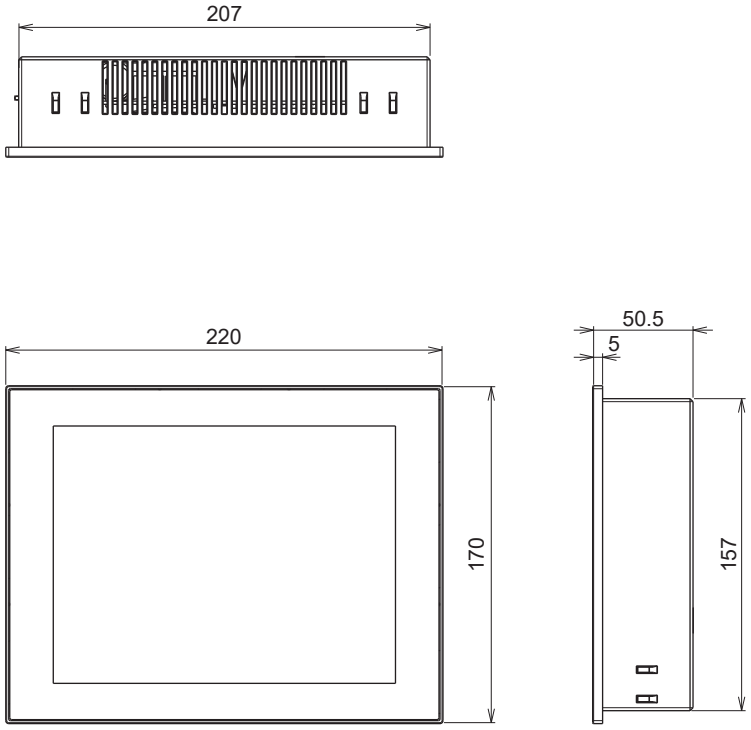


Figure 4 Dimensions (mm)

■ Part Names

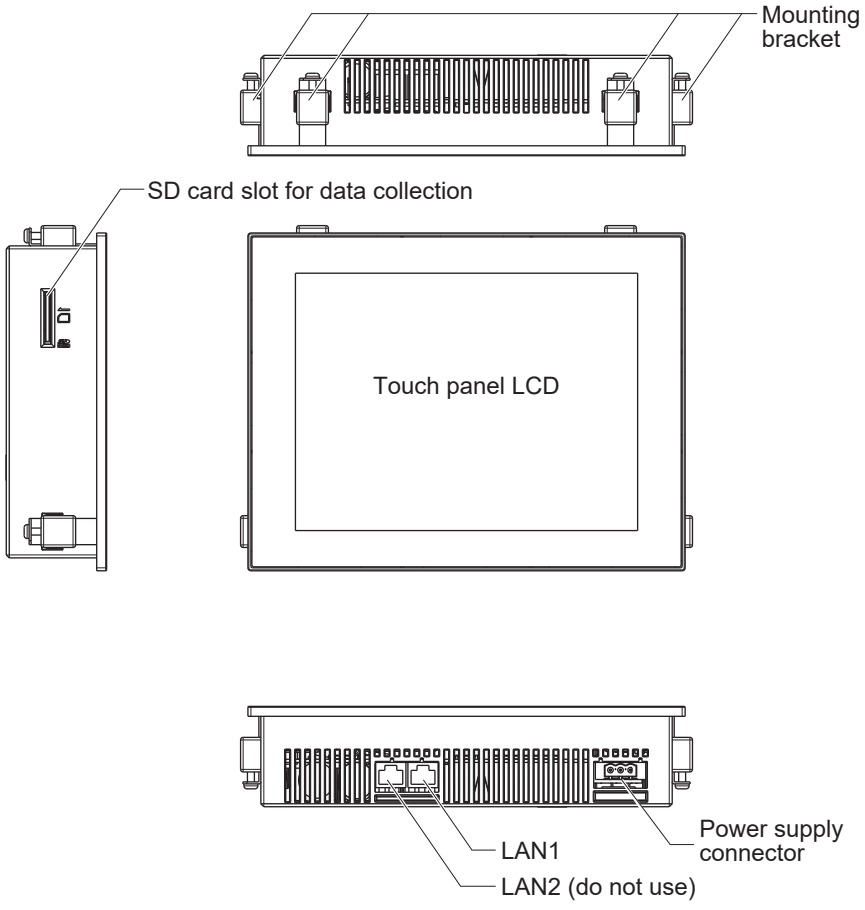


Figure 5

■ Specifications

● Basic Specifications

Item			Specification
Power supply		Input voltage	24 V DC (21.6–26.4 V DC)
		Power consumption	12 W (at 24 V DC)
		Inrush current	24 A max. (at 24 V DC)
		Ground	Functional ground 100 Ω max. ground resistance
CPU			32-bit
Memory device			512 MB SDRAM, 4 GB SD card
External memory			SD card slot for data collection × 1
Memory backup for power failure			Nonvolatile memory
Display	Type		8.4-inch TFT LCD
	Size		170.4 × 127.8 mm
	Resolution		800 × 600 (SVGA)
	Colors		65,536
Screen operation type			Projected capacitive touch screen with protective glass
Communication	Ethernet	Number of ports	2 (LAN 1 and LAN 2*)
		Function of ports	Auto-negotiation, MDI/MDI-X auto-recognition
		Protocol	Proprietary
		Communication speed	100 Mbps
Main material			Casing: modified PPE resin Surface of display: tempered glass
Weight			1.1 kg
Environmental conditions	Operating conditions	Ambient temperature	0–50 °C
		Ambient humidity	20–80 % RH (without condensation)
		Elevation	2,000 m max.
		Vibration	5.9 m/s^2 max. (10–150 Hz)
	Transportation/ storage conditions	Ambient temperature	−20–60 °C
		Ambient humidity	10–85 % RH (without condensation)
		Vibration (storage)	5.9 m/s^2 max. (10–150 Hz)
		Vibration (transport)	9.8 m/s^2 max. (10–150 Hz)
	Other		• No corrosive gas should be detected. • No exposure to direct sunlight. • Do not let the product get wet.
Installation location			On a control panel cabinet. Installable on a 1.0–3.2 mm thick cabinet door.
Mounting			Attached by mounting bracket and screws

* LAN 2 should not be used.

● Wiring Specifications

Item	Recommended wire	Specification	Max. wiring length	Connection type	Remarks
24 V DC power supply	IV, CVV, or equivalent	1.25–2.0 mm^2 stranded wire (16–14 AWG) Length of insulation to strip: 7 mm	3 m	Two-piece connector (screw clamp type)	
Ground	IV, CVV, or equivalent	1.25–2.0 mm^2 stranded wire (16–14 AWG) Length of insulation to strip: 7 mm	3 m	Two-piece connector (screw clamp type)	• 100 Ω max. ground resistance • Ground resistance is 100 Ω max. • Functional ground
Ethernet communication (LAN 1, LAN 2*)	—	EIA/TIA-568 category 5e or higher	100 m	RJ45 modular connector	

* LAN 2 should not be used.

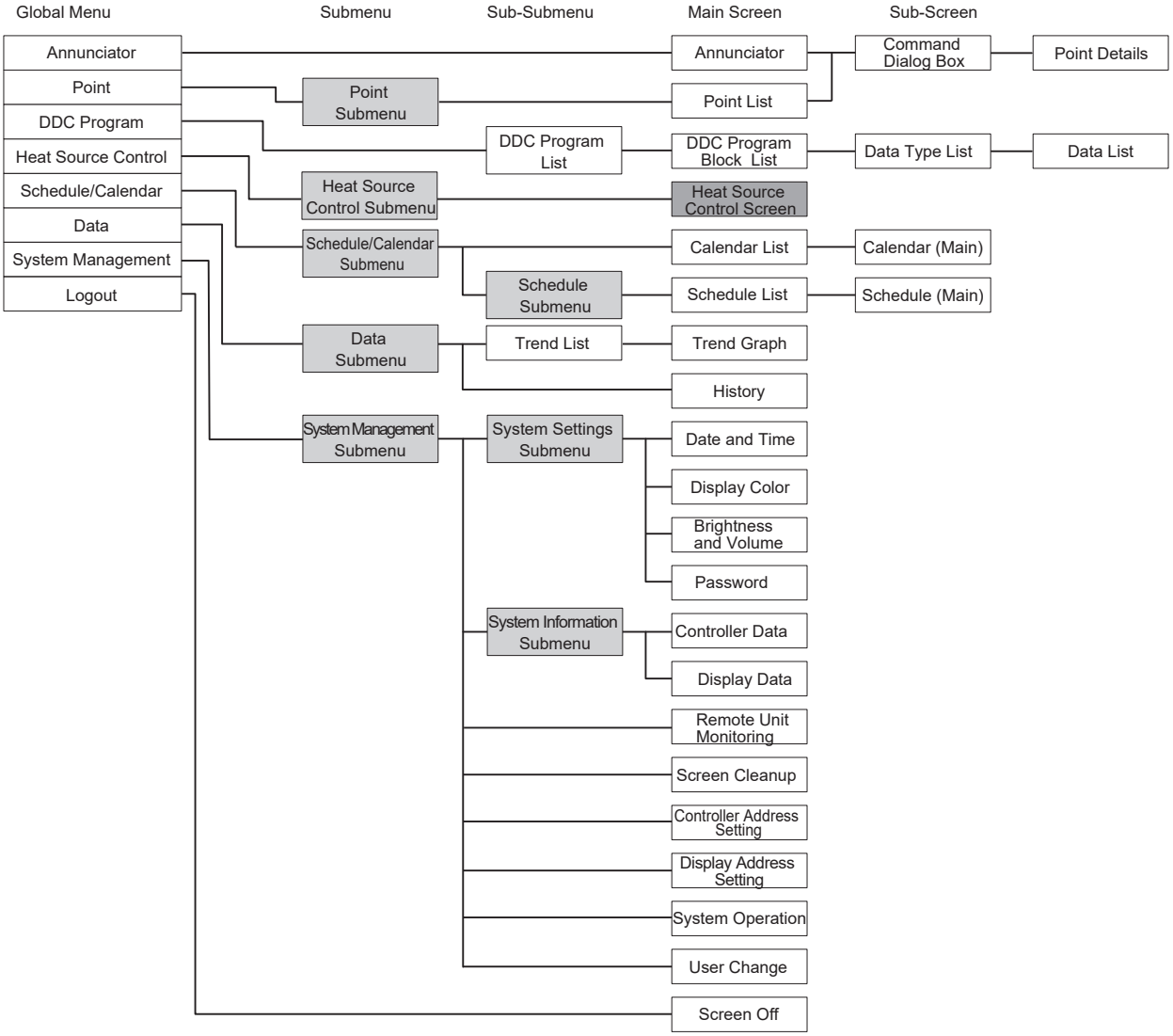
■ Functions

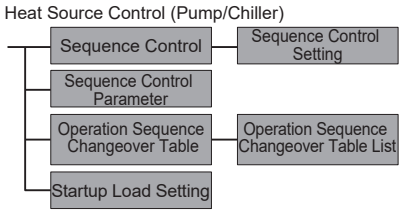
Item	Description
Controller management	Manages model WJ-1102 and WJ-1103 controllers. Model WJ-1002: max. 4 Model WJ-1103 (with redundancy): 1 set of controllers A and B Model WJ-1103 (without redundancy): max. 4 Operation from the OI is done by selecting the desired WJ-1102 or WJ-1103.
Point management	Controls the points of the selected WJ-1102 or WJ-1103. (Unable to control the points of secondary devices.)
Indicator bar	Shown at the top of the OI screen. Displays the status of the connected controllers, the controller currently selected, alarms, etc.
Operation and monitoring	It allows users to operate, monitor*, and change settings of the sequence control screen. Also, it can be used to set control parameters.
Annunciators	Like an annunciator panel, these display the point name, present value, and status. The point operation screen can be accessed from the annunciator screen if the points can be started, stopped, and set. 7 annunciators, 30 points per annunciator
Trend Graph	Shows graphed data for the desired point. Trend data collection: up to 32 points (4 points × 8 graphs) All trend graph data can be exported at the same time to an SD card in a CSV file.
History	Shows alarm records, operator actions, and state changes. 1000 items
Brightness	Changes the brightness of the display in four levels.
Volume	Changes the volume of alarm and touch sounds. Loud, medium, soft, or muted can be selected.

* In a savic-net G5 system, if the supervisory controller (SVC) monitors alarms, those alarms cannot be shown on the Operator Interface.

■ Screen Hierarchy

The OI displays various screens and is used to change settings.
For details, refer to AB-7467, Operator Interface User Guide.
The following is an overview of the screen hierarchy.
The screen hierarchy may differ depending on the controller model.
The “Schedule/Calendar” screen is displayed only when the OI is used in a standalone environment.
The Heat Source Control screen is not displayed for model WJ-1103.





■ Disposal

Dispose of the product as industrial waste in accordance with your local regulations.
Do not reuse all or part of this product.

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■ For CE-Marked Products

This product complies with the following harmonised standards of the Electromagnetic Compatibility Directive (EMCD).
EMCD: EN 61326-1 Class A, Table 2 (for use in an industrial electromagnetic environment)

Azbil Corporation
Building Systems Company

https://www.azbil.com/

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Specifications are subject to change without notice.