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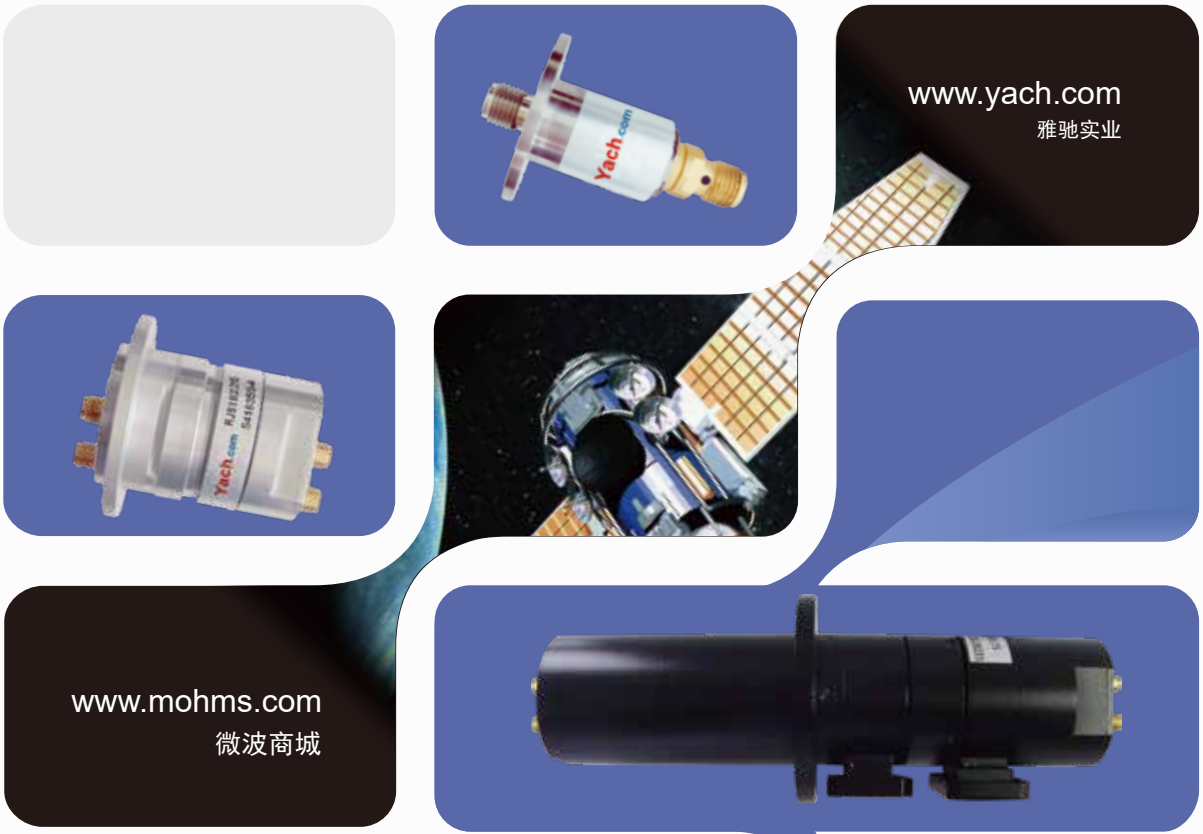
Yach Industry (Shanghai) Co., Ltd.



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Company Profile

Yach Industry (Shanghai) Co., Ltd.

is a high technology company registered in Shanghai Jiaotong University Science Park, which was qualified for China's National University Science Park class A. Yach Industry and Shanghai Jiaotong University also has deep cooperation, we provide the key products using in their testing system for integrated antenna of sub-millimeter wave and terahertz communication. Yach has been working in the Satellite Communication, Millimeter wave Telecommunication components and system, Microwave Chamber and Testing System design and building, Yach can provide turn-key projects such as Microwave Chamber, antenna Near-Field Measurement, Far-Field Measurements, Materials Measurement System, as well as software development and simulation.

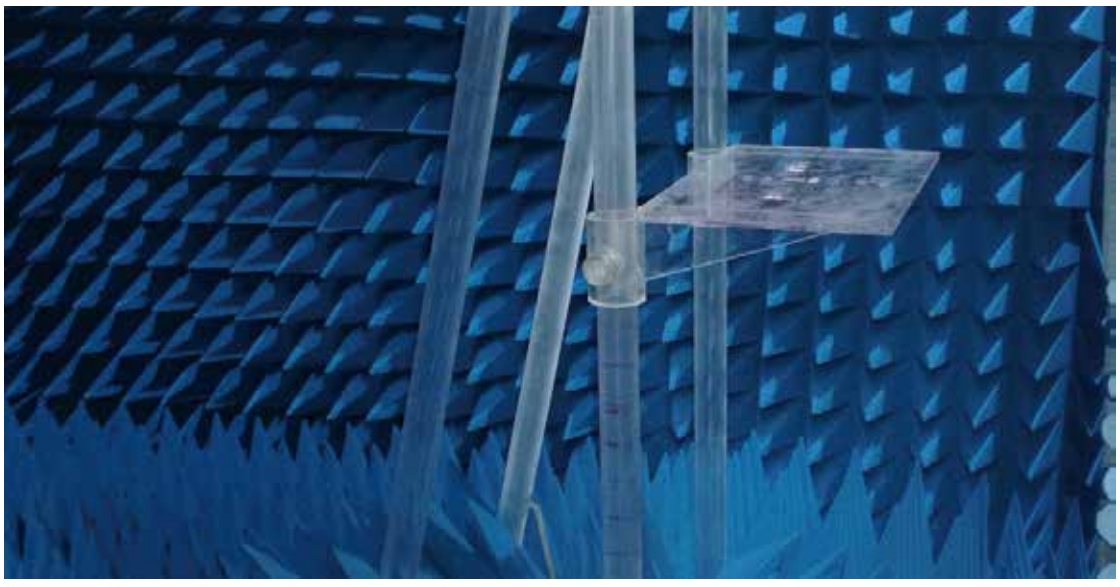
Yach products range from the coaxial cables and cable assemblies, fiber optical cable and components, to various types of wave guide products, electronic and optical transmission components and sub-systems. Yach rotary joints, coaxial switches, waveguide switches, phase shifters, attenuators, power amplifiers, LNB, mixers, extensions, the probe head, turntable, rigid waveguide, flexible waveguide, phase stability test cable and other products are widely used in scientific research, civil and military applications. The products are widely used in ATC (Air Traffic Control) RADAR, Weather RADAR, Financial System, Police Station and Fire Control etc. industry.

Yach understands your needs and our customers' satisfaction is paramount. Your success is our success!

Recognize our employee's contribution and continuously find ways to be better!

Honest is the life of our company, Innovation is the power for the growth.

Life is good! YACHT life… Just a matter of Time if you have YACH



Directory

Rotary Joint

Until the advent of phased arrays and electronically steerable beams, it was necessary in a radar system that the antenna be capable of rotation, either through 360°degree or through a smaller angle when sector scanning was required.

A Rotary Joint allows rotation between the antenna， transmitter and receivers for use in airborne, ground based, air traffic control, shipboard, vehicle mounted, space or commercial applications. Typical applications are testing platform, turntable, radar system, satellite communications etc.

A Rotary Joint is a coaxial, waveguide, optical, even cable transmission line that has the ability to pass a Radio Frequency (shorten as RF) signal, optical signal or others through a rotating interface without excessive loss or distortion. The rotary joints also work together with slip rings, which can transmit power, control, video surveillance etc. They work together to make a combination of telecommunication, no matter wire or wireless communication. It can be as simple as single channel or as complicated as hundreds channels for the rotary joint, slip ring, media joint (air or liquid joint).

They are true electro-mechanical devices in which the mechanical design considerations are equally as important as the R. F. design considerations. Other devices, such as slip rings (low frequency and power etc. purpose rotating joints), encoders (angular position measuring devices), gears, motors, etc. can be integrated into the Rotary Joint to give a full system capability.

This technical discussion is presented as a guide for selecting the most appropriate RF Rotary Joint for a potential system design. Like most RF devices there is no one RF Rotary Joint design that satisfies all requirements. Therefore, a number of configurations have been developed to satisfy various system concepts. They are reviewed here to familiarize you with this subject.

Bearing loads， axial and radial alignments, and dynamic pressure sealing (when applicable), can become the most difficult design problems to solve in some applications. Because the mechanical design facets of RF Rotary Joints must be considered, we have included a general review of dynamic seal designs and bearing support arrangements for consideration.

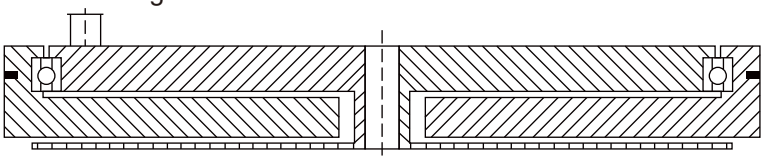
Cost is an important factor if not the most important factor when it comes to system affordability. The lowest initial cost, does not necessarily mean the lowest overall cost. Quality and product integrity must always be considered when you consider the whole system cost rather than the rotary joint itself cost. In selecting a Rotary Joint for a given system, costs can be significantly reduced if an at hand design can be used. Only a small number of Rotary Joint specification showed in this manual. If you can select one of these designs, the non-recurring engineering costs can be eliminated. If you require a unit that is not exactly in accordance with one of the specification control drawings shown, we can combine various designs to make a customized Rotary Joint to meet your requirements with a minimum engineering cost.

When you specify an RF Rotary Joint, it is important to specify exactly what you need. Don't over-specify, which can be costly, either don't underspecify, that will bring additional cost after a while of using. We suggest that you follow the general format presented here whether it be a single channel coaxial Rotary Joint or complicated multi-channel ones just to meet your needs. There are several types of Rotary Joint, which differ from each other in their functional or mechanical properties as below:

In principle, coaxial rotary joints can be classified into non-contacting rotary joint and contacting rotary joint.

• Non-contacting / Choke coupling / Hollow Shaft rotary joint

In a rotary joint the choke allows relative rotation of the two parts while providing electrical continuity across the open interface. This continuity is accomplished without physical contact, so that to make the rotary joint with a longest life time. In non-contacting rotary joint, the inner conductor of the coaxial line is hollow, which allows coaxial cables optical cables etc. to be put through the hole. The ball bearings are the only mechanical contact between the rotating and static parts. The advantage to the stub type design is that a clearance hole is provided through the center axis, which allow another one or more channels may be passed. This type of construction is often used in multi-channel rotary joint designs. It is typically limited to one octave bandwidth maximum. It can be furnished with either contact or choke construction. There are several geometrical variations on this joint type. One alternative is a relatively thin model, such the follow figure.



An optimum choke design utilizes two quarter wave transmission lines of different impedances. The quarter wave section coupling to the main line should be as low an impedance as is practical (Z01 = 1 to 2 ohms) and the second short circuited quarter wave section should be of relatively higher impedance (Z02 = 5 to 10 ohms). With this ratio, maximum band-width can be obtained. The low impedance coupling to the main transmission line provides minimum mismatch to the main line and this, in combination with the higher impedance short circuited quarter wave section, provides a very low impedance at the open interface of the main transmission line over a broad band. A choke coupling design should cover a bandwidth of 30% of the center frequency and afford a minimum of 50 dB Isolation between channels.

●Contacting rotary joint

In contacting rotary joint models, the electrical contact is maintained by utilizing precious metallic sliding contacts. The main reason for this is to realize a very wide operating frequency range. Mechanical wear is considerably larger and thus the total lifetime will be shorter than the non-contacting types.

Contacting junctions are used in applications requiring very broadband frequency. They provide a low impedance RF contact at a rotational interface from DC. to a high frequency, for example DC-50 GHz, limited by other portions of the RF circuit. If used in a coaxial circuit the frequency response would be DC to the TE11 Mode cutoff frequency of the particular coaxial line used. The full TEM mode bandwidth can be utilized for the contacting design. The peak and average power capabilities are directly proportional to the coaxial line size, connectors and method of maintaining RF continuity between the rotating and stationary sections. Basically small size line, can run higher frequency but with lower power, big size line can run higher power but lower frequency.

They perform well at low or moderate power levels and at either low or medium rotational speeds with a high degree of reliability. It should be noted that for maximum reliability non-contacting designs such as choke or capacitive junctions should be used. Depending on the size of the coaxial line， the channel may also be used to pass dc power thru it. This type of junction has been known to last over millions revolutions.

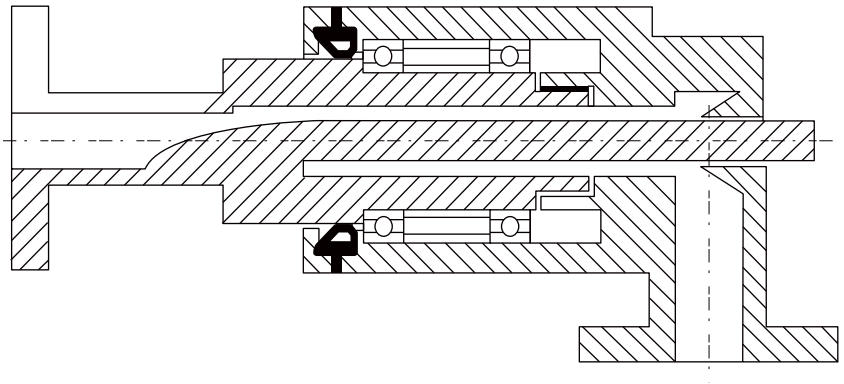
●Swivel Joints

This type of Rotary Joint is developed to twist only some certain angle, for exmple 60° degrees, which is often quite enough.

- ◆ Remarkably smaller dimensions;
- ◆ Higher peak power capacity.

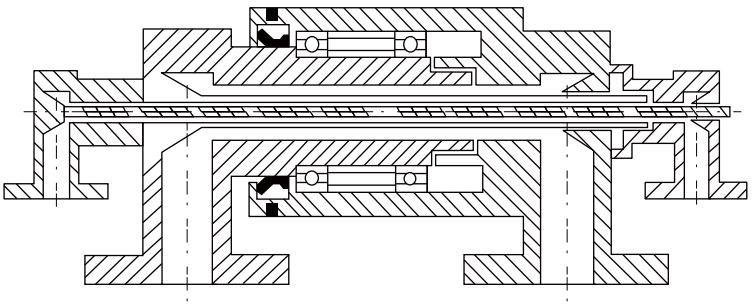
●Basic Waveguide Rotary Joints

◆ The basic construction consists of two parallel waveguides that have coaxial transitions and a short coaxial line in between.
◆ The coaxial part is circularly symmetric, allowing free rotation without having disturbing effects on the performance.
◆ In the rotating part, electrical continuity for RF is typically achieved by using N4 chokes, which eliminate the need for metal contacts.
◆ In most cases, ball bearings are used.
◆ The waveguide ports can be placed in various position depending of the application in which the joint is used:
Both ports at a right angle to the rotational axis;
One waveguide port at a right angle and one in line;
Both waveguide ports in line.
An illustrative cross section of a less typical Rotary Joint construction is presented in follow figure.



●Dual Channel Rotary Joint

In this case the probe gradually transforms itself into a fin, which is used to feed the horizontal waveguide.
Although the probe protrudes through the wall of the vertical transmission line (to the right), this is not really vital for the performance.



In principle, these constructions are composed by combining a Waveguide Rotary Joint module with additional coaxial or waveguide modules as shown in the figure. In this particular construction the waveguide center conductor will be used as the outer conductor for the next module.

●Multichannel Rotary Joints

By using the hollow shaft of a waveguide module for coaxial cables a number of coaxial modules can be stacked to form a compete assembly with several low power channels. In many rotary joint constructions, the characteristic property that allows the turning of an antenna is used either for microwave transmission or for control or alignment purposes.
This means that high precision slip-rings are necessary. The most harmful effect will be stacking, which can be avoided with a proper material selection only.

During rotation the rotary joint will add some noise at a very low level because of small changes in its insertion loss and electrical phase. The joint itself can further cause some vibration. This fact sets special requirements for designing the mechanisms of the joint. Also temperature stability is very important for the performance. Thus we have to consider the materials and the heat conduction properties of the joint body carefully.

You might also consider about other special demanding of the rotary joint, for example working temperature, humidity, attitude, sealing etc. Dynamic Pressure Seals under various loads, environments, rotation rates and sizes. Each application requires individual analysis of these and other pertinent parameters to obtain the most reliable seal with a set of conditions. To make these complicated assemblies with a reliable and longer life time, a slight amount of positive pressure is recommended. This keeps the harsh environment out of the RF path which could lead to premature power breakdown or corrosion.
All the Rotary Joints consist of two basic parts - a rotor and a stator. These elements are most often connected by ball bearings. The bearing arrangement and lubrication is a critical aspect of the design. Proper bearing design coupled with the correct choice of lubricant are necessary for maintenance free using and long life guarantee.

As with Dynamic Seals, each application must be considered on an individual basis with respect to loads, speed, life, temperature etc. The choice of lubricant is as important as the load arrangement and must also be considered.

Some rules of thumb for the mechanical design of a Rotary Joint
◆ The life time depends on operating temperature, rotation speed (1 to 2,000 rpm), internal barometric pressure, and other mechanical loading conditions.
◆ For most sophisticated Rotary Joints, even 50 million revolutions are guaranteed without maintenance
◆ In many cases, the maximum starting torque of rotation is critical.
◆ To avoid extra loads and bending, flexible waveguides for further connections from the joint are recommended.
◆ As in many microwave applications, environmental loads set extra requirements (in this case mostly for the bearings, sealing, and sliding elements).

Specification of Rotary Joint

◆VSWR (Voltage Standing Wave Ratio) is the amplitude relationship between the largest and the smallest voltage on a loss-free line. When an electrical line is terminated by a load with its characteristic impedance a signal transmitted to the line is fully absorbed by the matching load. However, if the impedance of the termination differs from the characteristic impedance of the line the wave will be reflected more or less strongly.
◆IL (Insertion Loss) is the loss of signal power resulting from the insertion of a device in a transmission line or optical fiber, usually expressed in decibels (dB).
◆ VSWR- wow is defined as variation in VSWR with rotation through 360° degrees.
◆ IL-WOW is defined as variation in insertion loss with rotation through 360°degrees.
◆ Phase-WOW is defined as variation in phase with rotation through 360° degrees.
◆ Phase tracking is defined as a value in degrees which relates the phase slope of one channel with respect to the phase slope of another channel.
◆ Percent (%) Frequency Bandwidth is defined as operating frequency range divided by center frequency.
◆ Phase Matching is defined as the electrical length of channels is identical to each other.
◆ Isolation is defined as the amount of leakage (cross-talk) between two channels.

Rotary Joints List

Single Channel Rotary Joints

Model Number	Frequency（GHz）	Interface	Page
RJ151020	96 ±1 GHz	WR 10	6
RJ618002	DC - 18 GHz	SMA - SMA	7
RJ518035	DC - 18 GHz	N - N	8
RJ518100	DC - 18 GHz	SMA - SMA	9
RJ518101	DC - 26 GHz	SMA - SMA	10
RJ518050	DC - 40 GHz	2.92	11
RJ518102	DC - 40 GHz	2.92	12
RJ518033	DC - 50 GHz	2.4mm	13

2 Channel Rotary Joints

Model Number	Frequency（GHz）		Interface		Page
	CH1	CH2	CH1	CH2	
RJ153189	DC - 2.2 GHz	DC - 2.2 GHz	SMA	SMA	14
RJ153190	DC - 2.2 GHz	DC - 2.2 GHz	F	F	15
RJ153191	DC - 2.2 GHz	DC - 2.2 GHz	F	F	16
RJ153192	DC - 2.2 GHz	DC - 2.2 GHz	SMA	SMA	17
RJ153193	DC - 2.2 GHz	DC - 2.2 GHz	F	F	18
RJ518225	DC - 5 GHz	DC - 5GHz	SMA	SMA	19
RJ518226	DC - 18 GHz	DC - 4GHz	SMA	SMA	20
RJ518227	DC - 18 GHz	DC - 13 GHz	SMA	SMA	21
RJ518205	DC - 18 GHz	DC - 18 GHz	SMA	SMA	22

Four Channel Rotary Joints

Model Number	Frequency（GHz）	Interface	Page
	CH1-CH4	CH1-CH4	
RJ153194	DC - 2.2 GHz	SMA	23
RJ153195	DC - 2.2 GHz	F	24
RJ153198	DC - 2.2 GHz	SMA	25
RJ153199	DC - 2.2 GHz	F	26

Single Channel Waveguide Rotary Joints

Model Number	Frequency（GHz）	Interface	Page
RJ151001	14 - 14.5GHz	PBR140	27
RJ151003	13.75 - 14.5 GHz	PBR120	28
RJ153116	1.13 - 1.72 GHz	FDP14	29
RJ518236	19.4 - 21.2 GHz	2.92	30

Dual Channel Waveguide Rotary Joints

Model Number	Frequency（GHz）		Interface		Page
	CH1	CH2	CH1	CH2	
RJ153115	13.75 - 14.5 GHz	DC - 4 GHz	UBR120	SMA	31

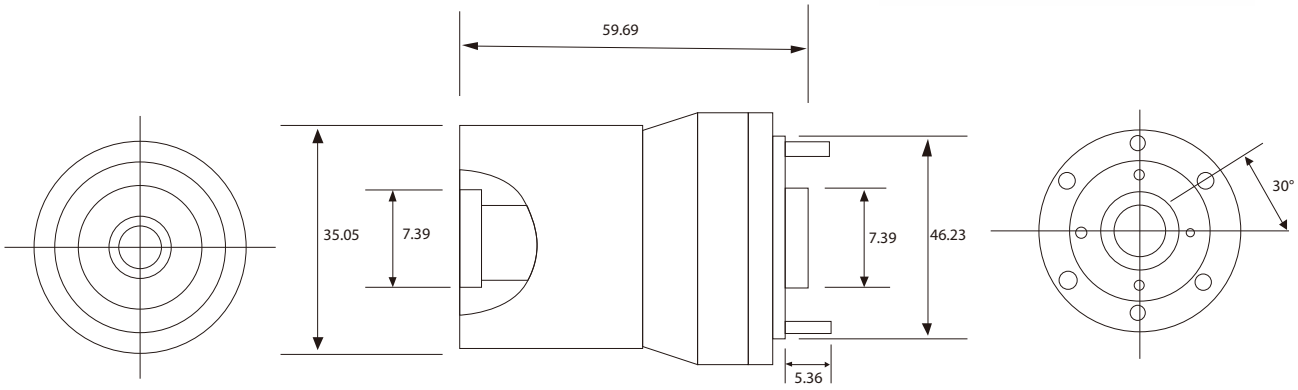
Three Channel Waveguide Rotary Joints

	Frequency（GHz）			Interface			Page
	CH1	CH2	CH3	CH1	CH2	CH3	
RJ153175	13.5 - 14.6GHz	DC - 13 GHz	DC - 4.5 GHz	UBR120	SMA	SMA	32

Rotary Joint Test System

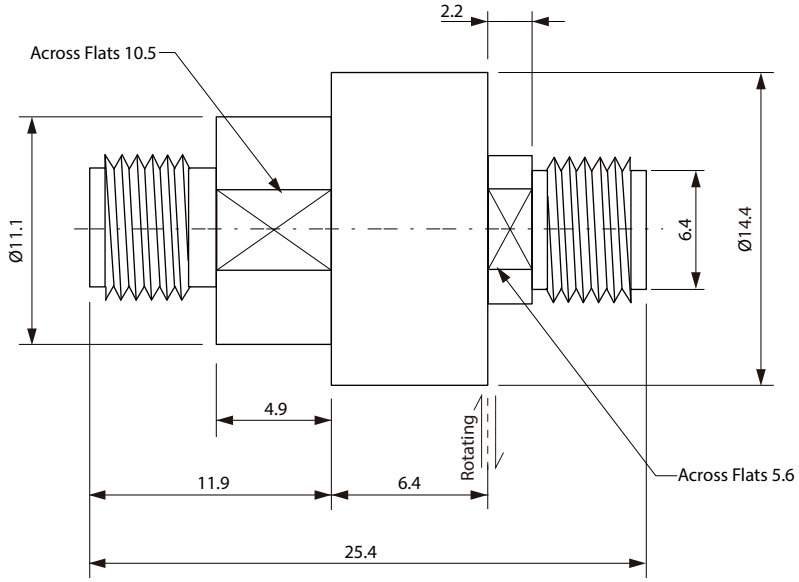
Model Number	Page
RJ004	33

- Waveguide size WR10
- Small Size and lightweight
- Up to 96-150 GHz working frequency



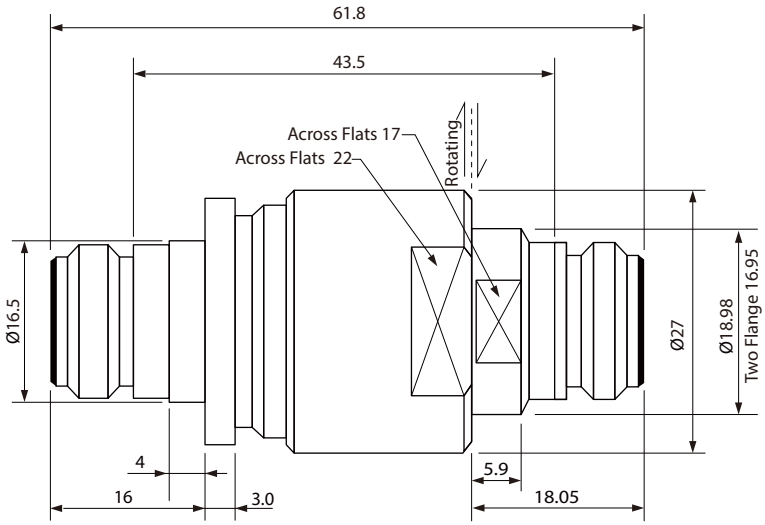
Specifications			
Waveguide Size	WR 10	Style	I Type
Frequency Range	96 ±1 GHz	Phase WOW (Degrees Max.)	2°
VSWR, Max.	1.10	Insertion Loss, Max.	0.40 dB
VSWR WOW	0.10	Insertion Loss WOW	0.20 dB
Peak Power, Max.	50 W	Average Power, Max.	1 W
Rotating Speed, Max.	20 rpm	Life Time, Min.	10 Million Revolutions
Starting Torque	2 Ncm Max.	Continuous Rotational Torque	2 Ncm Max.
Axial Load On Interface, Max	± 0.5 N	Radial Load On Interface, Max.	± 0.5 N
Body Material	Brass	Contact Surface Finish	Gold Plated
Weight	0. 4Kg	Marking	Adhesive Label
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing),Max.	95% (Operation)
	-55 to +85°C (Storage)		85% (Storage)

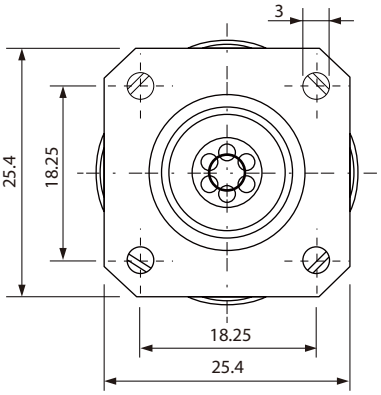
- Small Size and lightweight, to fulfill your compact system
- Coaxial line with SMA connectors
- Double D Accross Flats for fixing



Specifications			
Interface Type	SMA Female (50 ohms)	Style	I Type
Frequency Range	DC to 18 GHz	Phase WOW (Degrees Max.)	1°
VSWR, Max.	1.20 @ DC to 6 GHz 1.25 @ 6 to 12 GHz 1.35 @ 12 to 18 GHz	Insertion Loss, Max.	0.25 dB @ DC to 6 GHz 0.35 dB @ 6 to 12 GHz 0.50 dB @ 12 to 18 GHz
VSWR WOW	0.03	Insertion Loss WOW	0.04 dB
Peak Power, Max.	1500 W	Average Power, Max.	200 W @ 1 GHz 30 W @ 18 GHz
Rotating Speed, Max.	100 rpm	Life Time, Min.	0.5 Million Revolutions
Starting Torque	2 Ncm Max.	Continuous Rotational Torque	2 Ncm Max.
Axial Load On Interface, Max	± 2 N	Radial Load On Interface, Max.	± 2 N
Body Material	Stainless Steel	Contact Pin Material	Beryllium Copper
Body Surface Finish	Passivated	Contact Surface Finish	Gold Plated
Weight	0. 03Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 40 Acc. EN 60529
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing),Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)

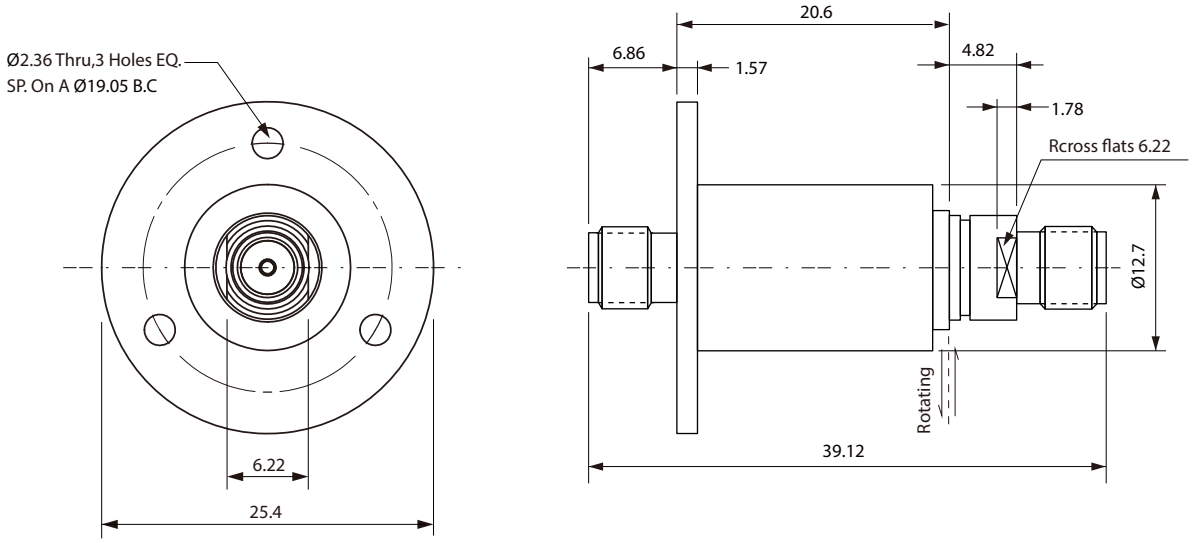
- Coaxial line with N Female connectors
- Contacting design, DC upto 15GHz working frequency





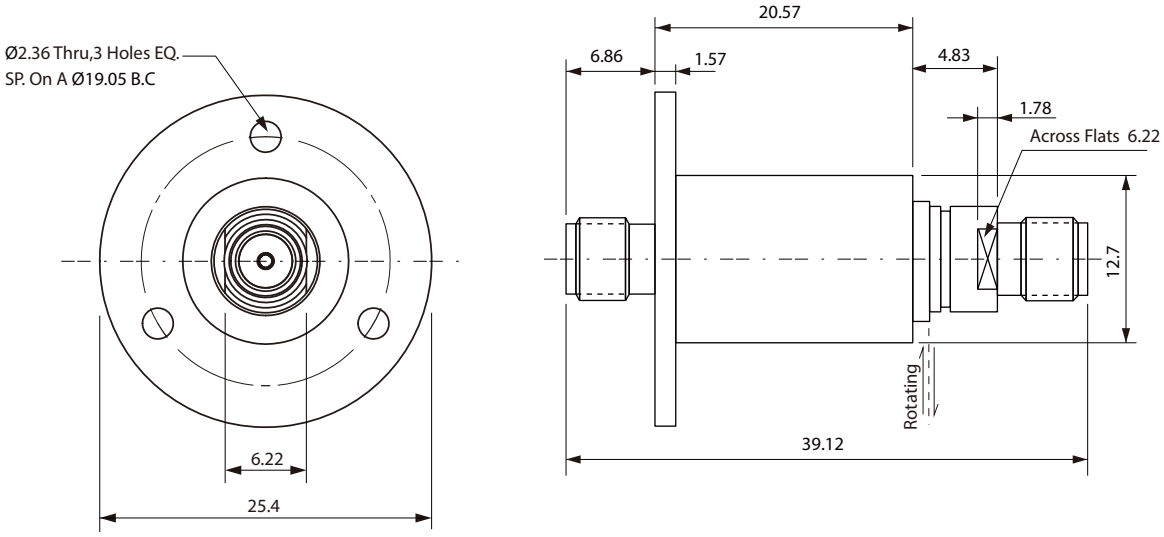
Specifications			
Interface Type	N Female – N Female (50 ohms)	Style	I Type
Frequency Range	DC to 18 GHz	Phase WOW (Degrees Max.)	2°
VSWR, Max.	1.06 @ 0 to 2 GHz 1.10 @ 2 to 8 GHz 1.18 @ 8 to 15 GHz 1.22 @ 15 to 18 GHz	Insertion Loss, Max.	0.08 dB @ DC to 2 GHz 0.12 dB @ 2 to 8 GHz 0.15 dB @ 8 to 15 GHz 0.20 dB @ 15 to 18 GHz
VSWR WOW	0.05	Insertion Loss WOW	0.05 dB
Peak Power, Max.	1500 W	Average Power, Max.	200 W @ 1 GHz 100 W @ 2-8 GHz 75 W @ 8-15 GHz 70 W @ 15-18 GHz
Rotating Speed, Max.	300 rpm	Life Time, Min.	5 Million Revolutions
Starting Torque	30 Ncm Max.	Continuous Rotational Torque	30 Ncm Max.
Axial Load On Interface, Max	± 8 N	Radial Load On Interface, Max.	± 8 N
Nut Material	Brass	Contact Pin Material	Beryllium Copper
Nut Surface Finish	Tin-Zinc-Copper-Alloy	Contact Surface Finish	Gold Plate
Body Material	Copper Alloy	Body Surface Finish	Silver Plate
Weight	0.14 Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 54 Per EN 60529
Temperature (Ambient Range)	-40 to +60°C (Operation)	Humidity (Non-Condensing), Max.	95% (Operation)
	-50 to +70°C (Storage)		95% (Storage)

- Coaxial line with SMA Female connectors
- Small Size and lightweight
- Contacting Design, DC upto 18GHz working frequency



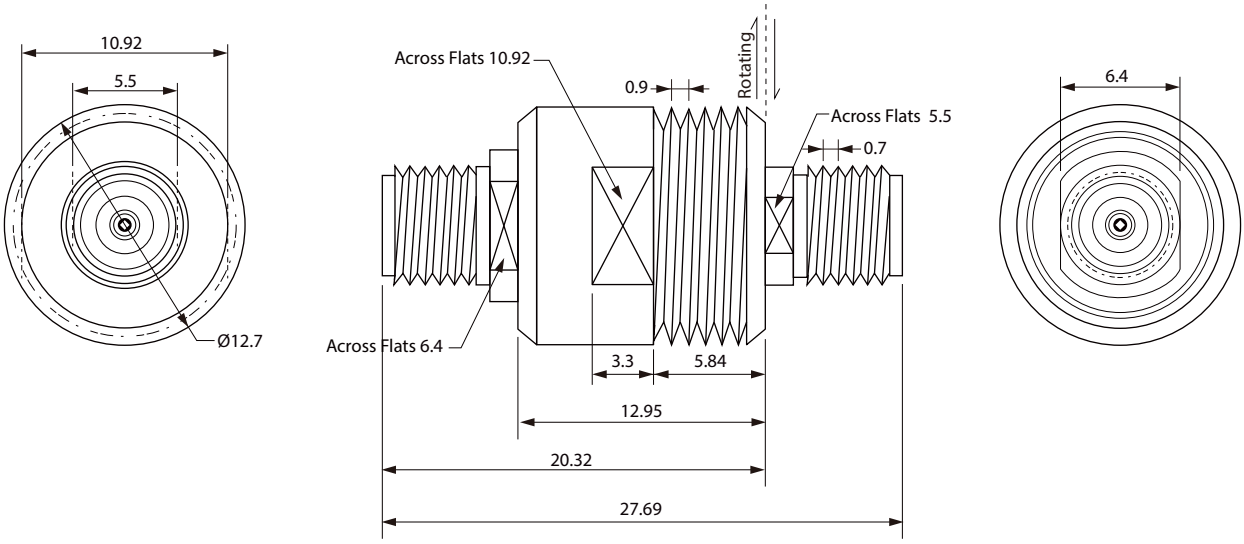
Specifications			
Interface Type	SMA F – SMA F (50 ohms)	Style	I Type
Frequency Range	DC to 18 GHz	Phase WOW (Degrees Max.)	1°
VSWR, Max.	1.5	Insertion Loss, Max.	0.30 dB
VSWR WOW	0.05	Insertion Loss WOW	0.05 dB
Peak Power, Max.	5 KW	Average Power, Max. @ Body Temperature Max. 60°C	200 W @ 1 GHz
Rotating Speed, Max.	500 rpm	Life Time, Min.	10 Million Revolutions
Starting Torque	0.5 Ncm Max.	Continuous Rotational Torque	2 Ncm Max.
Axial Load On Interface, Max	± 2 N	Radial Load On Interface, Max.	± 2 N
Body Material	Stainless Steel	Contact Pin Material	Beryllium Copper
Body Surface Finish	Passivate	Contact Surface Finish	Gold Plate
Weight	0.03 Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 40 Acc. EN 60529
Temperature (Ambient Range)	-55 to +85°C (Operation)	Humidity (Non-Condensing), Max.	95% (Operation)
	-55 to +85°C (Storage)		85% (Storage)

- Coaxial line with SMA Female connectors
- Small Size and lightweight
- Contacting Design, DC upto 26GHz working frequency



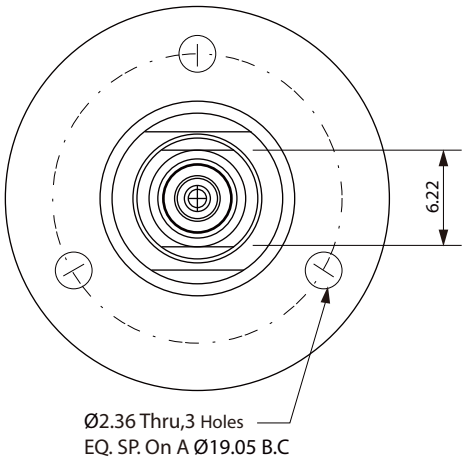
Specifications			
Interface Type	SMA F – SMA F (50 ohms)	Style	I Type
Frequency Range	DC to 26GHz	Phase WOW (Degrees Max.)	1°
VSWR, Max.	1.5 @ DC-18 GHz 1.75 @ 18-26 GHz	Insertion Loss, Max.	0.5 dB @ DC-18 GHz 0.75 dB @ 18-26 GHz
VSWR WOW	0.05 @ DC-18 GHz 0.07 @ 18-26 GHz	Insertion Loss WOW	0.05 dB @ DC-18 GHz 0.07 dB @18-26 GHz
Peak Power, Max.	5 KW	Average Power, Max. @ Body Temperature Max. 60°C	200 W @ 1 GHz
Rotating Speed, Max.	500 rpm	Life Time, Min.	15 Million Revolutions
Starting Torque	0.5 Ncm Max.	Continuous Rotational Torque	2 Ncm Max.
Axial Load On Interface, Max	± 2 N	Radial Load On Interface, Max.	± 2 N
Body Material	Stainless Steel	Contact Pin Material	Beryllium Copper
Body Surface Finish	Passivate	Contact Surface Finish	Gold Plate
Weight	0.03Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 40 Acc. EN 60529
Temperature (Ambient Range)	-40 to +70°C (Operation)	Humidity (Non-Condensing), Max.	95% (Operation)
	-55 to +85°C (Storage)		85% (Storage)

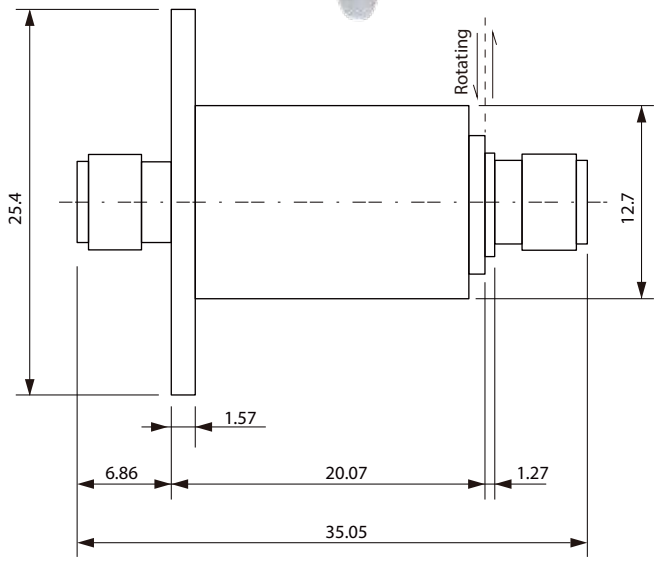
- Coaxial line with 2.92 Female connectors
- Small Size and lightweight



Specifications			
Interface Type	2.92mm Female (50 ohms)	Style	I Type
Frequency Range	DC to 40 GHz	Phase WOW (Degrees Max.)	1°
VSWR, Max.	1.30 @ DC to 10 GHz 1.45 @ 10 to 20 GHz 1.60 @ 20 to 30 GHz 1.75 @ 30 to 40 GHz	Insertion Loss, Max.	0.25 dB @ DC to 10 GHz 0.40 dB @ 10 to 20 GHz 0.55 dB @ 20 to 30 GHz 0.70 dB @ 30 to 40 GHz
VSWR WOW	0.1	Insertion Loss WOW	0.02 dB
Peak Power, Max.	500 W	Average Power, Max.	60 W @ 1 GHz
Rotating Speed, Max.	250 rpm	Life Time, Min.	5 Million Revolutions
Starting Torque	3.5 Ncm Max.	Continuous Rotational Torque	3.5 Ncm Max.
Axial Load On Interface, Max	± 1 N	Radial Load On Interface, Max.	± 1 N
DC Power Ability	3 A * 24V @ Full RF Power	Contact Pin Material	Beryllium Copper
Body Material	Stainless Steel	Contact Surface Finish	Gold Plate
Weight	0.01Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 64 Per EN 60529
Temperature (Ambient Range)	-40 to +60°C (Operation)	Humidity (Non-Condensing), Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)

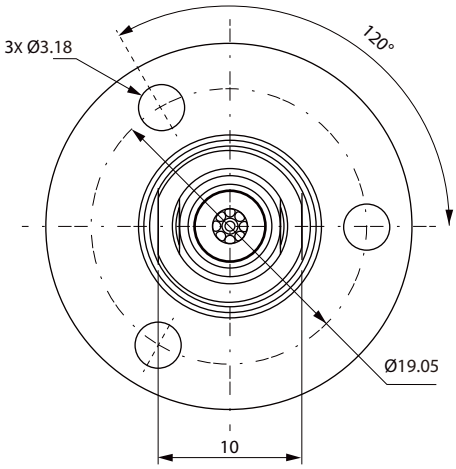
- Coaxial line with K Female connectors
- Small Size and lightweight
- Contacting Design, DC upto 40 GHz working frequency

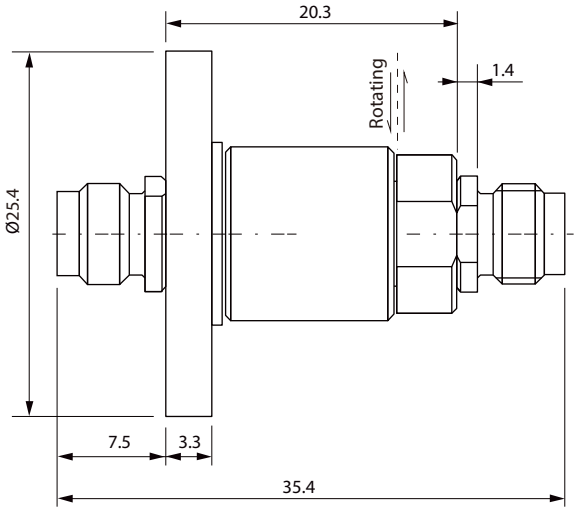




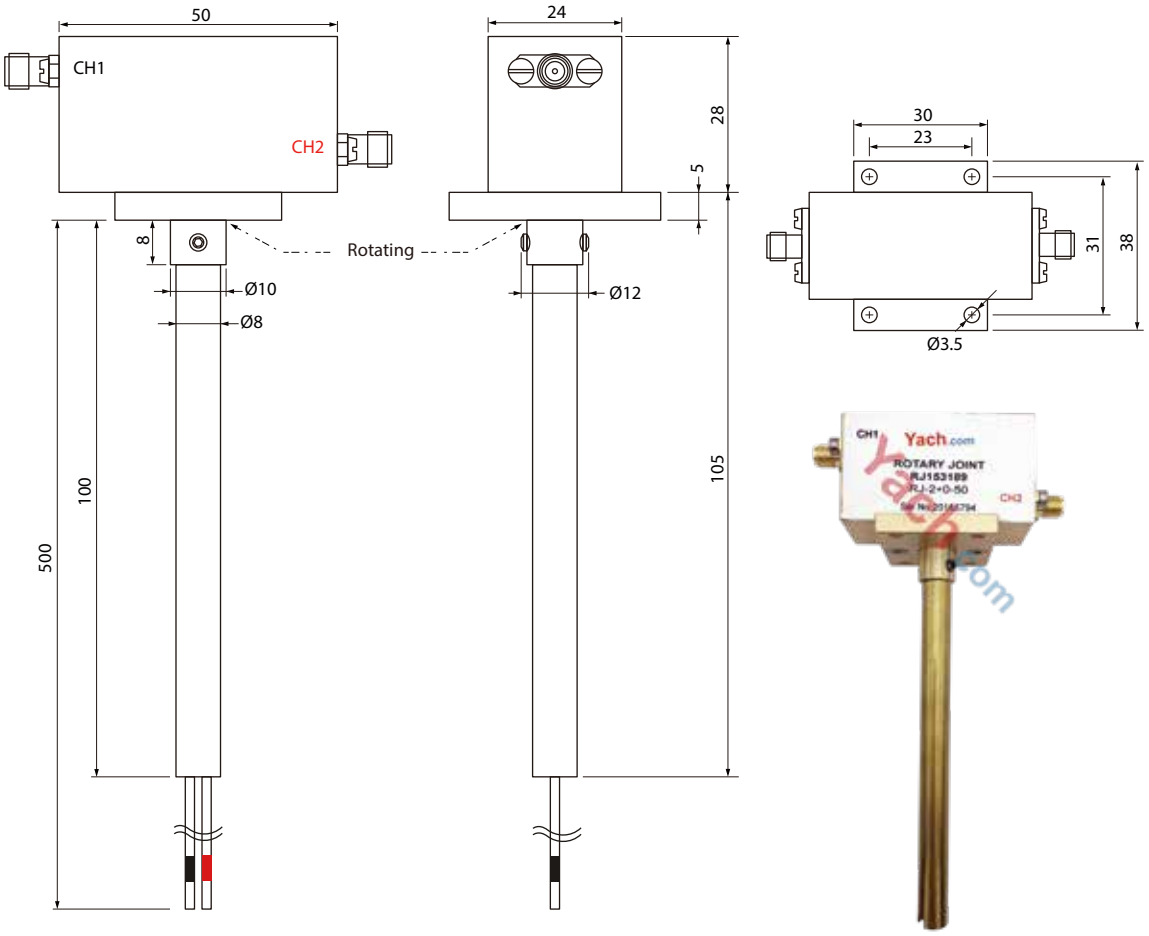
Specifications			
Interface Type	2.92mm Female (50 ohms)	Style	I Type
Frequency Range	DC to 40 GHz	Phase WOW (Degrees Max.)	1°
VSWR, Max.	1.40 @ DC to 18 GHz 1.65 @ 18 to 26.5 GHz 1.80 @ 26.5 to 40 GHz	Insertion Loss, Max.	0.50 dB @ DC to 18 GHz 0.75 dB @ 18 to 26.5 GHz 1.00 dB @ 26.5 to 40 GHz
VSWR WOW	0.05 @ DC to 26.5 GHz 0.10 @ 26.5 to 40 GHz	Insertion Loss WOW	0.05 dB @ DC -12 GHz 0.1 dB @ 12-40 GHz
Peak Power, Max.	500 W @ 1 GHz	Average Power, Min. @ Body Temperature Max. 60°C	50 W @ 1 GHz
Rotating Speed, Max.	500 rpm	Life Time, Min.	15 Million Revolutions
Starting Torque	2 Ncm Max.	Continuous Rotational Torque	2 Ncm Max.
Axial Load On Interface, Max	± 2 N	Radial Load On Interface, Max.	± 2N
Body Material	Stainless Steel	Contact Pin Material	Beryllium Copper
Body Surface Finish	Passivate	Contact Surface Finish	Gold Plate
Weight	0.03 Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 40 Acc. EN 60529
Temperature (Ambient Range)	-55 to +85°C (Operation)	Humidity (Non-Condensing), Max.	95% (Operation)
	-55 to +85°C (Storage)		85% (Storage)

- Coaxial line with 2.4mm connectors
- Small Size and lightweight, to fulfill your compact design
- Contacting design, DC upto 50 GHz working frequency

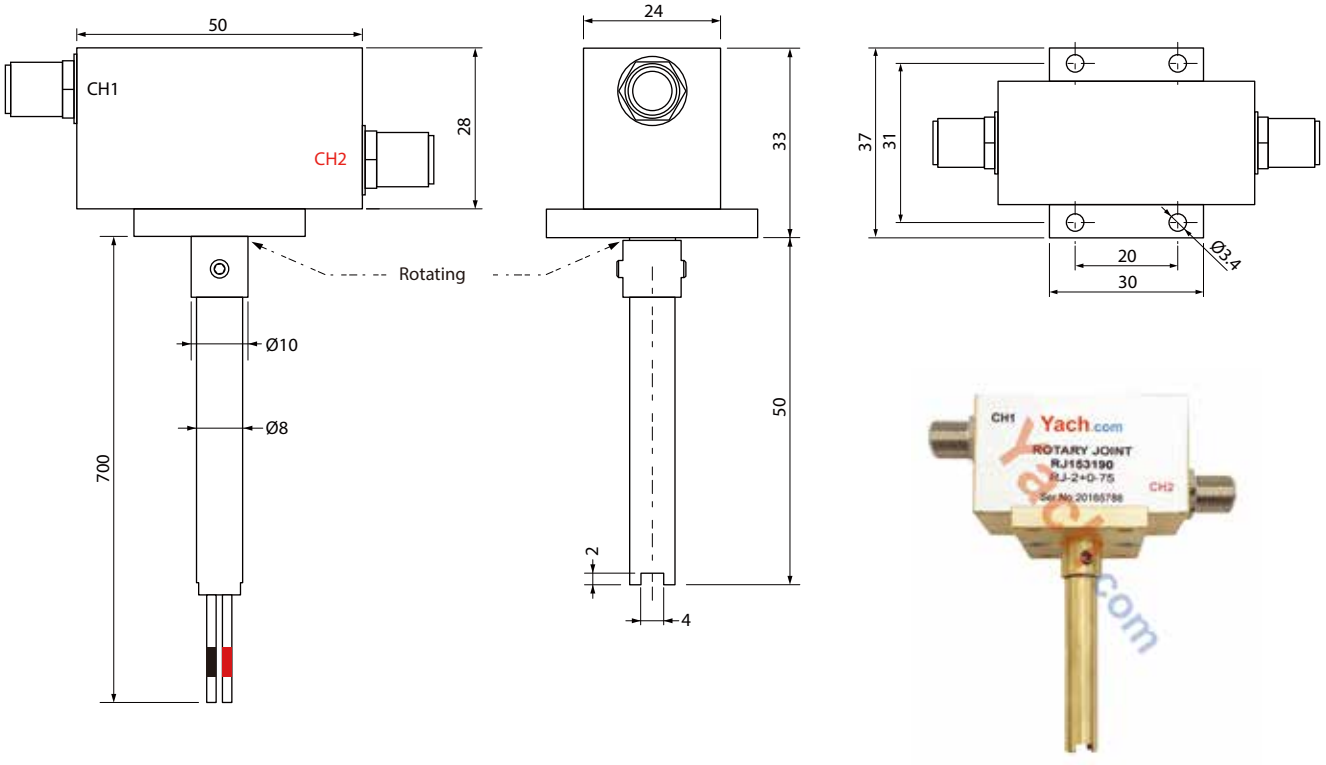




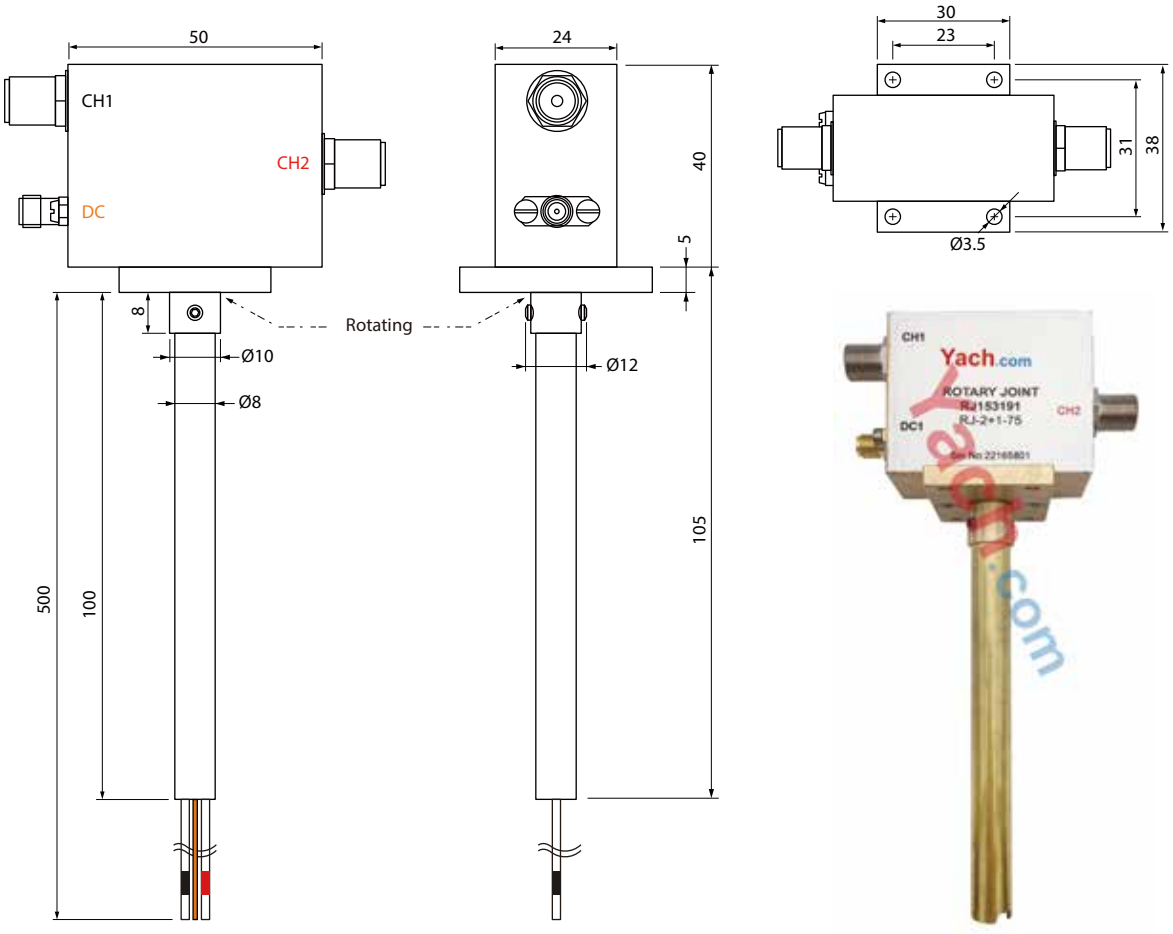
Specifications			
Interface Type	2.4mm Female (50 ohms)	Style	I Type
Frequency Range	DC to 50 GHz	Phase WOW (Degrees Max.)	1° @ DC to 26.5 GHz 2 °@ 26.5 to 50 GHz
VSWR, Max.	1.30 @ DC to 10 GHz 1.40 @ 10 to 26.5 GHz 1.70 @ 26.5 to 50 GHz	Insertion Loss, Max.	0.30 dB @ DC to 10 GHz 0.50 dB @ 10 to 26.5 GHz 0.90 dB @ 26.5 to 50 GHz
VSWR WOW	0.05 @ DC to 26.5 GHz 0.20 @ 26.5 to 50 GHz	Insertion Loss WOW	0.1 dB
Peak Power, Max.	1000 W	Average Power, Max.	50 W @ 1 GHz 15 W @ 10 GHz 5 W @ 26.5 GHz 3 W @ 50 GHz
Rotating Speed, Max.	200 rpm	Life Time, Min.	10 Million Revolutions
Starting Torque	0.5 Ncm Max.	Continuous Rotational Torque	0.5 Ncm Max.
Axial Load On Interface, Max	± 1 N	Radial Load On Interface, Max.	± 1 N
Body Material	Copper Alloy	Contact Pin Material	Beryllium Copper
Body Surface Finish	Silver Plate	Contact Surface Finish	Gold Plate
Weight	0.03Kg	Marking	Adhesive Label
Insulator Material	PTFE / Teflon	IP Protection Level	IP 60 Per EN 60529
Temperature (Ambient Range)	-40 to +70°C (Operation)	Humidity (Non-Condensing), Max.	95% (Operation)
	-50 to +70°C (Storage)		95% (Storage)



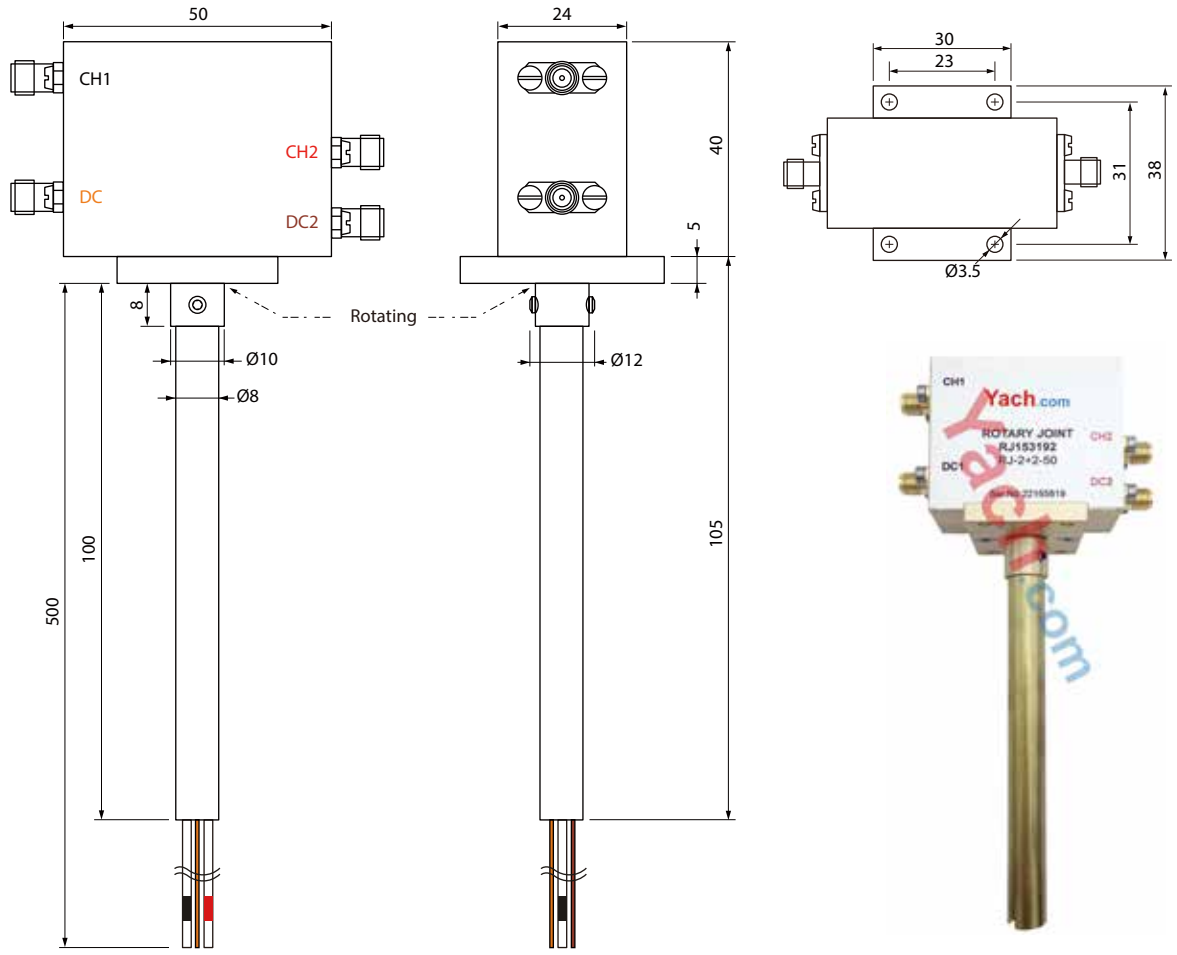
Specifications		
	Channel 1	Channel 2
Heatshrink Color	Black	Red
Interface	SMA (50 ohms)	SMA (50 ohms)
Style	L Type	L Type
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz
Average Power	5 W	5 W
Peak Power, Max.	500 W	500 W
VSWR, Max.	2.00	2.00
VSWR WOW (360°Max.)	0.25	0.25
Insertion Loss, Max.	1.0dB (2.5 dB max)	1.0 dB (2.5 dB max)
Insertion Loss WOW, Max.	0.25 dB	0.25 dB
Isolation	40 dB (30 dB typ. min)	
Current Capacity	1.0 AMP	
Voltage	12-24 VDC @ Full Power	
Rotation Speed, Max.	60 rpm	
Life, Min.	2 Million Revolutions	
Weight	0.25Kg	



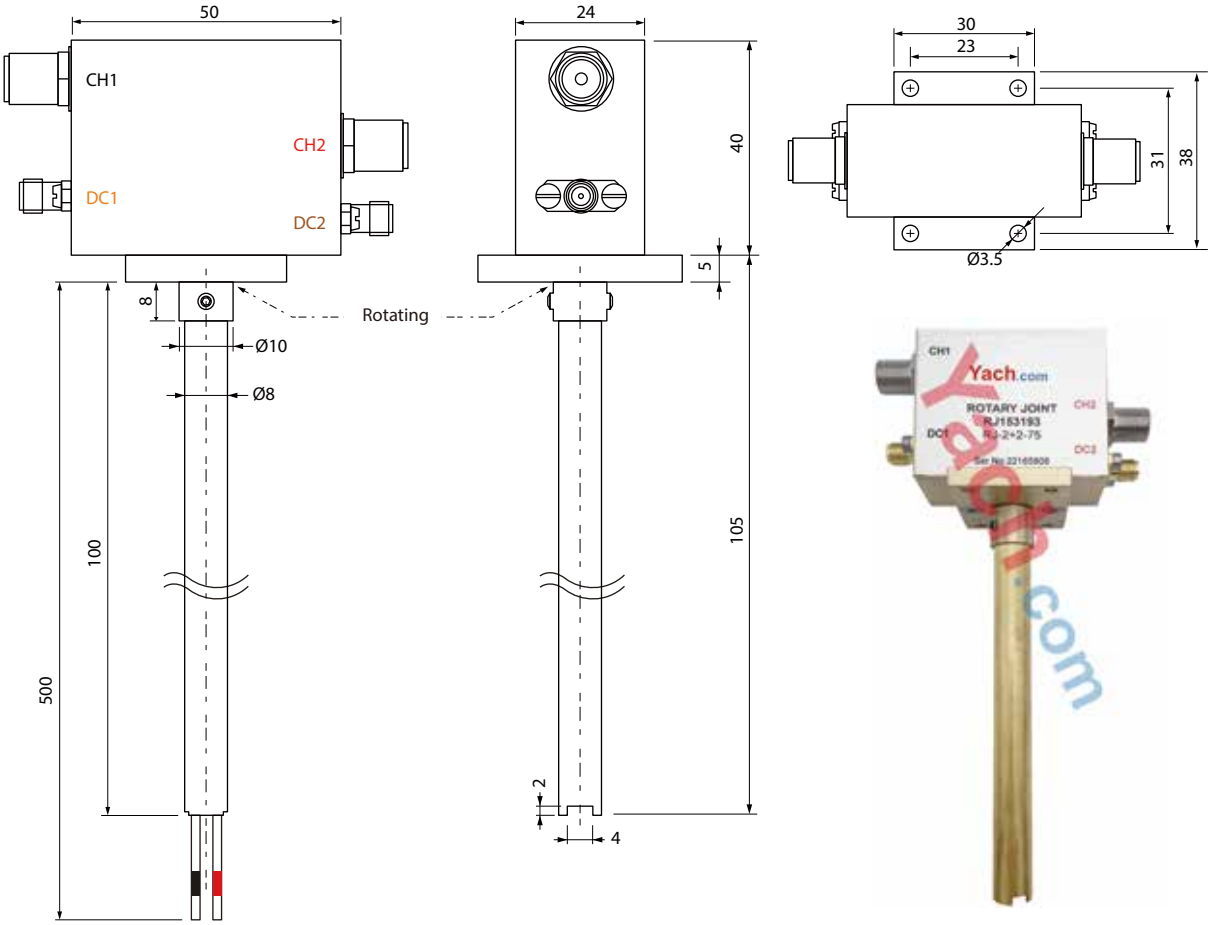
Specifications		
	Channel 1	Channel 2
Heatshrink Color	Black	Red
Interface	F (75 ohms)	F (75 ohms)
Style	L Type	L Type
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz
Average Power	5 W	5 W
Peak Power, Max.	500 W	500 W
VSWR, Max.	2.00	2.00
VSWR WOW (360°Max.)	0.25	0.25
Insertion Loss, Max.	1.5dB (2.5 dB max)	1.5 dB (2.5 dB max)
Insertion Loss WOW, Max.	0.25 dB	0.25 dB
Isolation	40-50 dB typ. (35 dB typ. min)	
Current Capacity	1.0 AMP	
Voltage	12-24 VDC @ Full Power	
Rotation Speed, Max.	60 rpm	
Life, Min.	2 Million Revolutions	
Weight	0.25Kg	



Specifications			
	Channel 1	Channel 2	DC1
Heatshrink Color	Black	Red	Orange
Interface	F (75 ohms)	F (75 ohms)	SMA
Style	L Type	L Type	L Type
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC
Average Power	5 W	5 W	
Peak Power, Max.	500 W	500 W	
VSWR, Max.	2.00	2.00	
VSWR WOW (360°Max.)	0.25	0.25	
Insertion Loss, Max.	1.0dB (2.5 dB max)	1.0 dB (2.5 dB max)	
Insertion Loss WOW, Max.	0.25 dB	0.25 dB	
Isolation	40 dB (30 dB typ. min)		
Current Capacity	1.0 AMP		3.0 AMP
Voltage	12-24 VDC @ Full Power		48 VDC
Rotation Speed, Max.	60 rpm		
Life, Min.	2 Million Revolutions		
Weight	0.31Kg		

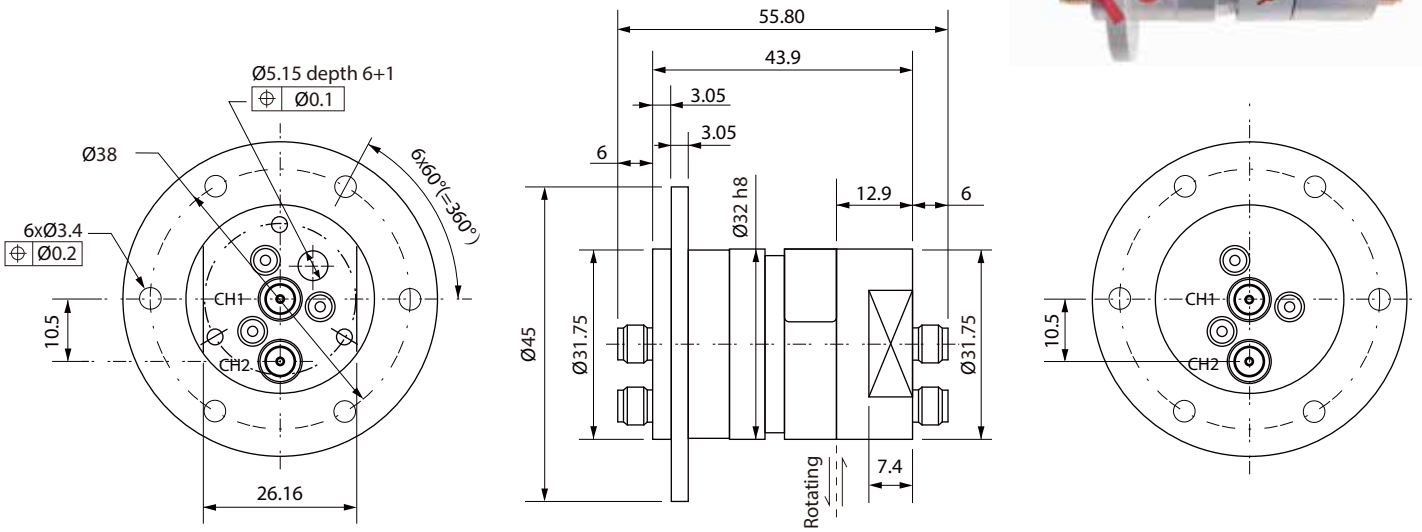


Specifications				
	Channel 1	Channel 2	DC1	DC2
Heatshrink Color	Black	Red	Orange	Brown
Interface	SMA (50 ohms)	SMA (50 ohms)	SMA	
Style	L Type	L Type	L Type	
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC	
Average Power	5 W	5 W		
Peak Power, Max.	500 W	500 W		
VSWR, Max.	2.00	2.00		
VSWR WOW (360°Max.)	0.25	0.25		
Insertion Loss, Max.	1.0dB (2.5 dB max)	1.0 dB (2.5 dB max)		
Insertion Loss WOW, Max.	0.25 dB	0.25 dB		
Isolation	40 dB (30 dB typ. min)			
Current Capacity	1.0 AMP		3.0 AMP	
Voltage	12-24 VDC @ Full Power		48 VDC	
Rotation Speed, Max.	60 rpm			
Life, Min.	2 Million Revolutions			
Weight	0.32Kg			



Specifications				
	Channel 1	Channel 2	DC1	DC2
Heatshrink Color	Black	Red	Orange	Brown
Interface	F (75 ohms)	F (75 ohms)	SMA	
Style	L Type	L Type	L Type	
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC	
Average Power	5 W	5 W		
Peak Power, Max.	500 W	500 W		
VSWR, Max.	2.00	2.00		
VSWR WOW (360°Max.)	0.25	0.25		
Insertion Loss, Max.	1.0dB (2.5 dB max)	1.0 dB (2.5 dB max)		
Insertion Loss WOW, Max.	0.25 dB	0.25 dB		
Isolation	40 dB (30 dB typ. min)			
Current Capacity	1.0 AMP		3.0 AMP	
Voltage	12-24 VDC @ Full Power		48 VDC	
Rotation Speed, Max.	60 rpm			
Life, Min.	2 Million Revolutions			
Weight	0.32Kg			

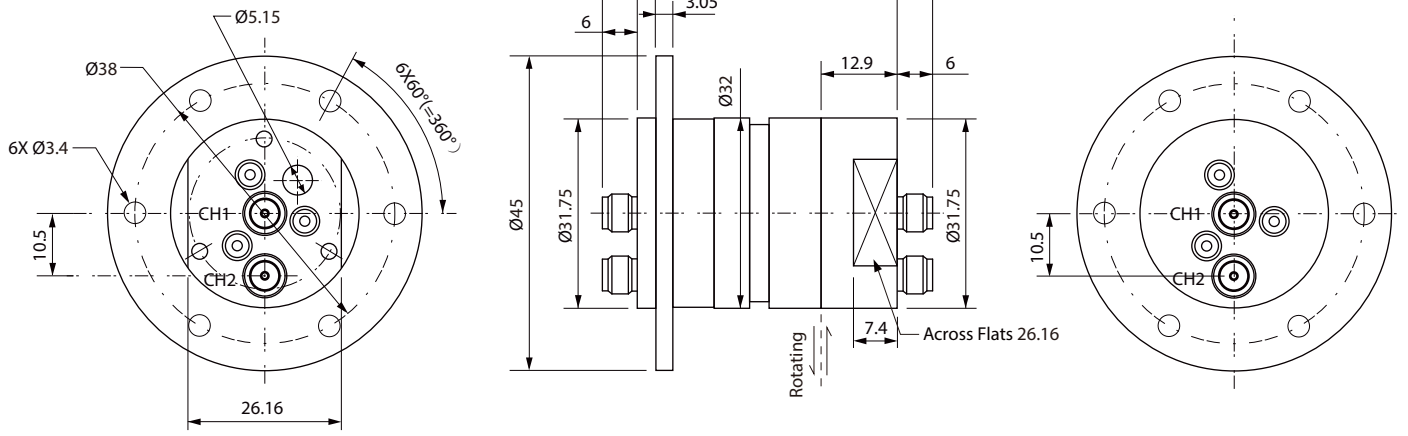
- Coaxial line with SMA connectors, to match your system
- Small Size and lightweight, to fulfill your compact design
- DC upto 5GHz working frequency for both channels



Specifications			
	Channel 1	Channel 2	
Interface	SMA Female (50 ohms)	SMA Female (50 ohms)	
Style	I Type	I Type	
Frequency Range	DC to 5 GHz	DC to 5 GHz	
Peak Power, Max.	1500 W	1500 W	
Average Power, Max.	60 W @ 5 GHz	50 W @ 0 GHz	
VSWR, Max.	1.2	1.5	
VSWR WOW (360°Max.)	0.05	0.15	
Insertion Loss, Max.	0.25 dB	0.45 dB	
Insertion Loss WOW, Max.	0.05 dB	0.15 dB	
Phase WOW (Degrees Max.)	0.5 °	4.0 °	
Isolation	50 dB Min. / 60 dB Typical		
DC Power (Applied To One Channel Only)	0.5 A * 48 VDC @ Full Power	0.5 A * 24 VDC @ Full Power	

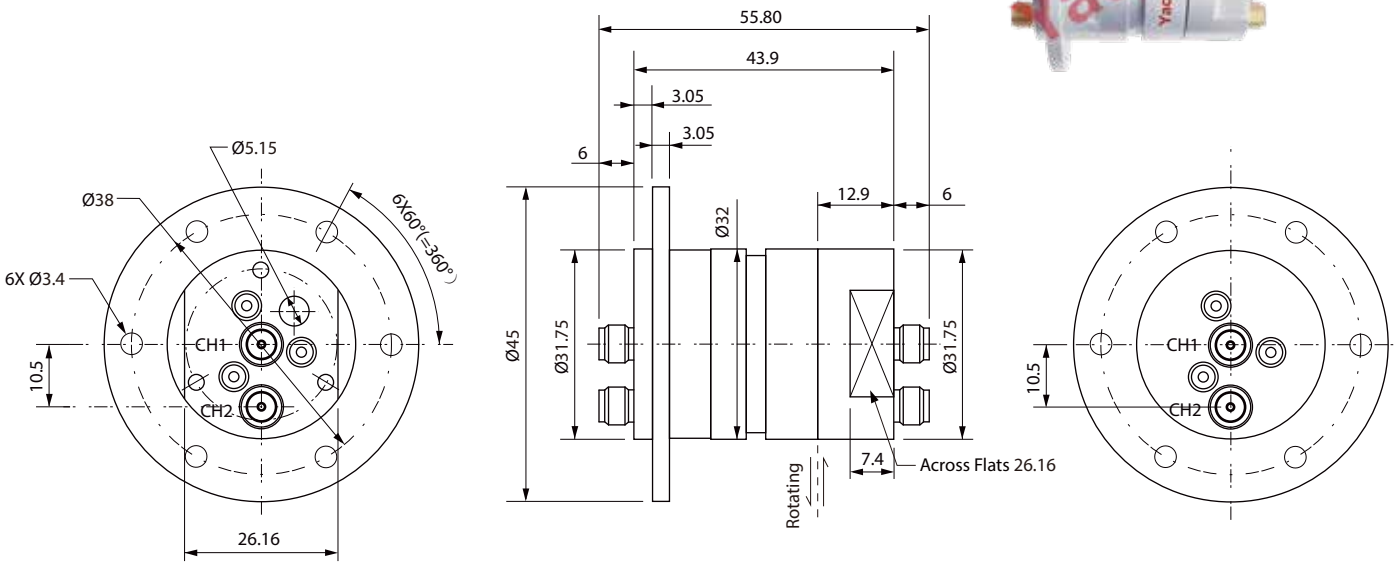
Rotation Speed, Max.	60 rpm	Life, min.	10 Million Revolutions
Starting Torque	5 Ncm Max.	Continuous Rotational Torque	5 Ncm Max.
Axial Load On Interface, Max	± 10 N	Radial Load On Interface, Max	± 10 N
Body Material	Aluminum Alloy	Material Contact	Beryllium Copper
Body Surface Finish	Chromate Conversion Coat	Material Contact Finish	Gold Plated
Weight	0.13 Kg	Insulator Material	PTFE / Teflon
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing),Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)
IP Protection Level	IP 60 Per EN 60529	Marking	Adhesive Label

- Coaxial line with SMA connectors, to match your system
- Small Size and lightweight, to fulfill your compact design
- Contacting design, DC upto 18 GHz for CH1 and upto 4 GHz for CH2



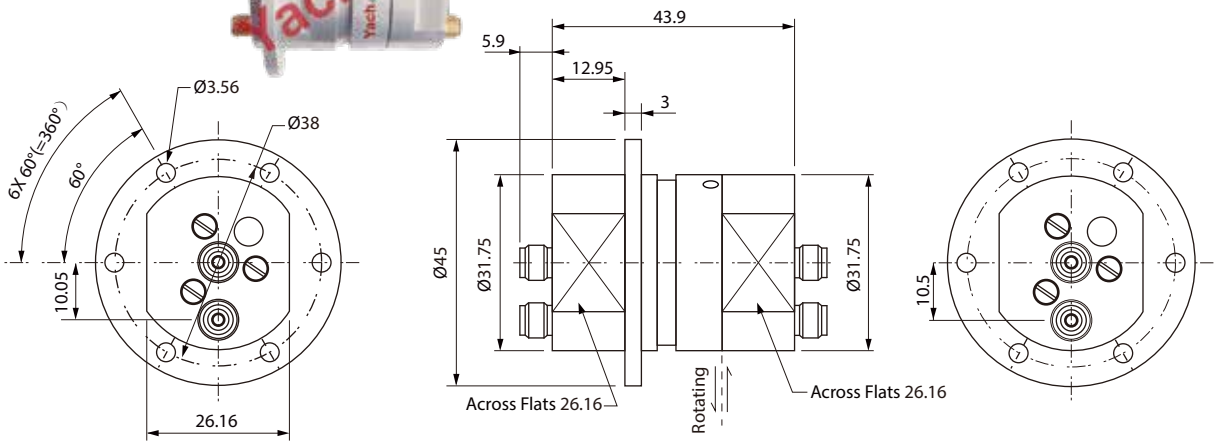
Specifications			
	Channel 1	Channel 2	
Interface	SMA Female (50 ohms)	SMA Female (50 ohms)	
Style	I Type	I Type	
Frequency Range	DC to 18 GHz	DC to 4 GHz	
Peak Power, Max.	1500 W	1500 W	
Average Power, Max.	30 W @ 18 GHz	30 W @ 4 GHz	
VSWR, Max.	1.3 @ DC - 8 GHz 1.5 @ 8 - 18 GHz	1.5 @ DC - 4 GHz	
VSWR WOW (360°Max.)	0.2	0.2	
Insertion Loss, Max.	0.4 dB @ DC - 8 GHz 0.9 dB @ 8 - 18 GHz	0.5 dB	
Insertion Loss WOW, Max.	0.05 dB	0.15 dB	
Phase WOW (Degrees Max.)	0.5 °	4.0 °	
Isolation	50 dB Min. / 60 dB Typical		
DC Power (Applied To One Channel Only)	0.5 A * 48 VDC @ Full Power	0.5 A * 24 VDC @ Full Power	
Rotation Speed, Max.	60 rpm	Life, min.	10 Million Revolutions
Starting Torque	5 Ncm Max.	Continuous Rotational Torque	5 Ncm Max.
Axial Load On Interface, Max	± 20 N	Radial Load On Interface, Max	± 20 N
Body Material	Aluminum Alloy	Material Contact	Beryllium Copper
Body Surface Finish	Chromate Conversion Coat	Material Contact Finish	Gold Plated
Weight	0.13Kg	Insulator Material	PTFE / Teflon
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing),Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)
IP Protection Level	IP 60 Per EN 60529	Marking	Adhesive Label

- Coaxial line with SMA connectors, to match your system
- Small Size and lightweight, to fulfill your compact design
- Contacting design, DC upto 18 GHz for CH1 and upto 13 GHz for CH2



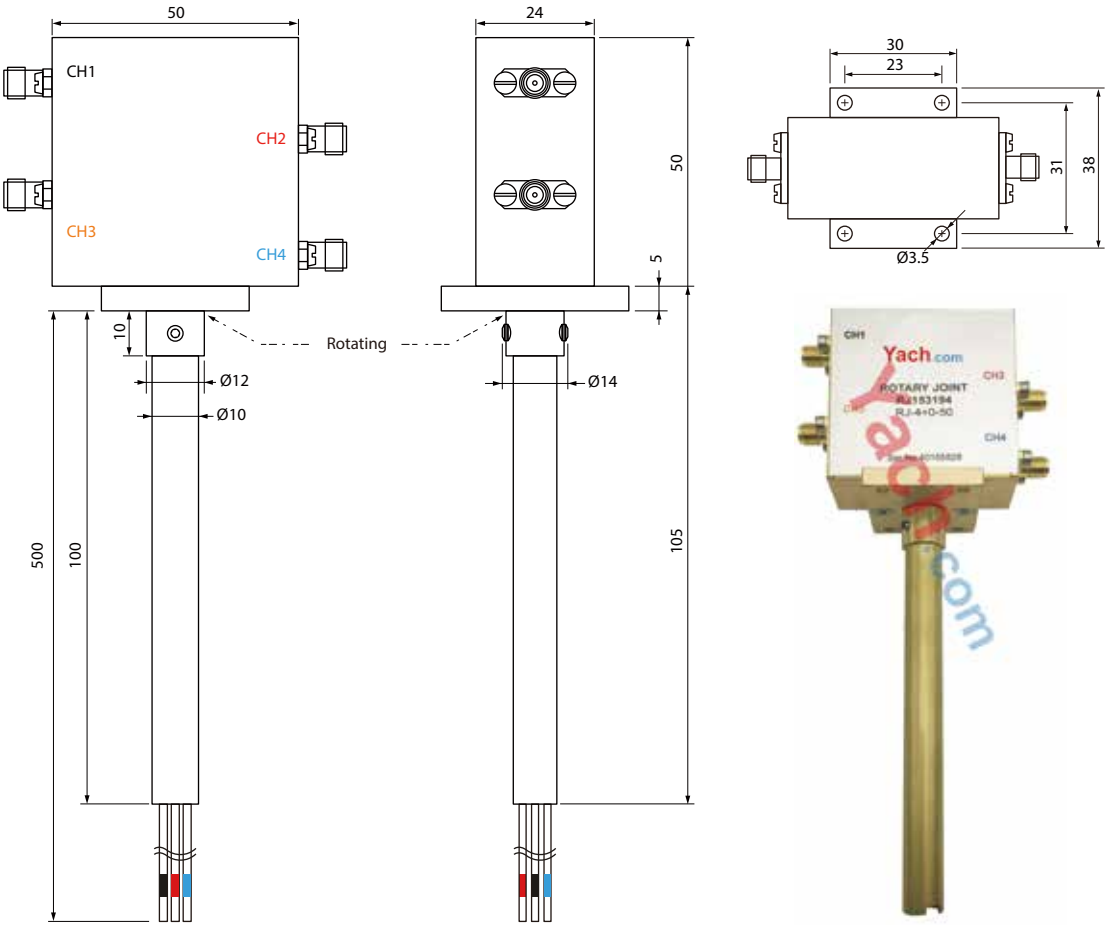
Specifications			
	Channel 1	Channel 2	
Interface	SMA Female (50 ohms)	SMA Female (50 ohms)	
Style	I Type	I Type	
Frequency Range	DC to 18 GHz	DC to 13 GHz	
Peak Power, Max.	1500 W	1500 W	
Average Power, Max.	50 W @ 18 GHz	30 W @ 4 GHz	
VSWR, Max.	1.3 @ DC - 8 GHz 1.5 @ 8 - 18 GHz	1.6 @ DC - 5 GHz 2.0 @ 5 - 13 GHz	
VSWR WOW (360°Max.)	0.2	0.5	
Insertion Loss, Max.	0.4 dB @ DC - 8 GHz 0.9 dB @ 8 - 18 GHz	0.5 dB @ DC - 5 GHz 1.0 dB @ 5 - 13 GHz	
Insertion Loss WOW, Max.	0.2 dB	0.5 dB	
Phase WOW (Degrees Max.)	0.5 °@ DC - 8 GHz 1 ° @ 8 - 18 GHz	4 ° @ DC - 5 GHz 10 ° @ 5 - 13 GHz	
Isolation	50 dB Min. / 60 dB Typical		
DC Power (Applied To One Channel Only)	0.5 A * 48 VDC @ Full Power	0.5 A * 24 VDC @ Full Power	
Rotation Speed, Max.	60 rpm	Life, Min.	10 Million Revolutions
Starting Torque	5 Ncm Max.	Continuous Rotational Torque	5 Ncm Max.
Axial Load On Interface, Max	± 20 N	Radial Load On Interface, Max	± 20 N
Body Material	Aluminum Alloy	Material Contact	Beryllium Copper
Body Surface Finish	Chromate Conversion Coat	Material Contact Finish	Gold Plated
Weight	0.13Kg	Insulator Material	PTFE / Teflon
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing), Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)
IP Protection Level	IP 60 Per EN 60529	Marking	Adhesive Label

- Small Size and lightweight, excellent RF performance
- DC upto 18 GHz working frequency for both channels

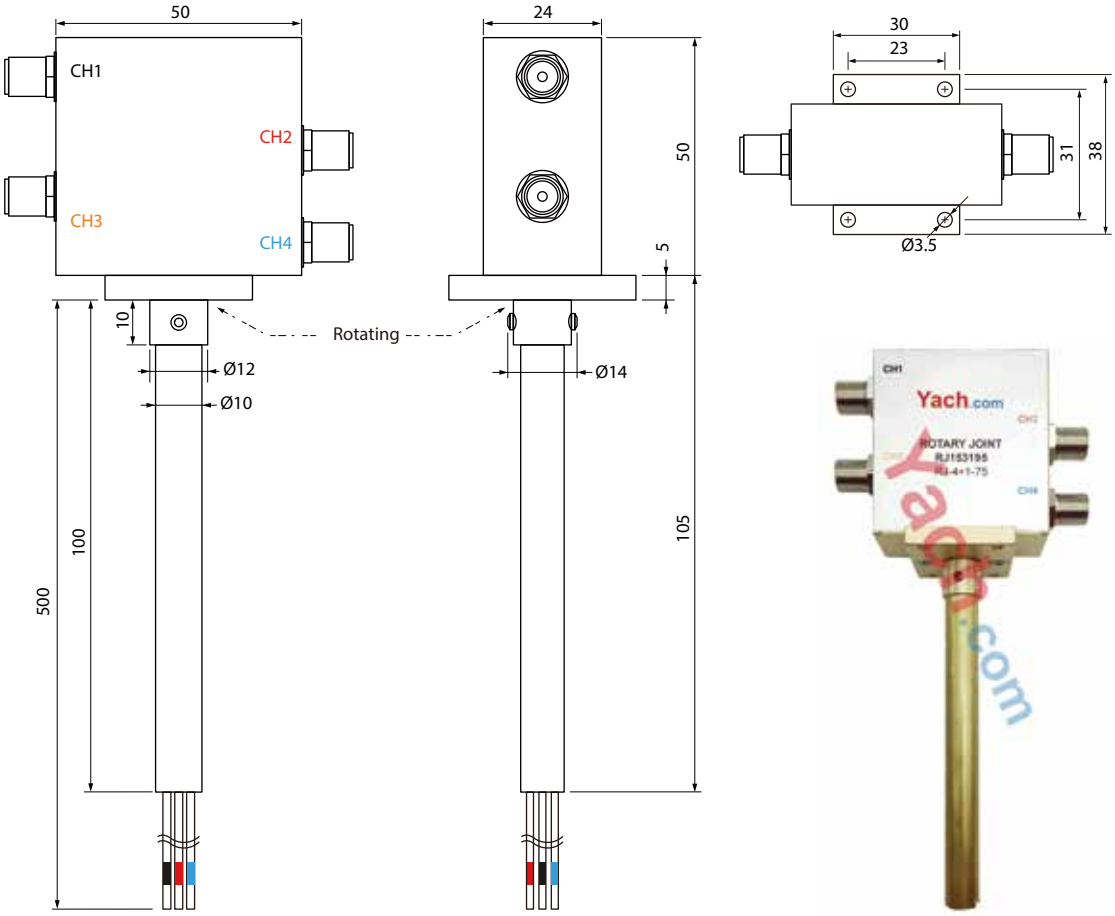


Specifications			
	Channel 1	Channel 2	
Interface	SMA Female (50 ohms)	SMA Female (50 ohms)	
Style	I Type	I Type	
Frequency Range	DC to 18 GHz	DC to 18 GHz	
Peak Power, max.	1000 W	1000 W	
Average Power, max.	100 W @ DC to 2 GHz 60 W @ 2 to 4 GHz 35 W @ 4 to 8 GHz 25 W @ 8 to 12 GHz 17 W @ 12 to 18 GHz	10 W	
VSWR, Max.	1.35 @ DC to 8 GHz 1.5 @ 8 to 18 GHz	2.0 @ DC to 4 GHz 2.5 @ 4 to 8 GHz 3.5 @ 8 to 12 GHz 4.5 @ 12 to 18 GHz	
VSWR WOW , Max.	0.1	0.1 @ DC to 4 GHz 0.4 @ 4 to 8 GHz 0.8 @ 8 to 12 GHz 2.0 @ 12 to 18 GHz	
Insertion Loss, Max.	0.4 dB @ DC to 12 GHz 1.0 dB @ 12 to 18 GHz	0.5 dB @ DC to 4 GHz 1.0 dB @ 4 to 8 GHz 2.0 dB @ 8 to 12 GHz 3.5 dB @ 12 to 18 GHz	
Insertion Loss WOW, Max.	0.06 dB	0.1 dB @ DC to 4 GHz 0.35dB @ 4 to 8 GHz 0.7 dB @ 8 to 12 GHz 1.5 dB @ 12 to 18 GHz	
Phase WOW (Degrees Max.)	0.5 ° @ DC to 8 GHz 1.5° @ 8 to 18 GHz	4 ° @ DC to 8 GHz 10° @ 8 to 12 GHz 25° @12 to 18 GHz	
Isolation Min.	50 dB		
DC Power (Applied To One Channel Only)	0.5 A , 48 VDC @ Full RF Avg. Power 2 A , 48 VDC @ RF Avg. Power 5W 5 A, 48 VDC @ RF Avg. Power 5W	0.5 A * 24 VDC @ Full RF avg. Power	

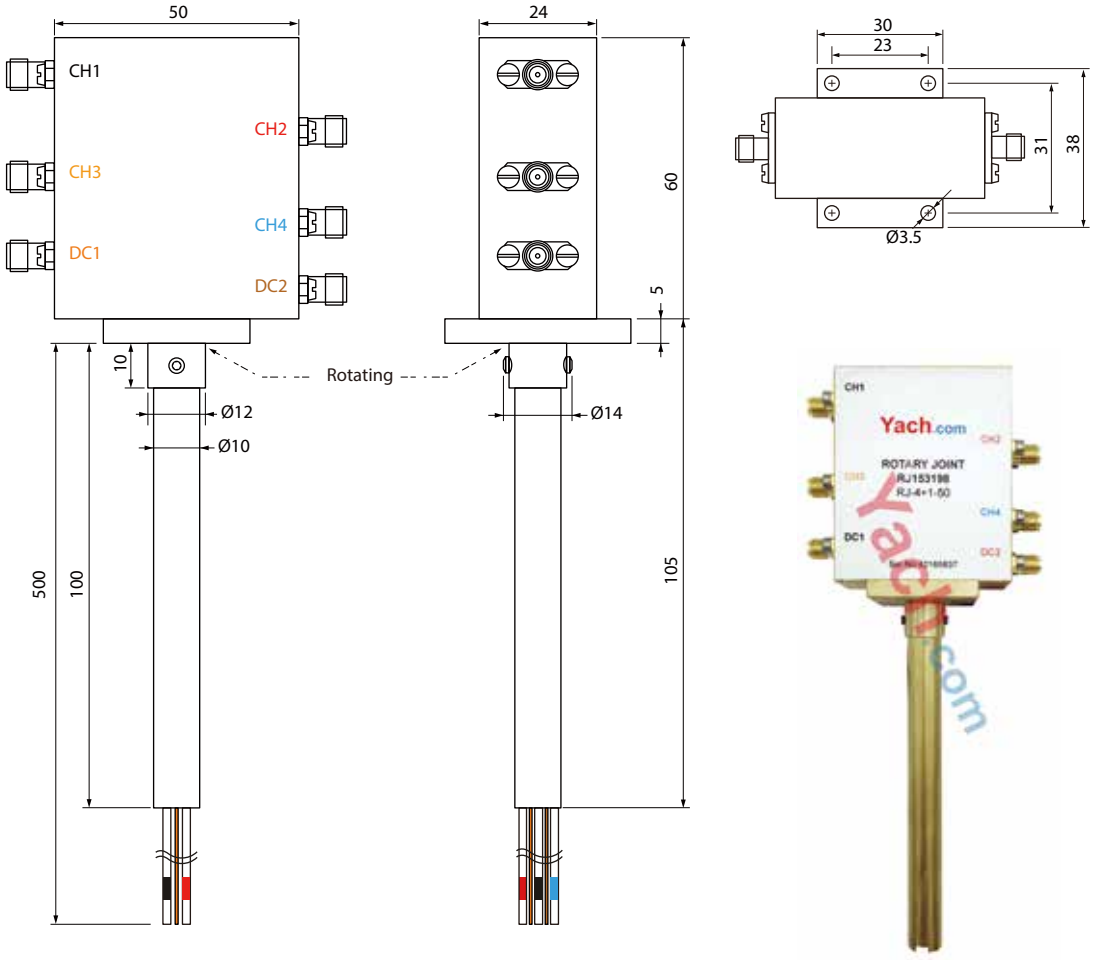
Rotation Speed, Max.	30 rpm	Life, Min.	10 Million Revolutions
Starting Torque, Max.	5 Ncm	Rotational Torque, Max.	5 Ncm
Case Material	Aluminum Alloy	Material Contact	Beryllium Copper
Case Surface Finish	Chromate Conversion Coat	Contact Finish	Gold Plated
Weight	0.13 Kg	Insulator Material	PTFE / Teflon
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing), Max.	95% (Operation)
	-55 to +70°C (Storage)		95% (Storage)
IP Protection Level	IP 60 Per EN 60529	Marking	Adhesive Label



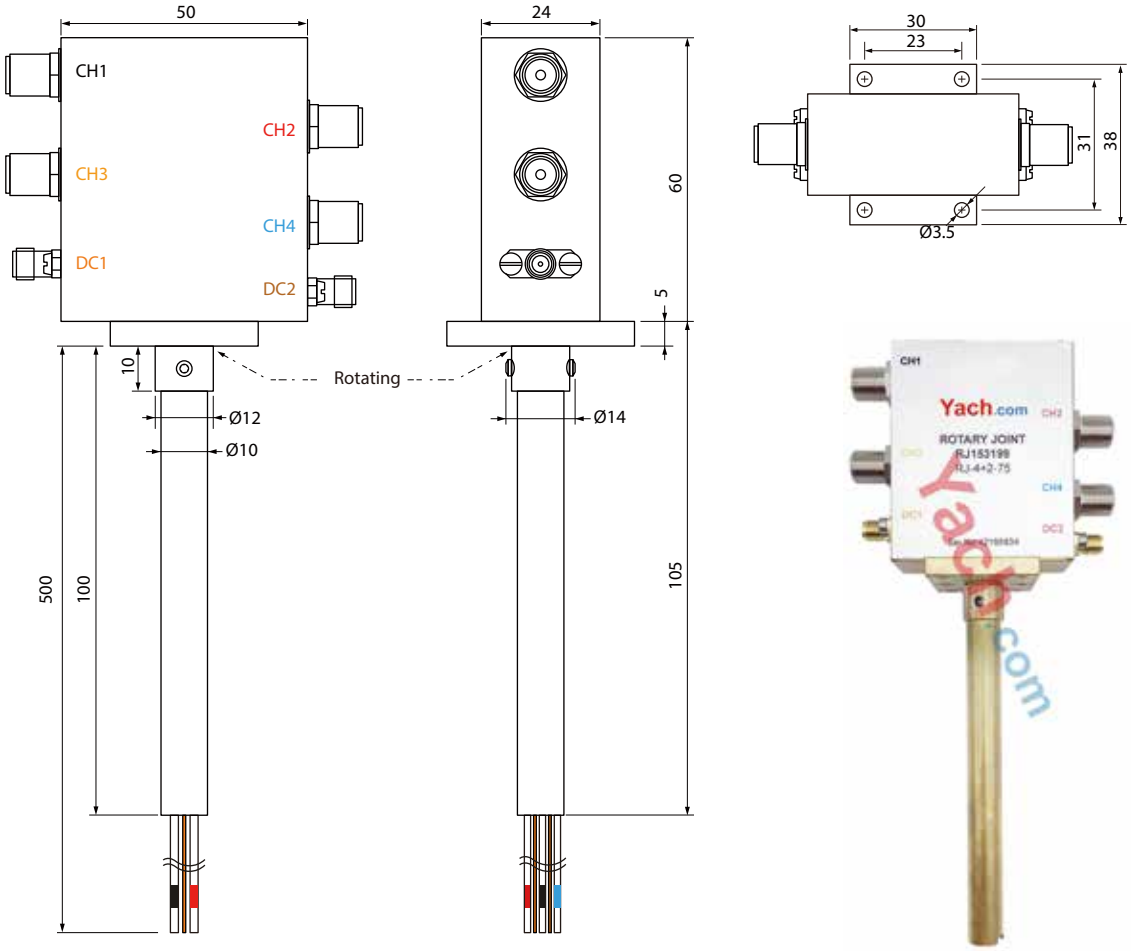
Specifications				
	Channel 1	Channel 2	Channel 3	Channel 4
Heatshrink Color	Black	Red	Yellow	Blue
Interface	SMA (50 ohms)	SMA (50 ohms)	SMA (50 ohms)	SMA (50 ohms)
Style	L Type	L Type	L Type	L Type
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz
Average Power	5 W	5 W	5 W	5 W
Peak Power, Max.	500 W	500 W	500 W	500 W
VSWR, Max.	2.00	2.00	2.00	2.00
VSWR WOW (360°Max.)	0.25	0.25	0.25	0.25
Insertion Loss, Max.	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)
Insertion Loss WOW, Max.	0.25 dB	0.25 dB	0.25 dB	0.25 dB
Isolation	40 dB (30 dB typ. min)			
Current Capacity	1.0 AMP			
Voltage	0-48 VDC @ Full Power			
Rotation Speed, Max.	60 rpm			
Life, Min.	2 Million Revolutions			
Weight	0.36 Kg			



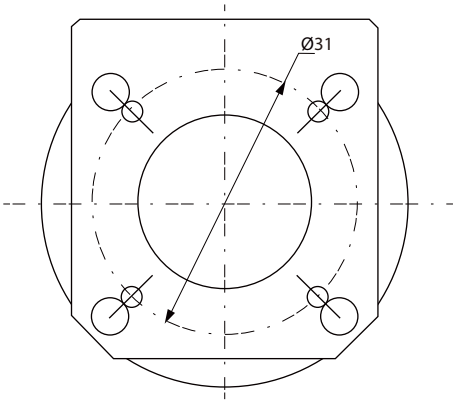
Specifications				
	Channel 1	Channel 2	Channel 3	Channel 4
Heatshrink Color	Black	Red	Yellow	Blue
Interface	F (75 ohms)	F (75 ohms)	F (75 ohms)	F (75 ohms)
Style	L Type	L Type	L Type	L Type
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz
Average Power	5 W	5 W	5 W	5 W
Peak Power, Max.	500 W	500 W	500 W	500 W
VSWR, Max.	2.00	2.00	2.00	2.00
VSWR WOW (360°Max.)	0.25	0.25	0.25	0.25
Insertion Loss, Max.	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)
Insertion Loss WOW, Max.	0.25 dB	0.25 dB	0.25 dB	0.25 dB
Isolation	40 dB (30 dB typ. min)			
Current Capacity	1.0 AMP			
Voltage	0 - 48 VDC @ Full Power			
Rotation Speed, Max.	60 rpm			
Life, Min.	2 Million Revolutions			
Weight	0.33Kg			

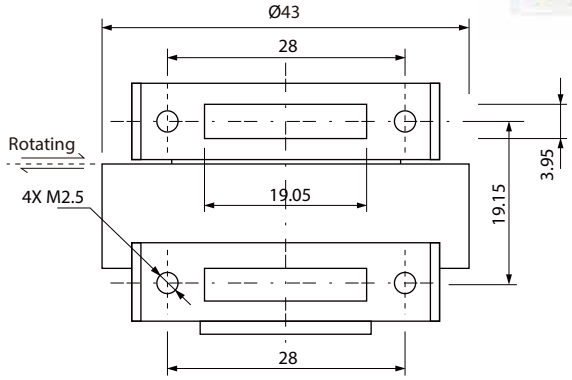


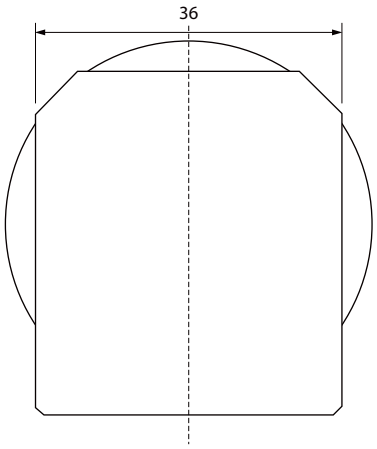
SPECIFICATIONS						
	Channel 1	Channel 2	Channel 3	Channel 4	DC1	DC2
Heatshrink Color	Black	Red	Yellow	Blue	Orange	Brown
Interface	SMA (50 ohms)	SMA (50 ohms)	SMA (50 ohms)	SMA (50 ohms)	SMA	
Style	L Type	L Type	L Type	L Type	L Type	
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz	DC	
Average Power	5 W	5 W	5 W	5 W		
Peak Power, Max.	500 W	500 W	500 W	500 W		
VSWR, Max.	2.00	2.00	2.00	2.00		
VSWR WOW (360°Max.)	0.25	0.25	0.25	0.25		
Insertion Loss, Max.	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)		
Insertion Loss WOW, Max.	0.25 dB	0.25 dB	0.25 dB	0.25 dB		
Isolation	40 dB (30 dB typ. min)					
Current Capacity	1.0 AMP				3.0 AMP	
Voltage	0 - 48 VDC				0- 48 VDC	
Rotation Speed, Max.	60 rpm					
Life, Min.	2 Million Revolutions					
Weight	0.33Kg					

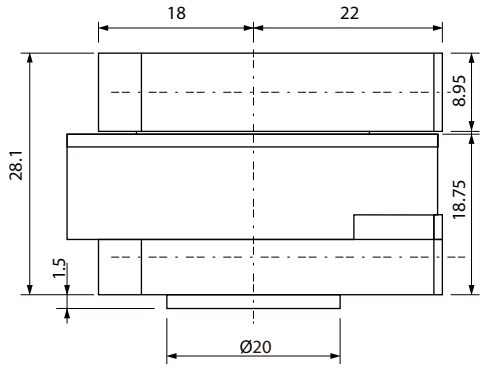


Specifications						
	Channel 1	Channel 2	Channel 3	Channel 4	DC1	DC2
Heatshrink Color	Black	Red	Yellow	Blue	Orange	Brown
Interface	F (75 ohms)	F (75 ohms)	F (75 ohms)	F (75 ohms)	SMA	
Style	L Type	L Type	L Type	L Type	L Type	
Frequency Range	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz	DC to 2.2 GHz	DC	
Average Power	5 W	5 W	5 W	5 W		
Peak Power, Max.	500 W	500 W	500 W	500 W		
VSWR, Max.	2.00	2.00	2.00	2.00		
VSWR WOW (360°Max.)	0.25	0.25	0.25	0.25		
Insertion Loss, Max.	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)	1.5 dB (2.5 dB max)		
Insertion Loss WOW, Max.	0.25 dB	0.25 dB	0.25 dB	0.25 dB		
Isolation	40 dB (30 dB typ. min)					
Current Capacity	1.0 AMP				3.0 AMP	
Voltage	0-48 VDC				0- 48 VDC	
Rotation Speed, Max.	60 rpm					
Life, Min.	2 Million Revolutions					
Weight	0.35Kg					

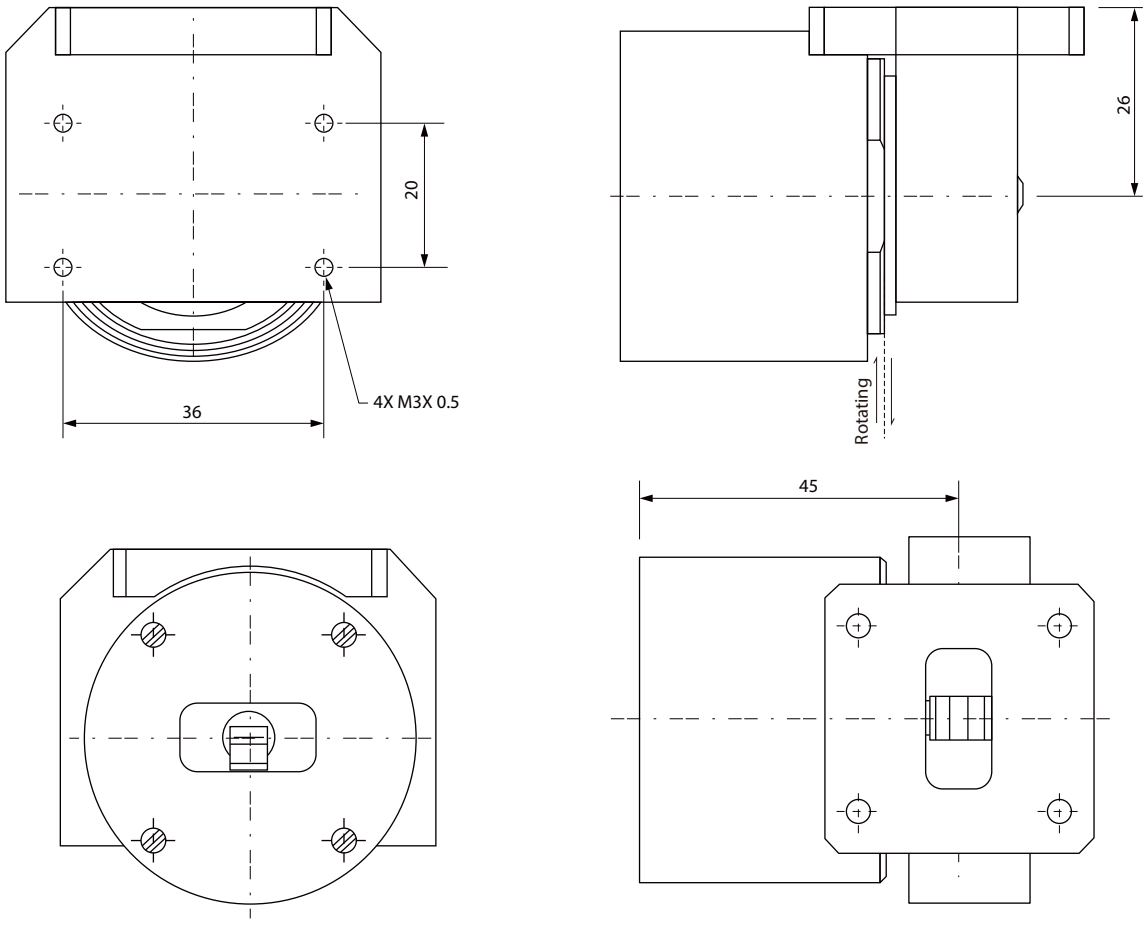




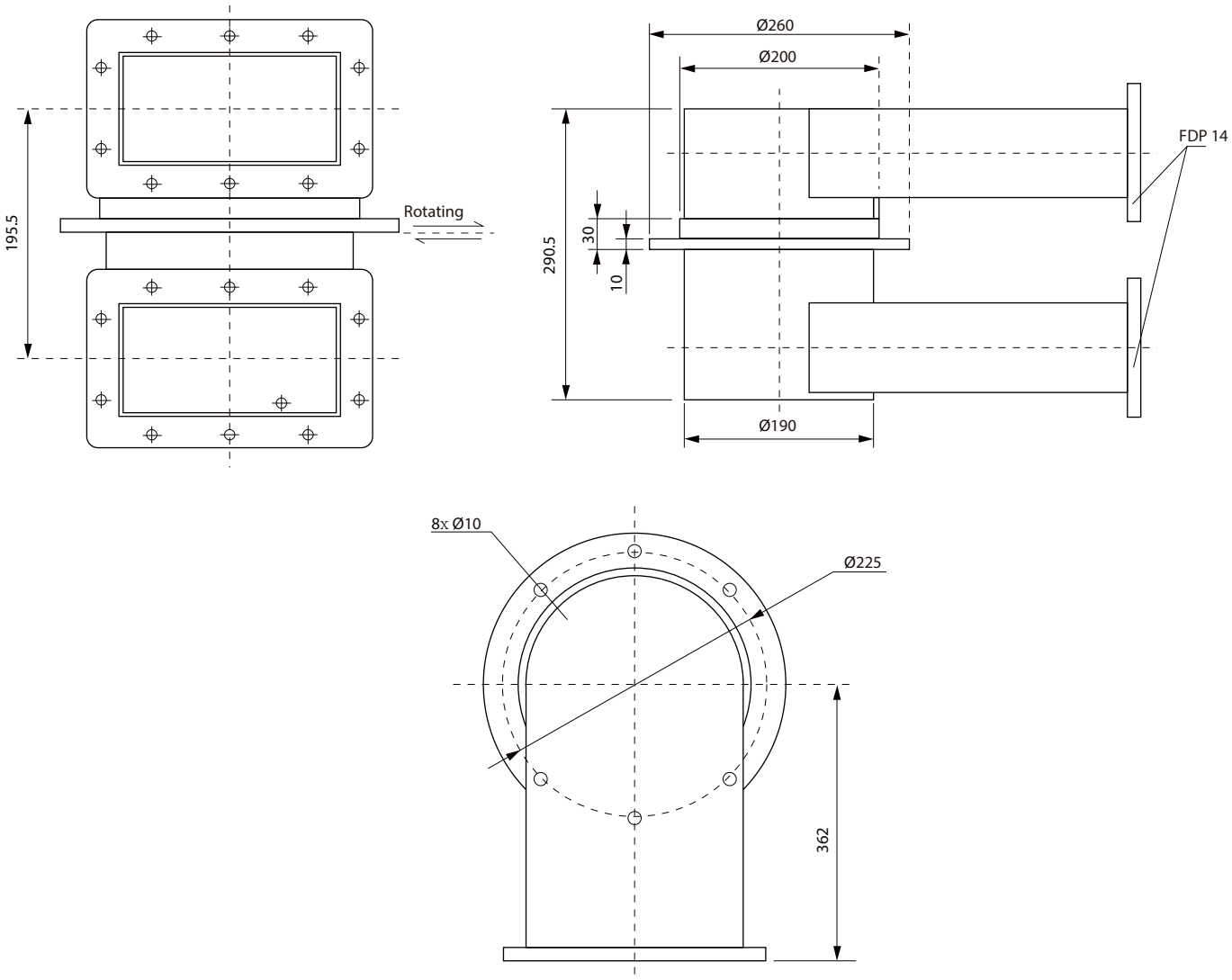




Specifications			
Connector	140 Special WG	Style	U Type
Frequency Range	14 - 14.5 GHz	Starting Torque, Max.	10 Ncm
Peak Power	500 W	Rotating Torque, Max.	6 Ncm
Average Power	50 W	Axial Load On Interface, Max	± 10 N
VSWR	1.2	Radial Load On Interface, Max.	± 10 N
VSWR WOW	0.1	Body Material	Aluminum Alloy
Insertion Loss	0.3 dB	Marking	Adhesive Label
Insertion Loss WOW	0.1 dB	Weight, Approx.	0.14 Kg
Rotating Speed	30 rpm	IP Protection Level	IP 40 Acc. EN 60529
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing), Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)

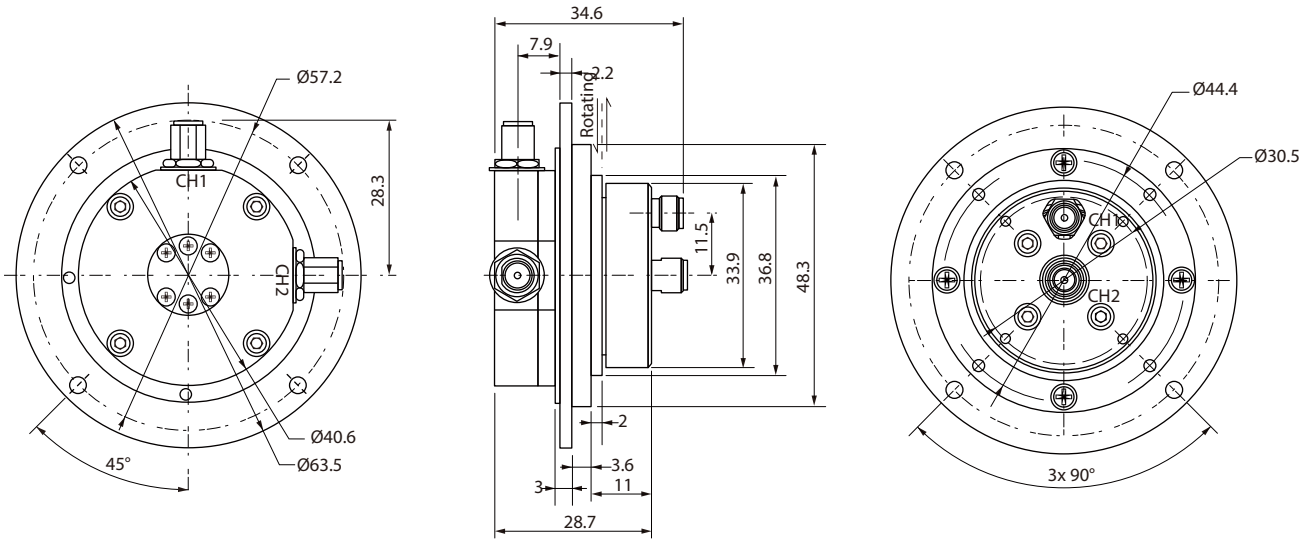


Specifications			
Interface Type	PBR 120	Life, Min.	10 Million Resolution
Material	Aluminum Alloy	Torque (Room / Min. Temperature), Max.	0.20 Nm @ 60°C @ Start-Up
Surface Finish	Chromated		0.25 Nm @ 20°C @ Start-Up
Interface Orientation	Style L		1.50 Nm @ -30°C @ Start-Up
Frequency Range	13.75-14.50 GHz		0.15 Nm @ 60°C @ Rotation
Average Power Capability	100 W		0.20 Nm @ 20°C @ Rotation
VSWR, Max.	1.2		1.00 Nm @ -30°C @ Rotation
VSWR WOW, Max.	0.05	Case Material	Aluminum Alloy
Insertion Loss, Max.	0.2 dB	Case Surface Finish	Chromate Conversion Coat Per MIL-C-5541
Insertion Loss WOW,Max.	0.05 dB	Weight, Approx.	0.4 kg
Rotating Speed, Max.	50 rpm	Temperature Range	-40 to +55°C(Operation)
IP Protection Level	IP41 Per EN 60529 (All Interfaces Connected)	Ambient Temperature Range	-40 to +70°C（Storage）
Marking	Adhesive Label		

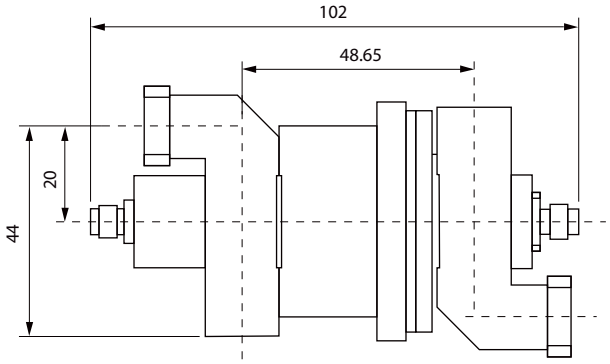


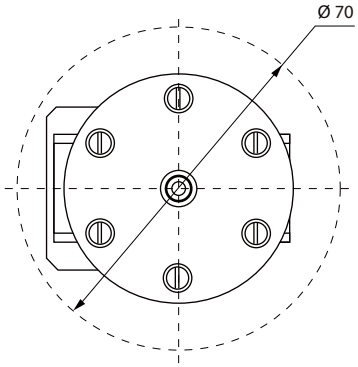
Specifications			
Connector	FDP14 WG	Style	Style U
Frequency Range	1.3 – 1.72 GHz	Body Material	Aluminum Alloy
Peak Power	1mW	Marking	Adhesive Label
Average Power	1 kW	Rotating Speed	30 rpm
VSWR	1.35	Insertion Loss	0.5 dB
VSWR WOW	0.05	Insertion Loss WOW	0.05 dB
Temperature(Ambient Range)	-40 to +70°C (Operation)	Humidity(Non-Condensing), Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)

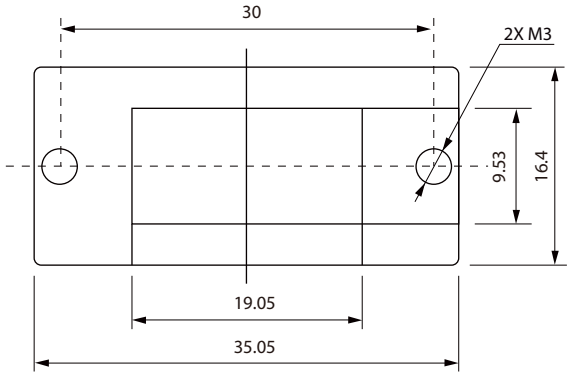
- Coaxial line with 2.92 connectors, to match your system
- Small Size and lightweight, to fulfill your compact design

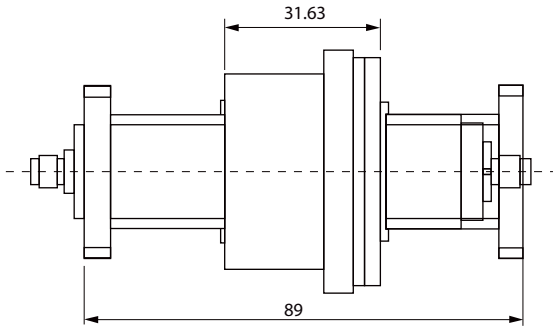


Specifications			
	Channel 1	Channel 2	
Interface	2.92mm Female (50 ohms)	2.92mm Female (50 ohms)	
Style	L Type	L Type	
Frequency Range	19.4 to 21.2 GHz	29.1 to 31 GHz	
Peak Power, Max.	1000 W	1000 W	
Average Power, Max.	1W	10W	
VSWR, Max.	1.5	1.5	
VSWR WOW (360°Max.)	0.1	0.1	
Insertion Loss, Max.	0.8 dB	0.8 dB	
Insertion Loss WOW, Max.	0.1 dB	0.2 dB	
Isolation	50 dB Min. / 60 dB Typical		
Rotation Speed, Max.	60 rpm	Life, min.	10 Million Revolutions
Starting Torque	5.6 Ncm Max.	Continuous Rotational Torque	5.6 Ncm Max.
Axial Load On Interface, Max	± 5 N	Radial Load On Interface, Max	± 5 N
Body Material	Aluminum Alloy	Material Contact	Beryllium Copper
Body Surface Finish	Chromate Conversion Coat	Material Contact Finish	Gold Plated
Weight	0.2 Kg	Insulator Material	PTFE / Teflon
Temperature(Ambient Range)	-55 to +70°C (Operation)	Humidity(Non-Condensing),Max.	85% (Operation)
	-50 to +70°C (Storage)		95% (Storage)
IP Protection Level	IP 60 Per EN 60529	Marking	Adhesive Label

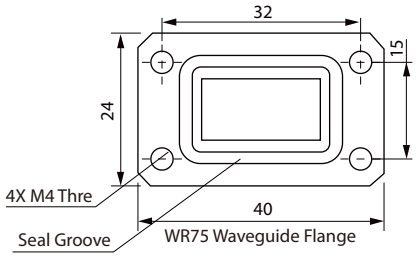


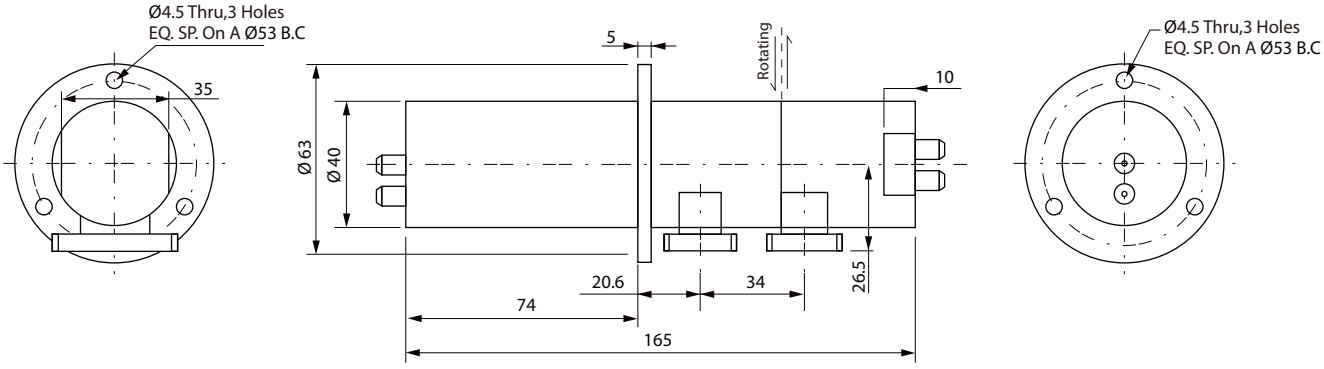






Specifications		
	Channel 1	Channel 2
Connector	UBR120 Special Flange	SMA Female
Frequency Range	13.75 GHz~14.5 GHz	DC ~4.0 GHz
Peak Power, Max.	5 KW	1 KW @ 1.0 GHz
Average Power, Max.	200 W	10 W
VSWR, Max.	1.25	1.35 @ DC-2 GHz 1.80 @ 2-4 GHz
VSWR WOW, Max.	0.1	0.15 @ DC-2 GHz 0.25 @ 2-4 GHz
Insertion Loss, Max.	0.25 dB	0.4 dB @ DC-2 GHz 0.8 dB @ 2-4 GHz
Insertion Loss WOW, Max.	0.1 dB	0.15 dB @ DC-2 GHz 0.45 dB @ 2-4 GHz
Isolation, Min.	60 dB	
Rotating Speed, Max.	60 rpm	
Life Time	0.5 Million Revolutions	
Starting Torque, Max.	2 Nm @ Ambient Temp	
Case Material	Aluminum Alloy	
Connector Material	Copper Alloy	
Case Surface Finish	Chromate Conversion Coat Per MIL-C-5541	
Connector Surface Finish	Gold Plated	
Marking	Adhesive Label	
Weight	0.3 Kg	
Operation Temperature Range	-50 °C to +80 °C	
Operation Humidity	95% RH (Non-Condensing)	
Operation IP Protection Level	IP60 Per EN 60529	
Storage Temperature Range	-55 °C to +85 °C	
Storage Humidity	95% RH (Non-Condensing)	



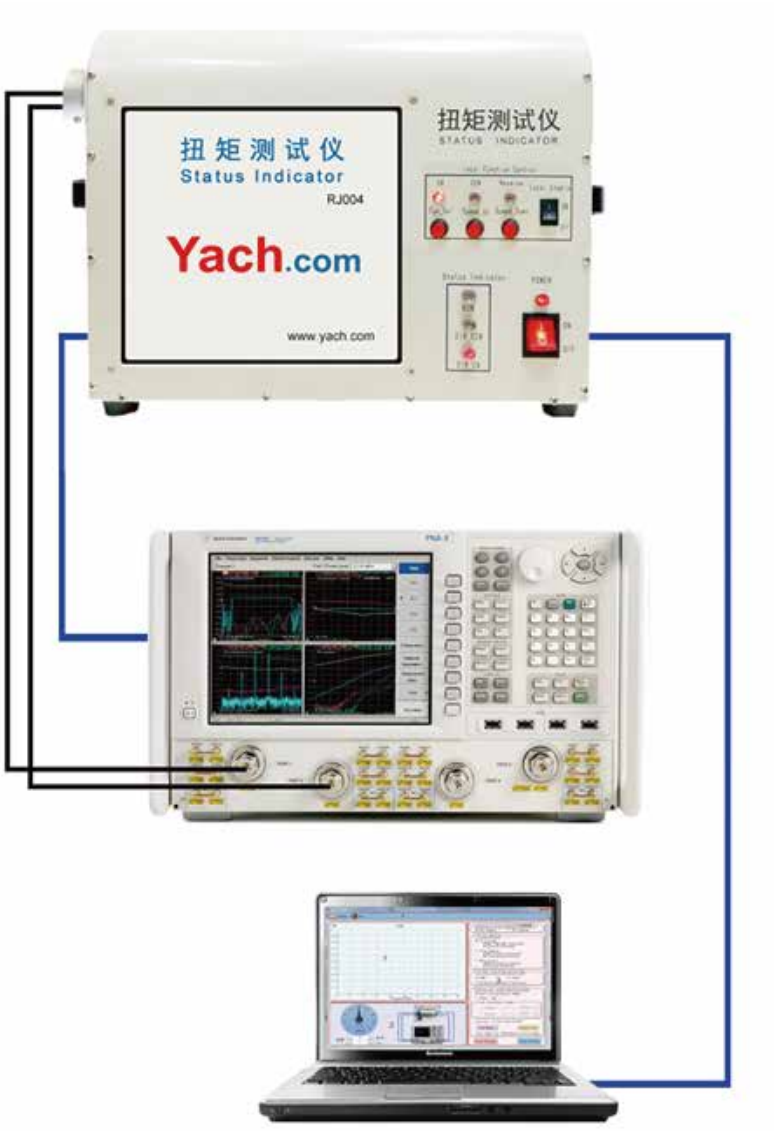


Specifications			
	Channel 1	Channel 2	Channel 3
Connector	SMA Female	SMA Female	UBR120 Flange
Frequency Range	DC - 18 GHz	DC -13.0 GHz	13.5 GHz - 14.6 GHz
Peak Power, Max.	1 kW @ 1.0 GHz	1 KW @ 1.0 GHz	20 KW
Average Power, Max.	10W	10 W	500 W
VSWR, Max.	1.4 @ DC - 4 GHz 1.8 @ 4 – 12 GHz 2.0 @ 12 – 18 GHzA	1.6 @ DC - 4 GHz 2.0 @ 4 – 8 GHz 2.5 @ 8 – 13 GHz	1.2
VSWR WOW, Max.	0.1	0.15	0.05
Insertion Loss, Max.	0.7 dB @ DC – 4 GHz 1.5 dB @ 4 – 12 GHz 2.0 dB @ 12 – 18 GHz	0.9 dB @ DC - 4 GHz 1.6 dB @ 4 – 8 GHz 2.5 dB @ 8 – 13 GHz	0.2 dB
Insertion Loss WOW, Max.	0.1 dB	0.15 dB	0.05 dB
Isolation, Min.	50 dB		
Rotating Speed, Max.	20 RPM		
Starting Torque, Max.	0.03 Nm @ Ambient Temp		
Case Material	Aluminum Alloy		
Connector Material	Copper Alloy		
Case Surface Finish	Black paint		
Connector Surface Finish	Gold Plated		
Marking	Adhesive Label		
Operation Temperature Range	-50°C to +80°C		
Operation Humidity	95% RH (Non-Condensing)		
Operation IP Protection Level	IP60 Per EN 60529		
Storage Temperature Range	-55°C to +85°C		
Storage Humidity	95% RH (Non-Condensing)		
Weight	0.5 Kg		

Yach self-developed rotary joint test system (RJ001 - RJ004) is for single, dual and multi-channel Rotary Joints, especially for testing the coaxial Rotary Joint automatically systems. It can test the torque etc. mechanical specifications and the VSWR,VSWR WOW, Insertion Loss and Insertion Loss WOW, Phase and Phase WOW etc. electronical specifications as well as life time etc. as you wish. It can be set to various indicators and their change of time in accordance with your settings, the system has high reliability of the test results and automated measurement and automatic statistical analysis of measurement results, etc.

RJ001-RJ004 system needs to be equipped with corresponding 2-port or 4-port network analyzer. 4-port network analyzer is particularly suitable for measuring dual-channel and multi-channel Rotary Joints. Compared to the 2-port network analyzer, 4-port network analyzer is of higher efficiency, higher measurement stability and authenticity. RJ001-RJ004 system can be equipped with the calibration kits, testing load, testing cable, measuring Rotary Joints and other accessories.

All the testing result/record can be displayed simultaneously on the VNA, integrated screen or/and notebook, they can also be showed within a chart/table as you wish. You can inquire Yach for more information mail us info@yach.com or call us +86-21-8039 4921.



Three testing method comparison			
Testing Method	Method Ⅰ	Method Ⅱ	Method Ⅲ
Tested Rotary Joint Connected objects	To Load	To Jumper	To Standard Rrotary Joint
Components Cost	Low	Medium	High
Testing Cost	Low	Low	High
Continuous Rotating	Yes	No	Yes
High Speed Rotating	Yes	No	DO NOT Suggest
Possible Tested Specifications	VSWR, VSWR WOW, Isolation, Life time etc.	VSWR, VSWR WOW, IL, IL WOW, Phase WOW, Isolation	VSWR, VSWR WOW, IL, IL WOW, Phase WOW, Isolation, Life time etc.
Details for tested Specifications			
VSWR	Yes	Yes	Yes
VSWR WOW	Yes	Yes	Yes
Insertion Loss	No	Yes	Yes
IL WOW	No	Yes	Yes
Phase WOW	No	Yes	Yes
Isolation	Yes	Yes	Yes
Life Time	Yes	No	Yes
System component parts and instructions			
Laptop	To provide users with the user interface for the operating platform software provides complete software control, software and communications equipment and turntable, data collection and data processing functions.		
Test turntable	With mounting bracket and flange for the rotary joint movement and testing		
RJ45 network cable	The completion and testing of computer power and communications turntable, computer and network analyzer between		
Cable Assemblies	For RF network analyzer and test the link between joint connector		
RF components	Including some calibration devices, such as open, short circuit, load, straight, etc., necessary for calibration		
Network Analyzer	RF test environment for providing the test system, test conditions		
Power line	Provide AC power supply, in order to test the turntable work		

RF Switches

Yach Industry (Shanghai) Co., Ltd.

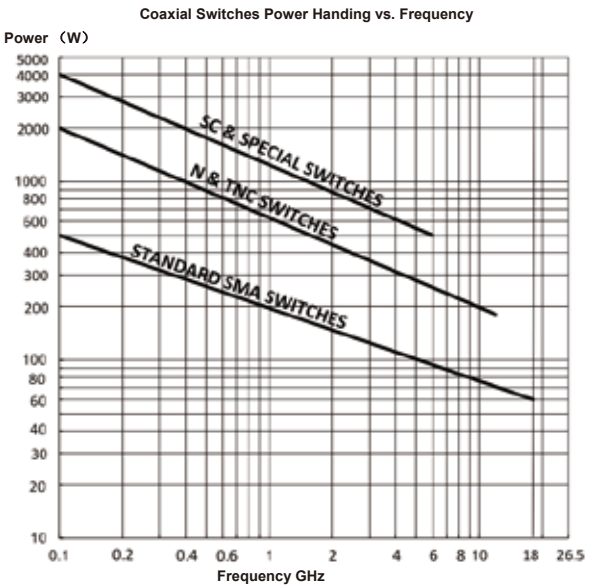
is a high technology company registered in Shanghai Jiaotong University Science Park， which was qualified for China's National University Science Park class A. Yach Industry and Shanghai Jiaotong University also has deep cooperation, we provide the key products using in their testing system for integrated antenna of sub-millimeter wave and terahertz communication. Yach has been working in the Satellite Communication, Millimeter wave Telecommunication components and system, Microwave Chamber and Testing System design and building, Yach can provide turn-key projects such as Microwave Chamber, antenna Near-Field Measurement, Far-Field Measurements, Materials Measurement System, as well as software development and simulation.

Yach products range from the coaxial cables and cable assemblies, fiber optical cable and components, to various types of wave guide products, electronic and optical transmission components and sub-systems. Yach rotary joints, coaxial switches, waveguide switches, phase shifters, attenuators, power amplifiers, LNB, mixers, extensions, the probe head, turntable, rigid waveguide, flexible waveguide, phase stability test cable and other products are widely used in scientific research, civil and military applications. The products are widely used in ATC (Air Traffic Control) RADAR, Weather RADAR, Financial System, Police Station and Fire Control etc. industry.

Coaxial switch is controlled automaticly by voltage or computer programming, which is switching in microwave circuit. According to the number of input and output points ,it can be divided into SPDT (single pole double throw), SP3T (single pole 3 throw), SP4T (single-pole four-throw), DPDT (double-pole double-throw) and other types of products. Constituting Coaxial switch device has ferrite, PIN tube, FET or BJT. According to different functions, coaxial switches generally can be divided into Failsafe type and Latching type; different driving mode can be divided into belt-driven and non-driven, also can be divided with feedback and without feedback type.

Waveguide RF switches are electromagnetic switches with hollow circular or rectangular cross-sections and are used for routing RF energy in microwave communications, broadcasting, and in radar applications. Waveguide switches can be used to transfer both power and communication signals, and the bandwidth of a waveguide is in relation to its size, and thus always referred to by its size (e.g. WR112, WR90, WR75 etc.). Compared to coaxial RF switches, waveguides can route extremely high power signals over a narrow bandwidth at low to high frequencies, and now Lightweight Waveguide series is available.

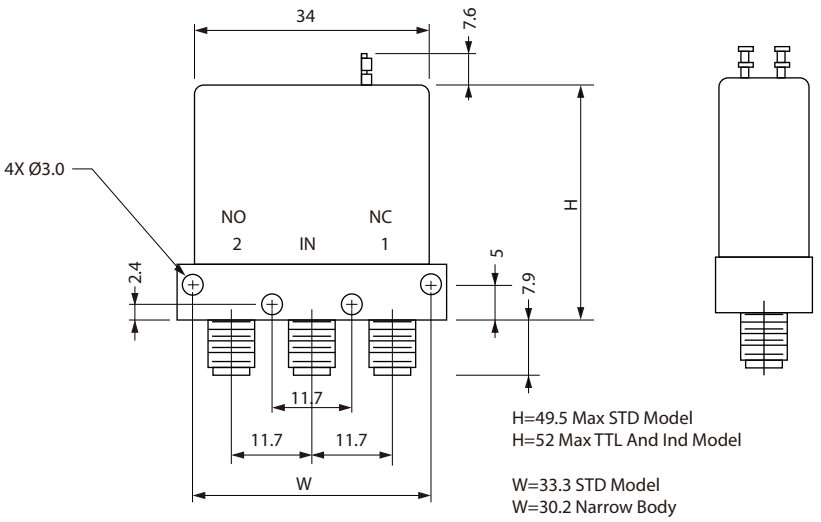
Coaxial & Waveguide Switches pictures:

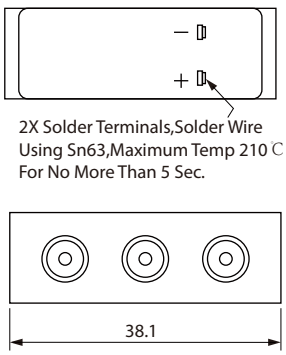


Estimates base on the following reference conditions:
Ambient temperature @ 20°C
Sea level operation
Load VSWR of 1.2:1 Maximum
No high - Power (hot) switching

RF Switches List

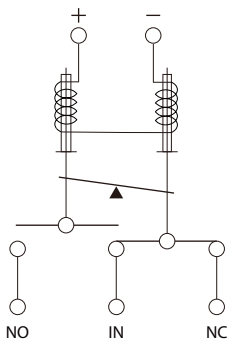
Coaxial Switches			
Model Number	Frequency（GHz）	Interface	Page
SW516100	DC -26.5 GHz	SMA	37
SW516101	DC -33.5 GHz	2.92	39
SW516102	DC -40 GHz	2.92	41
SW516103	DC -26.5 GHz	SMA	43
SW516104	DC -12 GHz	N	45
SW516105	DC -18 GHz	N	47
SW516106	DC -18 GHz	N	49
SW516108	DC -26.5 GHz	SMA	51
SW516109	DC -26.5 GHz	SMA	53
SW516110	DC -26.5 GHz	SMA	55
SW516111	DC -11 GHz	N	57
SW516112	DC -11 GHz	N	59
SW516113	DC -11 GHz	N	61
SW516114	DC -11 GHz	N	63
SW516115	DC -18 GHz	N or BNC	65
SW516116	DC -18 GHz	SMA	66
SW516117	DC -18 GHz	SMA	67
SW516118	DC -18 GHz	SMA	68
SW516119	DC -26.5 GHz	SMA	69
SW516120	DC -26.5 GHz	SMA	70
Waveguide Switch			
WG516079	12.4 -18GHz	WR 62	71
WG516080	10.0-15GHz	WR 75	72
WG516081	8.2-12.4 GHz	WR 90	73
WG516082	75-110 GHz	WR 10	74
WG516083	60-90 GHz	WR 12	75
WG516084	50-75 GHz	WR 15	76
WG516085	40-60 GHz	WR 19	77
WG516086	33-50 GHz	WR 22	78
WG516088	22-33 GHz	WR 34	79
WG516090	18-26.5 GHz	WR 42	80
WG516091	15-22 GHz	WR 51	81
WG516092	7.05-10 GHz	WR 112	82
WG516093	5.85-8.2 GHz	WR 137	83
WG516094	4.9-7.05 GHz	WR 159	84
WG516095	3.3-4.9 GHz	WR 229	85
WG516099	1.12-1.7 GHz	WR 650	86



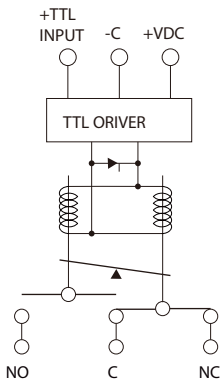


SPDT Failsafe Actuator

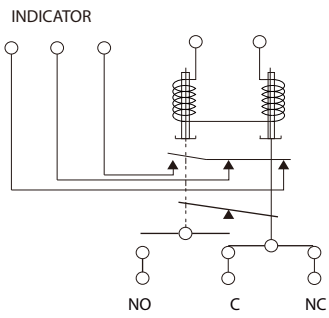
Standard



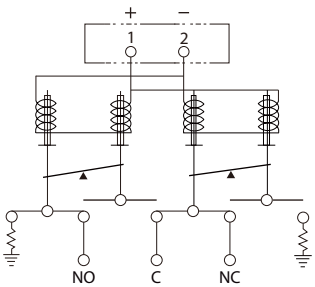
TTL



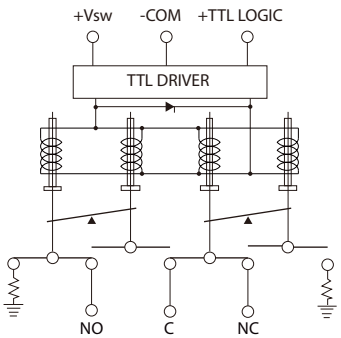
Indicator



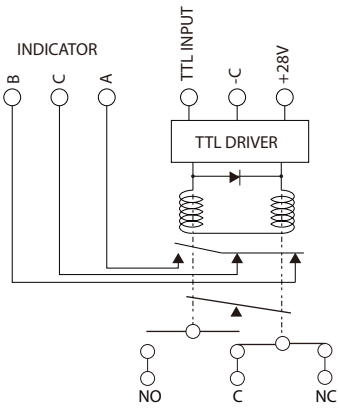
Internal Termination



TTL + Internal Termination

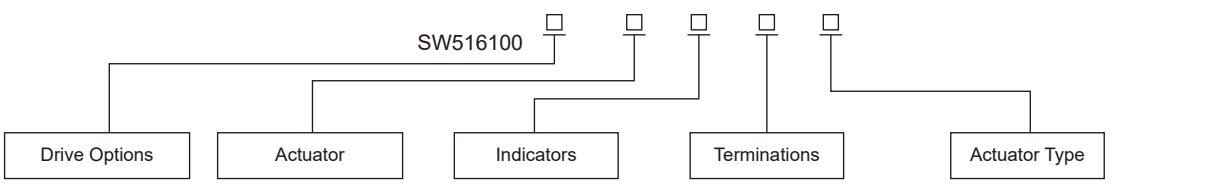


Indicator + TTL



Specifications	
Operating Frequencies	DC to 26.5 GHz
VSWR	1.20 @ DC to 8 GHz 1.30 @ 8.0 to 12 GHz 1.35 @ 12 to 18 GHz 1.50 @ 18 to 26.5 GHz
Isolation	70 dB @ DC to 8 GHz 65 dB @ 8.0 to 12 GHz 60 dB @ 12 to 18 GHz 55 dB @ 18 to 26.5 GHz
Insertion Loss	0.2 dB @ DC to 8 GHz 0.3 dB @ 8.0 to 12 GHz 0.35dB@ 12 to 18 GHz 0.5 dB @ 18 to 26.5 GHz
Actuator Voltage	12 VDC
Actuator Current	195 mA
Switching Time	15 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	SMA(F)
Actuator type	A: Failsafe without Indicator B: Failsafe with Indicator C: Latching without Indicator D: Latching with Indicator E: Normally open without Indicator F: Normally open with Indicator
Options	D: TTL Driver -Available for all models E: Decoder H: High power T: Internal Terminations -SPDT/SPMT,SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection



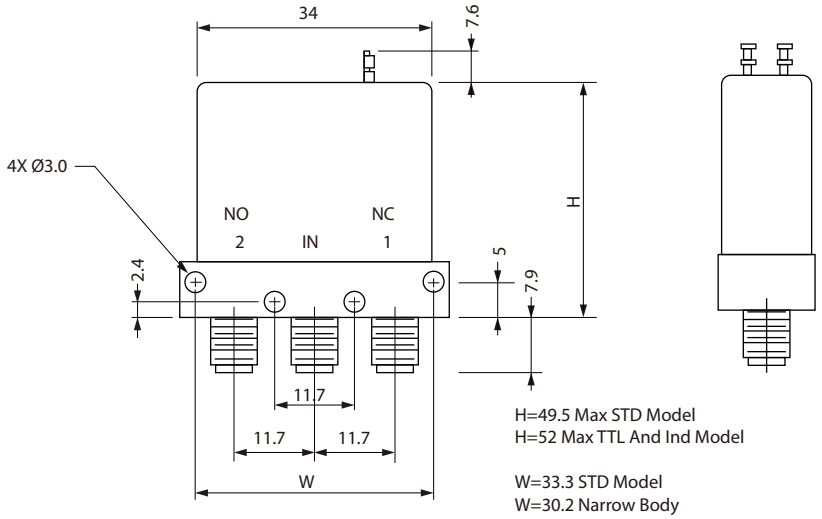
Drive Options
D: TTL Driver
E: Decoder
H: High power
T: Internal Terminations

Actuator
F:Failsafe
L:Latching

Indicators
I: with Indicators
D:default

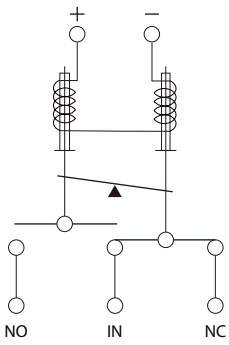
Terminations
NT:with Termination
N:the quantity of Termination -without indicators
D:default-without Termination

Actuator Type
A: Failsafe without Indicator
B: Failsafe with Indicator
C: Latching without Indicator
D: Latching with Indicator
E: Normally open without Indicator
F: Normally open with Indicator

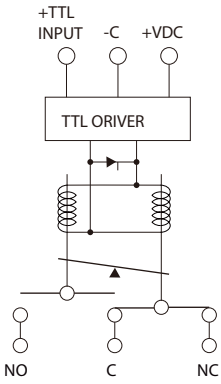


SPDT Failsafe Actuator

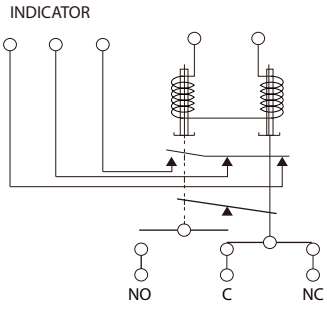
Standard



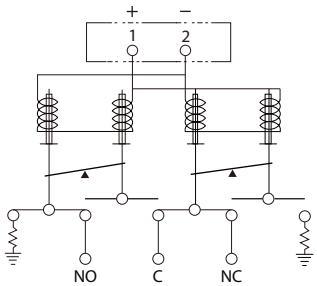
TTL



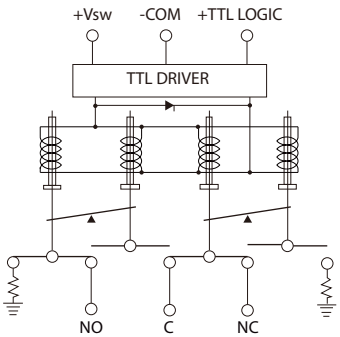
Indicator



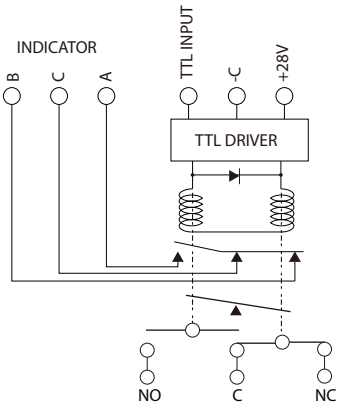
Internal Termination



TTL + Internal Termination

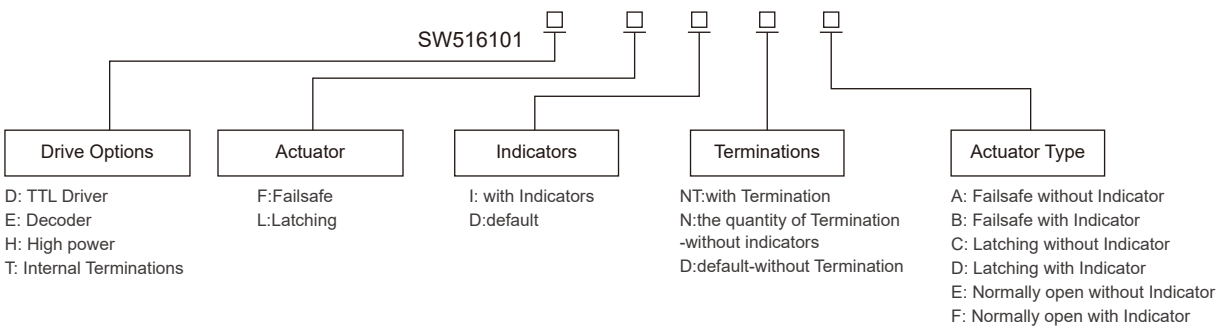


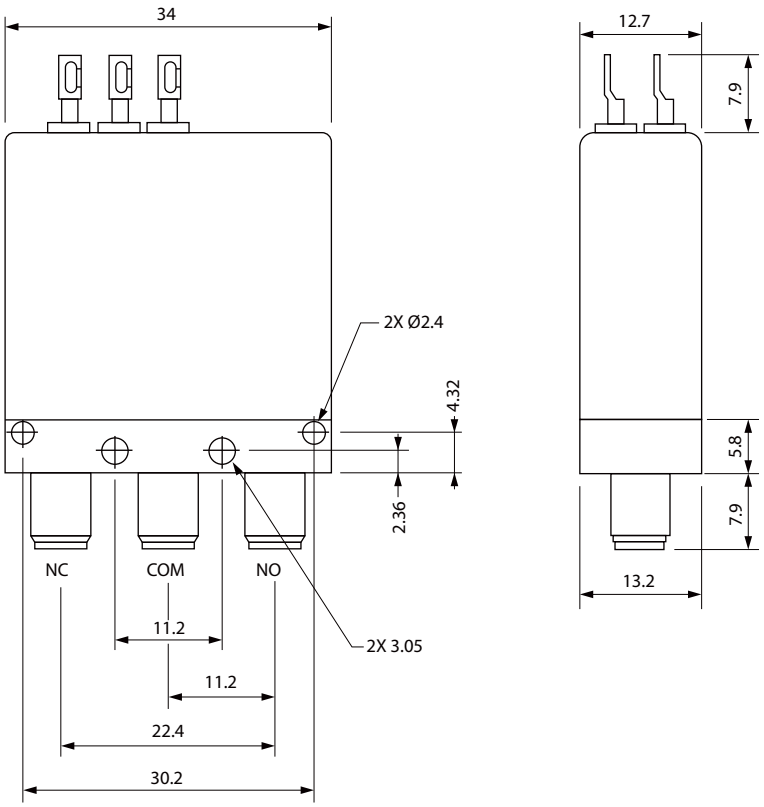
Indicator + TTL



Specifications	
Operating Frequencies	DC to 33.5 GHz
VSWR	1.25 @ DC to 6 GHz 1.40 @ 6.0 to 12 GHz 1.50 @ 12 to 18 GHz 1.60 @ 18 to 26.5 GHz 1.95 @ 26.5 to 33.5 GHz
Isolation	70 dB @ DC to 6 GHz 60 dB @ 6.0 to 12 GHz 60 dB @ 12 to 18 GHz 50 dB @ 18 to 26.5 GHz 40 dB @ 26.5 to 33.5 GHz
Insertion Loss	0.2 dB @ DC to 6 GHz 0.4 dB @ 6.0 to 12 GHz 0.5 dB @ 12 to 18 GHz 0.6 dB @ 18 to 26.5 GHz 0.95dB@ 26.5to 33.5 GHz
Actuator Voltage	12 VDC
Actuator Current	195 mA
Switching Time	15 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	2.92 (F)
Actuator type	A: Failsafe without Indicator B: Failsafe with Indicator C: Latching without Indicator D: Latching with Indicator E: Normally open without Indicator F: Normally open with Indicator
Options	D: TTL Driver E: Decoder H: High power T: Internal Terminations
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

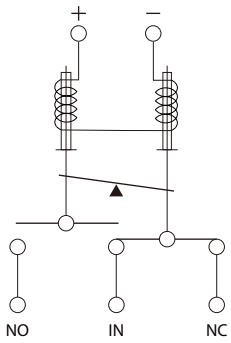
Part Number Selection



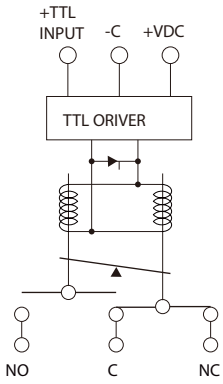


SPDT Failsafe Actuator

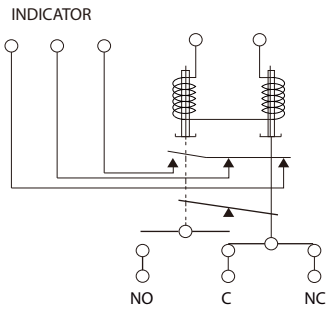
Standard



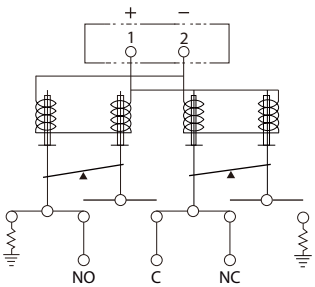
TTL



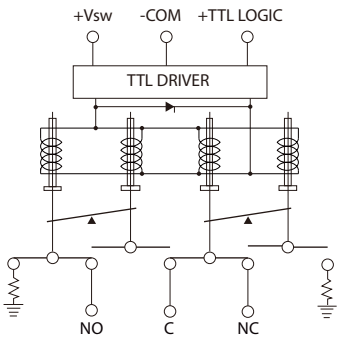
Indicator



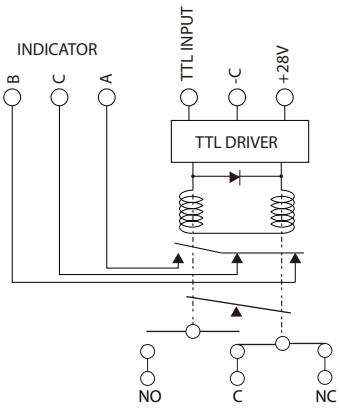
Internal Termination



TTL + Internal Termination

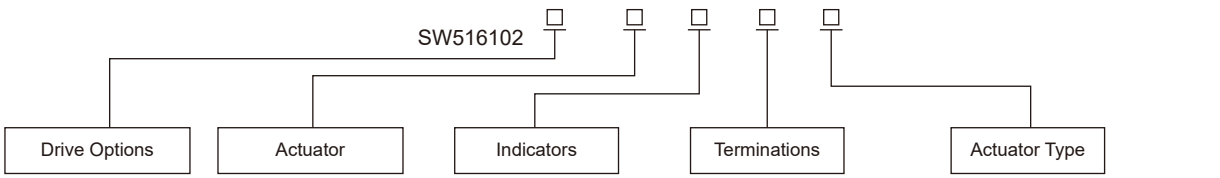


Indicator + TTL



Specifications	
Operating Frequencies	DC to 40 GHz
VSWR	1.20 @ DC to 8 GHz 1.30 @ 8.0 to 12 GHz 1.35 @ 12 to 18 GHz 1.50 @ 18 to 26.5 GHz 1.90 @ 26.5 to 40 GHz
Isolation	70 dB @ DC to 8 GHz 65 dB @ 8.0 to 12 GHz 60 dB @ 12 to 18 GHz 55 dB @ 18 to 26.5 GHz 55 dB @ 26.5 to 40 GHz
Insertion Loss	0.2 dB @ DC to 8 GHz 0.3 dB @ 8.0 to 12 GHz 0.35dB @ 12 to 18 GHz 0.50dB @ 18 to 26.5 GHz 0.80dB @ 26.5to 40 GHz
Actuator Voltage	12 VDC
Actuator Current	195 mA
Switching Time	15 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	2.92 (F)
Actuator type	A: Failsafe without Indicator B: Failsafe with Indicator C: Latching without Indicator D: Latching with Indicator E: Normally open without Indicator F: Normally open with Indicator
Options	D: TTL Driver E: Decoder H: High power T: Internal Terminations
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection



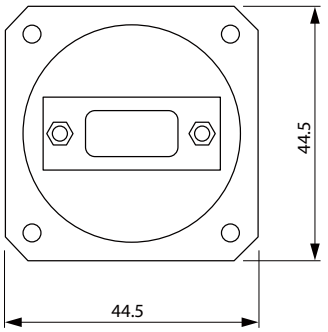
Drive Options
D: TTL Driver
E: Decoder
H: High power
T: Internal Terminations

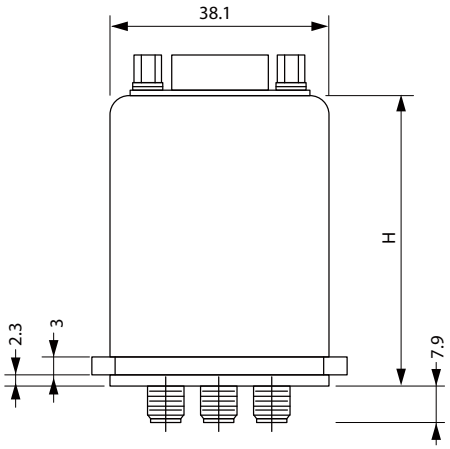
Actuator
F:Failsafe
L:Latching

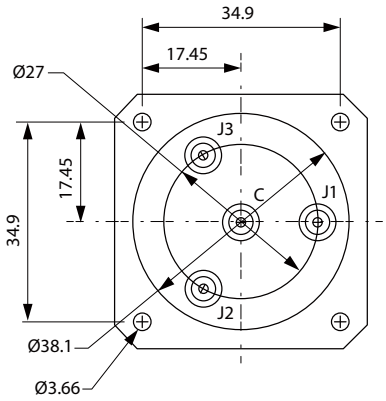
Indicators
I: with Indicators
D:default

Terminations
NT:with Termination
N:the quantity of Termination -without indicators
D:default-without Termination

Actuator Type
A: Failsafe without Indicator
B: Failsafe with Indicator
C: Latching without Indicator
D: Latching with Indicator
E: Normally open without Indicator
F: Normally open with Indicator



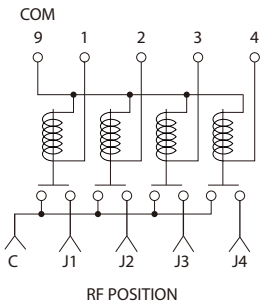




H=50.8 Max STD Model
H=63.5 Max TTL Model
H=66 Max TTL And Ind Model

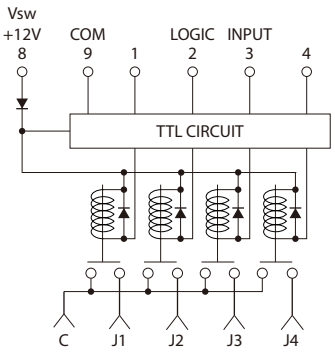
SPnT Normally Open

Standard

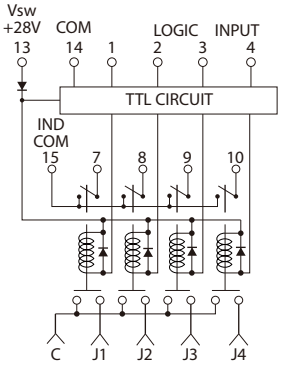


RF POSITION

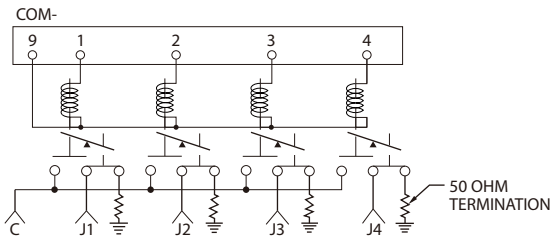
TTL



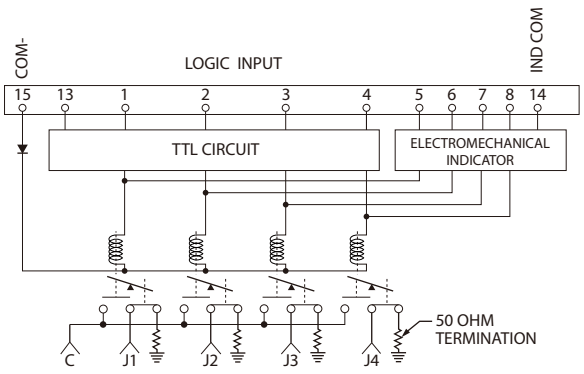
Indicator + TTL



TTL + Internal Termination

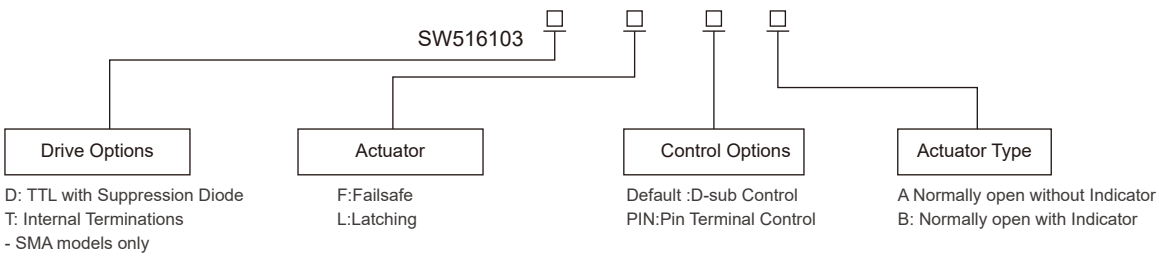


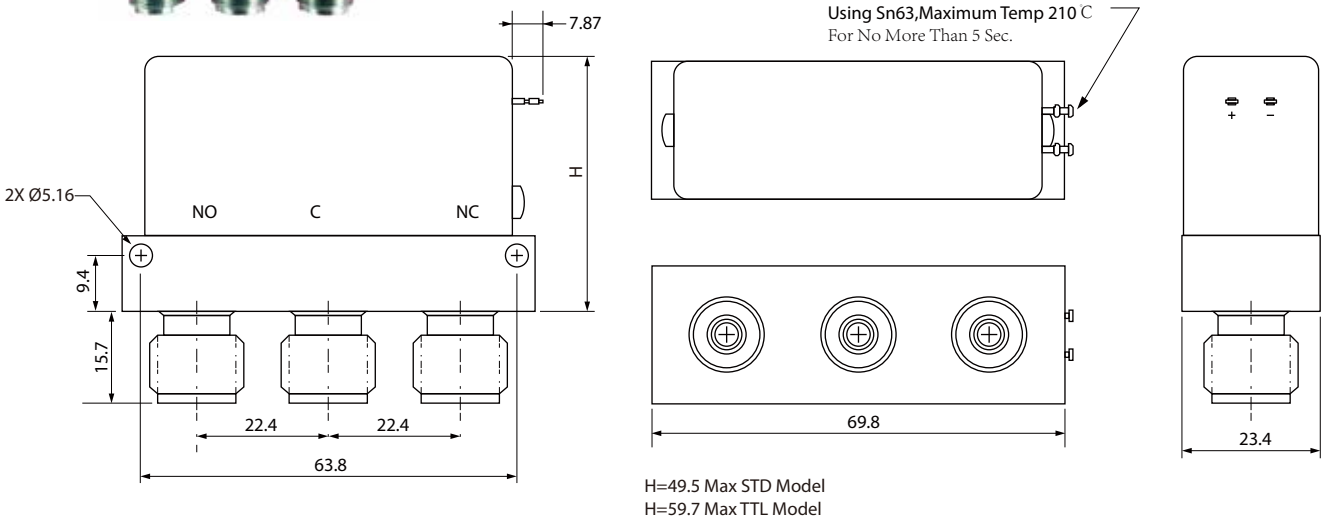
Indicator + TTL + Internal Termination



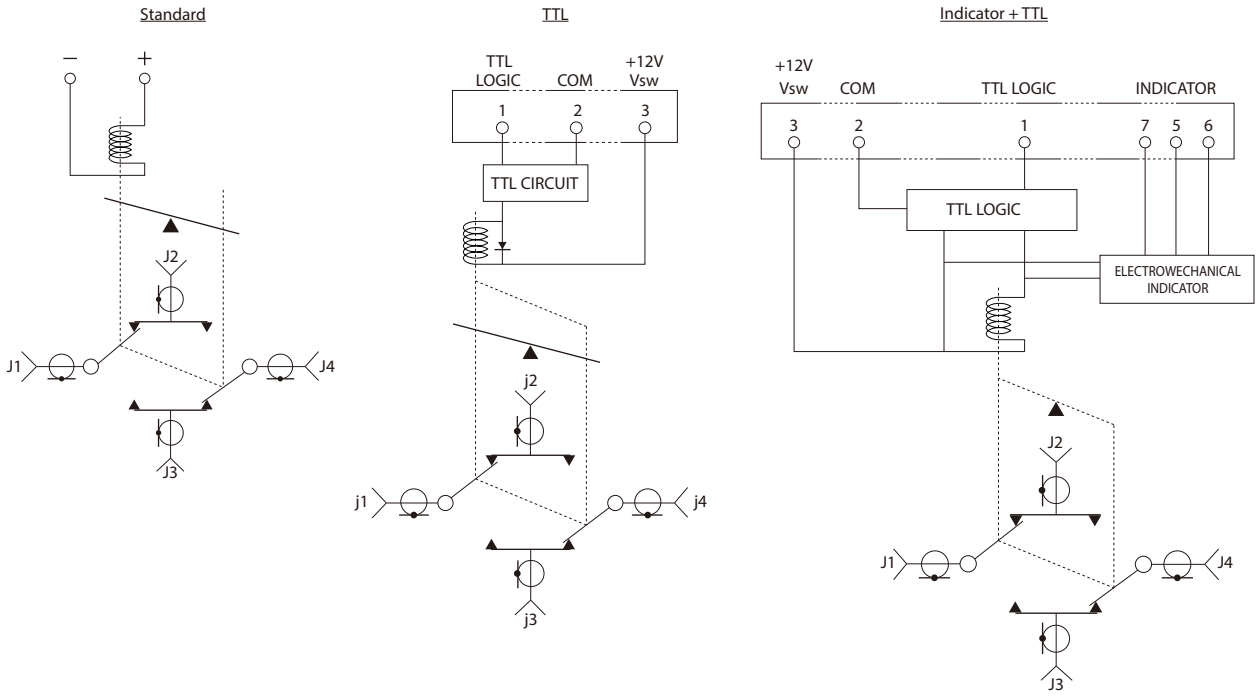
Specifications	
Operating Frequencies	DC to 26.5 GHz
VSWR	1.25 @ DC to 6 GHz 1.40 @ 6 to 12 GHz 1.50 @ 12 to 18 GHz 1.80 @ 18 to 22 GHz 1.80 @ 22 to 26.5 GHz
Isolation	70 dB @ DC to 6 GHz 60 dB @ 6 to 12 GHz 60 dB @ 12 to 18 GHz 50 dB @ 18 to 22 GHz 50 dB @ 22 to 26.5 GHz
Insertion Loss	0.2 dB @ DC to 6 GHz 0.4 dB @ 6 to 12 GHz 0.5 dB @ 12 to 18 GHz 0.8 dB @ 18 to 22 GHz 0.8 dB @ 22 to 26.5 GHz
Actuator Voltage	12 VDC
Actuator Current	220mA
Switching Time	20MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	SMA(F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations - SMA models only
Operating Life	1 Million Cycles MIL-HDBK-217F Fixed, 25°C,<1 Cycle per hour
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection



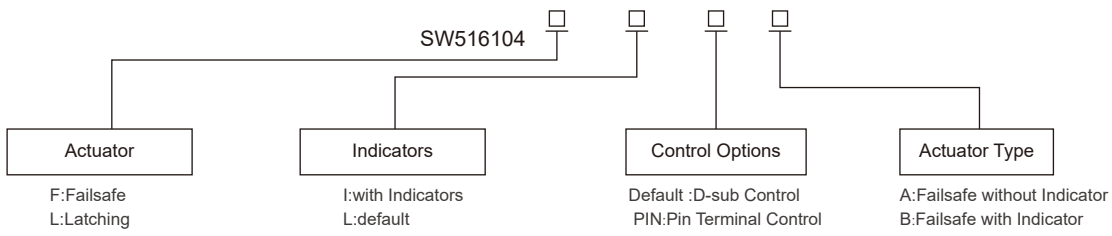


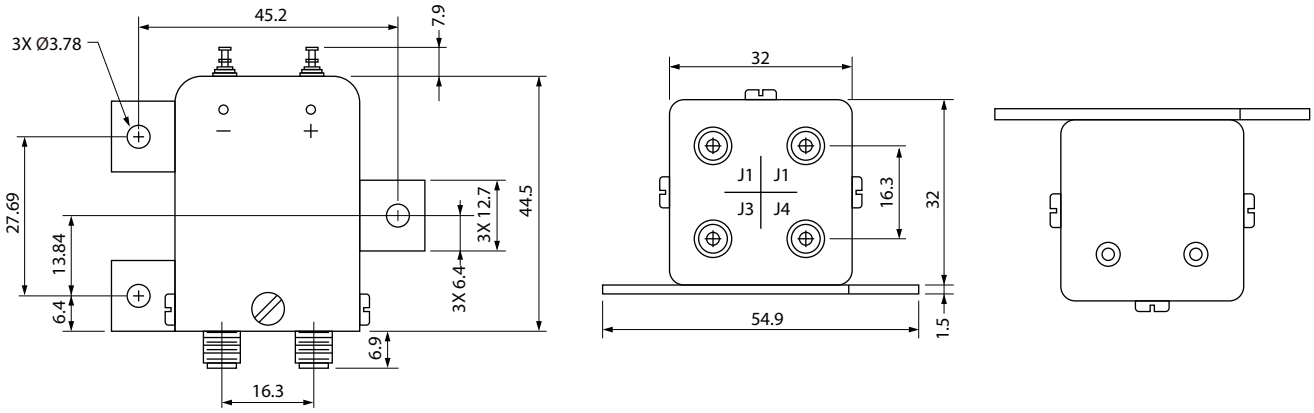
SPDT Failsafe Actuator



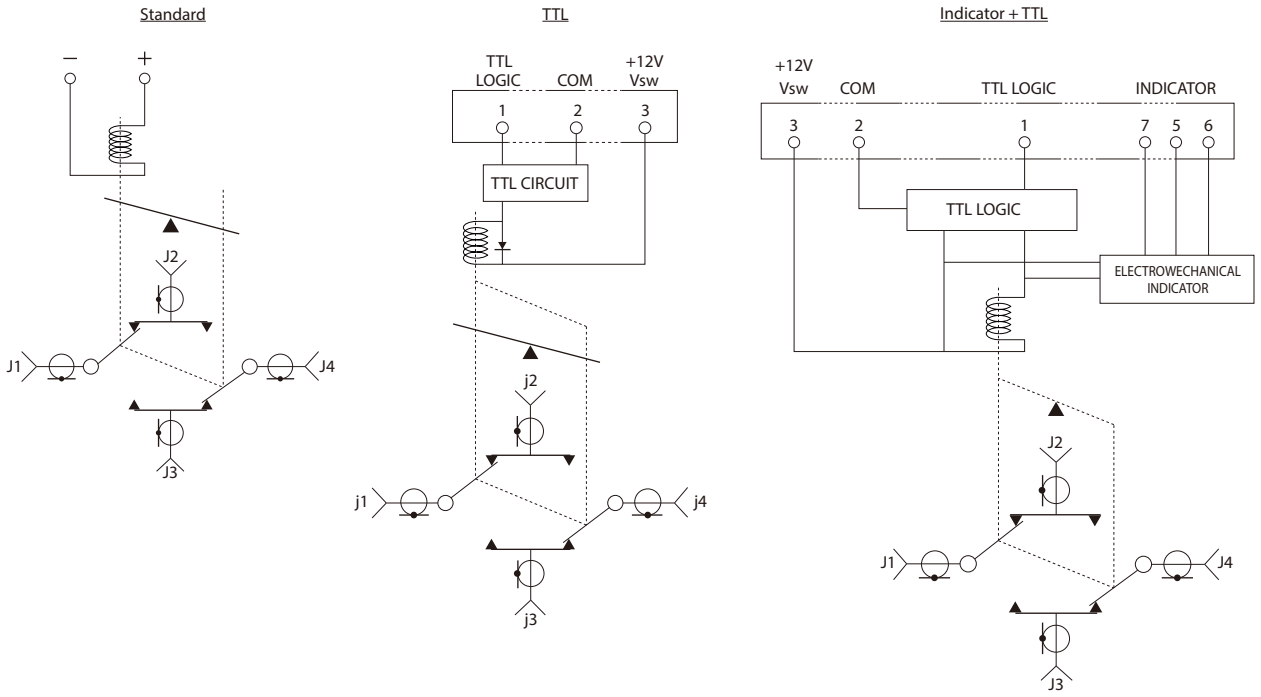
Specifications	
Operating Frequencies	DC to 12 GHz
VSWR	1.40 @ DC to 4 GHz 1.60 @ 4 to 8 GHz 1.80 @ 8 to 12 GHz
Isolation	60 dB @ DC to 4 GHz 60 dB @ 4 to 8 GHz 60 dB @ 8 to 12 GHz
Insertion Loss	0.4 dB @ DC to 4 GHz 0.45dB@ 4 to 8 GHz 0.5 dB @ 8 to 12 GHz
Actuator Voltage	12 VDC
Actuator Current	195 mA
Switching Time	15 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	N(F)
Actuator type	A: Failsafe without Indicator B: Failsafe with Indicator
Options	TTL Driver -Available for all models
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection



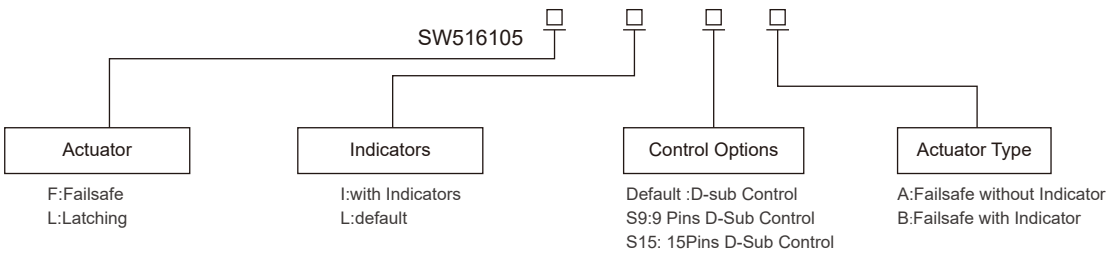


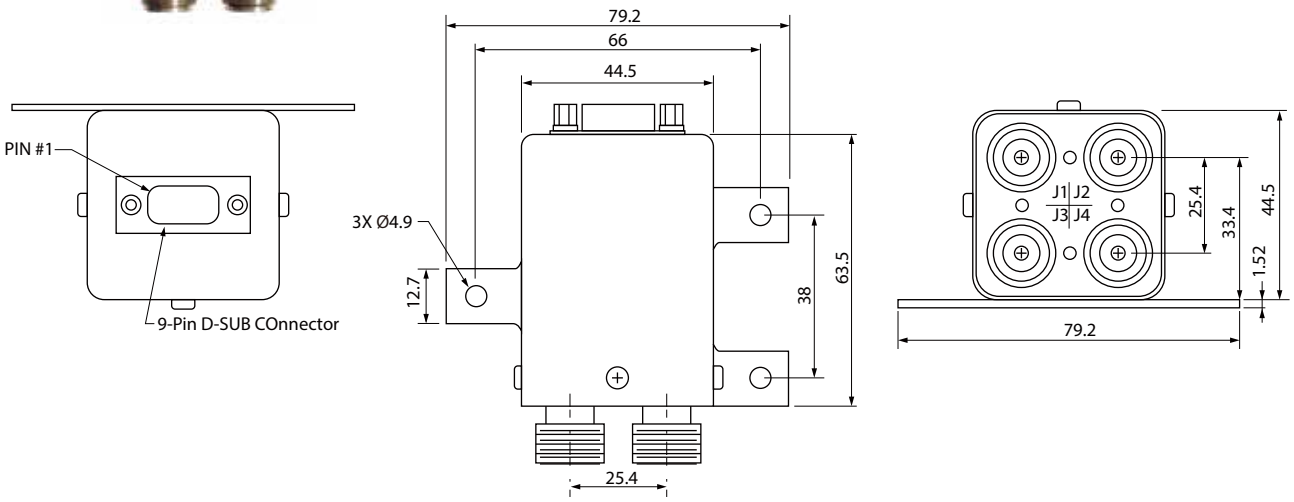
Failsafe Actuator



Specifications	
Operating Frequencies	DC to 18 GHz
VSWR	1.20 @ DC to 4 GHz 1.30 @ 4 to 8 GHz 1.40 @ 8 to 12 GHz 1.50 @ 12 to 18 GHz
Isolation	80 dB @ DC to 4 GHz 70 dB @ 4 to 8 GHz 65 dB @ 8 to 12 GHz 60 dB @ 12 to 18 GHz
Insertion Loss	0.2 dB @ DC to 4 GHz 0.3 dB @ 4 to 8 GHz 0.4 dB @ 8 to 12 GHz 0.5 dB @ 12 to 18 GHz
Actuator Voltage	12 VDC
Actuator Current	360 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	SMA (F)
Actuator type	A: Failsafe without Indicator B: Failsafe with Indicator
Options	TTL with Suppression Diode
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

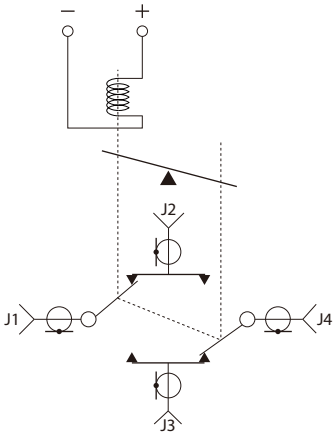
Part Number Selection



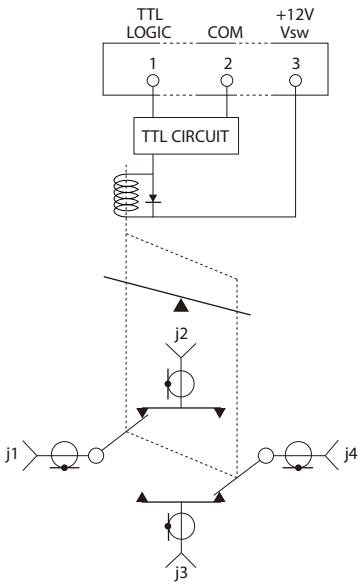


Failsafe Actuator

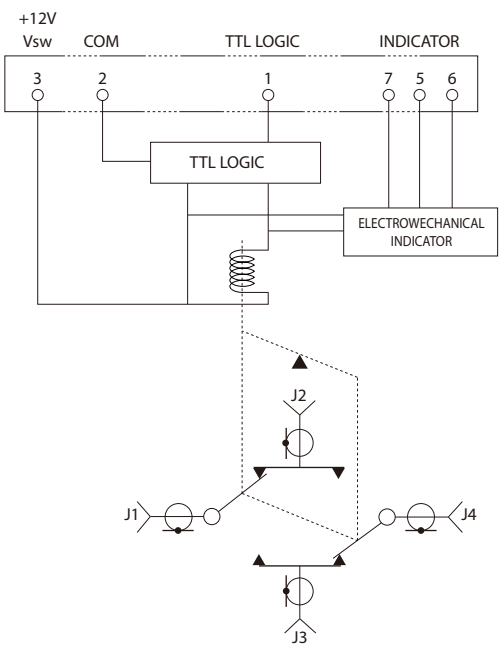
Standard



TTL

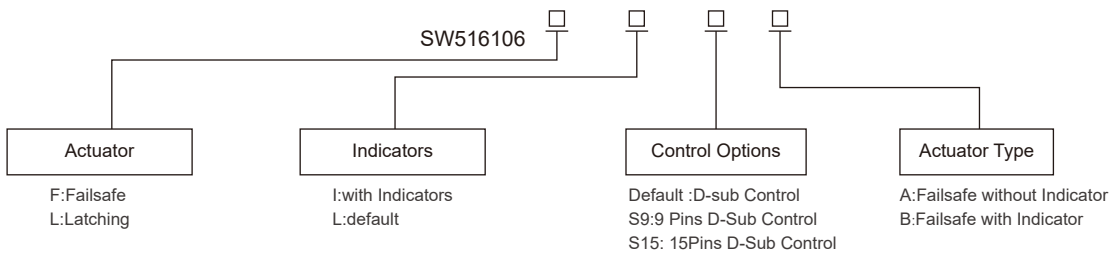


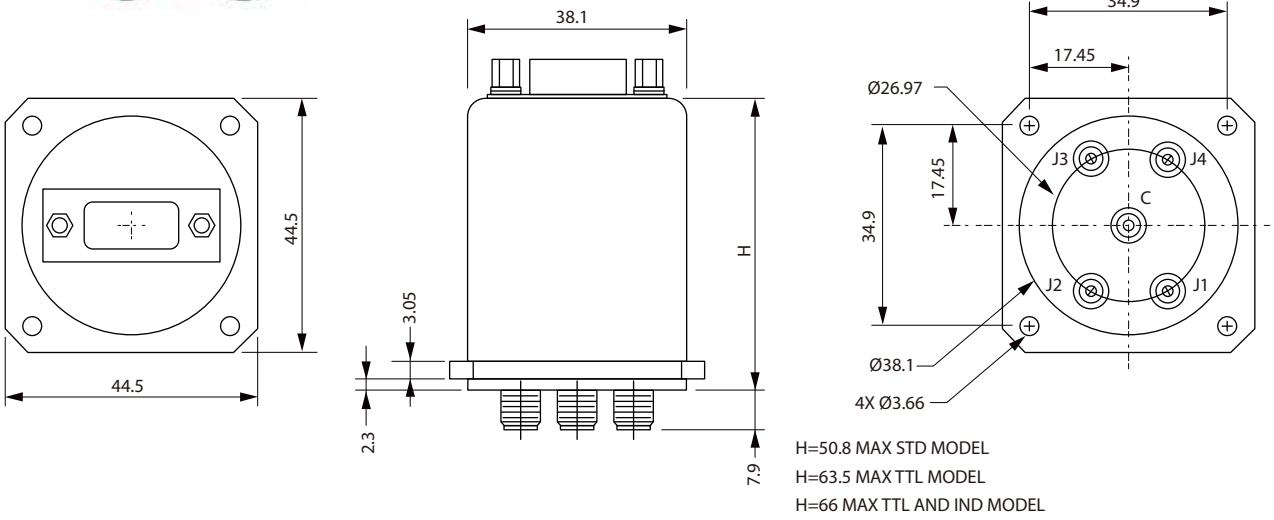
Indicator + TTL



Specifications	
Operating Frequencies	DC to 18 GHz
VSWR	1.20 @ DC to 4 GHz 1.30 @ 4 to 8 GHz 1.40 @ 8 to 12 GHz 1.50 @ 12 to 18 GHz
Isolation	80 dB @ DC to 4 GHz 70 dB @ 4 to 8 GHz 65 dB @ 8 to 12 GHz 60 dB @ 12 to 18 GHz
Insertion Loss	0.2 dB @ DC to 4 GHz 0.3 dB @ 4 to 8 GHz 0.4 dB @ 8 to 12 GHz 0.5 dB @ 12 to 18 GHz
Actuator Voltage	12 VDC
Actuator Current	360 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	N (F)
Actuator type	A: Failsafe without Indicator B: Failsafe with Indicator
Options	TTL with Suppression Diode
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection

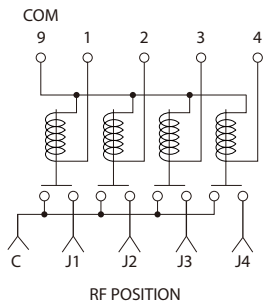




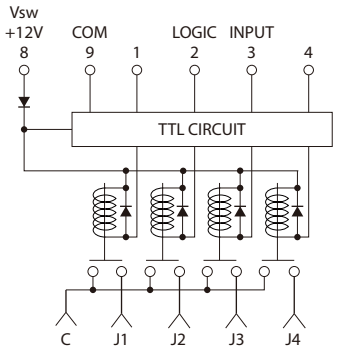
H=50.8 MAX STD MODEL
H=63.5 MAX TTL MODEL
H=66 MAX TTL AND IND MODEL

SPnT Normally Open

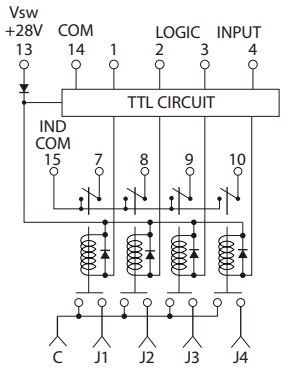
Standard



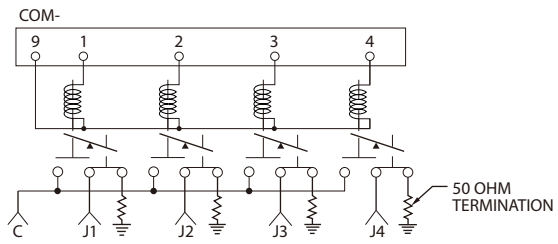
TTL



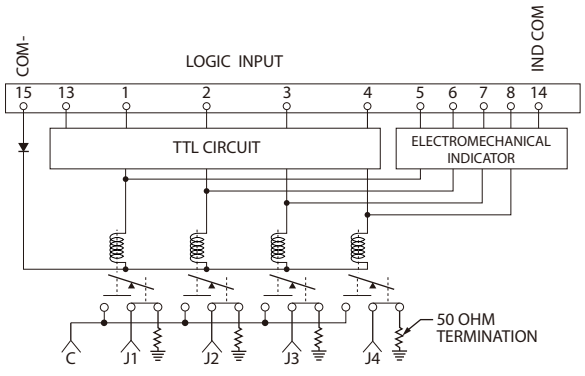
Indicator + TTL



TTL + Internal Termination

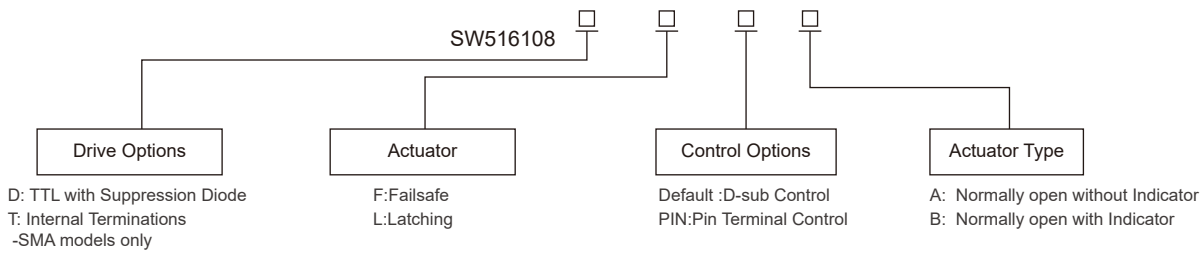


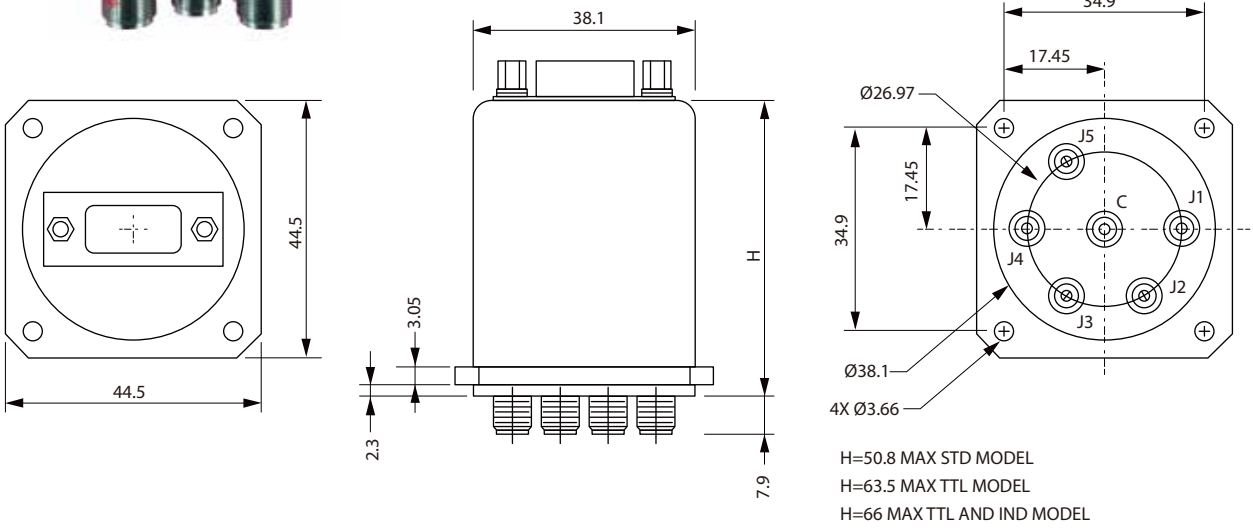
Indicator + TTL + Internal Termination



Specifications	
Operating Frequencies	DC to 26.5 GHz
VSWR	1.25 @ DC to 6 GHz 1.40 @ 6 to 12 GHz 1.50 @ 12 to 18 GHz 1.80 @ 18 to 22 GHz 1.80 @ 22 to 26.5 GHz
Isolation	70 dB @ DC to 6 GHz 60 dB @ 6 to 12 GHz 60 dB @ 12 to 18 GHz 50 dB @ 18 to 22 GHz 50 dB @ 22 to 26.5 GHz
Insertion Loss	0.2 dB @ DC to 6 GHz 0.4 dB @ 6 to 12 GHz 0.5 dB @ 12 to 18 GHz 0.8 dB @ 18 to 22 GHz 0.8 dB @ 22 to 26.5 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	SMA (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection

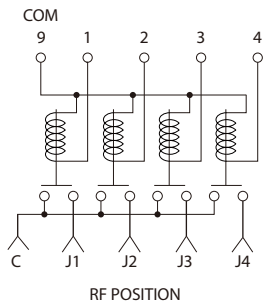




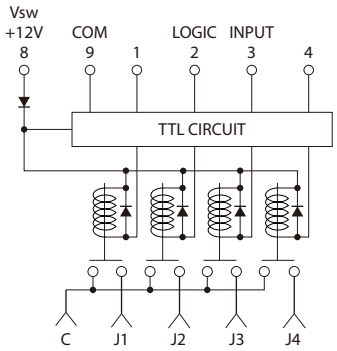
H=50.8 MAX STD MODEL
H=63.5 MAX TTL MODEL
H=66 MAX TTL AND IND MODEL

SPnT Normally Open

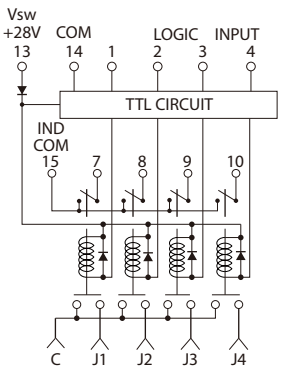
Standard



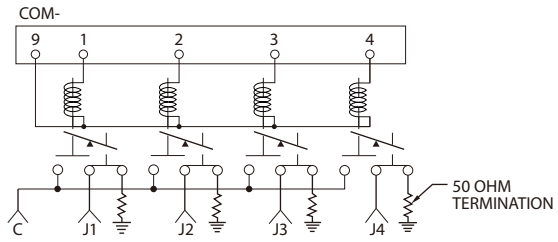
TTL



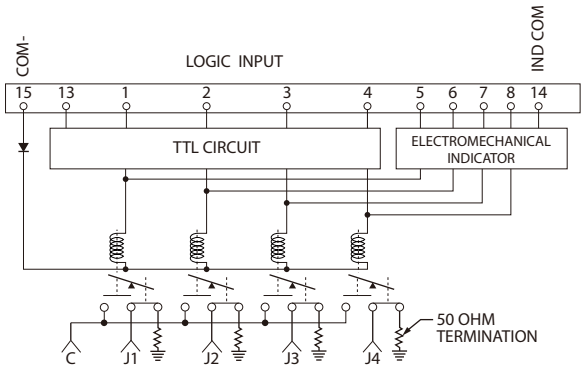
Indicator + TTL



TTL + Internal Termination

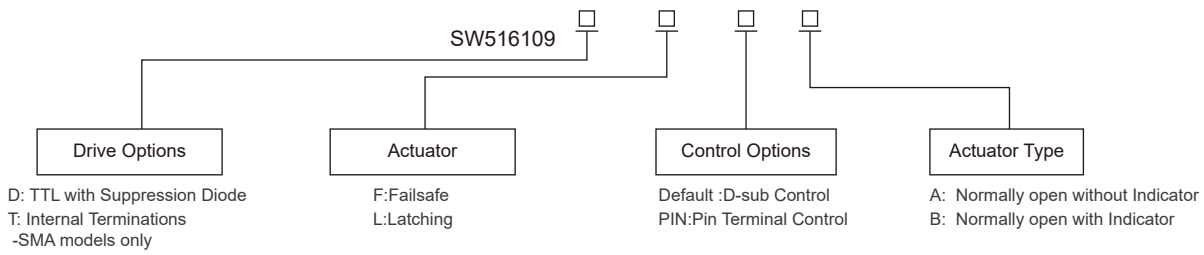


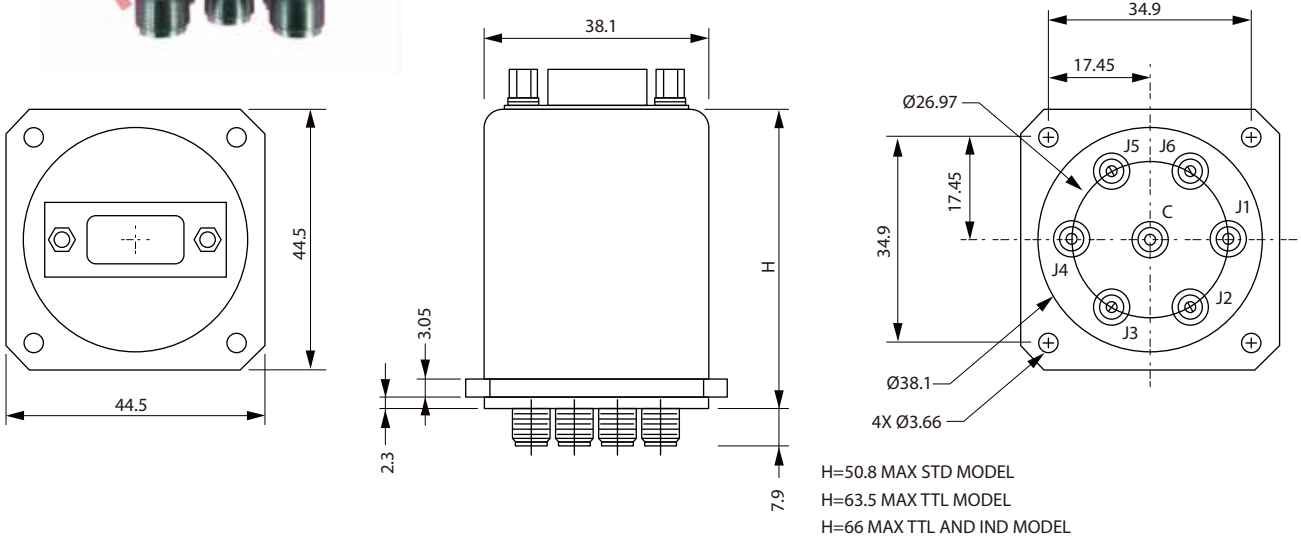
Indicator + TTL + Internal Termination



Specifications	
Operating Frequencies	DC to 26.5 GHz
VSWR	1.25 @ DC to 6 GHz 1.40 @ 6 to 12 GHz 1.50 @ 12 to 18 GHz 1.80 @ 18 to 22 GHz 1.80 @ 22 to 26.5 GHz
Isolation	70 dB @ DC to 6 GHz 60 dB @ 6 to 12 GHz 60 dB @ 12 to 18 GHz 50 dB @ 18 to 22 GHz 50 dB @ 22 to 26.5 GHz
Insertion Loss	0.2 dB @ DC to 6 GHz 0.4 dB @ 6 to 12 GHz 0.5 dB @ 12 to 18 GHz 0.8 dB @ 18 to 22 GHz 0.8 dB @ 22 to 26.5 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	SMA (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection

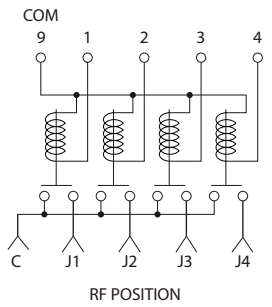




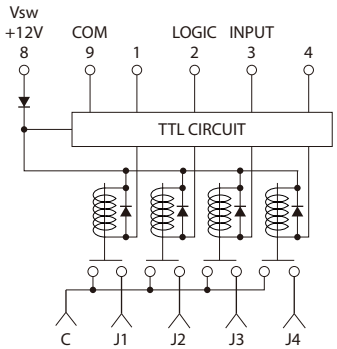
H=50.8 MAX STD MODEL
H=63.5 MAX TTL MODEL
H=66 MAX TTL AND IND MODEL

SPnT Normally Open

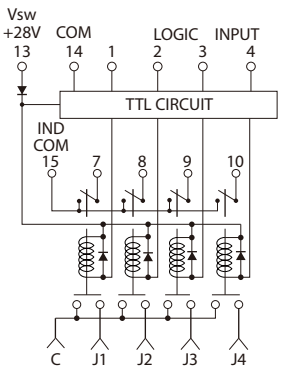
Standard



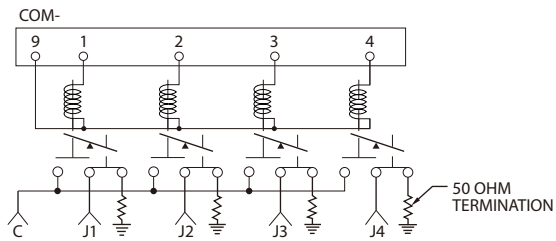
TTL



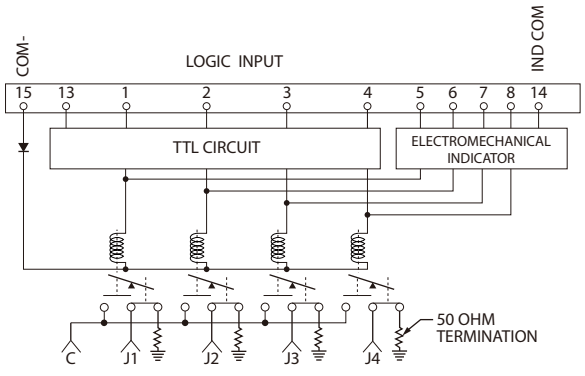
Indicator + TTL



TTL + Internal Termination

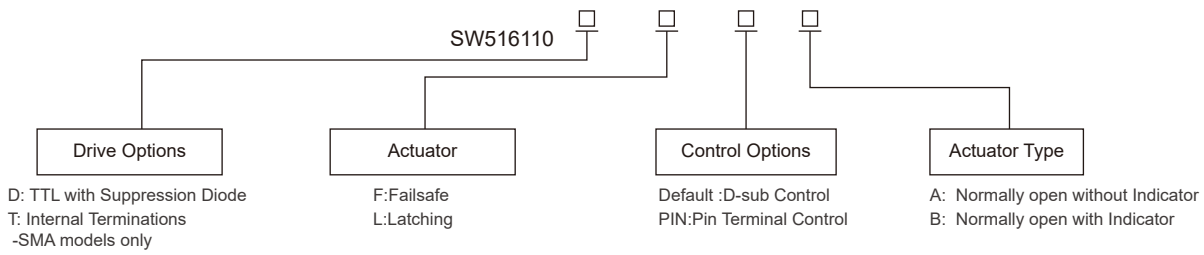


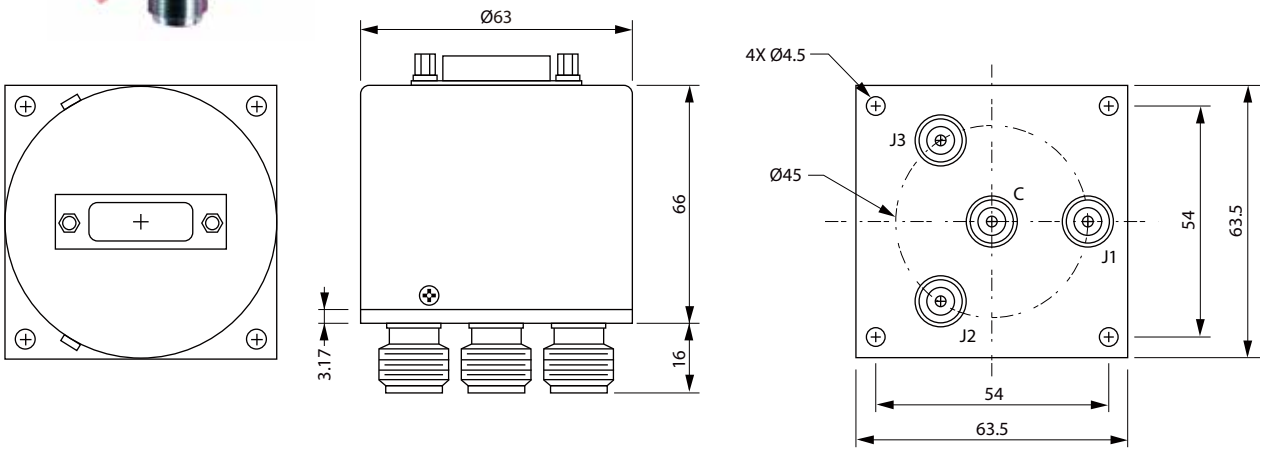
Indicator + TTL + Internal Termination



Specifications	
Operating Frequencies	DC to 26.5 GHz
VSWR	1.25 @ DC to 6 GHz 1.40 @ 6 to 12 GHz 1.50 @ 12 to 18 GHz 1.80 @ 18 to 22 GHz 1.80 @ 22 to 26.5 GHz
Isolation	70 dB @ DC to 6 GHz 60 dB @ 6 to 12 GHz 60 dB @ 12 to 18 GHz 50 dB @ 18 to 22 GHz 50 dB @ 22 to 26.5 GHz
Insertion Loss	0.2 dB @ DC to 6 GHz 0.4 dB @ 6 to 12 GHz 0.5 dB @ 12 to 18 GHz 0.8 dB @ 18 to 22 GHz 0.8 dB @ 22 to 26.5 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	SMA (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

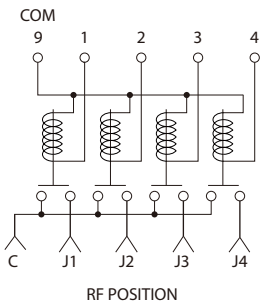
Part Number Selection



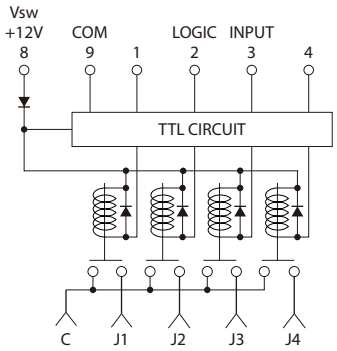


SPnT Normally Open

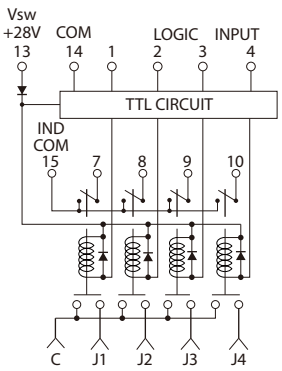
Standard



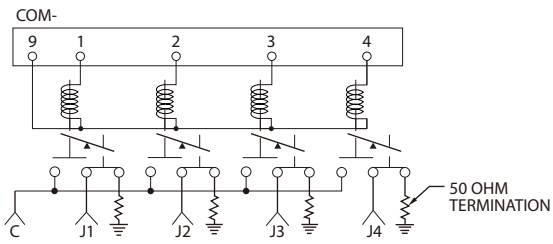
TTL



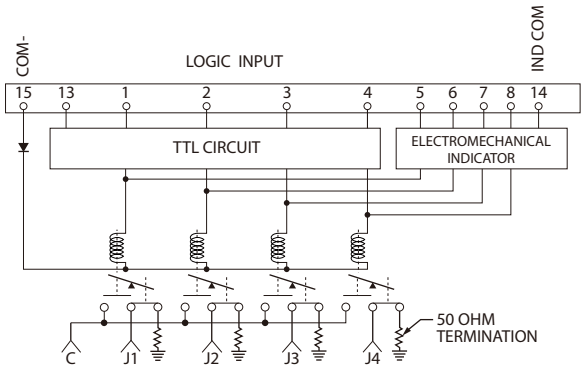
Indicator + TTL



TTL + Internal Termination

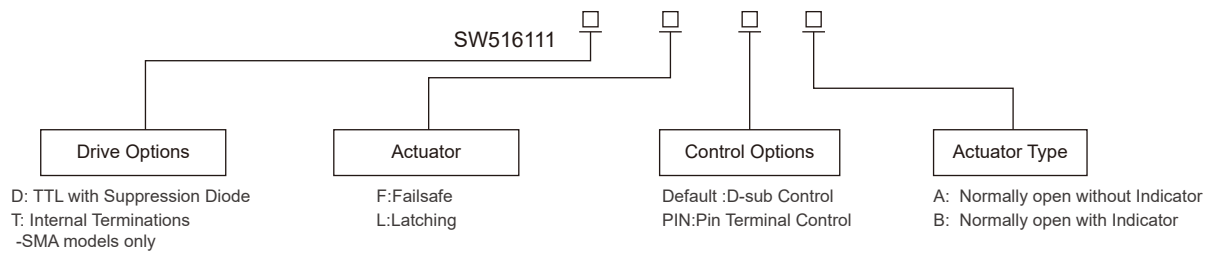


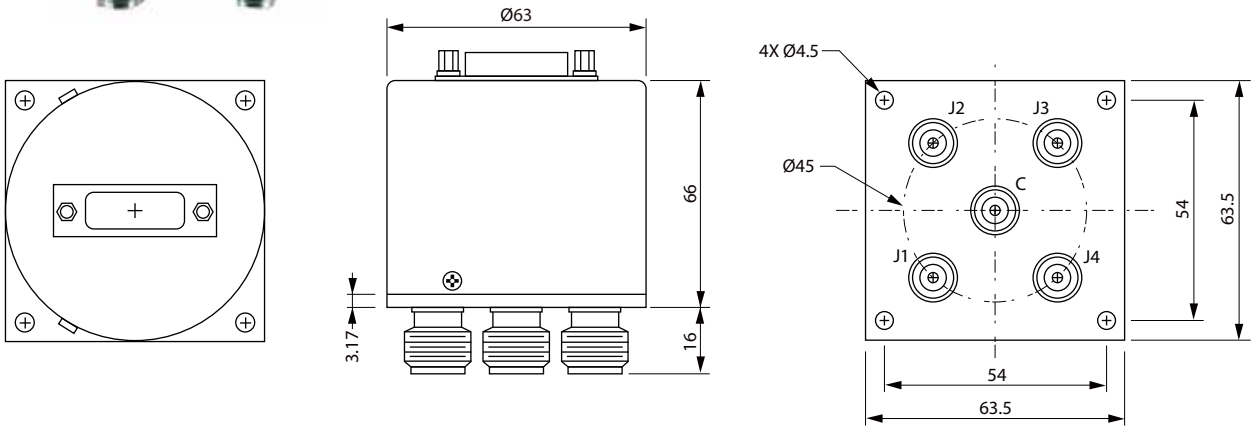
Indicator + TTL + Internal Termination



Specifications	
Operating Frequencies	DC to 11 GHz
VSWR	1.25 @ DC to 1 GHz 1.40 @ 1 to 4 GHz 1.45 @ 4 to 8 GHz 1.70 @ 8 to 11 GHz
Isolation	70 dB @ DC to 1 GHz 60 dB @ 1 to 4 GHz 60 dB @ 4 to 8 GHz 60 dB @ 8 to 11 GHz
Insertion Loss	0.3 dB @ DC to 1 GHz 0.4 dB @ 1 to 4 GHz 0.4 dB @ 4 to 8 GHz 0.7 dB @ 8 to 11 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	N (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

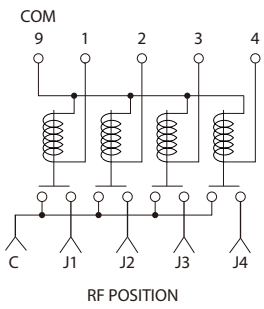
Part Number Selection



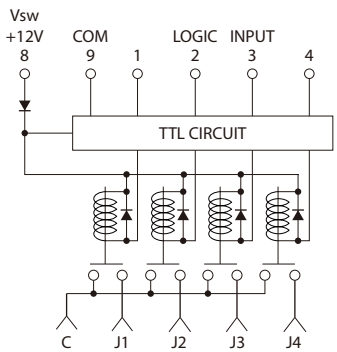


SPnT Normally Open

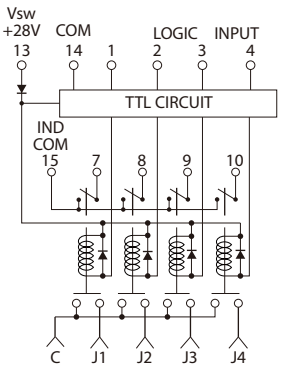
Standard



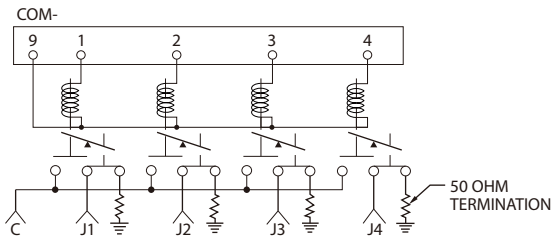
TTL



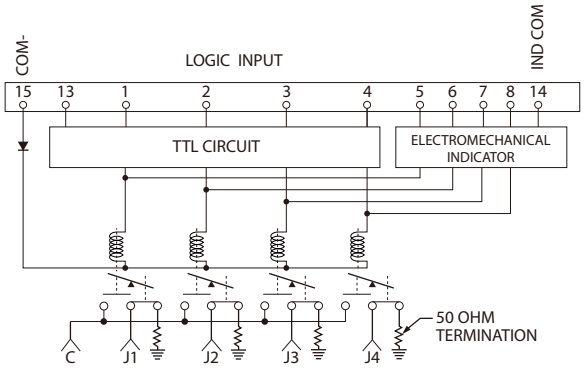
Indicator + TTL



TTL + Internal Termination

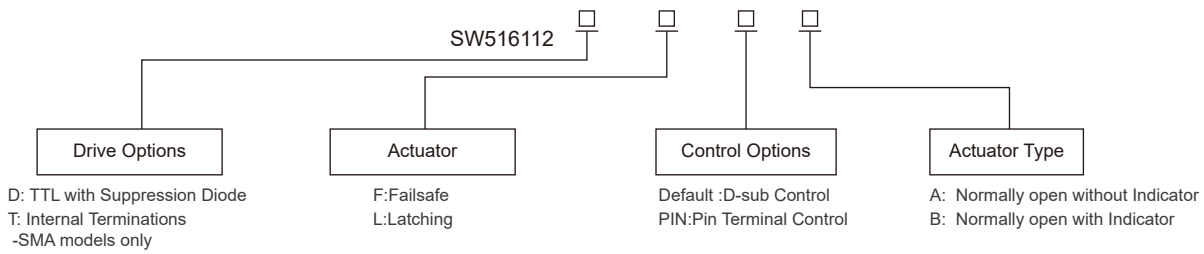


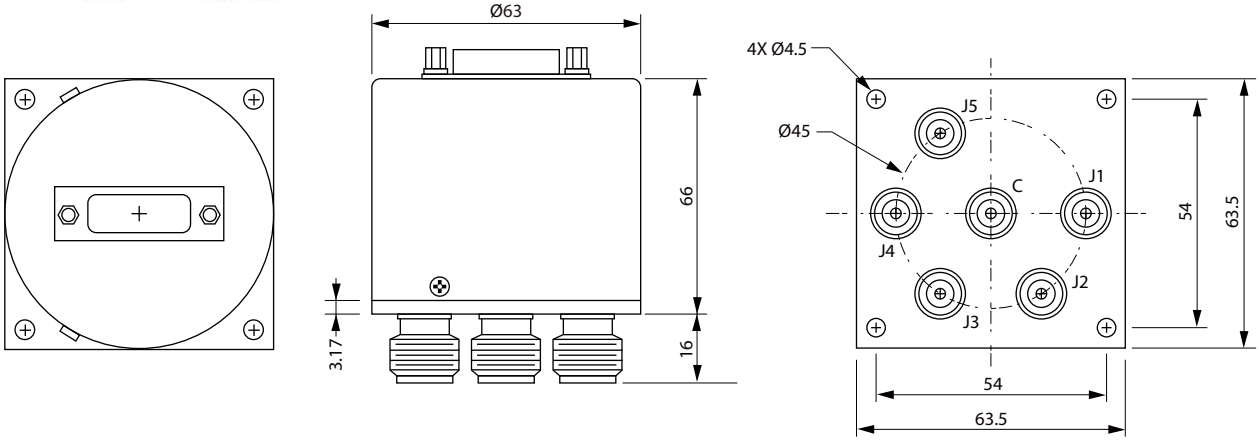
Indicator + TTL + Internal Termination



Specifications	
Operating Frequencies	DC to 11 GHz
VSWR	1.25 @ DC to 1 GHz 1.40 @ 1 to 4 GHz 1.45 @ 4 to 8 GHz 1.70 @ 8 to 11 GHz
Isolation	70 dB @ DC to 1 GHz 60 dB @ 1 to 4 GHz 60 dB @ 4 to 8 GHz 60 dB @ 8 to 11 GHz
Insertion Loss	0.3 dB @ DC to 1 GHz 0.4 dB @ 1 to 4 GHz 0.4 dB @ 4 to 8 GHz 0.7 dB @ 8 to 11 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	N (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

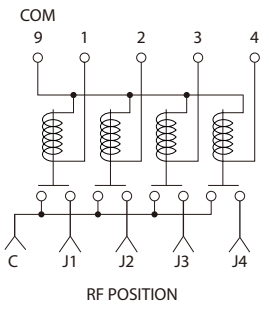
Part Number Selection



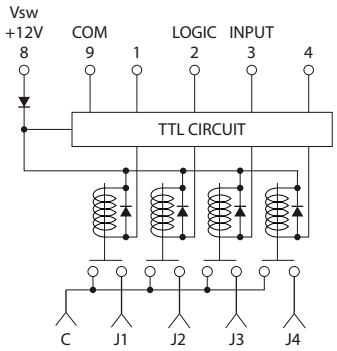


SPnT Normally Open

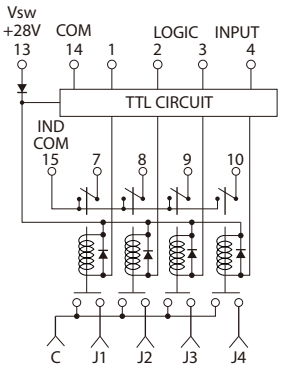
Standard



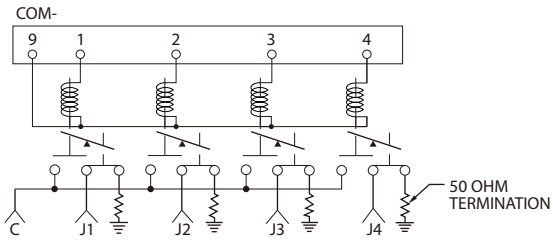
TTL



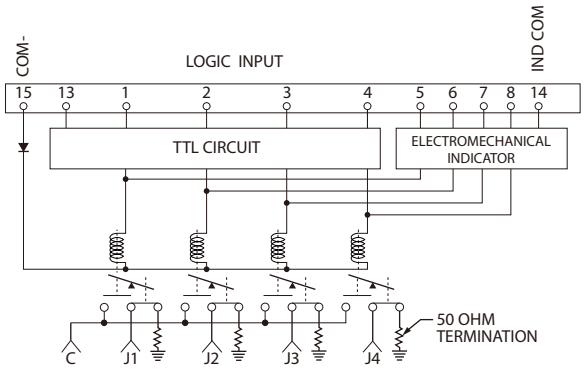
Indicator + TTL



TTL + Internal Termination

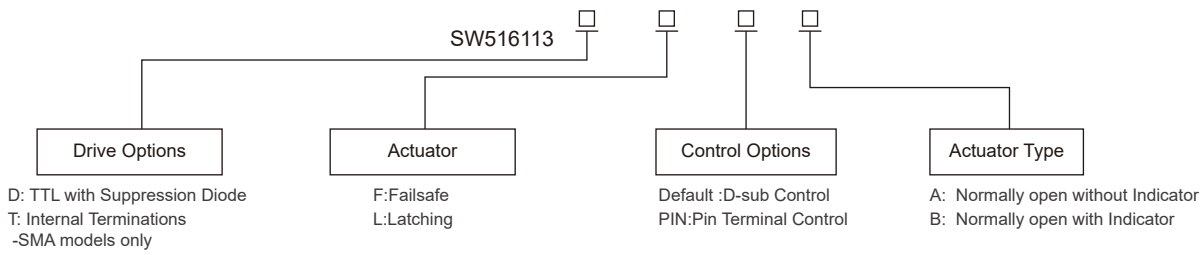


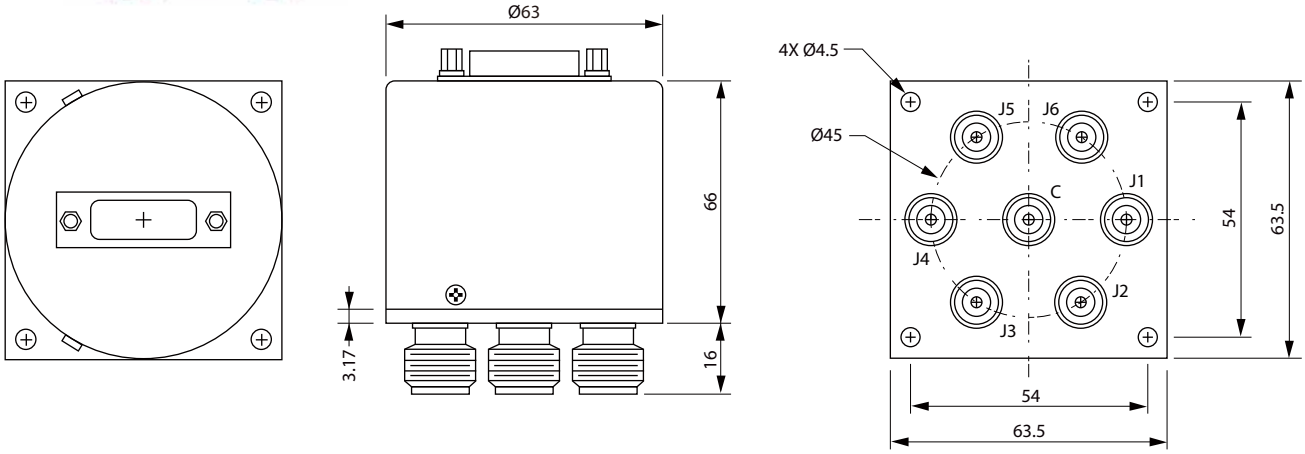
Indicator + TTL + Internal Termination



Specifications	
Operating Frequencies	DC to 11 GHz
VSWR	1.25 @ DC to 1 GHz 1.40 @ 1 to 4 GHz 1.45 @ 4 to 8 GHz 1.70 @ 8 to 11 GHz
Isolation	70 dB @ DC to 1 GHz 60 dB @ 1 to 4 GHz 60 dB @ 4 to 8 GHz 60 dB @ 8 to 11 GHz
Insertion Loss	0.3 dB @ DC to 1 GHz 0.4 dB @ 1 to 4 GHz 0.4 dB @ 4 to 8 GHz 0.7 dB @ 8 to 11 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	N (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

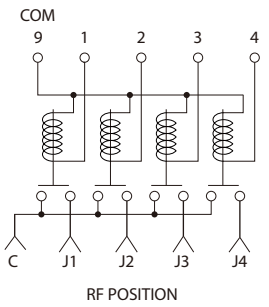
Part Number Selection



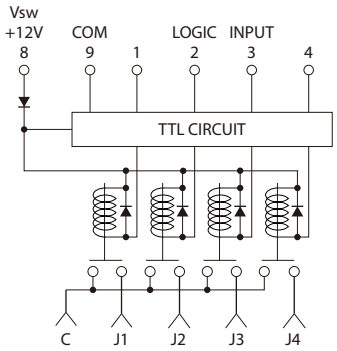


SPnT Normally Open

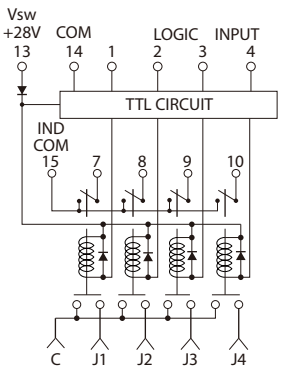
Standard



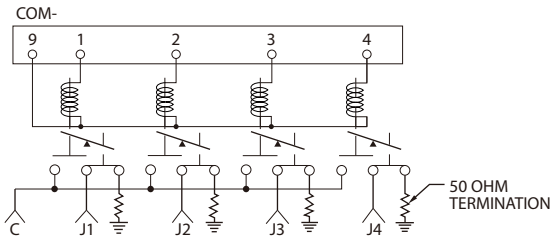
TTL



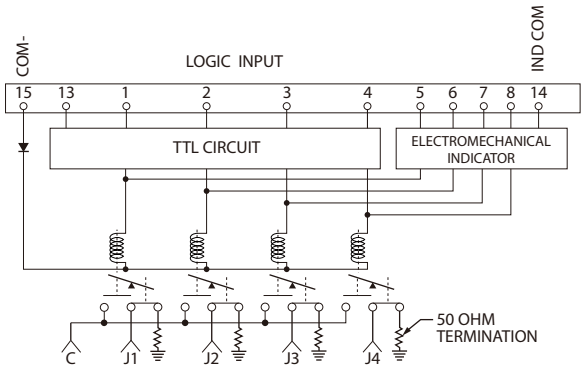
Indicator + TTL



TTL + Internal Termination

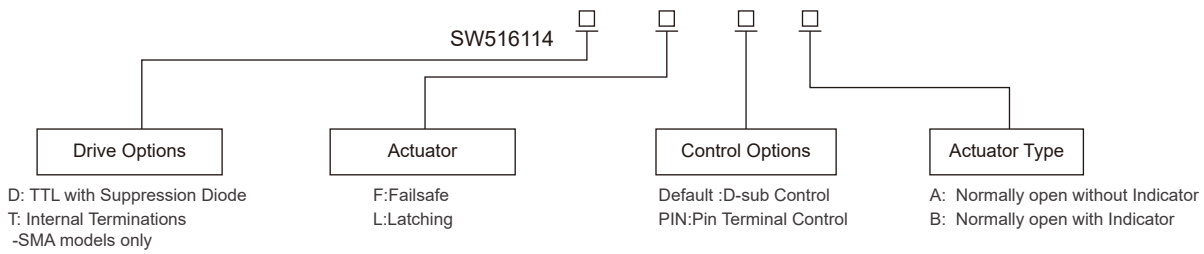


Indicator + TTL + Internal Termination

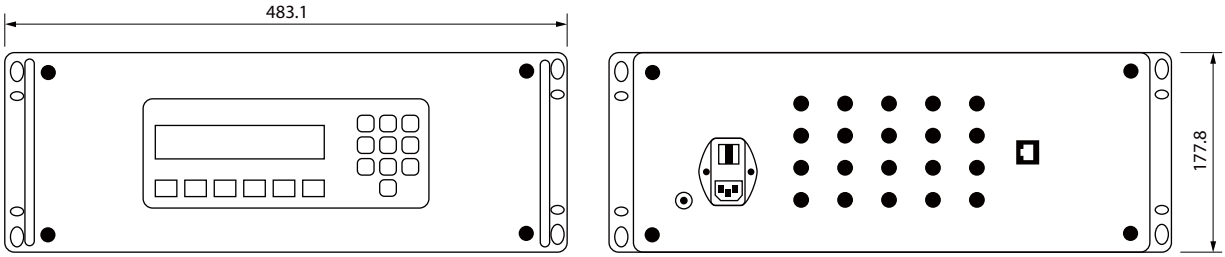


Specifications	
Operating Frequencies	DC to 11 GHz
VSWR	1.25 @ DC to 1 GHz 1.40 @ 1 to 4 GHz 1.45 @ 4 to 8 GHz 1.70 @ 8 to 11 GHz
Isolation	70 dB @ DC to 1 GHz 60 dB @ 1 to 4 GHz 60 dB @ 4 to 8 GHz 60 dB @ 8 to 11 GHz
Insertion Loss	0.3 dB @ DC to 1 GHz 0.4 dB @ 1 to 4 GHz 0.4 dB @ 4 to 8 GHz 0.7 dB @ 8 to 11 GHz
Actuator Voltage	12 VDC
Actuator Current	220 mA
Switching Time	20 MS
Power Connector	ITT KPTO2E12-10P Mating connector provided
Connectors	N (F)
Actuator type	A: Normally open without Indicator B: Normally open with Indicator
Options	D: TTL with Suppression Diode T: Internal Terminations -SMA models only
Operating Life	1 Million Cycles
Characteristic Impedance	50Ω (75Ω available for SPDT upon request)
Operating Temperature	-25 to +65°C
Humidity	Moisture Seal Available
Shock	MIL-STD-202 Method 213,Condition D(500G Non Operation)

Part Number Selection



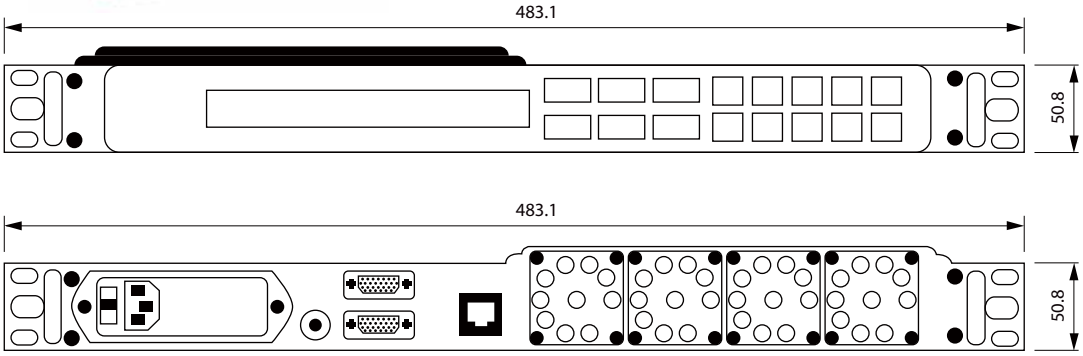
- High Isolation
- Phase Matching
- Terminated Paths
- Available with Master/Slave Control Capability
- n by m (max. 10x10)
- Crossbar



* Combined input power on all inputs (at the same time)
Note: Shown as SW516115-10/10-ENET

Specifications	
Operating Frequencies	DC to 18 GHz
VSWR	1.20 @ DC to 4 GHz 1.30 @ 4 to 8 GHz 1.40 @ 8 to 12 GHz 1.80 @ 12 to 16 GHz 2.0 @ 16 to 18 GHz
Isolation	75 dB @ DC to 4 GHz 70 dB @ 4 to 8 GHz 65 dB @ 8 to 12 GHz 60 dB @ 12 to 16 GHz 60 dB @ 16 to 18 GHz
Insertion Loss	2.5 dB @ DC to 4 GHz 3.0 dB @ 4 to 8 GHz 4.0 dB @ 8 to 12 GHz 5.0 dB @ 12 to 16 GHz 5.0 dB @ 16 to 18 GHz
CW Power Handling	100 W @ DC to 4 GHz 80 W @ 4 to 8 GHz 60 W @ 8 to 12 GHz 50 W @ 12 to 16 GHz 40 W @ 16 to 18 GHz
Characteristic Impedance	50Ω
Switch Type	Normally Open
Switching Speed (max)	50 ms (switch level) / 300 ms (system level)
Power Supply	Input Voltage 85-232 VAC 47-440Hz (Optional Redundant Power Supply available)
Connectors	N (F) or BNC (F)
Operating Life	1 Million Cycles (cold switching)
Size	A:483.1* B:177.8 mm
Operating Temperature	0 to +50℃

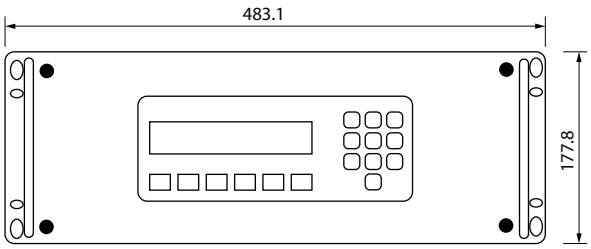
- DPDT, SP6T, SP8T and SP10T (can be mixed)
- Terminated Switches (with slightly increase in unit height)
- Available with Master/Slave Control Capability

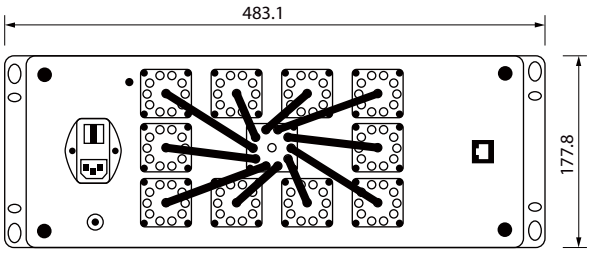


* ENET or GPIB (remote interface)
Note: All configurations are not shown

Specifications	
Operating Frequencies	DC to 18 GHz
VSWR	1.40 @ DC to 8 GHz 1.60 @ 8 to 12 GHz 1.80 @ 12 to 18 GHz
Isolation	70 dB @ DC to 8 GHz 60 dB @ 8 to 12 GHz 50 dB @ 12 to 18 GHz
Insertion Loss	0.4 dB @ DC to 8 GHz 0.5 dB @ 8 to 12 GHz 0.8 dB @ 12 to 18 GHz
CW Power Handling	80 W @ DC to 8 GHz 60 W @ 8 to 12 GHz 40 W @ 12 to 18 GHz
Characteristic Impedance	50Ω
Switch Type	Normally Open
Switching Speed (max)	20 ms (switch level) / 300 ms (system level)
Power Supply	Input Voltage 85-232 VAC 47-440Hz (Optional Redundant Power Supply available)
Connectors	SMA (F)
Operating Life	1 Million Cycles (cold switching)
Size	A:483.1 X B:50.8 mm
Operating Temperature	0 to +50℃

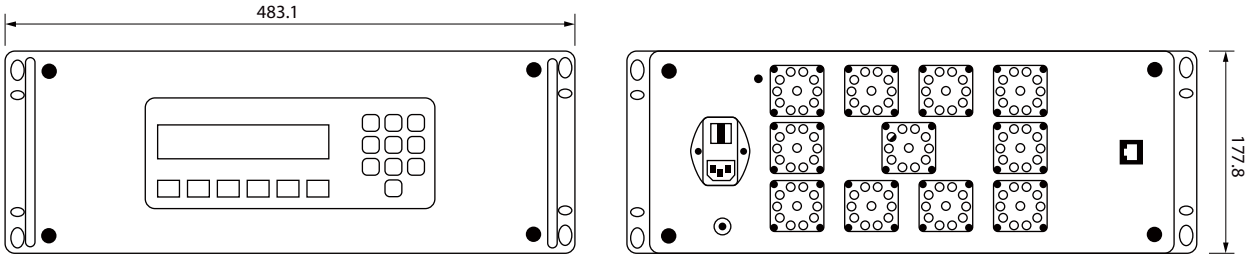
- Available operating frequencies: DC-18 GHz
- Electromechanical switches offer at least 1 million life cycles
- Perfect for both low and high power applications
- Longer switching time
- For larger scaled multiplexing the chassis size quickly increases
- 1 by n (1x10, 1x20, ... , 1x100)
- Multiplexer





Specifications	
Operating Frequencies	DC to 18 GHz
VSWR	1.40 @ DC to 8 GHz 1.60 @ 8 to 12 GHz 1.80 @ 12 to 18 GHz
Isolation	70 dB @ DC to 8 GHz 60 dB @ 8 to 12 GHz 50 dB @ 12 to 18 GHz
Insertion Loss	3.0 dB @ DC to 8 GHz 4.5 dB @ 8 to 12 GHz 6.0 dB @ 12 to 18 GHz
CW Power Handling	80 W @ DC to 8 GHz 60 W @ 8 to 12 GHz 40 W @ 12 to 18 GHz
Characteristic Impedance	50Ω
Switch Type	Normally Open
Switching Speed (max)	20 ms (switch level) / 300 ms (system level)
Power Supply	Input Voltage 85-232 VAC 47-440Hz (Optional Redundant Power Supply available)
Connectors	SMA (F)
Operating Life	1 Million Cycles (cold switching)
Size	A:483.1* B:177.8 mm
Operating Temperature	0 to +50℃

- Available operating frequencies: DC-18 GHz
- n number of 1x10 (max. 16)
- Blocking



Specifications	
Operating Frequencies	DC to 18 GHz
VSWR	1.40 @ DC to 8 GHz 1.60 @ 8 to 12 GHz 1.80 @ 12 to 18 GHz
Isolation	70 dB @ DC to 8 GHz 60 dB @ 8 to 12 GHz 50 dB @ 12 to 18 GHz
Insertion Loss	0.4 dB @ DC to 8 GHz 0.5 dB @ 8 to 12 GHz 0.8 dB @ 12 to 18 GHz
CW Power Handling	80 W @ DC to 8 GHz 60 W @ 8 to 12 GHz 40 W @ 12 to 18 GHz
Characteristic Impedance	50Ω
Switch Type	Normally Open
Switching Speed (max)	50 ms (switch level) / 300 ms (system level)
Power Supply	Input Voltage 85-232 VAC 47-440Hz (Optional Redundant Power Supply available)
Connectors	SMA (F)
Operating Life	1 Million Cycles (cold switching)
Size	A:483.1 X B:177.8 mm
Operating Temperature	0 to +50℃

The SW516119-PXI Switching Modules – Reconfigurable Modular Solutions
The PXI family offers three modules with different RF coaxial switch configurations: Dual SPDT,DPDT, SP3T, SP4T, SP6T, 4x4 or 2x5. Depending on the model, the PXI solutions operate either between DC -18 GHz or between DC - 26.5 GHz. Model 12K3S offers the user the flexibility to combine up to three different switches in one single model and by removing external RF cables on Model 14F32-1/4x4, the user can reconfigure the unit to terminated (e.g. SPDT or SP3T) switches.

Additional Hardware
National Instrument PXI chassis (PXI-1036 or similar) is required.
Software
Each switch can be controlled via LabVIEW, LabWindows, or Visual Basic Graphical User Interface. Also, the modules are VISA and IVI compatible and no additional drivers are needed.
Application
Automatic Test Equipment (ATE) for in-lab testing or large scale signal routing and multiplexing.

*** Software delays are not taken into account**
In Focus: SW516119-12K3S-Series

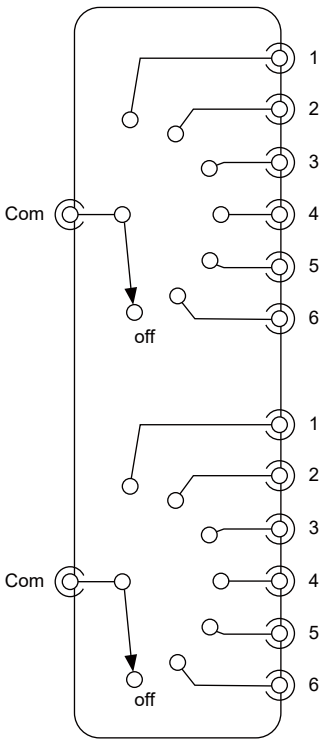
Command and Control

Software
The PXI card is supplied with an IVI compliant driver providing complete functionality for the matrix module. The driver supports the following Windows platforms: 98/2000/XP.

PXI Interface
The PXI Card complies with the PXI Specification 2.1.
Trigger Bus, Star Trigger, Interrupts, and Local Bus are not implemented.

Recommended Software
LabVIEW
LabWindows
Visual Basic
C/C++

Specifications			
Operating Frequencies	DC to 26.5 GHz	Characteristic Impedance	50 Ω
VSWR	1.25 @ DC to 4 GHz 1.35 @ 4 to 8 GHz 1.40 @ 8 to 12 GHz 1.50 @ 12 to 18 GHz 1.80 @ 18 to 26.5 GHz	Insertion Loss	0.2 dB @ DC to 4 GHz 0.3 dB @ 4 to 8 GHz 0.4 dB @ 8 to 12 GHz 0.5 dB @ 12 to 18 GHz 0.8 dB @ 18 to 26.5 GHz
Open Channel Isolation	70 dB @ DC to 4 GHz 65 dB @ 4 to 8 GHz 60 dB @ 8 to 12 GHz 60 dB @ 12 to 18 GHz 50 dB @ 18 to 26.5 GHz	RF CW Power	100 W @ DC to 4 GHz 70 W @ 4 to 8 GHz 60 W @ 8 to 12 GHz 60 W @ 12 to 18 GHz 30 W @ 18 to 26.5 GHz
Power Consumption Backplane Supply	+12 VDC	Random Vibration	Operating: 5 to 500 Hz @ 0.3 grms Nonoperating: 5 to 500 Hz @ 2.4 grms
Switching Speed (max)	20 ms (max)	Actuator Current	1A
Contact Material	Beryllium copper,gold-plated	RF Connectors	SMA (F)
Operating Life	1 Million Cycles (cold switching)	Dimensions	2-slot,3U,PXI/PCI module
Operating Temperature	0 to +50 ℃	Relay Type	Electromechanical
Storage Temperature	-20 to +70 ℃	Operational Shock	30 g peak,half-sine,11 ms pulse
Relative Humidity	5% to 85% (non-condensing)		



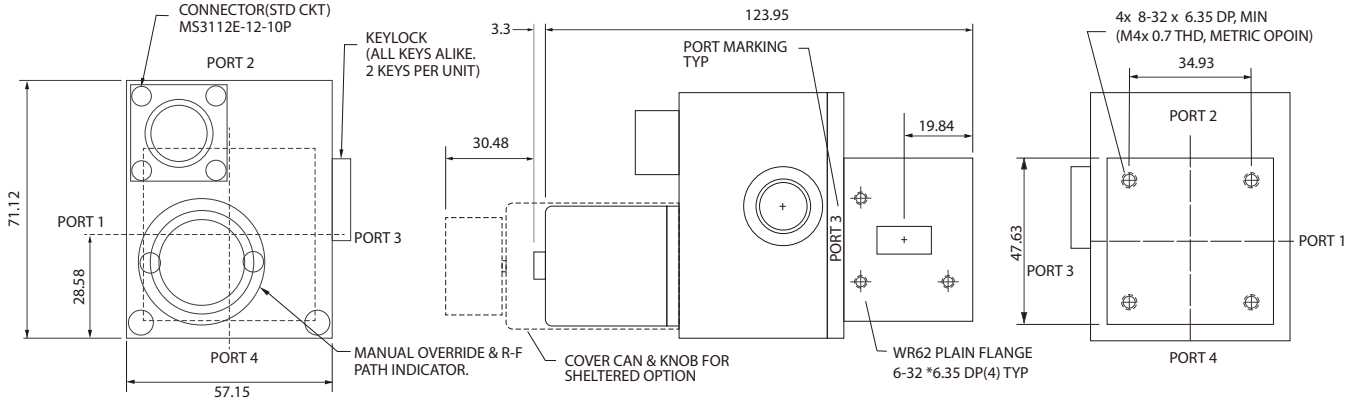
Microwave Multiplexer Module

- Single, Dual or Triple Subminiature SP6T & SP4TMultiplexers
- 6GHz, 18GHz, 26.5GHz and 40GHz Bandwidths
- Custom Versions Available
- Excellent RF & Repeatability Characteristics
- Extended Life For 6GHz/18GHz/26.5GHz Models –10M Operations Guaranteed & Typically >25M!
- Faster Operate Time than Conventional Microwave Relay Solutions (Typically <10.5ms)
- LED Indication
- VISA, IVI & Kernel Drivers Supplied forWindows XP/Vista/7/8
- Supported by PXI, PXIe Hybrid and Pickering LXI Modular Chassis
- 3 Year Warranty

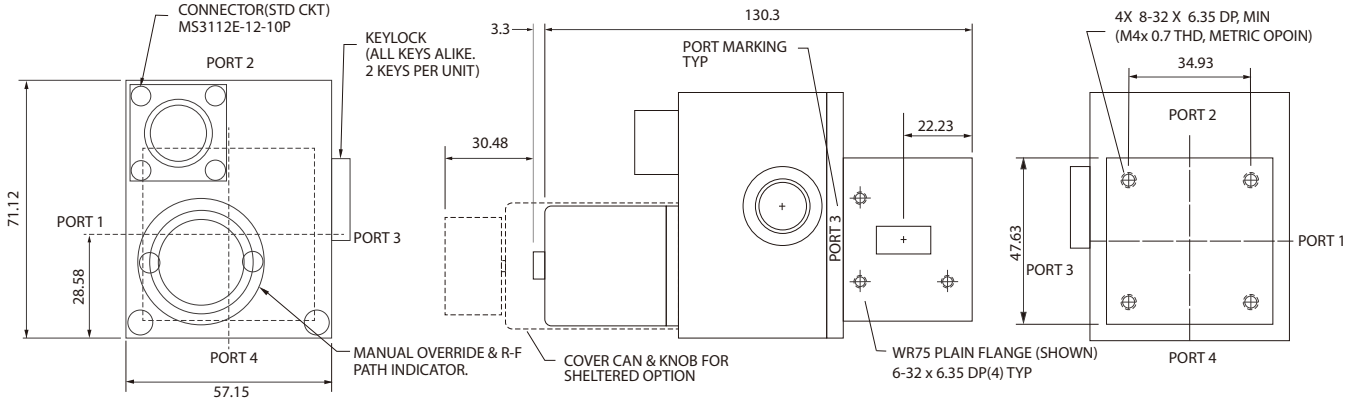
- **Power consumption from the backplane supply is as follows:**

+3.3V	+5V	+12V	-12V
0	0.2A	0.75A	0

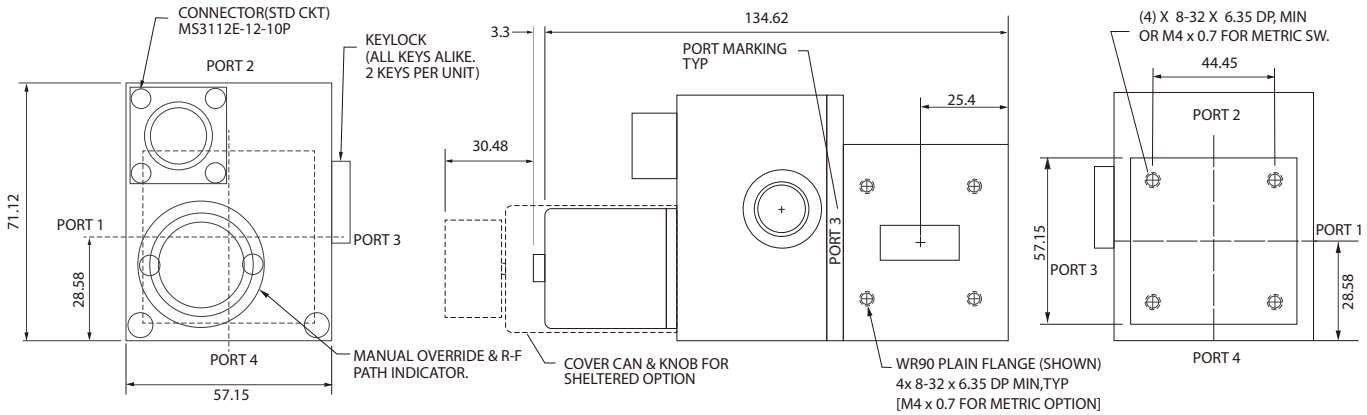
Specifications			
Operating Frequencies	DC to 26.5 GHz	Characteristic Impedance	50 Ω
VSWR	1.12 @ DC to 3 GHz 1.30 @ 3 to 6 GHz 1.40 @ 8 to 12.4 GHz 1.50 @ 12.4to 18 GHz 1.60 @ 18 to 26.5 GHz	Isolation	80 dB @ DC to 3 GHz 70 dB @ 3 to 6 GHz 60 dB @ 8 to 12.4 GHz 60 dB @ 12.4to 18 GHz 55 dB @ 18 to 26.5 GHz
Insertion Loss	0.2 dB @ DC to 3 GHz 0.3 dB @ 3 to 6 GHz 0.4 dB @ 8 to 12.4 GHz 0.5 dB @ 12.4to 18 GHz 0.6 dB @ 18 to 26.5 GHz	RF CW Power	220 W @ DC to 3 GHz 150 W @ 3 to 6 GHz 120 W @ 8 to 12.4 GHz 100 W @ 12.4 to 18 GHz 40 W @ 18 to 26.5 GHz
Propagation Delay Variation (between channels)	<1pc	Operating Life	10 Million operations per position guaranteed (typically >25 million)
Operate Time	Typically <10.5ms	Actuator Current	1A
Maximum Cold Switch Voltage	100V	RF Connectors	SMA (F)
Operating Temperature	0 to +55℃	Storage Temperature	-20 to +75 °C
Relative Humidity	Up to 90% (non-condensing)	Relative Humidity	Up to 90% (non-condensing)
Altitude	5000 m	Altitude	15000 m



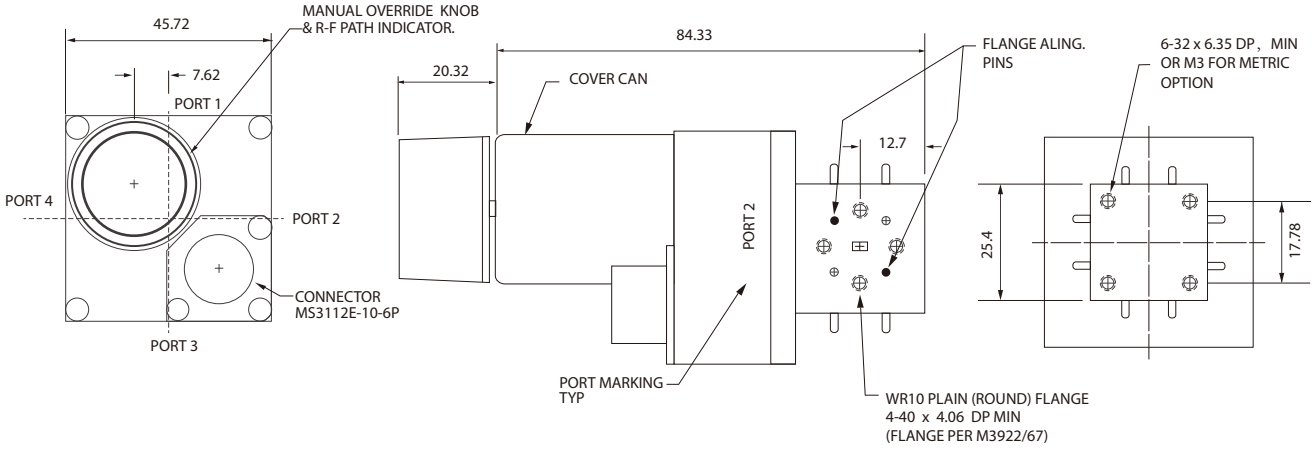
Electrical Specifications	
Operating Frequency	12.4 to 18GHz (selected bands)
VSWR	1.10
Isolation	60 dB
Insertion Loss max.	0.10 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR62
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on rest of body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



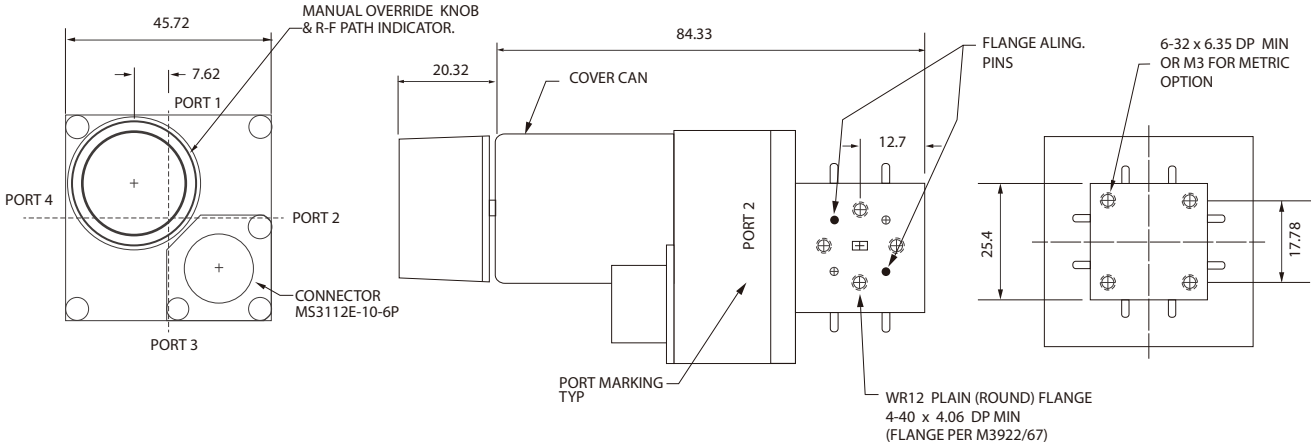
Electrical Specifications	
Operating Frequency	10.0 to 15.0 GHz (selected bands)
VSWR	1.08
Isolation	60 dB
Insertion Loss max.	0.05 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR75
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on rest of body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



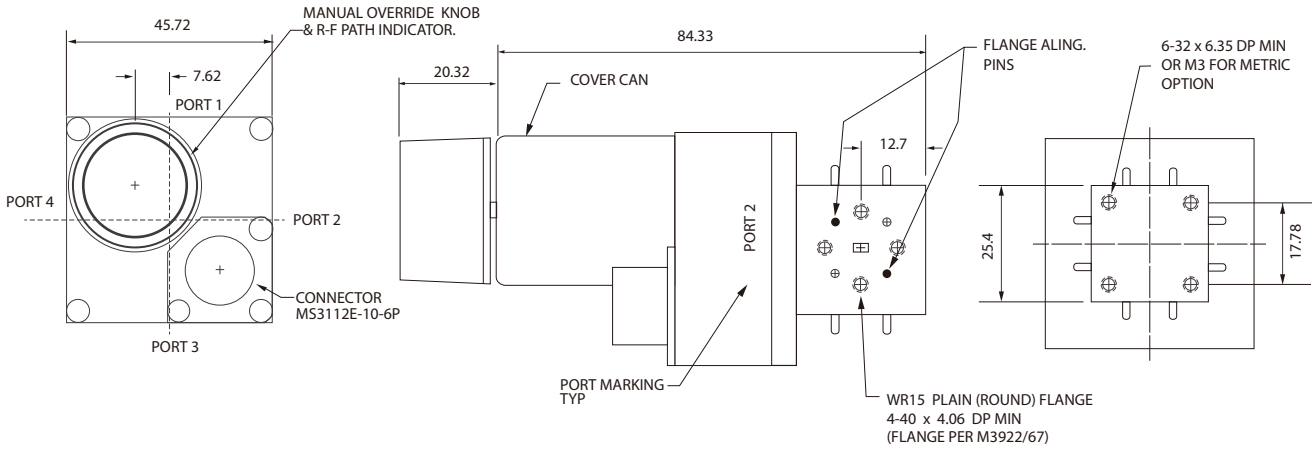
Electrical Specifications	
Operating Frequency	8.2 to 12.4 GHz (selected bands)
VSWR	1.05
Isolation	60 dB
Insertion Loss max.	0.05 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR90
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on rest of body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



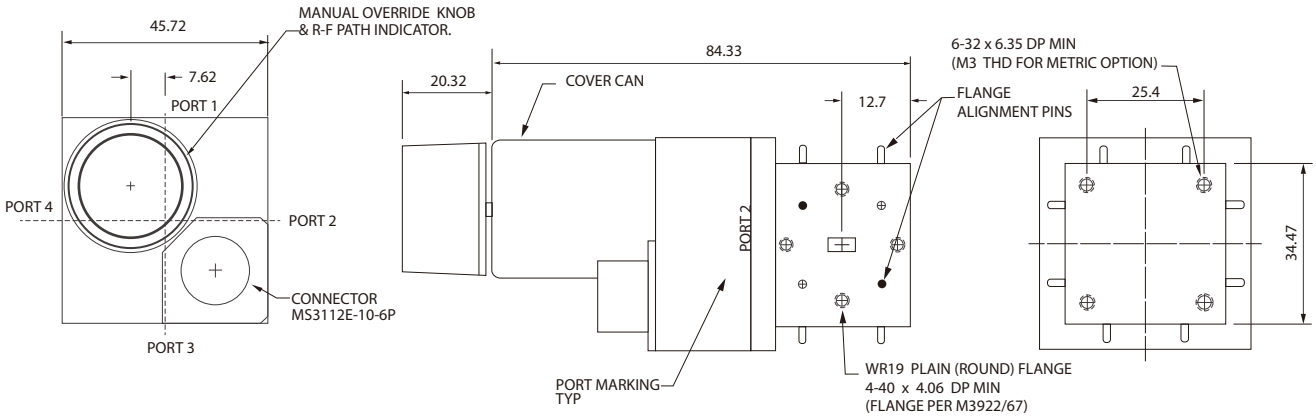
Electrical Specifications	
Operating Frequency	75.0 to 110.0 GHz (selected bands)
VSWR	1.20
Isolation	50 dB
Insertion Loss max.	0.4 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR10
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



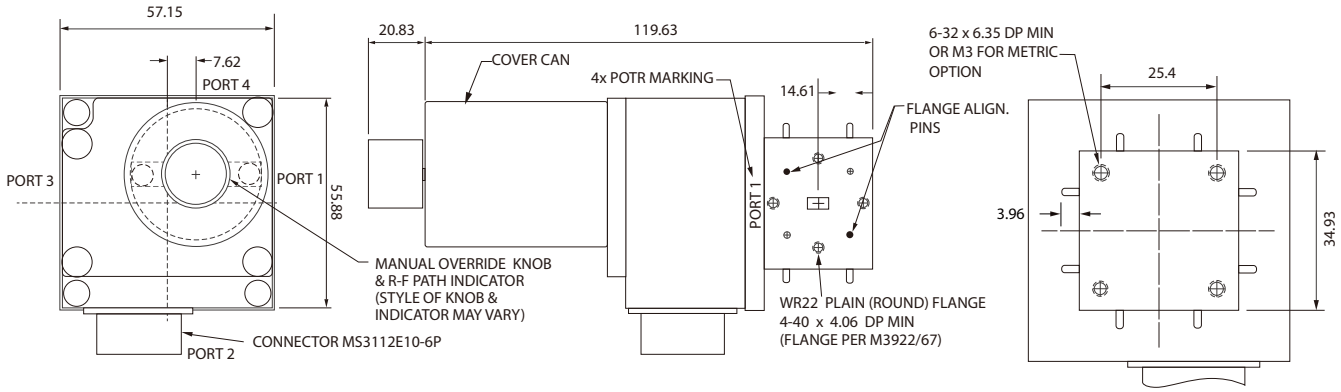
Electrical Specifications	
Operating Frequency	60.0 to 90.0 GHz (selected bands)
VSWR	1.20
Isolation	50 dB
Insertion Loss max.	0.4 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR12
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



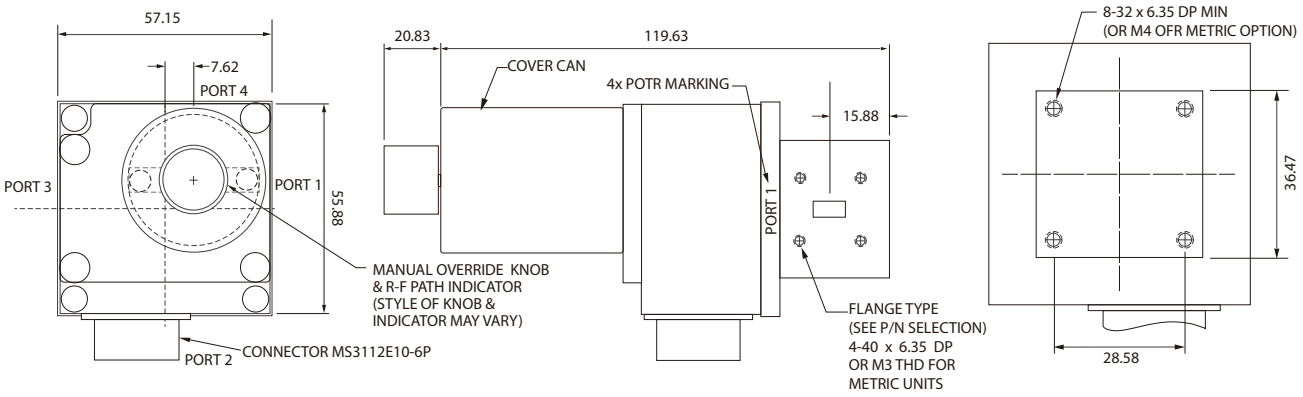
Electrical Specifications	
Operating Frequency	50.0 to 75.0 GHz (selected bands)
VSWR	1.20
Isolation	50 dB
Insertion Loss max.	0.4 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR15
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



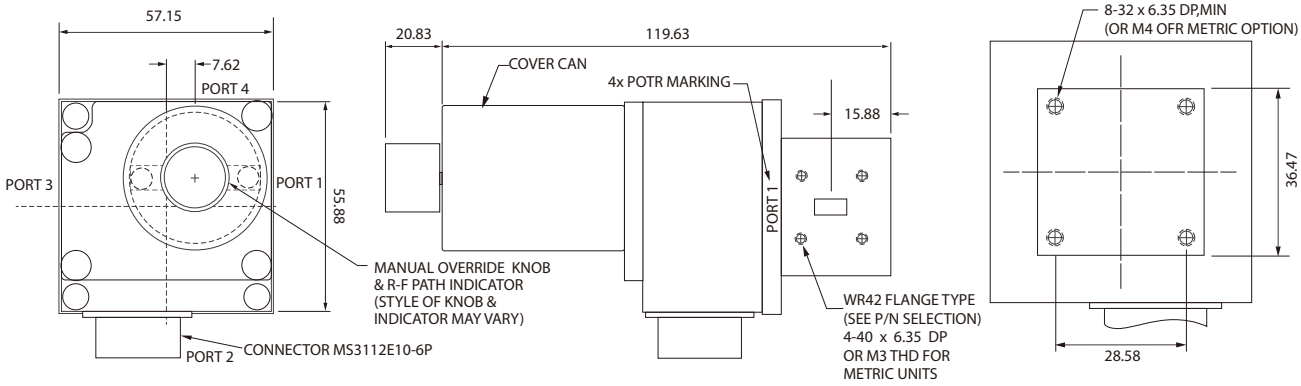
Electrical Specifications	
Operating Frequency	40.0 to 60.0 GHz (selected bands)
VSWR	1.15
Isolation	50 dB
Insertion Loss max.	0.2 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR19
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



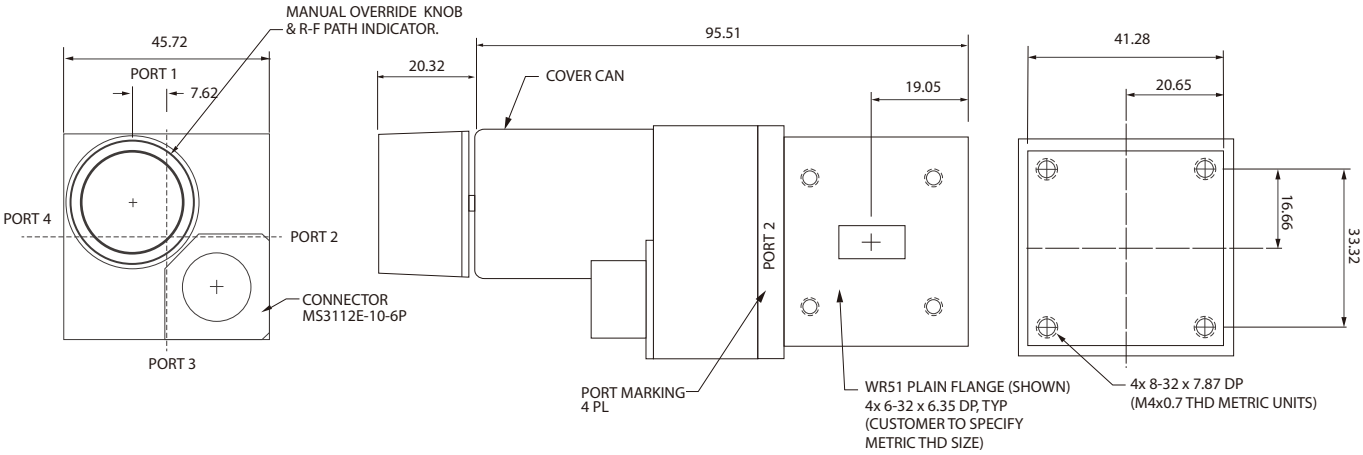
Electrical Specifications	
Operating Frequency	33.0 to 50.0 GHz (selected bands)
VSWR	1.15
Isolation	50 dB
Insertion Loss max.	0.2 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR22
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



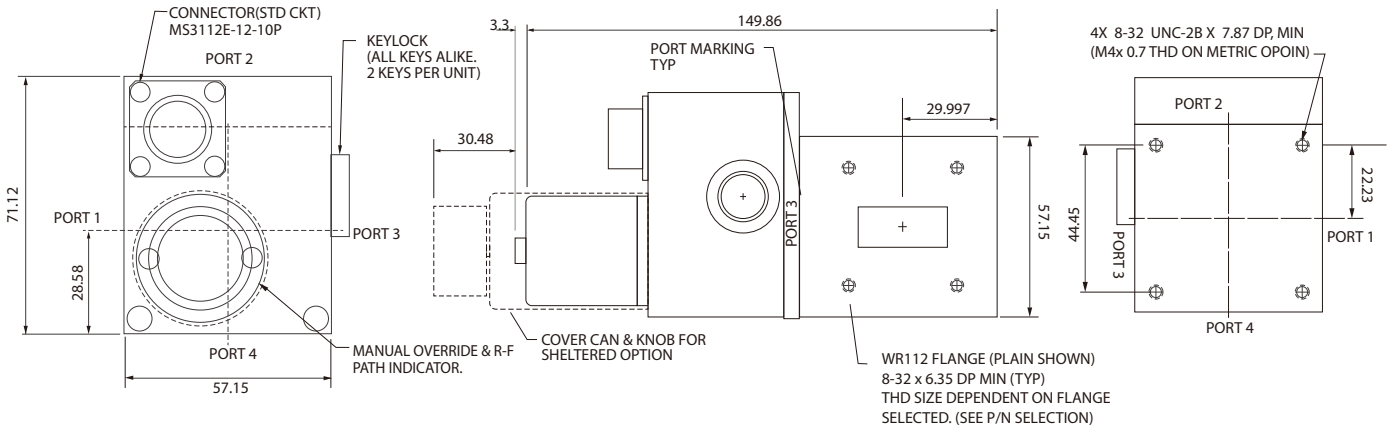
Electrical Specifications	
Operating Frequency	22.0 to 33.0 GHz (selected bands)
VSWR	1.10
Isolation	55 dB
Insertion Loss max.	0.15 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR34
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



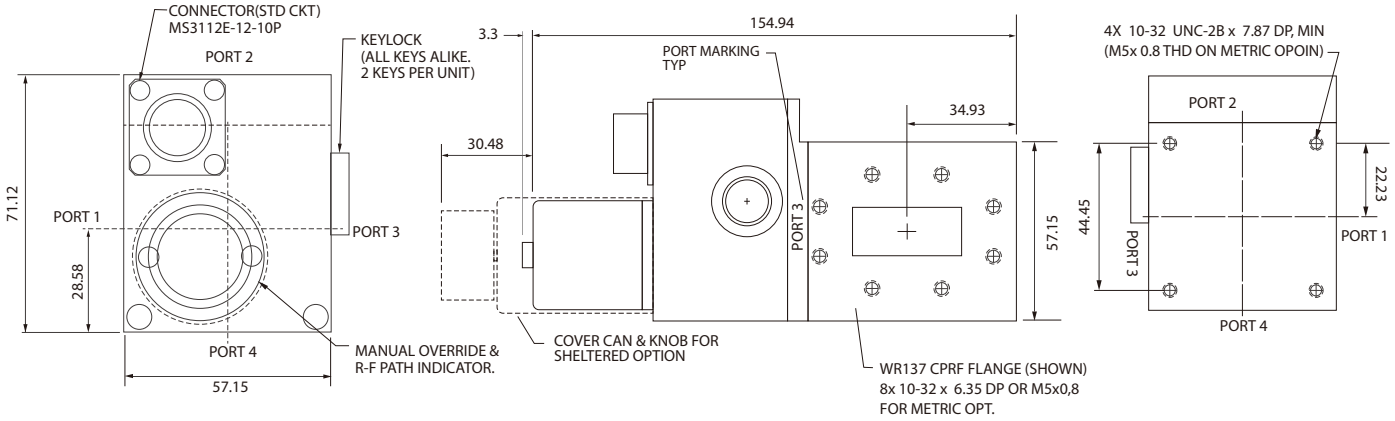
Electrical Specifications	
Operating Frequency	18.0 to 26.5GHz (selected bands)
VSWR	1.10
Isolation	60 dB
Insertion Loss max.	0.10 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	50 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR42
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



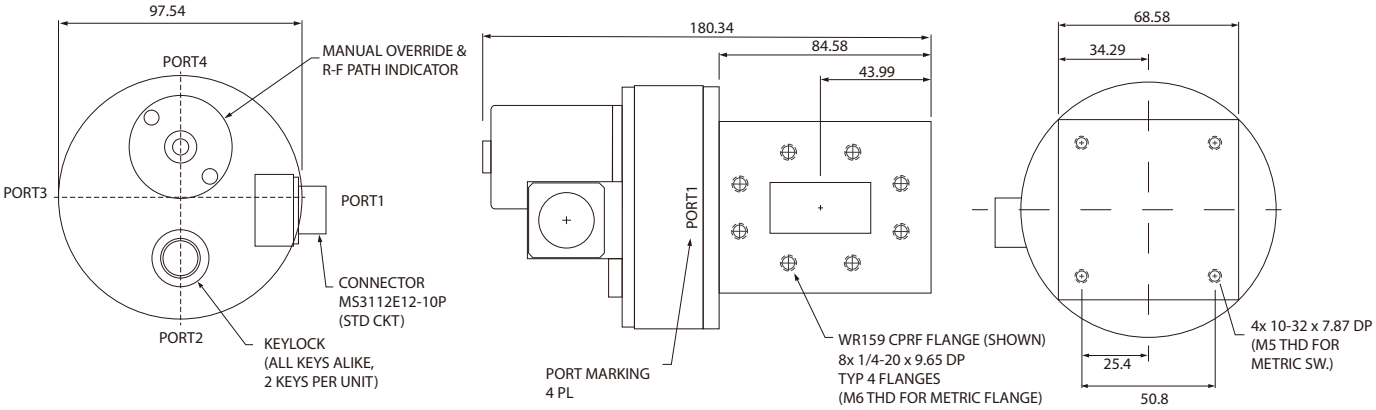
Electrical Specifications	
Operating Frequency	15.0 to 22.0GHz (selected bands)
VSWR	1.10
Isolation	60 dB
Insertion Loss max.	0.10 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	60 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR51
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD ONLY)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



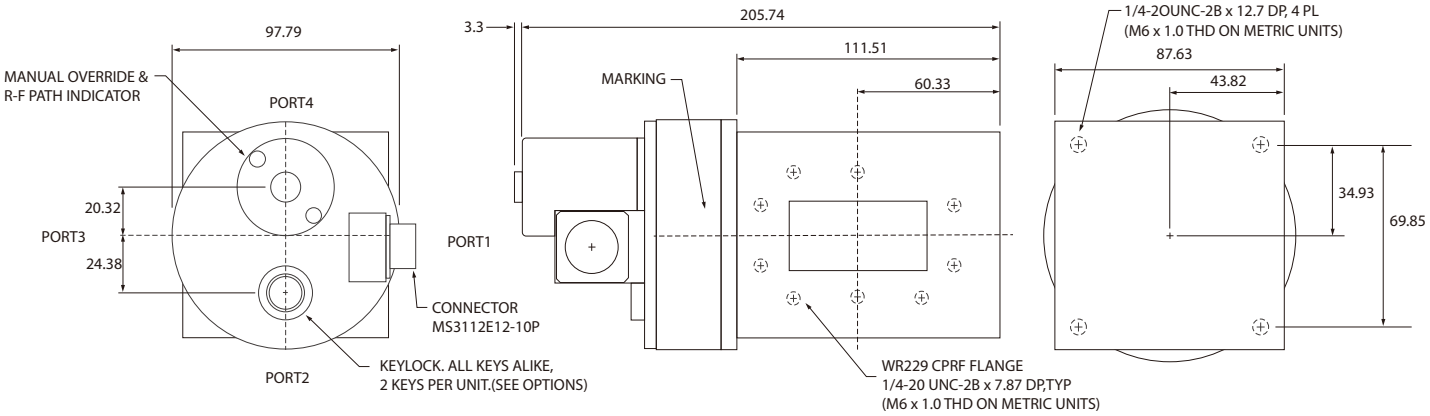
Electrical Specifications	
Operating Frequency	7.05 to 10.0 GHz (selected bands)
VSWR	1.05
Isolation	60 dB
Insertion Loss max.	0.05 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	60 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR112
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on rest of body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



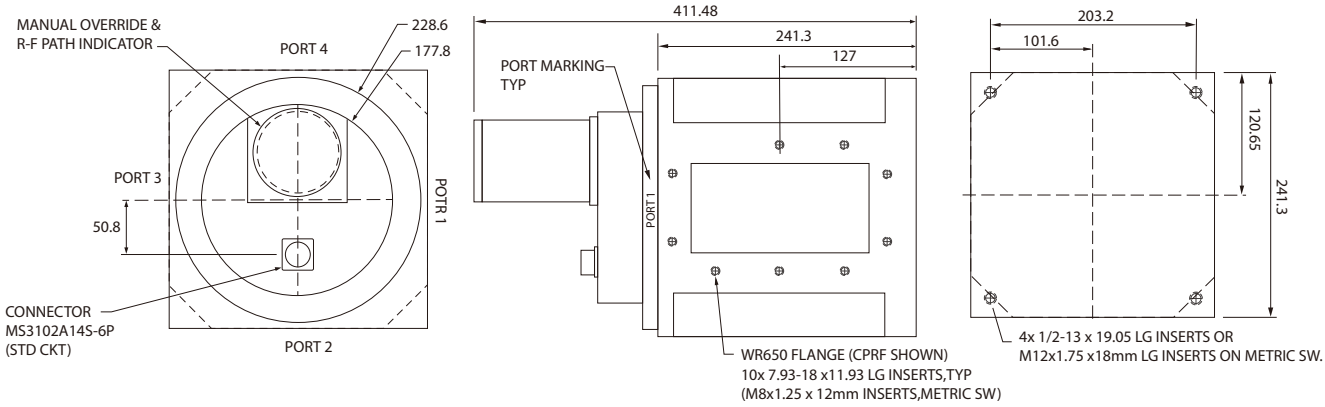
Electrical Specifications	
Operating Frequency	5.85 to 8.2 GHz (selected bands)
VSWR	1.05
Isolation	60 dB
Insertion Loss max.	0.02 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	60 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR137
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	80 % Aluminum
Finish	Iridite on flanges, satin black enamel on rest of body.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



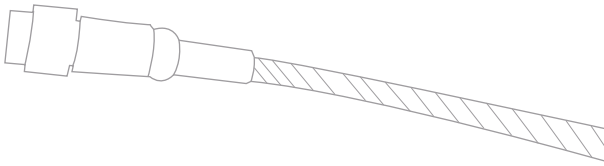
Electrical Specifications	
Operating Frequency	4.9 to 7.05 GHz (selected bands)
VSWR	1.05
Isolation	70 dB
Insertion Loss max.	0.02 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	80 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR159
Flange	PLAIN
Pressure Capability	TO 30 PSIG (R-F HEAD ONLY)
Material	80 % Aluminum
Finish	Satin black enamel,iridite on flange faces.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



Electrical Specifications	
Operating Frequency	3.3 to 4.9 GHz (selected bands)
VSWR	1.05
Isolation	80 dB
Insertion Loss max.	0.02 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	100 ms
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR 229
Flange	CPRF
Pressure Capability	TO 30 PSIG (R-F HEAD ONLY)
Material	80 % Aluminum
Finish	Iridite on flanges,satin black enamel on rest of body..
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



Electrical Specifications	
Operating Frequency	1.12 to 1.7 GHz (selected bands)
VSWR	1.05
Isolation	80 dB
Insertion Loss max.	0.01 dB
Actuator Voltage	28V
Lifetime	100,000 operations
Switch time	1 SEC
OPTION	DPDT
Mechanical Specifications	
Waveguide Size	WR 650
Flange	CPRF
Pressure Capability	TO 30 PSIG (R-F HEAD)
Material	ALUM ALY
Finish	SATIN BLACK ENAMEL,IRIDITE ON FLANGE FACES.
Weight	0.33 Kg
Environmental Specifications	
Operating Temperature	-40 to +65°C
Storage Temperature	-50 to +75°C
Humidity	100%



Test Cables

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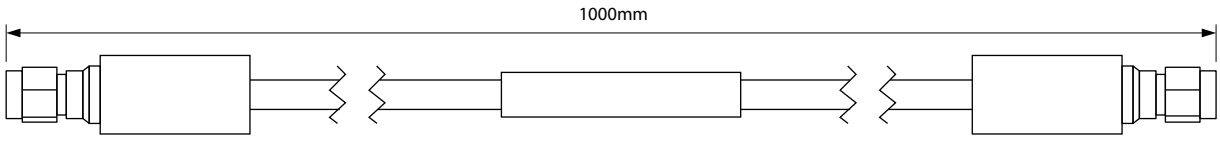
RF coaxial cables include: low-loss cable, semi-rigid cable, aviation and other high temperature resistant cable test cables, with low loss, high phase stability, low VSWR, etc.

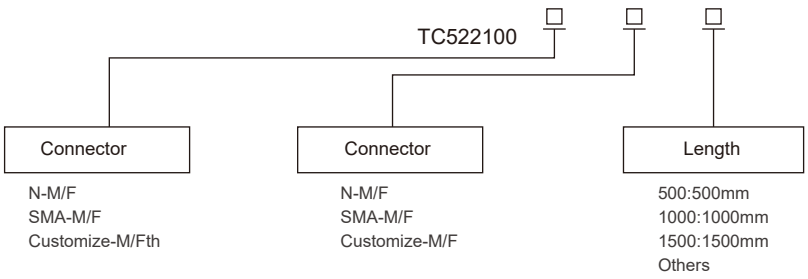
Test Cables List

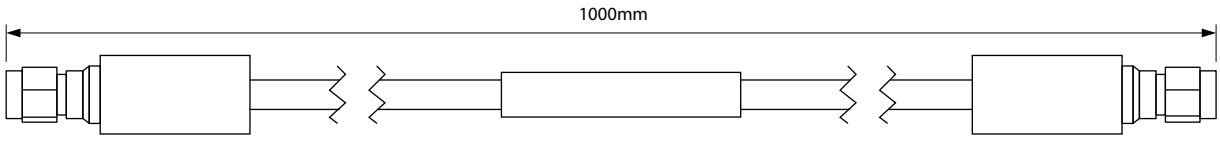
Test Cables			
Model Number	Frequency（GHz）	Interface	Page
TC522100	DC - 18 GHz	N,SMA	88
TC522101	DC - 18 GHz	N,SMA	89
TC522102	DC - 18 GHz	N,SMA	90
TC522103	DC - 33 GHz	N,SMA,TNC	91
TC522104	DC - 18 GHz	N	92
TC522105	DC - 40 GHz	K	93
TC522106	DC - 4GHz	N,SMA	94
TC522107	DC - 5GHz	N,SMA	95
TC522108	DC - 18GHz	N,SMA	96
TC522109	DC - 6 GHz	N,SMA	97



Specifications			
Connector	N or SMA or customize	Style	Low Insertion Loss with steady phase
Frequency Range	DC to 18 GHz	Bending radius	38 mm
Impedance	50 Ω	Bending Phase Stability	≤0.5° / GHz
Dimensions	Φ4.8 mm	Marking	Production Date with Number
VSWR	1.40 (500 MHz - 18 GHz)	Heat Shrinkable Tube Material	No
Insertion Loss (Max / m @ 20°C)	0.47 dB @ 3 GHz 0.66 dB @ 6 GHz 0.86 dB @ 10 GHz 1.17 dB @ 18 GHz 1.55 dB @ 26.5 GHz	Temperature (Ambient Range)	-55 to +150°C
Speed Ratio	85 %	Temperature Phase Stability With -55 to +85°C	750 PPM
Shielding attenuation	≥90 dB / 1 GHz	Weight, approx.	0.068 Kg / m

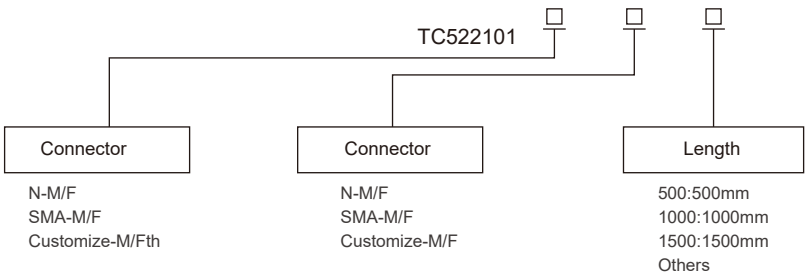
Part Number Selection





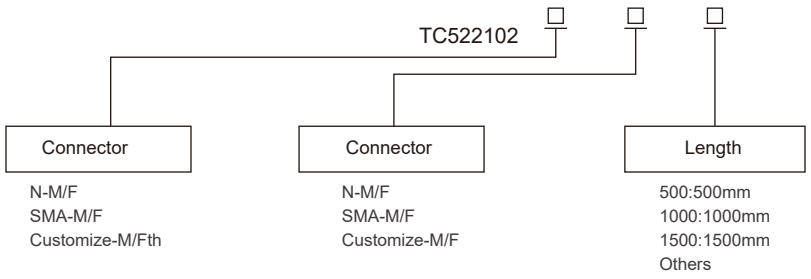
Specifications			
Connector	N or SMA or customize	Style	Low Insertion Loss with steady phase
Frequency Range	DC to 18 GHz	Bending radius	25 mm
Impedance	50 Ω	Bending Phase Stability	≤5° / 18 GHz
Dimensions	Φ2.2 mm	Marking	Production Date with Number
VSWR	1.50 (500 MHz - 18 GHz)	Heat Shrinkable Tube Material	No
Insertion Loss (Max / m @ 20°C)	1.1 dB @ 2 GHz 1.7 dB @ 4 GHz 2.1 dB @ 6 GHz 2.6 dB @ 10 GHz 3.3 dB @ 18 GHz	Temperature (Ambient Range)	-55 to +150°C
Speed Ratio	82 %	Temperature Phase Stability With -55 to +85°C	800 PPM
Shielding attenuation	≥90 dB / 1 GHz	Weight, approx.	0.016 Kg / m

Part Number Selection



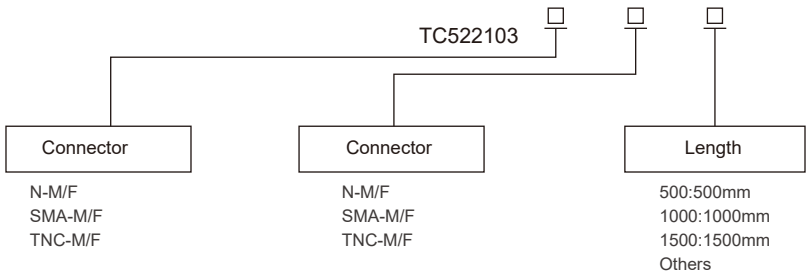
Specifications			
Connector	N or SMA or customize	Style	Low Insertion Loss with steady phase
Frequency Range	DC to 18 GHz	Bending radius	18 mm
Impedance	50 Ω	Bending Phase Stability	≤5° / 18 GHz
Dimensions	Φ3.55 mm	Marking	Production Date with Number
VSWR	1.40 (500 MHz - 18 GHz)	Heat Shrinkable Tube Material	No
Insertion Loss (Max / m @ 20°C)	0.75 dB @ 4 GHz 1.01 dB @ 6 GHz 1.45 dB @ 12 GHz 1.74 dB @ 18 GHz 2.30 dB @ 26.5 GHz 2.85 dB @ 40 GHz	Temperature (Ambient Range)	-55 to +150°C
Speed Ratio	85 %	Temperature Phase Stability With -55 to +85°C	700 PPM
Shielding attenuation	≥90 dB / 1 GHz	Weight, approx.	0.033 Kg / m

Part Number Selection



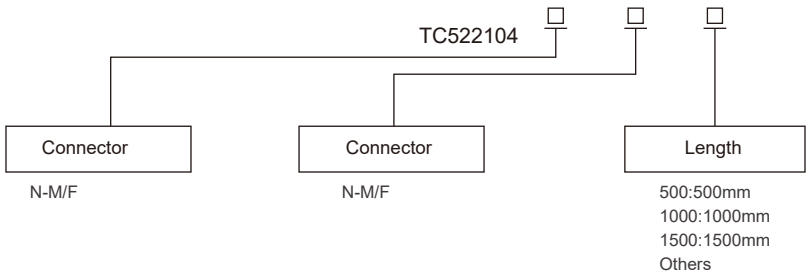
Specifications			
Connector	N or SMA or TNC	Style	Low Insertion Loss
Frequency Range	DC to 33 GHz	Shielding attenuation	≥90 dB / 1 GHz
Impedance	50 Ω	Bending Radius	50mm
Dimensions	Φ 5.0 mm	Marking	Production Date with Number
Speed Ratio	82 %	Heat Shrinkable Tube Material	No
Insertion Loss (Max / m @ 20°C)	0.74 dB @ 3 GHz 1.08 dB @ 6 GHz 1.43 dB @ 10 GHz 1.8 dB @ 15 GHz 1.99 dB @ 18 GHz	Temperature (Ambient Range)	-55 to +85°C
Weight, approx.	0.05 Kg / m		

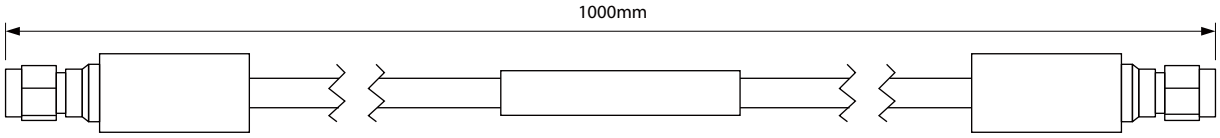
Part Number Selection



Specifications			
Connector	N	Style	Low Insertion Loss
Frequency Range	DC to 18 GHz	Bending Radius	90 mm
Impedance	50 Ω	Marking	Production Date with Number
Dimensions	Φ 9.0mm	Heat Shrinkable Tube Material	No
Insertion Loss (Max / m @ 20°C)	0.45 dB @ 3 GHz 0.65 dB @ 6 GHz 0.98 dB @ 10 GHz 1.43 dB @ 15 GHz 1.63 dB @ 18 GHz	Temperature (Ambient Range)	-55 to +85°C
Speed Ratio	83%	Weight, approx.	0.168 Kg / m

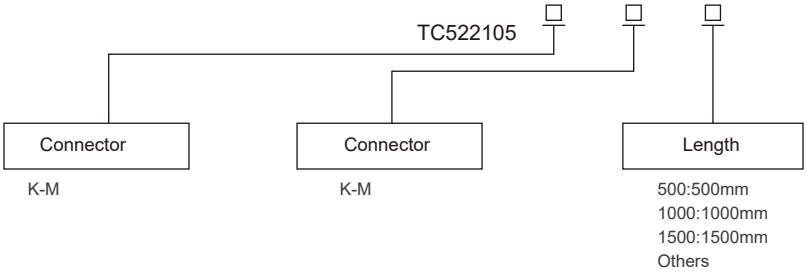
Part Number Selection





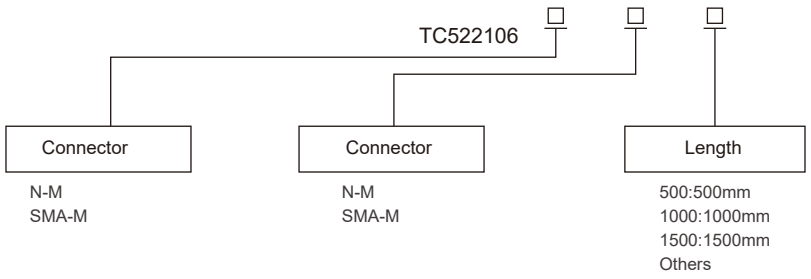
Specifications			
Connector	K	Style	Low Insertion Loss
Frequency Range	DC to 40 GHz	Heat Shrinkable Tube Material	PE with Black
Impedance	50 Ω	Bending Radius	30mm
Dimensions	Φ 3.6 mm	Marking	Production Date with Number
Speed Ratio	77 %	Weight, approx.	0.04 Kg / m
Insertion Loss (Max / m @ 20°C)	1.10 dB @ 3 GHz 1.60 dB @ 6 GHz 2.10 dB @ 10 GHz 2.73 dB @ 15 GHz 3.20 dB @ 18 GHz 4.50 dB @ 35 GHz 5.0 dB @ 40 GHz	Temperature (Ambient Range)	-55 to +200°C

Part Number Selection



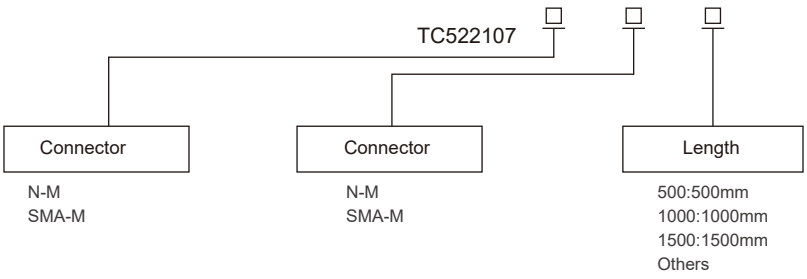
Specifications			
Connector	N or SMA	Style	Low Insertion Loss with steady phase
Frequency Range	DC to 4 GHz	Bending radius	10 D
Impedance	50 Ω	Heat Shrinkable Tube Material	PE with Black
VSWR	1.22 (500 MHz-4 GHz)	Marking	Production Date with Number
Dimensions	Φ5.4 mm	Weight, approx.	0.07Kg / m
Insertion Loss (Max / m @ 20°C)	0.62 dB @ 4 GHz (Nom dB @ 3 GHz)	Temperature(Ambient Range)	-55 to +85°C

Part Number Selection



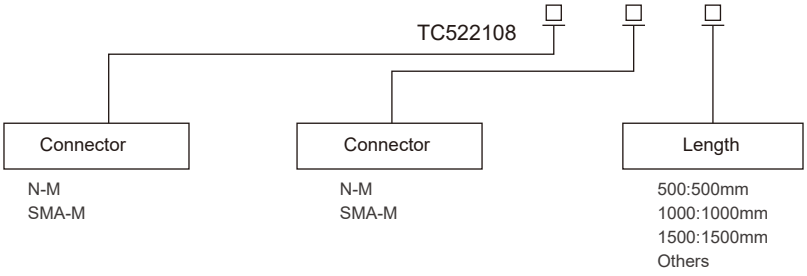
Specifications			
Connector	N or SMA	Style	Semi-flexible RF cable
Frequency Range	DC to 5 GHz	Heat Shrinkable Tube Material	No
Impedance	50 Ω	Bending Radius	8mm
Dimensions	Φ 3.52 mm	Marking	Production Date with Number
Speed Ratio	69 %	Weight, approx.	0.07 Kg / m
Insertion Loss(Max / m @ 20°C)	0.63 dB @ 2 GHz 1.34 dB @ 6 GHz	Temperature (Ambient Range)	-55 to +125°C

Part Number Selection



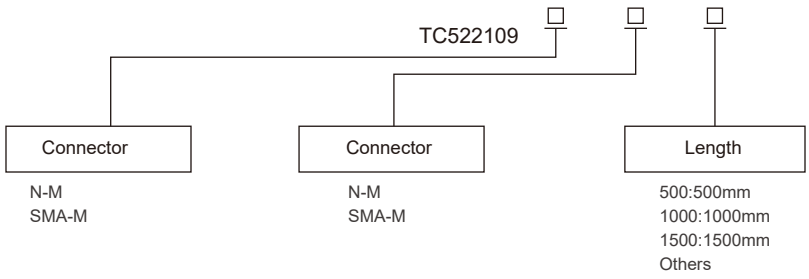
Specifications			
Connector	N or SMA	Style	Semi-rigid RF cable
Frequency Range	DC to 18 GHz	Bending radius	8mm
Impedance	50 Ω	Heat Shrinkable Tube Material	PE with Black
Speed Ratio	69%	Marking	Production Date with Number
Dimensions	Φ3.58 mm	Weight, approx.	0.06Kg / m
Insertion Loss (Max / m @ 20°C)	0.65 dB @ 2 GHz 1.64 dB @ 10 GHz 2.36 dB @ 18 GHz	Temperature(Ambient Range)	-55 to + 125°C

Part Number Selection



Specifications			
Connector	N or SMA	Style	Semi-rigid RF cable
Frequency Range	DC to 6 GHz	Speed Ratio	82 %
Impedance	50 Ω	Heat Shrinkable Tube Material	PE with Black
Speed Ratio	69 %	Marking	Production Date with Number
Dimensions	Φ60 mm	Average Power	120 W
Insertion Loss (Max / m @ 20°C)	0.15 dB @ 1 GHz 0.45 dB @ 6 GHz	Peak Power	300 W @ 1.25 GHz 200 W @ 2.50 GHz 200 W @ 4.0 GHz
Once Bending radius	50 mm	Weight, approx.	0.3Kg / m
Repeatedly Bending radius	100 mm	Temperature(Ambient Range)	-55 to +150°C

Part Number Selection



Optical Rotary Joint

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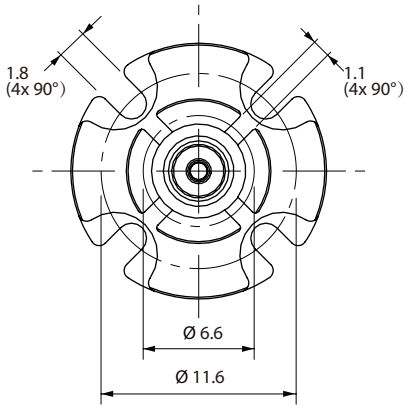
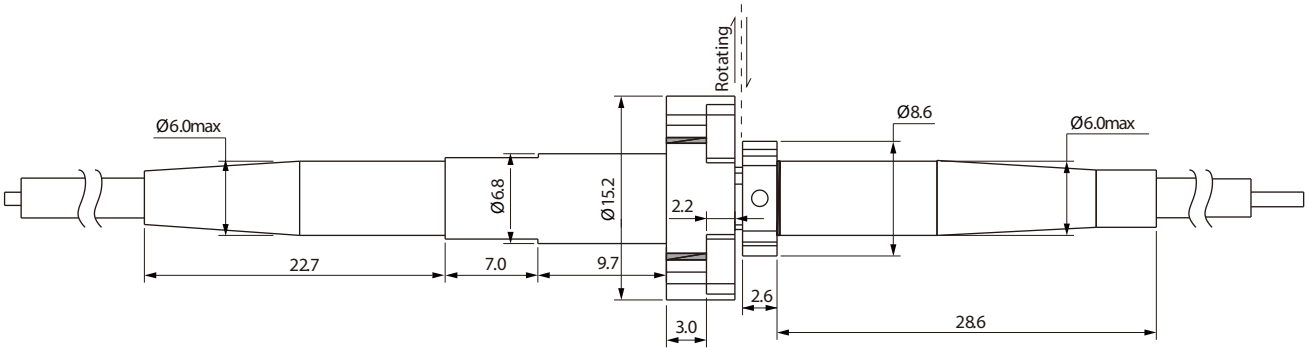
Optical rotary joint can transmit photoelectric rotation signals between the rotating part and the stationary part . Optical rotary joint resolves optical signal transmission problems, which is to ensure that the transmission optical signal is not interrupted by the rotation.Our products are Singlemode, Multimode with Single core, Multi core. They are used in optical communications, medical devices and so on.

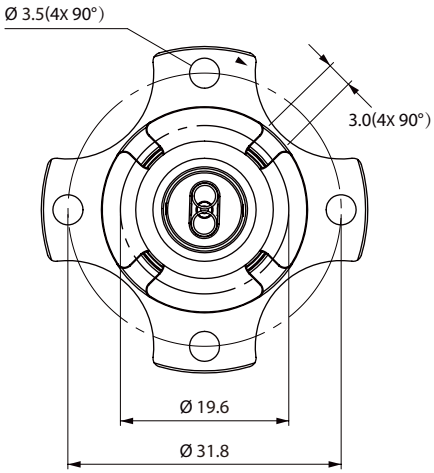
Optical Rotary Joint List

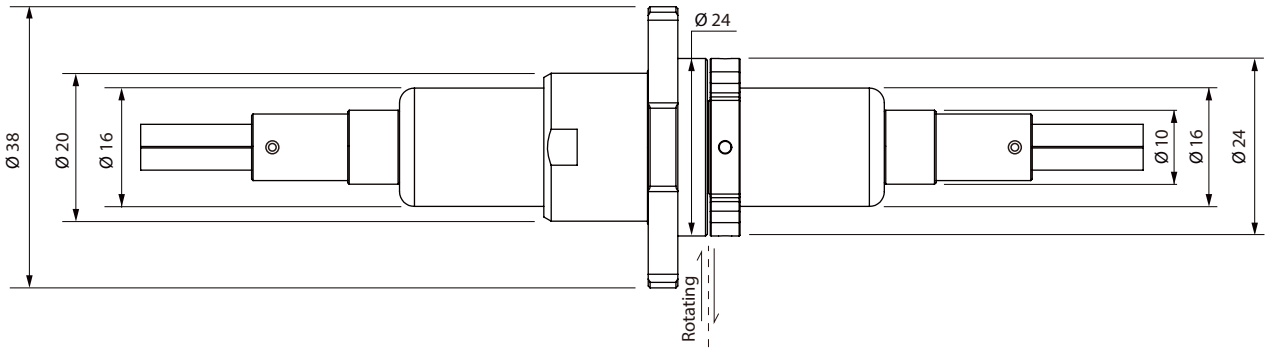
Optical Rotary Joint List			
Model Number	Wavelength Range（nm）	Interface	Page
RJ518901	1330 - 1550nm	FC/PC	99
RJ518902	1310 - 1550nm	FC\SC\ST\SMA\LC	100
RJ518903	400 - 2200nm	FC/PC	101
RJ518904	400 - 2200nm	FC/PC,2.5mm	102
RJ518905	400 - 2200nm	FC/PC	103
RJ518906	400 - 2200nm	FC/PC	104
RJ518907	1310 - 1550nm	FC\SC\ST\SMA\LC	105
RJ518908	1310 - 1550nm	FC/PC	106



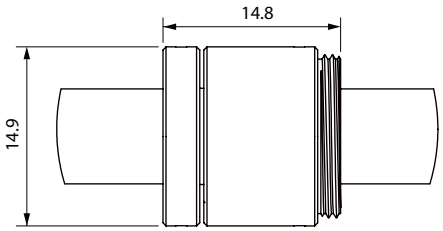


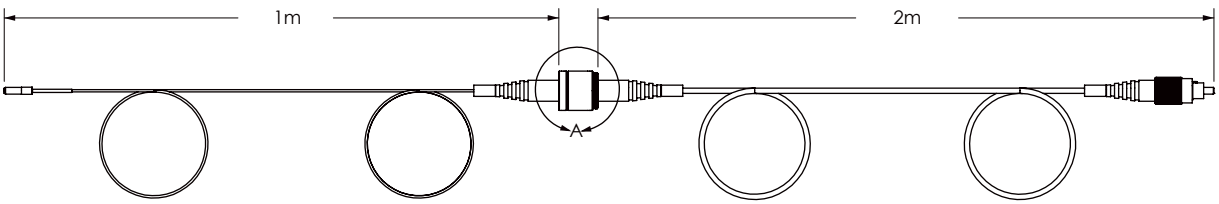
Specifications			
Wavelength Range	1330 and 1550nm	Working Temperature	-40 to 85 °C
Insertion Loss	< 2 dB	Storage Temperature	-50 to 85 °C
Insertion Loss WOW	< +/-0.25 dB	Housing Material	Stainless Steel
Return Loss	> 40 dB	Fiber Types	9/125 Single Model (Corning Fiber)
Maximum Speed	2,000 rpm	Connector Types	FC/PC
Pressure Compensation	1,000 psi	Dimensions	6.8 mm dia. x 28 mm Length
Pulling Strength	10 N	Weight	0.01 kg
Start Up Torque	<0.01 Nm	Vibration	MIL-STD-167-1A
Life Time	200 Million Revolutions	Mechanical Shock	MIL-STD-810G
Optical Power Handling	200 mW / 23 dBm		



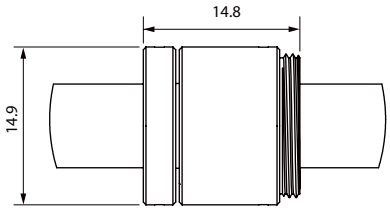


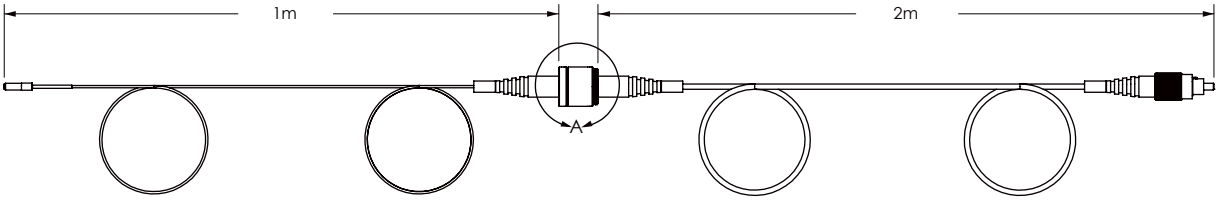
Specifications			
Wavelength Range	1310/850 nm or 1310/1550 nm	Working Temperature	-40 to 72 °C
Insertion Loss	<4 dB/channel 1, <6 dB/channel 2	Storage Temperature	-45 to 75 °C
Insertion Loss WOW	< +/-1 dB	Housing Material	Stainless Steel
Return Loss	15 dB	Fiber Types	MM w/3 mm Cable (Kevlar lined) or Armor
Maximum Speed	100 rpm	Connector Types	FC, SC, ST, SMA, or LC
Pulling Strength	10 N	Dimensions	20 mm dia. x 65 mm Length
Start Up Torque	<0.2 Nm	Weight	0.1 kg
Life Time	200 Million Revolutions	Vibration	MIL-STD-167-1A
Optical Power Handling	200 mW / 23 dBm	Mechanical Shock	MIL-STD-810G



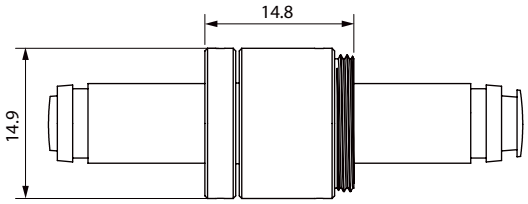


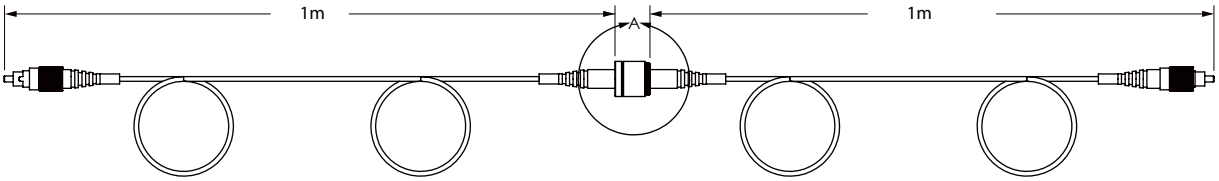
Specifications			
Wavelength range	400 and 2200 nm	Working temperature	-40 to 85 °C
Insertion Loss	< 2 dB	Storage temperature	-50 to 85 °C
NA	0.39± 0.02	Core Diameter	200 ± 5 μm
Start up torque	< 1 Ncm	Cladding Diameter	225 ± 5 μm
Connector types	FC/PC	Coating Diameter	500 ± 30 μm
Weight	0.034 kg	Housing material	Stainless steel



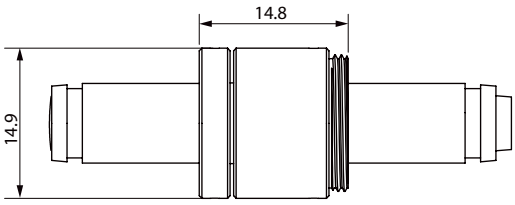


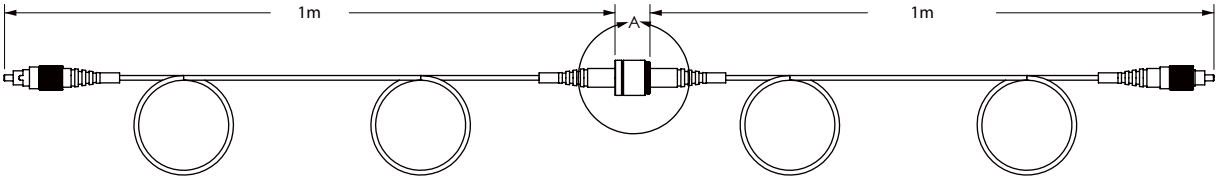
Specifications			
Wavelength Range	400 and 2200 nm	Working Temperature	-40 to 85 °C
Insertion Loss	< 2 dB	Storage Temperature	-50 to 85 °C
Insertion Loss WOW	0.4 dB	Fiber Core Diameter	400 ± 8 µm
Numerical Aperture	0.39 ± 0.02	Fiber Cladding Diameter	425 ± 10 µm
Maximum Speed	2,000 rpm	Fiber Coating Diameter	730 ± 30 µm
Pulling Strength	10 N	Housing Material	Stainless Steel
Start Up Torque	< 1 Ncm	Fiber Types	Ø2 mm, Orange Jacket
Optical Power Handling	300 mW CW (Limited By The Connection Part)	Dimensions	14.9 mm Diameter, 1m Fiber Length On One Side And 2m Fiber Length On Other Side
Life Time	200 Million Revolutions	Weight	0.09 kg
Connector Types	FC / PC,2.5mm	Fiber Pulsed Power	2000 kW
Fiber Bending Radius	18 mm	Fiber CW Power	0.4 kW
Fiber Max Attenuation	10 dB / km @ 850 nm		



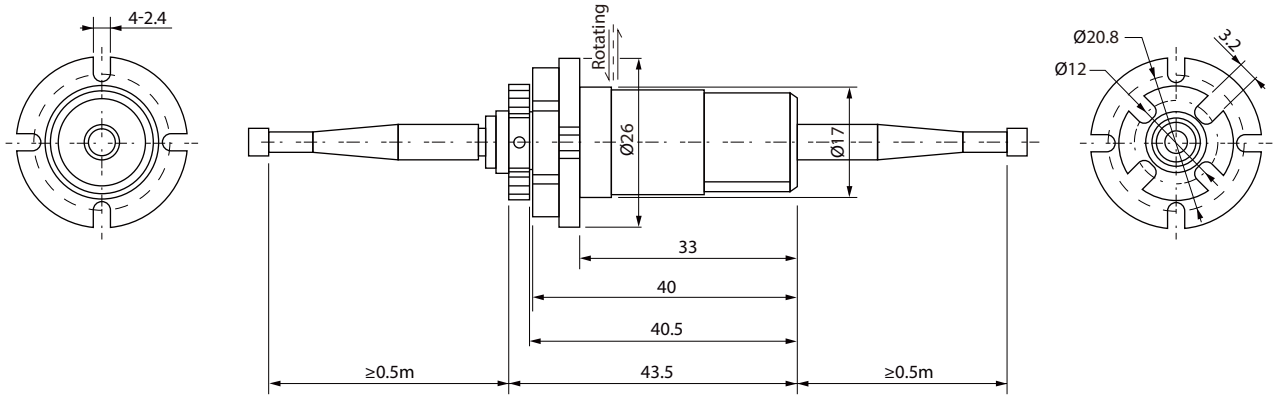


Specifications			
Wavelength Range	400 and 2200 nm	Working Temperature	-40 to 85 °C
Insertion Loss	< 2 dB	Storage Temperature	-50 to 85 °C
Insertion Loss WOW	0.4 dB	Fiber Core Diameter	200 ± 5 µm
Numerical Aperture	0.39 ± 0.02	Fiber Cladding Diameter	225 ± 5 µm
Maximum Speed	2,000 rpm	Fiber Coating Diameter	500 ± 30 µm
Pulling Strength	10 N	Housing Material	Stainless Steel
Start Up Torque	< 1 Ncm	Fiber Types	Ø2 mm, Orange Jacket
Optical Power Handling	300 mW CW (Limited By The Connection Part)	Dimensions	14.9 mm Diameter, 1m Fiber Length On One Side
Life Time	200 Million Revolutions	Weight	0.09 kg
Connector Types	FC / PC	Fiber Pulsed Power	2000 kW
Fiber Bending Radius	18 mm	Fiber CW Power	0.4 kW
Fiber Max Attenuation	10 dB / km @ 850 nm		

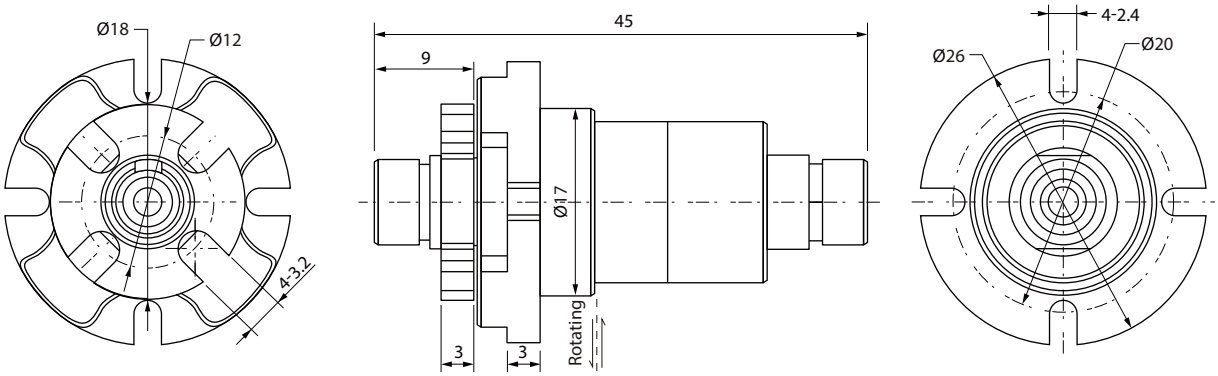




Specifications			
Wavelength Range	400 and 2200 nm	Working Temperature	-40 to 85 °C
Insertion Loss	< 2 dB	Storage Temperature	-50 to 85 °C
Insertion Loss WOW	0.4 dB	Fiber Core Diameter	400 ± 5 µm
Numerical Aperture	0.39 ± 0.02	Fiber Cladding Diameter	425 ± 5 µm
Maximum Speed	2,000 rpm	Fiber Coating Diameter	730 ± 30 µm
Pulling Strength	10 N	Housing Material	Stainless Steel
Start Up Torque	< 1 Ncm	Fiber Types	Ø2 mm, Orange Jacket
Optical Power Handling	500 mW CW (Limited By The Connection Part)	Dimensions	14.9 mm Diameter, 1m Fiber Length On Both Side
Life Time	200 Million Revolutions	Weight	0.09 kg
Connector Types	FC / PC	Fiber Pulsed Power	2000 kW
Fiber Bending Radius	18 mm	Fiber CW Power	0.4 kW
Fiber Max Attenuation	10 dB / km @ 850 nm		



Specifications			
Wavelength Range	1310/1550 nm	Working Temperature	-45 to 85 °C
Insertion Loss	≤ 2 dB	Storage Temperature	-50 to 85 °C
Insertion Loss WOW	≤ 0.5 dB	Vibration	10-55 Hz, Amplitude 0.75 mm 55-500 Hz, Acceleration 10 g
Return Loss	≥45 dB PC; ≥55 dB APC	Encapsulation	Pigtail
Maximum Speed	2,000 rpm	Housing Material	Stainless Steel
Pulling Strength	10 N	Connector Types	FC、SC、 ST 、LC、 SMA
Start Up Torque	< 10 Ncm	Dimensions	Ø3 mm
Impact	50g/11ms	Weight	0.10 Kg
Life Time	50 Million Revolutions	Operation IP Protection Level	IP65



Specifications			
Wavelength Range	1310/1550 nm	Working Temperature	-45 to 85 °C
Insertion Loss	≤ 2 dB	Storage Temperature	-50 to 85 °C
Insertion Loss WOW	≤ 0.5 dB	Vibration	10-55 Hz, Amplitude 0.75 mm 55-500 Hz, Acceleration 10g
Return Loss	≥45 dB	Encapsulation	FC / PC
Maximum Speed	2,000 rpm	Housing Material	Stainless Steel
Pulling Strength	10 N	Connector Types	FC / PC
Start Up Torque	< 10 Ncm	Dimensions	Ø3 mm
Impact	50g/11ms	Weight	0.055 Kg
Life Time	50 Million Revolutions	Operation IP Protection Level	IP65

Flexible Rectangular Waveguide

A waveguide is an electromagnetic feed line used in microwave communications, broadcasting and radar system. Tube of it can be divided into rectangular and elliptical. The electromagnetic field propagates lengthwise. It is used in horn antennas a and dish antennas.
The electromagnetic wave can be propagated in a waveguide. There are two common mdoes are transverse-magnetic and transverse-electric. In TM mode , the magnetic lines of flux are perpendicular to the axis of the waveguide. In TE mode, the electric lines of flux are perpendicular to the axis of the wavegudie.Either mode can provide low loss and high efficiency as long as the interior of the waveguide is kept clean and dry.

Flexible Rectangular Waveguide

Flexible rectangular waveguide is a dispensable component for the connection between microwave equipment and feeder.

Our flexible rectangular waveguide is manufactured by using precision winding machines, designed, built and innovated using new techniques in precision metal manipulation. The unique design of these machines has set new levels of performance for flexible / twistable waveguide without the need to dent tune.

Storage

To prevent dirt and moisture ingress flexible waveguide, it should be transported and stored in their original packaging until installed.
Flexible waveguide standard packing is a sealed polythene moisture barrier. To make sure its performance form humidity and moisture.

Handling

To maximize performance, waveguides are manufactured to high tolerances.
Any physical or external force change the cross - sectional, it is bad for electrical performance.

Silicone: -70 to 170°C

Our flexible waveguide is encapsulated by moulded silicone rubber, to provide a high degree (IP68).
Silicone is proven that it is more resistant than the neoprene in extreme evironment, such as ozone, UV, water.

Polyurethane: -30 to 90℃

Polyurethane offers an excellent alternative to neoprene, Because that temperature range of silicone is almost not required.

Polyolefin:-20 to 100℃

We can offer an adhesive lined polyolefin heat-shrink jacket for a limited number of applications and for longer lengths. Due to the nature of the jacket, moulds are not required that its lengths up to 5 meter. It depends on size of waveguide.

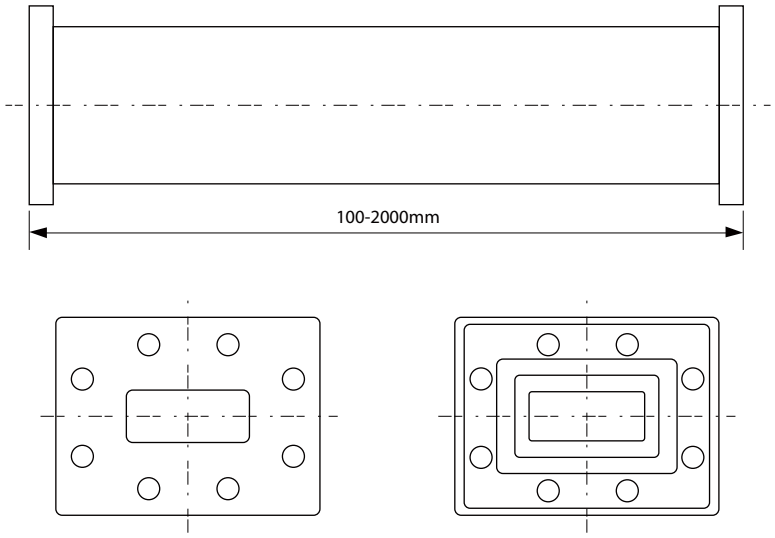
Flanges

Flexible Waveguide offer a wide variety of flanges, including European "154 IEC" standard, American MIL specification "UG" flanges and American EIA "CPR" types. Standard flanges are CNC machined from corrosion resistant, marine grade brass and are supplied un-plated unless otherwise specified.

Flexible Rectangular Waveguide list

Model Number	Frequency（GHz）	Interface	Page
WG516032	4.90 - 7.05 GHz	UDR58/PDR58	109
WG516033	5.85 - 8.20 GHz	UDR70/PDR70	110
WG516034	7.05 - 10.00 GHz	UDR84/PDR84	111
WG516035	8.2 - 12.4 GHz	UBR100/PBR100	112
WG516036	10.0 - 15.0 GHz	UBR120/PBR120	113
WG516037	12.4 - 18.0 GHz	UBR140/PBR140	114
WG516038	17.7 - 26.5 GHz	UBR220/PBR220	115
WG516039	1.70 - 2.60 GHz	UDR22/PDR22	116
WG516040	2.17 - 3.30 GHz	UDR26/PDR26	117
WG516041	2.60 - 3.95 GHz	UAR32/PAR32/CAR32	118
WG516042	3.30 - 4.90 GHz	UAR40/PAR40/CAR40	119
WG516043	3.95 - 5.85 GHz	UAR48/PAR48/CAR48	120
WG516044	4.90 - 7.05 GHz	UAR58/PAR58/CAR58	121
WG516045	5.85 - 8.20 GHz	UAR70/PAR70/CAR70	122
WG516046	7.05 - 10.00 GHz	UBR84/PBR84/CBR84	123
WG516047	8.20 - 12.40 GHz	UBR100/PBR100/CBR100	124
WG516048	10.00 - 15.00 GHz	UBR120/PBR120/CBR120	125
WG516049	12.40 - 18.00 GHz	UBR140/PBR140/CBR140	126
WG516050	17.70 - 26.50 GHz	UBR220/PBR220	127
WG516051	26.50 - 40.00 GHz	UBR320/PBR320	128
WG516052	5.90 - 7.20 GHz	UDR70	129
WG516053	5.90 - 7.20 GHz	UDR70	130
WG516054	7.10 - 8.50 GHz	UDR84	131
WG516055	7.10 - 8.50 GHz	UDR84	132
WG516058	5.82 - 8.20 GHz	PDR/UDR/FDM70/FDP70	133
WG516059	5.85 - 8.20 GHz	FDM70/FDP70	134
WG516060	5.85 - 8.20 GHz	FDM70/FDP70	135
WG516061	5.85 - 8.20 GHz	PDR70/UDR70	136
WG516062	10.0 - 15.0 GHz	FBM120/FBP120	137

- Low VSWR ,Low loss
- Good flexibility and twistability
- Stable performance during flexing and twisting



Electrical Specifications	
Operation Frequency Band	4.90 to 7.05GHz
Insertion Loss	0.20dB/m
VSWR	1.10
Average Power	2.5kW
Peak Power	1100kW
General Specifications	
Waveguide Size	WR159/WG13/R58
Interface	UDR58/PDR58
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	185deg/m
Minimum Bend Radius (E Plane)	116mm
Minimum Bend Radius (H Plane)	232mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

- Low VSWR ,Low loss
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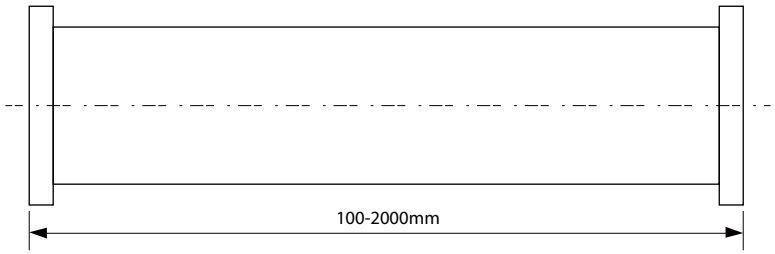
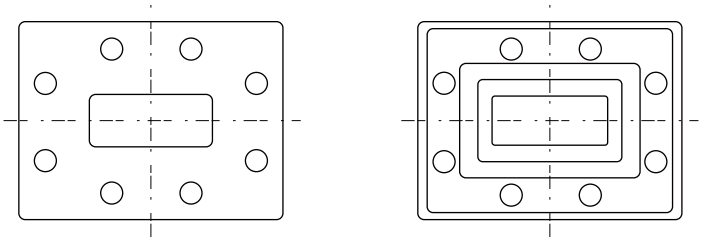
- Stable performance during flexing and twisting





Electrical Specifications	
Operation Frequency Band	5.85 to 8.20 GHz
Insertion Loss	0.25 dB/m
VSWR	1.10
Average Power	2 kW
Peak Power	500 kW
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface	UDR70/PDR70
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	205 deg/m
Minimum Bend Radius (E Plane)	100mm
Minimum Bend Radius (H Plane)	200mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

- Low VSWR ,Low loss
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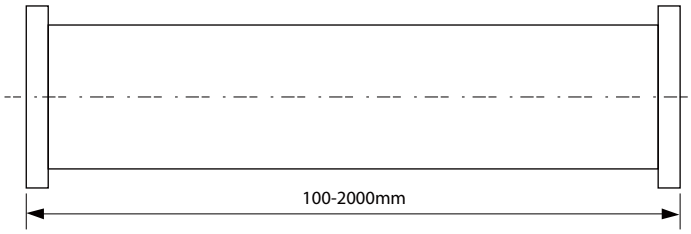
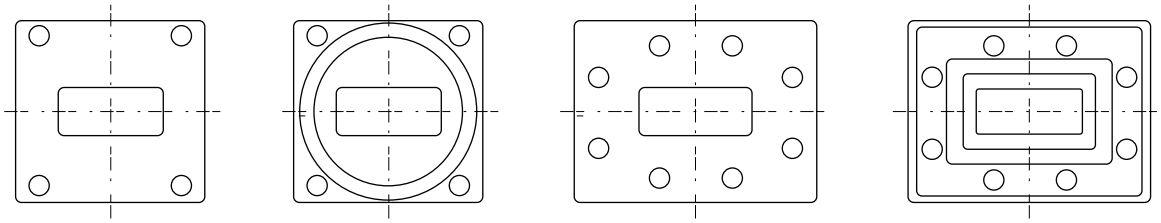
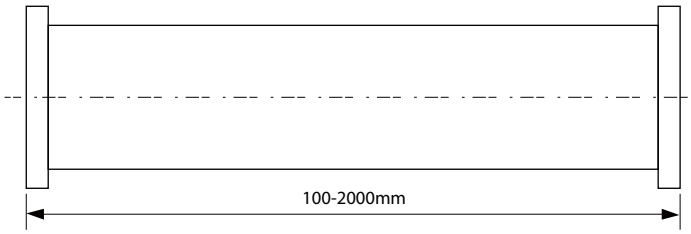
- Stable performance during flexing and twisting

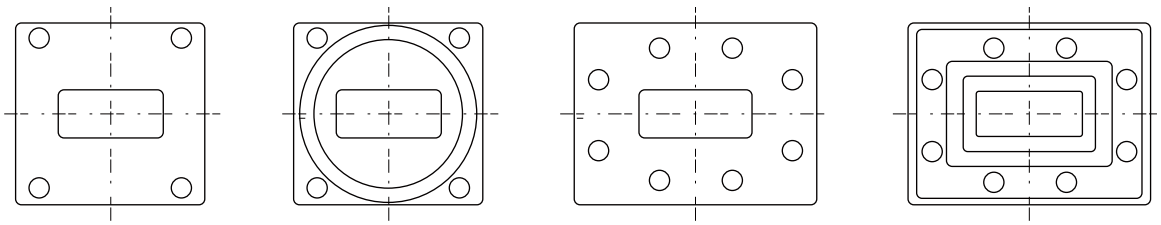




Electrical Specifications	
Operation Frequency Band	7.05 to 10.0 GHz
Insertion Loss	0.30 dB/m
VSWR	1.10
Average Power	1.26 kW
Peak Power	315 kW
General Specifications	
Waveguide Size	WR112|WG15|R84
Interface	UDR84/PDR84
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	262 deg/m
Minimum Bend Radius (E Plane)	76 mm
Minimum Bend Radius (H Plane)	152 mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

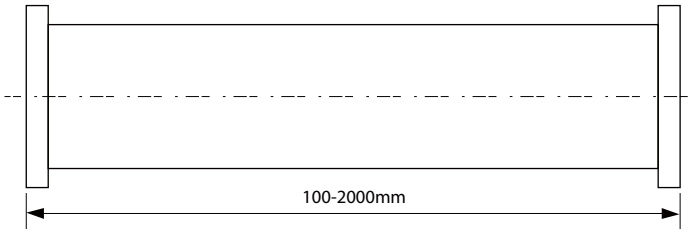
- Low VSWR ,Low loss
- Good flexibility and twistability
- Stable performance during flexing and twisting

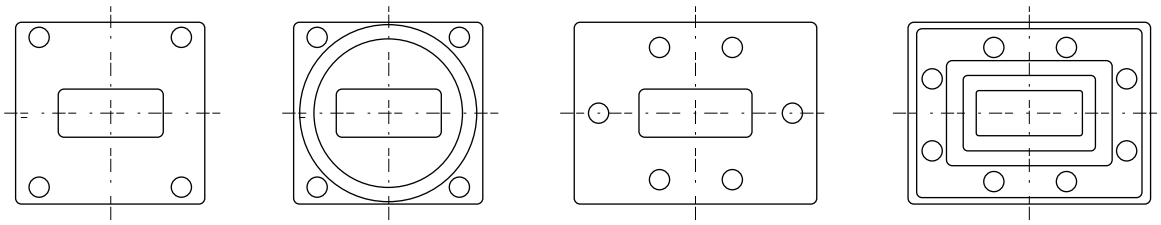




Electrical Specifications	
Operation Frequency Band	8.2 to 12.4 GHz
Insertion Loss	0.40 dB/m
VSWR	1.15
Average Power	0.96 kW
Peak Power	180 kW
General Specifications	
Waveguide Size	WR90|WG16|R100
Interface	UBR100/PBR100 UDR100/PDR100
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	308 deg/m
Minimum Bend Radius (E Plane)	66mm
Minimum Bend Radius (H Plane)	120mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

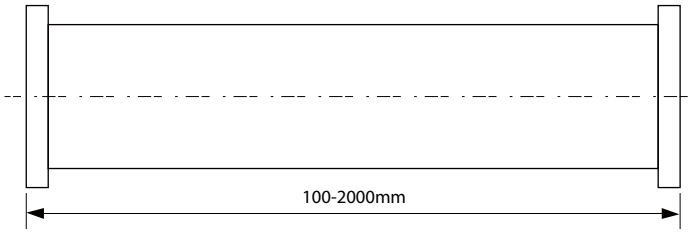
- Low VSWR ,Low loss
- Good flexibility and twistability
- Stable performance during flexing and twisting

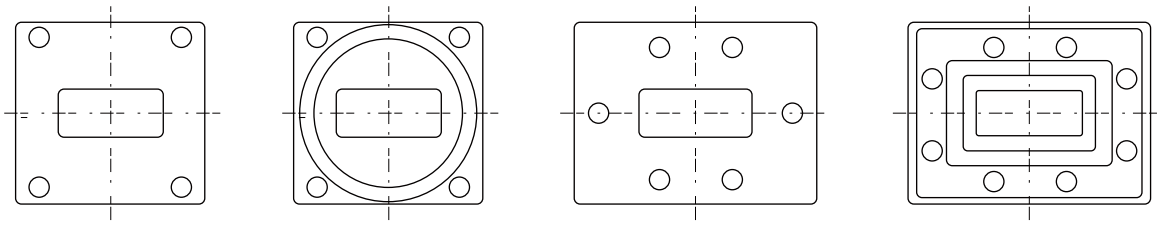




Electrical Specifications	
Operation Frequency Band	10.0 to 15.0GHz
Insertion Loss	0.50 dB/m
VSWR	1.15
Average Power	0.75 kW
Peak Power	140 kW
General Specifications	
Waveguide Size	WR75|WG17|R120
Interface	UBR120/PBR120 UDR120/PDR120
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	430 deg/m
Minimum Bend Radius (E Plane)	64 mm
Minimum Bend Radius (H Plane)	120 mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

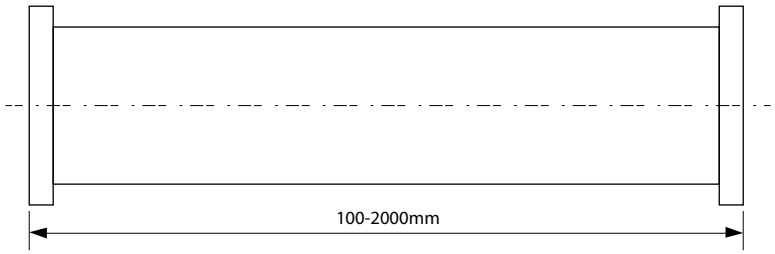
- Low VSWR ,Low loss
- Good flexibility and twistability
- Stable performance during flexing and twisting

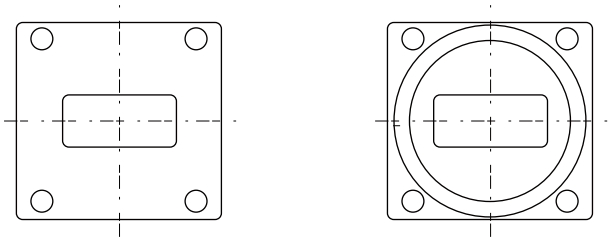




Electrical Specifications	
Operation Frequency Band	12.4 to 18 GHz
Insertion Loss	0.55 dB/m
VSWR	1.15
Average Power	0.40 kW
Peak Power	100 kW
General Specifications	
Waveguide Size	WR62|WG18|R140
Interface	UBR140/PBR140 UDR140/PDR140
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	436 deg/m
Minimum Bend Radius (E Plane)	54 mm
Minimum Bend Radius (H Plane)	105 mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

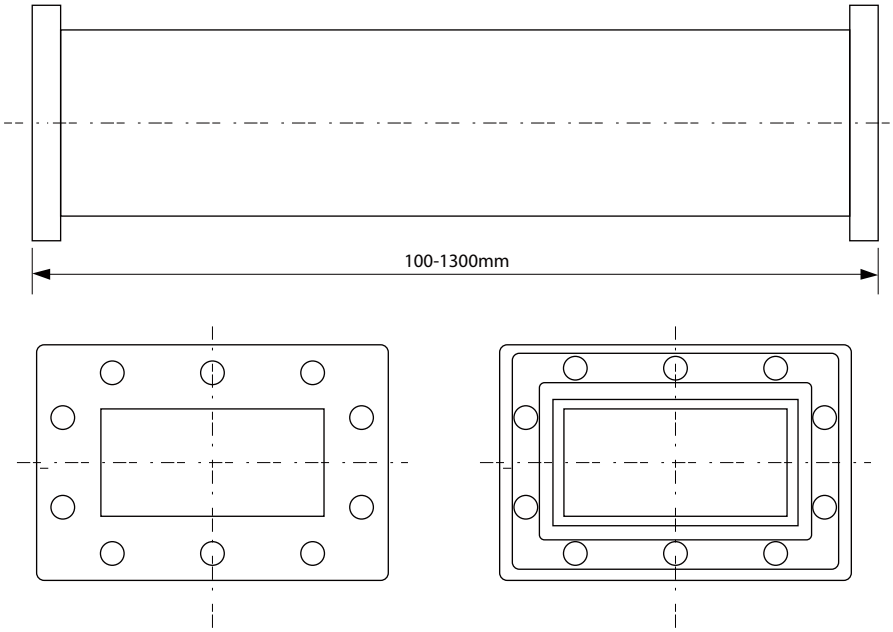
- Low VSWR ,Low loss
- Good flexibility and twistability
- Stable performance during flexing and twisting





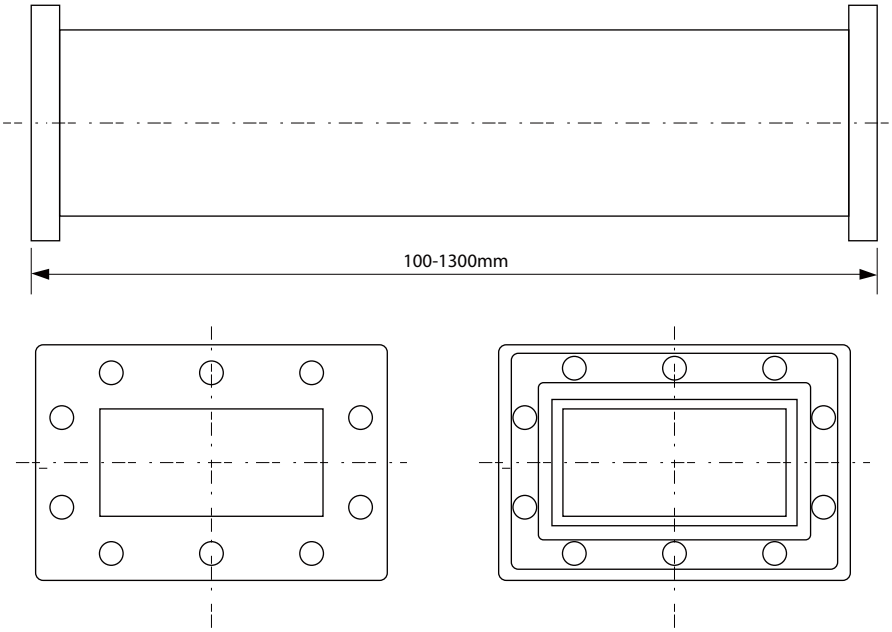
Electrical Specifications	
Operation Frequency Band	17.7 to 26.5 GHz
Insertion Loss	1.30 dB/m
VSWR	1.25
Average Power	0.1 kW
Peak Power	39 kW
General Specifications	
Waveguide Size	WR42|WG20|R220
Interface	UBR220/PBR220
Length (L)	100 - 2000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Twist	510 deg/m
Minimum Bend Radius (E Plane)	41 mm
Minimum Bend Radius (H Plane)	78 mm
Environmental Specifications	
Operation Temperature	-40℃ - +75℃
Storage Temperature	-55℃ - +85℃

- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape



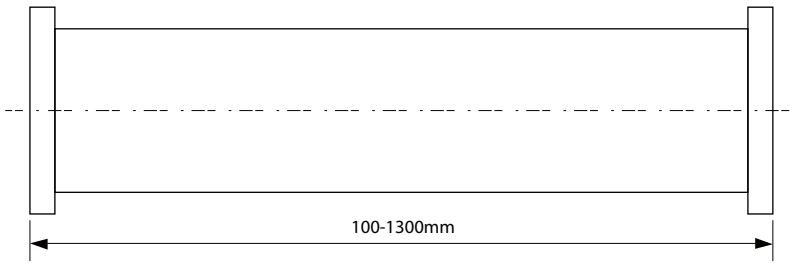
Electrical Specifications	
Operation Frequency Band	1.70 to 2.60 GHz
Insertion Loss	0.13 dB/m
VSWR	1.10
Average Power	20 kW
Peak Power	4.5 MW
General Specifications	
Waveguide Size	WR430|WG8|R22
Interface	UDR22/PDR22
Length (L)	100 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	312 mm
Minimum Bend Radius (H Plane)	624 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

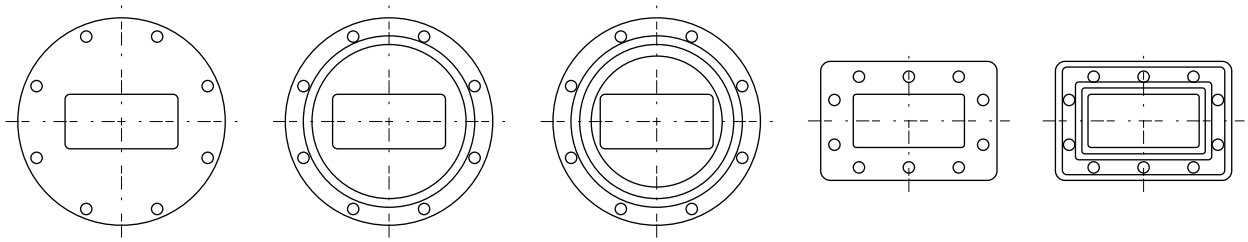
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape



Electrical Specifications	
Operation Frequency Band	2.17 to 3.30 GHz
Insertion Loss	0.14 dB/m
VSWR	1.10
Average Power	16 kW
Peak Power	3.5 MW
General Specifications	
Waveguide Size	WR340|WG9|R26
Interface	UDR26/PDR26
Length (L)	100 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	260 mm
Minimum Bend Radius (H Plane)	520 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

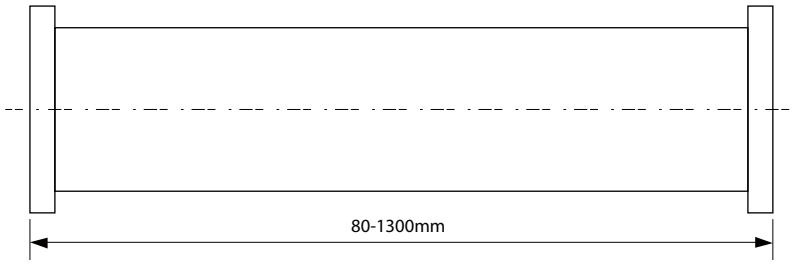
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape

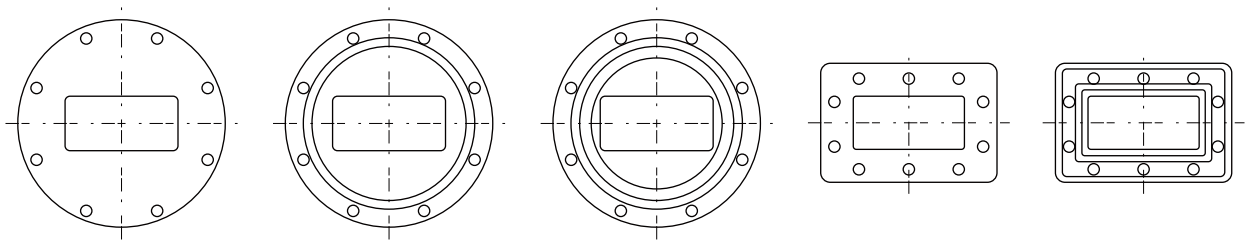




Electrical Specifications	
Operation Frequency Band	2.60 to 3.95 GHz
Insertion Loss	0.15 dB/m
VSWR	1.10
Average Power	10 kW
Peak Power	2.43 MW
General Specifications	
Waveguide Size	WR284|WG10|R32
Interface	UAR32/PAR32/CAR32 UDR32/PDR32
Length (L)	100 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	204 mm
Minimum Bend Radius (H Plane)	408 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

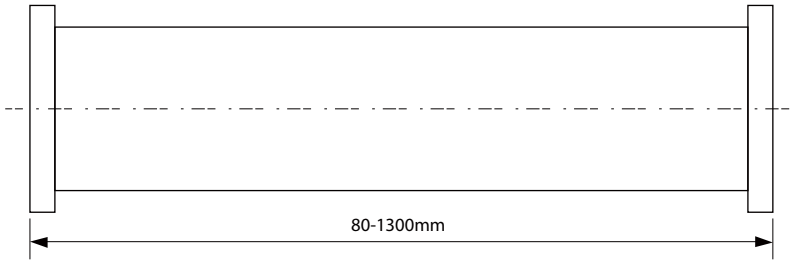
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape

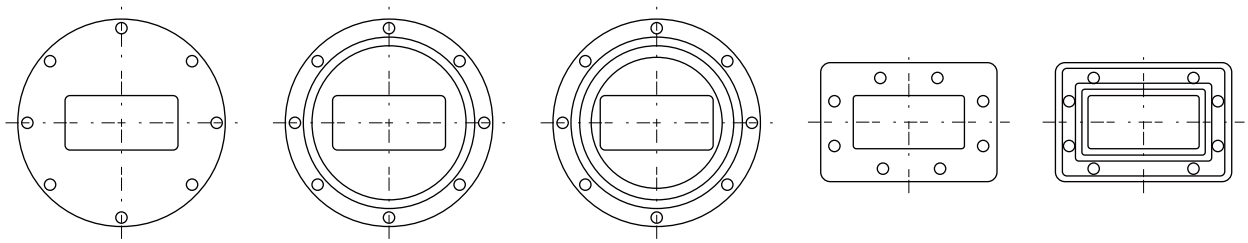




Electrical Specifications	
Operation Frequency Band	3.30 to 4.90 GHz
Insertion Loss	0.17 dB/m
VSWR	1.10
Average Power	8 kW
Peak Power	1.6 MW
General Specifications	
Waveguide Size	WR229|WG11A|R40
Interface	UAR40/PAR40/CAR40 UDR40/PDR40
Length (L)	80 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	166 mm
Minimum Bend Radius (H Plane)	332 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape





Electrical Specifications	
Operation Frequency Band	3.95 to 5.85 GHz
Insertion Loss	0.24 dB/m
VSWR	1.10
Average Power	6.5 kW
Peak Power	1.0 MW
General Specifications	
Waveguide Size	WR187|WG12|R48
Interface	UAR48/PAR48/CAR48 UDR48/PDR48
Length (L)	80 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	160 mm
Minimum Bend Radius (H Plane)	332 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

- Low VSWR ,Low loss
- High power performance
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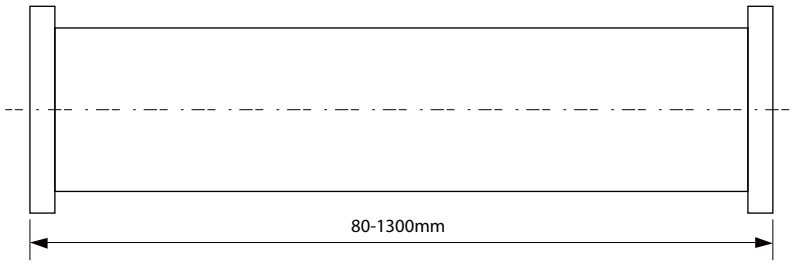
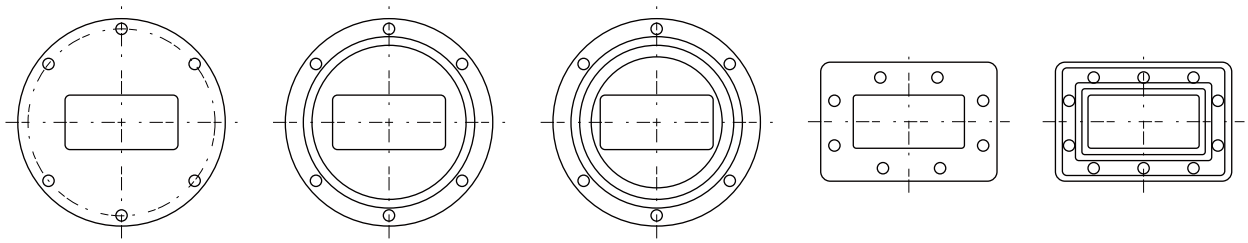
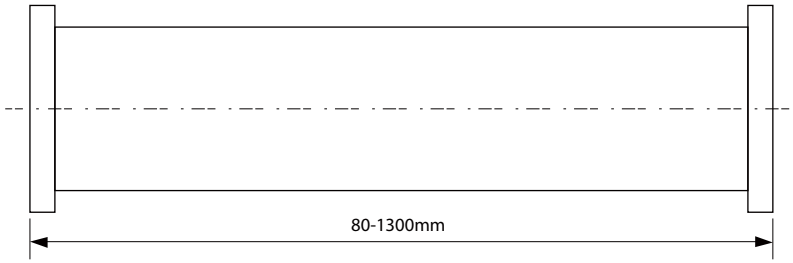
- Preform to be a desired shape

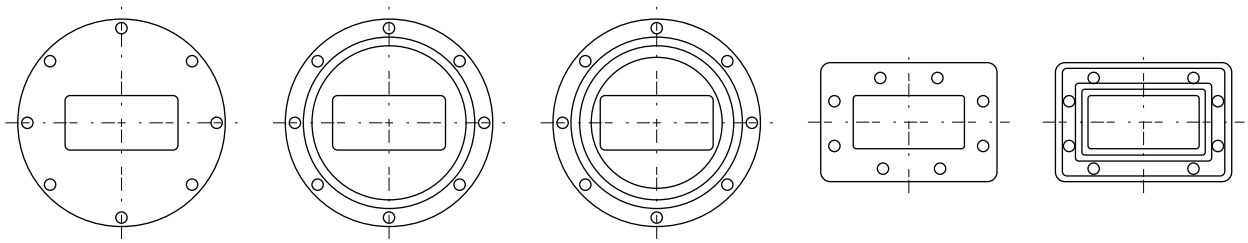




Electrical Specifications	
Operation Frequency Band	4.90 to 7.05 GHz
Insertion Loss	0.26 dB/m
VSWR	1.10
Average Power	6 kW
Peak Power	0.8 MW
General Specifications	
Waveguide Size	WR159|WG13|R58
Interface	UAR58/PAR58/CAR58 UDR58/PDR58
Length (L)	80 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	129 mm
Minimum Bend Radius (H Plane)	258 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

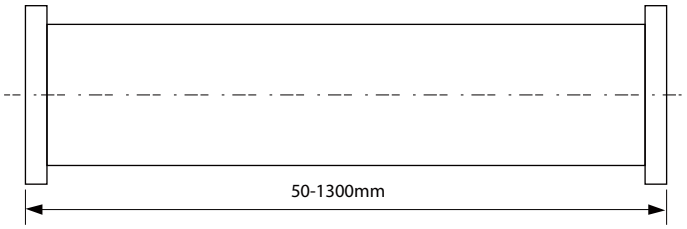
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape

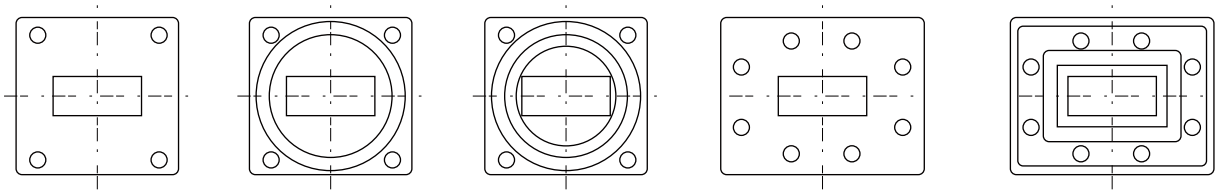




Electrical Specifications	
Operation Frequency Band	5.85 to 8.20 GHz
Insertion Loss	0.30 dB/m
VSWR	1.10
Average Power	5 kW
Peak Power	0.54 MW
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface	UAR70/PAR70/CAR70 UDR70/PDR70
Length (L)	80 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	100 mm
Minimum Bend Radius (H Plane)	200 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

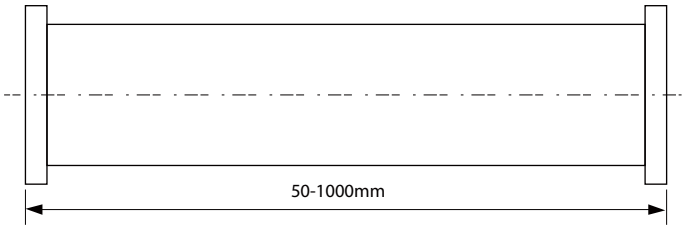
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape

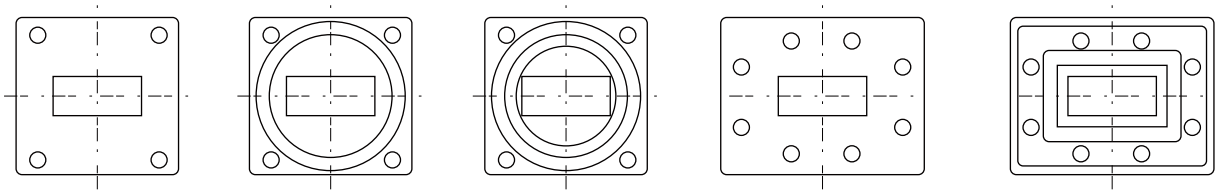




Electrical Specifications	
Operation Frequency Band	7.05 to 10.0 GHz
Insertion Loss	0.35 dB/m
VSWR	1.10
Average Power	4 kW
Peak Power	0.35 MW
General Specifications	
Waveguide Size	WR112|WG15|R84
Interface	UBR84/PBR84/CBR84 UDR84/PDR84
Length (L)	50 - 1300mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	76 mm
Minimum Bend Radius (H Plane)	152 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

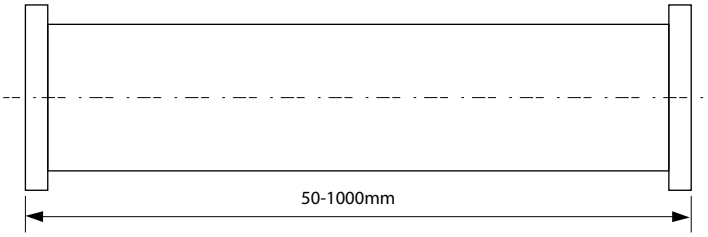
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape

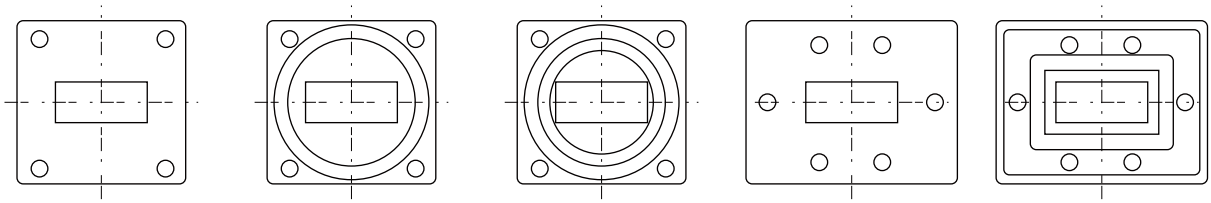




Electrical Specifications	
Operation Frequency Band	8.20 to 12.4GHz
Insertion Loss	0.45 dB/m
VSWR	1.10
Average Power	3 kW
Peak Power	0.23 MW
General Specifications	
Waveguide Size	WR90|WG16|R100
Interface	UBR100/PBR100/CBR100 UDR100/PDR100
Length (L)	50 - 1000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	66 mm
Minimum Bend Radius (H Plane)	120 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

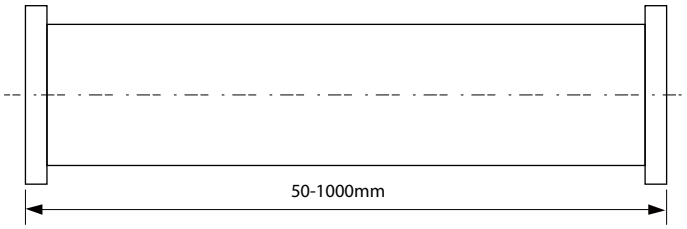
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape

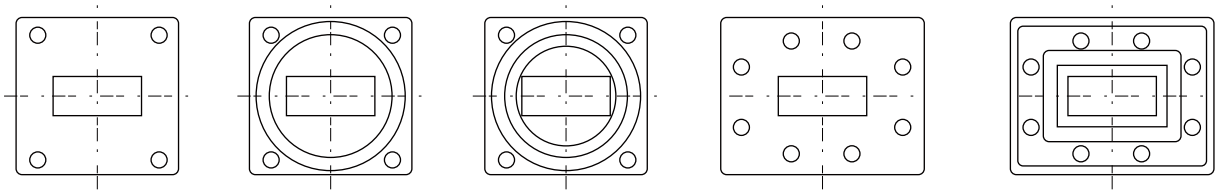




Electrical Specifications	
Operation Frequency Band	10.0 to 15.0 GHz
Insertion Loss	0.65 dB/m
VSWR	1.12
Average Power	1.5 kW
Peak Power	0.17MW
General Specifications	
Waveguide Size	WR75|WG17|R120
Interface	UBR120/PBR120/CBR120 UDR120/PDR120
Length (L)	50 - 1000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	64 mm
Minimum Bend Radius (H Plane)	120 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

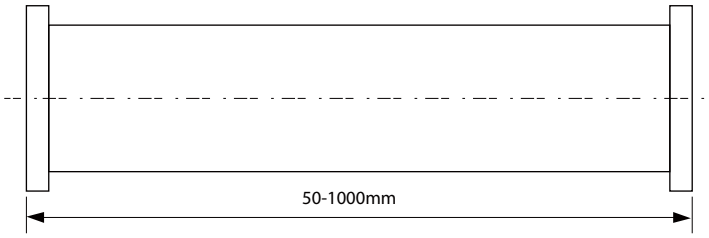
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape





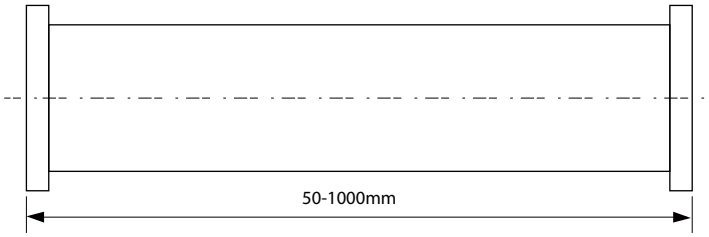
Electrical Specifications	
Operation Frequency Band	12.4 to 18.0 GHz
Insertion Loss	0.74 dB/m
VSWR	1.12
Average Power	1 kW
Peak Power	0.12 MW
General Specifications	
Waveguide Size	WR62|WG18|R140
Interface	UBR140/PBR140/CBR140 UDR140/PDR140
Length (L)	50 - 1000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	54 mm
Minimum Bend Radius (H Plane)	105 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

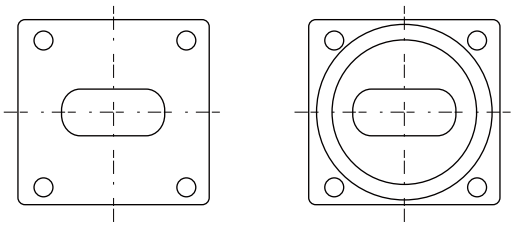
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape



Electrical Specifications	
Operation Frequency Band	17.7 to 26.5 GHz
Insertion Loss	1.40 dB/m
VSWR	1.20
Average Power	0.3 kW
Peak Power	0.048 MW
General Specifications	
Waveguide Size	WR42|WG20|R220
Interface	UBR220/PBR220
Length (L)	50 - 1000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2 MPa
Minimum Bend Radius (E Plane)	41 mm
Minimum Bend Radius (H Plane)	78 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

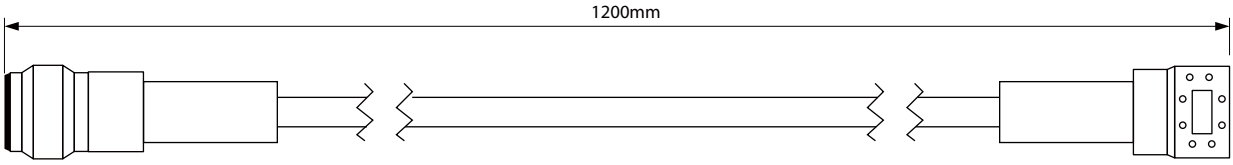
- Low VSWR ,Low loss
- High power performance
- Good flexibility
- Preform to be a desired shape





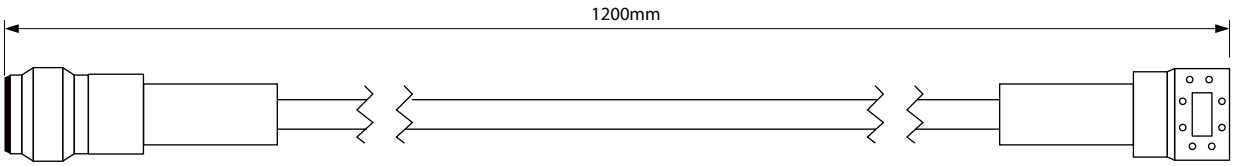
Electrical Specifications	
Operation Frequency Band	26.5 to 40.0 GHz
Insertion Loss	2.40 dB/m
VSWR	1.30
Average Power	0.15 kW
Peak Power	0.025 MW
General Specifications	
Waveguide Size	WR28|WG22|R320
Interface	UBR320/PBR320
Length (L)	50 - 1000mm
Jacket	Silicone Rubber /Polysulfide Sealant
Mechanical Specifications	
Maximum Pressure	0.2MPa
Minimum Bend Radius (E Plane)	20 mm
Minimum Bend Radius (H Plane)	40 mm
Environmental Specifications	
Operation Temperature	-55℃ - +85℃
Storage Temperature	-55℃ - +85℃

- Low VSWR ,Low loss
- Good flexibility
- Interface flexibility，Easy conversion
- Smaller size



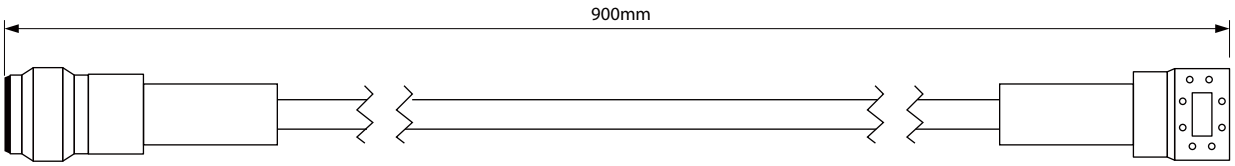
Electrical Specifications	
Operation Frequency Band	5.9 to 7.2 GHz
Insertion Loss	1.0dB
VSWR	1.3
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface 1	UDR70
Interface 2	N-J
Length	900mm
Mechanical Specifications	
Minimum Bend Radius	105mm
Tensile Strength	20kg
Pressurization	50kPa
Environmental Specifications	
Operation Temperature	-40℃ - +80℃
Storage Temperature	-55℃ - +110℃

- Low VSWR ,Low loss
- Good flexibility
- Interface flexibility， Easy conversion
- Smaller size



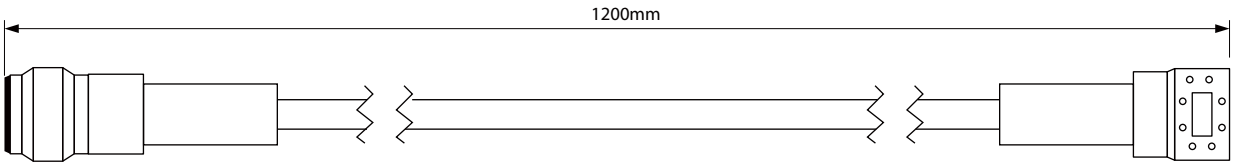
Electrical Specifications	
Operation Frequency Band	5.9 to 7.2 GHz
Insertion Loss	1.2dB
VSWR	1.3
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface 1	UDR70
Interface 2	N-J
Length	1200mm
Mechanical Specifications	
Minimum Bend Radius	105mm
Tensile Strength	20kg
Pressurization	50kPa
Environmental Specifications	
Operation Temperature	-40℃ - +80℃
Storage Temperature	-55℃ - +110℃

- Low VSWR ,Low loss
- Good flexibility
- Interface flexibility，Easy conversion
- Smaller size



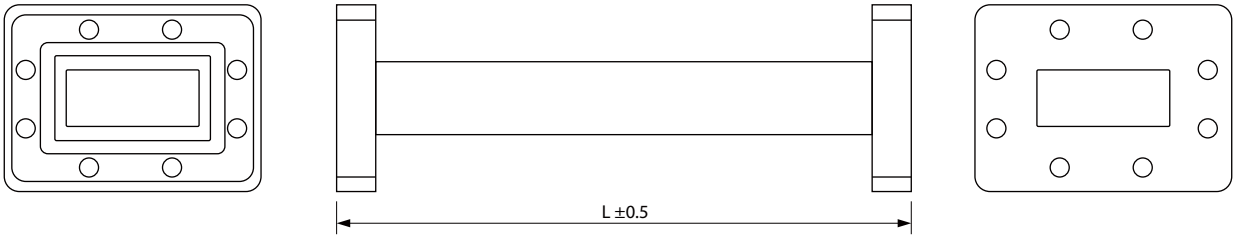
Electrical Specifications	
Operation Frequency Band	7.1 to 8.5 GHz
Insertion Loss	1.0dB
VSWR	1.3
General Specifications	
Waveguide Size	WR112|WG15|R84
Interface 1	UDR84
Interface 2	N-J
Length	900mm
Mechanical Specifications	
Minimum Bend Radius	105mm
Tensile Strength	20kg
Pressurization	50kPa
Environmental Specifications	
Operation Temperature	-40℃ - +80℃
Storage Temperature	-55℃ - +110℃

- Low VSWR ,Low loss
- Good flexibility
- Interface flexibility， Easy conversion
- Smaller size



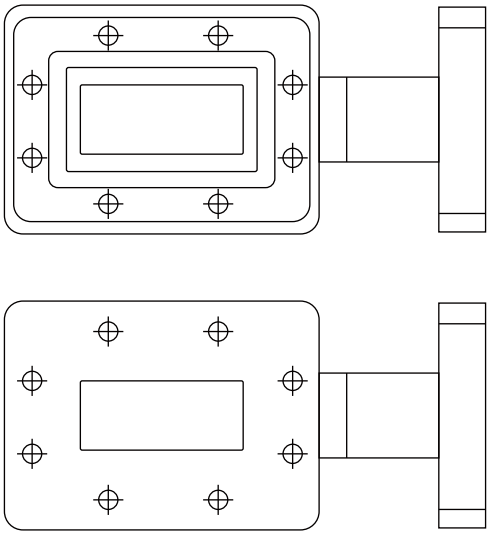
Electrical Specifications	
Operation Frequency Band	7.1 to 8.5 GHz
Insertion Loss	1.2dB
VSWR	1.3
General Specifications	
Waveguide Size	WR112|WG15|R84
Interface 1	UDR84
Interface 2	N-J
Length	1200mm
Mechanical Specifications	
Minimum Bend Radius	105mm
Tensile Strength	20kg
Pressurization	50kPa
Environmental Specifications	
Operation Temperature	-40℃ - +80℃
Storage Temperature	-55℃ - +110℃

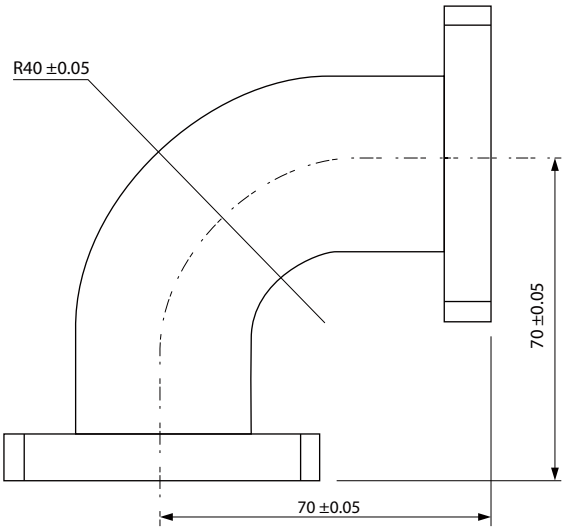
- Low VSWR ,Low loss
- High power performance



Electrical Specifications	
Operation Frequency Band	5.82 to 8.20 GHz
Insertion Loss	0.20dB/m
VSWR	1.10
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface	PDR/UDR/FDM70/FDP70
Length (L)	150/300/400/500/700mm
Inner Size (mm)	34.85*15.80
Material	Copper (Silver-plate)
Outer Surface treatment	Spray-paint (black)
Environmental Specifications	
Operation Temperature	-55°C - +85°C
Storage Temperature	-55°C - +85°C

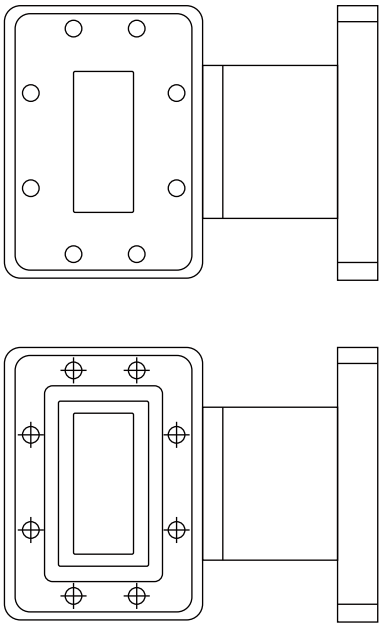
- Low VSWR ,Low loss
- High power performance

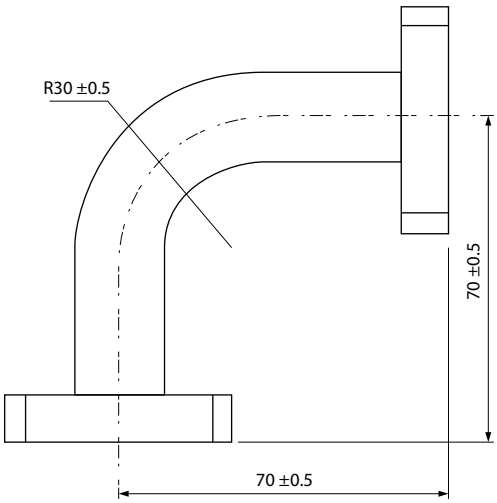




Electrical Specifications	
Operation Frequency Band	5.85 to 8.20 GHz
Insertion Loss	0.20dB/m
VSWR	1.10
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface	FDM70/FDP70
Length (L)	H 70mm*70mm
Inner Size (mm)	34.85*15.80
Material	Copper (Silver-plate)
Outer Surface treatment	Spray-paint (black)
Environmental Specifications	
Operation Temperature	-55°C - +85°C
Storage Temperature	-55°C - +85°C

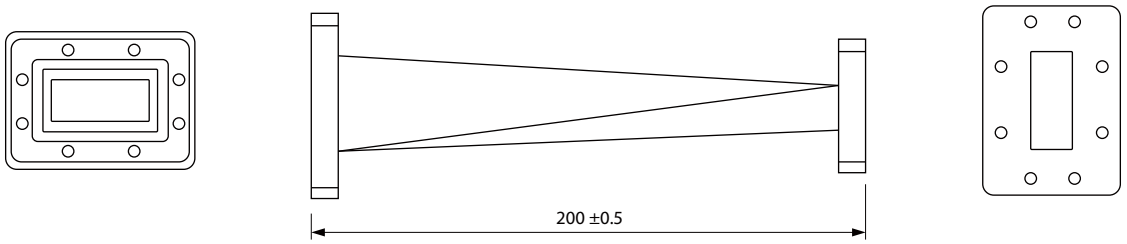
- Low VSWR ,Low loss
- High power performance





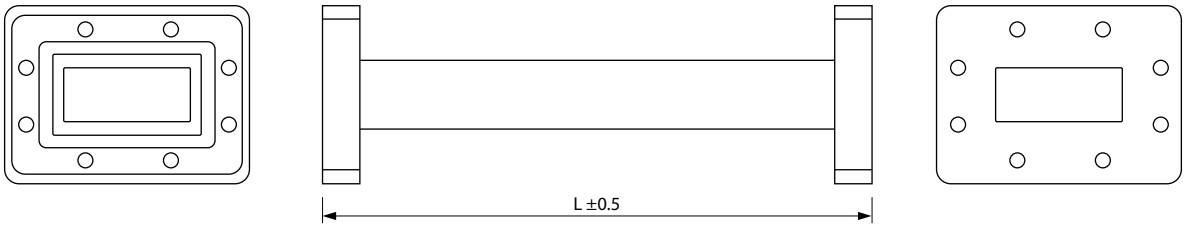
Electrical Specifications	
Operation Frequency Band	5.85 to 8.20 GHz
Insertion Loss	0.20dB/m
VSWR	1.10
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface	FDM70/FDP70
Length (L)	E 70mm*70mm
Inner Size (mm)	34.85*15.80
Material	Copper (Silver-plate)
Outer Surface treatment	Spray-paint (black)
Environmental Specifications	
Operation Temperature	-55°C - +85°C
Storage Temperature	-55°C - +85°C

- Low VSWR ,Low loss
- High power performance



Electrical Specifications	
Operation Frequency Band	5.85 to 8.20 GHz
Insertion Loss	0.20dB/m
VSWR	1.10
General Specifications	
Waveguide Size	WR137|WG14|R70
Interface	PDR70/UDR70
Length (L)	200 T 90mm
Inner Size (mm)	34.85*15.80
Material	Copper (Silver-plate)
Outer Surface treatment	Spray-paint (black)
Environmental Specifications	
Operation Temperature	-55°C - +85°C
Storage Temperature	-55°C - +85°C

- Low VSWR ,Low loss
- High power performance



Electrical Specifications	
Operation Frequency Band	10 to 15 GHz
Insertion Loss	0.20dB/m
VSWR	1.10
General Specifications	
Waveguide Size	WR75|WG17|R120
Interface	FBM120/FBP120
Length (L)	250mm
Inner Size (mm)	19.85*9.53
Material	Copper (Silver-plate)
Outer Surface treatment	Spray-paint (black)
Environmental Specifications	
Operation Temperature	-55°C - +85°C
Storage Temperature	-55°C - +85°C

Optical Communication

With the popularity and maturity of optical fiber communication, optical fiber communication applications increasingly widespread, the demand for portable optical measuring instruments is growing, especially in the construction and maintenance of optical communications engineering networks mostly work in the field of construction and equipment functional requirements and metrics tools are high. Therefore, the development of a plurality of wavelengths of light can power real-time power monitoring sub-wavelength, and compact, powerful, cheap and portable intelligent measurement instrument is the majority of optical communications network testing and construction users expect.

PM refers to the instrument used to measure absolute or relative optical power loss through a length of optical fiber optical power. Multichannel optical power meter is used to analyze the performance of multi-channel loss passive optical devices can be accurately and rapidly measure the loss of the PLC, quick and easy operation, low power consumption.

it not only has smart appearance, backlit display, automatic shutdown feature , also has a wide range of tests, test accuracy and precision universal interface design. By using the detection module integrated design, full-featured, small size, light weight, easy to carry; set multi-channel photodetector, channel selector circuit on the module, the signal conversion and amplification circuitry, analog / digital converter and information treatment with the calculator, and successively connected, a calculator connected to the information processing and external communication interfaces, and the external data memory interface man-machine interface module, the detection module is connected with the power supply module.

By using the detection module integrated design, full-featured, small size, light weight, easy to carry; by providing external communication interface and the external data memory interface, a connection to an external storage module and an external communication module; use rechargeable batteries, can be repeated multiple use and improve efficiency; man-machine interface module display and keyboard settings, easy to operate and flexible to adapt to the operator's habits.

- PLC Device
- Multi-wavelength & Power measurement for LTE, CWDM, PON system
- Automatic CWDM-18channel (Wavelength & Power) measurement at a time
- CWDM Scan with Color Graph
- Save and Recall about 1,000 data
- Software Provided for the self-management data
- Auto Power-Off

Specifications	
Channel Bandwidth	8 nm
Measure accuracy	± 0.5 dB @ -40 dBm
Number of Channels	18
Operation Wavelength	1270 to 1610 nm
Channel Spacing	20 nm
Measure Speed	0.8 Second Max.
Weight	0.3 kg
Optical Connector	SC/PC (FC, ST, LC Adapter)
Battery	Li-Polymer, 1800mAh/3.7V
Battery working time	420 Minutes @ fully charged
Display	2.8” TFT-LCD, 16bit color, 240*320
Measure Range	-40 to 10 dBm
Display Resolution	0.01 dB
Dimension	155*78*34 mm
Temperature(Ambient Range)	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Humidity(non-condensing), max.	95% (Operation)
	85% (Storage)

• PLC Device

• Multi-wavelength & Power measurement for LTE, CWDM, PON system

• Automatic CWDM-18channel (Wavelength & Power) measurement at a time

• CWDM Scan with Color Graph

• Save and Recall about 1,000 data

• Software Provided for the self-management data

• Auto Power-Off

Specifications	
Channel Bandwidth	8 nm
Measure accuracy	± 1.0dB @ -40 dBm
Number of Channels	18
Operation Wavelength	1270 to 1610 nm
Channel Spacing	20 nm
Measure Speed	0.8 Second Max.
Weight	0.3 kg
Optical Connector	SC/PC (FC, ST, LC Adapter)
Battery	Li-Polymer, 1800mAh/3.7V
Battery working time	420 Minutes @ fully charged
Display	2.8” TFT-LCD, 16bit color, 240*320
Measure Range	-40 to 10 dBm
Display Resolution	0.01 dB
Dimension	155*78*34 mm
Temperature(Ambient Range)	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Humidity(non-condensing), max.	95% (Operation)
	85% (Storage)

- PLC Device
- DWDM(48 channel)Measurement Solution
- Automatic DWDM-48channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- DWDM Scan with Color Graph
- Save and Recall about 300 data
- Software Provided for the self-management data
- Auto Power-Off

Specifications	
Number of Channels	48
Channel Frequency	196.4~191.7THz
Channel Bandwidth	1526.44~1563.86 nm
Measurement Speed	3 Sec. (all 48ch.)
Measurement Range	+10 ~ -40dBm
Measure Accuracy	± 1.0dB @ -30 dBm
Weight	0.3 kg
Display Resolution	0.01dB
Channel Spacing	100 GHz
Optical Connector	SC/PC(FC,ST,SC,LC adapter)
Battery	Li-Polymer, 1800mAh/3.7V
Battery Life(Min)	420 (Fully charged)
Display	2.8” TFT-LCD, 16bit color, 240*320
Dimension	155*78*34 mm
Temperature(Ambient Range)	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Humidity(non-condensing), max.	95% (Operation)
	85% (Storage)

- PLC Device
- DWDM(96channel)Measurement Solution
- Automatic DWDM-96channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- DWDM Scan with Color Graph
- Save and Recall about 300 data
- Software Provided for the self-management data
- Auto Power-Off

Specifications	
Number of Channels	96
Channel Frequency	196.45~191.7THz
Channel Bandwidth	1526.05~1563.86 nm
Measurement Speed	4 Sec. (all 96ch.)
Measurement Range	+10 ~-40dBm
Measure Accuracy	± 1.0dB @ -40 dBm
Display Resolution	0.01dB
Display Unit	dB, dBm,nm,THz
Weight	0.6 kg
Channel Spacing	50GHz, 100GHz
Maximum Total Input Power	500mW; 27dBm
Optical Connector	SC/PC Standard
Battery	Li-Polymer, 4800mAh/3.7V
Battery Life(Min)	620 (Fully charged)
Current Consumption(Max)	0.25A
Electricity Consumption	0.925W
Display	3.5” TFT-LCD, 16bit color, 240*320
Dimension	196*95*40 mm
Humidity(non-condensing), max.	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Temperature(Ambient Range)	95% (Operation)
	85% (Storage)

- PLC Device
- LAN WDM Grid for 100 Gbps Application
- Automatic 8 channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- Scan with Color Graph
- Save and Recall about 1,000 data
- Software Provided for the self-management data
- Auto Power-Off

Specifications	
Number of Channels	8
Channel Spacing	800GHz
Channel Frequency	233 to 227.4THz
Channel Bandwidth	1286.66 - 1318.35 nm
Measurement Speed	0.8 Sec. Max
Measurement Range	+10 ~ -40dBm
Weight	0. 3 kg
Measure Accuracy	± 1.0dB @ -20 dBm
Display Resolution	0.01dB
Optical Connector	SC/PC (FC,ST,SC,LC adapter)
Battery	Li-Polymer, 1800mAh/3.7V
Battery Life(Min)	420 (Fully charged)
Display	2.8" TFT-LCD, 16bit color, 240*320
Dimension	155*78*34mm
Humidity(non-condensing), max.	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Temperature(Ambient Range)	95% (Operation)
	85% (Storage)

- Scan Color Graph
- Save and Recall about 1000 data
- Software Provided for Data management
- Auto Power-Off
- Using MPO connector

Specifications	
Number of Channels	12
Display Units	dB, dBm
Operating Wavelength	1310nm,1550(SM)/850nm 1310nm,1550(MM) nm
Measurement Speed	0.8 Sec. Max
Measurement Range	+10 - -40dBm
Measure Accuracy	± 0.5dB @ -20 dBm
Weight	0.3 kg
Display Resolution	0.01dB
Optical Connector	MPO connector
Battery	Li-Polymer, 1800mAh/3.7V
Battery Life(Min)	420 (Fully charged)
Display	2.8” TFT-LCD, 16bit color, 240*320
Dimension	155*78*34mm
Temperature(Ambient Range)	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Humidity(non-condensing), max.	95% (Operation)
	85% (Storage)

Feature

• Automatic Detection of Power&Wavelength

• Support SNMP v1.0

• LOS etection & Alarm

• Real time power monitoring

Applications

• Remote management of DWDM

• Real-time remote monitoring optical facilities

• Fault isolation of optical lines

• Remote monitoring of system turn-up

Specifications	
Number of Channels	48
Channel Spacing	100GHz
Channel Frequencies	196.4 - 191.7THz
	1526.44 - 1563.86nm
Optical Power Display	+0.01~-40 dBm
Optical Power Accuracy	± 0.5dB @ -40 dBm
Optical Power Resolution	0.01 dB
Optical Connector	SC/PC
Power Supply	DC 5V
Power Consumption	1.75W(Max)
Communication Interface	Mini-USB,RJ-45(Ethernet 10/100Mbps)
Dimension	105*166*55mm
Temperature(Ambient Range)	-20 to +55 °C(Operation)
	-35 to +65°C(Storage)
Humidity(non-condensing), max.	95% (Operation)
	85% (Storage)

- Automatic Wavelength & Power Detection
- Rugged,Shock & Water proof for field use
- Compact,Light & Cost-effective
- Quick and easy to operate

Specifications		
Operation Wavelength		1270 - 1610nm(excluding 1370,1390)
Measurement Range		-50 - +4dBm
Resolution		0.01dB
Accuracy		±0.5 dB @ - 20 dBm
Display Unit		nm, dB, dBm
Optical Interface		SC/PC,FC/APC
Data Storage		300records
Battery	Type	Li-ion Polymer Rechargeable
	Power	3.7V
	Life	25 hrs
	Charging Time	4 hrs
Accessories		5V AC adapter Operation Manual
Dimension		138*73*30mm
Weight		0.2kg
Temperature(Ambient Range)		-10 to +50 °C(Operation)
		-30 to +60°C(Storage)
Humidity(non-condensing), max.		95% (Operation)
		85% (Storage)

The UCC was designed as an alternative to GTEM-Cells for pre- compliance measurements as well as for the fields of research and science. The walls and the ceiling of the chamber are lined completely with ferrite absorbers and the rear wall next to the EUT has an additional hybrid absorber lining of 6 m^2, which qualifies the chamber for measurements in the frequency range from 30 MHz to 18 GHz. The most important advantages, compared to GTEM-Cells, are the facts that the staff can walk into this chamber (more simple EUT setup), the practical test setup with corresponding cable feeding to peripheral equipment, as well as the possibility of taking larger test specimen into the chamber. The UCC can be used for pre-compliance radiated emission measurements and immunity tests according to the standard IEC/EN 61000-4-3 in 1.0 m measuring distance.
In addition, it is very well suited for pre-compliance measurements of automotive components according to DIN/ISO 11452-2 and EN 55025 (CISPR 25). If required, the UCC can also be used as a normal shielded room for conducted testing. Because of its small dimensions the chamber can be placed in normal laboratories or office rooms.

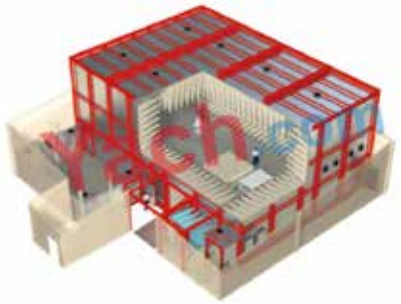
Specifications	
External dimensions (L x W x H)	4,280 mm x 3,080 mm x 2,550 mm
Frequency range	30 MHz to 18 GHz
Measuring distance	1m
Absorber lining	
Walls and ceiling	Ferrite absorbers, type F006
Rear wall showing to EUT	6m^2 hybrid absorbers, type HF300
Floor	2m^2 ferrite absorbers between EUT and antenna
Emission measurements	Pre-compliance measurement
Immunity tests	"Full compliance measurement acc. to IEC/EN 61000-4-3 for a measuring distance of 1.0 m"
Size of the uniform area acc. to IEC/EN 61000-4-3	0.5 m x 0.5 m
Max. deviation	0 dB / +6dB at 4 of 4 measuring points
Standard Equipment	**Options**
1 access door, 1.013 x 2.043 mm	3 phase mains filter
1 honeycomb insert for ventilation	Signal and / or data line filter
1 mains filter 250 VAC, 2 x 16 A	Fan
1 penetration panel	Antenna tripod
"Feed-throughs: 4 x “N”, 4 x “BNC” and 1 x for fibre optics"	Video and / or audio system
Electric installation	Verification of the chamber
Illumination	Measuring equipment
Raised floor	Other extras
Absorber lining	

The AVTC is a standard chamber for radiated emission and immunity testing on vehicles and components acc. to CISPR 12 / 25 and ISO 11451-2 / ISO 11452-2.
The standard dimensions of the chamber allow vehicle testing up to a length of 5.5 m (on turntable) and a measuring distance of 3.0 m.
With additional (optional available) floor absorbers it is simply possible to upgrade the chamber for emission measurements acc. to EN 55022 (CISPR 16-1-4) and immunity tests acc. to IEC/EN 61000-4-3.

Specifications	
External dimensions (L x W x H)	11,480 mm x 9,380 mm x 6,000 mm
Frequency range	20 MHz to 18 GHz (Optional 40 GHz)
Measuring distance	3m
Absorber lining	
Walls and ceiling	Hybrid absorber, type H600
Floor	Optional
Emission measurements	Full compliant acc. to CISPR 12 / CISPR 25 and EN 55022 (30 MHz-1 GHz) Optional (with floor absorbers) acc. to CISPR 16-1-4 from 1-18 GHz
Immunity tests	Full compliant acc. to ISO 11451-2 and ISO 11452-2 "Optional (with additional floor absorbers) full compliant acc. to IEC/EN 61000-4-3"
Standard Equipment	**Options**
1 access door, 1.013 x 2.043 mm	Additional mains filters
1 sliding door, 3.038 x 3.093 mm	Signal and / or data line filters
1 mains filter 440 VAC, 4 x 32 A	Non-combustible absorbers
2 penetration panels	Measuring equipment
Electric installation	Floor absorbers
"Feed-throughs: 8 x “N”,	Video and / or audio system
8 x “BNC” and 4 x fibre optics"	
Illumination	
Raised floor	
Ground plane	
Turntable, 5.0 m diameter, 8.0 to	
Antenna Mast, 1-4 m	
Controller for mast and turntable	
Absorber lining	
10 honey comb inserts for ventilation	

The SAC-3 / -5 Plus is a full-compliant semi anechoic chamber for a measuring distance of 3 or 5 meters. It´s dome shaped roof as well as it´s optimized absorber layout, with ferrite and partial hybrid absorber lining for the frequency range from 26 MHz to 18 GHz, leads to minimized reflections. The SAC-3 / -5 Plus delivers outstanding performances for both, NSA (±3.5 dB) from 30 MHz to 1 GHz, and SVSWR (5 dB) from 1 GHz to 18 GHz conforming to the site validation standard CISPR 16-1-4 for SVSWR. The standard version does already include the antenna mast for 1-4 m height scan, the turntable as well as their controller.

Specifications	
Products	SAC-3 Plus S / SAC-3 Plus L / SAC-5 Plus
External dimensions (L x W x H)	8,480 mm x 6,530 mm x 6,000 mm（SAC-3 Plus S） 9,230 mm x 6,530 mm x 6,000 mm（SAC-3 Plus L） 12,680 mm x 7,730 mm x 6,000 mm（SAC-5 Plus）
Frequency range	26 MHz - 18 GHz
Measuring distance	3.0 m / 5.0 m
Absorber lining	
Walls / ceiling	Full-lining with ferrite absorbers F006 and partial lining with additional hybrid absorbers H600 and H1000
Floor	"9 m² transportable pyramid absorbers P600 for immunity tests 14.2 m² transportable pyramid absorbers P450 Plus for emission measurement > 1 GHz"
Emission measurement	"Full compliance acc. to EN 55022 and CISPR 22 class B (30 MHz - 1 GHz) Full compliance acc. to CISPR 16-2-3 (1 GHz - 18 GHz)"
Immunity tests	Full compliance acc. to IEC/EN 61000-4-3
Max. deviation from NSA acc. to CISPR 16-1-4	± 4 dB, optional ± 3.5 dB
Max. Site-VSWR acc. to. CISPR 16-1-4	6 dB, optional 5 dB
Size of test volume	1.2 m diameter / 1.2 m height | 2.0 m diameter / 2.0 m height
Size of uniform area	1.5 m x 1.5 m
Max. deviation	0 dB / + 6 dB for 75 % of 16 measuring points
Standard Equipment	Options
Absorber lining	3 phase mains filter
4-6 honeycomb inserts for ventilation	Signal and / or data line filter
1 mains filter, 250 VAC, 2 x 32 A	Fan
Turntable	Antenna tripod
2 penetration panels	Video and / or audio system
Antenna mast	Measurement of the chamber
Electric installation	Measuring equipment
Illumination	Non-combustible hybrid absorbers
Groundplane	
Raised floor	
"1 access door, 1.238 x 2.118 mm (3-Plus) /1.538 x 2.118 mm (5-Plus)"	
"Feed-throughs: 6 x “N”, 6 x “BNC” and 2 x for fibre optics"	
1 mains filter, 440 V, 50 / 60 Hz, 4 x 32 A (SAC-5Plus)	
Controller for antenna mast and turntable	



Anechoic chambers for 10.0 m measuring distance are planned and realized almost exclusively at customers´ requirements. However, for a first impression about size and performance of a SAC-10 we defined below 4 standard model with quiet zone diameter from 2.0 m to 5.0 m. The planning of an anechoic chamber should be made as early as possible. Typical interfaces are as follows: any kind of supply media, spaces reserved in the concrete floor for a turntable / rolling test stands or driving pits for sliding gates, as well as a possible fastening of the room construction to the building construction. Furthermore, possible interfaces to emergency control / alarm systems. Such systems are normally not required when using our non-combustible pyramid absorbers in “thin-film” technology.

Specifications	
Diameter of quiet zone	2.0 m/3.0 m/4.0 m/5.0 m
External dimensions (L x W x H)	21,080 mm x 13,730 mm x 8,550 mm (SAC-10-2) 21,680 mm x 13,730 mm x 8,550 mm (SAC-10-3) 22,580 mm x 15,980 mm x 9,000 mm (SAC-10-4) 23,480 mm x 16,580 mm x 9,000 mm (SAC-10-5)
Frequency range	26 MHz to 18 GHz
Measuring distance	3 m and 10 m
Absorber lining	
Walls / Ceiling	Long Pyramid absorbers P 2200 and P2400
Floor	Movable absorbers for immunity tests ac. to IEC/EN 61000-4-3 and for emission measurements >1 GHz (SVSWR) included
Emission measurements	Full compliance acc. to CISPR 16-2-3 and CISPR 22
"Max. deviation from normalized	±3.5 dB
Site attenuation acc. to. CISPR 16-1-4" Max. Site-VSWR acc. to. CISPR 16-1-4	6 dB
Immunity tests	Full compliance acc. to IEC/EN 61000-4-3
Size of uniform area	1.5 m x 1.5 m
Max. deviation	0 dB / +6 dB at 75 % of 16 measuring points
Standard Equipment	**Options**
1 sliding door, 1 single leaf door	3 phase mains filter
12-16 honeycomb inserts for ventilation	Signal and / or data line filter
1 mains filter, 250VAC, 2 x 16A	Fan
1 mains filter, 440VAC, 4 x 64A	Antenna tripod
Penetration panels	Video and / or audio system
Electric installation	Measurement of the chamber
Illumination	Measuring equipment
Groundplane	Non-combustible pyramid absorbers
False floor	
Absorber lining	
1 Turntable	
1 Antenna mast	
1 Controller for antenna mast and turntable	
Feed-throughs: “N”, “BNC” and fibre optics	

Model is a complete cylindrical near-field system ideal for measuring broad-beam (azimuth) antennas with apertures less than eight feet making it ideal for testing stacked linear arrays. The 600C-8 consists of a vertical probe tower with an 8’ (2.4 m) travel, high capacity stepper motor based azimuth positioner, control computer, software and cabling. The high capacity probe stage can accommodate probes as large as a WR650 including optional roll and translation stages. This simple design is easy to assemble and align, accurate, and can be dismantled for transport or storage within one day.

Specifications	
Construction:	Steel tower and base; separate azimuth stage
Drive System:	Precision Stepper Motor; rack and pinion
Scan Area:	360° in azimuth; 8’ (2.4 m) Y
Y-axis Linearity Uncorrected:	<0.003” (0.076 mm) RMS
Resolution:	0.0125° azimuth; 0.001” (0.025 mm) Y
Position Repeatability:	0.03° azimuth; 0.002” (0.05 mm) (Y) RMS
Scan Speed:	20°/s azimuth; 15 in/s (0.38 m/s) Y
Azimuth Stage Axial Load:	1595 lb. (725 kg) max.
Probe Carriage Capacity:	50 lb (22.7 kg) maximum recommended, WR650
System Controller:	NSI controller with serial and parallel I/O interfaces
Measurement Workstation:	Measurement workstation computer with large LCD monitor.
Sepper Motor Power Amplifier:	EIA 19” rack mount.(7” high x 14” deep)
Motor Cables:	Quick-connect; 40’ (12 m)
Scanner Absorber:	Absorber Kit (8” pyramidal cone)
Probe:	Optional
Probe Absorber:	Pyramidal Cone Absorber (8”)
Probe Mount:	Angle Bracket-allows mounting probe in “V” or “H” orientation
RF Cables:	Qty. 4 - Flexible 15’ (4.5 m) with SMA (m-m) coaxial terminations; DC-18 GHz
Rotary Joint:	Qty 1 DC-18 GHz on Az Stage
Supported RF Devices:	NSI Panther Receiver Subsystem or selection of Keysight, Rohde & Schwarz and Anritsu VNA's (contact NSI for a complete list)
Power:	100-120/200-240 V AC, 50/60 Hz, 500 watts

This type of test turntable with azimuth elevation range of structure form, suitable for base station antennas, microwave communication antennas and antenna test. In addition, the turntable due to structural characteristics are also applicable to satellite communication antenna servo test. Therefore, this model has the characteristics of high practicability, wide application area and so on. In the long-term practice, the model has received good results.

Antenna turntable widely used in various types of antenna test sites, realize the measurement of various parameters of the antenna with the turntable through this and other devices, we can be customized according to the actual needs of customers a variety of turntable and excellent performance.

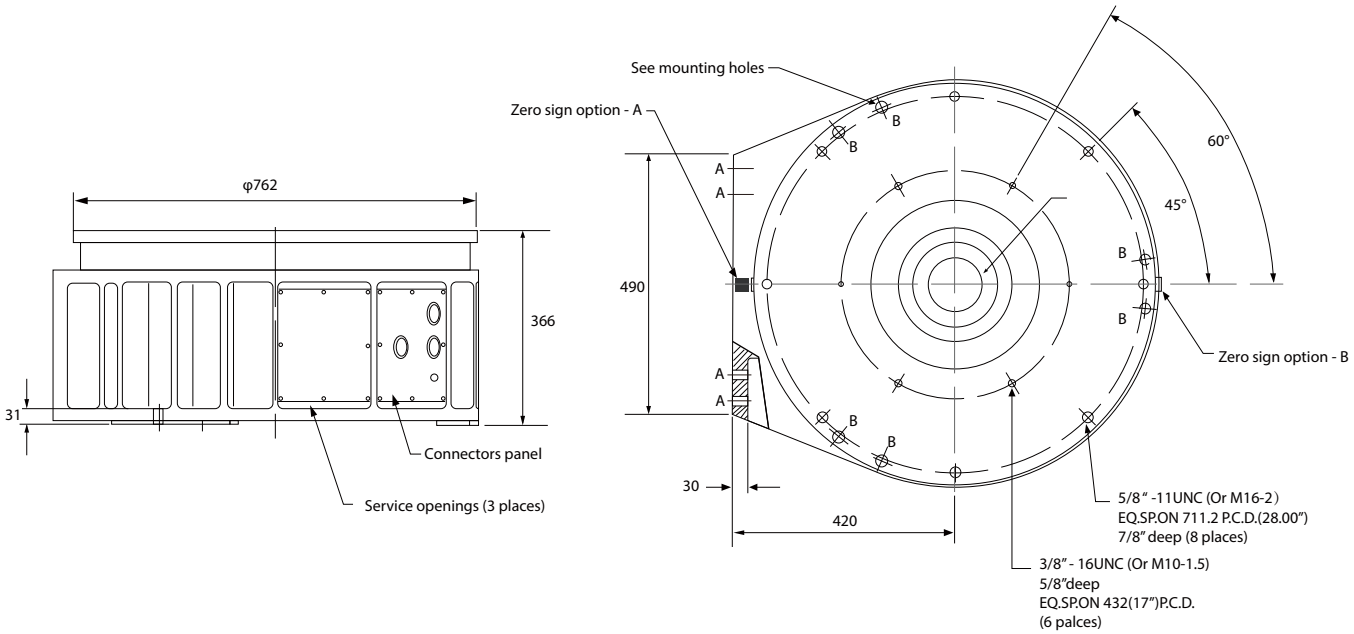
AT519012 using this type of polarization turret azimuth - structure switch for various antenna base station antennas, microwave communication antennas on the test, the biggest feature is you can install the antenna in different bands 4 sides, saving time replacement antenna - polarization improve test efficiency, with easy control, practical, wide range of applications and so on. In the long course of practice this type of turret has received very good results.

Components	Quantity	Other
Automatic antenna measurementpaltform	1	Including imported rotary joints（DC - 26.5G）
Turntable Controller / Driver	1	Standard integrated multi-axis motion control card
Reception polarizationrotation device	1	Including antenna bracket
Regulated power distribution box	1	10 kW
RF multi-port switch	1	DC - 6.0G (2 to 10 ports)
Standard combination control cabinet	1	Including keyboard shelves, panels
Advantech industrial control computer	1	19-inch LCD dual display, 250GB hard drive, 2GB memory
Automatic antenna measurement and analysis software	1	2D / 3D amplitude and phase patterns
Phase-stable RF Cable Assemblies	1	Demand adjustment
Broadband Amplifier	1	0.3 ~ 6GHz, 2W
Video Surveillance System	1	Two path monitoring, with independentmonitors
Beacon and standard speaker	1	customized require

Azimuth Positioners provide accurate, balanced rotation, and controllable velocity for the positioning of devices under test. Their rugged, straight-forward construction ensures maximum reliability and trouble-free operation, yielding an outstanding size and weight/performance ratio.
Typically the unit includes the body, precise slew bearings, DC motor, gear reducer, encoder/synchro, and limit switch assemblies. The turntable surface is designed with threaded mounting holes for easy installation of the DUT. An integrated Safe/Operate switch ensures safety.

Applications
- General Purpose Positioning Subsystems
- Far-Field & Near-Field Antenna Measurements
- Indoor & Outdoor Use

Product Highlights
- Vertical Loads Ranging from 3,990 to 13,610 kg
- Turntable Diameters Ranging from 516 to 762 mm
- Excellent Angular Position Accuracy
- Low Backlash Design
- Precision Bearings
- Closed Loop Servo Control
- Industry-Standard Wiring
- Tachometers/Encoders for Optimal Speed Regulation & Control
- Wide Operating Temperature Range: - 20° C to 60° C
- Fully Enclosed Design of Drive Gear Train & Data Take-Off
- Wide Variety of Available Options

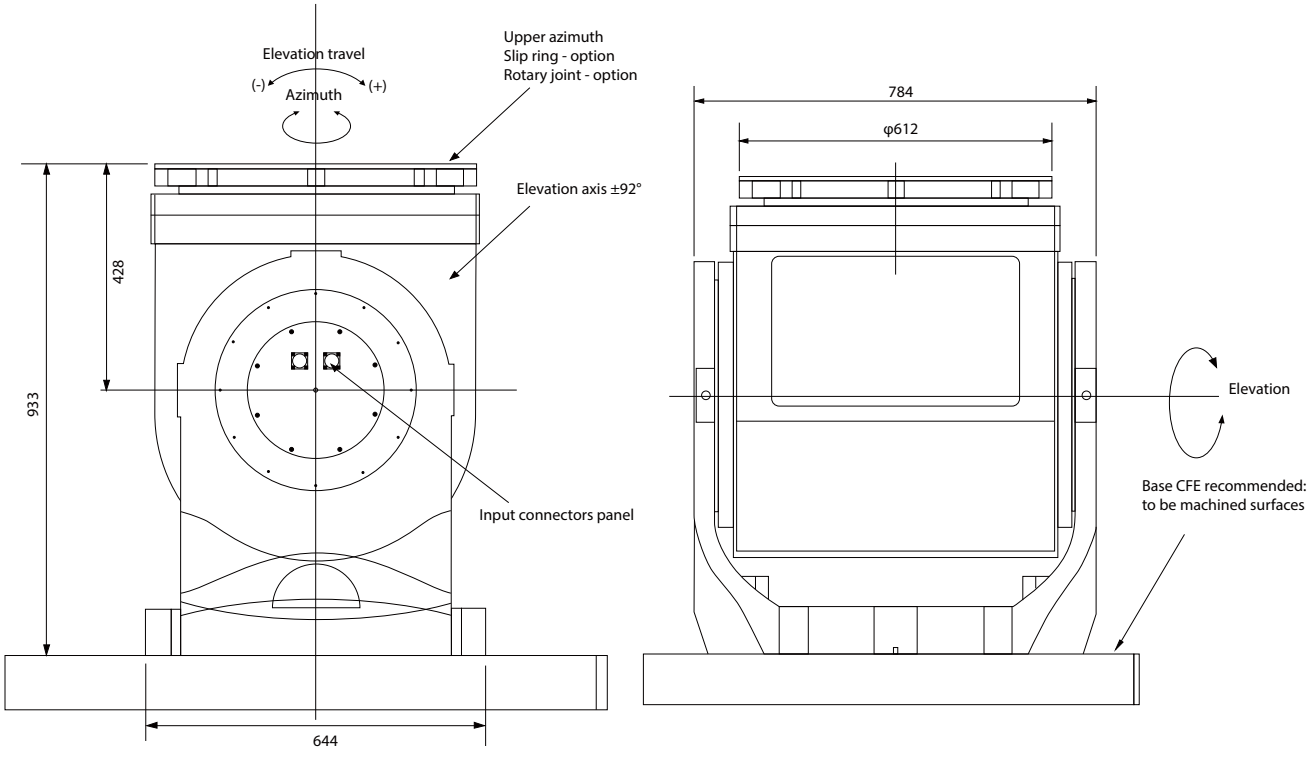


Specifications	
Bending Moment (kg-m)	1,380
Vertical Load (kg)	3,990
Delivered Torque (kg-m)	70
Withstand Torque (kg-m)	80
Drive Power (hp)	1/3
Nominal Speed (rpm)	1.5
Standard Angle Transducer Format	Incremental Encoder
Standard Accuracy (deg)	±0.03
Maximum Backlash (deg)	0.05
Direct Absolute Encoder (High Accuracy)	Opt
Accuracy (deg)	± 0.005
Direct Absolute Encoder (High Accuracy)	Opt
Absolute Encoder (Standard Accuracy)	Opt
Slip Ring	SR051L、SR101L、SR301L、SR402L
Rotary Joint	RJ518100 、RJ518101 、RJ518102 、RJ518033
Central Thru-Hole Inner Diameter	102mm
Internal Harnessing	EX002
Connector Format	Opt
Leveling Screw (set)	Built-In
Stow Lock	Opt
Mounting Thread	MM002、MM003
Height	322
Weight	91
Turntable Diameter	516
Operating Temperature	-4° F to 140° F (-20℃ to 60℃)

Yach-438X series dual-axes positioners are low profile design and advanced drive mechanism, these symmetrical AZ/EL positioners ensure accurate, balanced rotation, and controllable velocity.
The rugged yet straightforward construction ensures maximum reliability and trouble-free operation, yielding the best size and weight / performance ratio. This particular series provides a counter weight option which improves overall system stability and accuracy while allowing for higher DUT loads. Typically, the unit includes the main body, precise slew bearings, DC motors, gear reducers, encoder assemblies, and limit switch assemblies. The turntable surface is designed with a threaded mounting hole pattern for ease of use. A Safe/Operate switch is included to ensure safety. A large variety of options is available for Yach standard product family. See the Options pages on the website for slip rings, rotary joints, high precision encoders, speed options and more.

Applications
- General Purpose Positioning Subsystems
- Far-Field & Near-Field Antenna Measurements
- Indoor & Outdoor Use

Product Highlights
- Operating Loads Ranging from 270 to 6000 kg
- Turntable Diameters 612mm (other diameters upon request)
- Excellent Angular Position Accuracy
- Low Backlash Design
- Precision Bearings
- Closed Loop Servo Control
- Industry-Standard Wiring
- Tachometers for Optimum Speed Regulation & Control
- Wide Operating Temperature Range:
- 4° F to 140° F (- 20° C to 60° C)
- Fully Enclosed Design of Drive Gear Train & Data Take-Off
- Wide Variety of Available Options



Specifications	
Bending Moment (kg-m)	580
Vertical Load (kg)	1000
Delivered Torque (Azimuth/Elevation)	70 / 170
Withstand Torque (Azimuth/Elevation)	250 / 580
Drive Power (Azimuth/Elevation)	1/3 / 3/4
Nominal Speed (Azimuth/Elevation)	1.3 / 180
Standard Angle Transducer Format	Incremental Encoder
Standard Accuracy (Azimuth/Elevation)	±0.03
Maximum Backlash (Azimuth/Elevation)	0.05
Elevation Limit-to-Limit Travel	± 92
Counter-weight Option	1080
Direct Incremental Encoder (High Accuracy)	Opt
Accuracy (Azimuth/Elevation)	± 0.005
Direct Absolute Encoder (High Accuracy)	Opt
Accuracy (Azimuth/Elevation)	± 0.005
Absolute Encoder (High Accuracy)	Opt
Accuracy (Azimuth/Elevation)	± 0.03
Slip Ring	SR051U, SR101U, SR201U, SR301U, SR402U, SR502U
Rotary Joint	RJ518100, RJ518101, RJ518102, RJ518033
Central Thru-Hole Inner Diameter	101.6 mm
Internal Harnessing	EX002
Connector Format	-
Leveling Screw (set)	Built-In
Stow Lock	ST002U、ST002E
Mounting Thread	MM002
Height at 0° Elevation	937
Weight	470
Turntable Diameter	612
Interlock Circuit	IC002
Operating Temperature	-4° F to 140° F (-20℃ to 60℃)

VSWR & Return Loss Data

VSWR	Standing Waveratio(dB)	Return Loss(dB)	Transmission Loss(dB)	Reflection Coefficient	Transmitted Power %	Reflected Power %
1.00	0	μ	0	0	100.0	0
1.01	0.1	46.1	0	0	100.0	0
1.02	0.2	40.1	0	0.01	100.0	0
1.03	0.3	36.6	0.001	0.01	100.0	0
1.04	0.3	34.2	0.002	0.02	100.0	0
1.05	0.4	32.3	0.003	0.02	99.9	0.1
1.06	0.5	30.7	0.004	0.03	99.9	0.1
1.07	0.6	29.4	0.005	0.03	99.9	0.1
1.08	0.7	28.3	0.006	0.04	99.9	0.1
1.09	0.7	27.3	0.008	0.04	99.8	0.2
1.10	0.8	26.4	0.010	0.05	99.8	0.2
1.11	0.9	25.7	0.012	0.05	99.7	0.3
1.12	1.0	24.9	0.014	0.06	99.7	0.3
1.13	1.1	24.3	0.016	0.06	99.6	0.4
1.14	1.1	23.7	0.019	0.07	99.6	0.4
1.15	1.2	23.1	0.021	0.07	99.5	0.5
1.16	1.3	22.6	0.024	0.07	99.5	0.5
1.17	1.4	22.1	0.027	0.08	99.4	0.6
1.18	1.4	21.7	0.030	0.08	99.3	0.7
1.19	1.5	21.2	0.033	0.09	99.2	0.8
1.20	1.6	20.8	0.036	0.09	99.2	0.8
1.21	1.7	20.4	0.039	0.10	99.1	0.9
1.22	1.7	20.1	0.043	0.10	99.0	1.0
1.23	1.8	19.7	0.046	0.10	98.9	1.1
1.24	1.9	19.4	0.050	0.11	98.9	1.1
1.25	1.9	19.1	0.054	0.11	98.8	1.2
1.26	2.0	18.8	0.058	0.12	98.7	1.3
1.27	2.1	18.5	0.062	0.12	98.6	1.4
1.28	2.1	18.2	0.066	0.12	98.5	1.5
1.29	2.2	17.9	0.070	0.13	98.4	1.6
1.30	2.3	17.7	0.075	0.13	98.3	1.7
1.32	2.4	17.2	0.083	0.14	98.1	1.9
1.34	2.5	16.8	0.093	0.15	97.9	2.1
1.36	2.7	16.3	0.102	0.15	97.7	2.3
1.38	2.8	15.9	0.112	0.16	97.5	2.5
1.40	2.9	15.6	0.122	0.17	97.2	2.8
1.42	3.0	15.2	0.133	0.17	97.0	3.0
1.44	3.2	14.9	0.144	0.18	96.7	3.3
1.46	3.3	14.6	0.155	0.19	96.5	3.5
1.48	3.4	14.3	0.166	0.19	96.3	3.7
1.50	3.5	14.0	0.177	0.20	96.0	4.0
1.52	3.6	13.7	0.189	0.21	95.7	4.3
1.54	3.8	13.4	0.201	0.21	95.5	4.5
1.56	3.9	13.2	0.213	0.22	95.2	4.8
1.58	4.0	13.0	0.225	0.22	94.9	5.1
1.60	4.1	12.7	0.238	0.23	94.7	5.3
1.62	4.2	12.5	0.250	0.24	94.4	5.6

VSWR & Return Loss Data

VSWR	Standing Waveratio(dB)	Return Loss(dB)	Transmission Loss(dB)	Reflection Coefficient	Transmitted Power %	Reflected Power %
1.64	4.3	12.3	0.263	0.24	94.1	5.9
1.66	4.4	12.1	0.276	0.25	93.8	6.2
1.68	4.5	11.9	0.289	0.25	93.6	6.4
1.70	4.6	11.7	0.302	0.26	93.9	6.7
1.72	4.7	11.5	0.315	0.26	93	7.0
1.74	4.8	11.4	0.329	0.27	92.7	7.3
1.76	4.9	11.2	0.342	0.28	92.4	7.6
1.78	5.0	11.0	0.356	0.28	92.1	7.9
1.80	5.1	10.9	0.370	0.29	91.8	8.2
1.82	5.2	10.7	0.384	0.29	91.5	8.5
1.84	5.3	10.6	0.398	0.30	91.3	8.7
1.86	5.4	10.4	0.412	0.30	91.0	9.0
1.88	5.5	10.3	0.426	0.31	90.7	9.3
1.90	5.6	10.2	0.440	0.31	90.4	9.6
1.92	5.7	10.0	0.454	0.32	90.1	9.9
1.94	5.8	9.9	0.468	0.32	89.8	10.2
1.96	5.8	9.8	0.483	0.32	89.5	10.5
1.98	5.9	9.7	0.497	0.33	89.2	10.8
2.00	6.0	9.5	0.512	0.33	88.9	11.1
2.50	8.0	7.4	0.881	0.43	81.6	18.4
3.00	9.5	6.0	1.249	0.50	75.0	25
3.50	10.9	5.1	1.603	0.56	69.1	30.9
4.00	12.0	4.4	1.938	0.60	64.0	36
4.50	13.1	3.9	2.255	0.64	59.5	40.5
5.00	14.0	3.5	2.553	0.67	55.6	44.4
5.50	14.8	3.2	2.834	0.69	52.1	47.9
6.00	15.6	2.9	3.100	0.71	49.0	51
6.50	16.3	2.7	3.351	0.73	46.2	53.8
7.00	16.9	2.5	3.590	0.75	43.7	56.2
7.50	17.5	2.3	3.817	0.76	41.5	58.5
8.00	18.1	2.2	4.033	0.78	39.5	60.5
8.50	18.6	2.1	4.240	0.79	37.7	62.3
9.00	19.1	1.9	4.437	0.80	36.0	64
9.50	19.6	1.8	4.626	0.81	34.5	65.5
10.00	20.0	1.7	4.807	0.82	33.1	66.9
11.00	20.8	1.6	5.149	0.83	30.6	69.4
12.00	21.60	1.5	5.466	0.85	28.4	71.6
13.00	22.30	1.3	5.762	0.86	26.4	73.5
14.00	22.90	1.2	6.040	0.87	24.9	75.1
15.00	23.50	1.2	6.301	0.88	23.4	76.6
16.00	24.10	1.1	6.547	0.88	22.1	77.9
17.00	24.60	1.0	6.780	0.89	21.0	79
18.00	25.10	1.0	7.002	0.89	19.9	80.1
19.00	25.60	0.9	7.212	0.90	19.0	81
20.00	26.00	0.9	7.413	0.90	18.1	81.9
25.00	28.00	0.7	8.299	0.92	14.8	85.2
30.00	29.50	0.6	9.035	0.94	12.5	87.5

Waveguide Bands / Flanges Size Form

Frequency Band	China Waveguide Standard	EIA Waveguide Standard	UK Waveguide Standard	153 Waveguide Standard	Frequency Limits(GHz)	Inside Dimensions (mm)	Flange size L*W(mm)
-	BJ3	WR-2300	-	R3	0.32 to 0.49	584.2 x 292.1	-
-	BJ4	WR-2100	-	R4	0.35 to 0.53	533.4 x 266.7	-
-	BJ5	WR-1800	WG1	R5	0.41 to 0.62	457.2 x 288.6	-
-	BJ6	WR-1500	WG2	R6	0.49 to 0.75	381.0 x 190.5	-
-	BJ8	WR-1150	WG3	R8	0.64 to 0.98	292.1 x 146.05	-
-	BJ9	WR-975	WG4	R9	0.76 to 1.15	247.65 x 123.82	-
-	BJ12	WR-770	WG5	R12	0.96 to 1.46	195.58 x 97.79	-
-	BJ14	WR-650	WG6	R14	1.13 to 1.73	165.1 x 82.55	138.9*221.50
R band	BJ22	WR-430	WG8	R22	1.72 to 2.61	109.22 x 54.61	106.38*161.14
S band	BJ32	WR-284	WG10	R32	2.60 to 3.95	72.136 x 34.04	φ149.2
E band	BJ40	WR-229	WG11A	R40	3.22 to 4.90	58.17 x 29.08	70.2*98.73
G band	BJ48	WR-187	WG12	R48	3.94 to 5.99	47.549 x 22.149	φ92.33
F band	BJ58	WR-159	WG13	R58	4.64 to 7.05	40.386 x 20.193	φ85.915
C band	BJ70	WR-137	WG14	R70	5.38 to 8.17	34.849 x 15.799	φ79.50
H band	BJ84	WR-112	WG15	R84	6.57 to 9.99	28.499 x 12.624	47.9*47.9
X band	BJ100	WR-90	WG16	R100	8.2 to 12.4	22.86 x 10.16	41.4*41.4
X-Ku band	BJ120	WR-75	WG17	R120	9.84 to 15.0	19.05 x 9.525	38.3*38.3
Ku band	BJ140	WR-62	WG18	R140	12.4 to 18.0	15.799 x 7.899	33.3*33.3
K band	BJ180	WR-51	WG19	R180	14.5 to 22.0	12.954 x 6.477	30.1*30.1
K band	BJ220	WR-42	WG20	R220	17.6 to 26.5	10.668 x 4.318	22.41*22.41
-	BJ260	WR-34	WG21	R260	22.0 to 33.0	8.636 x 4.318	22.1*22.1
Ka band	BJ320	WR-28	WG22	R320	26.5 to 40.0	7.112 x 3.556	19.05*19.05
Q band	BJ400	WR-22	WG23	R400	33 to 50	5.69 x 2.845	φ28.55
-	BJ500	WR-18	WG24	R500	39.2 to 59.6	4.775 x 2.388	φ28.55
V band	BJ620	WR-15	WG25	R620	49.9 to 75.8	3.759 x 1.88	φ19.05
E band	BJ740	WR-12	WG26	R740	60.5 to 90.9	3.099 x 1.55	φ19.05
W band	BJ900	WR-10	WG27	R900	73.8 to 112	2.54 x 1.27	φ19.05
F band	BJ1200	WR-8	WG28	R1200	90.2 to 140	2.032 x 1.016	φ19.05

RJ518050

RJ518102

RJ518033

RJ518035

RJ518225

RJ153115

RJ515017

RJ153175

RJ151001

SW516155

SW516156

WG516081

RJ153198

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