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 & installation
- Vendor independent
- Local 24/7 support
- Smart Home platform
- 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 wirespeed 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 optical signal (both CATV and DATA) and enable the user to 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

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.

Built-in Smart Home platform

The i6400 layer 2 switch supports the unique Icotera Smart Home platform via state-of-the-art low-consuming wireless technology. The platform offers great solutions for end-users within Alarm & Surveillance, Energy Management and Home automation. The cloud-based platform connects to third party device-hardware, which makes the possibilities for connecting devices close to endless. For the network operator or service provider, the platform offers an opportunity for additional revenue streams and higher customer loyalty. The Icotera Smart Home platform is deeply integrated into the Icotera switch, which makes the daily use effortless and very valuable for the modern household.

Icotera

i6400 Residential Switch

FEATURES

- Award-winning industrial design
- Vendor-independent
- Integrated CATV solution (optional)
- Developed and manufactured in Europe
- Optional operator branding
- Customized firmware
- Extensive IPv6 support
- Built-in Smart Home platform

NETWORK COMMUNICATION

WAN INTERFACE

- Single mode fiber (ITU-T G.652) SC/PC connector
- 100BaseBX10/20 compliant
- 1000BaseBX10/20 compliant
- Tx: 1310 nm, Rx: 1480–1600 nm
- Operating distance: 20 km
- Transmit power: -7 – -2 dBm
- Receive sensitivity: -3 – -23 dBm
- Class 1 laser product
- Jumbo packets
- DDM (optional), providing measurements of:
  - TX Power
  - RX Power
  - Temperature
  - Voltage
  - Current TX Bias
- Link propagation

WAN INTERFACE (i6407)

- 100/1000 SFP w/ DDM support
- 10/100/1000Base-T(x) RJ45-connector
- Combo or standalone mode
- Automatic uplink detection
- Link propagation
- Auto-negotiation for speed and duplex
- Auto MDI/MDX

LAN INTERFACE

- 4x 10/100/1000Base-T(x) RJ45 connector (5x ports for i6407 variant)
- Auto-negotiation for speed and duplex
- Auto MDI/MDX
- Jumbo packets
- Link propagation
- Cable tester, detects:
  - Short
  - Open
  - Impedance mismatch
  - Cable length

LAYER 2

- Jumbo packet forwarding
- OSI Layer 2 filtering
- 4k VLAN
- VLAN filtering
- VLAN remapping
- VLAN termination
- MAC limiting (1–254 or disabled)
- IGMP v1/v2 snooping
- MLD v1/v2 snooping
- QinQ
- Port mirroring
- Loop detection
- Broadcast suppression

LAYER 3

- IP source guard
- ARP inspection
- OSI Layer 3 and 4 filtering by ACLs

QoS

- 4 queues per interface
- Ingress/Egress rate limiting per
  - Port
  - Queue
  - Access list
- Rate limiting in 32 Kbps steps
- DSCP mapping/remapping
- ToS mapping/remapping
- 802.1p mapping/remapping
- Mechanisms
  - Weighted Fair Queuing
  - Strict SP

CATV (OPTIONAL)
OPTICAL PARAMETERS

- Saturation power: +2dBm
- Input level range: -10 to 0 dBm
- Input wave length: 1310/1550 nm
- Optical connector: SC/APC
- ITU-T G.652 Single Mode fiber
- Software monitoring of RX level in 0.1 dB steps
- Low-signal LED configurable

RF PARAMETERS

- RF connector: 75 Ohm "F"
- Frequency: 45-870MHz
- EIN @-10dBm: 4 pA/√Hz
- Tilt: 5 dB
- RF output AGC @-8 to 0 dBm (3.5% OMI): 80 dBuV
- Max. RF output @ 0 dBm (3.5% OMI): 96 dBuV
- CNR (CENELEC 42 channels): ≥ 51 dB
- CSO (CENELEC 42 channels): ≥ 60 dBc
- CTB (CENELEC 42 channels): ≥ 60 dBc
- RF filters (optional): up to 2
- Software adjustable RF output level w/AGC

USB

- 2.0 USB port
- Prepared for
  - Z-Wave
  - ZigBee
  - CAT-iq
  - Storage

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 firmware w/ fail-safe upgrading

OPERATIONAL SPECIFICATIONS

- DC12V input (±10%)
- Power consumption: 2.4-7.6W
- Operating temperature: 5 – 45°C
- Storage temperature: -20 – 85°C
- Humidity: 5% – 95% (non-condensing)

PHYSICAL SPECIFICATIONS
CASING

- Weight: 395 g
- Size: 190 x 132 x 48 mm (W x H x D)
- Front LEDs configurable by operator:
  - Power/WAN status (link/traffic/provisioning)
  - CATV (status/signal power)
- LAN status LEDs (link/traffic, duplex) per interface
- LED auto off after timeout period

FIBER TERMINATION UNIT (OPTIONAL)

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

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Configuration possibilities

Gateway Interface Configurations:

Model	Uplink	LAN	USB	CATV	Bottom
i6401:	BX20	4x	1x	1x	FTU / Patch
i6405:	BX20	4x	1x		FTU / Patch
i6407:	RJ45/SFP	4/5x	1x		Patch (Roll-up)

NOTE: Please contact Sales for further details on information listed and feature requests.

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