

LTE WIRELESS HIGH-SPEED NETWORK INTERFACE BOARD

- 1 LTE/GNSS modem
- 1 PCI Express Mini Card slot for LTE, LTE Advanced, GNSS
- 1 PCI Express Mini Card slot for WLAN, GNSS
- 2 external antennas per module
- 10 microSIM card slots
- Software tool for switching SIM cards and remote power up/down of modems
- -40 °C to +85 °C, conformal coating



THREE SLOTS FOR WIRELESS FUNCTIONALITY

The F229 is a rugged single slot CompactPCI carrier board for up to three PCI Express Mini Cards. The slots can be used for LTE, GNSS or WLAN modems. Two antenna slots for different types of antenna connectors are provided for each PCI Express Mini Card slot. One PCI Express Mini Card slot is by default equipped with an LTE/GNSS module and two RP-SMA antenna connectors/cables.

FOR TRAIN CONNECTIVITY AND FLEET MANAGEMENT

The F229 provides connectivity solutions to cellular networks by adding LTE, LTE Advanced or other types of wireless modems.

It is intended for use in various train connectivity applications including onboard WLAN, passenger infotainment and fleet management systems. In the train communication system architecture, the F229 is typically located at the front end where it communicates directly with a cellular network. To optimize the connection and network coverage, the F229 features ten micro-SIM card slots.

REMOTE CONTROL BY SOFTWARE

duagon provides a user friendly software tool designed for interacting with the F229. The user is able to remotely control which micro-SIM cards are connected to the modems. Remote power reset is also possible for each modem.

SUITED FOR MOBILITY APPLICATIONS IN HARSH ENVIRONMENTS

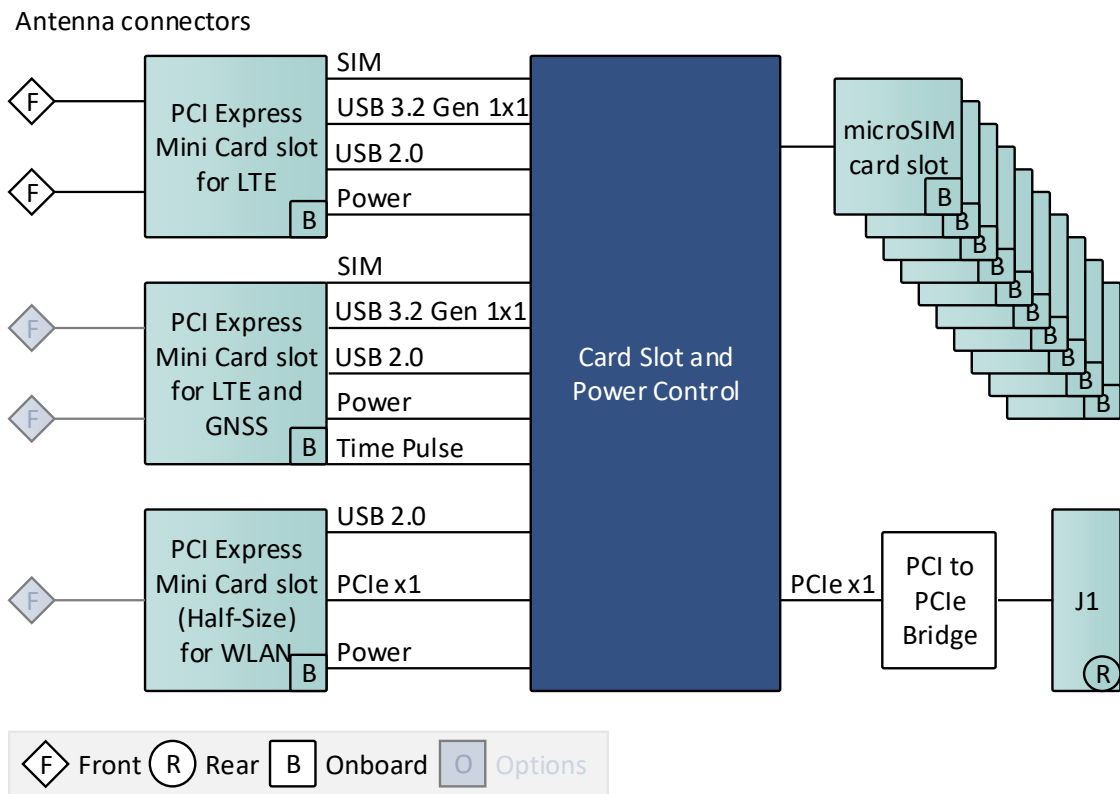
The F229 is designed for -40 °C to +85 °C operating temperature and conformal coated in order to be used also in transportation applications in harsh environments. The final environmental qualification depends on the respective PCI Express Mini Cards used with the carrier.



www.duagon.com/products/f229/

DATA SHEET

F229 | DIAGRAM



F229 | TECHNICAL DATA

WIRELESS FUNCTIONALITY

- Possible functions:

- GNSS
- LTE
- WLAN

INTERFACES

- This product includes interface options
 - Different wireless functions depending on assembled wireless interface cards
 - Different front connectors

- Wireless

- LTE (Main) antenna connector: 1 × RP-SMA receptacle (X1)
- LTE (Div) antenna connector: 1 × RP-SMA receptacle (X2)

- PCI Express Mini Card

- 3 × PCI Express Mini Card slot
- Slot 1: PCIe Full-Mini; USB 2.0, USB 3.2 Gen 1x1
- Assembled: Sierra Wireless MC7421 PCI Express Mini Card, LTE, UMTS, GNSS, USB 3.0, EU version, -40 °C to +85 °C (6100-0371)
- Slot 2: PCIe Full-Mini; USB 2.0, USB 3.2 Gen 1x1
- Slot 3: PCIe Half-Mini; PCIe x1, USB 2.0

- SIM card

- 10 × micro-SIM slot, internally accessible



- LED
 - Status: power status
 - User configurable: 3 ×
- Cutout
 - Antenna connector options: QLS receptacle, RP-SMA receptacle, SMA receptacle

PRODUCT STANDARD

- CompactPCI: CompactPCI Core Specification PICMG 2.0 R3.0
- Peripheral slot
- 32-bit/33-MHz CompactPCI bus
- V(I/O): +3.3 V (+5 V tolerant)

ELECTRICAL SPECIFICATIONS

- Supply voltage: +5 V (-5 % / +5 %)

MECHANICAL SPECIFICATIONS

- Dimensions: 3U, 4 HP
- Cooling: Air cooling, forced convection, airflow 1.5 m/s

PRODUCT COMPLIANCE: RAIL - ROLLING STOCK

- Operating temperature: -40 °C to +85 °C (EN 50155:2021, class OT6)
- Rapid temperature variations: EN 50155:2021, class H1, no requirements
- Storage temperature: -40 °C (EN 50155:2021) to +85 °C (EN 60068-2-2, Bb)
- Altitude: +1400 m max. (EN 50125-1:2014, class A1)
- Pollution degree: EN 50124-1:2017, class PD2
- Humidity: +55 °C and +25 °C, 100 % RH max. (EN 50155:2021)
- Shock: 30 ms @ 50 m/s² (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B)

- Vibration: 10 min @ 1.01 m/s² (functional) and 5 h @ 5.72 m/s² (long-life) (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B)
- Electrical safety
 - EN 50124-1:2017
 - EN 50153:2014 + A1:2017
 - EN 50155:2021
 - EN ISO 13732-1:2008
- Fire protection: EN 45545-2:2013 + A1:2015, HL3
- EMC emission
 - EN 50121-3-2:2016 + A1:2019
 - Regelung Nr. EMV 06 :2019-05-09 (2.0), Anhang E: Messung an Geräten
- EMC immunity: EN 50121-3-2:2016 + A1:2019
- Protective coatings
 - EN 50155:2021, class PC2 (Any PCB protected on both sides)
 - Third party products e.g. LTE modules are not coated, in compliance with EN 50155:2021 Class PC1
- Useful life: 20 years (EN 50155:2021, class L4)

RELIABILITY

- MTBF: 1 292 412 h predicted @ 40 °C according to IEC/TR 62380 (RDF 2000)

SOFTWARE SUPPORT

- Linux
 - Tested with: Ubuntu 20.04.2 LTS
- Further Resources
 - See the product User Manual for details on software support: www.duagon.com/products/f229/#doc
 - See section Software on the product web page for available packages: www.duagon.com/products/f229/#downl

F229 | ORDERING INFORMATION

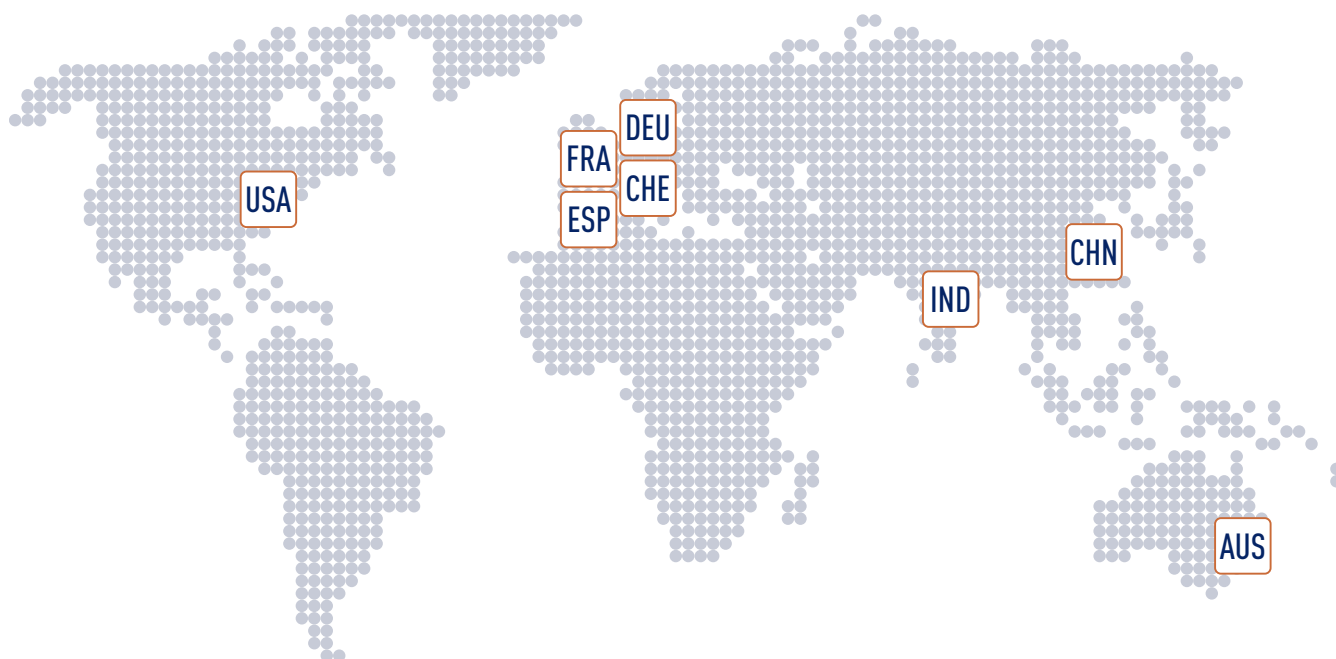
STANDARD MODELS

02F229-00

LTE, WLAN, GNSS carrier board, 3x PCIe Mini card slot, 1x Sierra Wireless MC7421 PCIe MC, 2x RP-SMA antenna connectors, 10x microSIM card slot, -40 °C to +85 °C, conformal coating



LEADING THE EMBEDDED FUTURE



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duagon has a global presence with support and sales representatives across 8 countries. With three decentralized engineering and production sites, our customers take advantage of the added competence and flexibility.

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