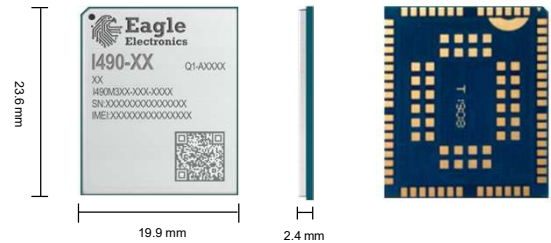


Eagle I490

LTE Cat M1/ Cat NB2 EGPRS Module



I490 is a series of multi-mode LPWA modules supporting LTE Cat M1/Cat NB2/EGPRS and integrated GNSS. It is 3GPP Rel-14 compliant and offers maximum data rates of 588 kbps downlink and 1119 kbps uplink under LTE Cat M1. It features ultra-low power consumption by leveraging the integrated RAM/flash as well as the ARM Cortex A7 processor supporting ThreadX, achieving up to 70 % reduction in PSM leakage and 85 % reduction in eDRX current consumption compared to its predecessor.

I490 boasts a comprehensive set of hardware-based security features and enables trusted applications to run directly on the Cortex A7 Trust Zone engine. Additionally, I490 provides pin-to-pin compatibility with Eagle I491 LTE Modules and Quectel BG95 modules.

With a cost-effective SMT form factor of 23.6 mm × 19.9 mm × 2.2 mm and high integration level, I490 enables integrators and developers to easily design their applications and take advantage from the module's low power consumption and mechanical intensity. Its advanced LGA package allows fully automated manufacturing for high-volume applications. A rich set of Internet protocols, industry-standard interfaces and abundant functions extend the applicability of the module to a wide range of M2M applications such as wireless POS, smart metering, tracking, wearable devices, etc.

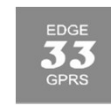


Key Features

- ✓ LTE Cat M1/Cat NB2/EGPRS module with ultra-low power consumption
- ✓ Supports DFOTA
- ✓ Main antenna and GNSS antenna (Optional)
- ✓ Integrated RAM/flash in the baseband chipset
- ✓ Robust mounting and interfaces
- ✓ Comprehensive set of hardware-based security features
- ✓ Compact SMT form factor ideal for size-constrained applications with tight space



LTE Cat M1 & Cat NB2



EGPRS



LGA Package



Embedded Abundant Protocols



DFOTA



Enhanced AT Commands



USB 2.0 High Speed Interface



Integrate RAM/Flash in Chipset



Ultra-low Power Consumption

Eagle I490 Family

LPWA	I490-M1	I490-M3	I490-MF
Region/Operator	Global	Global	Global
Dimensions (mm)	23.6 x 19.9 x 2.4	23.6 x 19.9 x 2.4	23.6 x 19.9 x 2.4
Weight (g)	Approx. 2.3	Approx. 2.3	Approx. 2.3
Temperature Range			
Operating Temperature	-35 °C to +75 °C	-35 ° C to +75 C	-35 °C to +75 °C
Extended Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands			
LTE-FDD	B1/ 2/ 3/ 4/ 5/ 8/ 12/	B1/ 2/ 3/ 4/ 5/ 8/ 12/	B1/ 2/ 3/ 4/ 5/ 8/ 12/
Cat M1:	13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85	13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85	13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85
Cat NB2:		B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85	B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85
EGPRS (MHz)		GSM 850/ EGSM 900/ DCS 1800/ PCS 1900	
Wi-Fi (for positioning)			2.4 GHz
GNSS (Optional)	GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS
Certifications			
Carrier	America: Verizon/AT&T/T-Mobile	America: Verizon/AT&T/T-Mobile Canada: Rogers/Telus	America: Verizon/AT&T/T-Mobile
Regulatory	Global: GCF North America: PTCRB America: FCC Canada: IC	Global: GCF North America: PTCRB America: FCC Canada: IC Mexico: IFETEL	Global: GCF North America: PTCRB America: FCC Canada: IC
Others	WHQL/RoHS	WHQL/RoHS	WHQL/RoHS
Max. Data Rates			
LTE-FDD (kbps)	588 (DL) 1119 (UL)	588 (DL) 1119 (UL)	588 (DL) 1119 (UL)
NB-IoT (kbps)		127 (DL) 158.5 (UL)	127 (DL) 158.5 (UL)
2G (EGPRS)		296 (DL) 236.8 (UL)	
Interfaces			
(U)SIM	× 1 (1.8 V only)	× 1 (1.8 V only)	× 1 (1.8 V only)
UART	× 3	× 3	× 3
USB 2.0	× 1	× 1	× 1
PCM	× 1 (for VoLTE Only)	× 1 (for VoLTE Only)	× 1 (for VoLTE Only)
I2C	× 1		× 1
GPIO	× 9	× 9	× 7
GRFC	× 2	× 2	× 2
Antenna	× 2	× 2	× 2
Software Features			
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6
USB Serial Driver	Windows 8.1/10/11 Linux 2.6-6.7 Android 4.x-13.x	Windows 8.1/10/11 Linux 2.6-6.7 Android 4.x-13.x	Windows 8.1/10/11 Linux 2.6-6.7 Android 4.x-13.x
GNSS/RIL Driver	Android 4.x-13.x	Android 4.x-13.x	Android 4.x-13.x
Enhanced Features			
DFOTA	●	●	●
QuecOpen	●	●	●
QuecLocator	Cell ID Positioning	Cell ID Positioning	Cell ID Positioning Wi-Fi

NOTE:

●: supported.

Eagle I490 Family

LPWA	I490-M1	I490-M3	I490-MF
Electrical Features			
Supply Voltage Range	2.6–4.8 V, typ. 3.3 V	3.3–4.3 V, typ. 3.8 V	3.3–4.3 V, typ. 3.8V
Max Output Power (dBm)	Power Class 5 21 @ LTE Bands	Power Class 5 21 @ LTE Bands	Power Class 5 21 @ LTE Bands
Power Consumption @ LTE Cat M1	Sleep Mode: 1.7 mA @ DRX = 1.28 s 0.577 @ e-I-DRX = 81.92 s Idle Mode: 20 mA@ DRX = 1.28 s 19.57 @ e-I-DRX = 81.92 s Active Mode: 210 mA@ 21 dBm, GNSS off	Sleep Mode: 1.89 mA@ DRX = 1.28 s 0.63 mA@ e-IDRX = 81.92 s Idle Mode: 18.9 mA@ DRX = 1.28 s 18.2 mA@ e-I-DRX = 81.92 s Active Mode: 193 mA@ 21 dBm, GNSS off	Sleep Mode: 1.59 @ DRX = 1.28 s 0.58 @ e-IDRX = 81.92 s Idle Mode: 18.5 @ DRX = 1.28 s 17.97 @ e-I-DRX = 81.92 s Active Mode: 181 @ 21 dBm, GNSS off
Power Consumption @ LTE NB IoT		Sleep Mode: 1.49 @ DRX = 1.28 s 0.67 @ e-IDRX = 81.92 s Idle Mode: 14.8 @ DRX = 1.28 s 14.3 @ e-I-DRX = 81.92 s Active Mode: 154 @ 21 dBm, GNSS off	Sleep Mode: 1.43 @ DRX = 1.28 s 0.56 @ e-IDRX = 81.92 s Idle Mode: 14.2 @ DRX = 1.28 s 14.1 @ e-I-DRX = 81.92 s Active Mode: 137 @ 21 dBm, GNSS off