

# Embedded Module 16CH UHF **M690**



## PRODUCT DESCRIPTION

The Embedded Module 16CH UHF M690, which is part of iDTRONIC's new line of UHF readers, is a high-performance octa-port UHF RFID module based on the IMPINJ New Generation reader chips (E310/ E510/E710).

With its programmable power output of up to 33dBm, the module can achieve reading distances of up to 12 meters (depending on the antenna, transponders, and environment). With an all-aluminum housing and excellent heat dissipation, this reader module can be perfectly embedded into fixed industrial machines, shelving systems and supply chain applications.

The Embedded Module 16CH UHF M690 is equipped with UHF Technology EPC Class 1 Gen 2 (ISO 18000-63) and is globally applicable with a frequency band of 840 - 960 MHz. The Impinj-based reader chip enables it to rapidly read between 350 and 1,000 tags per second (depending on the IC Chip).

iDTRONIC's hardware comes with a useful SDK for the development of controller, Linux or Windows based applications. In addition to the documentation, command protocols and source codes, the SDK includes a Windows-based demo application providing full functionality over all supported UHF RFID standards.

## APPLICATIONS

- Industry 4.0
- Multilevel Gate Applications
- Shelf Applications
- Asset Tracking

## FEATURES

- Based on the latest generation Impinj chipsets E310/ E510/E710
- EPC C1 GEN2 | ISO 18000-63
- 33 dBm RF power output
- High performance of anti collision recognition algorithm
- 8x SMA External Antenna Ports
- UART - TTL

## CHIP OPTIONS

- UHF

## TECHNICAL DATA

### RADIO SPECIFICATIONS

|                     |                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------|
| Operating Frequency | 840...960 MHz, Configurations for<br>USA: 902...928 MHz (FCC),<br>EU: 865...868 MHz (ETSI) |
| RF TX Power         | +5...33 dBm, adjustable: steps of 1 dB                                                     |
| Reading Range       | Up to 12 meters*                                                                           |
| RF Impedance        | 50 Ω                                                                                       |
| Antenna             | 8 SMA female connectors for external<br>antennas                                           |

### ELECTRICAL SPECIFICATIONS

|                         |                                                                                                                                                                                                                                                      |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply            | 5 Vdc                                                                                                                                                                                                                                                |
| Power Consumption       | 1600 mA @ +33 dBm TX Power<br>120 mA Standby<br>40 mA enabling Mode                                                                                                                                                                                  |
| Connectors              | 15 pin FPC socket                                                                                                                                                                                                                                    |
| Communication Interface | UART TTL port                                                                                                                                                                                                                                        |
| Baudrate                | 9600...921600 bit/s, 115200 bits/s<br>factory default                                                                                                                                                                                                |
| GPIO                    | 2 Inputs TTL Levels:<br>Logic low: < 0.8 V, minimum 0V<br>Logic high: > 2 V, maximum 3.3 V<br>2 Outputs TTL Levels:<br>Logic low: maximum 0.4 V<br>Logic high: minimum 2.9V, maximum<br>3.3V<br>IO: The maximum output current of<br>the port is 5mA |

### MECHANICAL SPECIFICATIONS

|            |                    |
|------------|--------------------|
| Dimensions | 93.5 × 83.2 × 8 mm |
| Weight     | 118 g              |
| Material   | Aluminium          |

### ENVIRONMENTAL CONDITIONS

|                       |                            |
|-----------------------|----------------------------|
| Operating Temperature | -25 °C ... +65 °C          |
| Storage Temperature   | -40 °C ... +85 °C          |
| Humidity              | up to 95 %, non-condensing |

### SDK INFORMATION

|                     |                         |
|---------------------|-------------------------|
| Supported OS        | Windows, Linux, Android |
| Supported Languages | C, C#/.NET, Java        |
| Demo Software       | Windows                 |

### SUPPORTED STANDARD / TAGS

|              |                                  |
|--------------|----------------------------------|
| ISO Standard | ISO 18000-63 (EPC Class 1 Gen 2) |
| Tag Cache    | ≥ 1000 Tags @ 12 Bytes EPC size  |

**\*READING DISTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS.**

## AVAILABLE VERSIONS

|                              | E310                                                             | E510                                                                   | E710                                                           |
|------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------|
| <b>UNIQUE SPECIFICATIONS</b> |                                                                  |                                                                        |                                                                |
| Description                  | EMBEDDED UHF MODULE M670<br>TTL - 310                            | EMBEDDED UHF MODULE M670 -<br>TTL - 510                                | EMBEDDED UHF MODULE M670<br>TTL - 710                          |
| RFID IC                      | IMPINJ E310                                                      | IMPINJ E510                                                            | IMPINJ E710                                                    |
| RF Sensitivity               | -72 dBm                                                          | -79 dBm                                                                | -86 dBm                                                        |
| Reading Rate                 | ≥ 350 tags/s                                                     | ≥ 600 tags/s                                                           | ≥ 1000 tags/s                                                  |
| Applications                 | Shelving Systems /<br>Production Line Integration /<br>Mid-Range | Industrial Applications and Robotics /<br>Logistics and Asset Tracking | Demanding Retail and<br>Inventory Applications /<br>Long Range |
| <b>ORDER CODES</b>           |                                                                  |                                                                        |                                                                |
|                              | OEM-UHF-M693-TTL                                                 | OEM-UHF-M695-TTL                                                       | OEM-UHF-M697-TTL                                               |