E-PON FTTH Systems

FURUKAWA ELECTRIC

E-PON ONU Operation Support System
FITELwave AG-Manager

Server

3U Type E-PON Center Equipment (OLT)
FITELwave AG1600E

Router

E-PON Extender, 4ch WDM
FITELwave AG400 Series

INTERNET

20km

20km

E-PON ONU for Communication
FITELwave AG20E（L）

E-PON Extender, 1ch
FITELwave AG100 Series

E-PON Extender, 4ch WDM
FITELwave AG400 Series

Wide Temperature Range
Specification E-PON ONU
FITELwave AG70 Series

SFP-type E-PON ONU
FITELwave AG9

1　E-PON Center Equipment（OLT）
FITELwave AG1600

This is the E-PON optical line terminal for FTTH, which offers an extremely high-speed access line of 1Gbps and can accommodate up to 1,024 subscribers in each chassis.

Item	Specifications
Transmission medium	1.3μm zero-dispersion optical fiber
Optical wavelength	Downstream: 1,480～1,500nm; Upstream: 1,260～1,360nm
Allowable optical transmission loss	29dB as a standard（including power penalty of 1dB）
Number of optical branches	Up to 64 branches
Configuration	Power supply: 2 units（redundant configuration）
	Fan: 2 units（redundant configuration）
	SV: 1 unit
	PIF: 16 units
OLT interface	100BASE-TX/1000BASE-T
	Auto-Negotiation/Fixed（full duplex/half duplex）
Power supply	AC100V or DC-48V, 400W or less
Dimensions	480（W）×352（D）×214.5（H）mm（excluding projections）
Mass	15kg or less（full implementation）

2　E-PON Optical Line Terminal（3U Type）
FITELwave AG1600E

NEW
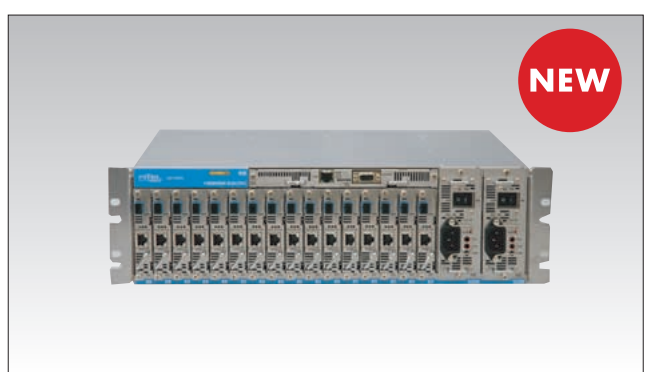
This is a slimmer version of AG1600. The accommodation efficiency improves by 60%.

Item	Specifications
Transmission medium	1.3μm zero-dispersion optical fiber
Optical wavelength	Downstream: 1,480～1,500nm; Upstream: 1,260～1,360nm
Allowable optical transmission loss	29dB as a standard（including power penalty of 1dB）
Number of optical branches	Up to 64 branches per PIF card
Configuration	Power supply: 2 units
	Fan: 2 units
	SV: 1 unit
	PIF: 16 units
PON Interface（PIF）	100BASE-TX/1000BASE-T
	Auto-Negotiation/Fixed（full duplex/half duplex）
Power supply	AC100V～240V
Dimensions	480（W）×380（D）×130（H）mm（excluding projections）
Mass	20kg or less（full implementation）

3 · E-PON Extender, 4ch WDM
FITELwave AG400 Series
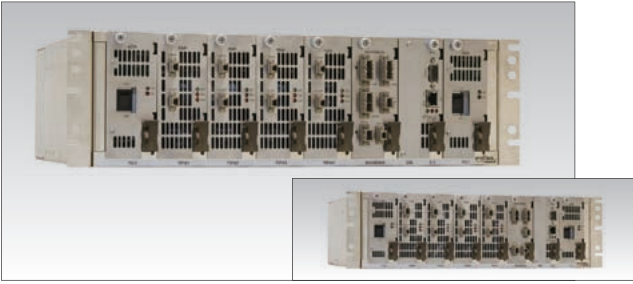
This equipment extends the service distance of E-PON equipment up to **50km**. It offers a function of multiplexing four OLTs on a single optical fiber.

Item	Specifications
Transmission medium	1.3μm zero-dispersion optical fiber
Optical wavelength	Downstream: 1,490nm band; Upstream: 1,310nm band Video downstream: 1,550nm band
Optical connector	Data system: SC-SPC or MU connector Video system: SC-APC or MU connector
Configuration	Power supply: 2 units (redundant configuration)
	Fan: 3 units (redundant configuration)
	SV: 1 unit
	Transponder: 4 units as a standard
Monitoring and control interface	SNMP/WEB/TELNET/Dry contact
Power supply	AC100V or DC-48V
Dimensions	480(W)×384(D)×113(H)mm(excluding projections)
Mass	20kg or less(full implementation)

4 · E-PON ONU for Communication
FITELwave AG20E (L)

FITELwave AG20E (L) is E-PON ONU that can offer up to a 1Gpbs service to subscribers, when connected with the E-PON optical line terminal.

Item	Specifications
Transmission medium	1.3μm zero-dispersion optical fiber
Optical wavelength	Downstream: 1,480〜1,500nm; Upstream: 1,260〜1,360nm
Allowable optical transmission loss	29dB as a standard (including power penalty of 1dB)
Structure	Optical fiber surplus length storage section, AC adapter
LAN port 1	10BASE-T/100BASE-TX/1000BASE-T
	Auto-Negotiation/Fixed (full duplex/half duplex)
	Auto MDI/MDIX
LAN port 2	10BASE-T/100BASE-TX
	Auto-Negotiation/Fixed (full duplex/half duplex)
	Auto MDI/MDIX
Power supply	AC100V, 10W or less
Dimensions	35(W)×158(D)×114(H)mm(excluding projections) (tentative)
Mass	Main body: 0.5kg or less, AC adaptor: 0.4kg or less

5 · Wide Temperature Range Specification E-PON ONU
## FITELwave AG70 Series

NEW

The service temperature range has been extended to **-20°C to 60°C**. The scope of application of E-PON system has been expanded.

Item	Specifications (tentative)
Transmission medium	1.3μm zero-dispersion optical fiber
Optical wavelength	Downstream: 1,480〜1,500nm; Upstream: 1,260〜1,360nm
Allowable optical transmission loss	29dB as a standard (including power penalty of 1dB)
Temperature	-20〜50°C or -20〜60°C
Optical connector	SC/SPC
LAN port 1	10BASE-T/100BASE-TX/1000BASE-T
	Auto MDI/MDIX
LAN port 2	10BASE-T/100BASE-TX
	Auto MDI/MDIX
Power supply	DC12V
Dimensions	34(W)×115(D)×165(H)mm(excluding projections)
Mass	1kg or less(full implementation)

# 6 · SFP-type E-PON ONU
FITELwave AG9

NEW
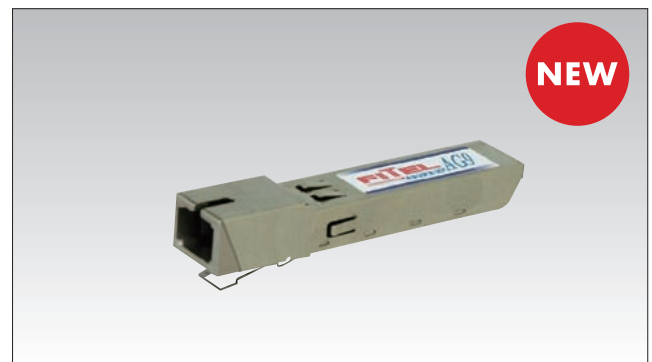
This is an SFP-type ultra compact E-PON ONU compliant with the IEEE802.3ah.

Item	Specifications (tentative)
Transmission speed	1.25Gbit/s
Transmission medium	1.3μm zero-dispersion optical fiber
Optical connector	SC-SPC
Optical wavelength	Downstream: 1,480〜1,500nm; Upstream: 1,260〜1,360nm
Allowable optical transmission loss	26dB or more (including power penalty of 1dB)
Structure	SFP-compliant
Power supply	DC3.3V
Dimensions	14.1(W)×67(D)×10.6(H)mm (excluding projections)

## 7 Optical Distribution Unit
FWM Coupler Series
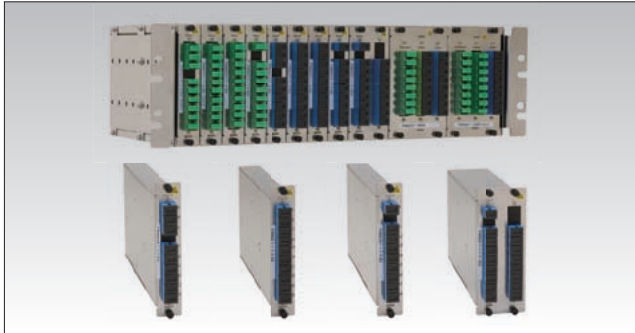
The couplers can be mounted as units, and diverse combinations enable flexible system configuration. The module units can be implemented on EIA3U sub-rack. Configurations can be made to suit the rack usage conditions.

Item	Specifications			
Model	2-port	4-port	8-port	16-port
	FWM201-1x2xx	FWM201-1x4xx	FWM301-1x8xx	FWM301-1x16xx
Applicable fiber	SM fiber			
Terminal connector (Note)	SC/APC			
Applicable adapter	SC with shutter/APC adapter (green)			
Type	1x2 (3 units)	1x4 (2 units)	1x8 (1 unit)	1x16 (1 unit)
Insertion loss	4.3dB or less	7.8dB or less	11.5dB or less	15.0dB or less
Unit occupation width when implemented on sub-rack	1	1	1	2
Number of units accommodated on FH-MF-1102A	For 16 units (with 2-port, 4-port or 8-port coupler)			
Dimensions (EIA30 3U)	480(W)×271.5(D)×132(H)mm (excluding projections)			

Note: Compatibility with SPC connector is also available

8 High-Density WDM Filter Unit
FWM Unit Series
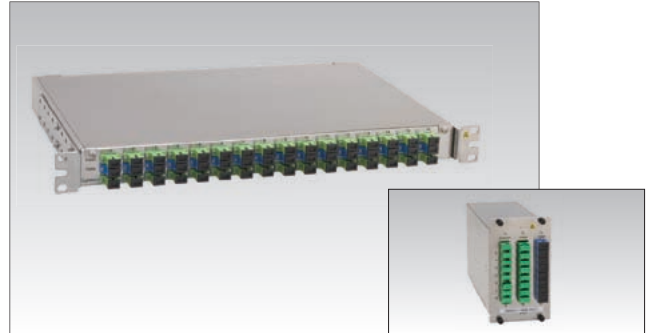
This is a three-wavelength band multiplex WDM filter unit. The planar lightwave circuit (PLC (Note)) technology is used to achieve even greater cost savings and higher density.

Item	Specifications		
Model	FWM-301-FH-WF-B0301Ax	FWM-301-FH-WF-B0302A	
Transmission wavelength	1,310/1,490/1,550nm		
C-division output	1 output	2 outputs	
Insertion loss	2.0dB or less	5.8dB or less	C→D(1,310nm)
	2.2dB or less	6.0dB or less	D→C(1,490nm)
	2.0dB or less	5.8dB or less	V→C(1,550nm)
Isolation	9dB or more		C→V(1,310nm)
	7.5dB or more		C→V(1,490nm)
	11dB or more		C→V(1,550nm)
Optical connector	SC-APC(V、C port)　SC-SPC(D port)		
Dimensions	480(W)×342(D)×44(H)mm	480(W)×342(D)×88(H)mm	

V port: video port; D port: communication port, C port: common (transmission channel) port
Note: PLC: Planar Lightwave Circuit

## 9 E-PON Extender, 1ch
FITELwave AG100 Series

The service distance can be extended easily just by placing this extender in between the existing OLT and ONU equipment. The equipment can be placed outdoors and therefore can be applied to diverse systems.

Item	Specifications (tentative)
Transmission medium	1.3μm zero-dispersion optical fiber
Optical wavelength	Downstream: 1,490nm band; Upstream: 1,310nm band
Allowable optical transmission loss	OLT side: 29dB as a standard (including 1dB of power penalty)
	ONU side: 29dB as a standard (including 1 dB of power penalty)
Structure	Outdoor-type die cast
Optical connector	OLT side: SC connector 1
	ONU side: SC connector 1
Power supply	AC60V typ.
Dimensions	362(W)×148(D)×262(H)mm (excluding projections)
Mass	8.5kg or less (full implementation)

## 10 Closure with Built-in WDM Filter
FP-CC-W8
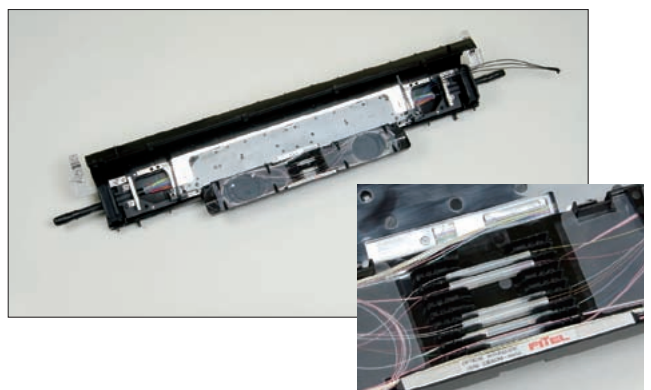
The closure integrates eight-division splitter function with WDM filter function using planar lightwave circuit (PLC) technology only, facilitating configuration of one-core three-wave FTTH system.

Item	Specifications	Remarks
Transmission wavelength	1310/1490/1550nm	
Insertion loss	12.4dB or less	P2→P3(1,310nm)
	12.4dB or less	P3→P2(1,490nm)
	12.4dB or less	P3→P1(1,550nm)
Isolation	25dB or more	P3→P1(1,310nm)
	33dB or more	P3→P1(1,490nm)
	9.5dB or more	P3→P2(1,550nm)
Dimensions	105(W)×70(D)×865(H)mm (excluding projections)	

P1 port: video port; P2 port: communication port; P3 port: common (transmission channel) port

E-PON ONU Operation Support System

FITELwave AG-Manager
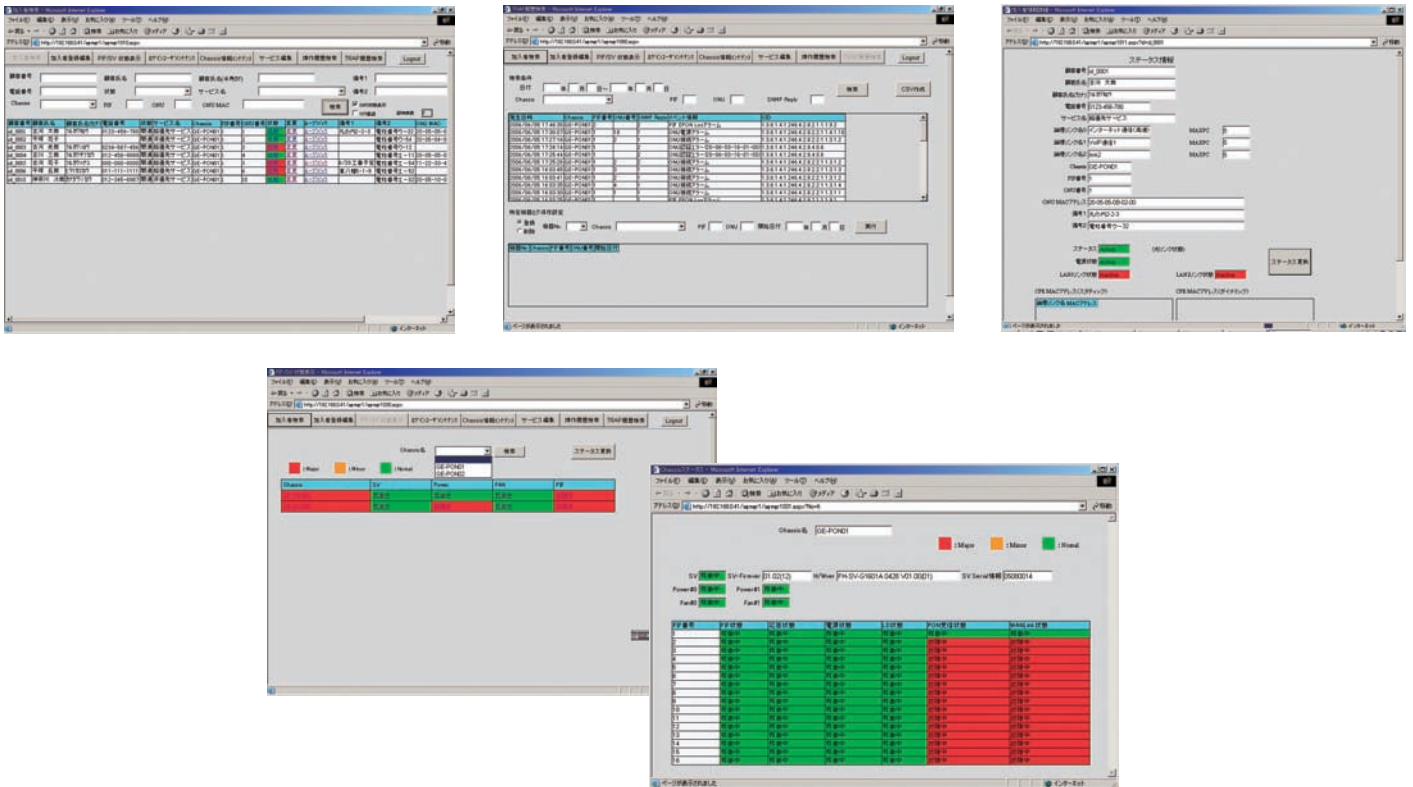
Management, operation and status display for E-PON ONU can be done on GUI.

Registration of E-PON ONU terminals, modification, ONU search at times of trouble, status display and others are possible.

Item	Specifications		
Applicable system	FITELwave AG Series SV Firm V1.02 or later Client browser: Internet Explorer 6.0 or later		
Server specifications (Note)	Server type	Rack-mounted type	Tower type
	Dimensions	430 (W)×710 (D)×43.6 (H) (1U) mm (excluding projections)	205 (W)×602 (D)×444 (H) mm (excluding projections)

Note: Choice between the rack-mounted type and tower type is possible to suit the usage environment.

* Multiple units of OLT equipment can be managed
* Setting is possible by assigning preset service template
* Equipped with search function to identify ONU based on various registered data
* OLT equipment information is displayed real-time

* Can be accessed with your PC at hand, since this is Web server system
* Equipped with batch conversion function for customer (ONU) data
* Equipped with TRAP accumulation and search function

For inquiries, contact:

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http://www.furukawa.co.jp/broadband/english/