

# BETTER CONNECTED LIVING



## INTELLIGENT FTTH SOLUTIONS

- Fiber Network Termination
- Managed Fiber Gateways
- Managed Ethernet Routers & Access Points
- Wi-Fi App & Network Monitoring

# ABOUT ICOTERA



Icoteria is a leading European developer and manufacturer of Fiber-to-the-Home (FTTH) CPE solutions. Our intelligent FTTH gateways, managed Ethernet routers, and access points include best-in-class Wi-Fi and are optimized by our real-time network and in-home Wi-Fi monitoring solution.

As a technological leader in our field, we create and deliver products with superior design, quality and performance, and we are dedicated to providing fiber network operators and internet service providers with tailor-made, flexible and cost-effective solutions to fit their individual needs. All hardware and software development are produced in-house, guaranteeing our customers the quality they need.

Our mission is to enable our customers to deliver an outstanding user experience based on our high-quality FTTH solutions and services which will provide them with additional revenue streams that contribute to their sustainable growth, both now and in the future.

“ *Our mission is to enable our customers to deliver an outstanding user experience...* ”



*René Brøchner,  
Chief Executive Officer at Icoteria*

# OUR PROMISE: EFFICIENT OPERATION & SUPERIOR CUSTOMER EXPERIENCE

## **User experience**

The key to success is satisfied customers. A successful customer journey, powerful technology and efficient support make the difference.

## **Best-in-class Wi-Fi**

High-performance antenna designs secure customers with the best in-home Wi-Fi experience in all rooms of the house.

## **Unique Nordic design**

The stylish and aesthetic appearance makes the products fit easily into the environment — discreet equipment that looks great in every room.

## **Tailor-made solutions**

Intelligent solutions are flexible solutions. And that's why we bring bespoke solutions to medium-sized network operators and ISPs. Together we create the right solutions — not because they fit all, but because we make them all fit.

## **Quality that lasts**

State-of-the-art FTTH P2P and GPON solutions, crafted with superior quality of design, components, software, and manufacturing, optimize the total cost of ownership.



# CUSTOMER TESTIMONIALS



“Our goal was to provide our customers with the best on the best wireless network standard in the current market: Wi-Fi 6. The new router must deliver maximum performance and coverage, but it must be compatible with our demand for a simple, elegant, minimalist design. Icotera’s ability to unite modern design with high technical capacity is exceptional, and we look forward to offering our customers the benefits that such expertise implies.”

**Carl Gunnstam, Head of Products and Customer Value Proposition  
Telenor, Sweden**



“We spent a lot of time researching different companies and decided to go with Icotera as we could see the potential to make our services more attractive to our customers. The high-quality onebox solution would provide our customers with the maximum speed they needed.”

**Dobrina Penkova, Sales and Marketing Director  
Coolbox, Bulgaria**



“Companies like ours will be buying lots of routers, but they must be top quality. If we have any issues, we cannot wait six months for a technical solution, as we will lose the customer within that timeframe. That is why it was important for us that Icotera’s CPE met – and continues to meet – our customers’ needs for strong Wi-Fi connectivity.”

**Richard Robinson, Managing Director  
Grain Connect, United Kingdom**

# DESIGN THAT MAKES A DIFFERENCE

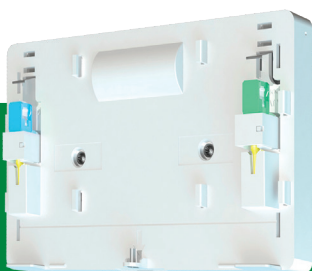
## Unique industrial design



The housing of Icoteria CPEs has been designed with both aesthetics and functionality in mind. In addition to holding the most powerful optical fiber residential gateways on the market, they also set a unique standard for ease of installation and maintenance. The innovative design minimizes the total cost of ownership, delivering significant savings to network operators and ISPs. What's more, our units have been created to seamlessly fit in with the interiors of both modern and traditional households, with a discreet and compact design that still leaves a lasting impression.

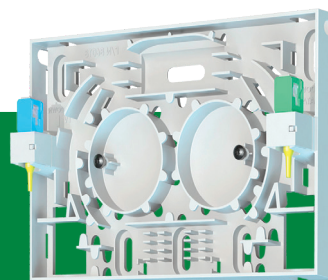
It is not all about the design though - optical fiber networks including the fiber infrastructure that sits within end-user households, benefit from an extremely long life. At Icoteria we appreciate the longevity of this technology, which means that our fiber termination units (FTUs) have also been engineered to support future generations of optical fiber gateways.

Because all Icoteria products come with a power supply unit with either the EU or UK plug, they are a perfect fit for any market. For more information, request a quote from our [Sales department](#).



### ADVANCED SLIDE-ON SYSTEM

The innovative slide-on system built into our optical fiber gateways has been designed to make it simple to change gateways without interfering with the fiber installation. This makes it easy for end-users to replace their gateways, and thereby dramatically cuts the costs for network operators. This system is an integral part of Icoteria FTUs and gateways, allowing for mechanical fixtures and the simple removal of the gateway, as well as facilitating stable and reliable optical interconnections. The mechanical interface is universal in design and will be featured in future generations of gateways, making for easy upgrades, simple maintenance and reduced costs.



### MULTI-PURPOSE FIBER TERMINATION UNIT

To support the expected impressive longevity of fiber installations, Icoteria has designed an advanced, universal Fiber Termination Unit (FTU). This FTU supports all types of fiber installation methodologies and facilitates the use of single or dual-fiber in both cable and tube. The FTU provides sufficient space for winding up and reversing the fibers in accordance with the minimum bending radius requirements of standard fibers. There is also plenty of room for a gas block, fixtures for splicing rods, and a Wavelength Division Multiplex (WDM) filter. This innovative design allows for a high-quality standard of fiber installation while minimizing labour and reducing the cost of installation and maintenance.

# P2P LAYER 2 SWITCH

## i6400-series

Residential Switch

The Icotera i6400 Layer 2 residential fiber switch, prepared for Open Access networks, integrates optical Ethernet-based data transmission with Layer 2-4 functionality, CATV, and USB.

- Ease of use and installation
- Vendor-independent
- Award-winning industrial design
- Lowest total cost of ownership



### Strong hardware base

The Icotera i6400 is a fully-featured Layer 2 fiber switch with an advanced feature set. i6400 is targeted towards open access networks and, in general, operators with a layer 2 demarcation point. All switching is done in hardware, resulting in lightning-fast wire-speed gigabit transfer rates and giving the instant-on feeling for the end-user.

### State-of-the-art features

The i6400 is a complete, feature-full package of Layer 2 functionalities. Gigabit rates and instant forwarding due to powerful switching capability, optical signal auto-detection and support of 100Base-BX-10/20 and 1000Base-BX standards is a clear token of this high-quality switch. The CATV AGC receiver gives the subscriber cable television access with power level configuration and monitoring. To top it off, this fiber switch offers (optionally) individual RF channel plans in a complete filter solution with high-block band attenuation.

### Extensive functionality

The i6400 offers an advanced array of traffic control and shaping features, such as Ethernet and IP filtering up to layer 4, MAC address limiting, IP source guard, and VLAN forwarding and filtering. Agile reduction of traffic overhead is managed by jumbo frame forwarding leading to lower packet rates. Adaptive mechanisms control the quality of the optical signal (CATV and DATA). As a result, users can swiftly zero in on any problems in the upstream network. Ethernet link performance is continuously controlled by 802.3ah OAM instruments that allow prompt resolution of any arising problems. Link state information is propagated on both WAN and LAN side and power consumption is managed with advanced management capabilities.

### Full control and management

The i6400 can easily be managed by protocols such as EOAM, SNMP v1/v2, SSH/Telnet and TR-069. Supported by our zero-touch auto provisioning mechanism it allows for easy and trouble-free daily operations.

# i6400 Residential Switch

## FEATURES

- Vendor-independent
- Award-winning industrial design
- Low power consumption
- Optional operator branding

## NETWORK COMMUNICATION WAN INTERFACE

- Single-mode fiber (ITU-T G.652) SC/PC connector
- 100BaseBX10/20 compliant
- 1000BaseBX10/20 compliant
- Tx: 1310 nm, Rx: 1480 nm – 1600 nm
- Operating distance: 20 km
- Transmit power: -7 dBm to -2 dBm
- Receive sensitivity: -3 dBm to -23 dBm
- Class 1 laser product
- Auto detection of 100 Mbps or 1 Gbps
- 1 x 1G/SFP for the i6407 model

## LAN INTERFACES

- 4 x 1G LAN
- Auto-negotiation for speed and duplex
- Integrated cable tester to detect the following metrics:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

## LAYER 2

- Jumbo 9k packets
- IGMP v1/v2 snooping
- Transparent IPv6 forwarding
- Forwarding up to 2k MAC addresses
- Multicast support
- VLAN translation
- VLAN 802.1Q support
- Port mirroring

## LAYER 3

- Management WAN interface
- OSI Layer 3 and 4 filtering by ACLs

## USB

- 1 x USB 2.0 host port

## CATV (OPTIONAL)

### OPTICAL PARAMETERS

- Input wavelength: 1310 nm – 1550 nm
- Input level range: -9 dBm to 2 dBm
- Optical connector: SC/APC

### RF PARAMETERS

- RF output impedance 75Ω
- Frequency range: 45 MHz – 890 MHz
- Slope (maximum): 5 dB
- RF output level (4% OMI, -8 dBm to 0 dBm): 80 ± 2dBμV
- CNR ≥ 45dB
- CSO ≥ 60dB
- CTB ≥ 60dB
- Management via OMCI

## MANAGEMENT & MONITORING

- IPv4 management interface
- Separate VLAN (optional)
- Access filtering based on IP source network
- Zero-touch provisioning with DHCP, TFTP, HTTP, FTP, and TR-069/TR-181 with HTTPS
- Multicast analyzer
  - Debugging of live multicast streams
  - Provides detailed information from MPEG-TS and RTP layers
- Host simulation tool
- Adjustable outage portal
- 64-bit port counters
  - Unicast
  - Packet size (64, 128, 256, 512, 1024, 1518, 9k)
  - Multicast
  - Broadcast
  - FCS error
  - Align error
  - Undersized
  - Fragmented
  - Too long
  - Good byte
  - Bad byte
  - Overflow
  - Filtered
  - Collisions
- SNMP v1/v2
  - IF-MIB2
  - Icotera private MIB
  - Community protected
  - Traps
- 802.3ah OAM
  - Link performance monitoring
  - Fault detection
  - Loopback testing
- Automatic firmware and configuration update (polling)
- Dual bank flash memory with fail-safe firmware upgrading

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 6.7 W
- Power consumption in idle state: 1.9 W
- Operating temperature: 5°C – 45°C
- Storage temperature: 5°C – 85°C
- Humidity: 5% – 95% (noncondensing)

## PHYSICAL SPECIFICATIONS CASING

- Size: 191 x 132 x 49 mm (W x H x D)
- Weight: 388 g
- WAN LED indicator for the connection status
- VOIP LED indicators for the registration status
- CATV LED indicator for the signal status
- Status LED indicators for link, traffic, and duplex for each LAN port

## FIBER TERMINATIONS

- Slide-on mechanism for easy installation (optional)
- FTU support for:
  - Gas block unit (sold separately)
  - WDM filter (sold separately)
- Blind cover for the FTU (optional)

## INCLUDED IN THE BOX

- Icotera i6400 switch
- 12 V power supply unit
- 2 labels with the PON serial number
- Fiber termination unit (optional)
- Screw (optional)

### i6400 residential switch configuration possibilities



### Gateway interface configurations

Model	Uplink	LAN	USB	CATV	Bottom
i6401-51	BX20	4x	1x	1x	FTU / Patch
i6405-51	BX20	4x	1x	-	FTU / Patch
i6407-50	RJ45 + SFP	4x	1x	-	Patch (Roll-up)

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

# GPON ONT

## i5200-series

Residential Open Access ONT

The Icotera i5200-series residential ONT series is designed as a long-term GPON termination point in a two-box installation. Optional CATV, ITU-T OMCI standards-compliant provisioning, a vendor-independent approach, and easy installation together with Icotera's focus on design and usability make the i5200-series an obvious choice for GPON fiber termination.

- Aesthetic design
- Vendor-independent provisioning and management
- Lowest total cost of ownership
- Designed for long-lifetime installations

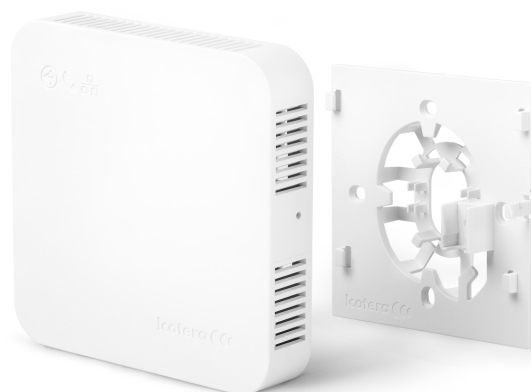


### Full flexibility

Together with the vendor independent provisioning and management, the i520x-20 creates the standards setting for a residential Open Access ONT. The i5200-series is designed for a common patch installation, where the ONT is mounted directly on the wall.



Patch installation



FTU installation

# i5200-series Residential Open Access ONT

## FEATURES

- Vendor-independent GPON ONT
- Hardware forwarding
- Long-lifetime standard interfaces
- Protocol transparent forwarding

## NETWORK COMMUNICATION PON INTERFACE

- GPON 2.488/1.244 Gbps (DS/US)
- The i5205 model includes a PON port on the bottom side of the ONT
- Wavelength: TX: 1310 nm, RX: 1490 nm
- G.984.1,2,3,4,5 compliant
- G.988 compliant
- Multi-vendor support
- Forward Error Correction (FEC)
- Ethernet GEM support
- AES encryption
- Dying gasp
- Class B+ optics

## LAN INTERFACE

- 1 x 1G LAN
- Auto-negotiation for speed and duplex
- The i5205 model includes an integrated cable tester to detect the following metrics:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

## LAYER 2

- 64 byte forwarding at line rate
- Jumbo 9k packets
- Forwarding up to 256 MAC addresses
- VLAN QinQ support
- VLAN 802.1ad support
- Transparent IPv6 forwarding
- Multicast support

## QoS

- Support DBA in SR and NSR modes
- Support for Strict Priority and Weighted Fair Queuing
- Support for TCONTs 1 - 5
- Support up to 32 T-CONTs
- 8 upstream or downstream queues configurable via OMCI
- Class of service based on VLAN-ID, 802.1p
- Marking and remarking of 802.1p
- Marking and remarking of DSCP/ToS

## CATV (optional) OPTICAL PARAMETERS

- Input wavelength: 1550 nm - 1560 nm
- Operating optical input power: -10 dBm to 0 dbm
- Optical connector: SC/APC
- WDM filter

## RF PARAMETERS

- RF output impedance 75Ω
- Frequency range: 45 MHz - 890 MHz
- Slope (maximum): 5 dB
- RF output level (4% OMI, -8 dBm to 0 dBm): 80 ± 2 dBμV
- CNR ≥ 45dB
- CSO ≥ 60dB
- CTB ≥ 60dB
- Management: via OMCI

## VoIP (optional)

- 1 POTS line
- British telephone socket (BS 6312)
- SIP (RFC3261) over IPv4
- 3 REN support
- DTMF signalling
  - SIP INFO
  - Inband
  - Auto
  - RFC 2833
- Caller ID support (DTMF/FSK)
- CLIR
- Advanced dialplan
- Class 5 services
  - Forward all calls
  - Forward on busy
  - Forward on no answer
  - Call waiting
- Codecs:
  - G.711A a-law
  - G.711U μ-law
  - G.722
  - G.729AB
- Codec negotiation
- Modem/Fax detection

## MANAGEMENT & MONITORING

- Zero-touch configuration with OMCI provisioning
- Dual bank flash memory with fail-safe firmware upgrading
- Hardware watchdog

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 3.3 W or 4.4 W (i5205)
- Power consumption in idle state: 2 W or 2.7W (i5205)
- Operating temperature: 5°C - 45°C
- Storage temperature: 5°C - 85°C
- Humidity: 5% - 95% (non-condensing)

## PHYSICAL SPECIFICATIONS CASING

- Size: 126 x 140 x 28 mm (W x H x D) or 101 x 106 x 22 mm (i5205)
- Weight: 222 g or 126 g (i5205)
- Area for an optional PON label with the serial number - 16 x 30 mm on the right side
- Product SN, PON SN, FW version and MAC address label on the bottom side
- PON LED indicator for the connection status
- LAN LED indicator for the link status
- CATV LED indicator for the signal status

## FIBER TERMINATIONS

- Wall mountable
- The i5205 model supports slide-on-mechanism for easy installation or Schuko in-wall installation

## INCLUDED IN THE BOX

- Icotera i5200 ONT
- 12 V power supply unit
- 2 labels with the PON serial number
- The i5205 model includes the FTU for Schuko installation, the optical fibre heat shrink tube, and a screw

## SUPPORTED PLATFORMS

- Nokia ISAM 7330/7360
- Huawei MA5600/5800
- ZTE C320
- The ONT supports other specific platforms. For more information, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

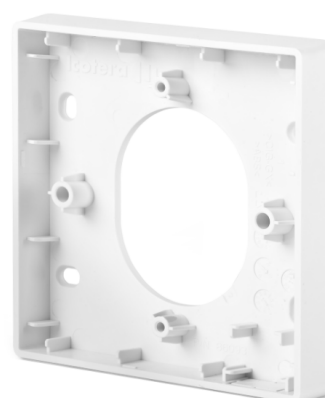
## i5200-series residential GPON ONT configuration possibilities



### Gateway interface configurations

Model	LAN	VoIP	CATV	Termination
i5204-22	1x1G	-	1x	Patch
i5205-00	1x1G	1x	-	FTU
i5208-20	1x1G	-	-	Patch

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).



Wall plate

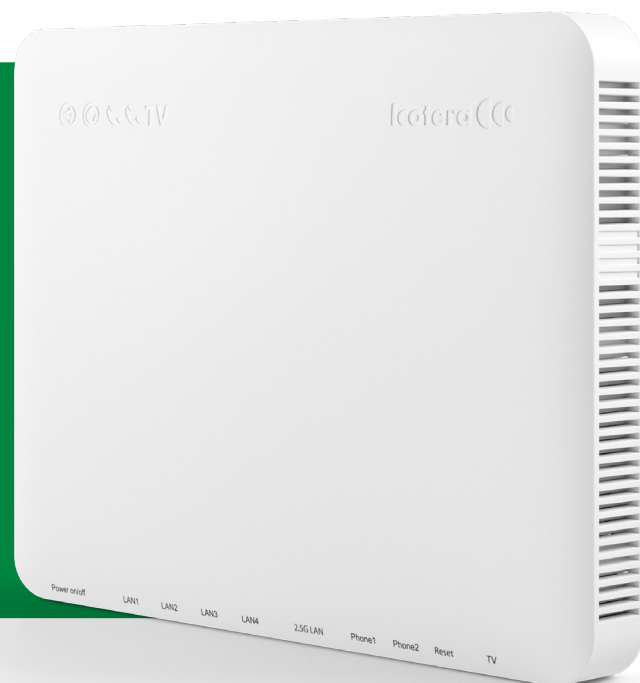
# GPON FTTH ONT

## i5900-series

Residential ONT + Multi-Service Gateway for wholesales network operators

The Icotera i5900 residential ONT integrates optical Ethernet-based gigabit data transmission with Layer 2-4 functionality, VoIP, and optional CATV.

- Ease of use and installation
- OLT vendor independent
- Designed for open access and wholesale deployment
- Award-winning industrial design



### Powerful hardware platform

The Icotera i5900 Fiber-to-the-Home (FTTH) Multi-Service Gateway demonstrates its great strength by bringing together a wide feature set and flawless performance. Its foundation is built on a powerful, cutting-edge dual-core architecture. This, paired with an ASIC for packet forwarding, ensures the platform is always ready to cope with additional tasks while processing VoIP, Gigabit routing of IPv4 with NAT, IPv6 and stateful filtering, and traffic switching or bridging.

### Innovative feature set

The i5900 provides exceptional Layer 2 functionality that can effortlessly handle 16 bridging instances, exceptional Layer 2 and Layer 3 functionality, multiple WAN interfaces, PPPoE and in-band secure management. The CATV AGC receiver offers

broadband cable television services to the subscriber with seamless monitoring and configuration of the power levels. As an optional feature, this fiber gateway offers a complete and customizable filter solution with low-pass filters for individual RF channel plans.

### Ease of control

A great variety of management protocols (such as OMCI v2, SNMP v1/v2, Syslog, SSH, Telnet and TR-069) is integrated and supported, which guarantees effortless control over the i5900. Paired with our fail-proof, zero-touch auto-provisioning mechanism, they provide easy and trouble-free daily operations. To guarantee effortless firmware roll-outs in harsh network environments, the i5900 also comes with dual-bank flash memory.

# i5900 Residential ONT

## FEATURES

- Vendor-independent
- Award-winning industrial design
- Low power consumption
- Optional operator branding

## NETWORK COMMUNICATION PON INTERFACE

- GPON 2.488/1.244 Gbps (DS/US)
- Wavelength: Tx: 1310 nm, Rx: 1490 nm
- G.984.1,2,3,4,5 compliant
- G.988 compliant
- Multi-vendor support
- Forward Error Correction (FEC)
- Ethernet GEM support
- AES encryption
- Dying gasp
- Class B+ optics

## LAN INTERFACES

- 1 x 2.5G LAN
- 4 x 1G LAN
- Auto-negotiation for speed and duplex
- Integrated cable tester to detect the following metrics:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

## LAYER 2

- 16 bridge instances
- 64 byte forwarding at line rate
- Jumbo 9k packets
- IGMP v1/v2/3 snooping
- Transparent IPv6 forwarding
- Forwarding up to 2k MAC addresses
- Multicast support
- VLAN translation
- VLAN 802.1Q support
- Port mirroring

## LAYER 3

- Virtual interfaces
- Multiple WAN interfaces in one router
- 64 byte forwarding at line rate with routing or NAT
- IGMP v1/v2 proxy with fast-leave and monitoring
- Stateful Firewall

- IPv4
  - SNAT, DNAT, DMZ
  - DNS proxy
  - DHCP client and server
- IPv6
  - Prefix delegation
- PPPoE (termination)
- 32k NAT/NAPT flows
- Tracking the connection status in the CLI
- RTSP stateful proxy
- Protocol helpers for: SIP, RTSP, FTP, TFTP, PPTP, L2TP, and IPSec
- Guest access
- Input wavelength: 1550 nm - 1560 nm
- Input level range: -9 dBm to 2 dBm
- Optical connector: SC/APC

## QoS

- Support for Strict Priority and Weighted Fair Queuing
- Support for TCONTS 1 - 5
- Support up to 32 T-CONTS
- 8 upstream or downstream queues configurable via OMCI
- Class of service based on VLAN-ID, 802.1p (configurable via OMCI)
- Marking and remarking of 802.1p (configurable via OMCI)
- Marking and remarking of DSCP/ToS (configurable via OMCI)

## CATV

### Optical parameters

- Input wavelength: 1550 nm - 1560 nm
- Input level range: -9 dBm to 2 dBm
- Optical connector: SC/APC
- WDM filter

### RF parameters

- RF output impedance 75Ω
- Frequency range pass-band: 45 MHz - 890 MHz
- Frequency range Filter1: 430 MHz - 890 MHz
- Frequency range Filter2: 590 MHz - 890 MHz
- Slope (maximum): 5 dB
- RF output level (2.5% OMI, -8 dBm to 0 dBm):  $80 \pm 2 \text{ dB}\mu\text{V}$
- RF output level @ AGC-high mode (2.5% - 4% OMI, -6 dBm to 0 dBm):  $85 \pm 2 \text{ dB}\mu\text{V}$
- CNR  $\geq 45 \text{ dB}$
- CSO  $\geq 60 \text{ dB}$
- CTB  $\geq 60 \text{ dB}$
- Management via OMCI

## VoIP

- 2 separate POTS lines SIP (RFC3261)
- Up to 5 ringer equivalence numbers (REN)
- DTMF signaling
  - SIP INFO
  - Inband
  - Auto
  - RFC 2833
- Caller ID support (DTMF/FSK)
- CLIR
- Advanced dialplan
- Called party (B-Number) manipulation
- Class 5 services
  - Forward all calls
  - Forward on busy
  - Forward on no answer
  - Call waiting
- Codecs:
  - G.711A a-law
  - G.711U  $\mu$ -law
  - G.722
  - G.729
- Codec negotiation
- Modem or fax detection
- G.165 echo cancellation

## MANAGEMENT & MONITORING

- Shared or separate IP interface for management
- L1 and L3 filters for all local services
- SSHv2 with key authentication
- Telnet with authentication
- Configurable web interface for end users:
  - LAN network
  - Port forwarding
  - NAT loopback
  - DMZ
  - DynDNS
  - Status and monitoring
- Zero-touch provisioning with DHCP, TFTP, HTTP, FTP, or TR-069
- TR-069 with TLS, supporting TR-104 for VoIP and TR-181 for network
- SNMP v1/v2
- CLI with auto-completion
- Firmware upgrade from a USB drive
- Extensive debug possibilities
- Packet dumping
- All settings are stored locally in flash memory
- Automatic firmware and configuration update (polling)
- Dual bank flash memory with fail-safe firmware upgrading

- LED brightness configurable by the operator or end-user
- Hardware watchdog
- Wake-on-LAN for the web interface and CLI

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 11 W
- Power consumption in idle state: 5.5 W
- Operating temperature: 5°C - 45°C
- Storage temperature: 5°C - 85°C
- Humidity: 5% - 95% (noncondensing)

## PHYSICAL SPECIFICATIONS CASING

- Size: 190 x 150 x 32 mm (W x H x D)
- Weight: 400 g
- PON LED indicator for the connection status
- LAN LED indicator for the link status
- VOIP LED indicators for the registration status
- CATV LED indicator for the signal status
- Status LED indicators for link, traffic, and duplex for each LAN port
- LED auto off after timeout period

## FIBER TERMINATIONS

- Slide-on mechanism for easy installation
- FTU support for
  - Gas block unit (sold separately)
  - WDM filter (sold separately)
- Blind cover for FTU (optional)

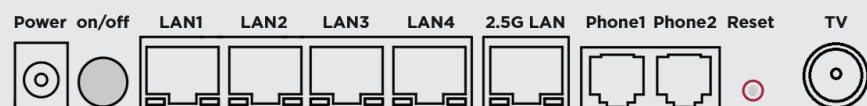
## INCLUDED IN THE BOX

- Icotera i5900 ONT
- 12 V power supply unit
- Fiber termination unit
- Screw (optional)

## SUPPORTED PLATFORMS

- Nokia ISAM 7330/7360
- ZTE C320

### i5900 residential ONT configuration possibilities



### Gateway interface configurations

Model	Uplink	LAN ports	POTS ports	USB 2.0 ports	USB 3.0 ports	Wi-Fi	Antennas	CATV output	Gateway top	Gateway bottom
i5901-00	GPON/MSGW	4x1G 1x2.5G	2	-	-	-	-	High output	Printed English port + logo	FTU

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

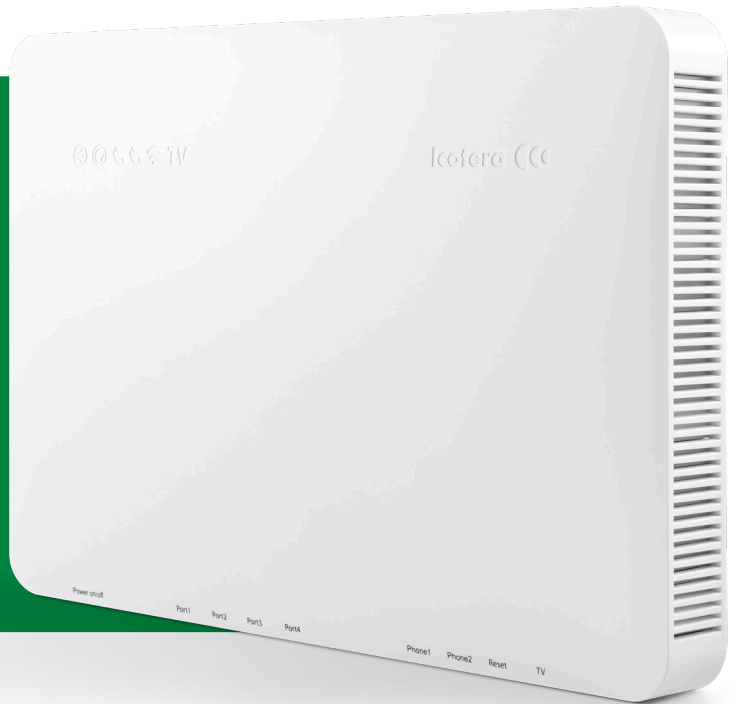
# P2P FTTH GATEWAY

## i6900-series

Residential Multi-Service Gateway

The Icotera i6900 Multi-Service Gateway integrates optical Ethernet-based gigabit data transmission with Layer 2-4 functionality, and CATV.

- Ease of use & installation
- Vendor independent
- Multi-Service Gateway for wholesale network operators
- Award-winning industrial design



### Powerful hardware platform

The Icotera i6900 Fiber-to-the-Home (FTTH) Multi-Service Gateway demonstrates its great strength by bringing together a wide feature set and flawless performance. Its foundation is built on a powerful, cutting-edge dual-core architecture. This, paired with an ASIC for packet forwarding, ensures the platform is always ready to cope with additional tasks while processing VoIP, Gigabit routing of IPv4 with NAT, IPv6 and stateful filtering, traffic switching and bridging.

### Innovative feature set

The i6900 provides exceptional Layer 2 functionality that can effortlessly handle 16 bridging instances, multiple WAN interfaces, PPPoE and in-band secure management. The CATV AGC receiver offers

broadband cable-television services to the subscriber with seamless monitoring and configuration of the power levels. As an optional feature, this FTTH gateway offers a complete and customizable filter solution with low-pass filters for individual RF channel plans.

### Ease of control

A great variety of management protocols such as SNMP v1/v2, Syslog, SSH, Telnet and TR-069 is integrated and supported, which guarantees effortless control over the i6900. Paired with our fail-proof, zero-touch auto provisioning mechanism, they provide easy and trouble-free daily operations. To guarantee trouble-free firmware roll-outs in harsh network environments, the i6900 also comes with dual-bank flash memory.

# i6900 Multi-Service Gateway

## FEATURES

- Vendor-independent
- Award-winning industrial design
- Low power consumption
- Optional operator branding

## NETWORK COMMUNICATION WAN INTERFACE

- Single-mode fiber (ITU-T G.652) SC/PC connector
  - 100BaseBX10/20 compliant
  - 1000BaseBX10/20 compliant
- Tx: 1310 nm, Rx: 1480 nm – 1600 nm
- Full-duplex transmission
- Operating distance: 20 km
- Transmit power: -7 dBm to -2 dBm
- Receive sensitivity: -3 dBm to -23 dBm
- Class 1 laser product
- Auto detection of 100 Mbps or 1 Gbps

## LAN INTERFACES

- 4 x 1G LAN
- Auto-negotiation for speed and duplex
- Integrated cable tester to detect the following metrics:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

## LAYER 2

- 16 bridge instances
- 64 byte forwarding at line rate
- Jumbo 9k packets
- IGMP v1/v2 snooping
- Transparent IPv6 forwarding
- Forwarding up to 2k MAC addresses
- Multicast support
- VLAN translation
- VLAN 802.1Q support
- Port mirroring
- Advanced QoS for wholesale support

## LAYER 3

- Virtual interfaces
- Multiple WAN interfaces in one router
- 64 byte forwarding at line rate with routing/NAT
- IGMP v1/v2 proxy with fast-leave and monitoring
- Stateful firewall
- IPv4
  - SNAT, DNAT, DMZ
  - DNS proxy
  - DHCP client and server
- IPv6
  - Prefix delegation
- PPPoE (termination)
- 32K NAT/NAPT flows
- Tracking the connection status in the CLI
- RTSP stateful proxy
- Protocol helpers for: SIP, RTSP, FTP, TFTP, PPTP, L2TP, and IPSec
- Guest access

## QoS

- Support for Strict Priority and Weighted Fair Queuing (available for Layer2 mode)
- 8 upstream or downstream queues (available for Layer2 mode)
- Class of service based on VLAN-ID, 802.1p (available for Layer2 mode)
- Marking and remarking of 802.1p (available for Layer2 mode)
- Marking and remarking of DSCP/ToS (available for Layer2 mode)

## CATV (OPTIONAL)

### OPTICAL PARAMETERS

- Input wavelength: 1550 nm – 1560 nm
- Input level range: -9 dBm to 2 dBm
- Optical connector: SC/APC

### RF PARAMETERS

- RF output impedance 75Ω
- Frequency range pass-band: 45 MHz – 890 MHz
- Frequency range Filter1: 430 MHz – 890 MHz
- Frequency range Filter2: 590 MHz – 890 MHz
- Slope (maximum): 5 dB
- RF output level (2.5% - 4% OMI, -8 dBm to 0 dBm): 80 ± 2dBμV
- RF output level @ AGC-high mode (2.5% - 4% OMI, -6 dBm to 0 dBm): 85 ± 2dBμV
- CNR ≥ 45dB
- CSO ≥ 60dB
- CTB ≥ 60dB
- Management via OMCI

## VoIP (optional)

- 2 separate POTS lines SIP (RFC3261)
- Up to 5 ringer equivalence numbers (REN)
- DTMF signaling
  - SIP INFO
  - Inband
  - Auto
  - RFC 2833
- Caller ID support (DTMF/FSK)
- CLIR
- Advanced dialplan
- Called party (B-Number) manipulation
- Class 5 services
  - Forward all calls
  - Forward on busy
  - Forward on no answer
  - Call waiting
- Codecs:
  - G.711A a-law
  - G.711U μ-law
  - G.722 - G.729
- Codec negotiation
- Modem or fax detection
- G.165 echo cancellation

## MANAGEMENT & MONITORING

- Shared or separate IP interface for management
- L1 and L3 filters for all local services
- SSHv2 with key authentication
- Telnet with authentication
- Configurable web interface for end users:
  - LAN network
  - Port forwarding
  - NAT loopback
  - DMZ
  - DynDNS
  - Status and monitoring
- Zero-touch provisioning with DHCP, TFTP, HTTP, FTP, or TR-069
- TR-069 with TLS:
  - TR-104 (VoIP)
  - TR-181 (Network)
- SNMP v1/v2
- CLI with auto-completion
- Firmware upgrade from a USB drive
- Extensive debug possibilities
- Packet dumping
- All settings are stored locally in flash memory
- Automatic firmware and configuration update (polling)
- Dual bank flash memory with fail-safe firmware upgrading
- LED brightness configurable by the operator or end-user

- Hardware watchdog
- Wake-on-LAN for the web interface and CLI

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 16.7 W
- Power consumption in idle state: 5.5 W
- Operating temperature: 5°C – 45°C
- Storage temperature: 5°C – 85°C
- Humidity: 5% – 95% (noncondensing)

## PHYSICAL SPECIFICATIONS

### CASING

- Size: 235 x 164 x 36 mm (W x H x D)
- Weight: 462 g
- WAN LED indicator for the connection status
- LAN LED indicator for the link status
- VOIP LED indicators for the registration status
- CATV LED indicator for the signal status
- Status LED indicators for link, traffic, and duplex for each LAN port
- LED auto off after timeout period

## FIBER TERMINATIONS

- Slide-on mechanism for easy installation
- FTU support for
  - Gas block unit (sold separately)
  - WDM filter (sold separately)
- Blind cover for FTU (optional)

## INCLUDED IN THE BOX

- Icotera i6900 gateway
- 12 V power supply unit
- 2 labels with the PON serial number

## i6900 multi-service gateway configuration possibilities



### Gateway interface configurations

Model	Uplink	LAN ports	POTS ports	Micro SD card	Wi-Fi	Antennas	CATV output	Gateway top	Gateway bottom
i6901-20	P2P MSGW	4xGE	2x	-	-	-	1x	Printed: English ports + logo	FTU
i6902-20	P2P MSGW	4xGE	-	-	-	-	1x	Printed: English ports	FTU
i6905-20	P2P MSGW	4xGE	2x	-	-	-	-	Printed: English ports + logo	FTU

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

# RESIDENTIAL XGS-PON ONT

## i7208

Open Access XGS-PON ONT



The Icotera i7208 residential ONT is designed as a long-term XGS-PON termination point in a two-box installation. The ITU-T OMCI standards-compliant provisioning, a vendor-independent approach, and easy installation together with Icotera's focus on design and usability make the i7208 an obvious choice for XGS-PON fiber termination.

- Aesthetic design
- Vendor-independent provisioning and management
- Lowest total cost of ownership
- Designed for long-lifetime installations
- 2.5 Gigabit fiber termination
- BBF.247 certification



### Future proof solution

The i7208 series is an XGS-PON Layer 2 termination device with a single 2.5 Gbps LAN port. This solution makes it cost-effective for operators to implement two-box installations, as the i7208 is compatible with any Layer 3 device.

The ONT supports securely encrypted and signed FW, environmentally friendly materials, and is certified with the BBF.247 certification, fulfilling the latest test plans developed by the Broadband Forum.



# i7208 Residential XGS-PON ONT

## FEATURES

- Vendor-independent XGS-PON ONT
- Hardware forwarding
- Long-lifetime standard interfaces
- Protocol transparent forwarding

## NETWORK COMMUNICATION PON INTERFACE

- WDM filter that supports CATV and XGS-PON signal coexistence
- ITU-T G.9807.1 compliant
- Wavelength: US 1260 nm - 1280 nm, DS 1575 nm - 1580 nm
- 10 Gbps symmetric line rate
- G.988 compliant
- Forward Error Correction (FEC)
- AES encryption
- Dying gasp
- Class N1 optics

## LAN INTERFACE

- 1 x 2.5G LAN
- Auto-negotiation for speed and duplex

## LAYER 2

- 64 byte forwarding at line rate
- Jumbo 9k packets
- Forwarding up to 256 MAC addresses
- VLAN QinQ support
- VLAN 802.1ad support
- Transparent IPv6 forwarding
- Multicast support

## QoS

- Support DBA in SR and NSR modes
- Support for Strict Priority and Weighted Fair Queuing
- Support for TCONTs 1 - 5
- Support up to 32 T-CONTs
- 8 upstream or downstream queues configurable via OMCI
- Class of service based on VLAN-ID, 802.1p
- Marking and remarking of 802.1p
- Marking and remarking of DSCP/ToS

## MANAGEMENT & MONITORING

- Zero-touch configuration with OMCI provisioning
- Dual bank flash memory with fail-safe firmware upgrading
- Hardware watchdog

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 4.5 W
- Power consumption in idle state: 3.5 W
- Operating temperature: 5°C - 45°C
- Storage temperature: 5°C - 85°C
- Humidity: 5% - 95% (noncondensing)

## PHYSICAL SPECIFICATIONS CASING

- Size: 126 x 130 x 28 mm (W x H x D)
- Weight: 188 g
- Area for an optional PON label with the serial number - 16 x 30 mm on the right side
- Product SN, PON SN, FW version and MAC address label on the bottom side
- PON LED indicator for the connection status
- LAN LED indicator for the link status

## FIBER TERMINATIONS

- Wall mountable

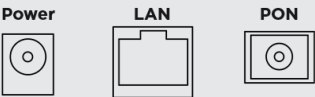
## INCLUDED IN THE BOX

- Icotera i7208 ONT
- 12 V power supply unit
- 2 labels with the PON serial number

## SUPPORTED PLATFORMS

- Nokia ISAM 7330/7360
- Huawei MA5600/5800
- The ONT supports other specific platforms. For more information, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

### i7208 residential XGS-PON ONT



### ONT interface configuration

Model	LAN	Termination
i7208-00	1 x 2.5G	Patch

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

# XGS-PON FTTH ONT

## i7400-series

Residential ONT for wholesale network operators



The Icotera i7400 residential ONT integrates optical Ethernet-based gigabit data transmission with Layer 2 functionality and optional CATV.

- Ease of use and installation
- OLT vendor-independent
- Designed for Open Access or wholesale deployment
- Award-winning industrial design
- 10 Gbps LAN port
- BBF.247 certification



### Future proof solution

The i7400 series is an XGS-PON L2 termination with full port flexibility and multi-10G + multi-1G ports. This solution allows operators to implement wholesale solutions in a flexible way without compromising on performance and develop a future-proof home setup. The ONT supports securely encrypted and signed FW, environmentally friendly materials, and is certified with the BBF.247 certification, fulfilling the latest test plans developed by the Broadband Forum.

### Ease of assembly

The i7400 series comes with the universal Fiber Termination Unit from Icotera that supports all types of fiber installation methodologies and facilitates the use of single or dual-fiber in both cable and tube. The FTU set consists of only 2 parts. The top cover simply locks on the FTU base and stays firmly secured. There is no need to use screws, pins, or other separate elements to join both FTU parts. SCA caps are integrated with the cover - no risk of losing separate caps. Pre-cut kerfs simplify making openings for fiber - no need to drill holes in the sides of the FTU cover.



**FTU installation**



**Patch installation**

# i7400 Residential ONT

## FEATURES

- Vendor-independent XGS-PON ONT
- Hardware forwarding
- Long-lifetime standard interfaces
- Protocol transparent forwarding

## NETWORK COMMUNICATION PON INTERFACE

- WDM filter that supports CATV and XGS-PON signal coexistence
- ITU-T G.9807.1 compliant
- Wavelength: US 1260 nm – 1280 nm, DS 1575 nm – 1580 nm
- 10 Gbps symmetric line rate
- G.988 compliant
- Forward Error Correction (FEC)
- AES encryption
- Dying gasp
- Class N1 optics

## LAN INTERFACES

- 1 x 10/5/2.5 Gbps LAN
- 4 x 1 Gbps LAN
- Auto-negotiation for speed and duplex

## LAYER 2

- 64 byte forwarding at line rate
- Jumbo 9k packets
- Forwarding up to 256 MAC addresses
- VLAN QinQ support
- VLAN 802.1ad support
- Transparent IPv6 forwarding
- Multicast support

## QoS

- Support DBA in SR and NSR modes
- Support for Strict Priority and Weighted Fair Queuing
- Support for TCONTs 1 - 5
- Support up to 32 T-CONTs
- 8 upstream or downstream queues configurable via OMCI
- Class of service based on VLAN-ID, 802.1p
- Marking and remarking of 802.1p
- Marking and remarking of DSCP/ToS

## CATV (OPTIONAL)

### Optical parameters

- Input wavelength: 1550 nm – 1560 nm
- Input level range: -9 dBm to 2 dBm
- Optical connector: SC/APC

### RF parameters

- RF output impedance 75Ω
- Frequency range pass-band: 45 MHz – 890 MHz
- Frequency range Filter1: 430 MHz – 890 MHz
- Frequency range Filter2: 590 MHz – 890 MHz
- Slope (maximum): 5 dB
- RF output level (4% OMI, -8 dBm to 0 dBm): 80 ± 2dBμV
- CNR ≥ 45dB
- CSO ≥ 60dB
- CTB ≥ 60dB
- Management via OMCI

## MANAGEMENT & MONITORING

- Zero-touch configuration with OMCI provisioning
- Dual bank flash memory with fail-safe firmware upgrading
- Hardware watchdog

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 5.5 W
- Power consumption in idle state: 3.6 W
- Operating temperature: 5°C – 45°C
- Storage temperature: 5°C – 85°C
- Humidity: 5% – 95% (non-condensing)

## PHYSICAL SPECIFICATIONS CASING

- Size: 190 x 150 x 33 mm (W x H x D)
- Weight: 400 g
- Area for an optional PON label with the serial number - 16 x 30 mm on the right side
- Product SN, PON SN, FW version and MAC address label on the bottom side
- PON LED indicator for the connection status
- LAN LED indicator for the link status

## FIBER TERMINATIONS

- Slide-on mechanism for easy installation

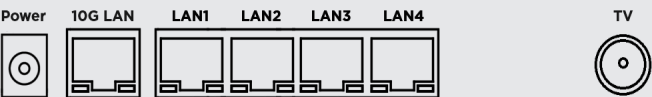
## INCLUDED IN THE BOX

- Icotera i7400 ONT
- 12 V power supply unit
- Fiber termination unit (FTU)
- 2 labels with the PON serial number

## SUPPORTED PLATFORMS

- Nokia ISAM 7330/7360
- Huawei MA5600/5800
- The ONT supports other specific platforms. For more information, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

## i7400 residential ONT configuration possibilities



## Gateway interface configurations

Model	Uplink	1G LAN port	10G LAN port	CATV output	Installation
i7404-00	XGS-PON	4x	1x	High output	FTU
i7408-00	XGS-PON	4x	1x	-	FTU

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

# Wi-Fi 6 ETHERNET ROUTER

## i4880-series

Residential Wi-Fi 6 Router

The i4880 ethernet gateway takes performance to the next level with a 2.5 Gbps IPv4 and IPv6 routing engine and premium Wi-Fi 6 with a configuration of 8x8 + 4x4. Special attention has been put into creating a beautiful, minimalistic, yet fully flexible design that fully matches the modern home. Full backward compatibility for WAN/LAN, VoIP, and Wi-Fi makes the i4880 the obvious choice for a high-end residential router for all serious service providers.

- Premium Wi-Fi 6 configuration
- Non-blocking 2.5 Gbps architecture
- Modern Scandinavian design
- Fully managed



Model: i4883

### Flexible installation

The i4880 is designed for all types of installations, both wall-mount and free-standing. In any installation, the i4880 allows for practical cable management, easy access to user-configurable buttons and intuitive LEDs for easy troubleshooting.

### Easy cable management

With all interfaces hidden practically on the back of the i4880, all cables can be managed in an easy way regardless of the installation method. Ports are coloured for intuitive installation for first-time users.

# i4880 Residential Wi-Fi 6 Router

## FEATURES

- Enterprise 8x8+4x4 Wi-Fi 6 configuration
- Vendor-independent
- Non-blocking 2.5 Gbps architecture
- Wi-Fi link rate up to 9.8 Gbps
- Low power consumption
- Optional operator branding
- Customized firmware

## NETWORK COMMUNICATION WAN INTERFACE

- 2.5G WAN
- Full-duplex transmission
- Auto-negotiation for speed and duplex
- Optional Energy-Efficient Ethernet (EEE)

## LAN INTERFACE

- 1x 2.5G LAN
- 2x 1G LAN
- Auto-negotiation for speed and duplex
- Integrated cable tester to detect the following metrics:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

## Wi-Fi INTERFACES

- Advanced WMM designed for long-range and resilient video and voice delivery
- Authentication methods:
  - Open
  - WPA2
  - WPA3-Personal
  - WPA3-Personal Transition Mode
- Up to 8 SSIDs
- MAC address filtering
- Beamforming
- 802.11v band steering and client roaming
- Neighbour scanning
- Advanced channel selection
- Software Tx power control
- Wireless client isolation
- Meshing — a built-in controller for Icotera i3560 access points

### Wi-Fi 6

- 802.11ax 8x8:8 5 GHz + 4x4:4 2.4 GHz
- BW support: 20 MHz, 40 MHz, 80 MHz
- Modulation support: MCS 0-11
- Downlink MU-MIMO and OFDMA
- Up to 1024-QAM modulation
- Support for unequal MCS
- Support for LDPC, STBC
- Support for target wake time (TWT)

### Wi-Fi 5

- 802.11ac Wave-2 8x8:8
- BW support: 20 MHz, 40 MHz, 80 MHz, 160 MHz
- MU-MIMO
- Support for LDPC, STBC
- Modulation support: MCS 0-11
- Up to 1024-QAM modulation

### Wi-Fi 4

- 802.11b/g/n 4x4:4
- MIMO
- Modulation support: MCS 0-76

## LAYER 2

- 16 bridge instances
- 64 byte forwarding at line rate
- Jumbo 9k packets
- IGMP v1/v2 snooping
- 802.1p marking
- VLAN support
- Wi-Fi support
- Transparent IPv6 forwarding
- DHCP relay with option 82
- 32k address entries
- Flexible L1 and L3 access control lists

## LAYER 3

- Virtual interfaces
- Multiple WAN interfaces in one router
- 64 byte forwarding at line rate with routing/NAT
- IGMP v1/v2 proxy with fast-leave and monitoring
- Stateful IPv4 and IPv6 firewall
- Supports routing for IPv4 and IPv6
- IPv4:
  - SNAT, DNAT, DMZ
  - DNS proxy
  - DHCP client and server
- IPv6:
  - Prefix delegation

- PPPoE (termination)
- Tracking the connection status in the CLI
- 32k HW connection tracking
- RTSP stateful proxy
- Protocol helpers for: SIP, RTSP, FTP, TFTP, PPTP, L2TP, and IPsec
- Guest access

## USB

- 1 x USB 2.0 host port (reserved for future use)

## VoIP (optional)

- 2 separate POTS lines SIP (RFC3261)
- Up to 5 ringer equivalence numbers (REN)
- DTMF signalling
  - SIP INFO
  - Inband
  - Auto
  - RFC 2833
- Caller ID support (DTMF/FSK)
- CLIR
- Advanced dialplan
- Called party (B-Number) manipulation
- Class 5 services:
  - Forward all calls
  - Forward on busy
  - Forward on no answer
  - Call waiting
- Codecs:
  - G.711A a-law
  - G.711U  $\mu$ -law
  - G.722
  - G.729
- Codec negotiation
- Modem or fax detection
- G.165 echo cancellation

## MANAGEMENT AND MONITORING

- Shared or separate IP interface for management
- Configurable web interface for end users:
  - PPPoE WAN
  - Wi-Fi
  - Guest network
  - LAN network
  - Port forwarding
  - NAT loopback
  - DMZ
  - DynDNS

- Status and monitoring
- Monitoring via telemetry streaming (ICONS)
- L1 and L3 filters for all local services
- SSHv2 with key authentication
- Zero-touch provisioning with DHCP and TR-069
- TR-069 with TLS:
  - TR-104 (VoIP)
  - TR-181 (Network)
- SNMP v1/v2
- Extensive debug possibilities
- Packet dumping
- All settings are stored locally in flash memory
- Dual bank flash memory with fail-safe firmware upgrading
- LED indicators brightness configurable by operators or end users
- Hardware watchdog
- Wake-on-LAN for the web interface and CLI
- L1 and L3 filters for all local services
- TR-143 for performance data and throughput statistics

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 31.7 W
- Power consumption in idle state: 17.8 W
- Operating temperature: 5°C – 45°C
- Storage temperature: -20°C – 85°C
- Humidity: 5% – 95% (noncondensing)

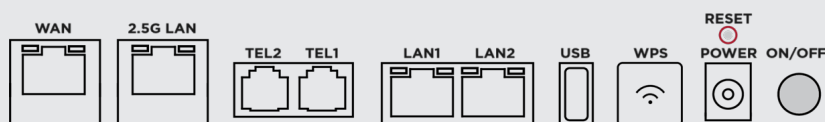
## PHYSICAL SPECIFICATIONS CASING

- Size: 234 x 177 x 53 mm (W x H x D)
- Weight: 844 g without VoIP, 869 g with VoIP
- Front LED indicators configurable by operators or end users.
  - Power or WAN status such as link or provisioning
  - VoIP
  - Wi-Fi
- Status LED indicators for link, traffic, and duplex for each LAN port
- WPS button

## INCLUDED IN THE BOX

- Icotera i488x gateway
- 12 V power supply unit
- Additional label with Wi-Fi credentials
- Ethernet cable

### i4880 configuration possibilities



#### Gateway interface configurations

Model	Uplink	LAN	USB	POTS	Wi-Fi	Antennas
i4882-00	2.5G WAN	1x 2.5G LAN 2x 1G LAN	1 x USB 2.0	-	Wi-Fi 6	8x8 + 4x4
i4883-00	2.5G WAN	1x 2.5G LAN 2x 1G LAN	1 x USB 2.0	2x	Wi-Fi 6	8x8 + 4x4

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

# Wi-Fi 5 ETHERNET ROUTER

## i4850-series

Residential Router

The Icotera i4850 residential Ethernet router integrates Ethernet-based gigabit data transmission with Layer 2-4 functionality, VoIP, 802.11ac and 802.11b/g/n Wi-Fi, and USB 3.0.

- State of the art 4x4 Wave 2 MU-MIMO Wi-Fi
- Ease of use and installation
- Vendor independent
- Award-winning industrial design
- Lowest total cost of ownership



### Powerful hardware architecture

The Icotera i4850 Ethernet router demonstrates its great strength by bringing together a wide feature set and flawless performance. Its foundation is built on a powerful, cutting-edge dual-core architecture. This, paired with an ASIC for packet forwarding, ensures the platform is always ready to cope with additional tasks while processing VoIP, Gigabit routing of IPv4 with NAT, IPv6 and stateful filtering, traffic switching/bridging and high-speed Wi-Fi.

### Next-generation Wi-Fi solution

With Wi-Fi becoming the preferred communication technology inside the home, the need for fast and stable wireless connections is becoming ever more important. The i4850 delivers not only backwards compatibility with any 802.11a/b/g/n Wi-Fi-certified device, but also includes the very latest standard — 802.11ac. With the added 802.11ac Wave 2 solution, the i4850 is capable of delivering 1733+300 Mbps and throughput which combined with MU-MIMO can deliver more than 1 Gbps in real home and office environments.

### Innovative feature set

The i4850 provides exceptional Layer 2 functionality that can effortlessly handle 16 bridging instances, 8 Wi-Fi access points over 2 radios, multiple WAN interfaces, PPPoE and in-band secure management.

### Ease of control

A great variety of management protocols (such as SNMP v1/v2, Syslog, SSH, Telnet, and TR-069) is integrated and supported, which guarantees effortless control over the i4850. Paired with our fail-proof, zero-touch auto-provisioning mechanism, they provide easy and trouble-free daily operations. To guarantee trouble-free firmware roll-outs, in harsh network environments, the i4850 also comes with dual-bank flash memory.

# i4850 Residential Router

## FEATURES

- Best-in-class Wi-Fi 5 solution
- Vendor-independent
- Award-winning industrial design
- Low power consumption
- Optional operator branding
- Customized firmware
- Wi-Fi link rate up to 2.1 Gbps

## NETWORK COMMUNICATION WAN INTERFACE

- 1G WAN
- Full-duplex transmission
- Auto-negotiation for speed and duplex
- Optional Energy-Efficient Ethernet (EEE)

## LAN INTERFACE

- 4x 1G LAN
- Auto-negotiation for speed and duplex
- Integrated cable tester to detect the following metrics:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

## Wi-Fi INTERFACES

- Authentication methods:
  - Open
  - WEP64
  - WEP128
  - WPA
  - WPA2
- MAC address filtering
- Advanced channel selection
- Software Tx power control
- Wireless client isolation
- Band steering
- Neighbour scanning
- Meshing - a built-in controller for Icotera i3550 access points
- Client roaming
- Airtime management

## Wi-Fi 5

- 4x4 Wave 2 MU-MIMO
- 5 GHz band with 256-QAM and 80 MHz
- Beamforming
- LDPC + STBC

## Wi-Fi 4

- 802.11b/g/n 2x2:2 MIMO
- 2.4 GHz band with 64-QAM and 40 MHz

## LAYER 2

- 16 bridge instances
- 64 byte forwarding at line rate
- Jumbo 9k packets
- IGMP v1/v2 snooping
- 802.1p marking
- VLAN support
- Wi-Fi support
- Transparent IPv6 forwarding
- DHCP relay with option 82
- 2k address entries
- Flexible L1 and L3 access control lists

## LAYER 3

- Virtual interfaces
- Multiple WAN interfaces in one router
- 64 byte forwarding at line rate with routing/NAT
- IGMP v1/v2 proxy with fast-leave and monitoring
- Stateful Firewall
- IPv4:
  - SNAT, DNAT, DMZ
  - DNS proxy
  - DHCP client and server
- IPv6:
  - Prefix delegation
- Supports routing for IPv4 and IPv6
- PPPoE (termination)
- Tracking the connection status in the CLI
- RTSP stateful proxy
- Protocol helpers for: SIP, RTSP, FTP, TFTP, PPTP, L2TP, and IPSec
- Up to 32K NAT/NAPT flows depending on the scenario used (IPv4, DS-Lite, PPPoE, SIP, L2TP)
- Guest access

## USB

- 1 x USB 3.0 host port (reserved for future use)
- 1 x USB 2.0 host port (reserved for future use)

## QoS

- Support for 8 configurable upstream queues
- Layer 2 and 3 QoS features:
  - Packet classification marking
  - Queuing
  - Scheduling
  - Rate-limiting
- Marking and queuing with 802.1p, ToS, DiffServ classification
- Globally shared rate-limiting queues

## VoIP (OPTIONAL)

- 2 separate POTS lines SIP (RFC3261)
- Up to 5 ringer equivalence numbers (REN)
- DTMF signaling:
  - SIP INFO
  - Inband
  - Auto
  - RFC 2833
- Caller ID support (DTMF/FSK)
- CLIR
- Advanced dialplan
- Called party (B-Number) manipulation
- Class 5 services:
  - Forward all calls
  - Forward on busy
  - Forward on no answer
  - Call waiting
- Codecs:
  - G.711A a-law
  - G.711U  $\mu$ -law
  - G.722
  - G.729
- Codec negotiation
- Modemo or fax detection
- G.165 echo cancellation

## MANAGEMENT & MONITORING

- Shared or separate IP interface for management
- Configurable web interface for end users:
  - PPPoE WAN
  - Wi-Fi
  - Guest network
  - LAN network
  - Port forwarding
  - NAT loopback
  - DMZ
  - DynDNS
  - Status and monitoring

- Monitoring via telemetry streaming (ICONS)
- L1 and L3 filters for all local services
- SSHv2 with key authentication
- Zero-touch provisioning with DHCP, TFTP, HTTP, FTP, or TR-069
- TR-069 with TLS:
  - TR-104 (VoIP)
  - TR-181 (Network)
- SNMP v1/v2
- CLI with auto-completion
- Extensive debug possibilities
- Packet dumping
- All settings are stored locally in flash memory
- Automatic firmware and configuration update (polling)
- Dual bank flash memory with fail-safe firmware upgrading
- LED indicators brightness configurable by operators or end users
- Hardware watchdog
- Wake-on-LAN for the web interface and CLI

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 26.5 W
- Power consumption in idle state: 6.8 W
- Operating temperature: 5°C - 45°C
- Storage temperature: -20°C - 85°C
- Humidity: 5% - 95% (non-condensing)

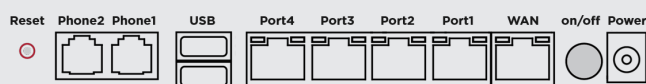
## PHYSICAL SPECIFICATIONS CASING

- Weight: 500 g
- Size: 215 x 215 x 50 mm (W x H x D)
- Front LED indicators configurable by operators or end users.
  - Power or WAN status such as link, traffic, or provisioning
  - VoIP ports
  - Wi-Fi
- Status LED indicators for link, traffic, and duplex for each LAN port
- WPS button

## INCLUDED IN THE BOX

- Icotera i4850 gateway
- 12 V power supply unit
- Additional label with Wi-Fi credentials
- Ethernet cable

## Icotera i4850 residential router configuration possibilities



### Gateway interface configurations

Model	Uplink	LAN	USB	POTS	Wi-Fi	Antennas
i4850-20	1G WAN	4x 1G LAN	2x	2x	802.11b/g/n + 802.11ac	2x2 + 4x4 Int.
i4850-25	1G WAN	4x 1G LAN	-	-	802.11b/g/n + 802.11ac	2x2 + 4x4 Int.

For more information and feature requests, contact our Sales department at [sales@icotera.com](mailto:sales@icotera.com).

# Wi-Fi 6 ACCESS POINT

## i3560-series

Residential Wi-Fi Access Point

The i3560 Wi-Fi access point takes performance to the next level with best-in-class Wi-Fi 6, the premium configuration of 5x5 + 4x4 guarantees maximum range and performance in all cases. To interconnect with the rest of the network, the i3560 features 2 gigabit LAN ports. Special attention has been put into creating a beautiful, minimalistic yet flexible design, which fully matches the modern home.

- Best possible Wi-Fi 6 configuration
- Non-blocking offloaded architecture
- Modern Scandinavian design
- Fully managed



### Flexible installation

The i3560 is designed for both wall mount and free-standing. In any configuration, it allows for practical cable management, easy access to user-configuration buttons, and intuitive LEDs for easy troubleshooting.



### Easy cable management

With all interfaces hidden practically on the back of the i3560, all cables can be managed in an easy way regardless of the installation method. Ports are coloured for intuitive installation for first-time users.

# i3560 Residential Wi-Fi 6 Access Point

## FEATURES

- Best-in-class Wi-Fi 6 solution
- Award-winning industrial design
- Optional operator branding
- Customized firmware
- Wi-Fi link rate up to 6.2 Gbps

## NETWORK COMMUNICATION LAN INTERFACE

- 2x 1G LAN
- Auto-negotiation for speed and duplex
- 64-byte forwarding at line rate

## LAYER 2

- IGMP v1/v2 snooping
- Transparent IPv6 forwarding
- 2k address entries

## Wi-Fi INTERFACES

- Advanced WMM designed for long-range and resilient video and voice delivery
- Authentication methods:
  - Open
  - WPA2
  - WPA3-Personal
  - WPA3-Personal Transition Mode
- Up to 8 SSIDs
- Beamforming
- Band steering and client roaming
- Neighbour scanning
- Advanced channel selection
- Advanced dynamic frequency selection (DFS) mechanism
- Software Tx power control
- Wireless client isolation

### Wi-Fi 6

- 802.11ax 5x5:5 5 GHz + 4x4:4 2.4GHz
- BW support: 20 MHz, 40 MHz, 80 MHz
- Modulation support: MCS 0-11
- MU-MIMO and OFDMA
- Up to 1024-QAM modulation
- Support for unequal MCS
- Support for LDPC, STBC

### Wi-Fi 5

- 802.11ac Wave-2 5x5:5
- BW support: 20 MHz, 40 MHz, 80 MHz, 160 MHz
- Modulation support: MCS 0-11
- MU-MIMO
- Up to 1024-QAM modulation
- Support for LDPC, STBC

### Wi-Fi 4

- 802.11b/g/n 4x4:4
- MIMO
- Modulation support: MCS 0-76

## MANAGEMENT & MONITORING

- Monitoring via telemetry streaming (ICONS) when the access point is connected to the Icotera i4882 or Icotera i4883 gateway
- L1-L3 filters for all local services
- SSHv2 with key authentication
- Web interface for end users:
  - Wi-Fi
  - LAN network
  - Firmware upgrade
  - Status and monitoring
- Zero-touch configuration with TR-069 and TR-181 or via the local gateway
- All settings are stored locally in flash memory
- Dual bank flash memory with fail-safe firmware upgrading

## OPERATIONAL SPECIFICATIONS

- DC 12 V input  $\pm 10\%$
- Power consumption maximum: 26 W
- Power consumption in standby mode: 13 W
- Operating temperature: 0 – 45°C
- Storage temperature: -20 – 85°C
- Humidity: 5% – 95% (non-condensing)

## PHYSICAL SPECIFICATIONS CASING

- Size: 160 x 162 x 42 mm (W x H x D)
- Weight: 460 g
- Front RGB LED indicator (power or WAN status such as link, traffic, or provisioning)
- Status LED indicators for link, traffic, and duplex for each LAN port
- LED auto off
- WPS button

## INCLUDED IN THE BOX

- Icotera i3560 access point
- 12 V power supply unit
- Additional label with Wi-Fi credentials
- Ethernet cable

### Icotera i3560 interface configuration



Model	LAN	Wi-Fi 6	Wi-Fi 5	Wi-Fi 4
i3560-00	2x 1G LAN	5x5:5 5 GHz + 4x4:4 2.4GHz	5x5:5	4x4:4

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# Wi-Fi 5 ACCESS POINT

## i3550-series

Residential Access Point

The Icotera i3550 is a Wi-Fi access point, repeater, Ethernet and wireless bridge. It delivers 1733 (4x4) + 300 (2x2) Mbps Wi-Fi throughput and includes the latest 4x4:4 802.11ac Wave 2 & 2x2:2 bgn Wi-Fi standard.

- State of the art 4x4 Wave 2 MU-MIMO Wi-Fi with multiple Wi-Fi access points, client roaming, beamforming, and band steering
- Ease of use and installation
- Vendor independent
- Award-winning industrial design
- Lowest Total Cost of Ownership



### Remote management

CWMP (TR-069, TR-181) support. Also supports a local web interface, configuration by the local gateway.

### 2 Gigabit LAN ports

With full IGMP and multicast support to allow for easy in-home installation and network expansion.

### Easy and simple installation

Designed for installations by end-users, it's plug and play!

### Expand the wireless home

Without complicated configuration, the i3550 simply configures itself and other Icotera network products to deliver the best possible networking experience whether it be cabled or wireless using techniques such as wireless roaming, and secure authentication.

### Backward compatible

Compatible with 802.11a/b/g/n/ac wireless standards.

### MSSID (Multi SSID)

Multiple SSIDs can be created to allow different users access to the Internet network, even creating public hotspots can be done simply with a click of a button.

### Designed for the operator

But with the customer in mind. The operator will always have the possibility to support their clients with full remote access for monitoring and debugging.

### Advanced wireless security

WPA2-PSK, WPA2-802.1x.

### Great aesthetic design

Both in form and shape the i3500 has great design attributes, but it also does an outstanding job making itself hidden by only using the LED indicators when there is actually something to tell – and that in the most intuitive way possible.

# i3550 Residential Access Point

## FEATURES

- Best-in-class Wi-Fi 5 solution
- Award-winning industrial design
- Low power consumption
- Optional operator branding
- Wi-Fi link rate up to 2.1 Gbps

## NETWORK COMMUNICATION

### LAN INTERFACE

- 2x 1G LAN
- Auto-negotiation for speed and duplex
- 64 byte forwarding at line rate

### LAYER 2

- 8 bridge instances
- IGMP v1/v2 snooping
- Wi-Fi support
- Transparent IPv6 forwarding
- 2k address entries
- 802.1x

## WI-FI INTERFACES

- Authentication methods:
  - Open
  - WPA2
- Up to 8 SSIDs
- Advanced channel selection
- Full ETSI channel plan including dynamic frequency selection (DFS)
- Software Tx power control
- Neighbour scanning
- Wireless client Isolation
- Band steering
- Client roaming

### Wi-Fi 5

- 4x4 Wave 2 MU-MIMO
- 5 GHz band with 256-QAM and 80 MHz
- Beamforming
- LDPC + STBC

### Wi-Fi 4

- 802.11b/g/n 2x2:2 MIMO
- 2.4 GHz band with 64-QAM and 40 MHz

## MANAGEMENT & MONITORING

- Monitoring via telemetry streaming (ICONS) when the access point is connected to the Icotera i4850, i5850, or i6850 gateway
- L1-L3 filters for all local services
- Web interface for end users:
  - Wi-Fi
  - LAN network
- All settings are stored locally in flash memory
- Zero-touch configuration with DHCP/TFTP, via TR-069 and TR-181 or via the local gateway
- Automatic firmware and configuration update (polling)
- Dual bank flash memory with fail-safe firmware upgrading

## OPERATIONAL SPECIFICATIONS

- DC 12 V input
- Power consumption maximum: 13 W
- Power consumption in idle state: 5.5 W
- Operating temperature: 0°C – 45°C
- Storage temperature: -20°C – 85°C
- Humidity: 5% – 95% (non-condensing)

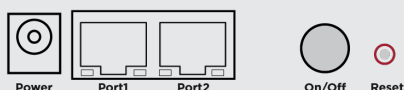
## PHYSICAL SPECIFICATIONS CASING

- Weight: 318 g
- Size: 152 x 152 x 42 mm (W x H x D)
- Front LED indicator (power or WAN status such as link or provisioning)
- Status LED indicators for link, traffic, and duplex for each LAN port
- WPS button

## INCLUDED IN THE BOX

- Icotera i3550 access point
- 12 V power supply unit
- Additional label with Wi-Fi credentials

### i3550 residential access point configuration possibilities



### Interface configurations

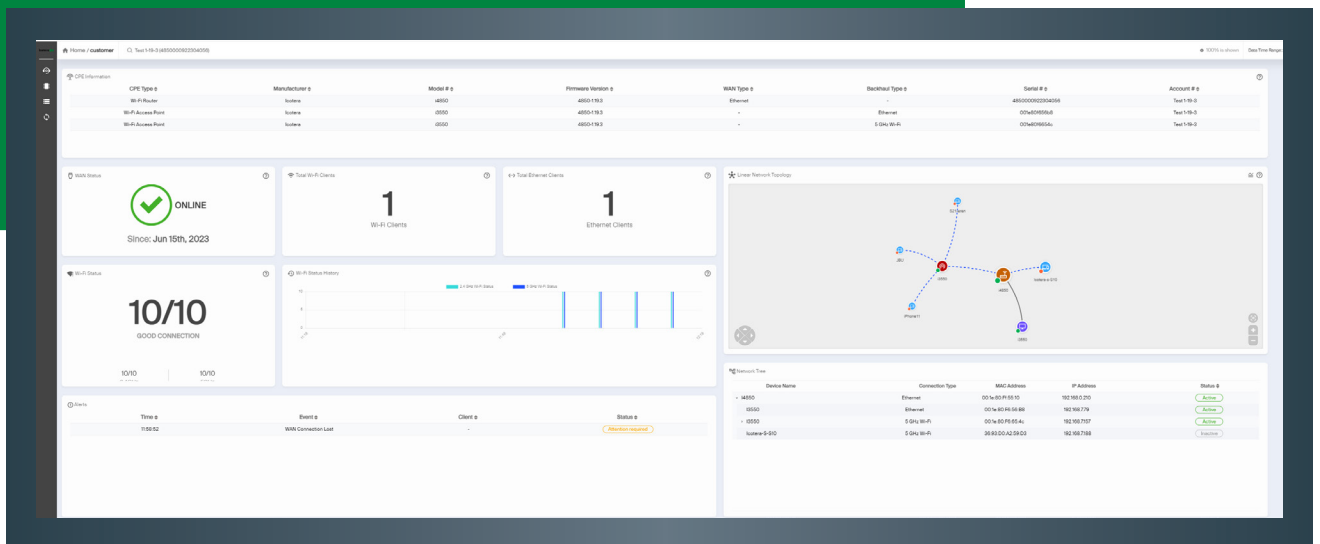
Model	LAN	Wi-Fi
i3550-00	2x 1G LAN	802.11a/n/ac 4x4:4 + 802.11b/g/n 2x2:2

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# IN-HOME REAL TIME NETWORK MONITORING

including in-home end-user devices

- Valuable insights through real-time network monitoring
- Flexible widgets based on advanced algorithms
- Quicker troubleshooting
- Reduce and shorten support calls
- Increased customer satisfaction



An intuitive overview of alerts and device status improves efficiency and speeds up root-cause analysis.

## New level of ISP support

ICONS is an in-home monitoring tool for ISPs enabling 1st, 2nd and even 3rd line supporters to troubleshoot customer issues efficiently.

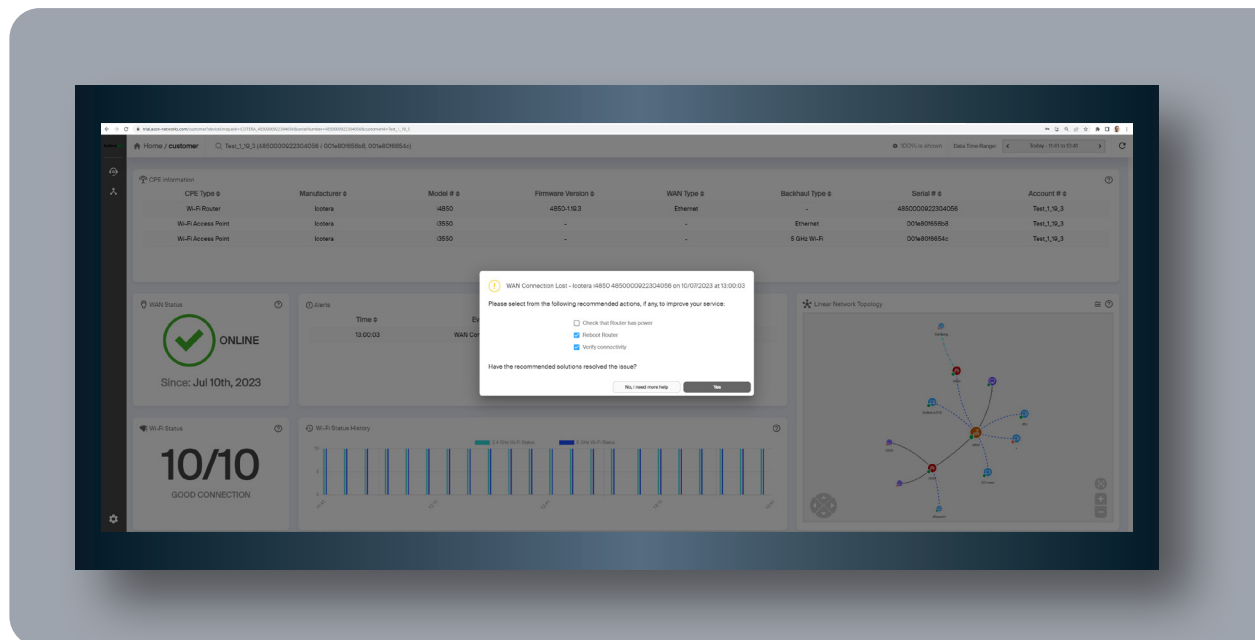
Through intelligent insights based on advanced algorithms, ICONS makes it possible to reduce the time on support calls dramatically. With a real-time view directly on customer CPEs and even end-user devices, ICONS is helping support personnel to efficiently solve issues with the customer on a one-call basis. Using the Time-Picker functionality helps the supporter to look for periodic problems and efficiently identify the root cause.

## Dynamic widgets for customised dashboards

ICONS is a widget-based system, where dashboards are designed to match the different expertise levels. The support supervisor creates the user groups; their rights and even the design of the dashboard.

1st, 2nd and 3rd line supporters do not have the same technical insights and hence should not be presented with the same type of data. While the 1st line supporter prefers intuitive data and colour-coded graphs, the more experienced 2nd line supporter needs a more detailed view of network- and Wi-Fi metrics to do in-depth troubleshooting.

3rd line supporters like senior network engineers, will typically look at overall trends and global network performance and need data supporting that.



When an issue is resolved, data is collected to build a knowledge database for advising other supporters. Future option is to do CPE-adjustments automatically before the issue appears.

## Wi-Fi network analysis

From the very moment a customer calls the support desk, time is a critical factor. Often the customer is already frustrated about his in-home network and waiting time on rebooting and random troubleshooting is not the way to go. It's crucial quickly to acknowledge or politely reject the issues by having the right data available and have a convincing and professional approach to the customer.

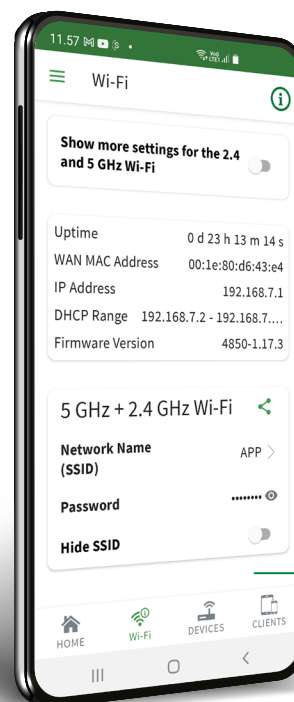
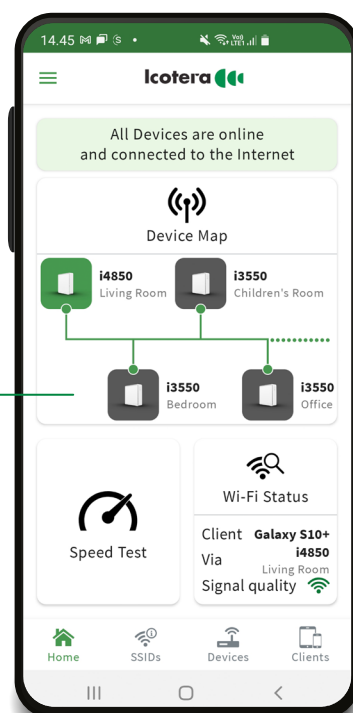
Insights also help reduce the amount of units replaced by support because the root cause was not identified and a replacement of the CPE was the only way out. Handling, shipping and refurbishing of units typically take a big part of the revenue.

# MAKE THE MOST OF YOUR Wi-Fi NETWORK

Intelligent self-service App secures easy onboarding and the best in-home Wi-Fi performance

## On-boarding and Home Screen

- Intelligent QR-based on-boarding feature makes it possible to install and connect the router in a few steps
- Home Screen provides overview of devices and current Wi-Fi status



## SSID and Password change

- Customer is encouraged to change SSID and Password during the onboarding procedure
- This improves security and reduce support calls

Optimise your customers' Wi-Fi experience with an intuitive and comprehensive Smartphone App.

The App includes an intelligent QR-based onboarding feature enabling the customers to install and connect the new router in a few steps. After completion, the full feature set of Wi-Fi control and -optimisation is available. All Icotera routers and access points in the network will automatically be identified and listed. Devices can be identified with a simple tap and new devices can be added. When an access point is installed, the clear colour coding indicates if the location is optimal or should be changed.

The App easily identifies how well any client device in

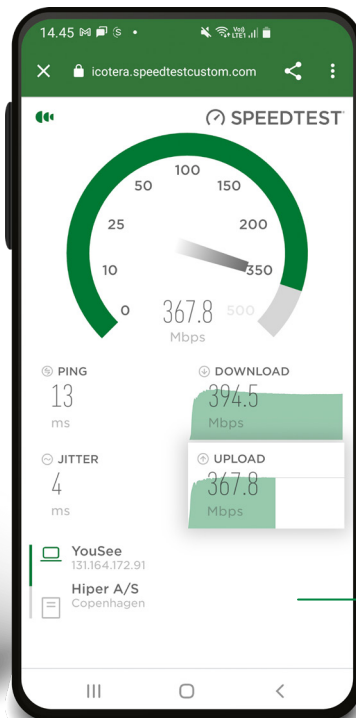
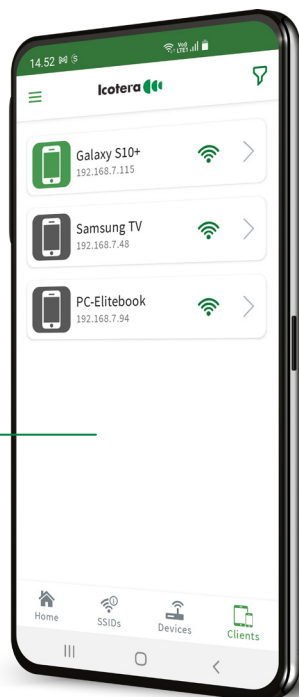
the network is connected and where to. If a client has no connectivity or internet performance issues, the App can be used to quickly investigate what might be the problem. The ultimate blue-print of the connection can be done by initiating a speed test measuring up- and download speeds as well as latency jitter directly in the App.

## Increased customer experience

The intelligent self-service App helps free support team resources as it enables the customers to handle simple coverage issues or forgotten passwords themselves. The increased customer control and faster resolution of issues means better customer satisfaction and reduced churn.

### Easy overview of all connected clients

- All clients are easily identified and connectivity status checked
- Click on a device to see connection details



### Integrated Ookla™ Speedtest

- Shows current throughput performance
- Download, Upload, Ping and Jitter

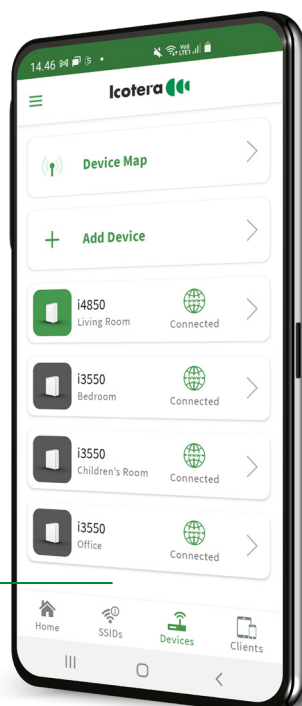
### Easy and quick to validate the quality and performance of the in-home Wi-Fi network and optimise it if necessary

Most important Wi-Fi settings can be changed on the spot and results are validated through instant speed tests. Wherever the Smartphone or any other client is in the house, its momentary Wi-Fi signal strength will be displayed in the App.

- Intuitive customer-onboarding process
- Automated Device Scan and login procedure
- Initial change of SSID and password
- Optimise Access Point location
- Overview of all connected Devices and Clients
- Add new Access Points
- Ookla™ Speedtest

### Device Screen

- Overview of connected devices and their associated end-user clients is shown
- When entering the Device Map a graphical representation of the network is shown



### Color featured Device map

- Intuitive color coded interconnectivity status
- Optimize Access Point locations



Icoteria A/S  
Hovedvejen 3A  
2600 Glostrup  
Denmark

Phone: +45 7010 0033  
Mail: [info@icotera.com](mailto:info@icotera.com)  
Web: [www.icoteria.com](http://www.icoteria.com)