3. M20
Primary Li-MnO₂ battery

9 V lithium manganese dioxide battery

Saft’s 3.M20 battery is based on D size Li-MnO₂ cells with spiral electrode design. It is ideally suited for applications requiring high energy with stable voltage under high discharge rate in -40 °C / +72 °C environment.

Benefits
- High drain and pulse capability
- High voltage response, stable even after long dormant periods
- High capacity even at high current and low temperature
- High energy density
- No voltage delay
- Low self-discharge compatible with long shelf-life of 10+ years (less than 1% after 1 year of storage at +20 °C)
- Superior resistance to corrosion
- Low magnetic signature

Key features
- Three M20 cells in 3S1P configuration and side-to-side orientation
- Safe, hermetic and non-pressurized cell construction with glass-to-metal seal, safety vent and stainless steel container
- Alternative versions with M20 CV cells having nickel-plated steel containers available on request
- Short-circuit proof due to integrated polyswitch
- Restricted for transport (class 9)
- Manufactured in Germany

Designed to meet all major quality, safety and environment standards
- Safety: UL 1642 (File MH 61234), IEC 60086-4
- Transport: UN 3090 and UN 3091
- Military: VG96915 parts 2 and 154
- Quality: ISO 9001, Saft World Class continuous program
- Environment: ISO 14001, RoHS and REACH compliant

Typical applications
- Tracking systems

**Electrical characteristics**
(Typical values related to batteries stored up to one year at +30 °C max)
- Typical capacity [at 150 mA, +20 °C, 6.0 V cut-off] (1) 12.6 Ah
- Open circuit voltage 9.6 V
- Nominal voltage [under 1 mA, at +20 °C] 9.0 V
- Nominal energy [at 150 mA, +20 °C, 6.0 V cut-off voltage] 108 Wh
- Maximum continuous discharge current (2) 2.0 A

**Operating conditions**
- Operating temperature range (3) -40 °C / +72 °C [-40 °F / +161 °F]
- Storage temperatures
  - Recommended +30 °C (+86 °F) max
  - Allowable (4) -55 °C / +90 °C [-67 °F / +194 °F]

**Physical characteristics**
- Length (max) 103.4 mm / 4.07 in
- Width (max) 34.6 mm / 1.36 in
- Height (max) 66.0 mm / 2.60 in
- Battery case Shrink sleeve
- Terminals Cables with optional connectors
- Battery weight 375 g
- Li metal content 10.5 g

**References**
Saft part numbers (3) with JST PHR-2 connector 4432080143

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(1) Can vary depending on current drain, temperature and cut-off voltage.
(2) Hold current of the polyswitch at +72 °C. Higher currents are possible for pulses, at lower temperatures or with different polyswitch types. Consult Saft.
(3) Operating temperatures up to +85 °C can be achieved. Consult Saft.
(4) Long-time storage at high temperature may affect performance. Consult Saft.
(5) Other versions with different part numbers are available on request. Consult Saft.
(6) Other protection elements can be integrated on request. Consult Saft.