AN5116-06B

Optical Line Terminal Equipment

Documentation Guide

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FiberHome Telecommunication Technologies Co., Ltd.

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Preface

Related Documentation

Document	Description
AN5116–06B Optical Line Terminal Equipment Documentation Guide	Introduces the retrieval method, contents, releasing, reading approach, and suggestion feedback method for the complete manual set for the AN5116-06B.
AN5116–06B Optical Line Terminal Equipment Product Description	Introduces the AN5116-06B's network location, functional features, hardware structure, FTTx application model, equipment configuration, network management system and technical specifications. It is the foundation of the complete manual set. Other manuals extend and enrich the concepts introduced in the Product Description.
AN5116–06B Optical Line Terminal Equipment Feature Description	Introduces the key features supported by the AN5116-06B, including GPON / EPON access, GPON / EPON terminal management, VLAN, multicast, voice and safety; and introduces these functions in details in terms of definition, features, specification, principle description, references and so on.
AN5116–06B Optical Line Terminal Equipment Hardware Description	Introduces the appearance, structure, functions, technical specifications, and operating method for the AN5116-06B cabinet, PDP, subrack, cards, cables and wires, facilitating users' mastery of the hardware features of the equipment.
AN5116–06B Optical Line Terminal Equipment Installation Guide	Introduces the overall installation and acceptance inspection procedures from unpacking inspection to poweron examination after the equipment is delivered on site, and provides reference information (e.g. safety principles and wiring scheme of various interfaces) to guide users to install the equipment.
AN5116–06B Optical Line Terminal Equipment EPON Configuration Guide	Introduces the method for configuring the EPON services supported by the AN5116-06B via the ANM2000, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, and software upgrading configuration, to guide users on startup for various services and software upgrading.

Document	Description
AN5116–06B Optical Line Terminal Equipment GPON Configuration Guide	Introduces the method for configuring the GPON services supported by the AN5116-06B via the ANM2000, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, and software upgrading configuration, to guide users on startup for various services and software upgrading.
AN5116–06B Optical Line Terminal Equipment GUI Reference	Introduces the shortcut menu for every card of the AN5116-06B on the ANM2000, including the function, parameter explanation, precautions and configuration example of every command in the shortcut menu of each card, to help users master the operation of the AN5116-06B using the ANM2000.
AN5116–06B Optical Line Terminal Equipment Component Replacement	Introduces the operation procedures for replacing the AN5116-06B's components, including preparations, precautions, early operations, operation process and subsequent operations, so as to guide users with the component replacement on the hardware.
AN5116–06B Optical Line Terminal Equipment Routine Maintenance	Introduces the daily, weekly, monthly, quarterly and annual routine maintenance operations on the AN5116-06B. Users are able to eliminate silent failures in the equipment operation process as early as possible via implementing the routine maintenance.
AN5116–06B Optical Line Terminal Equipment Alarm and Event Reference	Introduces the AN5116-06B alarm / event information, including alarm / event names, alarm / event levels, possible reasons, effects on the system, and processing procedures, to guide users on effective alarm / event processing.
AN5116–06B Optical Line Terminal Equipment Troubleshooting Guide	Introduces the fault processing principles and methods of fault diagnosis and isolation for the AN5116-06B. Also discusses the typical fault cases of various EPON / GPON services. In case of complex issues, users can contact FiberHome for technical support according to the instructions in this document.

Version

Version	Description
A	Initial version.

Intended Readers

This manual is intended for the following readers:

◆ Planning and designing engineers

◆ Commissioning engineers

◆ Operation and maintenance engineers

To utilize this manual, these prerequisite skills are necessary:

◆ EPON / GPON technology

◆ Data communication technology

◆ Optical fiber communication technology

◆ Ethernet technology

◆ Multicast technology

Conventions

Terminology Conventions

Terminology	Convention
AN5116-06B	AN5116-06B Optical Line Terminal Equipment
EC4B	4×EPON-C Interface Card (type B)
EC8B	8×EPON-C Interface Card (type B)
GC4B	4×GPON-C Interface Card (type B)
GC8B	8×GPON-C Interface Card (type B)
XG2B	2×10G EPON-C Interface Card (type B)
C155A	4×GE + 1×10GE Optical Interface Uplink Card (CES Mode)
CE1B	32×E1 Optical Interface Card (CES mode) (type B)
PUBA	Public Card (type A)
HSWA	Core Switch Card (EPON) (card No.: 2.115.334)
HSWA	Core Switch Card (type A) (card No.: 2.115.331)
HU1A	4×GE + 1×10GE Optical Interface Uplink Card
HU2A	2×GE + +2×10GE Optical Interface Uplink Card
GU6F	6×GE Optical Interface Uplink Card

Symbol Conventions

Symbol	Refer to	Meaning
	Note	Important features or operation guide.
	Caution	Possible injury to persons or systems, or cause traffic interruption or loss.
	Warning	May cause severe bodily injuries.

Contents

Tables

1   Documentation Retrieval

☑ Retrieving by User Roles

☑ Retrieving by Purposes

1.1   Retrieving by User Roles

Users playing different roles may need different documents. You can quickly retrieve the documents based on your working scope.

Definitions of the roles and duties of manual users may vary between network operators. We classify common users of the documents into the following categories and introduce how to retrieve in the AN5116-06B documentation set by user roles. Table 1-1 lists the documents in the AN5116-06B equipment documentation set that correspond to user roles.

Table 1-1   The AN5116-06B equipment documents corresponding to user roles

Intended Reader	Working Scope	User Document
Purchasing engineer	Purchases the communication equipment.	AN5116-06B Product Description AN5116-06B Hardware Description
Network planning engineer	Performs network design and system configuration.	AN5116-06B Product Description AN5116-06B Hardware Description AN5116-06B Feature Description
Hardware installation engineer	Performs on-site equipment installation.	AN5116-06B Installation Guide
Installation supervising engineer	Instructs the installation engineers in hardware installation and guarantees the quality of installation.	AN5116-06B Hardware Description AN5116-06B Installation Guide
Data configuration engineer	Configures the equipment data and starts EPON / GPON services for users.	AN5116-06B Hardware Description AN5116-06B Feature Description AN5116-06B EPON Configuration Guide AN5116-06B GPON Configuration Guide AN5116-06B GUI Reference

Table 1-1   The equipment documents corresponding to user roles (Continued)

Intended Reader	Working Scope	User Document
System maintenance engineer	Performs software and hardware maintenance; processes the alarms and events, isolates and handles common faults; handles or assists the FiberHome maintenance engineers in handling major faults with equipment.	AN5116-06B Hardware Description AN5116-06B Component Replacement AN5116-06B Routine Maintenance AN5116-06B EPON Configuration Guide AN5116-06B GPON Configuration Guide AN5116-06B GUI Reference AN5116-06B Alarm and Event Reference AN5116-06B Troubleshooting Guide
Field maintenance engineer	Performs routine maintenance; handles minor alarms; and reports severe faults.	AN5116-06B Hardware Description AN5116-06B Component Replacement AN5116-06B Routine Maintenance AN5116-06B Alarm and Event Reference

1.2   Retrieving by Purposes

Product manuals are tailored to different purposes and for different audiences. With a definite purpose, you can select the right documents to guide your work efficiently.

We recommend different documents for different purposes.

Table 1-2   List of the AN5116-06B optical line terminal equipment document types

Purpose	Document
Have a general ideal about the complete set of documents.	AN5116-06B Documentation Guide
Get familiar with the product.	AN5116-06B Product Description AN5116-06B Hardware Description AN5116-06B Feature Description

Table 1-2   List of the optical line terminal equipment document types (Continued)

Purpose	Document
Query how to operate the equipment.	AN5116-06B Component Replacement AN5116-06B Routine Maintenance
Install the equipment hardware.	AN5116-06B Installation Guide AN5116-06B Hardware Description
Configure and start services.	AN5116-06B GUI Reference AN5116-06B EPON Configuration Guide / AN5116-06B GPON Configuration Guide
Perform daily maintenance.	AN5116-06B Component Replacement AN5116-06B Routine Maintenance AN5116-06B Alarm and Event Reference
Shoot troubles with the equipment.	AN5116-06B Troubleshooting Guide AN5116-06B Component Replacement AN5116-06B Routine Maintenance

2   Overview of Documentation Set

☑ Document Classification

☑ Main Contents of Documents

2.1 Document Classification

The AN5116-06B optical line terminal equipment manuals are technical documents delivered to users together with equipment. Generally, our manuals are classified into three categories: descriptive documents, operational documents and referential documents.

◆ Descriptive documents: provide the functions and principles about the product, so that readers can have a correct understanding of the product.

◆ Operational documents: focus on the process of implementing various operations, so as to instruct the engineers in effective and appropriate operations.

◆ Referential documents: provide detailed information about the equipment for engineers' reference, so that they can have a better understanding of the equipment and can operate it properly.

2.1.1 Descriptive Documents

Table 2-1 lists the descriptive documents and their main contents.

Table 2-1   Descriptive documents and their main contents

Document	Main Content
AN5116-06B Optical Line Terminal Equipment Documentation Guide	Introduces the retrieval method, contents, releasing, reading approach, and suggestion feedback method for the complete manual set for the AN5116-06B.
AN5116-06B Optical Line Terminal Equipment Product Description	Introduces the AN5116-06B's network location, functional features, hardware structure, FTTx application model, equipment configuration, network management system and technical specifications. It is the foundation of the complete manual set. Other manuals extend and enrich the concepts introduced in the Product Description.

Table 2-1   Descriptive documents and their main contents (Continued)

Document	Main Content
AN5116-06B Optical Line Terminal Equipment Feature Description	Introduces the key features supported by the AN5116-06B, including GPON / EPON access, GPON / EPON terminal management, VLAN, multicast, voice and safety; and introduces these functions in details in terms of definition, features, specification, principle description, references and so on.
AN5116-06B Optical Line Terminal Equipment Hardware Description	Introduces the appearance, structure, functions, technical specifications, and operating method for the AN5116-06B cabinet, PDP, subrack, cards, cables and wires, facilitating users' mastery of the hardware features of the equipment.

2.1.2   Operational Documents

Table 2-2 lists the operational documents and their main contents.

Table 2-2   Operational documents and their main contents

Document	Main Content
AN5116-06B Optical Line Terminal Equipment Installation Guide	Introduces the overall installation and acceptance inspection procedures from unpacking inspection to poweron examination after the equipment is delivered on site, and provides reference information (e.g. safety principles and wiring scheme of various interfaces) to guide users to install the equipment.
AN5116-06B Optical Line Terminal Equipment EPON Configuration Guide	Introduces the method for configuring the EPON services supported by the AN5116-06B via the ANM2000, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, and software upgrading configuration, to guide users on startup for various services and software upgrading.
AN5116-06B Optical Line Terminal Equipment GPON Configuration Guide	Introduces the method for configuring the GPON services supported by the AN5116-06B via the ANM2000, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, and software upgrading configuration, to guide users on startup for various services and software upgrading.

Table 2-2   Operational documents and their main contents (Continued)

Document	Main Content
AN5116-06B Optical Line Terminal Equipment Component Replacement	Introduces the operation procedures for replacing the AN5116-06B's components, including preparations, precautions, early operations, operation process and subsequent operations, so as to guide users with the component replacement on the hardware.
AN5116-06B Optical Line Terminal Equipment Routine Maintenance	Introduces the daily, weekly, monthly, quarterly and annual routine maintenance operations on the AN5116-06B. Users are able to eliminate silent failures in the equipment operation process as early as possible via implementing the routine maintenance.
AN5116-06B Optical Line Terminal Equipment Troubleshooting Guide	Introduces the fault processing principles and methods of fault diagnosis and isolation for the AN5116-06B. Also discusses the typical fault cases of various EPON / GPON services. In case of complex issues, users can contact FiberHome for technical support according to the instructions in this document.

2.1.3   Referential Documents

Table 2-3 lists the referential documents and their main contents.

Table 2-3   Referential documents and their main contents

Document	Main Content
AN5116-06B Optical Line Terminal Equipment GUI Reference	Introduces the shortcut menu for every card of the AN5116-06B on the ANM2000, including the function, parameter explanation, precautions and configuration example of every command in the shortcut menu of each card, to help users master the operation of the AN5116-06B using the ANM2000.
AN5116-06B Optical Line Terminal Equipment Alarm and Event Reference	Introduces the AN5116-06B alarm / event information, including alarm / event names, alarm / event levels, possible reasons, effects on the system, and processing procedures, to guide users on effective alarm / event processing.

2.2   Main Contents of Documents

2.2.1   Documentation Guide

Content

Introduces the categories, retrieving methods, contents, releasing, reading approaches, and suggestion feedback approaches for the complete AN5116-06B manual set.

See Table 2-4 for the outline of the *AN5116-06B Optical Line Terminal Equipment Documentation Guide*.

Table 2-4   Outline of the *AN5116-06B Optical Line Terminal Equipment Documentation Guide*

Chapter	Summary
1 Documentation Retrieval	Describes how to retrieve the documents.
2 Overview of Documentation Set	Introduces the classification and main contents of the product documents.
3 Releasing and Obtaining Documents	Describes the release modes for the product documents and how to apply for these documents.
4 Providing Feedbacks	Provides the format of Product Documentation Customer Satisfaction Survey, in which the users can fill the comments and suggestions.

Purpose

Users can develop a general ideal about all product documents quickly via the *AN5116-06B Optical Line Terminal Equipment Documentation Guide*. You can refer to this manual whenever you have a question with the AN5116-06B user documents.

If you have any comment or suggestion on the FiberHome product documents, please fill in the feedback form in chapter 4 and send it to FiberHome via the listed feedback approaches, so that we can improve our work to cater for your demand better.

Intended readers

All users.

2.2.2　　　Product Description

Content

Introduces the AN5116-06B's network location, functional features, hardware structure, FTTx application model, equipment configuration, network management system and technical specifications. It is the foundation of the complete manual set. Other manuals extend and enrich the concepts introduced in the *Product Description*.

See Table 2-5 for the outline of the *AN5116-06B Optical Line Terminal Equipment Product Description*.

Table 2-5　　　Outline of the *AN5116-06B Optical Line Terminal Equipment Product Description*

Chapter	Summary
1 Product Introduction	Introduces the orientation, functions and features of the AN5116-06B.
2 Product Application	Introduces the network connection, application by technology and site application of the AN5116-06B.
3 Product Structure	Describes the hardware structure and software architecture and the corresponding functions of the AN5116-06B.
4 System Management	Describes the functions and the network connection modes of the AN5116-06B's ANM2000 system.
5 Technical Specifications	Introduces the performance specifications and the international standards and protocols supported by the AN5116-06B.
Appendix A Abbreviations	Explains the meanings of all the abbreviations used in this manual.

Purpose

Acquaints users with the complete concept of the AN5116-06B and provides basic information for users to read other manuals as well as performs operations and maintenance on the equipment. When users have questions about the supported functions, network connection modes, features and technical specifications of the AN5116-06B, they can find answers in this manual.

Intended readers

This manual is recommended to purchasing engineers and network planning engineers.

2.2.3 Hardware Description

Content

Introduces the appearance, structure, functions, technical specifications, and usage method for the AN5116-06B's cabinet, PDP, subrack, cards, cables and wires, facilitating users' mastery of the hardware features of the equipment.

See Table 2-6 for the outline of the *AN5116-06B Optical Line Terminal Equipment Hardware Description*.

Table 2-6   Outline of the *AN5116-06B Optical Line Terminal Equipment Hardware Description*

Chapter	Summary
1 Cabinet	Introduces the outline, dimensions, weight, mechanical structure, typical layout, wire arrangement inside the cabinet and the ventilation principle of the AN5116-06B cabinet.
2 PDP	Introduces the functions, parameter descriptions, outline and power terminal of the PDP on the AN5116-06B.
3 Subrack	Introduces the outline, structure, dimensions, weight, configuration, fan unit, air deflector unit and interfaces of the subrack on the AN5116-06B.
4 Card	Introduces the outline, structure, configuration, main functions, indicator LEDs, interfaces and technical specifications of the cards on the AN5116-06B.
5 Wire and Cable	Introduces the purpose, structure, connection relationships and technical specifications of the cables and wires used by the AN5116-06B.
Appendix A Abbreviations	Explains the meanings of all the abbreviations used in this manual.

Purpose

> Acquaints the users with outline, structure, main functions, technical specifications and use method of the each hardware component on the AN5116-06B. When users have questions about the hardware information during the equipment installation, daily operation and troubleshooting, they can find answers in this manual.

Intended readers

> This manual is recommended to the installation supervising engineers, field maintenance engineers and system maintenance engineers.

2.2.4 Feature Description

Content

> Introduces the key features supported by the AN5116-06B, including GPON / EPON access, GPON / EPON terminal management, VLAN, multicast, voice and safety; and introduces these functions in details in terms of definition, characteristic, specification, principle description, references and so on.
>
> See Table 2-7 for the outline of the *AN5116-06B Optical Line Terminal Equipment Feature Description*.

Table 2-7 Outline of the *AN5116-06B Optical Line Terminal Equipment Feature Description*

Chapter	Summary
1 EPON Access	Introduces the definition, characteristics, specifications and other information of the EPON access feature.
2 GPON Access	Introduces the definition, characteristics, specifications and other information of the GPON access feature.
3 EPON Terminal Management	Introduces the definition, characteristics, specifications and other information of the EPON terminal management feature.
4 GPON Terminal Management	Introduces the definition, characteristics, specifications and other information of the GPON terminal management feature.

Table 2-7   Outline of the *AN5116-06B Optical Line Terminal Equipment Feature Description* (Continued)

Chapter	Summary
5 Multicast Service Access	Introduces the definition, characteristics, specifications and other information of the multicast, IGMP Proxy, IGMP Snooping, multicast VLAN management, user management, program management and PIM-SM features.
6 VoIP Service Access	Introduces the definition, characteristics, specifications and other information of the VoIP, H.248, MGCP and SIP features.
7 TDM Service Access	Introduces the definition, characteristics, specifications and other information of the GPON TDM service access feature.
8 Layer 2 Characteristics	Introduces the layer 2 features such as MAC address management, 802.1Q VLAN, QinQ VLAN, VLAN Translation, RSTP, Ethernet link aggregation and Ethernet port mirroring.
9 Layer 3 Characteristics	Introduces the layer 3 features such as ARP Proxy, DHCP Relay, OSPF and RIP.
10 Flow Management	Introduces the flow categories and flow strategies.
11 DHCP	Introduces the definition, characteristics, specifications and other information of DHCP Option82 and DHCP Option60 features.
12 QoS	Introduces the definition, characteristics, specifications and other information of priority level marking, CoS priority level, scheduling, congestion control and rate control based on traffic and port features.
13 DBA	Introduces the definition, characteristics, specifications and other information of the DBA feature.
14 System Security	Introduces the definition, characteristics, specifications and other information of the anti DoS attack and MAC address filtering features.
15 User Security	Introduces the definition, characteristics, specifications and other information of the anti MAC spoofing, EPON user data encryption and GPON user data encryption features.
16 Redundancy	Introduces the definition, characteristics, specifications and other information of the core switch card redundancy, uplink port redundancy and PON port redundancy features.

Table 2-7 Outline of the *AN5116-06B Optical Line Terminal Equipment Feature Description* (Continued)

Chapter	Summary
17 ACL	Introduces the definition, characteristics, specifications and other information of the ACL feature.
18 Clock Feature	Introduces the definition, characteristics, specifications and other information of the NTP and various clock system features.

Purpose

Instructs users in learning about the definitions of the features, the support conditions for the feature specifications of the equipment and other closely related references of the features; helps them obtain a thorough understanding of the features on the equipment feature list and profoundly comprehend the principles of how the features are achieved on the AN5116-06B equipment.

Intended readers

This manual is recommended to network planning engineers and data configuration engineers.

2.2.5   Installation Guide

Content

Introduces the overall installation and verifying procedure from unpacking inspection to power-on examination after the equipment is delivered on site, and provides reference information (e.g. safety principles and wiring scheme of a variety of interfaces) to guide users to install the equipment.

See Table 2-8 for the outline of the *AN5116-06B Optical Line Terminal Equipment Installation Guide*.

Table 2-8   Outline of the *AN5116-06B Optical Line Terminal Equipment Installation Guide*

Chapter	Summary
1 Safety Precautions	Introduces the safety precautions that users should obey during the installation and operation of the AN5116-06B.
2 Equipment Introduction	Introduces the structure and components of the equipment, such as the cabinets, PDPs and subracks.
3 Installation Flow	Introduces the overall flow of the equipment installation.
4 Installation Preparation	Introduces the preparation before the installation, including the operation technical document preparation, tool and instrument preparation and installation environment inspection.
5 Installing 19-inch Cabinet	Introduces the procedure of installing a 19-inch cabinet.
6 Installing 21-inch Cabinet	Introduces the procedure of installing a 21-inch cabinet.
7 Installing Subrack and Relevant Components	Introduces how to install the subrack, fiber guide unit, card, fan unit and subrack anti-dust screen.
8 Connection and Layout of Wires and Cables	Introduces the procedures of connecting and arranging various wires, cables and pigtails for the equipment.
9 Installing Cabinet Doors	Introduces how to install the side door and front door of the 19-inch cabinet as well as the front door of the 21-inch cabinet.
10 Checking Installation	Introduces the items to be checked after the installation.
11 Power-on Test	Introduces the procedures of powering on and powering off the equipment, including the cabinet power-on, subrack power-on and equipment power-off.
Appendix A PDP	Introduces the components of the PDP.
Appendix B Adjustable Cabinet Base	Introduces the structure of the adjustable cabinet bases equipped for the 19-inch cabinet and the 21-inch cabinet.

Purpose

Acquaints users with the installation method of each part of the AN5116-06B. During the equipment installation, users should operate according to the methods introduced in this manual.

Intended readers

This manual is recommended to the hardware installation engineers and installation supervising engineers.

2.2.6　　EPON Configuration Guide

Content

Introduces the method for configuring the EPON services supported by the equipment via the ANM2000, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, CATV service configuration, and software upgrading configuration, to guide users on start-up for various services and software upgrading.

See Table 2-9 for the outline of the *AN5116-06B Optical Line Terminal EPON Configuration Guide*.

Table 2-9　　Outline of the *AN5116-06B Optical Line Terminal Equipment EPON Configuration Guide*

Chapter	Summary
1 ANM2000 Management Channel Configuration	Introduces the procedure of configuring the AN5116-06B's management channel in the ANM2000 system.
2 Adding Equipment	Introduces how to add the AN5116-06B in the ANM2000 system management domain.
3 ONU Authentication and Authorization	Introduces the procedure of authenticating and authorizing the ONU before the services on the AN5116-06B are started.
4 Voice Service Configuration	Introduces the start-up procedure of the MGCP, H.248 and SIP protocol voice services and the configuration method of the NGN parameters.
5 Data Service Configuration	Introduces the start-up procedures of the data service without VLAN translation, with N:1 VLAN translation and with 1:1 VLAN translation as well as the configuration method of the QinQ parameters.
6 Multicast Service Configuration	Introduces the start-up procedure of the multicast service under the proxy mode, snooping mode, proxy-snooping mode and controllable mode as well as the configuration method of the multicast protocol parameters.
7 CATV Service Configuration	Introduces the start-up procedure of the CATV service.
8 Card Software Upgrade	Introduces the operation steps of upgrading the card software.
9 ONU Software Upgrade	Introduces the operation procedure of upgrading the ONU software.

Table 2-9   Outline of the *AN5116-06B Optical Line Terminal Equipment EPON Configuration Guide* (Continued)

Chapter	Summary
10 Signal Tracing Configuration	Introduces the operation procedure of performing the signal tracing function.
11 QoS Configuration	Introduces the QoS start-up procedures based on the VLAN mode and based on the MAC address.
12 PON Protection Configuration	Introduces the configuration procedure of Type B PON protection.
13 Optical Power Testing	Introduces the configuration procedure of the optical power test.
Appendix A FTP Operation Guide	Introduces how to perform the equipment upgrading and back up operations via the FTP server.

Purpose

Acquaints users with the configuration of the EPON services supported by the AN5116-06B in the ANM2000 system. When the users perform the operations such as service start-up, software upgrade, signal tracing, QoS configuration, PON port protection and FTP operating guide via the ANM2000 system, they should refer to the methods introduced in this manual.

Intended readers

This manual is recommended to data configuration engineers and system maintenance engineers.

2.2.7   GPON Configuration Guide

Content

Introduces the method for configuring the GPON services supported by the equipment via the ANM2000, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, TDM service configuration, software upgrading configuration, signal tracing configuration, flow classification configuration and QoS configuration, to guide users on start-up for various services and software upgrading.

See Table 2-10 for the outline of the *AN5116-06B Optical Line Terminal GPON Configuration Guide*.

Table 2-10   Outline of the *AN5116-06B Optical Line Terminal Equipment GPON Configuration Guide*

Chapter	Summary
1 ANM2000 Management Channel Configuration	Introduces the procedure of configuring the AN5116-06B's management channel in the ANM2000 system.
2 Adding Equipment	Introduces how to add the AN5116-06B in the ANM2000 system management domain.
3 ONU Authentication and Authorization	Introduces the procedure of authenticating and authorizing the ONU before the services on the AN5116-06B are started.
4 Voice Service Configuration	Introduces the start-up procedure of the MGCP, H.248 and SIP protocol voice services and the configuration method of the NGN parameters.
5 Data Service Configuration	Introduces the start-up procedures of the data service under the transparent transmission mode, tag mode, N:1 VLAN translation mode, and 1:1 VLAN translation mode as well as the configuration method of the QinQ parameters.
6 Multicast Service Configuration	Introduces the start-up procedure of the multicast service under the proxy mode, snooping mode, and proxy-snooping mode as well as the configuration method of the multicast protocol parameters.
7 TDM Service Access	Introduces the configuration procedure of the TDM service.
8 Software Upgrade	Introduces the operation procedures of upgrading the card software and the ONU software.
9 Signal Tracing Configuration	Introduces the operation procedure of performing the signal tracing function.
10 Flow Classification Configuration	Introduces the configuration procedures of flow classification based on the MAC address and the IP address.
11 QoS Configuration	Introduces the QoS start-up procedures based on the VLAN mode and based on the MAC address.
12 PON Protection Configuration	Introduces the configuration procedure of Type B PON protection.
13 Optical Power Testing	Introduces the configuration procedure of the optical power test.
Appendix A FTP Operation Guide	Introduces how to perform the equipment upgrading and back up operations via the FTP server.

Purpose

Acquaints users with the configuration of the GPON services supported by the AN5116-06B in the ANM2000 system. When the users perform the operations such as service start-up, software upgrade, signal tracing, flow classification, QoS configuration, and FTP operating guide via the ANM2000 system, they should refer to the methods introduced in this manual.

Intended readers

This manual is recommended to data configuration engineers and system maintenance engineers.

2.2.8　　GUI Reference

Content

Introduces the shortcut menu for every card of the AN5116-06B on the ANM2000, including the function, parameter explanation, precautions and configuration example of every command in the shortcut menu of each card, to help users master the operation of the AN5116-06B on the ANM2000.

See Table 2-11 for the outline of the *AN5116-06B Optical Line Terminal Equipment GUI Reference*.

Table 2-11　　Outline of the *AN5116-06B Optical Line Terminal Equipment GUI Reference*

Chapter	Summary
1 Common Commands	Introduces the common commands for the objects of different levels on the AN5116-06B.
2 System Shortcut Menu Commands	Introduces the system shortcut menu commands of the AN5116-06B.
3 HSWA Card Shortcut Menu Commands	Introduces the HSWA card shortcut menu commands of the AN5116-06B.
4 EC4B / EC8B Card Shortcut Menu Commands	Introduces the EC4B / EC8B card shortcut menu commands of the AN5116-06B.
5 GC4B / GC8B Card Shortcut Menu Commands	Introduces the GC4B / GC8B card shortcut menu commands of the AN5116-06B.
6 HU1A / HU2A / GU6F Card Shortcut Menu Commands	Introduces the HU1A / HU2A / GU6F card shortcut menu commands of the AN5116-06B.

Table 2-11   Outline of the *AN5116-06B Optical Line Terminal Equipment GUI Reference* (Continued)

Chapter	Summary
7 CE1B / C155A Card Shortcut Menu Commands	Introduces the CE1B / C155A card shortcut menu commands of the AN5116-06B.
8 PUBA Card Shortcut Menu Commands	Introduces the PUBA card shortcut menu commands of the AN5116-06B.
9 FAN Card Shortcut Menu Commands	Introduces the FAN card shortcut menu commands of the AN5116-06B.
10 EPON Terminal Shortcut Menu Commands	Introduces the shortcut menu commands of EPON terminal supported by the AN5116-06B.
11 GPON Terminal Shortcut Menu Commands	Introduces the shortcut menu commands of GPON terminal supported by the AN5116-06B.

Purpose

Acquaints users with the methods of using each command of the AN5116-06B in the ANM2000 system. When users have questions about the GUI operation during the configuration or maintenance of the AN5116-06B, they can find answers in this manual.

Intended readers

This manual is recommended to data configuration engineers and system maintenance engineers.

2.2.9   Component Replacement

Content

Introduces the operation procedures of replacing the AN5116-06B's components, including preparations, precautions, early operations, operation process and subsequent operations, so as to provide hardware-based operation instructions.

See Table 2-12 for the outline of the *AN5116-06B Optical Line Terminal Equipment Component Replacement*.

Table 2-12   Outline of the *AN5116-06B Optical Line Terminal Equipment Component Replacement*

Chapter	Summary
1 Overview	Introduces the purpose, principles, general flow and requirements for operators regarding the replacement of various system components of the equipment.
2 Replacing a PDP	Introduces the tools, precautions, early-stage preparations, operation procedure and follow-up operations of replacing a PDP on the AN5116-06B.
3 Replacing a Subrack	Introduces the tools, precautions, early-stage preparations, operation procedure and follow-up operations of replacing a subrack on the AN5116-06B.
4 Replacing a Card	Introduces the tools, precautions, early-stage preparations, operation procedure and follow-up operations of replacing each card on the AN5116-06B.
5 Replacing a Fan Unit	Introduces the tools, precautions, early-stage preparations, operation procedure and follow-up operations of replacing a fan unit on the AN5116-06B.
6 Replacing a Cable	Introduces the tools, precautions, early-stage preparations, operation procedure and follow-up operations of replacing each cable on the AN5116-06B.
7 Replacing an Optical / Electrical Module	Introduces the tools, precautions, early-stage preparations, operation procedure and follow-up operations of replacing an optical / electrical module on the AN5116-06B.
8 Replacing an ONU	Introduces how to replace an EPON / GPON ONU with a new one of the same type when it is faulty.

Purpose

Acquaints users with the operation methods of replacing the PDP,subracks, cards, fan units, cables, optical modules and ONU of the AN5116-06B. Users should follow the methods introduced in this manual for daily maintenance operations or fault handling operations on the hardware of the AN5116-06B equipment.

Intended readers

This manual is recommended to field maintenance engineers.

2.2.10　Routine Maintenance

Content

Introduces the daily, weekly, monthly, quarterly and annual routine maintenance operations of the AN5116-06B. Users are able to eliminate the potential risks in the equipment operation process as early as possible via implementing the routine maintenance.

See Table 2-13 for the outline of the *AN5116-06B Optical Line Terminal Equipment Routine Maintenance*.

Table 2-13　Outline of the *AN5116-06B Optical Line Terminal Equipment Routine Maintenance*

Chapter	Summary
1 Overview	Introduces the purpose, precautions and rules of the routine maintenance operations, duties of personnel concerned, and approaches for technical support.
2 Remote Maintenance Guide	Introduces the operation procedure for the remote maintenance of the AN5116-06B.
3 On-site Maintenance Guide	Introduces the operation procedure for the on-site maintenance of the AN5116-06B.
Appendix Routine Maintenance Worksheet	Displays the routine maintenance worksheets of the AN5116-06B.

Purpose

Provides users with a basic understanding of the daily maitenance items of the AN5116-06B and instructs them to perform the standard maintenance operations following the methods introduced in this manual based on demand.

Intended readers

This manual is recommended to field maintenance engineers.

2.2.11   Alarm and Event Reference

Content

Introduces the AN5116-06B's alarm information and event reference, including alarm / event names, alarm / event levels, possible reasons, effects on the system, and processing procedure, to guide users on effective alarm / event processing.

See Table 2-14 for the outline of the *AN5116-06B Optical Line Terminal Equipment Alarm and Event Reference*.

Table 2-14   Outline of the *AN5116-06B Optical Line Terminal Equipment Alarm and Event Reference*

Chapter	Summary
1 Overview	Introduces the alarm processing principles and the definition, levels and list of the alarms and events on the AN5116-06B.
2 Basic Operation	Introduces the operation procedure of viewing the alarms and event, confirming current alarms, configuring and viewing the customized alarms.
3 Urgent Alarm	Introduces the attributes, causes, influences on the system and processing method of the urgent alarms reported by the cards and ONU on the AN5116-06B.
4 Major Alarm	Introduces the attributes, causes, influences on the system and processing method of the major alarms reported by the core switch card and ONU on the AN5116-06B.
5 Minor Alarm	Introduces the attributes, causes, influences on the system and processing method of the minor alarms reported by the uplink card and ONU on the AN5116-06B.
6 Prompt Alarm	Introduces the attributes, causes, influences on the system and processing method of the prompt alarms reported by the cards and ONU on the AN5116-06B.
7 Urgent Event	Introduces the causes, influences on the system and processing method of the urgent events reported by the cards and ONU on the AN5116-06B.
8 Major Event	Introduces the causes, influences on the system and processing method of the major events reported by the cards and ONU on the AN5116-06B.

Table 2-14 Outline of the *AN5116-06B Optical Line Terminal Equipment Alarm and Event Reference* (Continued)

Chapter	Summary
9 Minor Event	Introduces the causes, influences on the system and processing method of the minor events reported by the cards and ONU on the AN5116-06B.
10 Prompt Event	Introduces the causes, influences on the system and processing method of the prompt events reported by the cards and ONU on the AN5116-06B.

Purpose

Acquaints users with handling methods for all alarms and events of the AN5116-06B. Users can analyze, isolate and handle the all the AN5116-06B's alarms and events reported on the ANM2000 according to the methods introduced in this manual.

Intended readers

This manual is recommended to field maintenance engineers and system maintenance engineers.

2.2.12 Troubleshooting Guide

Content

Introduces the fault processing principles and methods of fault diagnosis and isolation for the AN5116-06B. Also discusses the typical fault cases of various EPON / GPON services. If the trouble is too complicated to process, users can refer to FiberHome for technical support according to the instructions in this document.

See Table 2-15 for the outline of the *AN5116-06B Optical Line Terminal Equipment Troubleshooting Guide*.

Table 2-15   Outline of the *AN5116-06B Optical Line Terminal Equipment Troubleshooting Guide*

Chapter	Summary
1 Overview	Introduces the requirements for the maintenance engineers, tool and instrument list, troubleshooting principles, general troubleshooting flow and how to get technical support.
2 Common Methods for Fault Analysis and Isolation	Introduces the definition, purpose and application of the common method in fault analysis and isolation.
3 Handling Common System Faults	Introduces the causes and processing methods of the common system faults on the AN5116-06B.
4 Handling Data Service Faults	Introduces the common causes and processing methods of the data service faults on the AN5116-06B.
5 Handling Voice Service Faults	Introduces the common causes and processing methods of the voice service faults on the AN5116-06B.
6 Handling Multicast Service Faults	Introduces the common causes and processing methods of the multicast service faults on the AN5116-06B.
7 Fault Case	Introduces a fault case on the AN5116-06B, including the detailed description of the phenomenon as well as the process of analyzing and handling the fault.
Appendix Singal Tracing Guide	Introduces and analyzes the common flow of the H.248 and SIP signals.

Purpose

Acquaints users with the basic troubleshooting principles and the handling methods of the typical GPON / EPON faults. Instructs users to start from analyzing the fault phenomenon, so as to isolate and remove the fault quickly and recover the normal services as soon as possible. When the AN5116-06B has faults, users can either perform the troubleshooting procedure according to the methods introduced in this manual, or contact the technical staff at FiberHome local office and eliminate the fault under the guidance of the technical staff.

Intended readers

This manual is recommended to field maintenance engineers and system maintenance engineers.

3   Releasing and Obtaining Documents

☑ Release Mode

☑ How to Apply for the Documents

3.1   Release Mode

3.1.1   Release of Printed Documentation

The twelve manuals included in the AN5116-06B equipment documentation set are: *Documentation Guide*, *Product Description*, *Feature Description*, *Hardware Description*, *Installation Guide*, *EPON Configuration Guide*, *GPON Configuration Guide*, *GUI Reference*, *Component Replacement*, *Routine Maintenance*, *Alarm and Event Reference* and *Troubleshooting Guide*.

The printed documentation set is delivered together with the AN5116-06B. The manuals are placed in the documentation bag provided for the equipment.

3.1.2   Release of Electronic Documentation

The CD-ROMs of users manuals are delivered together with the equipment. The manuals in the CD-ROMs are saved as PDF documents and can be read via Acrobat Reader. Quantity of the CD-ROMs are specified in the contract. The CD-ROMs are placed in the documentation bag provided for the equipment.

The online helps are embedded in the ANM2000 GUI and released with the delivery of the ANM2000.

3.2   How to Apply for the Documents

You can apply for a complete set of the AN5116-06B manuals by contacting the local office of FiberHome.

4 Providing Feedbacks

☑ Feedback Form

☑ Feedback Approaches

4.1   Feedback Form

FiberHome welcomes and values your comments and suggestions. You can fill in the form below (also provided at the end of each manual) to provide your comments and suggestions for product documents.

Product Documentation Customer Satisfaction Survey

Thank you for reading and using the product documentation provided by FiberHome. Please take a moment to complete this survey. Your answers will help us to improve the documentation and better suit your needs. Your responses will be confidential and given serious consideration. The personal information requested is used for no other purposes than to respond to your feedback.

Name	
Phone Number	
Email Address	
Company	

To help us better understand your needs, please focus your answers on a single documentation or a complete documentation set.

Documentation Name	
Code and Version	

Usage of the product documentation:

1. How often do you use the documentation?

☐ Frequently   ☐ Rarely   ☐ Never   ☐ Other (please specify) _____

2. When do you use the documentation?

☐ in starting up a project   ☐ in installing the product   ☐ in daily maintenance   ☐ in troubleshooting   ☐ Other (please specify)

3. What is the percentage of the operations on the product for which you can get instruction from the documentation?

☐ 100%   ☐ 80%   ☐ 50%   ☐ 0%   ☐ Other (please specify)_____

4. Are you satisfied with the promptness with which we update the documentation?

☐ Satisfied   ☐ Unsatisfied (your advice) _____

5. Which documentation form do you prefer?

☐ Print edition   ☐ Electronic edition   ☐ Other (please specify) _____

Quality of the product documentation:

1. Is the information organized and presented clearly?

☐ Very   ☐ Somewhat   ☐ Not at all (your advice) _____

2. How do you like the language style of the documentation?

☐ Good   ☐ Normal   ☐ Poor (please specify) _____

3. Are any contents in the documentation inconsistent with the product?

_____

4. Is the information complete in the documentation?

    □ Yes

    □ No (please specify) _____

5. Are the product working principles and the relevant technologies covered in the documentation sufficient for you to get known and use the product?

    □ Yes

    □ No (please specify)

6. Can you successfully implement a task following the operation steps given in the documentation?

    □ Yes (please give an example)

    □ No (please specify the reason)_____

7. Which parts of the documentation are you satisfied with?

_____

8. Which parts of the documentation are you unsatisfied with? Why?

_____

9. What is your opinion on the Figures in the documentation?

    □ Beautiful   □ Unbeautiful (your advice) _____

    □ Practical   □ Unpractical (your advice) _____

10. What is your opinion on the layout of the documentation?

    □ Beautiful   □ Unbeautiful (your advice) _____

11. Thinking of the documentations you have ever read offered by other companies, how would you compare our documentation to them?

    Product documentations from other companies:

    Satisfied (please specify) _____

    Unsatisfied (please specify)

12. Additional comments about our documentation or suggestions on how we can improve:

_____

_____

Thank you for your assistance. Please fax or send the completed survey to us at the contact information included in the documentation. If you have any questions or concerns about this survey please email at edit@fiberhome.com.cn.

4.2   Feedback Approaches

You can feed back the *Product Documentation Customer Satisfaction Survey* to FiberHome by the following means:

◆   Send it via this e-mail address: edit@fiberhome.com.cn.

◆   Contact the local offices of FiberHome.

Thank you again for your support to FiberHome!

Product Documentation Customer Satisfaction Survery

Thank you for reading and using the product documentation provided by FiberHome. Please take a moment to complete this survey. Your answers will help us to improve the documentation and better suit your needs. Your responses will be confidential and given serious consideration. The personal information requested is used for no other purposes than to respond to your feedback.

Name	
Phone Number	
Email Address	
Company	

To help us better understand your needs, please focus your answers on a single documentation or a complete documentation set.

Documentation Name	
Code and Version	

Usage of the product documentation:

1. How often do you use the documentation?

☐ Frequently ☐ Rarely ☐ Never ☐ Other (please specify) ————————

2. When do you use the documentation?

☐ in starting up a project ☐ in installing the product ☐ in daily maintenance ☐ in trouble shooting ☐ Other (please specify) ————————

3. What is the percentage of the operations on the product for which you can get instruction from the documentation?

☐ 100% ☐ 80% ☐ 50% ☐ 0% ☐ Other (please specify) ————————

4. Are you satisfied with the promptness with which we update the documentation?

☐ Satisfied ☐ Unsatisfied (your advice) ————————

5. Which documentation form do you prefer?

☐ Print edition ☐ Electronic edition ☐ Other (please specify) ————————

Quality of the product documentation:

1. Is the information organized and presented clearly?

☐ Very ☐ Somewhat ☐ Not at all (your advice) ————————

2. How do you like the language style of the documentation?

☐ Good ☐ Normal ☐ Poor (please specify) ————————

3. Are any contents in the documentation inconsistent with the product?

————————————————

4. Is the information complete in the documentation?

☐ Yes

☐ No (Please specify) _____

5. Are the product working principles and the relevant technologies covered in the documentation sufficient for you to get known and use the product?

☐ Yes

☐ No (Please specify) _____

6. Can you successfully implement a task following the operation steps given in the documentation?

☐ Yes (Please give an example) _____

☐ No (Please specify the reason) _____

7. Which parts of the documentation are you satisfied with?

_____

8. Which parts of the documentation are you unsatisfied with?Why?

_____

9. What is your opinion on the Figures in the documentation?

☐ Beautiful   ☐ Unbeautiful (your advice) _____

☐ Practical   ☐ Unpractical (your advice) _____

10. What is your opinion on the layout of the documentation?

☐ Beautiful   ☐ Unbeautiful (your advice) _____

11. Thinking of the documentations you have ever read offered by other companies, how would you compare our documentation to them?

Product documentations from other companies:_____

Satisfied (please specify) _____

Unsatisfied (please specify) _____

12. Additional comments about our documentation or suggestions on how we can improve:

_____

_____

Thank you for your assistance. Please fax or send the completed survey to us at the contact information included in the documentation. If you have any questions or concerns about this survey please email at
edit@fiberhome.com.cn