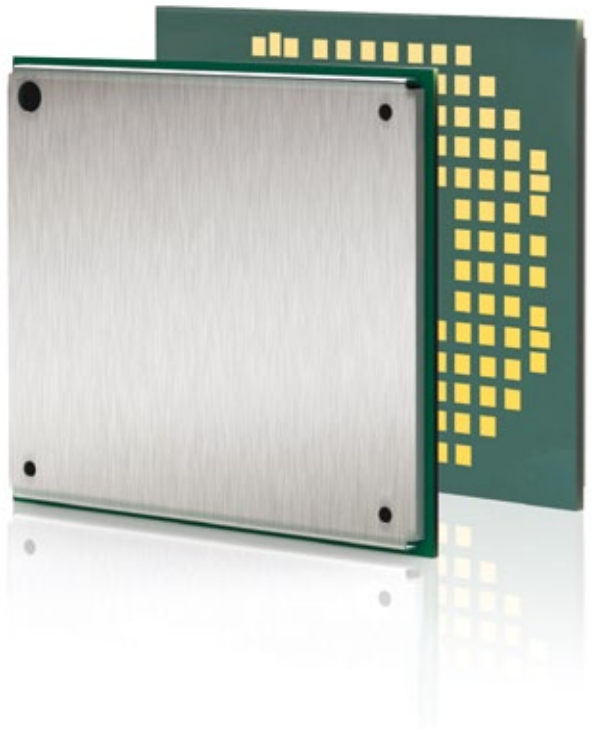
HSPA+
M2M Advanced

CINTERION
a Gemalto company

Cinterion 3G Modules PHS8
Introducing the Thinnest 3G LGA Module in the Market

- M2M Advanced
- Quad-Band 2G
- Five-Band 3G
- LGA Surface Mounting
- EDGE Class 12
- GPS
- GPRS Class 12
- Extended Temperature Range
- Full Voice Support
- USB 2.0
- TCP/IP
- RIL Driver



The new Cinterion PHS8 HSPA+ cellular machine-to-machine (M2M) module offers a smart solution for wireless connectivity today and in the future. With the latest HSPA+ technology, PHS8 is optimized for high bandwidth and allows speeds up to 14.4 Mbps for downlink and 5.7 Mbps for uplink. PHS8 is available in three versions, the PHS8-P with five bands UMTS for true global roaming and two local variants, the PHS8-US (USA) and PHS8-E (Europe) with dual band only, for improved TCO. PHS8 provides true worldwide coverage and reliability even while roaming across different wireless network technologies. By enabling a full range of M2M functions and features, PHS8 protects your technology investment by ensuring reliable communications today while allowing room for growth to 4G cellular technology on evolving GSM networks for many years to come.

PHS8 with its variants offers an ideal communication solution for the challenging requirements of a variety of M2M applications such as ruggedized mobile computing, security solutions, medical equipment, payment systems and gateway routers.

Two antenna pads enable diversity support allowing PHS8 to provide improved dataspeeds even under fluctuating 3G network conditions. The GPS antenna path is optimized for elimination of blanking on GPS for consistent performance.

Cinterion's unique type of LGA technology enables optimized heat dissipation that prevents warpage. It gives our customers the freedom to select the most beneficial soldering paste for

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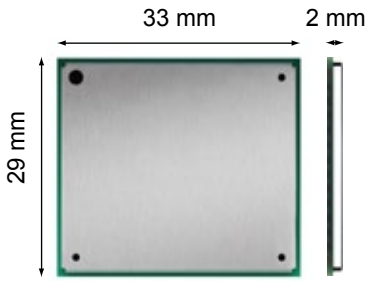

General features
- True global coverage with 3G
  PHS8-P: Five Bands UMTS/HSPA (850/800, 900, 1900 and 2100 MHz), Quad-Band GSM
- Regional variants:
  PHS8-US: Dual Band UMTS/HSPA (850, 1900 MHz), Dual-Band GSM (850/1900MHz)
  PHS8-E: Dual Band UMTS/HSPA (900, 2100 MHz), Dual-Band GSM (900/1800MHz)
- UMTS / HSPA+, 3GPP release 6 / 7
- GSM / GPRS / EDGE, 3GPP release 99 / 4
- SIM Application Toolkit, release 99
- SAIC / RX Diversity Type 3i
- Control via AT commands
  (Hayes, 3GPP TS 27.007 and 27.005)
- Supply voltage range 3.3 - 4.2 V
- Dimension: 29 x 33 x 2 mm
- Operational Temperature range: -40°C to +85°C

GPS features
- Standalone GPS
- GPS dedicated AT commands
- A/GPS support: standalone, XTRA® , CP E911
- Protocol: NMEA-0183 V2.3
- Option for temporary NMEA stream buffering
- Tracking Sensitivity: better than -158 dBm
- Prepared for GLONASS

Specifications
- HSDPA/HSUPA data rates
  DL: 7.2 / 14.4 Mbps, UL: 2.0 / 5.76 Mbps
  concurrent data rate:
  DL 7.2 Mbps / UL 5.76 Mbps
- UMTS data rates
  DL: max. 384 kbps, UL: max. 384 kbps
- EDGE class 12
  DL: max. 237 kbps, UL: max. 237 kbps
- GPRS class 12
  DL: max. 85.6 kbps, UL: max. 85.6 kbps
- CSD data transmission 14.4 kbps, V.110
- SMS text and PDU mode
- Voice specification:
  HR, FR, EFR and AMR supported Handset, headset and hands-free telephony.
  Dual microphone support for suppression of non-stationary background noise.
- TTY supported

Approvals
- R&TTE, FCC, GCF, PTCRB, UL, IC, CE
- AT&T, Telstra and other local approvals and provider certifications

For detailed specification please see Hardware Interface Description.

Interfaces
- LGA mounting
- 2 x antenna connectors for GSM/UMTS
- 1 x antenna connector for GPS
- Power supply
- Audio: 1 x analog*, 1 x digital (PCM or I²S)
- USB 2.0 high speed
- UICC and U/SIM card interface 3V, 1.8 V
- Emergency-off
- Network status
- Serial interfaces up to 920 kbps

Special features
- NDIS/USB/MUX driver for Microsoft® Windows XP™, Windows Vista™ and Windows 7™
- RIL/NDIS/USB/MUX driver for devices based on Microsoft® Windows Mobile™ >= 6.X
- USB/MUX driver for Microsoft® Windows CE™
- RIL driver for devices based on Android OS™
- Internet Services via TCP/IP Stack
- Customer IMEI/Netlock as variant
- Firmware update via USB and serial Interface
- USB supports multiple composite modes and a CDC-ACM compliant mode for Linux

*) PHS8-P only

Future proof design

At just 2 mm in height, PHS8 is ideal for integration in the slimmest and most size constraint M2M solutions. With the latest long-life chipset and a footprint prepared for forthcoming LTE modules, PHS8 provides longevity and a reliable path to the future for any high-bandwidth M2M applications.

Full voice support

PHS8-P includes best-in-class analog audio processing which allows quick & easy audio implementation.

Improved power management

PHS8 improved power management features preserve the battery power necessary for remote M2M devices and reduce heat generation. Combined with its intelligent design for superior heat dissipation, PHS8 is the first choice for temperature critical M2M applications.

Cinterion Global Support

Local engineers, a competent helpdesk, a dedicated team of R&D specialists and an advanced development center are the hallmarks of our leading support offer. The Cinterion support includes:
- Personal design-in consulting for hardware and software
- Extensive RF test capabilities
- GCF/PTCRB conform pretests to validate approval readiness
- Guidelines for local approvals and acceptances
- Regular training workshops

Further information about our products and services is also accessible via www.cinterion.com