



# Cinterion Wireless Modules Evaluation Boards

Remote the World

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# Cinterion Wireless LGA Modules

gemalto <sup>®</sup> Cinterion <sup>®</sup> Products Approved Distributor		27.6 x 18.8 x 2.7				27.6 x 25.4 x 2.3		33.9 x 29.6 x 3.2					33 x 29 x 2			
Dimensions in mm	27.6 x 18.8 x 2.7				27.6 x 25.4 x 2.3		33.9 x 29.6 x 3.2					33 x 29 x 2				
Product	BGS2-W BGS2-E	EHS5-E EHS5-US	AGS2	BGS5	EHS6	BGS3 BGS3-ATEX	EGS5 EGS5-X	EES3	EGS3	AGS3	PHS8-P/-E PHS8-US/-USA PHS8-J/K	PXS8	PVS8	AHS3-W AHS3-US	PLS8	
	GPRS	HSPA+	GPRS	Java™	HSPA+	GPRS	Java™	EDGE	GPRS	GPRS	HSPA+	CDMA HSPA+	CDMA	HSPA+	LTE	
Product family	M2M Value	M2M Evolution	M2M Auto- motive		M2M Evolution	M2M Value	M2M Evolution	M2M Evolution	M2M Evolution	M2M Auto- motive	M2M Advanced	M2M Advanced	M2M Advanced	M2M Auto- motive		
Frequency range																
2G GSM	DB 900, 1800 MHz	• (-E)	• (-E)								• (-E)					
	DB 850, 1900 MHz		• (-US)								• (-US/-USA)					
	QB 850, 900, 1800, 1900 MHz	• (-W)		•		•	•	•	•	•	• (-P/J/K)				•	
3G UMTS	DB 900, 2100 MHz TB: 900, 800/850, 2100 MHz		• (-E)								• (-E)					
	DB 850, 1900 MHz FB: 850, 800, 900, 1900, 2100 MHz		• (-US)								• (-US/-USA)			• (-W)		
	CDMA	CDMA 2000									• (-US/-USA)			• (-US)		
Embedded processing		Java™			Java™	Java™										
Extended memory		•			•	• (-X)										
Generic flash/Flash File System	•		•			• (-X)										
GPS; prepared for GLONASS											•	•	•	•		
Temperature range	-40°C to +85°C (AGS2: -40°C to +90°C)															
Data Transmission																
GPRS	Class	10	12	10		12	10	12	12	12	12	12	12	12	12	
	DL max in kbps	85.6	85.6	85.6		85.6	85.6	85.6	85.6	85.6	85.6	85.6	85.6	85.6	85.6	
	UL max in kbps	42.8(-W) 21.4 (-E)	85.6	42.8		85.6	42.8	85.6	85.6	85.6	85.6	85.6	85.6	85.6	85.6	
EDGE	Class		12			12		12			12	12		12		
	DL/UL max in kbps		236.8			236.8		236.8			236.8	236.8		236.8		
HSPA	DL max in Mbps		HSPA+			HSPA+		HSPA+			HSPA+	HSPA+		HSPA+		
	UL max in Mbps		7.2			7.2		7.2			7.2/14.4	14.4		14.4		
UMTS	DL/UL max in kbps		384			384		384			384	5.76		5.76		
CDMA	DL/UL max in kbps		384			384		384			384	5.76		5.76		
CSD/SMS/FAX	•/•/•	•/•/•	•/•/•	•/•/•		•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	
Voice	•	•	•	•		•	•	•	•	•	•	•	•	•	•	
TCP/IP connectivity	•	•	•	•		•	•	•	•	•	•	•	•	•	•	
Prepared for eCall				•							•				•	
Interfaces																
Audio analog/digital	1x/1x	-/1x	1x/1x			-/1x	2x/1x	2x/1x	2x/1x	2x/1x	2x/1x	2x/1x	2x/1x	1x/1x	1x/1x	
Serial interfaces	2x	2x	2x			2x	2x	2x	2x	2x	2x	2x	2x	1x	1x	
USB			•			•	•	•	•	•	•	•	•	•	•	
I2C/ SPI bus	•/-	•/-	•/-			•/•	-/-	•/•	•/•	•/•	•/•	•/•	•/•	-/-	-/-	
ADC/DAC(PWM)	1x/2x	1x/2x	1x/2x			1x/2x		2x/1x		2x/1x						
Dedicated multiple GPIO's (digital)	•	•	•			•		•		•						
Special features																
Automotive e-mark			•							•					•	
Over-the-air-update		•														
RLS-Monitor (Jamming Detection)	•		•			•		•	•	•	•	•	•	•	•	
Special features	Advanced Temperature Management; Multiplex driver Microsoft® Windows™															
DB=Dual-Band; TB=Tri-Band; QB=Quad-Band; FB=Five-Band; UL=Uplink; DL=Downlink																
For detailed specification please see hardware interface description.																
Errors and omissions expected.																



## Evaluation Boards Wireless LGA

The perfect tools for beginners and experts!

- Make your first steps with GSM, UMTS and LTE<sup>2)</sup>.
- Check new modules, new features and new technologies.
- Evaluation Kit includes antenna(s) and power supply (12VDC).
- Fully functionally with a personal computer or your application.

### Make your application wireless

- Up to two serial interfaces, with
  - RS-232 Interfaces, D-Sub 9 connector (meets EIA/TIA-232 specification down to +/- 3 V)
  - Interface for TTL-logic from 1.8 V to 3.6 V (for 1.8 V, 3.0 V or 3.3 V applications)
  - Provides TTL-to-USB Serial Converter "FTDI" TTL-232R-3V3™
- Mini USB Receptacle (5 Pin)

### Rapid prototyping

- Standard connectors: D-Sub 9, Mini USB-Receptacle
- Prepared for individual connections  
2.54 mm pitch, 2 rows for 1.27 mm ribbon cables

Some images show product in use with other accessories (not included).

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## M2M Value • Java™ AGS2 • BGS2 • EHS5 • EHS6

The evaluation boards demonstrate the functionality of the newest wireless modules – ideal for evaluation and development.

Several interfaces<sup>1)</sup> are available to connect them to existing applications, prototypes or working samples.

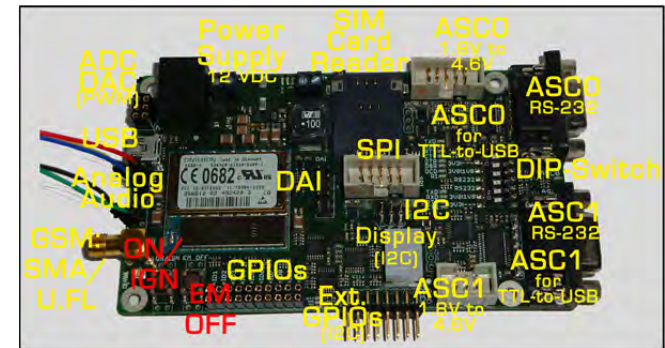
- Serial Interfaces (RS-232, TTL-logic)
- USB Interface
- DAI – Digital Audio Interface (PCM and I2S)
- AAI – Analog Audio Interface
- I2C-Interface
- ADC - Analog Digital Converter
- DAC – Digital Analog Converter (PWM)
- GPIOs (input/output, PWM)
- extended GPIOs (accessible via I2C)
- 7-Segment display for I2C experiments
- SMA- and U.FL-Antenna-Connector
- Push/Push-SIM Card Reader
- RJ12-Connector (6P6C) and screw-type-terminal for 12 VDC power supply

Wireless Module	Special Feature	RS-232	serial logic	USB	I2C-Interface	SPI-Interface	DAI	AAI	ADC	DAC (PWM)	GPIOs	I2C ext. GPIOs	7-Segment
AGS2	Automotive	2x	2x	•	•	•	•	•	•	•	6x	•	•
BGS2	GPRS	2x	2x	•	•	•	•	•	•	•	6x	•	•
BGS5 <sup>9)</sup>	GPRS, Java™	2x	2x	•	•	•	•	•	•	•	6x	•	•
EHS5	UMTS, Java™	2x	2x	•	•	•	•	•	•	•	6x	•	•
EHS6	UMTS, Java™	2x	2x	•	•	•	•	•	•	•	6x	•	•
EGS5-X	GPRS, Java, SPI	2x	2x	•	•	•	•	2x	•	•	10x	•	•
PSH8	UMTS & GPS	1x	1x	•	•	•	•	•	•	•	•	•	•
PLS8 <sup>9)</sup>	LTE	1x	1x	•	•	•	•	•	•	•	•	•	•

<sup>1)</sup> available interfaces depending on the module

<sup>2)</sup> coming soon

## Java™ • UMTS • LTE EGS5 • PHS8 • PLS8



## 2G/3G Extension Board for Arduino<sup>®3)</sup>

Combine the world of Arduino<sup>®3)</sup> with Cinterion Wireless Modules and get access to GSM/2G and UMTS/3G.

Build a working sample with

- Ethernet
- Memory Cards
- GPS, RFID
- Displays
- Sensors
- and a lot of other extensions

and on top

- GSM/2G or UMTS/3G.

<sup>3)</sup> Arduino<sup>®</sup> is a registered trademark of the Arduino Team (www.arduino.cc)