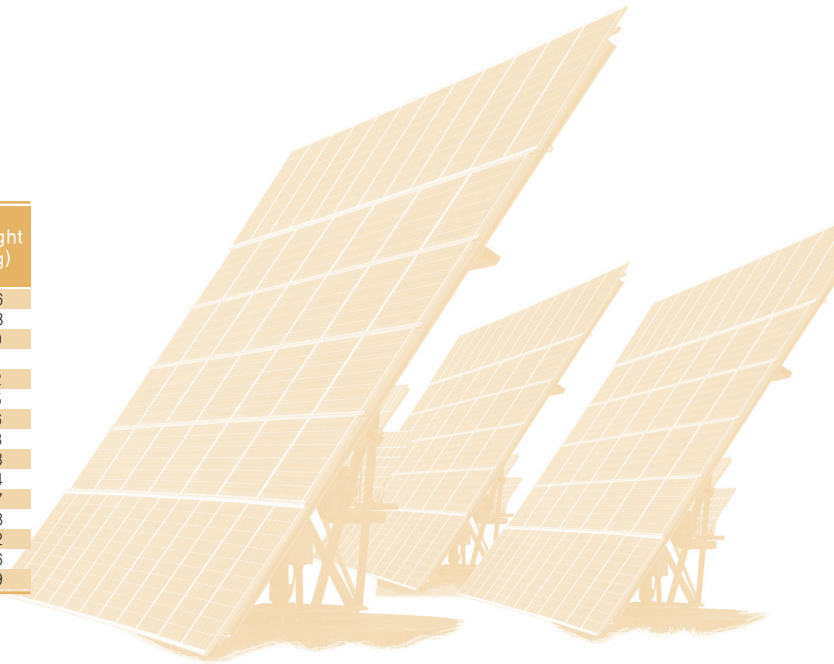
## GMH specification (25±2℃)

### 3. AGV, Electric Train and etc.

| Model (1.2V) | Capacity (AH) | | Dimension±2(mm) | | | | Weight (Kg) |
|---|---|---|---|---|---|---|---|
| | 5hour rate | 1hour rate | L | W | H | TH | |
| GMH 20X | 20 | 19 | 41 | 98 | 131 | 146 | 0.6 |
| GMH 30X | 30 | 28 | 41 | 98 | 131 | 146 | 0.8 |
| GMH 40X | 40 | 37 | 41 | 98 | 131 | 146 | 1.0 |
| GMH 50X | 50 | 47 | 41 | 98 | 131 | 146 | 1.1 |
| GMH 60X | 60 | 56 | 41 | 98 | 131 | 146 | 1.2 |
| GMH 70X | 70 | 65 | 40 | 116 | 163 | 178 | 1.5 |
| GMH 80X | 80 | 74 | 40 | 116 | 163 | 178 | 1.6 |
| GMH 100X | 100 | 93 | 40 | 116 | 163 | 178 | 1.8 |
| GMH 120X | 120 | 112 | 49 | 134 | 175 | 190 | 2.3 |
| GMH 130X | 130 | 121 | 49 | 134 | 175 | 190 | 2.4 |
| GMH 150X | 150 | 140 | 49 | 134 | 175 | 190 | 2.7 |
| GMH 180X | 180 | 167 | 55 | 182 | 205 | 224 | 3.8 |
| GMH 200X | 200 | 186 | 55 | 182 | 205 | 224 | 4.2 |
| GMH 230X | 230 | 214 | 55 | 182 | 205 | 224 | 4.6 |
| GMH 250X | 250 | 233 | 55 | 182 | 205 | 224 | 4.9 |

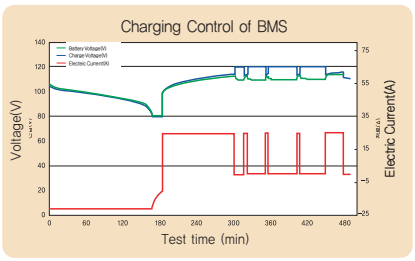
※Above data can be changed



## Charging characteristics

### ■Using BMS for GMH

Use of the GMH specific BMS (Battery Management System) is recommended, to prevent failures which other chargers are prone to, prevent overcharging and offer the optimal battery charging conditions.





1) Controlling Voltage per Cell: 1.40V/cell/25℃
2) Controlling Voltage per set = Controlling Voltage per Cell × number of Cells
3) Charger Voltage Setting = Controlling voltage per set
ex) Floating charge voltage per 92cell
1.40V/cell × 92cell = 128.8V/set

### ■BMS characteristics

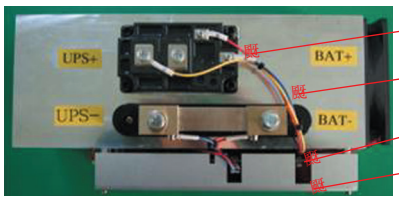
| Classification | Characteristics | Remarks |
|---|---|---|
| Charging Control method | • No need to change original charger<br>• Adopted intermittent charging method | • Floating charge → Intermittent charge<br>• Suitable charging conditions will be maintained by balancing charging amount with self-discharge |
| Prevents overcharging & overheating | • Automatic Compensation of Charging Voltage to Temperature : 2.5mV/cell/℃<br>• Over-charging Prevention Function<br>1) dT/dt : +5℃/min<br>2) dV/dt : −10mV/min<br>• Battery Temperature Control | • Battery Temperature Control<br>− In Charging, When Battery Temperature exceeds 55℃, the current is cut-off. Recharging recommences at 40℃ |
| Accident prevention | • Charging current cuts-off to prevent Over-current and Over-Voltage due to Charging System Error<br>→ Saves Report (Mechanical Examination) | • In case of trouble, program in BMS (MCU) will save the record |

### ■BMS communication data

Global's BMS brings real-time reports on the battery and current charging conditions using RS232 or 485. No extra monitoring system is required.

| Voltage (0.1V) | Current (0.1A) | System voltage (0.1V) | Battery Temperature (℃) | Battery Temperature (℃) | dT/dt (℃/sec) | dV/dt (0.1V/sec) | Maximum Control Voltage (0.1V) | Minimum Control Voltage (0.1V) | Status of charging /Discharging |
|---|---|---|---|---|---|---|---|---|---|
| 1225 | 506 | 1237 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1225 | 505 | 1240 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1225 | 502 | 1240 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1227 | 504 | 1240 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1230 | 504 | 1243 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1230 | 503 | 1245 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1230 | 505 | 1245 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1230 | 507 | 1245 | 30 | 31 | 0 | 0 | 1283 | 1246 | Charging |
| 1233 | 504 | 1245 | 30 | 31 | 0 | −1 | 1283 | 1246 | Charging |

### ■Characteristics of each parts from BMS




**IGBT** : Current IN/OUT Control Device on battery charging control MCU

**Shunt** : Records the current

**Communication Port** : Monitoring battery charge/discharge in real time

**Temperature sensing port** : Monitoring two places in the set


■Indication LED

| LED Status | Battery & System Condition |
|---|---|
| Green | Normal |
| Green off & Red on | Discharge due to power failure |
| Red | Charging system error or BMS condition error |