



Trimble EMPOWER

EM110/EM111/EM112 ASSET TRACKING MODULES

Modular Barcode & RFID Accessories Interchangeable with all Trimble EMPOWER Platforms

The Trimble® EMPOWER Asset Tracking Modules enable you to easily integrate Barcode Imager and/or Ultra-High Frequency (UHF) GEN2 & AEI RFID reader functionality with the Trimble EMPOWER enabled Nomad 5, Ranger 7 & Yuma 7 Rugged Handheld Computers.

Available EM11x modules include the EM110 Barcode Imager module, the EM111 Barcode Imager + UHF RFID modules, and the EM112 Barcode Imager + UHF RFID module, optimized to read AEI tags on rail cars.

Scalable and flexible, the EMPOWER platform and EM11x module family provide the perfect combination of a fully integrated rugged design & intelligent handheld data collection suited for the harshest industrial and outdoor environments.

Efficiency Features for Asset Tracking Workflows

All variants of the Trimble EMPOWER Asset Tracking modules integrate the industry leading Honeywell N6603 Series Imaging Engine, delivering superior barcode reading performance with ultra-fast motion tolerance for outstanding speed and unrivaled accuracy. Read barcodes with ease even in low light conditions with white LED illumination and a highly visible 650 nm red laser aimer. Give your solution an edge by reading an array of traditional linear barcodes, postal codes, and both matrix and stacked 2D symbology codes using the EM110 module integrated with any of the 3 EMPOWER platforms.

For Ultra High Frequency (UHF) RFID tag reading, the EM111 & EM112 modules also integrate the ThingMagic/JADAK Mercury6e-Micro (M6e-Micro) RFID reader into the same compact form factor as the EM110, with an integrated antenna optimized for long read range of EPCglobal GEN2 and/or AEI RFID

tags. EM111 includes 2 regional variants with an antenna tuned for a subset of the 865.6-867.6 MHz (typical in EU) or 902-928 MHz (typical in North America) band of the UHF frequency spectrum.

Designed specifically for the rail industry, the EM112 module has been optimized to read AEI RFID tags attached to every rail car in North America and in other locations such as Australia and South Africa. In addition to reading AEI tags, the EM112 module is also able to read barcode and EPCglobal GEN2 tags.

With the EM111 & EM112 modules you can easily switch back and forth between reading barcodes and RFID tags with the press of a button and efficiently capture accurate data in real world conditions.

Support Materials for Full Optimization

Applications for EM11x modules are pre-installed on the EMPOWER platform, making setup fast and easy. Quickly edit barcode symbologies, RFID power settings, and more, and then configure a keyboard wedge to quickly read a variety of barcodes and/or RFID tags into an application. For full optimization and custom workflows, developers may access freely available APIs allowing full integration of barcode and/or RFID tag data into custom Android or Windows 10 applications.

Key Features

- ▶ **Rugged:** The EM11x modules meet the rigorous MIL-STD-810G military standard for drops, vibration, humidity, and extreme temperatures – all while boasting an IP68 rating for total protection against dust and water ingress.
- ▶ **Designed for Data Capture:** Quickly capture barcode and/or RFID data with the press of a button, or record images or location data of your scanned asset.
- ▶ **Supported Worldwide:** EM11x modules are certified for operation in Australia, Brazil, Canada, EU, New Zealand, UAE, United States and South Africa, and can read a variety of barcode and industry standard EPCglobal GEN2 tags.
- ▶ **Trimble EMPOWER:** Expand the capabilities of your EMPOWER platform now or in the future with a variety of Asset Tracking modules, compatible with all EMPOWER platforms.
- ▶ **Develop:** Access free SDKs to programmatically communicate with the Asset Tracking Modules, allowing you to create custom barcode and/or RFID-enabled solutions.



Trimble EMPOWER ASSET TRACKING MODULES

CONFIGURATION OPTIONS

Module only; does not include the EMPOWER platform

- EM110: 1D/2D Barcode Imager
- EM111: 1D/2D Barcode Imager + UHF (865.6-867.6 MHz) GEN2 RFID Reader¹
- EM111: 1D/2D Barcode Imager + UHF (902-928 MHz) GEN2 RFID Reader¹
- EM112: 1D/2D Barcode Imager + UHF (902-928 MHz) GEN2 + AEI RFID Reader¹

SUPPORTED EMPOWER PLATFORMS

- **Nomad 5:** handheld form factor with a 5" sunlight readable display, Android 8.1 GMS certified OS, and one EMPOWER module bay
- **Ranger 7:** tablet form factor with full integrated QWERTY keyboard in compact form, 7" sunlight readable display, Microsoft® Windows® 10 Pro OS, and 2 EMPOWER module bays
- **Yuma 7:** tablet form factor with a 7" sunlight readable display, Microsoft® Windows® 10 Pro OS, and 2 EMPOWER module bays

For more information, visit empower.trimble.com

HIGH SPEED 1D/2D BARCODE IMAGER

- Integrated Honeywell N6603 Series Imaging Engine
- Optimized white LED illumination & 650 nm high visibility red laser aimer gives a clear, sharp and easily observed target area
- Superior scan performance with ultra-fast motion tolerance, up to 5 meters per second
- Excellent reading capability for poorly printed barcodes and support for color barcodes
- Full Symbology Support:
 - Linear: Codabar, Code 11, Code 39, Code 93, Code 128, EAN-8, EAN-13, GS1-128, GS1 DataBar Expanded, GS1 DataBar Limited, IATA 2 of 5, Interleaved 2 of 5, ISBT 128, Matrix 2 of 5, MSI, Standard 2 of 5, Telepen, UPC-A, UPC-E
 - Postal: Australian Post, Canada Post, China Post, Dutch Post, Japan Post, Korean Post, UK Royal Mail, US Intelligent Mail
 - 2D Stacked: Codablock A, Codablock F, GS1 Composite, MicroPDF, PDF417
 - 2D Matrix: Aztec, DataMatrix, Han Xin, Maxicode, QR Code

ULTRA-HIGH FREQUENCY (UHF) RFID READER²

- Integrated ThingMagic M6e-Micro module
- RFID Tag/Transponder Protocol Support for EPCglobal Gen2 (ISO 18000-6C) and AEI tags, with Anti-Collision and DRM
- Integrated passive tag patch antenna optimized for fast and accurate tag reads
- Power transmission up to +30 dBm (1 Watt) power for demanding applications and long read range
- Rapid-Read, high-accuracy performance on multiple tags in multiple orientations, even in crowded conditions

PHYSICAL (NOT INCLUSIVE OF BASE PLATFORM)

- Dimensions (L x W x H): 102.5 mm x 55 mm x 49.7 mm (4.04" x 2.17" x 1.96")
- Weight: 163 g (5.75 oz)
- Housing: Polycarbonate + Polycarbonate/PET blend
- Color: Black

ENVIRONMENTAL SPECIFICATIONS

Independently tested IEC ratings:

- Water/Dust ingress: IP68 (IEC 60529)
- IP-X8: Protected against the effects of total water immersion beyond 1 m for long periods under pressure
- IP-6X: Totally protected against dust; dust chamber with under-pressure - 8 hours of operation with blowing talcum powder

Meets or exceeds the following standards based on MIL-STD-810G test ratings:

- Drops: Survived multiple drops of 1.2m (4ft) on concrete; MIL-STD-810G, Method 516.6, Procedure IV, Transit Drop
- Operating Temperature: -30 °C to 60 °C (-22 °F to 140 °F); MIL-STD-810G, Method 502.5, Procedure I, II, III (Low Temp Operating -30 °C); Method 501.5, Procedure I & II (High Temp Operating 60 °C) (max temp may be duty-cycle limited)
- Storage Temperature: -40 °C to 70 °C (-40 °F to 158 °F); MIL-STD-810G, Method 502.5, Procedure I, II, III (Low Temp Storage -40 °C); Method 501.5, Procedure I & II (High Temp Storage 70 °C)
- Temperature Shock: Cycles between -30 °C and 60 °C (-22 °F and 140 °F); MIL-STD-810G, Method 503.5, Procedure I-C
- Humidity: 90% relative humidity non-condensing temperature cycle between -30 °C and 60 °C (-22 °F and 140 °F); MIL-STD-810G, Method 507.5, Procedure II
- Vibration: General minimum integrity and loose cargo tests; MIL-STD-810G, Method 514.6, Procedure I & II, Category 5
- Solar Exposure: Survives prolonged UVB exposure; MIL-STD-810G, Method 505.5, Procedure II

COMPLIANCE CERTIFICATIONS

- FCC and IC (USA & Canada) approvals
- ACMA (Australia & New Zealand) approvals
- ANATEL (Brazil) approvals
- CE Mark (Europe) approvals
- TRA (UAE) approvals
- ICASA (South Africa) approvals
- Safety: NRTL & CB Scheme, RoHS compliant

IN THE BOX

- Trimble EM110, EM111 or EM112 EMPOWER Module
- Quick Start Guide

SOFTWARE INCLUDED

- The Demo/Settings application, EMPOWER Hub and Module Support Package are pre-installed, with updates available on the Google Play Store (Nomad 5) or www.trimble.com/empowermodules (Ranger 7 & Yuma 7).

DEVELOPER RESOURCES

- Easy-to-use Honeywell and ThingMagic Software Development Kit (SDK) and Application Programming Interfaces (APIs) to customize settings and integrate barcode and/or RFID data into custom Windows 10 or Android applications
- Trimble EMPOWER Developer Program: Includes access to SDKs and other resources for software developers seeking to create custom apps leveraging Trimble EMPOWER modules such as the EM110/EM111/EM112. Also available for sale are the Module Development Kit (MDK) and case parts to build your own custom EMPOWER module. For more information visit empower.trimble.com/Developer

- 1 The EM111/EM112 RFID antenna is tuned to operate within a subset of these bands, with software that further limits the bands to comply with different country regulations around the world. It is important to choose the right model depending on the country where the RFID device will be used. The current regulatory status for countries that authorize RFID scanning within the EPC Gen2 (860-960 MHz) band of the UHF spectrum is published in the following GS1 document: https://www.gs1.org/docs/epc/uhf_regulations.pdf.
- 2 The RFID read range can vary according to the type of tag and reading environment.

Specifications may be changed without notice.