FURUKAWA BATTERY

Horizontal Unitized Multi-stage Valve-regulated Stationary Lead-acid Battery

FMU-S Series

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Features

1. Space Savings
Compact size with high capacity

2. Long Expected Life
Expected life of 13 to 15 years [25°C, 0.1C (A) discharge]

※ An "expected life" is a life on condition of a fixed operating condition and maintenance management. In addition, real tenure of use is not guaranteed from the life which can be expected in the ambient air temperature of 25℃, and floating charging voltage 2.23V / cell when the number of times of electric discharge is a years time grade.

3. Easy Maintenance
All the cell terminals are in an easy-to-reach location, facilitating maintenance work such as voltage measurement.

4. Improved Seismic Performance
Because of its unitized structure, there is no concern of the battery jumping even if it is subject to vertical seismic motion.

5. Shorter Installation Time
The unitized structure has reduced the time needed to install the battery.

Applications

Communication devices, instrumentation devices, disaster and crime prevention systems, power plants and substations, emergency lighting systems, and more

Construction/Specifications

1. Cells

●Plates : Highly corrosion-resistant Pb-Ca-Sn alloy plate grid

●Container : Excellent sealing with highly heat- and acid-resistant PP resin thermally bonded to the cover

●Terminals : Shorter installation time with a nut-free structure in which the nuts are embedded in the poles

Models	Nominal voltage (V)	Capacity (Ah)		Dimensions (mm)			Mass (approx.kg)
		10-hour rate	1-hour rate	Height	Width	Depth	
FMU-S-500	2	500	325	167	160	399.5	29
FMU-S-600	2	600	390	167	160	459.5	35
FMU-S-800	2	800	520	316	160	399.5	47
FMU-S-1000	2	1000	650	316	160	399.5	57

2. Unit Battery

Battery units are an iron box which houses the required number of cells, which are then stacked to form an assembled battery.

Models	Nominal voltage (V)	Capacity (Ah)		Dimensions (mm)			Mass (approx.kg)
		10-hour rate	1-hour rate	Height	Width	Depth	
FMU-S-500-8	8	500	325	201	746	444	135
FMU-S-600-8	8	600	390	201	746	504	165
FMU-S-800-8	8	800	520	349	746	444	220
FMU-S-800-12	12	800	520	349	1067	444	320
FMU-S-1000-8	8	1000	650	349	746	444	260
FMU-S-1000-12	12	1000	650	349	1067	444	380
FMU-S-1500-4	4	1500	975	201	1067	444	200
FMU-S-2000-6	6	2000	1300	349	1067	444	380
FMU-S-3000-4	4	3000	1950	349	1067	444	380

Assembly Battery

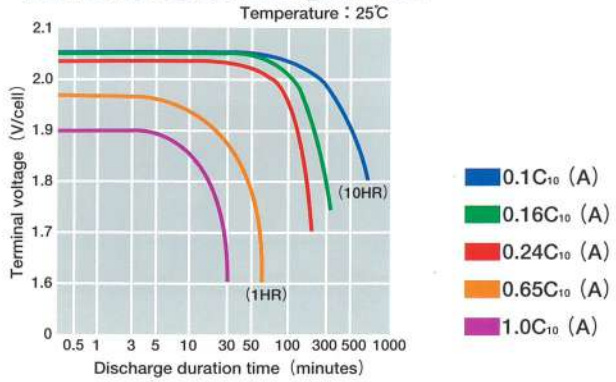
FMU-S Series

Models	Assembled battery voltage (V)	Dimensions (mm)			Installation floor area (m^2)	Assembled battery mass (approx.kg)	Floor load (t/m^2)
		Total height	Width	Depth			
FMU-S-500-8-12S	24	703	746	444	0.331	445	1.34
FMU-S-600-8-12S	24	703	746	504	0.376	535	1.42
FMU-S-800-8-12S	24	1147	746	444	0.331	710	2.15
FMU-S-1000-8-12S	24	1147	746	444	0.331	830	2.51
FMU-S-1500-4-12S	24	1306	1067	444	0.474	1255	2.65
FMU-S-2000-6-12S	24	1496	1067	444	0.474	1595	3.36
FMU-S-3000-4-12S	24	1147	2297	444	1.020	2430	2.38
FMU-S-500-8-24S	48	1306	746	444	0.331	855	2.58
FMU-S-600-8-24S	48	1306	746	504	0.376	1035	2.75
FMU-S-800-12-24S	48	1496	1067	444	0.474	1350	2.85
FMU-S-1000-12-24S	48	1496	1067	444	0.474	1590	3.35
FMU-S-1500-4-24S	48	1306	2297	444	1.020	2515	2.47
FMU-S-2000-6-24S	48	1496	2297	444	1.020	3195	3.13
FMU-S-3000-4-24S	48	1496	3527	444	1.566	4790	3.06

Notes) 1. For the dimensions in this table, 12S indicates a 3-, 4-, and 6-stage stack, and 24S indicates a 4-and 6-stage stack.
2. The total height includes the height of the channel base.
3. The height does not include the height of the terminals.
4. For other arrangements, capacities, and cubicle dimensions, please contact us.
5. The dimensions in this table are the reference values for assembled batteries with standard components.

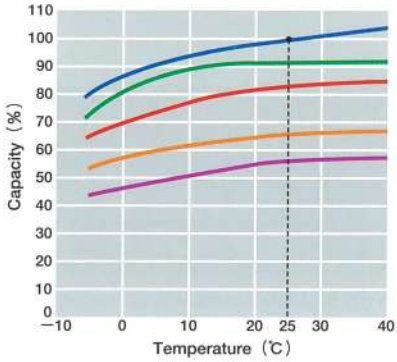
Characteristics

Discharge Characteristics with Varying Discharge Rates

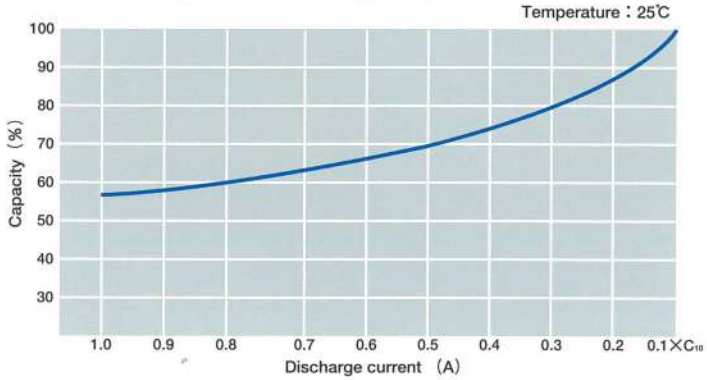


* "C_{10}" indicates the value of the rated capacity at a 10-hour rate.

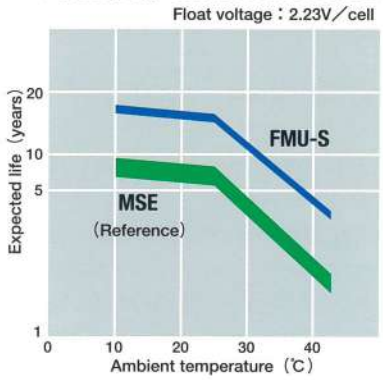
Temperature/ Capacity Characteristics



Discharge Current/Capacity Characteristics



Temperature/ Lifespan Characteristics



* These values are estimated based on accelerated life testing results and are not guaranteed values.

Comparison between the FMU-S Series and the MSE Series

Model		FMU-S Series	MSE Series
Item \ Name		Horizontal unitized multi-stage valve-regulated stationary lead-acid battery	Valve-regulated stationary lead-acid battery
Capacity range (rated capacity at 10-hour rate)		Cell (2V) : 500, 600, 800, 1,000 Ah Unit battery : 500 to 3,000 Ah	2V : 150~3000Ah 6V : 100Ah 12V : 50Ah
Volumetric capacity (10 hr)		99Wh/L (FMU-S-1000)	73.5Wh/L (MSE-500)
Mass efficiency (10 hr)		35Wh/kg (FMU-S-1000)	27.8Wh/kg (MSE-500)
Construction	Plates	Highly corrosion-resistant Pb-Ca alloy grids with excellent current collecting properties	Paste type. A Pb-Ca-alloy grid is filled with active material.
	Container/cover	PP resin	ABS resin
	Terminals	Lead-alloy terminals with embedded nuts	Lead-alloy terminals
Characteristics	Relationship between discharge rate and capacity (Standard characteristics at 25℃) C: Rated capacity	(Rated capacity at 10-hour rate) 0.10C (A) : 100% 0.24C (A) : 83% 0.65C (A) : 65% 1.00C (A) : 57%	
	Relationship between temperature and capacity (0.1 C discharge)	25℃ : 100% 5℃ : 92% −5℃ : 78%	
	Self-discharge rate	0.1% or less per day (25℃)	
	Expected life (25℃) ※	13 to 15 years (discharge cycles: several times per year)	7 to 9 years (discharge cycles: several times per year)
Maintenance inspection	Float voltage	2.23 V per cell	
	Equalizing charge frequency	Not required	
	Water refilling frequency		
	Specific gravity measurement		
	Electrolyte level check		
	Parts replacement		
	Maintainability	Extremely excellent maintainability with all the battery terminals in an easy-to-reach location	Usually vertically installed. Same maintainability equivalent to that of the flooded type.
Installation	Installation direction	Usually horizontal	Vertical (may be installed horizontally)
	* Comparison at 500 Ah-48 V Assembly battery dimensions (example) (Width X Depth X Height, mm)	[6-stage 1-row unit] 746 X 444 X 1,306	[2-stage 2-row rack] 1,125 X714X1,246
	Installation floor area (m^2)	0.33	0.80
	Installation method	Units are stacked and then connected to one another. (Nut-free method) * Shorter installation time	The rack is assembled and batteries are then placed on it. The batteries are connected individually.

※Expected life is not a guaranteed values.

Precautions for Safe Use

• To use the battery safely and properly, be sure to read the instruction manual before use.

⚠Danger

- For stationary batteries, ensure that the room is well ventilated so that the hydrogen concentration is 0.8% or less. Failure to do so may cause fire or explosion.
- Do not install the battery in a poorly-ventilated area where the hydrogen concentration becomes more than 0.8%, or near open flame. Doing so may cause fire or explosion.

⚠Caution

- The service temperature range of the battery is from -15 to 45°C. Using the battery outside this range may accelerate deterioration or cause the battery to freeze or overheat, resulting in damage or deformation.
- Do not use this battery where it is exposed to direct sunlight. Doing so may cause the parts of the battery to deteriorate.
- Do not expose the battery to water or seawater. Doing so may cause damage to the battery or fire, or cause the terminals or connecting plates to corrode.
- Do not use the battery near a heat source. Doing so may cause damage to the battery or cause the battery life to shorten.
- Do not use the battery in dusty areas. Doing so may cause a short-circuit.
- Charge the battery under the charging conditions recommended by Furukawa Battery. Failure to do so may result in insufficient charging, electrolyte leakage, temperature rise, explosion, deterioration in performance, or reduced service life.
- Install the battery horizontally with the terminals facing up and ensure that the battery is not tilted more than 90°. Failure to do so may cause electrolyte leakage.
- Ensure that the maximum discharge current is not exceeded for more than 1 minute for 3C (A) or for more than 5 seconds for 6C (A). Failure to do so may cause damage to the battery.
- Periodically inspect the battery. If the results deviate from the standards specified in the instruction manual, follow the steps in the instruction manual. Using the battery with such deviations may cause damage to the battery, or burnout.

ISO9001 Certifed
JQA-1118
(THE FURUKAWA BATTERY CO., LTD.)

ISO14001 Certifed
JQA-EM0380
(Iwaki and Imaichi Plants)

*Actual colors may differ slightly from those in the photo due to printing limitations.

• Contact Information

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• Information contained in this catalogue is current as of August 2014 and may be subject to change without notice.

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