

Wirnet™ iBTS

LoRaWAN® Outdoor Gateway for the Internet of Things



Standard Version



Compact Version

The “Wirnet™ iBTS” is the ideal gateway to support your smart city, smart building or every smart project as it combines both an excellent Outdoor coverage (more than 15km in direct line-of-sight and 2km in urban environment) and operational excellence.



Smart Cities



Smart Building



Smart Metering



Smart Agriculture & Environment

Kerlink is certified ISO9001: 2015 by AFNOR certification. The Quality Management System gives high priority to Customer satisfaction and progress implementation.



Key Features

- **Outdoor** LoRa® Gateway,
- Supported unlicensed bands : 863-874.4MHz (EMEA, India), 902-928MHz (North America), 915-928MHz (APAC, Latin America),
- Supported LoRaWAN® regional parameters: EU863-870, IN865-867, RU864-870, US902-928, AU915-928, AS923, KR920-923,
- **Modular configurations:**
 - from 16 channels (1 x LoRa RF modem) to 80 channels (4 x LoRa RF modem),
 - Single omnidirectional antenna, spatial diversity, dual polarization, tri-sectorization,
 - Possibility to support multiple unlicensed bands in a single gateway,
- Backhaul connectivity: Cellular 2G/3G/4G evolutive to 5G (mini-PCIe module), Ethernet 10/100 Mbps (RJ45),
- **Geolocation ready:** Using the fine timestamps on ALL the channels for improved geolocation services thanks to FPGA. Fully compliant with Semtech reference design v2. No proprietary locked solution; **Synchronization with GPS, combines RSSI and TDOA measurements.**

Key Differentiators

High performance, reliability & future-proof

- Semtech Reference Design v2,
- Built-in high rejection filters,
- LoRa-E™ Ready: Evolutive design using modem SDR (Software Design Radio) architecture.

Secure HW and SW architecture

- SecureBoot (Signed firmware),
- SecureStorage (keys and certificates in secured area) using ProvenCore™ solution,
- Secured links and backhaul protection (OpenVPN/IPsec),
- Reboot (watchdog) and recovery to previous Management config (or factory config if the boot issue is not fixed).

All product specifications are subject to change without notice (V2.8)

Zoom on “iBTS Standard” Version

- **Modular configuration:**
 - 1 x UC module,
 - **Select up to 2** x WAN modules (optional),
 - **Select up to 4** x LoRa® RF modem modules (16 channels each), Each LoRa RF modem allows 16ch RX (125 kHz, multi Spreading Factor) + 2ch RX (250kHz or 500kHz, mono Spreading Factor) + 2ch FSK + 2ch TX (without antenna diversity) to get up to 80 ch RX (with 4 x LoRa RF modem),
- Size: 295 x 317 x 125 mm (including mounting kit),
- Ingress protection (IP66),
- Weight:
 - About 6,2Kg (including mounting kit) with 1 x LoRa RF modem,
 - About 7,2Kg (including mounting kit) with 3 x LoRa RF modems.

Zoom on “iBTS Compact” Version

- **Compact configuration:**
 - 1 x UC module,
 - 1 x WAN module (**optional**),
 - 1 x LoRa® RF modem module (16 channels),
- **Size:** 357 x 189 x 150 mm (including mounting kit),
- Ingress protection (IP67),
- **Weight:** about 3Kg (including mounting kit).

Technical Features

- Sniffer for LBT (Listen Before Talk),
- Rx Sensitivity: -141 dBm (SF12),
- TX Conducted Power: configurable from 5dBm to 30dBm,
- Range -40°C +60°C, (for gateway only, without power supply),
- Humidity: 5% to 95%,
- Out-band radio scanners to monitor the entire band to detect real load of the band (Spectrum analysis compliant),
- Supercapacitors for clean shut down of applications in case of power failure,
- Power:
 - Power Over Ethernet **30W** for **Compact** version (accessory),
 - Power Over Ethernet **60W** for **Standard** version (accessory),
 - Power Over Ethernet 48V DC class 4 (accessory),
 - DC power supply (ex : solar panel use) : 11 to 56V DC (accessory),
 - Power control : ignition detection, software OFF switching, ON/OFF button.

Software Features

- **Same Kerlink software on all i-Series (for infrastructure homogeneity and easy maintenance)**
- **Dynamic web interface (On-the fly modifications),**
- **Programmable Gateway:** Toolchain, libraries and header files for compilation of in-house SW, or extra packages additions,
- **Including:**
 - Operating System: KerOS with embedded GNU/Linux based on Yocto 3.1 (dunfell) LTS and Kernel 5.4 LTS - Native Language Support: Python 3.8, C/C++ and Shell,
 - Included packages: SQLite (Database), Connman/Ofono, NTPd, lighttpd.

Added-Value Services for all gateways

- Lifetime Guarantee
- Access to Kerlink Wiki
- Zero Touch Provisioning (ZTP) and Zero Touch Maintenance (ZTM)
- Access to embedded Chirpstack LNS

More options :

- **Maintain offer :** Priority support, Access to Wanesy Maganement Cockpit including inventory, Software packages management, remote reboot, alerting features
- **Operate offer :** SLAs, Network Operating Center, Pro-Active and preventive maintenance, Reports and recommendations for network optimization

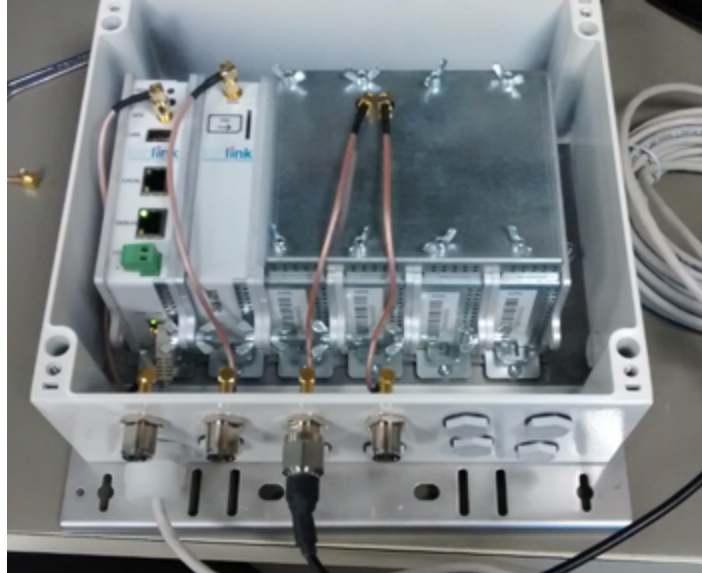
Thanks to their expertise and experience, Kerlink teams are fully mobilized to help you develop your business and reduce your operational and commercial risks.

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Wirnet™ iBTS (standard)



Wirnet™ iBTS Compact

Wirnet™ iBTS Compact - Ordering references

Product Ordering References

| Reference | Designation | Description | ISM Frequencies |
|--------------|---|--|-----------------|
| PDTIOT-MCS01 | 16CH LoRa, ETH backhaul only | Wirnet iBTS Compact - 1LOC868-0W868-EU | 863-874.4MHz |
| PDTIOT-MCS02 | 16CH LoRa, 2G/3G/4G backhaul + ETH backhaul | Wirnet iBTS Compact - 1LOC868-1W868-EU | 863-874.4MHz |
| PDTIOT-MCS18 | 16CH LoRa, Double 2G/3G/4G backhaul | Wirnet iBTS Compact 1LOC 1DW-EUEU | 863-874.4MHz |
| PDTIOT-MCS12 | 16CH LoRa, 2G/3G/4G backhaul + ETH backhaul | Wirnet iBTS Compact - 1LOC915-1W915-US | 902-928MHz |
| PDTIOT-MCS19 | 16CH LoRa, 2G/3G/4G backhaul + ETH backhaul | Wirnet iBTS Compact 1LOC923 1W915-US | 915-928MHz |
| PDTIOT-MCS10 | 16CH LoRa, 2G/3G/4G backhaul + ETH backhaul | Wirnet iBTS Compact - 1LOC923-1W923-EU | 915-928MHz |
| PDTIOT-MCS15 | 16CH LoRa, 2G/3G/4G backhaul + ETH backhaul | Wirnet iBTS Compact - 1LOC923-1W923-AS | 915-928MHz |

Common accessories for outdoor installation

| | | |
|----------|-----------------------------|---|
| KLK03524 | Self-amalgamating tape - 3m | Mounting accessories for outdoor installation |
| KLK03540 | Stainless Steel Hose clamp | Mounting accessories for outdoor installation |

868 Accessory Ordering References (Wirnet™ iBTS Compact)

DC/DC CONVERTER

| | | |
|----------|--------------|-------------------------------------|
| KLK02898 | Power Supply | 40W - DC/DC CONVERTER - 48VDC Input |
|----------|--------------|-------------------------------------|

PoE INJECTOR

| Reference | Designation | Description | Recommendation |
|-----------|-------------------------|---|----------------|
| KLK03525 | POE Injector | PoE Injector 30 W indoor – 48V DC Input | |
| KLK03505 | POE Injector | PoE Injector 30 W indoor - AC Input - EU | |
| KLK03554 | In addition to KLK03505 | AC Power supply cable for UK (IEC-320-C13) | |
| KLK03596 | POE Injector | PoE Injector - 30 W Outdoor - AC Input | |

EXTERNAL ANTENNA (optional)

| | | |
|--------------|---------------------------------------|---|
| ACCIOT-KAN00 | Antenna + 1m cable + support included | Antenna kit Omni 868 MHz 3 dBi |
| ACCIOT-KAN01 | Antenna + 1m cable + support included | Antenna kit Omni 868 MHz 6 dBi |
| ACCIOT-KAN06 | Product Subpart | Connectivity kit for antenna diversity (Antenna not included) |

(Outdoor) CAVITY FILTER

| | | |
|-------------|-------------------------------------|--|
| KLK02523 | Cavity filter 865-867 MHz | India |
| KLK02916 | CAVITY FILTER 863-873 MHz - OUTDOOR | EU coexistence high power emitters (former ACCIOT-CAV04) |
| KLK03410_01 | Cavity filter 865-870 MHz | 865-870 MHz, EU coexistence LTE800, RGSM |

SURGE PROTECTION

| | | | |
|----------|--|---------------------------------------|-------------|
| KLK02817 | Surge Protection for POE link - Outdoor | PoE Surge protection - outdoor | Recommended |
| KLK02818 | Surge Protection for POE link - Indoor | PoE Surge protection - Indoor | Recommended |
| KLK02881 | Surge Protection - DC Link – Indoor | DC Input | |
| KLK02900 | Surge Protection for Lora link - Outdoor | RF coaxial Surge protection - outdoor | Recommended |

| | | |
|--------------|-------------|---------------------------------|
| ACCWM2-SDE00 | Debug Probe | Wirnet iBTS / Wirma Debug Probe |
|--------------|-------------|---------------------------------|

915 Accessory Ordering References (Wirnet™ iBTS Compact)

| DC/DC CONVERTER | | | |
|-----------------------------|--|---|----------------|
| KLK02898 | Power Supply | 40W - DC/DC CONVERTER - 48VDC Input | |
| PoE INJECTOR | | | |
| | | Description | Recommendation |
| KLK03525 | POE Injector | PoE Injector 30 W indoor – 48V DC Input | |
| KLK03505 | POE Injector | PoE Injector 30 W indoor - AC Input - EU | |
| KLK03506 | POE Injector | PoE Injector 30 W indoor - AC Input - US | |
| KLK03596 | POE Injector | PoE Injector - 30 W Outdoor - AC Input | |
| EXTERNAL ANTENNA (optional) | | | |
| ACCIOT-KAN02 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 MHz 6 dBi | |
| ACCIOT-KAN03 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 Mhz 3 dBi | |
| ACCIOT-KAN06 | Product Subpart | Connectivity kit for antenna diversity (Antenna not included) | |
| SURGE PROTECTION | | | |
| KLK02817 | Surge Protection for POE link - Outdoor | PoE Surge protection - outdoor | |
| KLK02818 | Surge Protection for POE link - Indoor | PoE Surge protection - Indoor | |
| KLK02881 | Surge Protection - DC Link – Indoor | DC Input | |
| KLK02900 | Surge Protection for Lora link - Outdoor | RF coaxial Surge protection - outdoor | Recommended |
| (Outdoor) CAVITY FILTER | | | |
| KLK02906 | Cavity filter 915-920MHz | Philippines, Israel, Cuba | |
| KLK02973 | Cavity filter 902-928MHz | USA, Canada, Mexico | |
| DEBUG | | | |
| ACCWM2-SDE00 | Debug Probe | Wirnet iBTS / Wirma Debug Probe | |

923 Accessory Ordering References (Wirnet™ iBTS Compact)

| DC/DC CONVERTER | | | |
|-----------------------------|--|---|----------------|
| KLK02898 | Power Supply | 40W - DC/DC CONVERTER - 48VDC Input | |
| PoE INJECTOR | | | |
| | | Description | Recommendation |
| KLK03525 | POE Injector | PoE Injector 30 W indoor – 48V DC Input | |
| KLK03505 | POE Injector | PoE Injector 30 W indoor - AC Input - EU | |
| KLK03055 | In addition to KLK03505 | AC Power supply cable for Japan (IEC-320-C13) | |
| KLK03553 | In addition to KLK03505 | AC Power supply cable for Australia (IEC-320-C13) | |
| KLK03596 | POE Injector | PoE Injector - 30 W Outdoor - AC Input | |
| EXTERNAL ANTENNA (optional) | | | |
| ACCIOT-KAN02 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 MHz 6 dBi | |
| ACCIOT-KAN03 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 Mhz 3 dBi | |
| ACCIOT-KAN06 | Product Subpart | Connectivity kit for antenna diversity (Antenna not included) | |
| SURGE PROTECTION | | | |
| KLK02817 | Surge Protection for POE link - Outdoor | PoE Surge protection - outdoor | |
| KLK02818 | Surge Protection for POE link - Indoor | PoE Surge protection - Indoor | |
| KLK02881 | Surge Protection - DC Link – Indoor | DC Input | |
| KLK02900 | Surge Protection for Lora link - Outdoor | RF coaxial Surge protection - outdoor | Recommended |
| (Outdoor) CAVITY FILTER | | | |
| KLK02522 | Cavity filter 920-925 MHz | South Korea, Singapore, HK, Taiwan, Thailand, Cambodia | |
| KLK02905 | Cavity filter 918-923 MHz | Indonesia Malaysia, Vietnam, Myanmar | |
| KLK02909_01 | Cavity filter 920-928 MHz | New-Zealand, Japan, Costa Rica, Venezuela | |
| KLK03306 | Cavity filter 915-928 MHz | APAC, LATAM | |
| DEBUG | | | |
| ACCWM2-SDE00 | Debug Probe | Wirnet iBTS / Wirma Debug Probe | |

Wirnet™ iBTS Full - Ordering references

Product Ordering References

| Reference | Designation | Description | ISM Frequencies |
|--------------|--------------------------------|---|-----------------|
| PDTIOT-MSS16 | Wirnet iBTS - 1LOC923-1W923-AS | 16CH LoRa, 2G/3G/4G backhaul + ETH backhaul | 915-928MHz |

Common accessories for outdoor installation

| | | | |
|----------|-----------------------------|---|--|
| KLK03524 | Self-amalgamating tape - 3m | Mounting accessories for outdoor installation | |
| KLK03540 | Stainless Steel Hose clamp | Mounting accessories for outdoor installation | |

868 Accessory Ordering References (Wirnet™ iBTS Full)

| | | | |
|------------------------------------|--|---|-------------|
| DC/DC CONVERTER | | | |
| KLK02882 | Power Supply | 60W - DC/DC CONVERTER 48VDC input | |
| KLK02898 | Power Supply | 40W - DC/DC CONVERTER - 48VDC Input | 16 CH only |
| PoE INJECTOR | | | |
| KLK03505 | POE Injector | PoE Injector 30 W indoor - AC Input - EU | 16 CH only |
| KLK03550 | POE Injector | PoE Injector - 60 W indoor - AC Input | |
| KLK03554 | In addition to KLK03505, KLK03550 | AC Power supply cable for UK (IEC-320-C13) | |
| EXTERNAL ANTENNA (optional) | | | |
| ACCLOT-KAN00 | Antenna + 1m cable + support included | Antenna kit Omni 868 MHz 3 dBi | |
| ACCLOT-KAN01 | Antenna + 1m cable + support included | Antenna kit Omni 868 MHz 6 dBi | |
| ACCLOT-KAN05 | Antenna | Kit WAN 700-2700 MHz 5dBi - 5m - N Male | |
| ACCLOT-KAN06 | Product Subpart | Connectivity kit for antenna diversity (Antenna not included) | |
| (Outdoor) CAVITY FILTER | | | |
| KLK02523 | Cavity filter 865-867 MHz | India | |
| KLK02916 | Cavity filter 868 MHz | 863-873MHz - EU coexistence high power emitters | |
| KLK03410_01 | Cavity filter 865-870 MHz | 865-870 MHz, EU coexistence LTE800, RGSMS | |
| SURGE PROTECTION | | | |
| KLK02817 | Surge Protection for POE link - Outdoor | PoE Surge protection - Outdoor | Recommended |
| KLK02818 | Surge Protection for POE link - Indoor | PoE Surge protection - Indoor | Recommended |
| KLK02819 | RF Surge Protection for GSM and GPS Link | RF Surge protection - LoRa | Recommended |
| KLK02881 | Surge Protection - DC Link - Indoor | DC Input | |
| KLK02900 | Surge Protection for Lora link - Outdoor | RF coaxial Surge protection - Outdoor | Recommended |
| DEBUG | | | |
| ACCWM2-SDE00 | Debug Probe | Wirnet iBTS / Wirma Debug Probe | |

915 Accessory Ordering References (Wirnet™ iBTS Full)

| DC/DC CONVERTER | | | |
|-----------------------------|---|---|-------------|
| KLK02898 | Power Supply | 40W - DC/DC CONVERTER - 48VDC Input | 16 CH only |
| KLK02882 | Power Supply | 60W - DC/DC CONVERTER 48VDC input | |
| PoE INJECTOR | | | |
| KLK03525 | POE Injector | PoE Injector 30 W indoor – 48V DC Input | 16 CH only |
| KLK03505 | POE Injector | PoE Injector 30 W indoor - AC Input - EU | 16 CH only |
| KLK03506 | POE Injector | PoE Injector 30 W indoor - AC Input - US | |
| KLK03550 | POE Injector | PoE Injector - 60 W indoor - AC Input | |
| EXTERNAL ANTENNA (optional) | | | |
| ACCIOT-KAN02 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 MHz 6 dBi | |
| ACCIOT-KAN03 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 MHz 3 dBi | |
| ACCIOT-KAN05 | Antenna WAN + 5m cable + support included | Kit WAN 700-2700 MHz 5dBi - 5m - N Male | |
| ACCIOT-KAN06 | Product Subpart | Connectivity kit for antenna diversity (Antenna not included) | |
| (Outdoor) CAVITY FILTER | | | |
| KLK02973 | Cavity filter 902-928MHz | USA, Canada, Mexico | |
| KLK02906 | Cavity filter 915-920 MHz | Philippines, Israel, Cuba | |
| SURGE PROTECTION | | | |
| KLK02817 | Surge Protection for POE link - Outdoor | PoE Surge protection - Outdoor | |
| KLK02818 | Surge Protection for POE link - Indoor | PoE Surge protection - Indoor | |
| KLK02819 | RF Surge Protection for GSM and GPS Link | RF Surge protection - LoRa | Recommended |
| KLK02881 | Surge Protection - DC Link – Indoor | DC Input | |
| KLK02900 | Surge Protection for Lora link - Outdoor | RF coaxial Surge protection - Outdoor | Recommended |
| DEBUG | | | |
| ACCWM2-SDE00 | Debug Probe | Wirnet iBTS / Wirma Debug Probe | |

923 Accessory Ordering References (Wirnet™ iBTS Full)

| DC/DC CONVERTER | | | |
|-----------------------------|---|---|-------------|
| KLK02898 | Power Supply | 40W - DC/DC CONVERTER - 48VDC Input | 16 CH only |
| KLK02882 | Power Supply | 60W - DC/DC CONVERTER 48VDC input | |
| PoE INJECTOR | | | |
| KLK03525 | POE Injector | PoE Injector 30 W indoor – 48V DC Input | 16 CH only |
| KLK03505 | POE Injector | PoE Injector 30 W indoor - AC Input - EU | 16 CH only |
| KLK03055 | In addition to KLK03505 | AC Power supply cable for Japan (IEC-320-C13) | |
| KLK03550 | POE Injector | PoE Injector - 60 W indoor - AC Input | |
| KLK03553 | In addition to KLK03505 | AC Power supply cable for Australia (IEC-320-C13) | |
| EXTERNAL ANTENNA (optional) | | | |
| ACCIOT-KAN02 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 MHz 6 dBi | |
| ACCIOT-KAN03 | Antenna + 1m cable + support included | Antenna kit Omni 915/923 MHz 3 dBi | |
| ACCIOT-KAN05 | Antenna WAN + 5m cable + support included | Kit WAN 700-2700 MHz 5dBi - 5m - N Male | |
| ACCIOT-KAN06 | Product Subpart | Connectivity kit for antenna diversity (Antenna not included) | |
| (Outdoor) CAVITY FILTER | | | |
| KLK02522 | Cavity filter 920-925 MHz | South Korea, Singapore, HK, Taiwan, Thailand, Cambodia | |
| KLK02905 | Cavity filter 918-923 MHz | Indonesia Malaysia, Vietnam, Myanmar | |
| KLK02909_01 | Cavity filter 920-928 MHz | New-Zealand, Japan, Costa Rica, Venezuela | |
| KLK03306 | Cavity filter 915-928 MHz | APAC, LATAM | |
| SURGE PROTECTION | | | |
| KLK02817 | Surge Protection for POE link - Outdoor | PoE Surge protection - Outdoor | |
| KLK02818 | Surge Protection for POE link - Indoor | PoE Surge protection - Indoor | |
| KLK02819 | RF Surge Protection for GSM and GPS Link | RF Surge protection - LoRa | Recommended |
| KLK02881 | Surge Protection - DC Link – Indoor | DC Input | |
| KLK02900 | Surge Protection for Lora link - Outdoor | RF coaxial Surge protection - Outdoor | Recommended |
| DEBUG | | | |
| ACCWM2-SDE00 | Debug Probe | Wirnet iBTS / Wirma Debug Probe | |