

# M 20 HR

## Primary Li-MnO<sub>2</sub> cell

3 V high power lithium manganese dioxide D-size spiral cell

Saft's M 20 HR cell is ideally suited for applications requiring high discharge, continuous or pulse power with stable voltage under high discharge in - 40°C / + 72°C environment.

### Benefits

- High drain / high pulse capability
- High voltage response, stable during most of the lifetime of the application even after long dormant periods
- High capacity at high current and low temperature
- Low self-discharge compatible with long operating life (less than 1% after 1 year of storage at + 20°C)
- Superior resistance to corrosion
- Low magnetic signature

### Key features

- Spiral construction
- Hermetic construction with glass-to-metal seal
- Stainless steel container
- Integrated safety vent
- Non-corrosive electrolyte
- Non-pressurized at room temperature
- Restricted for transport (Class 9)
- Made in Germany

### Designed to meet all major quality, safety and environmental standards

- Safety: UL 1642 (File MH 61234), IEC 60086-4
- Transport: UN 3090 and UN 3091
- Military: VG96915 part 2 and part 154
- Quality: ISO 9001, Saft World Class Continuous program
- Environment: ISO 14001

### Typical applications

- Radio communications
- Alarms and security systems
- ELTs, EPIRBs
- Tracking systems
- M2M communication
- Medical devices
- Oil & gas applications



### Electrical characteristics

[Typical values relative to cells stored up to one year at + 30°C max]

|                                                                   |              |
|-------------------------------------------------------------------|--------------|
| Nominal capacity (at 0.5 A, + 20°C, 2.0 V cut-off) <sup>(1)</sup> | 11.5 Ah      |
| Open circuit voltage (at + 20°C)                                  | 3.2 V        |
| Nominal voltage (under 1 mA at + 20°C)                            | 3.0 V        |
| Nominal energy (at 0.5 A, + 20°C, 2.0 V cut-off)                  | 32 Wh        |
| Pulse capacity <sup>(2)</sup>                                     | up to 10.0 A |
| Recommended maximum continuous discharge current <sup>(3)</sup>   | 4.0 A        |

### Operating conditions

|                                            |                                    |                                     |
|--------------------------------------------|------------------------------------|-------------------------------------|
| Operating temperature range <sup>(4)</sup> | - 40°C / + 72°C (- 40°F / + 161°F) |                                     |
| Storage temperatures                       | Recommended                        | + 30°C (+ 86°F) max                 |
|                                            | Allowable <sup>(5)</sup>           | - 55°C to + 85°C (- 67°F / + 185°F) |

### Physical characteristics

|                                                |                   |
|------------------------------------------------|-------------------|
| Diameter (max)                                 | 34.2 mm (1.35 in) |
| Height for the tabbed version (max)            | 61.5 mm (2.42 in) |
| Height for the version with +/- end caps (max) | 62.5 mm (2.46 in) |
| Typical weight                                 | 117 g             |
| Li metal content                               | approx. 3.6 g     |

<sup>(1)</sup> Dependent upon current drain, temperature and cut-off.

<sup>(2)</sup> Dependent upon pulse characteristics, temperature, cell history and application. Higher rates are available under certain circumstances

<sup>(3)</sup> To maintain cell heating within safe limits. Battery packs may imply lower level of maximum current and may request specific thermal protection. Consult Saft.

<sup>(4)</sup> Operating temperatures up to + 85°C can be achieved. Consult Saft.

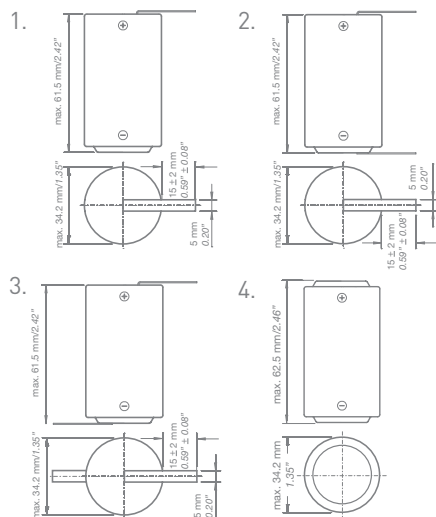
<sup>(5)</sup> Long time storage at high temperature may affect performances. Consult Saft.



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## Termination & part numbers

- 1. + tab (radial tab on positive terminal): 4142280403
- 2. C tab (radial tabs on positive & negative terminals): 4142280203
- 3. Z tab (radial tabs on positive & negative terminals): 4142280703
- 4. +/- end caps (incl. PTC): 4142287103
- Other configuration available on request



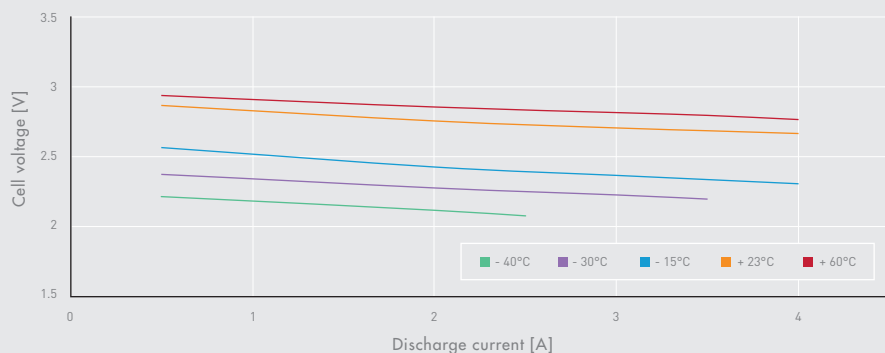
## Storage

- The storage area should be clean, cool (preferably not exceeding + 30°C), dry and ventilated.

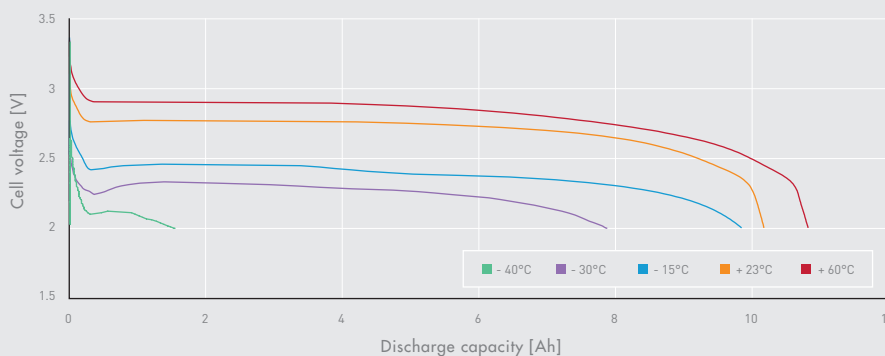
## Warning

- Fire, explosion and burn hazard.
- Do not recharge, short circuit, crush, disassemble, heat above + 100°C (+ 212°F), incinerate, or expose contents to water.
- Do not solder directly to the cell (use tabbed cell versions instead).
- Do not obstruct venting mechanism.

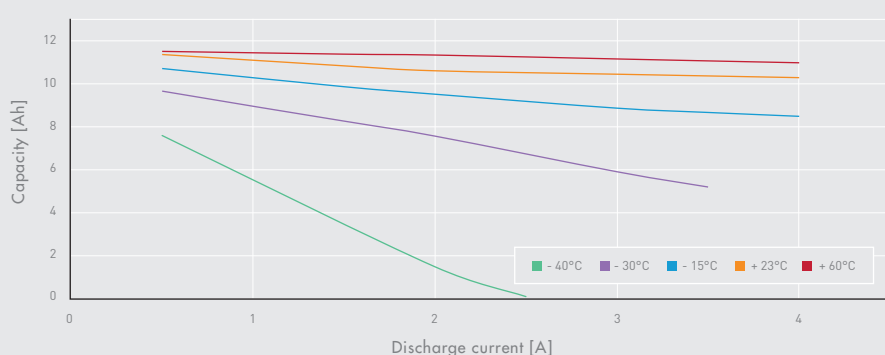
Mid-discharge voltage vs. current at various temperatures



Discharge curves at 2 A at various temperatures



Capacity vs. current at various temperatures



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