

ROBOT JOINT MODULE

MAIN FEATURES

Excellent Performance

- Torque motor, with high overload capacity, for stable operation, and more accurate and safe force control.
- The double absolute value high precision multi circle encoder is configured to ensure high output accuracy and repeated positioning accuracy of 0.001° .
- Multi turn double absolute value encoder + torque motor + high rigidity harmonic reducer make virtual force control come true.
- Large hollow shaft design, to meet the needs of central wiring, while making the joint structure more compact.

Light weight

High efficiency: vector control algorithm based on model prediction ensures high frequency motion control while maintaining low heat impact.

Long life

The positioning accuracy is less than 0.015° and the repeated positioning accuracy can reach 0.001° .

Easy to install

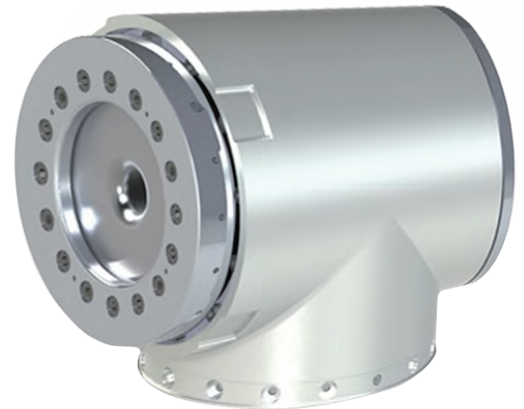
6 different joint sizes are easy to integrate into the robot body structure

Compact

6 core elements of the robot joint are integrated in limited space.

Sustainable

48V DC power supply, lower power consumption, support many mainstream brand controller.



NAMING RULE:

RJM-T14

PRODUCT CATEGORY

RJM: Robot Joint Module

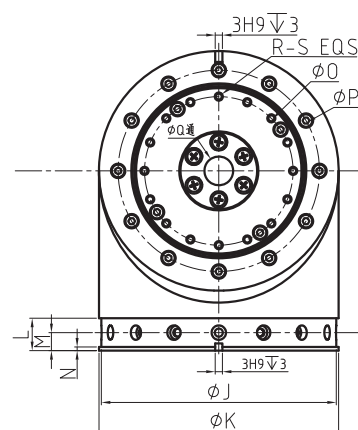
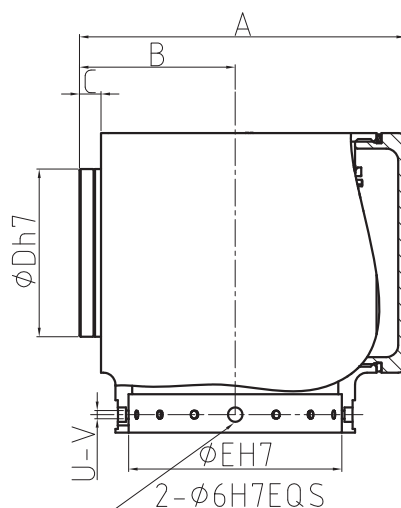
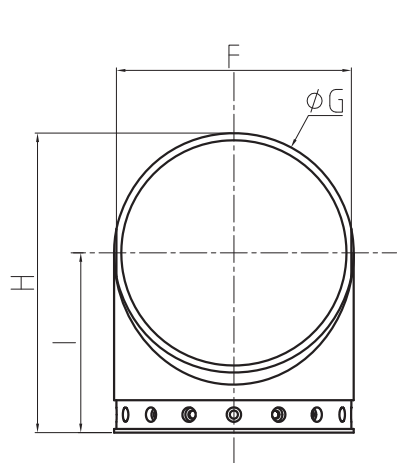
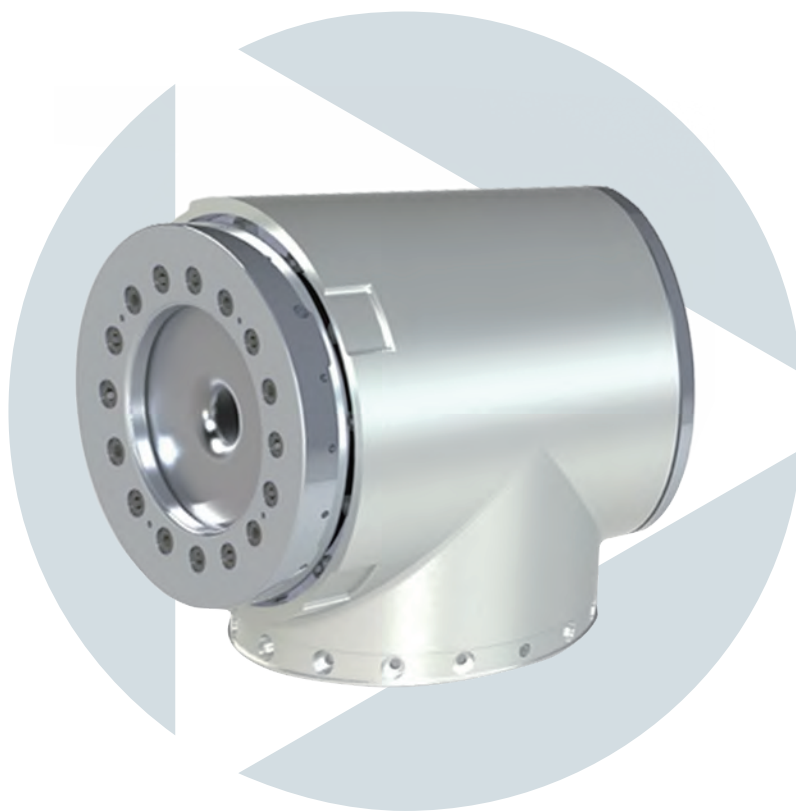
SIZE CODE

MODULE DESIGN

T: T-joint | **S**: Straight joint

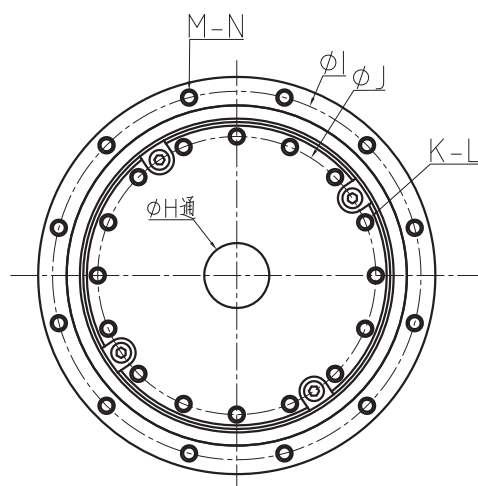
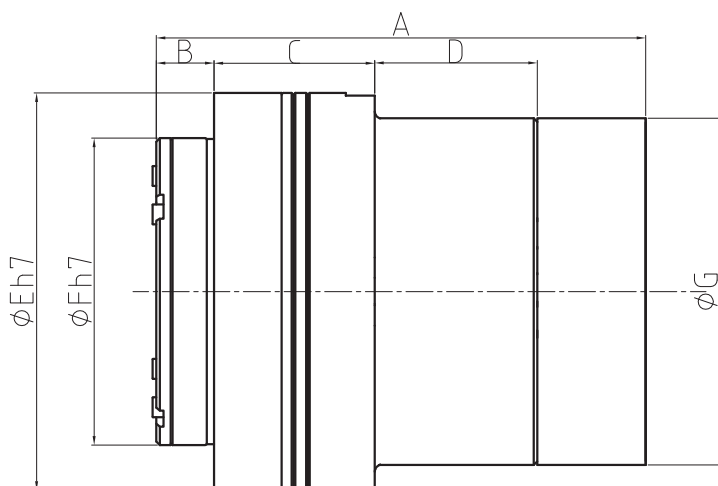
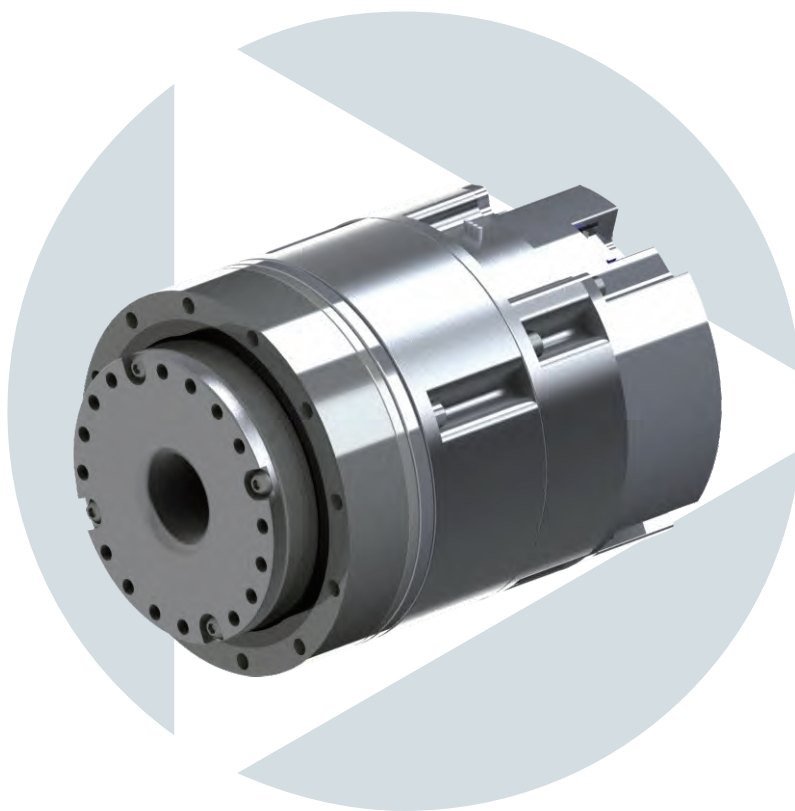
T-MODULE

ROBOT JOINT MODULE



STRAIGHT-MODULE

ROBOT JOINT MODULE



ROBOT JOINT MODULE

DIMENSION TABLE

Size Symbol	14	17	20	25	32
A	102	111.1	128	135.5	151.1
B	11	11.5	14.5	16	21
C	37.5	23	44	44.5	59.6
D	38.5	51.6	38.3	45	57
E	70	80	90	110	142
F	50	60	70	85	110
G	65	75	84	96	120
H	8	18	12	18	18
I	64	74	84	102	132
J	44	54	62	77	100
K	12E.A.8	20E.A.16	16	16	16
L	M3x5	M3x6	M3x6	M4x7	M5x8
	ØM3.5x11.5	ØM3.5x12	ØM3.5x13.5	ØM4.5x15.5	ØM5.5x20.5
M	8	12	12	12	12
N	M3x8	M3x8	M3x8	M4x8	M5x10
P	64	74	84	102	132
Q	8	18	12	18	18
R	12E.A.8	20E.A.16	16	16	16
S	M3x5	M3x6	M3x6	M4x7	M5x8
	ØM3.5x11.5	ØM3.5x12	ØM3.5x13.5	ØM4.5x15.5	ØM5.5x20.5
U	8	10	16E.A.14	16E.A.14	16E.A.14
V	Ø3.4	Ø3.4	Ø3.4	Ø3.4	Ø4.4
	Counterbore Ø6	Counterbore Ø6	Counterbore Ø6	Counterbore Ø6	Counterbore Ø10
	3.4	3.4	3.4	3.4	4.6

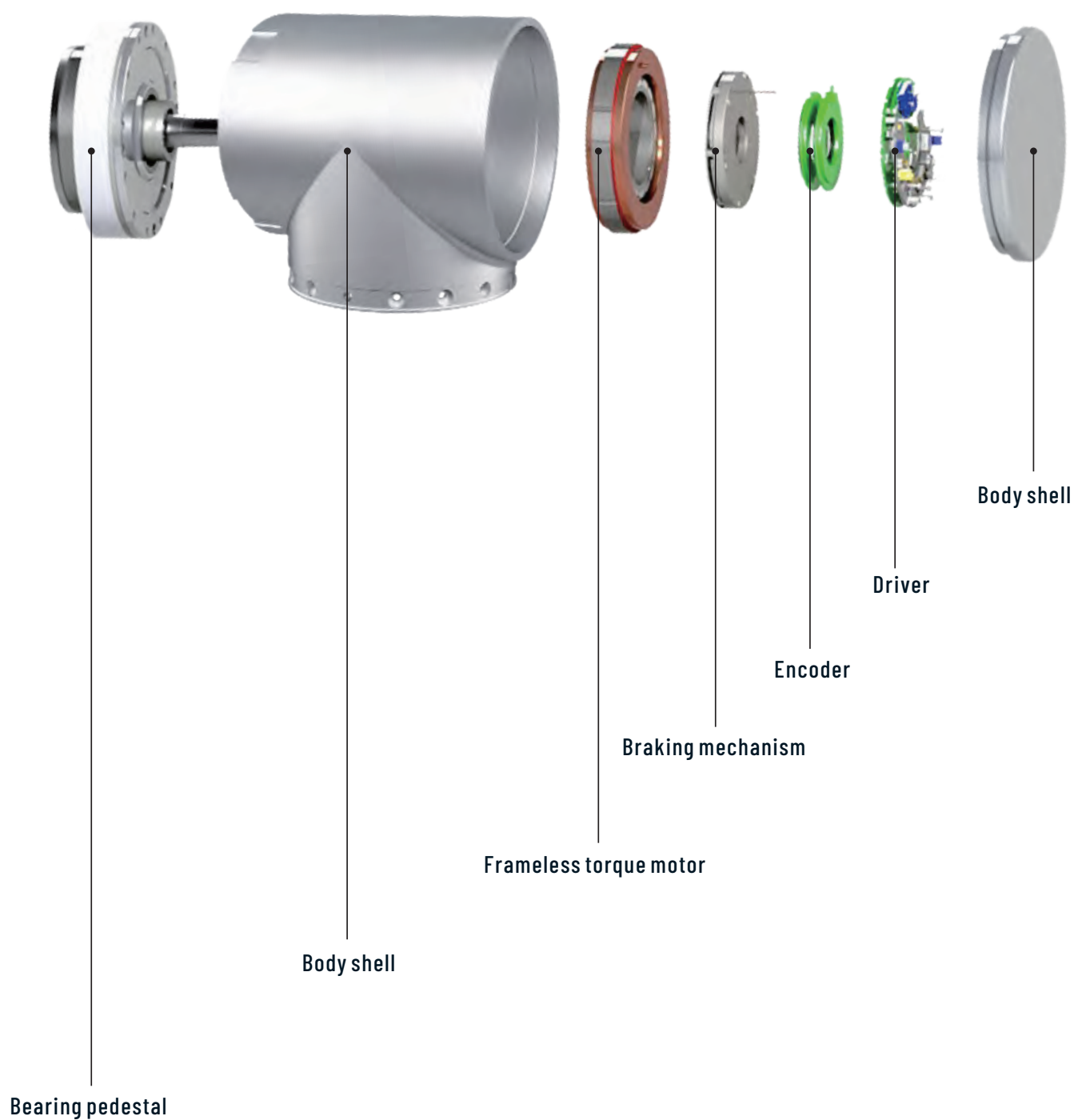
ROBOT JOINT MODULE

PARAMETER TABLE

parameter		unit	RJM-14	RJM-17	RJM-20	RJM-25	RJM-32
Voltage		VDC	48V				
Maximum current		Amps RMS	6.4	18	26.4	14.1	28
Continuous current		Amps RMS	2.1	6.3	9.2	7.05	14
Rated torque		N . m	10	31	52	87	178
Maximum torque		N . m	57.5	164	324	363	750
Speed at rated torque		RPM	35.8	34.6	17	16.7	16.7
Torque constant		N.m/ Amp RMS	0.11	0.083	0.102	0.14	0.22
Range of joint operation (central axis internal routing)		°	+/-360				
Range of joint operation(internal routing without central axis)		°	Infinite rotation				
Maximum temperature of reducer		°C	60				
Absolute encoder resolution		Bits	18				
			0.001				
Absolute value encoder accuracy		"	± 50				
Absolute encoder repeatability		°	0.001				
Communication bus			Ether CAT				
T-type	weight	Kg	1.32	2.2	3	3.41	8.67
Straight type			1	1.2	2	3.29	5.81

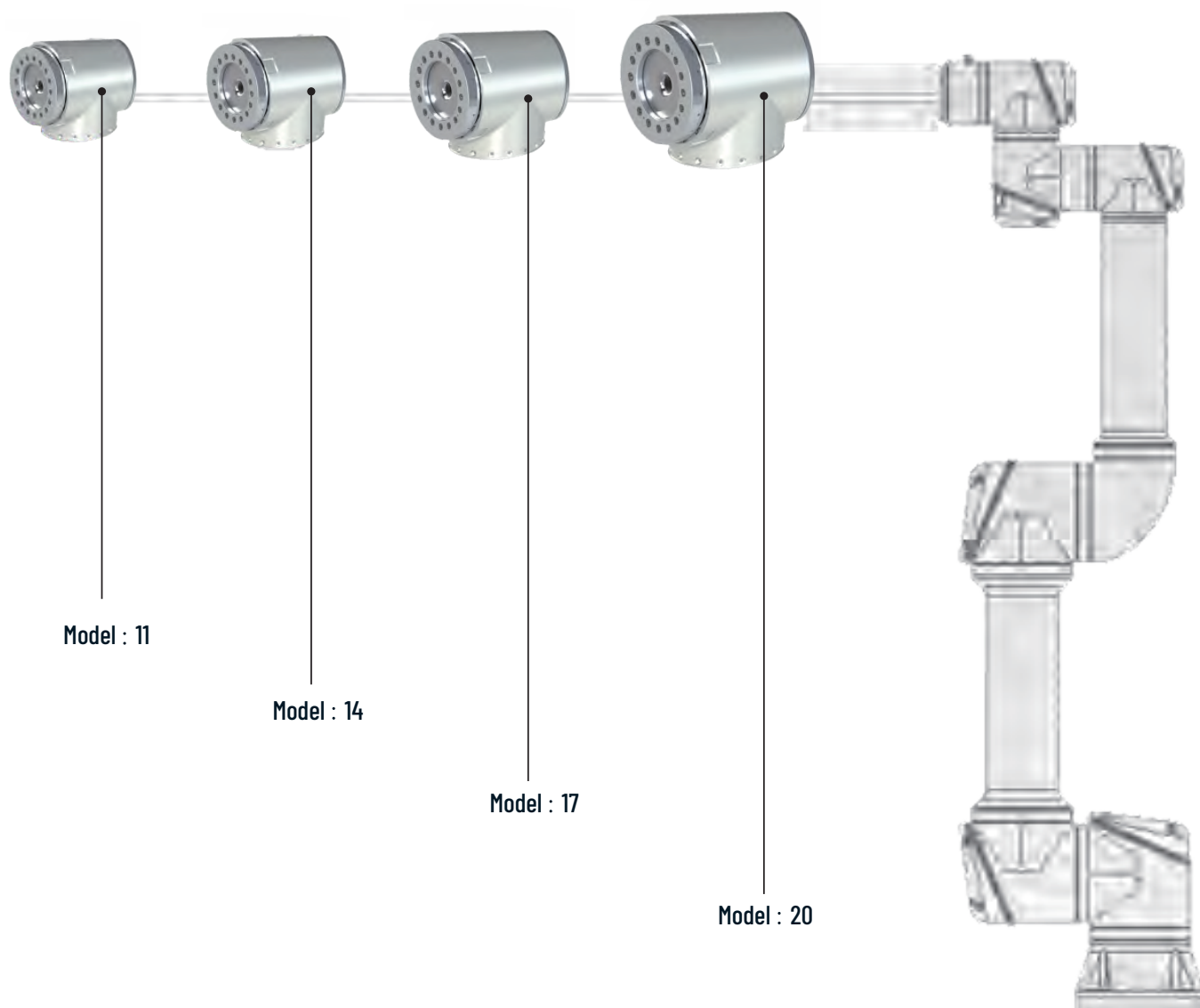
ROBOT JOINT MODULE

STRUCTURE CHART



ROBOT JOINT MODULE

MODULARIZATION



Complete specifications, 11/14/17/20/25/32

Joint modules of different specifications

can be spliced at will 3~15Kg

Cooperative robot

ROBOT JOINT MODULE

FRICITION BRAKE MECHANISM

Friction brake mechanism, accurate and reliable brake position

1. The brake is powerful and can provide more than 4.2Nm braking force at most;
2. The structure is compact and the maximum thickness is only 9.5mm;
3. Very low holding voltage and opening voltage, opening voltage is less than 24 V, holding voltage is less than 7 V.

Compared with the traditional top pin brake mechanism:

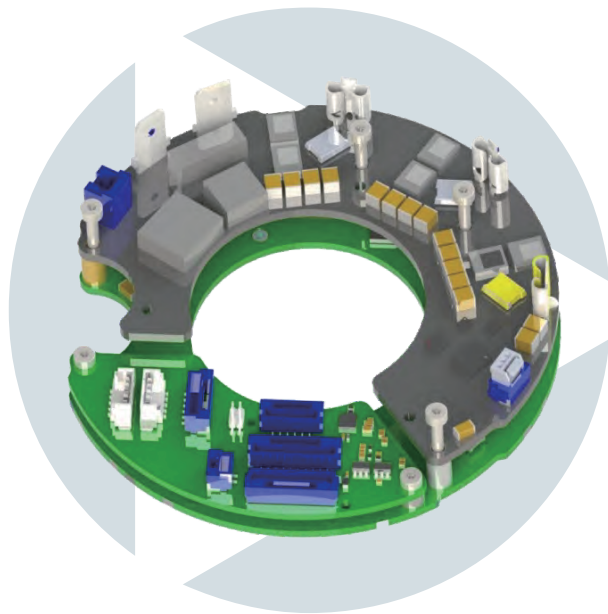
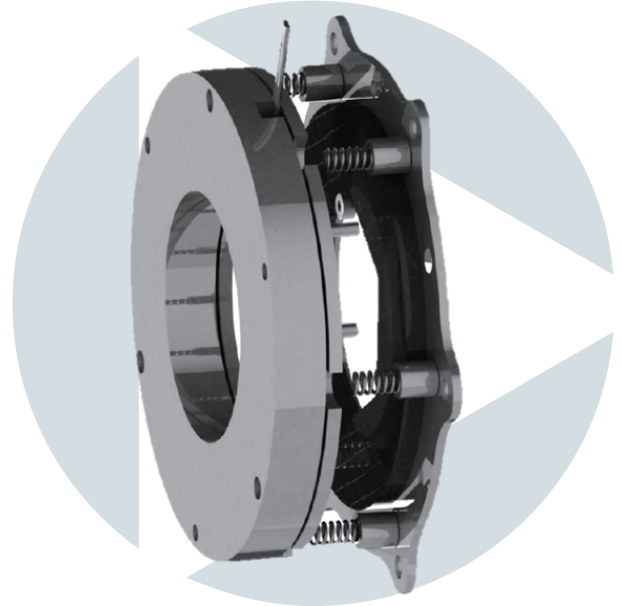
1. Reduce the risk of failure, use more convenient, brake positioning more accurate;
2. High brake torque output, more reliable

Compared with the traditional top pin brake mechanism:

1. Reduced risk of failure. Better and more accurate brake positioning.
2. Increased reliability and higher brake torque output

Starting process of friction brake

The controller enables the driver to open the brake, which is fast, convenient and reliable



Large hollow low voltage driver

Large hollow design, to meet the needs of central wiring, while making the joint structure more compact and smaller

Functional features:

1. **Ultra high efficiency:** vector control algorithm based on model prediction ensures high frequency motion control while maintaining low heat consumption;
2. **Safety:** on board sto and SBC based on 24 V I / O;
3. **Modular design:** easy to adjust quickly;
4. **Simplified wiring:** daisy chain structure covers ether cat, logic power supply, sto and SBC;
5. It supports CANopen® and EtherCAT® protocol with high compatibility

ROBOT JOINT MODULE

PRODUCT FEATURES

High precision rotary encoder

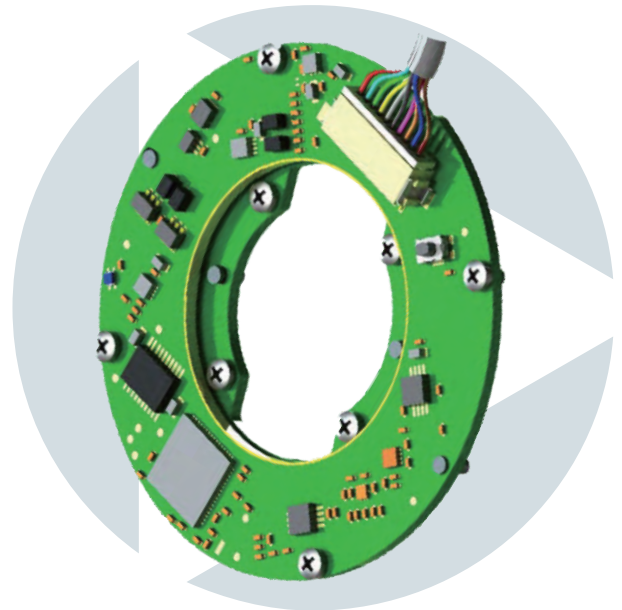
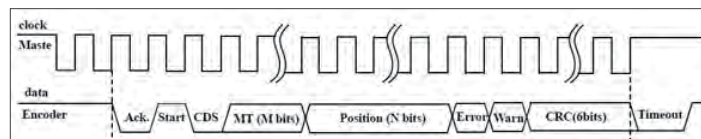
1. The positioning accuracy is less than 0.015° and the repeated positioning accuracy can reach 0.001°
2. Using BISS_C protocol, faster communication speed, longer communication distance, stronger anti-interference ability.
3. The double channel technology is used to measure the absolute angle, and the encoder can output the current real angle accurately at any position.
4. The encoder has stronger anti pollution and anti-interference ability.

BISS_C Interface

The clock input and data output are differential level based on RS, and the output protocol is biss-c protocol through one-way. The cable function is defined as follows:

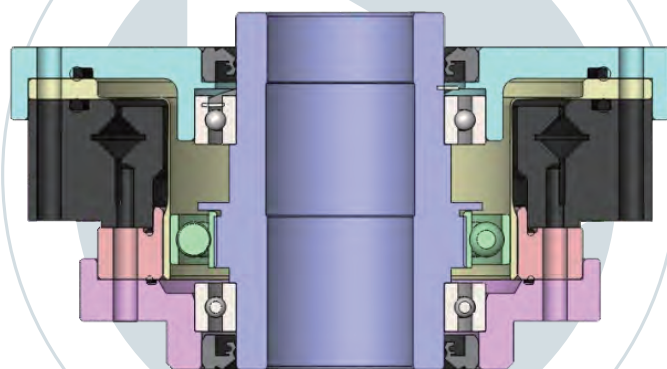
CABLE DEFINITION						
Color	Red	White	Brown	Black	Yellow	Grey
Meaning	5V	GND	CLK+	CLK-	DATA+	DATA-

BISS_C Sequence diagram



High precision
and long life

High rigidity and
low hysteresis



Stable operation
Low starting torque

Low noise and
low vibration