



FEATURES

1. Unique molded lens construction.

Unique molded lens built in which the condenser lens is molded at the same time as the chassis.

2. Conforms to Telcordia GR-1221-core

At the MEW everything is produced under one roof from internal mechanical relays to optical products. We ensure high reliability by harnessing our powerful production technology that has been cultivated over many years.

3. Unilateral input/output fiber optic cables

By putting both the input and output fiber optic cables on one end instead of on both ends, they can be neatly laid out on one side.

4. Built in indicator terminal

Switch operation can be monitored externally by using a mechanical relay contact terminal to drive the built in mirror.

5. Wide product lineup with latching and single side stable types.

In addition to a single side stable type, 1-coil and 2-coil latching types are available.

APPLICATIONS

- 1) Optical communications infrastructure
- 2) CATV equipment
- 3) W-CDMA base stations

ORDERING INFORMATION

AWAM **0**

WA-M Optical Switch

Switch type
0: 1×2

Fiber type & Wavelength

Wavelength	1310±20 nm	1550±20 nm	1310/1550 nm
Single mode (9/125/900)	0	1	2
Single mode (9/125/250)	3	4	5

Operation type
0: Single side stable
1: 1-coil latching
2: 2-coil latching

Connector type

SC/APC	SC/SPC	MU/SPC	LC/SPC
1	2	3	4

Nominal operating voltage
1: 3 VDC
6: 4.5 VDC

WA-M optical switches (AWAM0)

TYPES

Wavelength	Connector type	Single side stable type		1-coil latching type		2-coil latching type	
		Nominal voltage: 3 V	Nominal voltage: 4.5 V	Nominal voltage: 3 V	Nominal voltage: 4.5 V	Nominal voltage: 3 V	Nominal voltage: 4.5 V
1310±20nm	SC/APC connector	AWAM00011	AWAM00016	AWAM00111	AWAM00116	AWAM00211	AWAM00216
	SC/SPC connector	AWAM00021	AWAM00026	AWAM00121	AWAM00126	AWAM00221	AWAM00226
	MU/SPC connector	AWAM00031	AWAM00036	AWAM00131	AWAM00136	AWAM00231	AWAM00236
	LC/SPC connector	AWAM00041	AWAM00046	AWAM00141	AWAM00146	AWAM00241	AWAM00246
1550±20nm	SC/APC connector	AWAM01011	AWAM01016	AWAM01111	AWAM01116	AWAM01211	AWAM01216
	SC/SPC connector	AWAM01021	AWAM01026	AWAM01121	AWAM01126	AWAM01221	AWAM01226
	MU/SPC connector	AWAM01031	AWAM01036	AWAM01131	AWAM01136	AWAM01231	AWAM01236
	LC/SPC connector	AWAM01041	AWAM01046	AWAM01141	AWAM01146	AWAM01241	AWAM01246
1310/1550nm	SC/APC connector	AWAM02011	AWAM02016	AWAM02111	AWAM02116	AWAM02211	AWAM02216
	SC/SPC connector	AWAM02021	AWAM02026	AWAM02121	AWAM02126	AWAM02221	AWAM02226
	MU/SPC connector	AWAM02031	AWAM02036	AWAM02131	AWAM02136	AWAM02231	AWAM02236
	LC/SPC connector	AWAM02041	AWAM02046	AWAM02141	AWAM02146	AWAM02241	AWAM02246

COIL DATA (at 20°C 68°F)

1) Single side stable type

Nominal operating voltage, VDC	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, VDC
3 V DC	46.7	64.3	140	150% V DC of the nominal operating voltage
4.5 V DC	31.1	145		

2) 1-coil latching type

Nominal operating voltage, VDC	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, VDC
3 V DC	23.3	128.6	70	150% V DC of the nominal operating voltage
4.5 V DC	15.6	289.3		

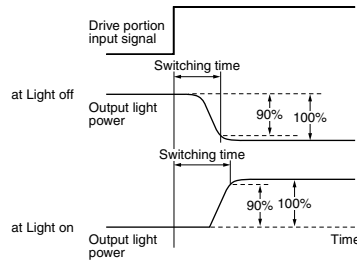
3) 2-coil latching type

Nominal operating voltage, VDC	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, VDC
3 V DC	46.7	64.3	140	150% V DC of the nominal operating voltage
4.5 V DC	31.1	145		

SPECIFICATIONS

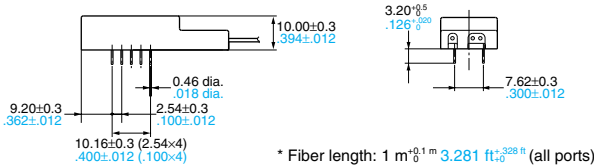
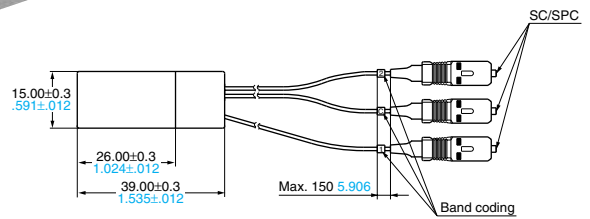
Item		Characteristics
Insertion loss <small>Notes) 1</small>		Max. 1.0 dB
Isolation		Min. 60 dB
Return loss <small>Notes) 1</small>		Min. 50 dB
P.D.L. <small>Notes) 1</small>		Max. 0.1 dB
Optical input power		Max. 100 mW (20 dBm)
Indicator contact rating	Contact resistance	Max. 1Ω (at 100 mA 5 VDC)
	Rated load	Max. 100 mA 30 VDC
Mechanical life (at 180 cpm, 20°C 68°F)		Min. 10 ⁷
Vibration resistance	Functional	10 to 55 Hz at double amplitude of 0.75 mm (Optical power fluctuation: max. 1 dB)
	Destructive	10 to 55 Hz at double amplitude of 1.52 mm
Shock resistance (Half-wave pulse of sine wave: 11 ms)	Functional	Min. 500 m/s ² (Optical power fluctuation: max. 1 dB)
	Destructive	Min. 1,000 m/s ²
Switching time (at 20°C 68°F) <small>Notes) 2</small>		Max. 6 ms (applied nominal operating voltage)
Conditions for operation, transport and storage (Not freezing and condensing at low temperature)	Ambient temperature	-5 to +70°C +23 to +158°F
	Humidity	5 to 85% R.H.
Unit weight		Approx. 7 g .25 oz

Notes: 1. Connectors are excluded. Add up to 0.2 dB typ. for each connector. Also, connector return loss is approx. 50 dB.
2. Oscilloscope waveform of switching characteristic.

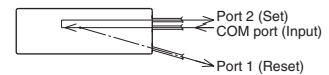


DIMENSIONS

mm inch



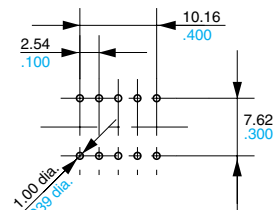
Optical signal I/O and coil impress direction indication diagram (TOP VIEW)



(BOTTOM VIEW)



PC board pattern



Tolerance: ±0.1 ±.004

WA-M optical switches (AWAM0)

NOTES

1. Usage, transport and storage conditions

1) Temperature:

-5 to +70°C +23 to +158°F

(However, when kept in packaging the allowable range is -40 to +70°C -40 to +158°F.)

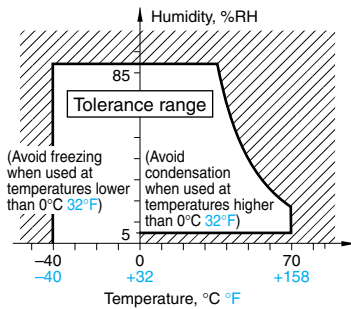
2) Humidity: 5 to 85% RH

(Avoid freezing and condensation.)

The humidity range varies with the temperature. Use within the range indicated in the graph below.

3) Atmospheric pressure: 86 to 106 kPa

Temperature and humidity range for usage, transport, and storage



2. Solder and cleaning conditions

1) Adhere to the conditions below when soldering this switch.

Solder iron tip temperature: 300°C min.

and 400°C max.

Soldering iron: 60 to 100 W

Soldering time: between 3 and 5 seconds

The effect on the switch will differ

depending on the type of PC board used.

For this reason, please verify using the actual PC board to be worked on.

2) This switch cannot be washed.

3. Precautions for use

1) Since this switch is polarized, reversing the coil + and - terminals will cause reverse operation. Be sure to connect following the attached product specification diagram.

2) Keep the ripple rate of the nominal coil voltage below 5%.

3) Avoid exceeding the specification ranges such as those for coil nominal voltage, contact rating and optical input power, exceeding specifications can cause abnormal heating or deterioration of performance.

4) For fiber, avoid bending to a radius smaller than 30 mm as doing so can cause breakage.

5) This optical switch contains precision optical components. If a switch has been subjected to a strong shock or vibration such as dropping. Do not use it; performance may have been adversely affected.

6) For latching type only, since there is a definite movement caused by changes in ambient temperature and other conditions of use, we recommend that the coil impress set and reset pulse widths be at the nominal operating voltage and at least 15 ms.

7) Latching type is shipped from the factory in the reset state. A shock to the relay during shipping or installation may cause it to change to the set state.

Therefore, it is recommended that the relay be used in a circuit which initializes the relay to the required state (set or reset) whenever the power is turned on.

8) In circuits which the relay may be left continually powered but with no switching operation for months or years, we

recommend they be designed so that there is no excitation during periods of no operation. Long-term operation of the coil

will accelerate the deterioration of coil insulation due to the heat of the coil itself.

For circuits like this, please use the latching type.