



A simple fiber termination  
for fast FTTH deployment and  
full Triple Play support.

# Innbox C30 - Simple Fiber Termination and Extension Unit



The Innbox C30 Fiber Termination Unit (FTU) provides fast and simple fiber termination at home, with which operators gain significant advantages over competitors, lowering installation expenditures by half, increasing revenue due to an increased number of connected customers and increased spending on newer, faster and more interesting broadband services. Last but not least, high customer satisfaction leads to lower customer churn and an increased customer base due to positive customer testimonials.

## Fast, Simple & Flexible Installation

Innbox C30 FTU enables various connection and installation options, due to its highly flexible and modular design. Innbox C30 FTU can be **used solely for fiber termination** in an apartment, waiting for the end user to decide whether to connect to broadband services. Later it can be used only **for the connection of CATV**, when an RF module is integrated into the FTU; it can also be used **for an in-house, fiber-network extension** and finally **for the connection of various types of Innbox Customer Premises Equipment (CPE)**, with the CATV option integrated into the FTU or not. In addition, various fiber types, such as fixed tube, micro duct and blow fiber, can be terminated in the unit. The **installation and mounting** of the unit on the wall was designed to be as **fast and easy as possible**.

## High Level of Fiber Protection – Robust Design

Since fiber is a very sensitive medium, effective and lasting protection is one of the very important features. Over time many things can damage fiber cables and connections due to different indoor activities related to house reconstruction or even daily cleaning. The robust design of the Innbox C30 guarantees **excellent fiber protection** over the years.

## Cost Savings and Increased Revenues

With the Innbox C30 unit, the **time needed to connect homes** and offices directly to a fiber network is practically **halved (from 4 to less than 2 hours**, on average, per home connected). This **significantly lowers the installation costs** of connecting the end user to the fiber network, which has a positive effect on business, especially if we realize the cost of the average engineer service hour is equal to the cost of the active CPE (FTTH device). When using Iskratel modules (e.g., an FTTH switch or a home gateway) with the FTU Innbox C30, end users can install the equipment by themselves, connecting the active service module to the FTU using a simple “click-on” principle, halving the time to market, which can lead to important competitive advantages. Increasing monthly revenues can also be achieved with ease, since you can charge for the internet connection and other broadband services faster and to more users than you would if you were using the current, “old” approach.

## Future-Safe Concept

The Fiber-Termination Unit Innbox C30 is designed **to be used with Iskratel FTTH CPE or any other vendor equipment**. When used with Innbox CPE equipment, the connection between the FTU and the particular CPE unit is achieved with the **simple and reliable “click-on” principle**. When using other vendor active equipment the connection between equipment is made with a standard patch cable. In addition, the FTU Innbox C30 provides space for fiber-cable amortization (fiber organizer), a splice cassette, an RF module for CATV and the attachment of various optical adapters, making the system **open and ready** for different installation options that may appear in the future.

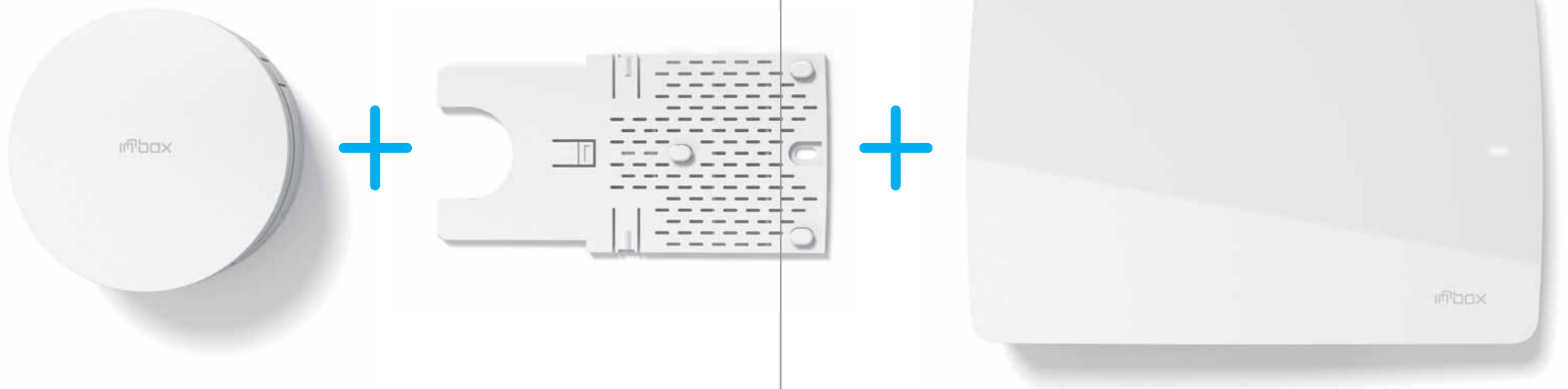
# Innovative design

## Simple Upgrade With Innbox Optical Devices

The foundation for connection is the base plate, which is inserted into the FTU on one side and attached to the wall on the other side. Innbox optical CPE is slid using the "click on" principle, while CPEs of other manufacturers are connected via patch cables.



reddot design award  
winner 2011

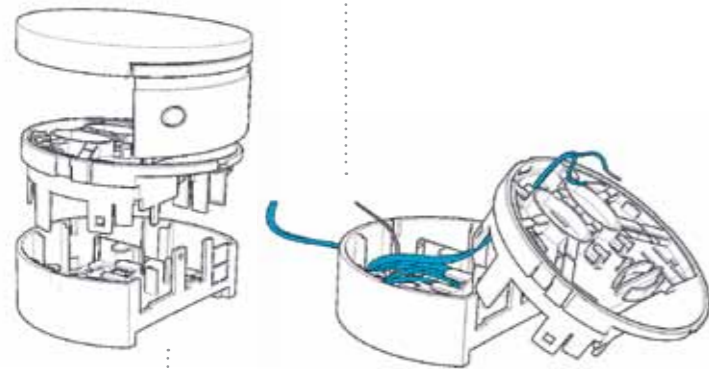


# Innovative design

## FTU Fiber Manipulation

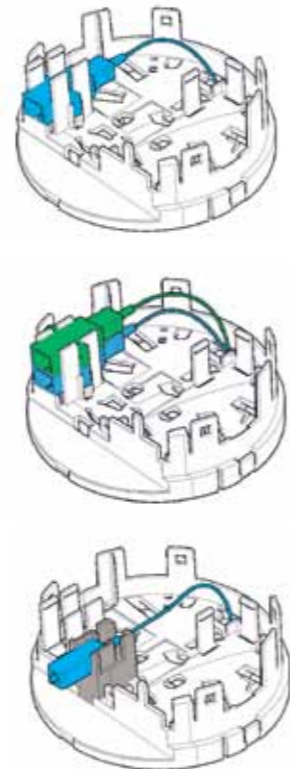
### 1. Section of the FTU

The FTU consists of three parts. The bottom part is designed for the input and coiling of any excess optical fiber and the installation of the optical coupler for fiber extension or for the connection of the Innbox Customer Premises Equipment (CPE). The central part represents the splice cassette used for the securing of optical splices and WDM filters. The third part is the cover of the FTU. Its modular design enables the removal of certain plastic parts. In the case of a fiber extension or CPE connection the plastic cover can be adapted easily.



### 2. Coiling of Excess Fiber

The FTU provides a dedicated place where remaining field fiber can be coiled and stored. The fiber can enter through lateral openings into the FTU or through the dedicated opening in the bottom of the FTU. The FTU is attached to the wall with screws.

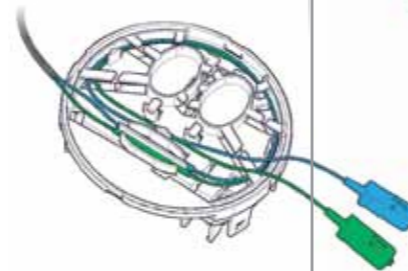


### 3. Securing the Connectors for a Fiber Extension and the Connection of the Innbox CPE

The first picture from top to bottom shows the installation of the connector adapter for a singlefiber extension, the second picture shows the dualfiber extension, and the third picture shows the installation of the connector for the "click on" connection of the Innbox FTTH CPE.

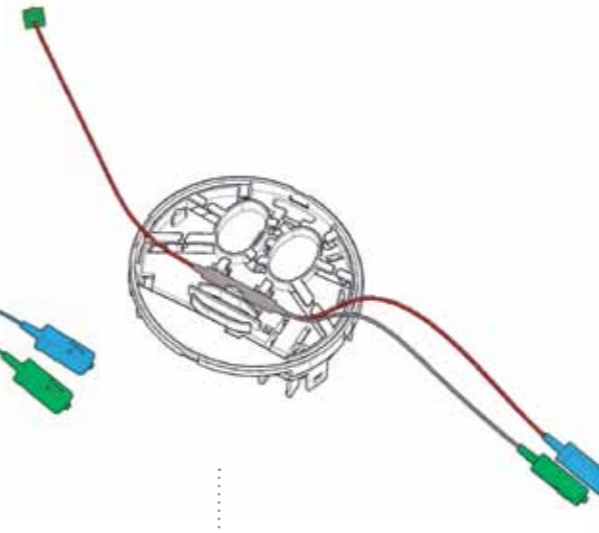
### 4. Splicing and Securing of Optical Cables

Splicing of optical fibers and securing of the splice is provided in a specially designed cassette.



### 6. Extension of the original basis to the next basis

A preview of the connectors' installation for a fiber extension, the preparation of the FTU opening for the connector access and the connection of the fiber cables in the FTU is shown here.

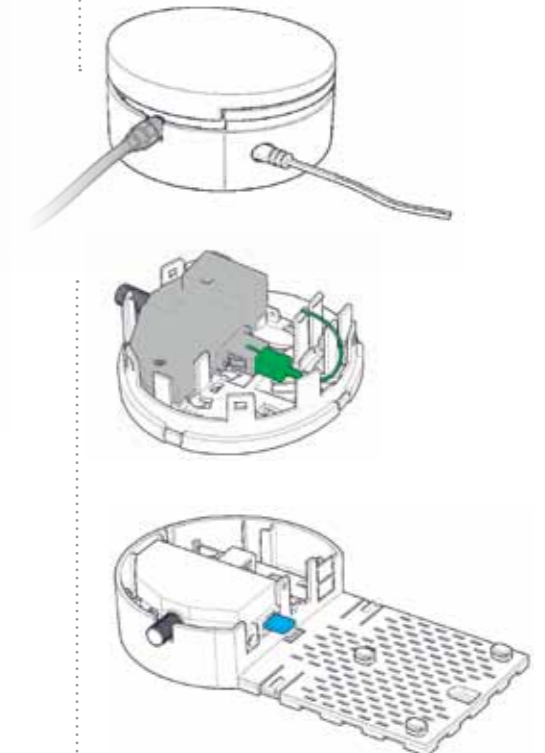


### 5. WDM filter installation

The WDM filter has a dedicated place in the splice cassette. The installation of the WDM filter in case of a common single fiber for the transmission of the broadband and CATV traffic is a fast and simple operation.

### 8. Connection of the CATV and power supply

The FTU can be optionally equipped with the CATV module. In this case the FTU is powered directly from the attached power supply.



### 7. Installation of the RF module

The drawing shows the installation of the RF module for CATV into the FTU, the fiber connection to the RF module and the preparation for the installation of the Innbox CPE. In this case the RF module is powered via the Innbox CPE communication interface (bottom drawing).

# Flexible FTTH deployment scenarios

## Option 1 - Standalone Fiber Termination Unit (FTU)

The first scenario foresees a **fiber termination** in the case when the potential end user has allowed a feeder link and the installation of an optical port but has not yet decided to use the broadband services at this point. The user can subscribe to the broadband services at any time, and thanks to the "click-on" system, **the user can make the connection to the Inbox CPE without any technical support**. Any additional network settings and equipment activation can be performed from the operator's remote control center. This is enabled by the **remote management** in the Inbox FTTH CPE. No other visits by the operator's technical staff are necessary, which substantially **reduces the connection price** and improves the outcome of the business plan.



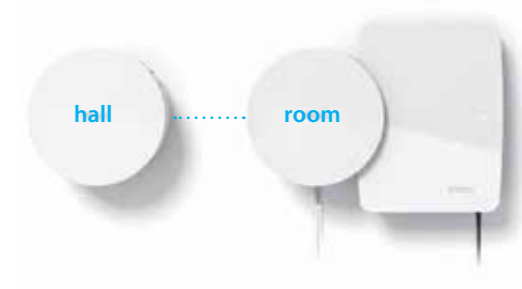
## Option 2 - Standalone FTU with integrated RF Module for CATV connection

The second scenario predicts the end user connection to CATV. The operator, providing the CATV, as well as other broadband services, can offer the end user only the **CATV access via fiber**. In this case the RF module used for the conversion of the optical signal into the electric signal is incorporated directly into the FTU.



## Option 3 - Inhouse Fiber extension

The third scenario assumes a **fiber extension** to the point in a house or an apartment where the client (TV, PC, etc.) is installed. The fiber extension is performed with the FTU Inbox C30. In each FTU there are special connectors for the fiber extension – **either singlefiber or dualfiber**. From the source FTU the extension fiber is connected to the next FTU, which is located at the appropriate in-house point. The Iskratel CPE is connected to the fiber using the "click-on" system.



## Option 4 - FTU (with RF optional)

- + Optical Switch Inbox F20 or
- + Optical Gigabit Switch Inbox F28 or
- + Optical Gigabit Switch with Voice Inbox F29 or
- + Optical Gigabit Home Gateway Inbox F60

The fourth scenario is intended for users who want to use, **other broadband services like internet, IPTV, VoIP, WIFI, etc. in addition to CATV service**. If the user does not want the CATV access and decides only for IPTV, the RF module in the FTU is not needed.

Different users have different needs and different models address these specific needs from basic Fast Ethernet Switch like Inbox F20 to high end Triple Play Gigabit Home Gateway Inbox F60. **All models can be used in domestic as well as in the business environment.**

The Inbox platform is also one of the best in its class, as demonstrated by the **Most Innovative Products Award** in the Access category, awarded by the Heavy Reading research.



# Innbox F20 / F28 / F29 / F60.

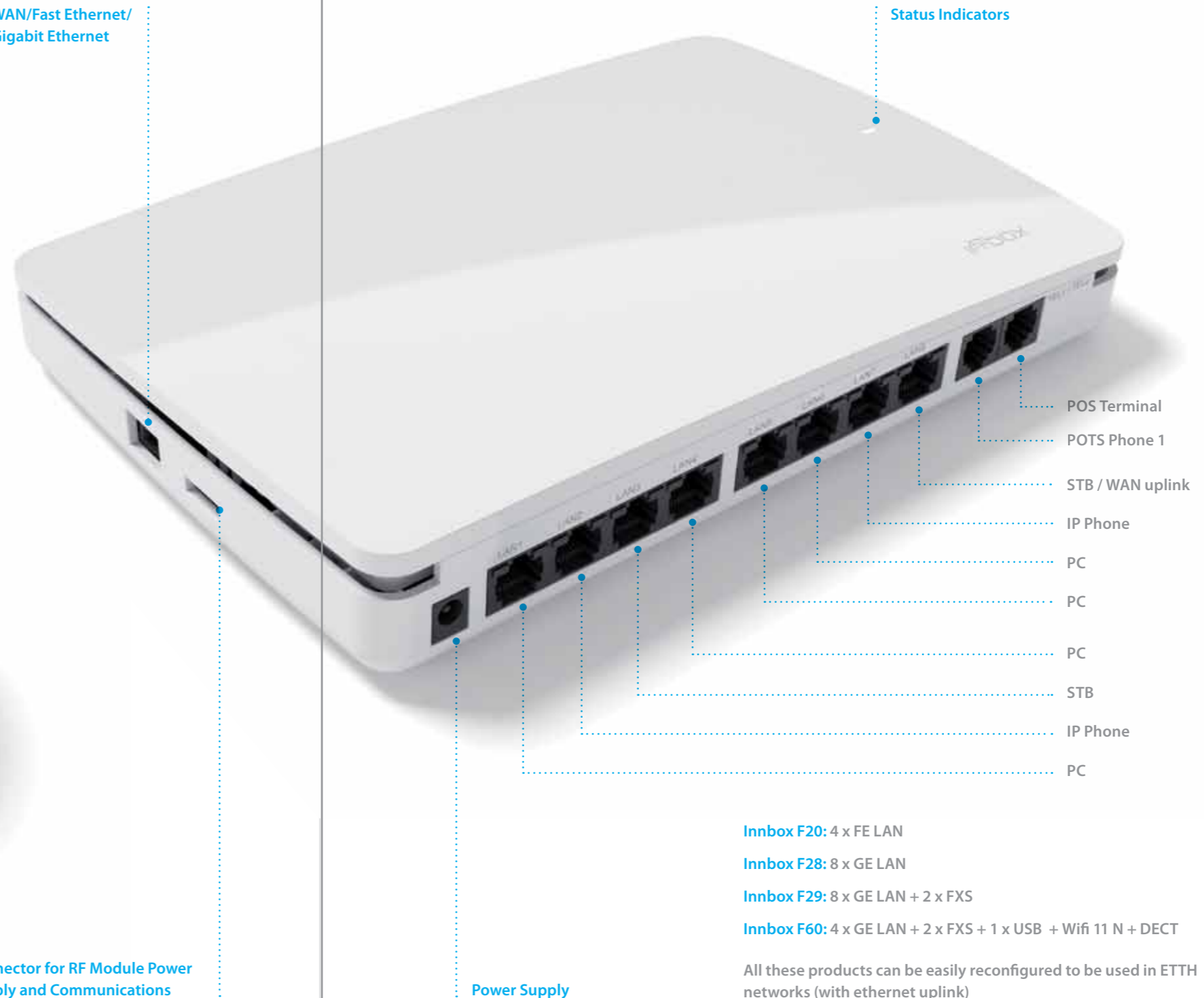
## Full support for Triple Play Services



### Interfaces and Connections



### Innbox F29

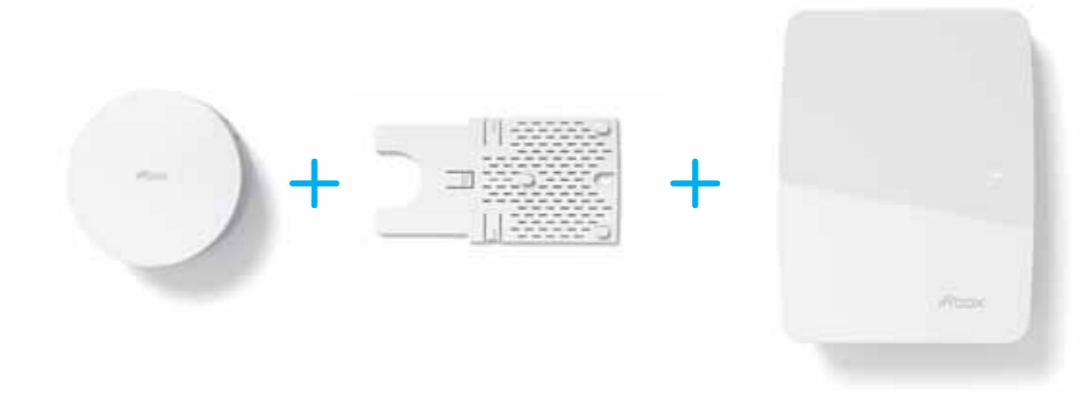


# Optical Switch Innbox F20

## Energy efficient modem

The Innbox F20 represents a carrier-class, low-power-consumption, networking solution for open-access networks providing **wholesale broadband services to different service providers**. The FTTH NT Innbox F20 combines an opto-electrical converter and a LAN switch in a single device. The Innbox F20 enables network providers to offer connections **up to 100 Mbps in both directions with standard Ethernet technology**. Furthermore, the Innbox F20 NT enables a multiple profile arrangement to gain **symmetrical** or **asymmetrical connections** from the CO to provide the desired bandwidth.

The Innbox F20 **consumes up to 4 times less energy** than defined by EU Code of Conduct on Energy Consumption of Broadband Equipment.



Optical Ethernet 100base FX WAN interface for FTTH applications

Service separation and prioritization with per port bandwidth limitation.



Low power consumption.



Support for centralized management node of multiple CPE (e.g. controlled mass remote SW upgrade and auto configuration provisioning).

## 400Mbps

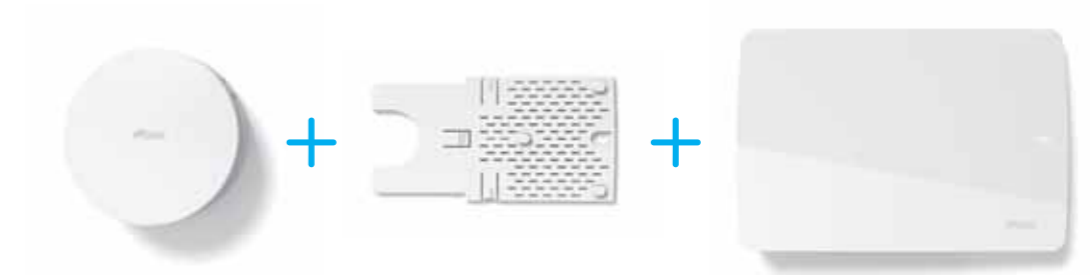
Four Ethernet 100base TX LAN ports for end-device or home-gateway connectivity

# Optical Gigabit Switch Inbox F28

## Ultimate broadband connectivity

FTTH NT Inbox F28 combines an opto-electrical converter and a LAN switch in a single device. It enables network providers to offer connections **up to 1 Gbps in both directions with the standard Gigabit Ethernet technology**. **Dual rate operation** is supported as well, which enables connectivity of Inbox F28 to a **Fast Ethernet or Gigabit Ethernet** enabled Central Office aggregation switch. Furthermore, Inbox F28 NT enables multiple profile arrangements to gain **symmetrical or asymmetrical connections** from CO to provide desired bandwidth.

The Inbox F28 **consumes up to 3 times less energy** than defined by EU Code of Conduct on Energy Consumption of Broadband Equipment.



Optical dual rate 100baseFX or 1000baseFX Ethernet WAN interface for FTTH applications.



Service separation and prioritization with per port bandwidth limitation.



Low power consumption.



Support for centralized management node of multiple CPE (e.g. controlled mass remote SW upgrade and auto configuration provisioning).

## 8Gbps

Eight Ethernet 10/100/1000baseTX LAN ports for end device or home gateway connectivity.

# Optical Gigabit Switch Innox F29

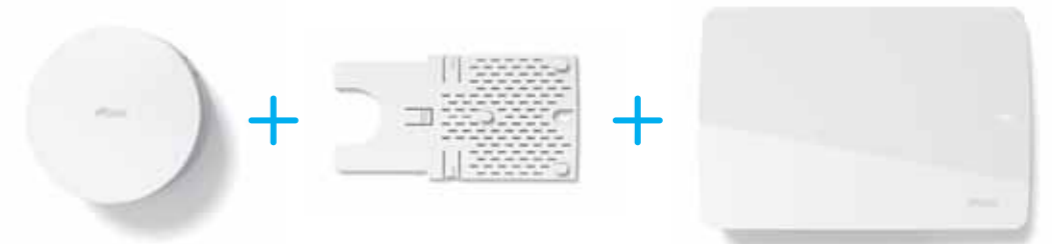
## Ultimate broadband connectivity and Traditional Telephony Support

FTTH NT Innox F29 combines an opto-electrical converter a **LAN switch and POTS functionality in a single device**. It enables network providers to offer connections **up to 1 gbps in both directions with the standard gigabit ethernet technology. Dual rate operation** is supported as well, which enables connectivity of Innox F29 to a **fast ethernet or gigabit ethernet** enabled Central Office aggregation switch. Furthermore, Innox F29 enables multiple profile arrangements to gain **symmetrical or asymmetrical connections** from CO to provide desired bandwidth.

The Innox F29 **consumes less energy** than defined by EU Code of Conduct on Energy Consumption of Broadband Equipment.



**NEW - AVAILABLE  
IN 2Q 2012**



Optical dual rate 100baseFX or 1000baseFX Ethernet WAN interface for FTTH applications



Service separation and prioritization with per port bandwidth limitation.



Low power consumption.



Support for centralized management node of multiple CPE (e.g. controlled mass remote SW upgrade and auto configuration provisioning).

**8Gbps**

Eight Ethernet 10/100/1000baseTX LAN ports for end device or home gateway connectivity.



Two FXS ports to connect two analog phones or fax machines.

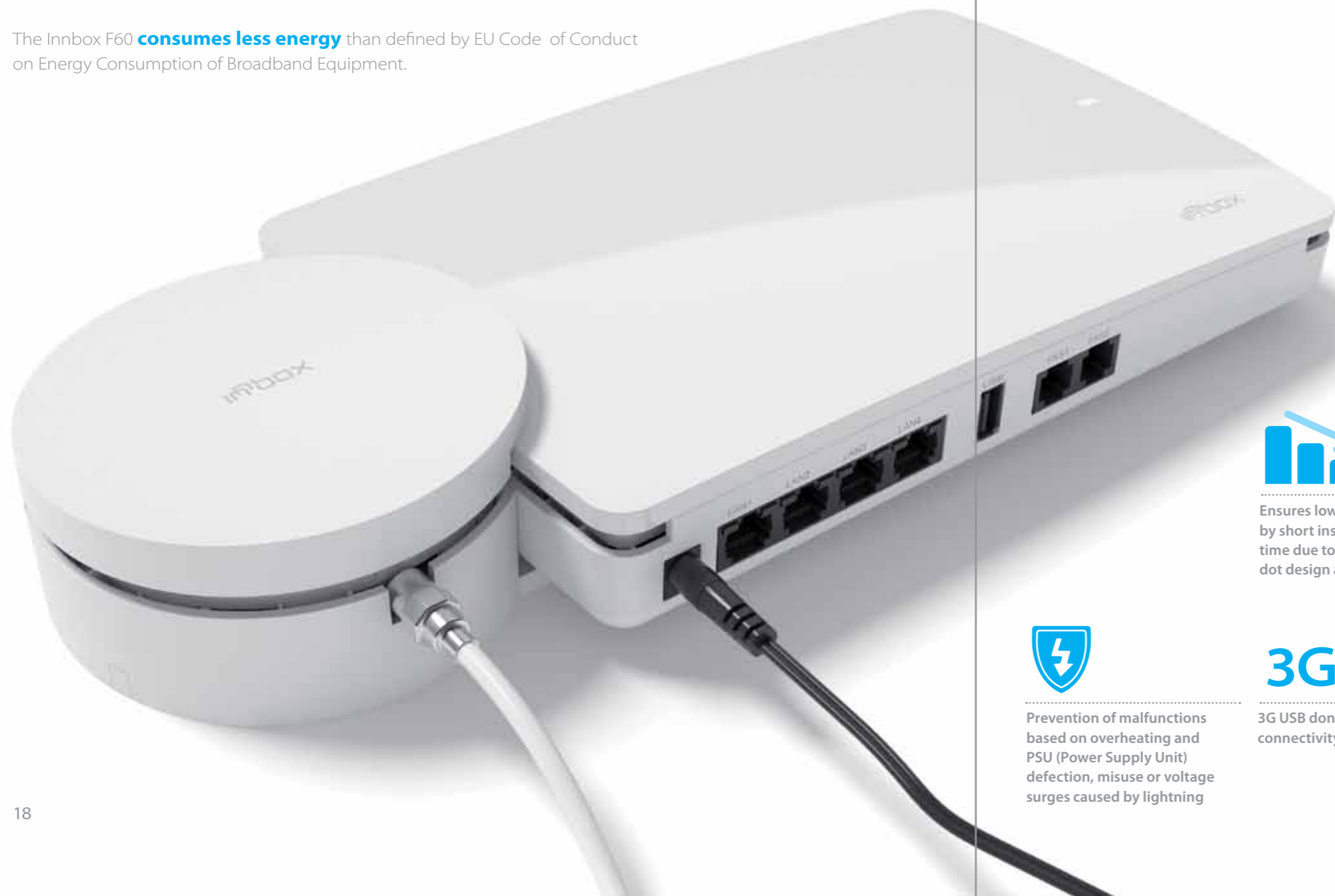
# Optical Gigabit Home Gateway Innbox F60



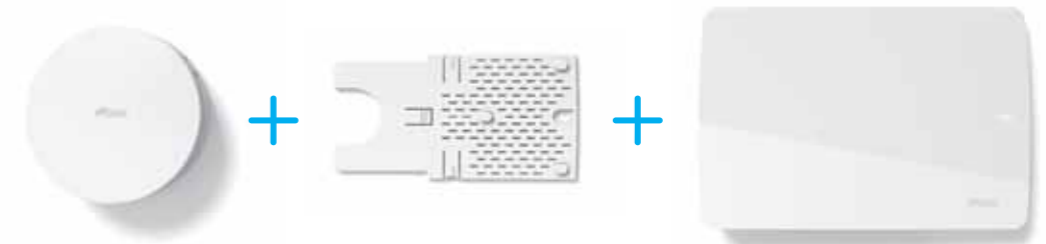
## First Class Triple Play Experience and Distinguishing L3 Functionalities for Maximum End User Flexibility and Operator's OPEX Savings

Innbox F60 is the only Home Gateway that offers **advanced multimedia capability, extended choice of physical interfaces, lowest energy consumption, easy to use, line rate routing performance in the same compact box** for affordable price. This means that operator gets much more **cost efficient** solution for **fast deployment** and its users receive **better quality of experience (QoE)** for Triple play services. Home Gateway Innbox F60 implements latest silicon technologies, advanced sleep mode and wake-up mechanism to drive average **power consumption to 50% lower levels than** other competitive products.

The Innbox F60 **consumes less energy** than defined by EU Code of Conduct on Energy Consumption of Broadband Equipment.



**NEW - PLANNED  
FOR 4Q 2012**



Integrated wireless IPTV support which removes all potential fuzzy transmission of TV signal (pixelization, loss of signal)



DLNA Support



Latest 11N WiFi standard implemented



Enables connectivity of DECT portable handsets



Ensures low installation costs by short installation and setup time due to unique design (Red dot design award winner 2011)



Fully utilized modern Gigabit Ethernet access – powerful networking engine



Short recovery time at critical failures



Prevention of malfunctions based on overheating and PSU (Power Supply Unit) deflection, misuse or voltage surges caused by lightning



3G USB dongle for back up connectivity (Optional)



Home automation support – integrated low bit rate industrial wireless technology



Lifeline support

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