Confirmat	ion i	tems for a	cust	omer	S Please let	us know abou	t the items listed below when inquiring.
	ltem			Reo	uired specification	IS	Remarks
		Voltage	( )V				Type3-20/23(27.6V)
Rating	Capacity		(	)Wh/(	)Ah		Type3-20(1.10kWh)/Type3-23(1.24kWh)
	Upper limit voltage		(	)V			
	voitage	Lower limit voltage	(	)V			
Discharge	Current	Average current	(	)A (	)sec or (	)h	
Discharge		Max. operating current	(	)A (	)sec		
		Inrush current	(	)A (	)ms		Inrush current at start of the motor, etc.
	Discharging time		(	)h			Discharge time before re-charging
Character	Current value		(	)A			
Charging	Cl	harging time	(	)h			
Application	Opera	ation procedures					Daily operating pattern, etc.
	Installation place		(Indoor / Outdoor) (Fixed / Movable)				
Environment	Temperature		(	)°C to (	)°C		
	Altitude		(	)m or lowe	21		
Cale a duda	Development period		month/year to month/year				
Schedule Start of mass production		month/year					
Quantity		(	)units/Year	r or Month			
Applied standard							
Upper controller specifications							
Others							

## TOSHIBA Leading Innovation >>>

TOSHIBA

# Toshiba Rechargeable Battery SCiB **Battery System Components**

### Characteristics of 20Ah cell



### Module characteristics (Type3-20)







### ▲ Safety precautions

• Do not use this product for facilities in which there is a risk to human life or a disruption to public fund safety equipment, and others).

• This product is produced under strict quality controls, however it may malfunction dep in which failure of the product would be expected to cause a great loss or accident.

The operating environment must be within the range of specifications noted in the catalog and instruction

Be sure to carefully read the instruction manuals before using this product so that you can use it correctly.

 Toshiba is not responsible for any losses related to malfunctions or abnormalities in equipment or devices co • The technical information in this document is for the purpose of explaining the typical operations and applications of the product, but not for granting any license or guarantee in regard to intellectual property rights, or any other

third parties or Toshiba. • The product described in this document cannot be used in conjunction with products that are prohibited from product n or sale by any rules, requ

 When exporting this product separately or combined with your equipment, please be sure to satisfy the objective conditions and inform conditions listed in the export control policies, so called Catch All re-Economy, Trade and Industry of Japan, and the appropriate export procedures must also be taken

<Agent>

### TOSHIBA

#### **TOSHIBA INFRASTRUCTURE SYSTEMS & SOLUTIONS CORPORATION**

Industrial Systems Division

Battery Systems Overseas Sales Department 72-34, Horikawa-cho, Saiwai-ku, Kawasaki 212-8585, Japan Tel +81-44-331-1574

The description in this catalog may change without prior notice.
The product names, etc. described in this catalog may be used as the trademarks of each company.
All rights reserved.
The product color may be different from the actual machine according to printing.
The design, specifications, components, and others may change without prior notice.
The package design presented is for catalog purpose, so the design of the actual battery will be different.

For detailed information of this product, please visit our Website. SCiB http://www.scib.jp/en/index.htm

The description in this catalog is as of July 2017.

SBT (E)-005c 17-10



## SCiB<sup>™</sup> Type3 Battery Module Capable of constructing various scales of battery systems



Several SCiB<sup>™</sup> cells are combined to provide user-friendly modules.Depending on the requirement, battery systems of various sizes can be built. This product can be used in a wide range of applications that support social infrastructure, from public, industrial, electric power and transportation systems to general households.

The robustness of the Type3 battery module has been enhanced for various types of applications. The pressure resistance and vibration resistance have been improved so that this product can be used at up to -30 ° C and 2000 m of altitude.



### Characteristics of Type3 battery module for the stationary / industrial applications



\*The above value were measurement using a Type3-20 battery module under specific conditions

## Battery system block diagram





6 Termination plug (TP)



The termination plug is the termination resistor for CAN communication.



#### Service disconnect (SDC)



The service disconnect is used to disconnect the main circuit when installing / removing the battery module or during the maintenance work. The built-in fast acting fuse to protect the battery in the case of external short circuit.

\* SDC-1500 does not have a built-in protection fuse. Use a commercially-available fuse additionally.

- Recommended fuse
- HINODE ELECTRIC (750GH-200UL)
- Mersen (HP10NH2GPV200B)

### Cable types

#### a BMU connection cable



Use the BMU connection cable to connect between BMU and other components, upper device, maintenance device, and 12VDC power source. Caution: BMU-2G-M12 is not appliable.

#### **b** Current leak sensor main circuit cable



Use this cable to connect to the connector used for the current leak sensor main circuit connection.



### Current leak sensor connection cable



Use this cable to connect to the current leak sensor control signal connector.

d SDC-750 fitting detection cable

Use this cable to connect to the fitting detection connector of the service disconnect. \* The cable for SDC-1500 is to be pre ared by cus

e Connection cable for Ethernet/CAN communication



Use this cable for the CAN-communication connection between BMU-2G and the upper communication (Ethernet), module, BMU, or current sensor (C type).

Recommended cable (STP straight cable, category 5e or higher) Note: The CAN communication cable extension length cannot exceed 40 m.

C	omponent	Connector	Remarks		
BMU-2G	Main on the CH1 side		Mixed with other		
	Sub on the CH2 side Dedicated		control cables		
HCT	Current sensor (C type)		Common to IN/OUT		
MDL	Battery module	RJ45	IN/OUT independent		
*Cable end is to be appropriately processed by customers					

## Products required for constructing the battery system





Battery system components							
Product name	Photo	Туре	Model	Specification	Dimensions (mm)	Weight(g)	Remarks
	Ŷ	2G type (BMU-2G-RJ45)	5P4E0124P001 Upper communication: Select from Ethernet/CAN Maximum number of Type3 series connection: 37	W95.0×D88.0×H32.0	130	Standard type	
BMU (Battery Management		2G type (BMU-2G-M12)	5P4E0125P001	Maximum number of BMU connection: 22 * For BMU-2G, up to 56 modules can be connected.	(Protrusions excluded)	145	Vibration-proof type BMU connection cable is not appliable.
Unit)		1G type	FMW-GAA0001P	Upper communication:CAN Maximum number of Type3 series connection: 28 Maximum number of BMU connection: 16	W95.0×D88.0×H32.0 (Protrusions excluded)	115	BMU-2G upper compatibility BMU-2G is recommended for new adoption
Contactor		S type (Standard)	FMW-GAA0004P	Contact rated capacity: 800 VDC-100 A Coil rating: 12 VDC-583 mA ± 10%	W98.0×D44.0×H86.2	650	-
(MC)		H type (High current)	5P4E0092P001	Contact rated capacity: 750 VDC-200 A Coil rating: 12 VDC-3.3 A ± 10%	W111.0×D63.0×H74.7	750	Drive signal cable included (Cable length: 300 mm)
Current sensor		C type (CAN communication type)	5P4E0094P001	Measurement range: -350 to 350 A High resolution	W51.4xD21.2xH71.5	67	Only for BMU-2G The CAN communication connector is to be prepared by customers.
(HCT)		A type (Analog type)	FMW-GAA0006P	Measurement range: Channel 1: -30 to 30 A Channel 2: -350 to 350 A	W64.5×D44.0×H24.0	70	Application to BMU-1G/2G is allowed. C type is recommended for BMU-2G.
	<b>N</b>	SDC-750P (Plug)	FMW-GAA0003P	Rated voltage: 750 VDC Rated current: 120 A or lower	W149.5×D43.9×H97.0	585	Fast acting fuse
Service		SDC-750R (Receptacle)	FMW-GAA0012P	Fuse: 750 VDC - 125 A (built-in)			
disconnect (SDC)	016	SDC-1500	5P4E0093P002	Rated voltage: AC/DC 1500V Rated current: 200 A or lower Fuse: Combined with a commercially- available fuse	W110.0xD76.75xH50.0	270	Recommended fuse: • HINODE ELECTRIC (750GH-200UL) • Mersen (HP10NH2GPV200B)
GND control	Main unit Socket	Main unit	FMW-GAA0005P	Contact rated capacity: 30 VDC-10 A (resistance load) Contact voltage (max): 125 VDC Contact current (max): 10 A Coil rated voltage: 12 V	W13.0×D29.0×H29.0	30	Not required for BMU-2G type
relay		Socket	FMW-GAA0013P		W19.5×D71.5×H54.0	40	
Current leak sensor (ELS)	UT The	-	FMW-GAA0002P	Ground pressure resistance range: DC $\pm$ 800 V Electric leakage detection resistance value: 500 $\pm$ 100 k $\Omega$	W73.0×D62.0×H30.0 (Protrusions excluded)	90	-
Termination plug (TP)		-	5P4E0003P001	$125\Omega \pm 5\%$ or less (Allowable loss: 1/4W or more)	Overall length: 52.5	10	Termination resistor for CAN communication
BMU connection cable	P	-	FMW-HAA0002P	For connecting between BMU and module/Current leak sensor/electric leakage sensor/SDC/contactor/GND control relay, etc.	Cable length: 2000	530	Application to both types BMU-1G and CH1 side of BMU-2G BMU-2 G-M12 is not appliable.
SDC-750 fitting detection cable	$\bigcirc$	-	FMW-HAA0003P	Connection between SDC-750 and BMU	Cable length: 1000	20	The cable of SDC-1500 is to be prepared by customers.
Current sensor (A type) connection cable	$\bigcirc$	-	FMW-HAA0004P	Connection between the current sensor and BMU	Cable length: 1000	35	Only for A type current sensor
Current leak sensor connection cable	Q	-	FMW-HAA0005P	Connection between the current sensor and BMU	Cable length: 1000	30	-
Current leak sensor main circuit cable	Q	-	FMW-HAA0006P	Connection between the electric leakage sensor and negative terminal contactor	Cable length: 1000	70	-

### Characteristics of the second-generation BMU "BMU-2G"

BMU-2G collects the information such as cell voltage or module temperature from each battery module in the battery unit, and performs controls, abnormality detection and diagnosis to protect the battery module. Additionally, BMU-2G reads the total current of the battery unit from the current sensor, and performs the SOC calculation of the battery unit.



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		Type3 battery module (up to	37 modules can be connecte	d in series).	
	Maximum voltage	750V or less	910V or less	1200V or less	1500V or less
Number of Type	e3 battery module series connection *1	1 to 23	24to 28	29to 37	38 to 46
DMIL	1G type	0	0		
DIVIO	2G type *2	0	0	0	0
Contactor	S type (Standard)	0			
Contactor	H type (High current)	0			
Current concer	C type (CAN communication type)	0	0	0	0
Current sensor	A type (Analog type)	0	0	0	0
SDC	SDC-750	0			
	SDC-1500	0	0	0	0
	GND control relay	0	0	0	0
Others	Current leak sensor	0			
	Termination plug	0	0	0	0
	BMU connection cable	0	0		
	SDC-750 fitting detection cable	0			
Cable	Current sensor (A type) connection cable	0	0	0	0
	Current leak sensor connection cable	0			
	Current leak sensor main circuit cable	0			

\*1: Number or series connection is calculated assuming the maximum charging voltage of a cell is 2.7 V. \*2: For BMU-2G, up to 56 modules can be connected.



57		Maintenance function	CAN	Ethernet
NOT SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY		Management information readout	0	0
MAI MAYON CARLEY MAN CARLEY MAN CARTER MAN CARTER MAN	0442232470 278425257022 289459 066440 0564700 0884708 088470	Parameter readout	0	0
798/528 0.486/8.870 0.486/988.870 0.486/888 0.486/888 0.486/888 444	Parameter change	0	0	
	7960/C3 22/46/ (E144)	Log readout	0	0
	75.4278	CMU access	0	0

#### The items enclosed in bold lines are within the maximum series connection range of the