KIATEL KOU1000 Outdoor Optical Access Gateway System Description

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KIATEL KOU1000 System Description

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Product Introduction 2

Compact and easy to install KIATEL KOU1000 Outdoor Optical Access Gateway give operators more freedom in setting up a future-proof network architecture

Taking fiber optic cables as near as possible to the subscriber has been a guiding principle for operators wishing to build affordable networks equipped with future oriented transport technology. Reasonably priced and flexible KIATEL Outdoor Unit adheres to this guiding principle Performing analog/digital signal conversion on site, KOU's are housed in waterproof metal cabinets Made of double-skinned metal, these housings store all of the communication equipment needed to tie up to 1000 subscribers into the access network

KOU Saves infrastructure costs

Installation has been greatly simplified since the switching technology, transmission equipment and the associated infrastructure (including the MDF, power supply unit, back-up batteries, air condition, mains power meter) have all been integrated in a single cabinet. The operator can simply install the KOU at the side of the road , against the wall of a building or in the basement out of the way. A light weight, compact design , it is easy to transport and can be mounted in the tiniest space

can be individually equipped

Due to its modular design, the KOU can be adapted to changing network needs at any time. KOU configuration , depends on the operators requirements and on the structure of the planned or existing infrastructure. During configuration various types of transport equipment can be combined according to building block principle

can be installed on site on the "plug and play" principle

KIATEL supplies the KOU to its customers already fully cabled and system-tested

The on-site installation of the KOU can therefore be carried out quickly and easily according to the plug and play principle: connect the unit to the fiber optic network, the mains power and the subscribers and the job is done

the basis for all services the network may offer

The capacity available in the KOU can be used to offer additional services in the access network at a relatively low price even in very remote regions with preset network parameters. The on-site installation of the KOU can therefore be The KIATEL KOU1000 is an optical Access gateway with large capacity
The KIATEL KOU1000 provides both narrow-band and broadband service interfaces, including

Plain Old Telephone Service (POTS)
Integrated Service Digital Network (ISDN)
Asymmetric Digital Subscriber line (ADSL)
The KIATEL KOU1000 supports 220 VAC power supply systems
The KIATEL KOU1000 consists of the following parts
Power supply system (lightning arrester, power module and battery)
Service shelf
Transmission unit
Network Ethernet Switch
Main Distribution Frame (MDF, System & Network side)
Optical Distribution Frame (OCDF)
Temperature control unit (heat exchanger)

3 Features

3.1 Easy Installation and Maintenance

The KIATEL KOU1000 can be installed on concrete pedestal or elevated platform, which can fulfill various carrier needs .

All compartments are isolated from each other, which helps to give different staff different access rights to the System .

The equipment compartment has an illuminator, which can ease the night operations. The compartment also has an AC socket, which can power external devices on site .

To improve the system reliability and maintainability, the KIATEL KOU1000 cabinet monitors in real time these factors of the cabinet and reports alarms:

- Ambient temperature
- Relative humidity
- Door status
- Power supply
- Battery
- MDF
- Lightning arrester

3.2 Compact and Reliable Structure

The KIATEL KOU1000 has service shelf, MDF, lightning arrester, battery, transmission unit and temperature control unit. The compact design saves the installation cost and the ground area They can be installed quickly on site to satisfy the demand for quick networking The sealed cabinet protects the components from dust, rain and high temperature. This design ensures reliable running of the system

3.3Tailored Port Configuration

Broadband and narrowband line cards can be configured flexibly in the KIATEL KOU1000 according to the customers' requirement. And the number of the broadband and narrowband line cards can be adjusted dynamically

The KIATEL KOU1000 supports 220 VAC power supply system. Thus its application scope is broadened

3.4Flexible Networking Mode

Through the built-in transmission unit, the KIATEL KOU1000 can be applied in link, tree, ring or star topology. The KIATEL KOU1000 can fulfill the requirements on upstream bandwidth for heavy broadband service traffic

The KIATEL KOU1000 is adaptive to various access network scenarios. In this way, it can save optical fibers and lower the construction cost. In the ring topology, the system is self-healing

The KIATEL KOU1000 networking features are as follows

- The narrowband services can be transmitted to the exchange with standard V5 interface through the standard V5 interface.
- The narrowband services can be transmitted to the Optical Line Terminal (OLT) equipment through the internal protocol or V5 protocol.
- The narrowband services can access to the IP network through VoIP.
- The broadband services can access to the ATM backbone network through ATM and IMA E1 upstream interfaces and to the IP backbone network through GE and FE upstream interfaces.

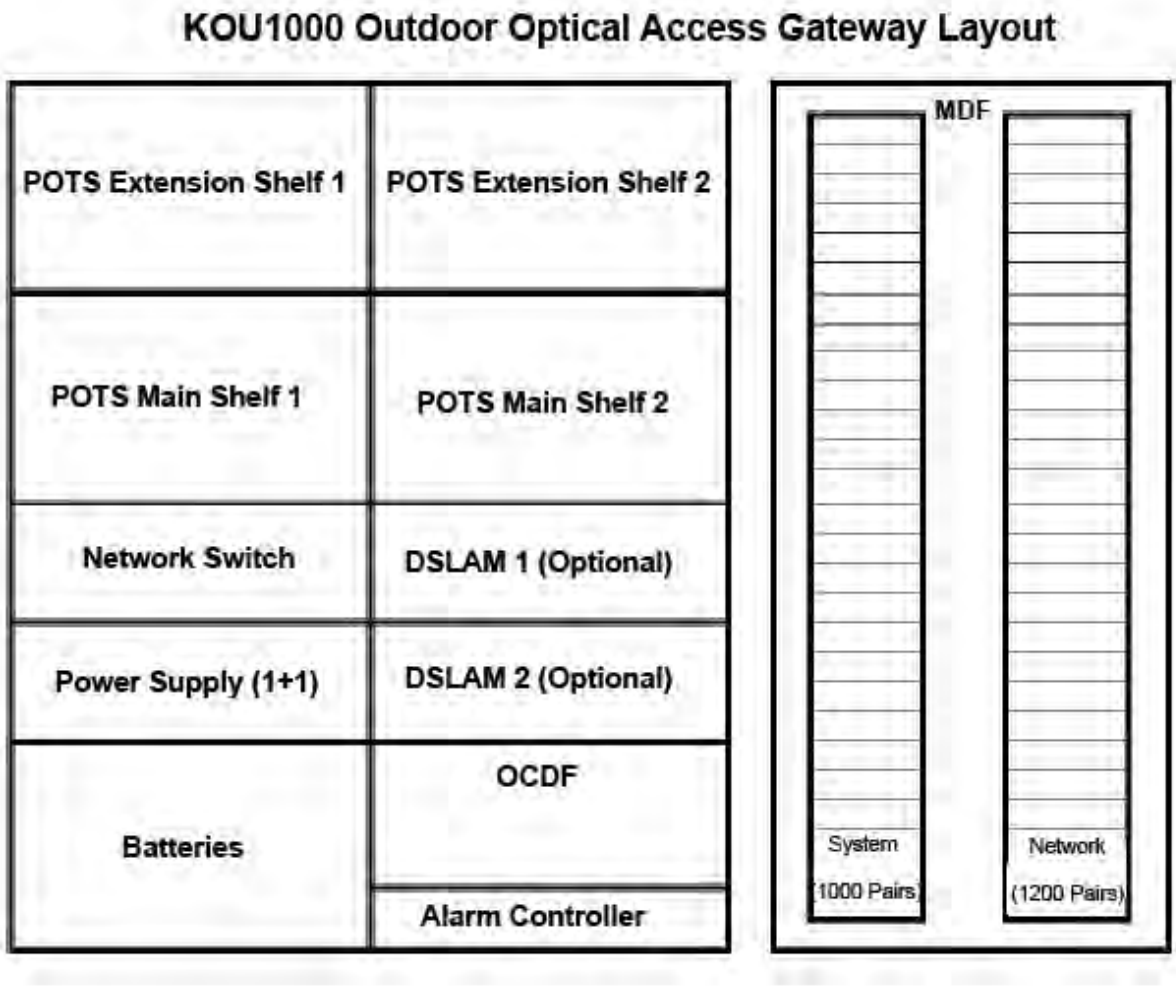
4 System Structure

4.1Structure Overview

Following picture shows the structure of the KIATEL KOU1000

4.2 Service shelves Layout

The KOU1000 uses the KIATEL EC-1K Port Unit Main Shelf and Port Unit Extension Shelf



4.5Power Supply System Unit

The power supply system consists of lightning arrester, power module and battery.

The cabinet supports 220 VAC power system which can provide uninterrupted power supply with the battery.

The performance of the power supply system is as follows:

- Protection for AC ports: The lightning arrester can protect the power module and the temperature control unit.
- Backup of power supply: One groups of 150 AH batteries are used, which can supply power for eight hours independently.

- Protection for customer ports: Both the protective unit of the cable side terminal block and the line card can protect customer ports, which complies with the K.20 and K.21 protection indexes.

4.6Temperature Control Unit

The KIATEL KOU1000 has built-in temperature control unit, which enable to work in the harsh environment. It has sound EMC and protection performance and good ability to undergo external damage

The KIATEL KOU1000 adopts the Air condition as the temperature control unit. Apply the heat exchanger where the ambient temperature ranges from –30°C to +60°C

4.7Cable Distribution Unit

The cable distribution unit is embedded in the cabinet, including ODF and MDF.

Cable distribution unit	Interface	Function
MDF	Insulation displacement contact (IDC)	Subscriber side capacity: 1200 pairs System side capacity: 1000 pairs
ODF	Fiber connector (FC)	4 – 12 Cores

4.8Transmission Unit (Optional)

The transmission unit can be General such as Metro1000 and etc. They provide the signal transmission channel between SYSTEM and OLT and between different systems

5 System Configuration

Broadband and narrow band line cards can be configured flexibly the KIATEL KOU1000 according to actual service requirements. The number of the broadband and narrow band subscribers can be customized dynamically

Service configuration of KIATEL KOU1000

Service configuration	Power supply	Battery
Up to 1000 POTS subscribers Up to 512 ADSL subscribers	220 VAC	One groups (150 AH/group

151 Technical Specifications

6.1Dimensions and Weight

Lists the dimensions and weight of the cabinet and battery.

1. Dimensions and weight of the cabinet and battery

Cabinet dimensions (width x depth x height)	Cabinet weight (without battery)	Battery weight
1450 mm x 650 mm x 1700 mm	650 kg	4*50=200 kg

6.2System Power Consumption

Lists the system power consumption.

1. System power consumption

Maximum input	Fan	Cabin heater
4000 W (including battery charging)	300 W	250 W

6.3Environment Requirements

Lists the environment requirements on the KIATEL KOU1000

Environment requirements on the KIATEL KOU1000

Item	Running	Storage	Transportation
Temperature	–30°C to +50°C[note1]	–45°C to +70°C	–40°C to +70°C
Solar radiation intensity	≤ 1120 W/m^2	≤1120 W/m^2	≤1120 W/m^2
Relative humidity	8% to 70%	8% to 75%	5% to 95%
Temperature change rate	NA	≤ 0.5°C /min	NA
Air pressure	70 kPa to 106 kPa	70 kPa to 106 kPa	70 kPa to 106 kPa

Note 1: When there is no radiation, the highest temperature can be 50°C. When there is the radiation, the highest temperature is 45°C.

6.4Power Supply Requirements

Lists the AC working voltage parameters.

AC working voltage parameters

Power module	Voltage range (V)	Voltage frequency range (Hz)	Maximum input current (A)
220 VAC	190 to 250 (Note: When the voltage decreases from 190 V, the output current will support by batteries.)	50	10~20

6.5External Socket Specification

lists the external socket specification

External socket specification of KIATEL KOU1000

Parameter	Specification
220 V power supply	220 V/3 A

6.7Interface Specifications

Interface	Standard
V5.1	ITU-T G.964
V5.2	ITU-T G.965
GPON & EPON	Data over Transport G.7000–G.7999 Packet over transport aspects G.8000–G.8999 Access networks G.9000–G.9999 Optical line systems for local and access networks G.9800–G.9899 In premises networks G.9900–G.9999
FE	IEEE 802.3u
GE	IEEE 802.3z
E1	The physical layer complies with ITU-T G.703 and the shelf structure complies with ITU-T G.704
E3	ITU-T G.703, ITU-T G.704, ITU-T G.823
V.35	ITU-T V.35, ITU-T V.24 and ISO2593 (M34)
IMA	AF-PHY-0086.000, AF-PHY-0086.001
POTS	ITU-T Recommendation Q.552 Transmission characteristics at 2-wire analogue interfaces of digital exchanges
ISDN 2B+D	ITU-T G.960, ITU-T G.961, ITU-T I.430, ITU-T Q.921, ITU-T Q.931
ISDN 30B+D	ITU-T G.962, ITU-T I.431, ITU-T Q.921, ITU-T Q.931
2B1Q	ITU-T G.961
Co-direction 64 kbit/s	ITU-T G.703
V.24	ITU-T V.28, ITU-T V.24, ISO2110 (DB25)
2/4-wire audio frequency	ITU-T G.712
10/100Base-T	IEEE 802.2, IEEE 802.3x, IEEE 802.3u, IEEE 802.1Q, ITU-T I.363.5, ITU-T I.370
CES	The physical layer complies with ITU-T G.703; E1 shelf structure complies with ITU-T G.704; the AAL1 service adaptation complies with ITU-T I.363.1.
ADSL	ITU-T G.992.1 (G.dmt), ITU-T G.992.2 (G.lite), ITU-T G.992.3, ITU-T G.992.4, ANSI T1.413
ADSL2+	G.992.5
SHDSL	ITU-T G.991.2
RS-232	ITU-T V.24, ITU-T V.28

6.8Engineering Standards Compliance

Lists the engineering standards compliance.

Item	Standards	Class
Operation environment	ETSI 300 019-1-4: Environmental conditions and environmental test for telecommunications equipment Part 1-4: Classification of environmental conditions; Stationary use at non-weather protected locations	Class 4.1E requirement can meet all ETSI countries environmental requirement. (–45 to 45°C)
Transportation environment	ETSI 300 019-1-2: Environmental conditions and environmental test for telecommunications equipment; Part 1-2: Classification of environmental conditions; Transportation	Class 2.3 Public transportation
Storage environment	ETSI 300 019-1-1: Environmental conditions and environmental tests for telecommunications equipment Part 2-1: Classification of environmental conditions; Storage	Class 1.3E Non-weather protected storage locations extended, –45 to 45°C
EMC	ETSI EN 300 386 (v1.3.1) : Electromagnetic Compatibility (EMC) requirements(for EMS)	Telecom central equipments; Non-telecom central equipments
	EN 55022:1998: Limits and methods of measurement(for EMI)	Other Class B application; Class B, in domestic environment, no fixed place use, telecommunication terminal, personal computer
Safety	EN 60950: Safety of information of technology equipment	Necessary
	EN 60825: Safety of laser products Pair 1: Equipment classification, requirements and user's guide Pair 2: Safety of optical fiber communication system	Necessary

Item	Standards	Class
Protection	IEC 529 Degrees of protection provided by enclosures (IP Code)	IP55 in the Electronic area and in the MDF area, IP35 in the battery compartment and cooling unit compartment
MDF	ITU-T K.20/21: Resistibility of telecommunication switching equipment to over voltage and over current	Basic level/Reinforced level
	K.45: Resistibility of telecommunication equipment installed in the access and trunk networks to overvoltages and overcurrents	-
Noise	ETS 300 753 Equipment Engineering (EE); Acoustic noise emitted by telecommunications equipment	-
Structure	IEC 60297 -1 Panels and racks IEC 60297-3 Subracks and associated plug -in units IEC 60297-2 Cabinets and Pitches of racks structure	-
Power supply	ETSI ETS 300-132: Power supply interface at the input to telecommunication equipment. Part1: Operated by alternating current (AC) derived from direct current (DC) sources. Part2: Operated by direct current (DC)	-
Lighting proof and earthing	ETSI ETS 300 253: Earthing and bonding of telecommunication equipment in telecommunication centers	Necessary
	IEC 61643 Performance requirement for surge protective device connected to low-voltage distribution systems of telecommunication stations /sites	Outdoor: H level Indoor: M level