WavePlex-2000 Two-Channel Wavelength Division Multiplexers

Illustrated: Waveplex 2000 WDMs with 100 Mbs client ports

Canary's WavePlex-2000 family provides parallel, two-channel Wavelength Division Multiplexing (WDM) for Gigabit and Fast Ethernet applications – an integrated Media Conversion/WDM solution. A synthesis of two separate technologies, WavePlex-2000 combines the benefits of active media conversion with parallel (shared) WDM access to new or existing fiber segments.

WavePlex-2000 WDM technology enables two separate data streams to traverse a fiber segment in parallel. The data streams then flow as discrete, virtual channels to individual ports or separate devices. WavePlex-2000 can be used as a redundant interface, ensuring that a backup data channel is available if the fiber link is intact. Fast Ethernet and Gigabit media/connector options include UTP Category(5)/ STP rated RJ-45 type and multi-mode or single-mode SC type Fiber. ST-type fiber connectors can be special ordered for Fast Ethernet models.

Adding flexibility ... extending technology's reach

Gigabit:
GWM-2001
Two copper data channels ...

GWM-2011
One copper and one fiber data channel ...

GWM-2021
Two fiber data channels ... parallel multiplexed to single- or multi-mode fibers

Fast Ethernet:
CWM-2001
Two copper data channels ...

CWM-2011
One copper and one fiber data channel ...

CWM-2021
Two fiber data channels ... parallel multiplexed to single- or multi-mode fibers

Feature:

Passive pass-through ports allow multiplexing of mixed protocols

The integrated media conversion/WDM solution for Gigabit and Fast Ethernet.

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Product Specifications

Power Supply:
- External switching
- 100/240 VAC, 1.2/0.6 Amp
- 50/60 Hz

Environment:
- Operating Temp.: 0 to 49ºC
- Storage Temp.: -10 to 66ºC
- Relative Humidity: 5% to 95% non-condensing

Mechanical:
- UTP to Fiber:
  Height: 1.50″ (3.8 cm)
  Length: 7.88″ (20.0 cm)
  Width: 8.14″ (20.7 cm)
  Ship Weight: 3.0 lb (1.4 Kg)
  Single Unit: 2.5 lb (1.2 Kg)
- Fiber to Fiber:
  Height: 1.00″ (2.54 cm)
  Length: 7.88″ (20.0 cm)
  Width: 8.14″ (20.7 cm)
  Ship Weight: 3.0 lb (1.4 Kg)
  Single Unit: 2.5 lb (1.1 Kg)

Regulatory:
- Designed in compliance with CE, UL, CSA & TUV standards
- IEEE 802.3z, A/B; 1000BASE-T/SX/LX
- Class 1 lasers conform to US 21CFR(J), EN 60825-1, UL 1950 and IEC-825

Warranty:
- Five (5) Years, parts and labor

WavePlex-2000 Media Converters

Use a WavePlex-2000 to interconnect copper and fiber segments, and convert between multi-mode and single-mode fiber and multiplex them over a single duplex fiber segment. WavePlex versions utilizing Passive (pass-through) optical ports allow additional equipment to be linked over an existing populated fiber segment. The user's investment in his preexisting equipment installation is maintained while multiplexing the new (equipment) fiber data with the original data traffic.

WavePlex versions with Passive optical ports are extremely versatile, flexible units. Because the Passive optical port is protocol agnostic, it can be easily used to multiplex and forward mixed-rate Ethernet data traffic, or combine Ethernet and non-Ethernet traffic for transmission. For example, 100 Mb Ethernet fiber traffic could be combined and launched with Gigabit traffic; or Fibre Channel could be combined and launched with Fast Ethernet traffic. The user should contact Canary Communications to confirm the correct port/wavelength assignments.

WavePlex versions running Fast Ethernet support Link Fault Signaling (LFS) to speedup Spanning Tree link recovery by forwarding lost link signals to each connected host. Canary was the first in the industry to develop this feature for media converters.

The pages that follow provide ordering information for Canary's WavePlex-2000 Media Converters providing Parallel Two-Channel Wavelength Division Multiplexing:

Gigabit:
- ***Two copper input data channels …***
  GWM-2001
- ***One copper and one fiber input data channel …***
  GWM-2011
- ***Two fiber input data channels … parallel multiplexed to single- or multi-mode fibers***
  GWM-2021

Fast Ethernet:
- ***Two copper input data channels …***
  CWM-2001
- ***One copper and one fiber input data channel …***
  CWM-2011
- ***Two fiber input data channels … parallel multiplexed to single- or multi-mode fibers***
  CWM-2021
- ***Also versions with passive (pass-through) parts for combining existing with new fiber data or for mixing protocol types.***

RWTÜV USA INC.
Subsidiary of RWTÜV Systems GMBH Germany
ISO 9001 : 2000

Canary Communications is an ISO 9001 : 2000 registered company.

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Models with active Gigabit Ethernet media conversion

GWM-2001 – *Two Copper input data channels parallel multiplexed to single-mode or multi-mode Fiber*

GWM-2011 – *One Copper and one Fiber input data channel parallel multiplexed to single-mode or multi-mode Fiber*

GWM-2021 – *Two Fiber input data channels parallel multiplexed to single-mode or multi-mode Fiber*

- Switch for Hard-Setting 1000BASE-SX/LX Fiber Autonegotiation for Full and Half-duplex operation and Flow Control – allows Gigabit Fiber connections to match 1000BASE-T negotiated connections
- Internal Auto-sensing, MDI / MDI-X crossover switch for proper Network Interface Card or Switch connections
- Transparent to Flow-Control commands such as PAUSE
- A full array of status / diagnostic LEDs
- Auto-sensing, 110 / 230 VAC Power Supply
- Optional: UK, Continental European power
- Dual power jacks for connecting optional, redundant power supply
- Passive "pass-through" ports allow multiplexing of mixed protocols.

Ordering Information

Gigabit Ethernet WavePlex-2000 Model Numbers	Client Input Media Types	Client Port (1) (Active Input/ Output Port)	Client Port (2) (Active Input/ Output Port)	WDM PWR Budget Min. See note* Re: Passive	WDM PWR Budget Max. See note* Re: Passive	WDM Connector Type	WDM Wavelengths (hm)	WDM Transmit Distance
GWM-2001	UTP /UTP	RJ-45	RJ-45	6.5 dB m/m	12.0 dB m/m	SC	1310/850 ηm	220/550 m m/m
GWM-2001-SM	UTP /UTP	RJ-45	RJ-45	9.0 dB s/m	16.0 dB s/m	SC	1310/1550 ηm	5 Km s/m
GWM-2011-P	UTP / MM	RJ-45	Passive m/m* 850 ηm	6.5 dB m/m	12.0 dB m/m	SC	1310/850 ηm	220/550 m m/m
GWM-2011-PSM	UTP / SM	RJ-45	Passive s/m* 1310 ηm	9.0 dB s/m	16.0 dB s/m	SC	1310/1550 ηm	5 Km s/m
GWM-2011-SM	UTP / MM	RJ-45	Active m/m 850 ηm	9.0 dB s/m	16.0 dB s/m	SC	1310/1550 ηm	5 Km s/m
GWM-2021-P	MM / MM	Active m/m 850 ηm	Passive m/m* 850 ηm	6.5 dB m/m	12.0 dB m/m	SC	1310/850 ηm	220/550 m m/m
GWM-2021-PSM	MM / SM	Active m/m 850 ηm	Passive s/m* 1310 ηm	9.0 dB s/m	16.0 dB s/m	SC	1310/1550 ηm	5 Km s/m
GWM-2021-SM	MM / MM	Active m/m 850 ηm	Active m/m 850 ηm	9.0 dB s/m	16.0 dB s/m	SC	1310/1550 ηm	5 Km s/m

(1) Specifications in Blue are for units with multi-mode WDM Ports.
Optical power values for Client multi-mode Input/Output (Ethernet) Ports. Minimum PWR Budget: 7.5 dB; Maximum PWR Budget: 13.0 dB

(2) Specifications in Black are for WDM dual wavelength single-mode ports.

** Passive Fiber Input/Output Client Ports contribute ≤ 0.5 dB loss per each connected WDM unit. Review the Fiber Power & Sensitivity figures for each device connected via a passive port. Gigabit Ethernet specifies 850 ηm wavelengths for multi-mode and 1310 ηm for single-mode connectors. It is assumed that these wavelengths will be received and forwarded through the WavePlex passive ports. For other possible wavelength combinations, please contact Canary Communications.*

Illustrated: Gigabit 2-channel WDMs

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Models with Active Fast Ethernet media conversion

GWM-2001 – *Two Copper input data channels parallel multiplexed to single-mode or multi-mode Fiber*

GWM-2011 – *One Copper and one Fiber input data channel parallel multiplexed to single-mode or multi-mode Fiber*

GWM-2021 – *Two Fiber input data channels parallel multiplexed to single-mode or multi-mode Fiber*

- Switch for Hard-Setting Full-Duplex or 100BASE-T Autonegotiation for 100 Mbs, Full and Half-duplex operation
- Active Fiber-to-Fiber ports are transparent to data rates in the range: ≤ 10 Mbs through ≤ 155 Mbs (OC-3)
- External MDI / MDI-X crossover switch for proper Network Interface Card or Switch connections
- A full array of status / diagnostic LEDs
- Switch enabled Link Fault Signaling (LFS) – Forwards lost link awareness to each connected host
- Auto-sensing, 110 / 230 VAC Power Supply
- Optional: UK, Continental European power
- Dual power jacks for connecting optional, redundant power supply

Ordering Information

Fast Ethernet WavePlex-2000 Model Numbers	Client Input Media Types	Client Port (1) (Active Input/ Output Port)	Client Port (2) (Active Input/ Output Port)	WDM PWR Budget Min. See note* Re: Passive	WDM PWR Budget Max. See note* Re: Passive	WDM Connector Type	WDM Wavelengths (ηm)	WDM Transmit Distance
CWM-2001	UTP /UTP	RJ-45	RJ-45	10.0 dB m/m	16.0 dB m/m	SC	1310/850 ηm	600 m m/m
CWM-2001-SM	UTP /UTP	RJ-45	RJ-45	18.0 dB s/m	25.0 dB s/m	SC	1310/1550 ηm	8 Km s/m
CWM-2011-P	UTP / MM	RJ-45	Passive m/m * 1310 ηm	10.0 dB m/m	16.0 dB m/m	SC	1310/850 ηm	600 m m/m
CWM-2011-PSM	UTP / SM	RJ-45	Passive s/m * 1310 ηm	18.0 dB s/m	25.0 dB s/m	SC	1310/1550 ηm	8 Km s/m
CWM-2011-SM	UTP / MM	RJ-45	Active m/m 1310 ηm	18.0 dB s/m	25.0 dB s/m	SC	1310/1550 ηm	8 Km s/m
CWM-2021-P	MM / MM	Active m/m 1310 ηm	Passive m/m 1310 ηm	10.0 dB m/m	16.0 dB m/m	SC	1310/850 ηm	600 m m/m
CWM-2021-PSM	MM / SM	Active m/m 1310 ηm	Passive s/m 1310 ηm	18.0 dB s/m	25.0 dB s/m	SC	1310/1550 ηm	8 Km s/m
CWM-2021-SM	MM / MM	Active m/m 1310 ηm	Active m/m 1310 ηm	18.0 dB s/m	25.0 dB s/m	SC	1310/1550 ηm	8 Km s/m

(1) Specifications in Blue are for multi-mode WDM Ports.
Optical power values for Client multi-mode Input/Output (Ethernet) Ports. Minimum PWR Budget: 11.0 dB; Maximum PWR Budget: 17.0 dB

(2) Specifications in Black are for WDM dual wavelength single-mode ports.

** Passive Fiber Input/Output Client Ports contribute ≤ 0.5 dB loss per each connected WDM unit. Review the Fiber Power & Sensitivity figures for each device connected via a passive port. Fast Ethernet specifies 1310 ηm wavelengths for both multi-mode and single-mode connectors. It is assumed that these wavelengths will be received and forwarded through the WavePlex passive ports. For other possible wavelength combinations, please contact Canary Communications.*

Illustrated: CWM-2011

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