

Block Power Supply DC Backup Block for Preventing 24 VDC Outages due to Instantaneous Power Failures

- Supplies 24 VDC for a fixed period of time even during AC input outages to considerably improve system reliability.
- Block Power Supply Basic Block is connected by the Bus Line Connector. Simple system configuration.
- Alarms are notified by indication on main unit and by alarm signal output.



Block Power Supply Basic Block
DC Backup Block



Ordering Information

■ DC Backup Block (See note 1.)

Output voltage	Output current	Model
24 V	3.7 A / 8 A (See note 2.)	S8T-DCBU-01

- Note:**
1. One S8T-BUS03 Connector is included as accessory.
 2. The output current can be selected by a switch.

■ Bus Line Connector

Type	Number of Connectors	Model
DC line bus	1 Connector	S8T-BUS03
	10 Connectors (See note.)	S8T-BUS13

- Note:** One package contains 10 S8T-BUS03 Connectors.

■ Battery Holder

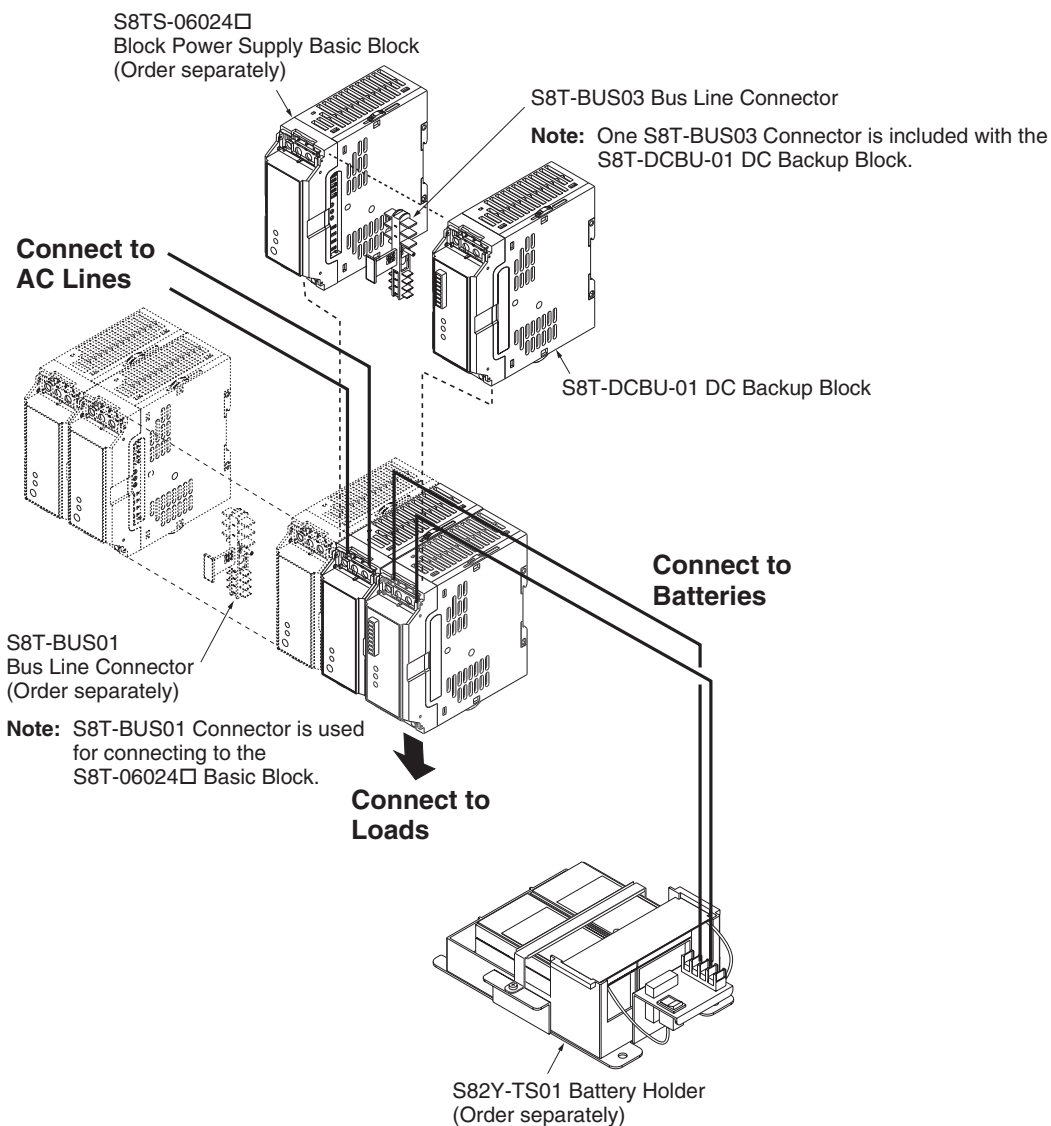
Model
S82Y-TS01

■ Basic Block

Type	Output voltage/output current	Model
Screw terminal type	24 V / 2.5 A	S8TS-06024
Connector terminal type		S8TS-06024F

- Note:** Use S8T-BUS01 in a pair with the Block Power Supply Basic Block.

Basic Configuration



■ Maximum Number of S8TS-06024□ Block Power Supply Basic Blocks that can be Linked / Specified Battery

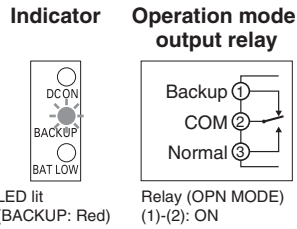
Overcurrent protection function selector switch	Maximum number of S8TS-06024□ Basic Blocks that can be linked	Battery Sales Area Specified battery	Japan	
			LC-P122R2J	LC-P123R4J
5.7 A (typical)	2 Blocks (3 Blocks if N + 1 redundant system is used)	Yes	Yes	Yes
11.7 A (typical)	4 Blocks (5 Blocks if N + 1 redundant system is used)	—	—	Yes

- Note:**
1. Specified batteries are made by Matsushita Electric Industrial Co., Ltd. (Panasonic).
 2. The rated voltage of the specified battery is 12 V. Use two specified batteries connected in series.
 3. Be sure to connect the S8TS-06024□ Basic Block.
 4. Consult your OMRON representative when purchasing batteries.

Operation

Backup

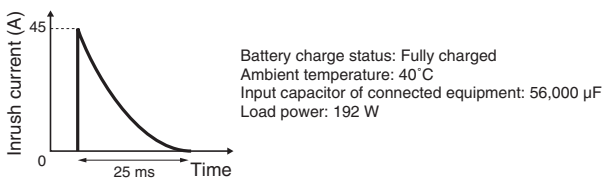
The S8T-DCBU-01 detects drops in the output voltage of the S8TS-06024□ and switches over to backup operation.



Backup operation is continued for about seven seconds even if the output voltage of the S8TS-06024□ is reset.

		Backup status	LED (BACKUP: Red)	Relay (OPN MODE)
Power failure		Backup operation is performed continuously.	Lit	Backup (1)-(2): ON
One S8TS-06024□ Basic Block is out of order.	When one S8TS-06024□ Basic Block is used	Regular operation and backup operation are repeated alternately at about 7-second cycles.	Flash at about 7-second cycles	Regular operation ((3)-(2): ON) and backup operation ((1)-(2): ON) are repeated alternately at about 7-second cycles.
	When two or more S8TS-06024□ Basic Blocks are used (See note 1.)			
When the overcurrent protection function of the S8TS-06024□ is active (See note 1.)				

- Note:**
- If this state occurs, a probable cause is an S8TS-06024□ overload or it is out of order. Immediately eliminate the cause of the trouble.
 - Output voltage also fluctuates in keeping with repeated alternate switching between backup operation and regular operation.
 - The relay contact capacity is 24 VDC, 0.1 A.
 - If the load fluctuates suddenly, the output voltage of the S8TS-06024□ sometimes drops resulting in backup operation.
 - The maximum inrush current shown below flows when backup operation is switched to.



Output Voltage Setting of the S8TS-06024□

The DC Backup Block detects drops (approx. 23 VDC) in the output voltage of the connected S8TS-06024□ and switches over to backup operation.

The output voltage of the S8TS-06024□ can be adjusted by the output voltage adjustment trimmer. When using the S8TS-06024□ connected to the DC Backup Block, do not set the voltage to a value lower than the factory set voltage.

Length of Wires between S8T-DCBU-01 and Battery

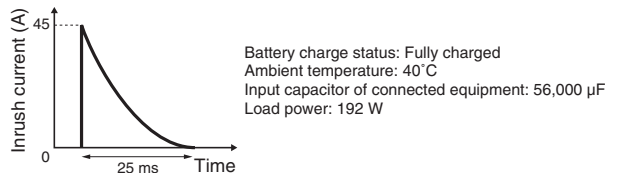
Limit the wire between the S8T-DCBU-01 and the battery to 1.5 m or less using wires of gages indicated at "Recommended Wire Size" on page 14.

As the battery voltage is monitored at Battery Connector terminal, wiring longer than 1.5 m will cause a large impedance which will result in a larger voltage drop on the wiring and a shorter backup time.

S82Y-TS01 Battery Holder

We recommend using the S82Y-TS01 Battery Holder for connecting and installing the battery. Take the following points into consideration when using the S82Y-TS01:

- Contact between leaking battery fluid and metal parts having an electric potential may cause smoke or fire. To prevent this, place the battery on a resin battery tray.
- The inrush current shown below flows when backup operation is switched to. The peak value and time of this inrush current vary according to the capacity of the input capacitor of the connected equipment, battery charge status, battery wiring length, and ambient temperature. The switch and fuse of the S82Y-TS01 are selected taking this inrush current into consideration. When replacing the fuse, use only the specified fuse. (Littelfuse, 257015 (15 A))
- In the event that the battery generates inflammable gases, place the switch and fuse away from the convection path of the inflammable gas to prevent the switch or fuse from causing ignition and explosion.
- Storing the S8T-DCBU-01 still connected to the battery may cause the battery to discharge and considerably reduce the service life of the battery. To prevent this, turn the switch OFF.



Charging Circuit

Charging Time (Reference Values)

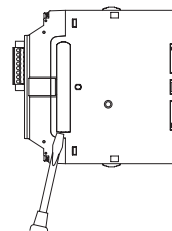
Battery used	100% charge	80% charge
LC-P122R2J	24 to 48 hours	5 hours
LC-P123R4J		8 hours

Note: The times shown in the table above are required for charging the battery. If a power failure occurs within the above charging times, backup operation at the required time may not be possible.

Mounting and Removing Bus Line Connector

Pay attention to the following points to maintain electrical characteristics.

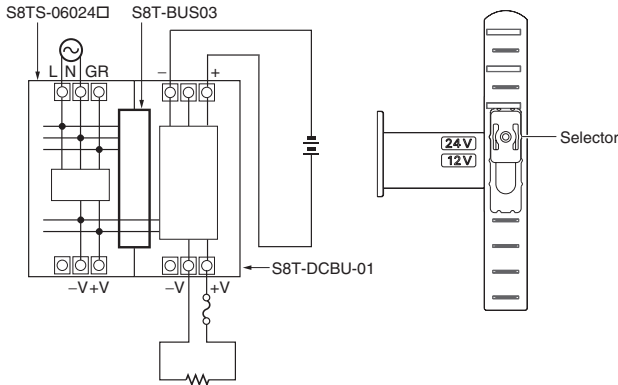
- Do not insert/remove the Connectors more than 20 times.
- Do not touch the Connector terminals.
- To remove the Connectors, insert a flat-bladed screwdriver alternately at both ends.



S8T-BUS03

Connect the S8T-BUS03 Connector to the DC line only (AC line not connected) for use.

The S8T-BUS03 Bus Line Connector is equipped with a selector to prevent erroneous connection of Blocks with different output voltage specifications. Slide the selector to 24 V.



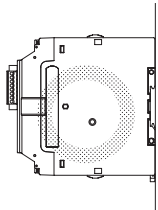
Mounting

Mounting Direction

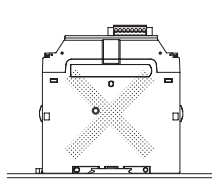
Standard mounting	Yes
Face-up mounting	No
Other mounting methods	No

Use standard mounting only. Using any other mounting method will prevent proper heat dissipation and may result in deterioration or damage of internal elements.

Standard mounting



Face-up mounting



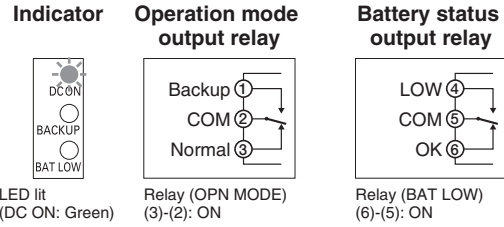
Stopping Unit

When stopping a connected unit during maintenance, we recommend first making sure that backup operation is not needed before turning the battery holder switch and then the AC power line OFF.

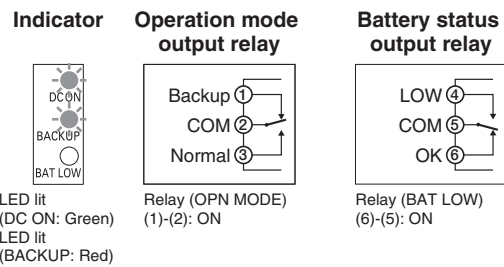
Checking Performances

When having finished connecting equipment to the S8TS-06024□ Basic Block and S8T-DCBU-01, we recommend checking that backup is performed properly by the following procedure.

1. Turn ON the power of battery holder.
2. Turn ON the S8TS-06024□ AC power line.
3. Check the operating status described below after 10 seconds or more.



4. Turn OFF the S8TS-06024□ AC power line.
5. Check that backup is performed properly by the following figures.



6. Turn ON the S8TS-06024□ AC power line.

Note: 1. Check the S8T-DCBU-01 is performed properly after making sure that no problems will occur as a result of stopping power to connected loads.

2. Note that backup operation may not be switched to if the AC power line is turned OFF for less than 10 seconds at step 3.

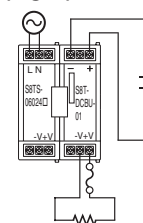
Specifications

■ Ratings/Characteristics/Functions

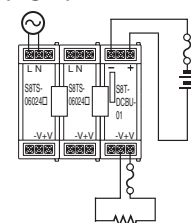
Item	Model	S8T-DCBU-01		
Input	Voltage	24 to 28 VDC		
Output (See note 3.)	Normal operation	Voltage	24 VDC (See note 4.)	
		Load variation influence (See note 5.)	6% max.	
	Backup operation	Voltage	21.0 to 27.4 VDC (See note 6.)	
		Min. output current	LC-P122R2J	0.11 A
			LC-P123R4J	0.17 A
		Backup time (reference value) (See note 1.)	LC-P122R2J	8 min/3.7 A (at 25°C, battery fully charged, start of battery service life)
LC-P123R4J	4 min/8.0 A (at 25°C, battery fully charged, start of battery service life)			
Charging	Method	Stable voltage/current charging method		
	Charge voltage (See note 2.)	27.4 V / 26.2 V (typical)		
	Max. charge current	0.35 A (typical)		
	Overvoltage protection (See note 2.)	Yes (30 V typical)		
Additional functions	Protection functions	Overdischarge protection (See note 2.)	Yes (18.5 V typical)	
		Overcurrent protection (See note 2.)	Yes (5.7 A / 11.7 A typical)	
		Battery misconnection protection (See note 2.)	Yes	
	Input function	Backup ON/OFF input (See note 2.)	Yes	
	Output functions	Output indicator	Yes (color: green)	
		Battery status indicator (See note 2.)	Yes (color: red)	
		Battery status output (See note 2.)	Yes (relay: 24 VDC, 0.1 A)	
		Backup status indicator	Yes (color: red)	
		Operation mode output	Yes (relay: 24 VDC, 0.1 A)	
	Other	Ambient operating temperature (See note 5.)	Operating: Refer to the derating curve in <i>Engineering Data</i> . (with no condensation or icing) Storage: -25 to 65°C	
Ambient humidity		Operating: 25% to 85%; Storage: 25% to 90%		
Dielectric strength (See note 5. and 7.)		3.0 kVAC for 1 minute (between all S8TS-06024□ AC inputs, and between all S8T-DCBU-01 terminals and all S8TS-06024□ outputs; detection current: 20 mA) 2.0 kVAC for 1 minute (between all S8TS-06024□ AC inputs and GR terminals; detection current: 20 mA) 1.0 kVAC for 1 minute (between all S8T-DCBU-01 terminals and all S8TS-06024□ outputs, and between GR terminals; detection current: 20 mA)		
Insulation resistance (See note 5.)		100MΩ min. (between all S8T-DCBU-01 terminals and all S8TS-06024□ outputs, and between all S8TS-06024□ AC inputs and GR terminals) at 500 VDC		
Vibration resistance (See note 5. and 8.)		10 to 55 Hz, 0.375-mm single amplitude for 2 h each in X, Y, and Z directions		
Shock resistance (See note 5. and 8.)		150 m/s ² , 3 times each in ±X, ±Y, and ±Z directions		
Electromagnetic interference (See note 5.)		Conforms to FCC Class A, EN50081-2/1993		
EMI (See note 5.)		Conforms to EN50081-2/1993		
Approved standards		UL: UL508 (Listing, Class 2: Per UL1310) (See note 9.), UL60950, UL1604 (Class I /Division 2) cUL: CSA C22.2 No.14, No.60950, No.213 (Class I /Division 2) EN/VDE: EN50178 (=VDE0160), EN60950 (=VDE0806)		
Size		120 × 120 × 43 mm		
Weight		350 g		

- Note:**
1. Refer to *Backup Time (Reference Value)* on page 7 for details.
 2. Refer to *Functions* on page 8 for details.
 3. The output is specified at power output terminals.
 4. Specified by performance of S8TS-06024□ Basic Block.
 5. Specified by S8TS-06024□ connection.
 6. Specified by battery performance.
 7. Set the detection current to 20 mA × N when S8TS-06024□ Basic Block N Blocks are connected.
 8. Be sure to mount End Plates (PFP-M) on both ends of the Power Supply.
 9. To meet UL508 requirements, insert a UL List and a 4.2 A fuse or equivalent circuit breaker according to the conditions in the table below.

(Fig. 1)



(Fig. 2)



	Series connection with battery	Series connection with load
When one S8TS-06024□ Basic Block is used (Fig. 1)	No	Yes
When two or more S8TS-06024□ Basic Blocks are used (Fig. 2)	Yes	Yes

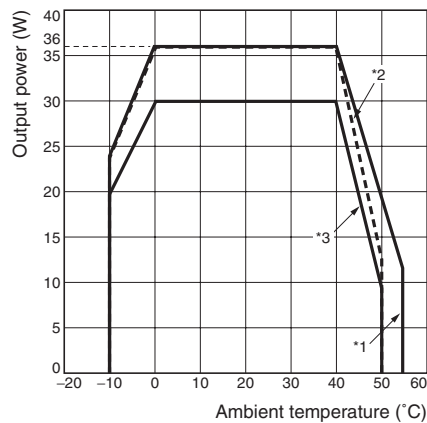
Engineering Data

Derating Curve

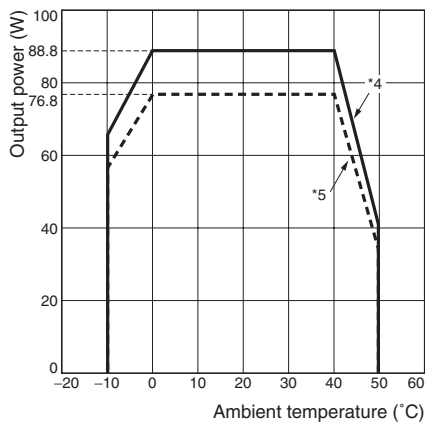
Number of S8TS-06024□s	S8TS-06024□ rated input	Derating curve	Rated output power
1	200 to 240 VAC	*1	36 W
	100 to 120 VAC	*2	
1 (+1)	100 to 120 VAC/200 to 240 VAC	*3	30 W
2		*4	88.8 W
2 (+1)		*5	76.8 W
3		*6	146.4 W
3 (+1)		*7	128.4 W
4		*8	192 W
4 (+1)		*9	168 W

- Note:**
1. Add one more S8TS-06024□ Basic Block if a redundant system is used.
 2. If there is a derating problem, use forced air-cooling.
 3. The ambient temperature is specified for a point 50 mm below the power supply.
 4. The ambient temperature range of the battery is 0 to 40°C, different from that for the S8T-DCBU-01. The ambient temperature of the battery is specified according to the battery's surface temperature.
 5. As energy is consumed by S8T-DCBU-01, the total output capacity of the number of connected S8TS-06024□s cannot be calculated.

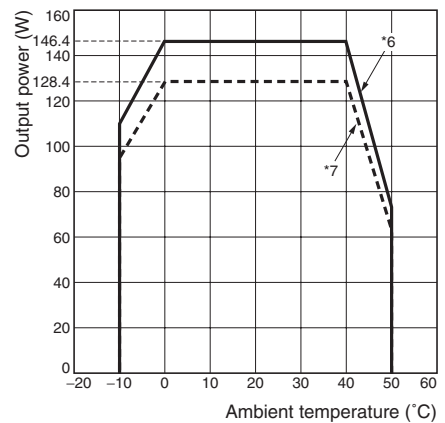
S8T-DCBU-01



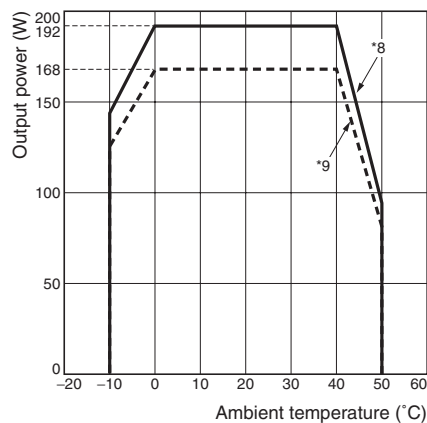
S8T-DCBU-01



S8T-DCBU-01

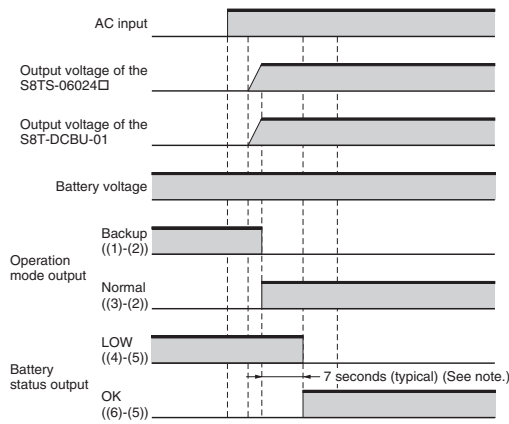


S8T-DCBU-01



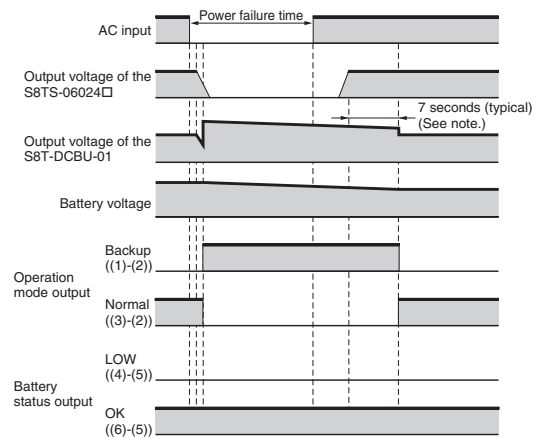
■ Time Charts

Startup



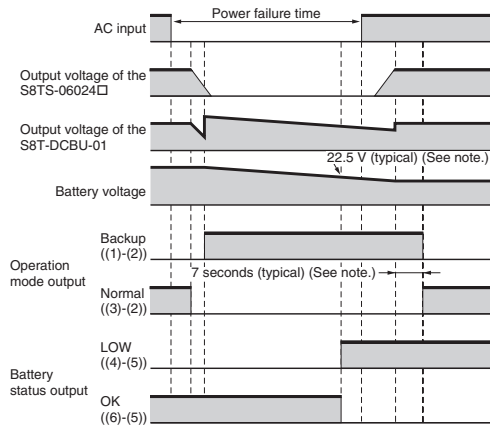
Note: Backup operation is not possible during the period (7 seconds (typical)) that the battery status output relay is LOW after the S8T-DCBU-01 is started up.

Power Failure (When the Battery Voltage does not Reach the BAT LOW Voltage)



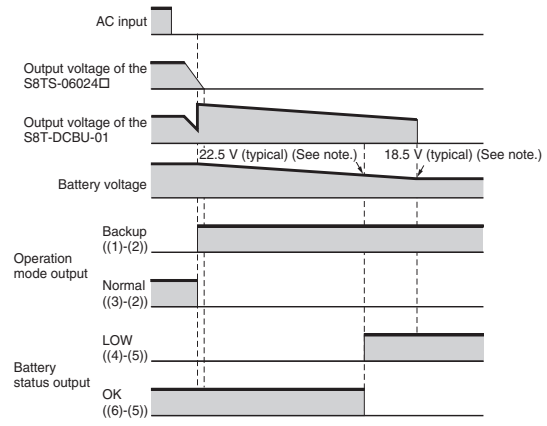
Note: Backup operation is continued for seven seconds after the power is restored from a power failure.

Power Failure (When the Battery Voltage Reaches the BAT LOW Voltage)



Note: When the battery voltage falls below 22.5 V (typical), the status of the battery status output relay changes to LOW.

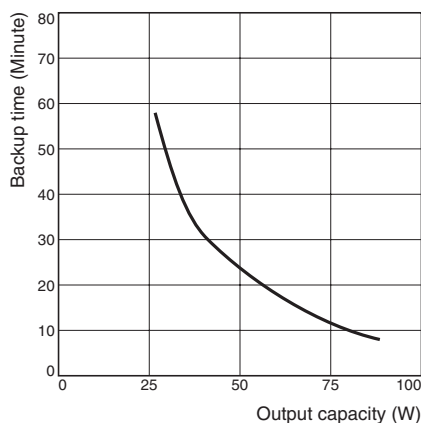
Power Failure (When the Battery Voltage Reaches the Overdischarge Protection Voltage)



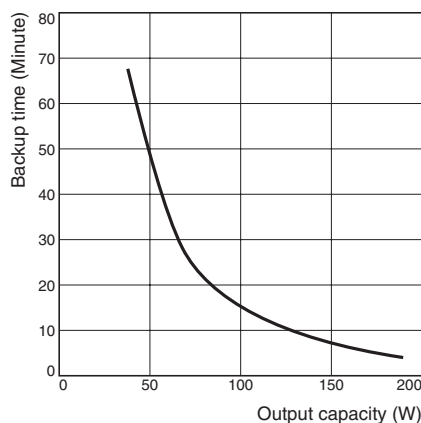
Note: When the battery voltage falls below 22.5 V (typical), the status of the battery status output relay changes to LOW, when the battery voltage falls below 18.5 V (typical), backup operation is stopped.

■ Backup Time (Reference Value)

Backup Time when LC-P122R2J is Used



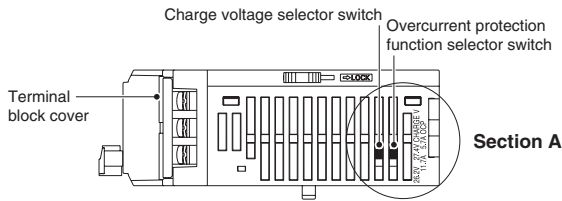
Backup Time when LC-P123R4J is Used



Note:

- Backup time conditions
 - Ambient temperature: 25°C
 - Battery: New product fully charged to 27.4 V
 - Length of wire between S8T-DCBU-01 and battery: 1.5 m
- The backup time changes depending on the capacity of connected equipment, ambient temperature, and battery service life.

Functions



Charge Voltage Selector Switch

The battery charge voltage can be selected from 27.4 V and 26.2 V by the charge voltage selector switch.

The default setting is 27.4 V.

The charge voltage recommended by the battery manufacturer is 27.4 V, so recommend using the battery at 27.4 V. At this voltage, the charge voltage of 27.4 VDC sometimes is output momentarily when backup operation is switched to depending on the status of the connected load.

Note: When charging the battery at 26.2 V, the battery capacity decreases and the backup time is shortened gradually as shown in the table below at each discharge cycle.

	Capacity reduction at each discharge cycle
25°C environment	10% reduction (reference value)
0°C environment	20% reduction (reference value)

Overvoltage Protective Circuit

When the charge voltage exceeds about 30 V, the charge voltage is cut off to prevent battery overcurrent resulting from overvoltage.

Reset method

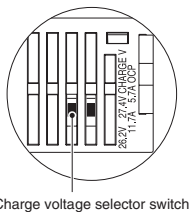
Reset the S8T-DCBU-01 by the following procedure after making sure that no problems will occur as a result of stopping power to connected loads.

1. Turn OFF the power of battery holder.
2. Turn OFF the S8TS-06024□ AC power line.
3. One minute or more has elapsed.
4. Turn ON the power of battery holder.
5. Turn ON the S8TS-06024□ AC power line again.

Note:

1. Be sure to eliminate the cause of the trouble before turning ON the S8TS-06024□ AC power line again.
2. As an AC input OFF status is the same as a power failure, the S8T-DCBU-01 will perform backup operation. Sometimes charging cannot be performed for the required backup time as the battery is not sufficiently charged. For this reason, first make sure that backup operation is not needed before turning the battery holder switch and then the AC input OFF.
3. The time that the S8T-DCBU-01 must be left for resetting is the time specified when five S8TS-06024□ Basic Blocks are connected, the S8T-DCBU-01 is in a no-load state and the battery is fully charged.

Enlarged View of Section A

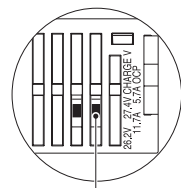


Charge voltage selector switch

Overcurrent Protection Function Selector Switch

The overcurrent protection function can be selected from 5.7 A (typical) and 11.7 A (typical) by the overcurrent protection function selector switch during backup operation. When one or two S8TS-06024□ Basic Blocks are connected (3 Blocks if an N + 1 redundant system is used), set the current to 5.7 A (typical). When three or four S8TS-06024□ Basic Blocks are connected (5 Blocks if an N + 1 redundant system is used), set the current to 11.7 A (typical). The default setting is 5.7 A (typical).

Enlarged View of Section A



Overcurrent protection function selector switch

Overcurrent Protection Function

Normal operation

The overcurrent status is notified as follows:

- LED lit (Battery status indicator (BAT LOW: Red))
- Relay (Battery status output (BAT LOW)) (4)-(5): ON

If a power failure occurs in one of these states, the overcurrent protection function is activated, and backup operation is not performed.

Backup operation

The overcurrent protection function can be selected from 5.7 A (typical) and 11.7 A (typical) by the overcurrent protection function selector switch. Output is cut when the overcurrent protection function is activated.

Note: Continued use of the S8T-DCBU-01 in an overcurrent state will cause internal elements to deteriorate and may result in breakage.

Overdischarge Protection Function

When the voltage at the Battery Connector terminal reaches about 18.5 V, backup operation is stopped to prevent battery overdischarge.

Backup ON/OFF Input Function

Backup operation is possible when the backup ON/OFF input terminal is shorted, and not possible when the terminal is open. The system used is no-voltage input, and the shorted/open status is specified by the following table.

Shorted	Impedance: 1 kΩ max. Current discharge at 0Ω: Approx. 2 mA Residual voltage: 1 V max.
Open	Impedance: 400 kΩ min.

Before shipment, the backup ON/OFF input terminal is shorted by a short bar.

The operator is notified that backup operation is not possible as follows when the backup ON/OFF input terminal is open:

- LED lit (Battery status indicator (BAT LOW: Red))
- Relay (Battery status output (BAT LOW)) (4)-(5): ON

Battery Misconnection Protection Function

When the voltage on the Battery Connector terminal is about 15.5 V or less when the S8T-DCBU-01 is started up, the charging circuit is disconnected. This protects the battery and main unit when the battery is incorrectly connected (+ and – polarities are incorrectly connected, only one 12 V battery is connected, etc.).

The operator is notified of an abnormality as follows when the battery misconnection protection function is activated:

- LED lit (Battery status indicator (BAT LOW: Red))
- Relay (Battery status output (BAT LOW)) (4)-(5): ON

Battery Status Indicator / Battery Status Output

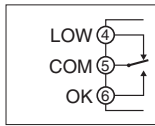
The operator is notified of an abnormality as follows when an abnormality ((1) to (4) below) occurs during battery discharging:

Indicator



LED lit
(BAT LOW: Red)

Battery status output relay



Relay (BAT LOW)
(4)-(5): ON

If a power failure occurs in the following states, backup operation is not performed and/or the backup time is shortened. Immediately eliminate the cause of the abnormality.

1. The voltage at the Battery Connector terminal is 22.5 V or less.
2. The battery misconnection protection function is activated.
3. The backup ON/OFF input terminal is open.
4. Overcurrent status during normal operation

Note: The relay contact capacity is 24 VDC, 0.1 A.

■ Replacing Batteries

The service life of the seal-type lead battery in use is limited. Use of the battery beyond its replacement cycle may, in the worst instance, cause fire. To prevent accidents in the worst instance, we recommend periodically replacing the battery.

- Note:**
1. Battery performance rapidly deteriorates as it approaches the end of its service life.
 2. The battery life is specified as half of the battery's initial capacity.
 3. The service life is shortened depending on its storage and operating environments and the backup frequency.
 4. When disposing of or collecting batteries for recycling, observe local bylaws and regulations.

1. Replacement Guideline

Replace the battery using the following table as a guideline:

Battery	Ambient temperature	Service life of the battery	Replacement guideline
LC-P122R2J	20 °C	4 to 6 years	4 years
LC-P123R4J	30 °C	2 to 3 years	2 years
	40 °C	1 to 2 years	1 year

Note: Values in the above table are calculated assuming that a backup is performed using a charge voltage of 27.4 V, discharge of 8 A (LC-P123R4J) or 3.7 A (LC-P122R2J) once every month.

2. Measuring Backup Time

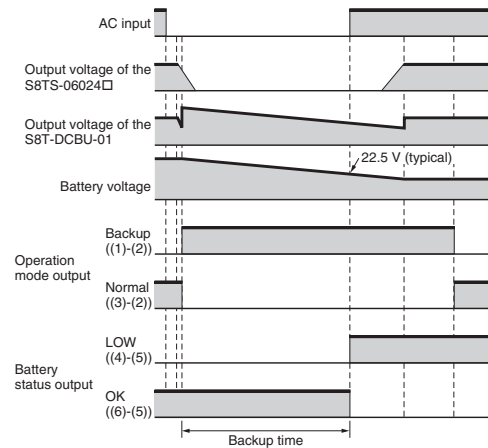
The backup time can be measured by the procedure below. When the battery is new, first measure the initial backup time value.

Replace the battery if backup operation is not performed for the required backup time during periodic maintenance or the backup time has fallen below the half or less of initial value.

- Note:**
1. Make sure that at least 48 hours has elapsed since the previous backup operation, and that the battery is correctly connected, and then measure the backup time.
 2. Measure the backup time after making sure that no problems will occur as a result of stopping power supply.

- (1) Turn the AC power line OFF, and back up the S8T-DCBU-01.
- (2) Measure the time that the battery status output relay turns to LOW ((4)-(5): ON) after the operation mode output relay is backed up ((1)-(2): ON). (This is the backup time.)

- (3) When the battery status output relay turns LOW ((4)-(5): ON), turn the AC power line ON.



Periodic Inspecting the Battery

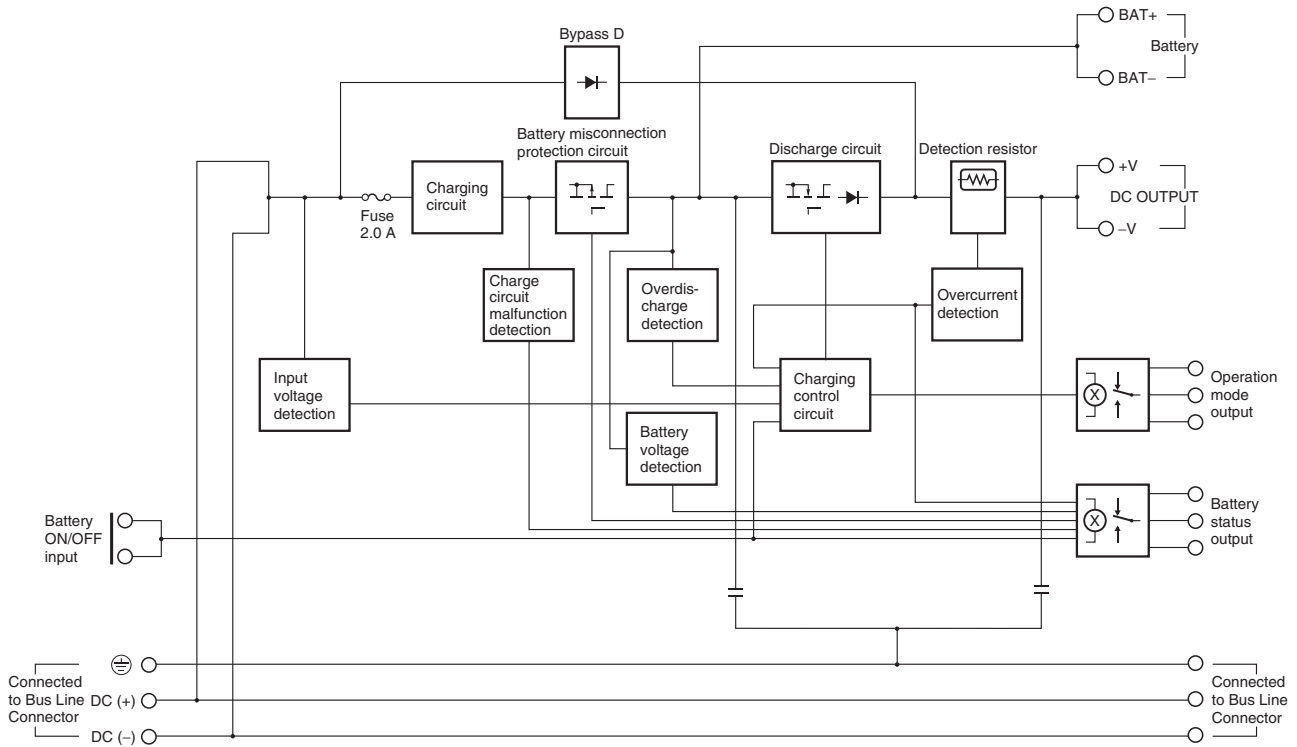
We recommend periodically inspecting the battery as follows:

- Check the battery voltage. (In a 27.4 V series connection, make sure that each battery is charged to 13.7 V.)
- Check battery wiring and connections. (Check the batteries and S8T-DCBU-01 connections for loose screws.)
- Make sure that backup operation is performed normally in a simulated power failure state.

Note: Check the backup operation after making sure that no problems will occur as a result of stopping power supply.

Block Diagrams

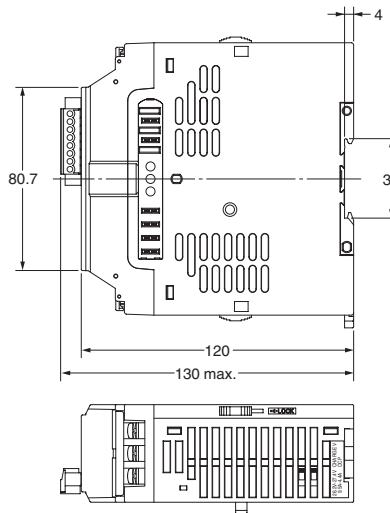
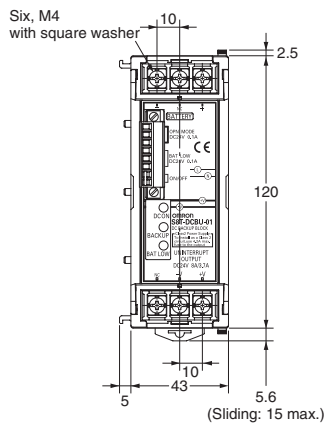
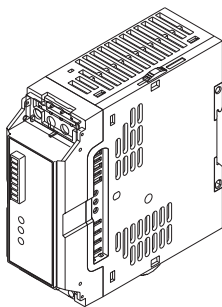
S8T-DCBU-01



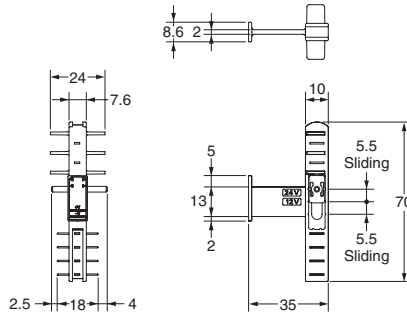
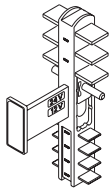
Dimensions

Note: All units are in millimeters unless otherwise indicated.

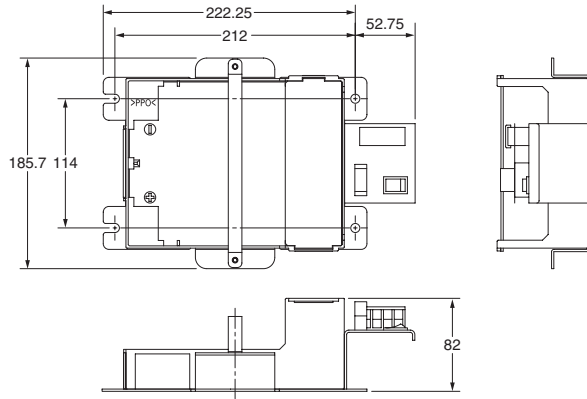
DC Backup Block S8T-DCBU-01



**Bus Line Connector
S8T-BUS03**



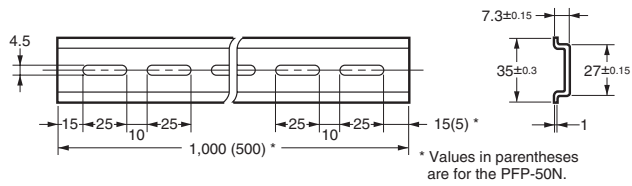
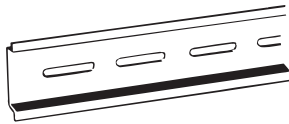
**Battery Holder
S82Y-TS01**



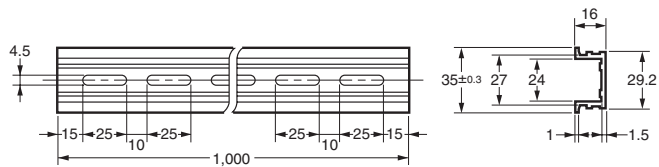
■ DIN Track

Note: All units are in millimeters unless otherwise indicated.

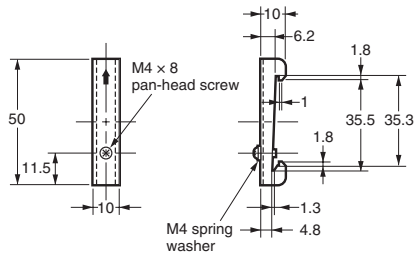
**Mounting Track (material: aluminum)
PFP-100N
PFP-50N**



**Mounting Track (material: aluminum)
PFP-100N2**

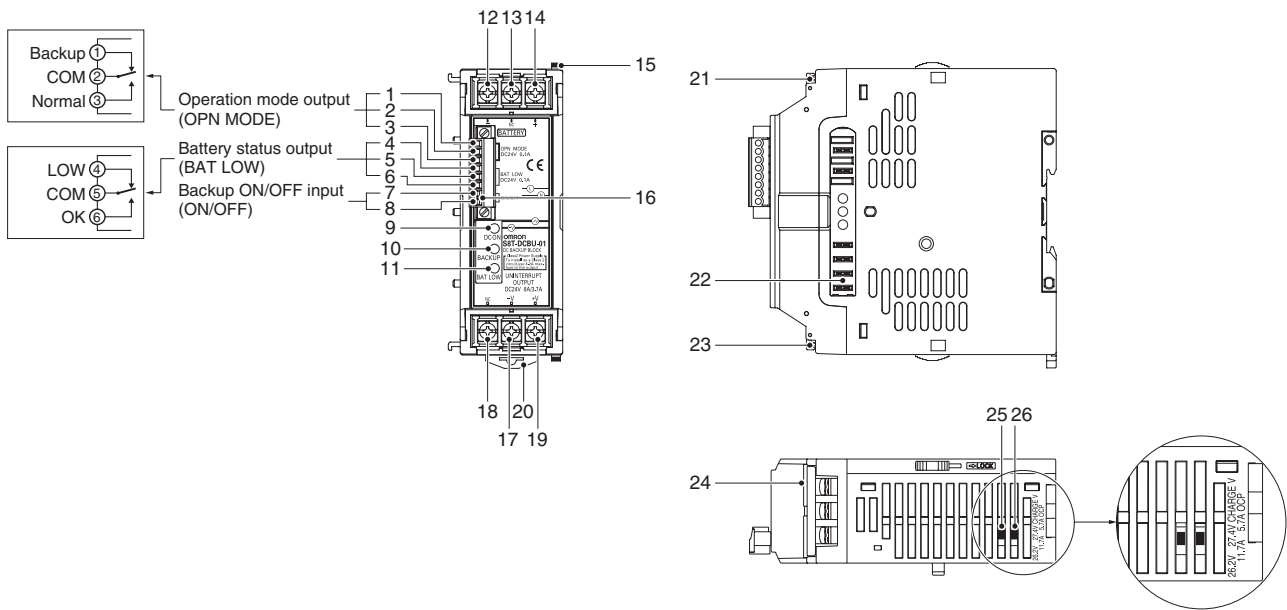


**End Plate
PFP-M**



Component Names

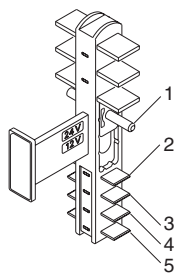
S8T-DCBU-01 DC Backup Block



- (1) Backup: Operation Mode Output Relay
- (2) COM: Operation Mode Output Relay
- (3) Normal: Operation Mode Output Relay
- (4) LOW: Battery Status Output Relay
- (5) COM: Battery Status Output Relay
- (6) OK: Battery Status Output Relay
- (7) ON/OFF: Backup ON/OFF Input
- (8) GND: Backup ON/OFF Input
- (9) Output Indicator (CD ON: Green)
- (10) Backup Status Indicator (BUCKUP: Red)
- (11) Battery Status Indicator (BAT LOW: Red)
- (12) Battery Connector Terminal (-)
- (13) NC

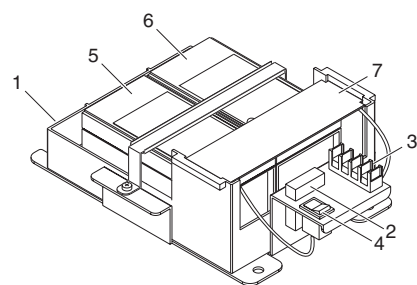
- (14) Battery Connector Terminal (+)
- (15) Slider
- (16) Short Bar
- (17) DC Output Terminal (-V)
- (18) NC
- (19) DC Output Terminal (+V)
- (20) Track Stopper
- (21) Battery Connector Terminal Block
- (22) Connected to Bus Line Connector
- (23) DC Output Terminal Block
- (24) Terminal Block Cover
- (25) Charge Voltage Selector Switch
- (26) Overcurrent Protection Function Selector Switch

S8T-BUS03 Bus Line Connector



- (1) Selector
- (2) Ground Terminal
- (3) Parallel Operation Signal Terminal
- (4) DC Output Terminal (+)
- (5) DC Output Terminal (-)

S82Y-TS01 Battery Holder



- (1) Battery Tray
- (2) Fuse
- (3) Terminal Block
- (4) Switch
- (5) Battery A (Order separately)
- (6) Battery B (Order separately)
- (7) Protection Cover

Precautions

WARNING

[Installation, Environment]

Do not use the S8T-DCBU-01 in locations where the battery is in a sealed structure or near components (e.g. contactors, relays, components that generate static electricity) that emit sparks. The battery may emit inflammable gas during charging, and cause ignition and explosion.

The tightening torque for S8T-DCBU01 terminal screws is 1.08 N·m. The tightening torque for connector screws and screw flanges is 0.20 N·m. Loose screws may result in fire.

The tightening torque for terminal screws of battery holders is 1.08 N·m. Loose screws may result in fire.

Do not remove the connector cover on unused Bus Line Connectors. Doing so may result in electric shock.

When linking Blocks and DC Backup Blocks, lock the sliders and track stoppers. If incompletely locked, vibrations, etc. may cause disconnection, resulting in electric shock.

Use specified batteries only. Otherwise, smoking or ignition may occur.

Do not bring resins containing migrating type plastics into contact with batteries. The batteries may be damaged and leak.

When using a metal tool to install the battery on the battery holder, use a metal tool insulated with vinyl tape or other insulating material. Heat and sparks caused by shorting with the metal tool may burn or damage the battery, and cause ignition and explosion.

Be sure to connect the batteries correctly. Otherwise, smoking or ignition may occur.

Install the battery holder in the specified direction. If it is installed in a different direction, the battery may leak, and protection during battery leakage may not be possible, which will result in smoke or ignition.

Do not use the batteries in locations where the ambient operating temperature exceeds 40°C. Doing so may cause battery performance to deteriorate rapidly, resulting in fire. (Ambient temperature range of batteries: 0°C to 40°C)

Do not use in locations where corrosive gases may enter the batteries. Doing so may, in the worst instance, cause fire.

Do not mix old and new batteries, use different types of batteries, or use batteries with different remaining battery power. Doing so result in smoke or fire.

Avoid use in applications where inrush current on the load side frequently occurs. Doing so may result in deterioration or damage of internal elements.

[Use]

Check the battery handling precautions before using the battery. Mishandling batteries may result in a hazard.

Do not touch the Power Supply while power is supplied or immediately after power is turned OFF. The Power Supply becomes hot and touching it may result in injury.

Do not attempt to link or dismount any Blocks while power is supplied. Doing so may result in electric shock.

Replace batteries immediately after they have reached the end of their service lives. Continued use beyond the end of their service life may cause fire.

If you hear abnormal sounds, smell strange odors, see smoke, or discover fluid leaking from batteries, turn the battery holder switch OFF. Use in such a condition may cause fire.

Do not touch fluid leaking from a battery. Doing so might result in loss of sight or burns. If battery fluid comes into contact with your eyes or skin, immediately rinse off with a lot of cold, running water, and contact a physician.

Do not use the battery holder in locations subject to shocks or vibrations. Shocks or vibrations may cause battery performance to deteriorate.

[Maintenance]

Do not attempt to disassemble the Power Supply or touch its internal parts while power is being supplied. Doing so may result in electric shock.

Before you start maintenance, turn the AC power line and battery holder switch OFF. If the AC power line only is turned OFF, power will be supplied from the battery, and operation of connected units will not stop.

Take care not to drop the battery when installing batteries and the battery holder, or when replacing batteries. Otherwise, you may suffer injury or burns from leaking fluid.

Do not install or replace batteries in locations subject to flammable gases. When connecting batteries, sparks may fly, causing explosion and fire.

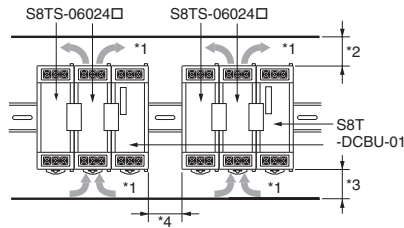
Do not attempt to disassemble or modify the batteries. If you come into contact with diluted sulfuric acid, you may lose your sight or suffer burns.

Do not short-circuit the battery with metal objects. Doing so may result in electric shock, ignition, or burns.

When disposing of or collecting batteries for recycling, observe local bylaws and regulations. Do not dispose of batteries in fire. Doing so may cause an explosion.

Mounting

To improve the long-term reliability of devices, give due consideration to heat dissipation when mounting. With the S8T-DCBU-01, heat is dissipated by natural convection. Mount Blocks in a way that allows convection in the atmosphere around them.

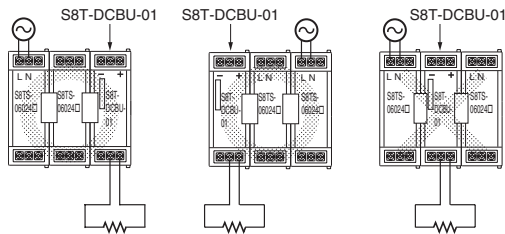


- *1. Convection of air
- *2. 75 mm min.
- *3. 75 mm min.
- *4. 10 mm min.

When cutting out holes for mounting, make sure that cuttings do not enter the interior of the products.

Before turning the Power Supply ON, be sure to remove sheets that were used as covers during mounting, and make sure that heat release is not obstructed.

Connect the S8T-DCBU-01 to the right or left end of S8TS-06024□ Basic Blocks.



Wiring

Sufficiently ground the Power Supply, otherwise an electric shock may occur or the Power Supply may malfunction.

Be sure to wire I/O terminals correctly.

When tightening the terminals, do not exert a force of 100N or more on terminal blocks or connector terminals.

To prevent short circuits across terminals caused by contact with foreign objects, close the Terminal Block cover before use.

Use wire shown in the following table to prevent smoking or ignition of wiring due to overloading or other abnormalities.

Recommended Wire Size

Overcurrent protection function selector switch	Number of connected S8TS-06024□ Basic Block	Recommended wire size
5.7 A (typical)	1 Block, 2 Blocks	AWG 14 to 18 (cross-sectional area: 0.823 to 2.081 mm ²)
	3 Blocks	AWG 14 to 16 (cross-sectional area: 1.309 to 2.081 mm ²)
11.7 A (typical)	3 Blocks, 4 Blocks, 5 Blocks	AWG 14 (cross-sectional area: 2.081 mm ²)

Installation Environment

Do not use the Power Supply in locations subject to shocks or vibrations. In particular, install the Power Supply as far away as possible from contactors or other devices that are a vibration source. Be sure to mount End Plates (PFP-M) on both ends of the Power Supply.

Install the Power Supply well away from any sources of strong, high-frequency noise.

Operating and Storage Environments

Do not use or store the Power Supply in the following locations. Doing so may result in failure, malfunction, or deterioration of performance characteristics.

- Do not use in locations subject to direct sunlight.
- Do not use in locations where the ambient temperature exceeds the range of the derating curve.
- Do not use in locations where the humidity is outside the range 25% to 85%, or locations subject to condensation due to sudden temperature changes.
- Do not store in locations where the ambient temperature is outside the range -25 to 65°C or where the humidity is outside the range 25% to 90%.
- Do not use in locations where liquids, foreign matter, corrosive gases, or flammable gases may enter the interior of products.
- Follow the battery specifications regarding use and the environment for storing battery holders with a battery installed.

When batteries are used for a prolonged period, observe the following two points:

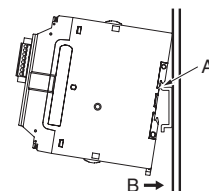
- Charge the batteries at the cycle specified by the battery manufacturer. The battery capacity also decreases due to self-discharge during storage.
- Turn the battery holder switch OFF. Otherwise, battery discharge will progress due to leakage current.

Bus Line Connectors

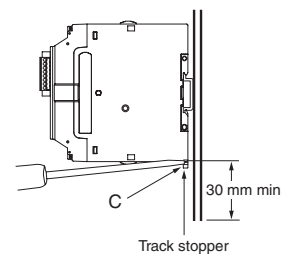
Do not apply sudden shocks (e.g., by dropping) to the Bus Line Connectors. Doing so may result in damage.

DIN Track Mounting

To mount the Block on a DIN track, hook portion (A) of the Block onto the track and press the Block in direction (B).



To dismount the Block, pull down portion (C) with a flat-blade screwdriver and pull out the Block.



Troubleshooting

This page lists the errors that may occur when the S8T-DCBU-01 is used, along with their probable causes and remedies. Check the relevant item.

When	Probable cause	Description	Remedies	
Installation	S8T-DCBU-01 cannot be connected.	The Bus Line Connector is provided with a selector for preventing misconnection of 12 V and 5 V specification S8TS units. For this reason, connection is not successful if different specification units are installed.	Set the selector on the Bus Line Connector (provided) to 24 V. Refer to <i>S8T-BUS03</i> on page 4 for details.	
When checking the performances Refer to <i>Checking Performances</i> on page 4 for details.	The S8T-DCBU-01 output indicator does not lit in operation check procedure, step 2.	The S8T-DCBU-01 operates by the output of the S8TS-06024□. A probable cause is that the Bus Line Connector is not connected as the input voltage is connected by the Bus Line Connector (provided).	Connect the S8T-DCBU-01 to S8TS-06024□ using the Bus Line Connector (provided). Refer to <i>Basic Configuration</i> on page 2 for details.	
	The connected S8TS-06024□ does not operate in operation check procedure, step 2.	A probable cause is that the S8T-DCBU-01 is connected between S8TS-06024□ Basic Blocks.	The S8T-BUS03 Bus Line Connector for connecting the S8T-DCBU-01 is not connected to the AC power line. Connect the S8T-DCBU-01 to the right or left end of S8TS-06024□ Basic Blocks.	
	The battery status indicator is lit even 10 seconds or more after the power is turned ON in operation check procedure, step 3.	A probable cause is that the battery was connected with the + and – polarities reversed.		Connect the battery correctly. Refer to <i>Battery Misconnection Protection Function</i> on page 8 for details.
		A probable cause is that the battery voltage falls below about 22.5 V. (A probable cause is battery discharge during long-term storage.)		Charge the battery before use. Refer to <i>Battery Status Indicator / Battery Status Output</i> on page 9 for details.
		A probable cause is that the backup ON/OFF input is open.		Short the backup ON/OFF input. (Before shipment, the backup ON/OFF input is shorted.) Refer to <i>Backup ON/OFF Input Function</i> on page 8 for details.
		A probable cause is that the overcurrent protection function of the connected S8TS-06024□ is active.		As energy is consumed by S8T-DCBU-01, the total load capacity of the number of connected S8TS-06024□s cannot be obtained. Connect one more S8TS-06024□ Basic Block. Refer to the <i>Derating Curve</i> on page 6 for details.
		A probable cause is that the overcurrent protection function selector switch on the S8T-DCBU-01 is set low.		When three or more S8TS-06024□ Basic Blocks are connected, set the overcurrent protection function selector switch to 11.7 A (typical). (The default setting is 5.7 A (typical).) Refer to <i>Overcurrent Protection Function Selector Switch</i> on page 8 for details.
		A probable cause is that the output voltage adjustment trimmer of the connected S8TS-06024□ is set lower than the factory set voltage.		The S8T-DCBU-01 detects drops in the output voltage of the S8TS-06024□ and switches over to backup operation. Adjust the output voltage adjustment trimmer on the S8TS-06024□ so that the output in a no-load state is 24.5 V or more. Refer to <i>Output Voltage Setting of the S8TS-06024□</i> on page 3 for details.
The backup operation is not performed in operation check procedure, step 5.	A probable cause is that inrush current during backup operation caused the fuse on the battery to blow.		Select a fuse taking the inrush current when backup operation is switched to into consideration. The recommended S82Y-TS01 Battery Holder is selected taking this inrush current into consideration. Refer to <i>S82Y-TS01 Battery Holder</i> on page 3 for details.	

When	Probable cause	Description	Remedies
When S8T-DCBU-01 is used	The backup state is not returned to even after the power is restored from a power failure.	A probable cause is that a protection function on the S8TS-06024□ was activated to stop S8TS-06024□ operation.	Cancel the protection functions on the S8TS-06024□. (Turn OFF the power of S8TS-06024□ Basic Block, and after at least one minute turn ON the input voltage again.)
	Output was cut during backup operation.	A probable cause is that the overdischarge protection function was activated by battery voltage dropping due to discharge.	If a remedy is required during backup operation, allow backup to finish until the battery status indicator lit.
		A probable cause is that an overcurrent state is reached due to load fluctuations during backup operation.	Provide sufficient margin for the load capacity when using the S8T-DCBU-01.
	Backup operation and regular operation are alternately repeated.	A probable cause is that one of the S8TS-06024□s is out of order when two or more S8TS-06024□s are connected.	Replace the out-of-order S8TS-06024□. Refer to <i>Backup</i> on page 3 for details.
A probable cause is that the S8TS-06024□ is in an overcurrent state due to load fluctuations during regular operation.		Provide sufficient margin for the load capacity when using the S8T-DCBU-01.	
When inspecting batteries	Backup time is too short.	A probable cause is that the battery has reached the end of its service life.	We recommend periodically replacing the battery. Refer to <i>Replacing Batteries</i> on page 9 for details.
		A probable cause is that the S8T-DCBU-01 was stored for a long time with the battery connected.	Storing the S8T-DCBU-01 with the battery connected may considerably shorten the service life of the battery due to leakage current from equipment. When storing the S8T-DCBU-01, first disconnect the battery.
		A probable cause is that battery characteristics caused the backup time to shorten in low temperatures.	Check the backup time in the operating environment before use.
	The voltages of the two batteries used in series are considerably different.	A probable cause is a battery abnormality.	Replace both batteries.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. T000-E1-01 **In the interest of product improvement, specifications are subject to change without notice.**

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