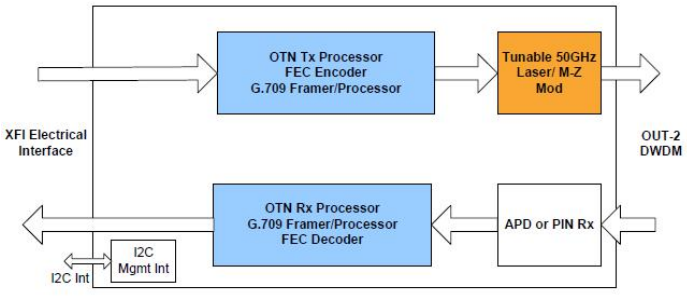
Solutions of Tunable Optical Module and 50GHz DWDM Dense Wavelength Division Multiplexing

The conventional light sources in optical communication field are all the laser modules based on a fixed wavelength. With the continuous development, application and promotion of optical communication systems, the disadvantages of fixed-wavelength DWDM lasers have been gradually revealed: On the one hand, with the development of technology, the number of wavelengths in DWDM 50GHz has reached the hundreds. In the occasion that protection needs to be provided, the backup of each laser must be provided by the laser whose wavelength can be replaced, which results in the increase in the quantity of backup DWDM optical module and the rise of operating cost; on the other hand, because the wavelength of common DWDM optical module is fixed, therefore the stock quantity of DWDM optical module with fixed wavelength is increased and it is difficult to predict the number of stock in specific channels;

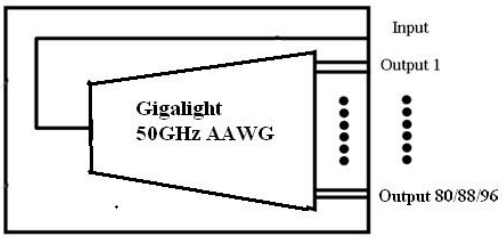
In addition, it is required to use a large number of common DWDM optical modules with different wavelengths to support the dynamic wavelength assignment in optical network and improve network flexibility, but the usage rate of each optical module is very low, resulting in a waste of resources. To solve these problems, with the development of semiconductors and related technologies, Gigalight has successfully developed a tunable optical module (SFP + and XFP packages are provided), i.e., different DWDM wavelengths can be configured and output in the same optical module, and these wavelength values and intervals all meet the requirements of ITU-T (50GHz DWDM ITU-T Full C-band). The characteristic of wavelength tunable optical module for flexibly selecting working wavelength has a very large practical value in optical fiber communication wave division multiplexing system, optical add-drop multiplexer and optical cross-connection, optical switching equipment, light source parts and other applications.

Gigalight tunable DWDM optical module adopts the chips of built-in integrated laser and MZ modulator, to meet the ITU-T (50GHz DWDM ITU-T Full C-band) requirements. With a tunable range of 90 channels based on 50GHz channel spacing, it will provide equipment manufacturers and operators with great flexibility, achieve the optimization



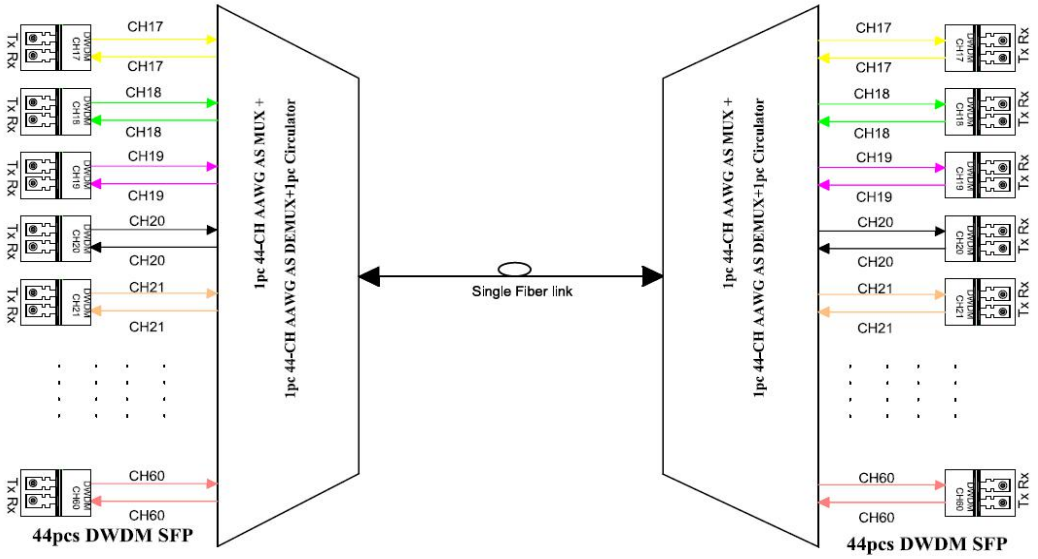
for the overall network performance and greatly reduce the demand of existing operators for DWDM SFP + module inventory. The power consumption of Gigalight tunable DWDM 10GE SFP + optical module is smaller than 1.7W, the wavelength of this module is stable, and the transmit optical power is about 0dBm; the extinction ratio is greater than 10dBm, the side die suppression ratio is greater than 51dB, the eye-diagram crossing point is between 47% and 52 %, and the sensitivity of this module can reach above -24dBm, a full 80KM optical fiber working distance; Gigalight tunable DWDM 10GE XFP optical module is divided into two versions to support FEC coding function (OTN G.709 framing) and non-FEC coding function. The power of DWDM tunable optical module supporting FEC coding function (OTN G.709 framing) is slightly large (smaller than 4.5W), and the advantage of FEC coding function is to improve the sensitivity of transmission; while the power of DWDM tunable optical module without FEC function is slight small (less than 3.5W). The two versions are available to meet the working distance of 80KM optical fiber and meanwhile be compatible with the switches and core routers of Cisco, Juniper and other major equipment suppliers.

Diagram of DWDM tunable XFP optical module with FEC code



Gigalight has also developed 50GHz athermal AAWG DWDM 1U chassis equipment based on single-chip solution (can be installed in a 19'' rack), this equipment is passive, without the need for power transmission, and 80/88/96 channel configuration is optional; at the same time, provide DWDM upgrading port and monitor port. Compared with interleaver plan, it has the advantages of low insertion loss and low cost.

The following is the diagram of Gigalight tunable optical module (SFP+/XFP) and 50GHz DWDW 1U chassis equipment combination scheme for your reference.


CH17
CH18
CH19
CH20
CH21
CH60
Tx Rx
1pc 44-CH AAWG AS MUX +
1pc 44-CH AAWG AS DEMUX+1pc Circulator
Single Fiber link
44pcs DWDM SFP
44pcs DWDM SFP