

# TSM232-Hybrid

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## Introduction



TSM232-Hybrid

TSM232-Hybrid is real-time advanced hybrid tracking terminal with 4G/3G/GSM/GNSS/Iridium satellite connectivity with backup battery and solar panel. This solution allows transferring data to a server via the Iridium satellite network when other terrestrial networks are unavailable. Device supports Bluetooth® communication for synchronization alert with FMBXX family devices. High capacity internal Li-ion Battery battery ensures long autonomous working hours when the main power source is disconnected. Such a solution meets the demand for high-security logistics, marine transport, construction & mining transport, oil/gas industry, public safety, government/defense, and more.

## Basic characteristics

GSM / GPRS / GNSS features:

- Quectel EG91-EX, Quectel EG91-AUX
- LTE(CaT1)/3G(UMTS/HSPA)/2G(GSM/GPRS)/GNSS/GPRS Mobile Station ClassB
- SMS (text/data)

Hardware Features:

- 7000 mAh Li-ion rechargeable 12V battery
- 1W Solar panel 12V
- Operating Temperature: - 40 °C to +85 °C

## Interface Features:

- Magnets mounting
- Magnet sensor for *mounting/unmounting* monitoring
- Door cable (container door monitoring)
- Backup battery charging from external power input DC 12-30V

## Special Features:

- Iridium 9603 SBD Transceiver - frequency Range 1616 MHz to 1626.5MHz, Duplexing Method TDD, Multiplexing Method TDMA/FDMA
- Data transferring via Iridium satellite network when 4G/GSM network is unavailable
- Data transfer via Bluetooth®
- Ingress Protection - IP65

# Technical features

## Cellular

<b>Technology</b>	<b>LTE Cat 1, UMTS, GSM</b>
2G bands	EC21-EC: GSM: B3/B8
3G bands	EC21-EC: WCDMA: B1/B8
4G bands	EC21-EC: LTE FDD: B1/B3/B7/B8/B20/B28A
Data transfer	LTE FDD: Max 10Mbps (DL)/Max 5Mbps (UL) LTE TDD: Max 8.96Mbps (DL)/Max 3.1Mbps (UL) UMTS:WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL) GSM:GPRS: Max 107Kbps (DL)/Max 85.6Kbps (UL)

## GNSS

<b>Technology</b>	<b>GPS, GLONASS, GALILEO, BEIDOU, QZSS, AGPS</b>
Receiver	Tracking: 33
Tracking sensitivity	-165 dBm
Accuracy	< 2.5m CEP
Hot start	< 1 s
Warm start	< 25 s
Cold start	< 35 s