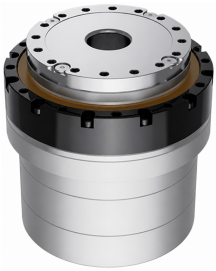


SINGLE ENCODER

TSL-CRA-RI70-90

Ø90 mm Robot Joint Module | Harmonic Gearbox

Single encoder configuration with 16-bit feedback and CAN communication.



Reduction Ratio

**51:1 / 81:1 / 101:1 /
121:1**

Rated Torque

32 / 42 / 50 / 50 N·m

Peak Torque

69 / 91 / 102 / 108 N·m

Communication

CAN

1. Electrical, Mechanical and Control Parameters

Ratio	Unit	51	81	101	121
Start-Stop Peak Torque	N·m	69	91	102	108
Average Load Torque Allowable Maximum (Robot Scenario)	N·m	42	58	61	61
Rated Torque at 2000rpm/(Reduction Ratio) (Industrial Scenario)	N·m	32	42	50	50
Output End Peak Speed	rpm	77	48	40	30
Rated Speed (with 1/2 Rated Torque)	rpm	61	38	30	25
Backlash	arcsec	20	20	10	10
Rated Power	W	340			
Supply Voltage	V	24 - 48			
Encoder Resolution	bit	16			
Communication Bus	-	CAN			
Brake Torque (No Brake/With Brake)	N·m	0/1			
Stiffness	10 ⁴ N/rad	1.24	1.52	1.52	1.52
Radial Allowable Load	kN	22			
Axial Allowable Load	kN	50			
Allowable Bending Moment	N·m	190			
Length (No Brake/With Brake)	mm	73.5±0.5/92±0.5			
Through Hole	mm	18			
Weight (No Brake/With Brake)	kg	1.27/1.5			
Inertia (No Brake/With Brake)	g·cm ²	596.4/746.7			

Parameters can be customized based on customer needs. Final installation dimensions shall follow the corresponding dimension drawing.

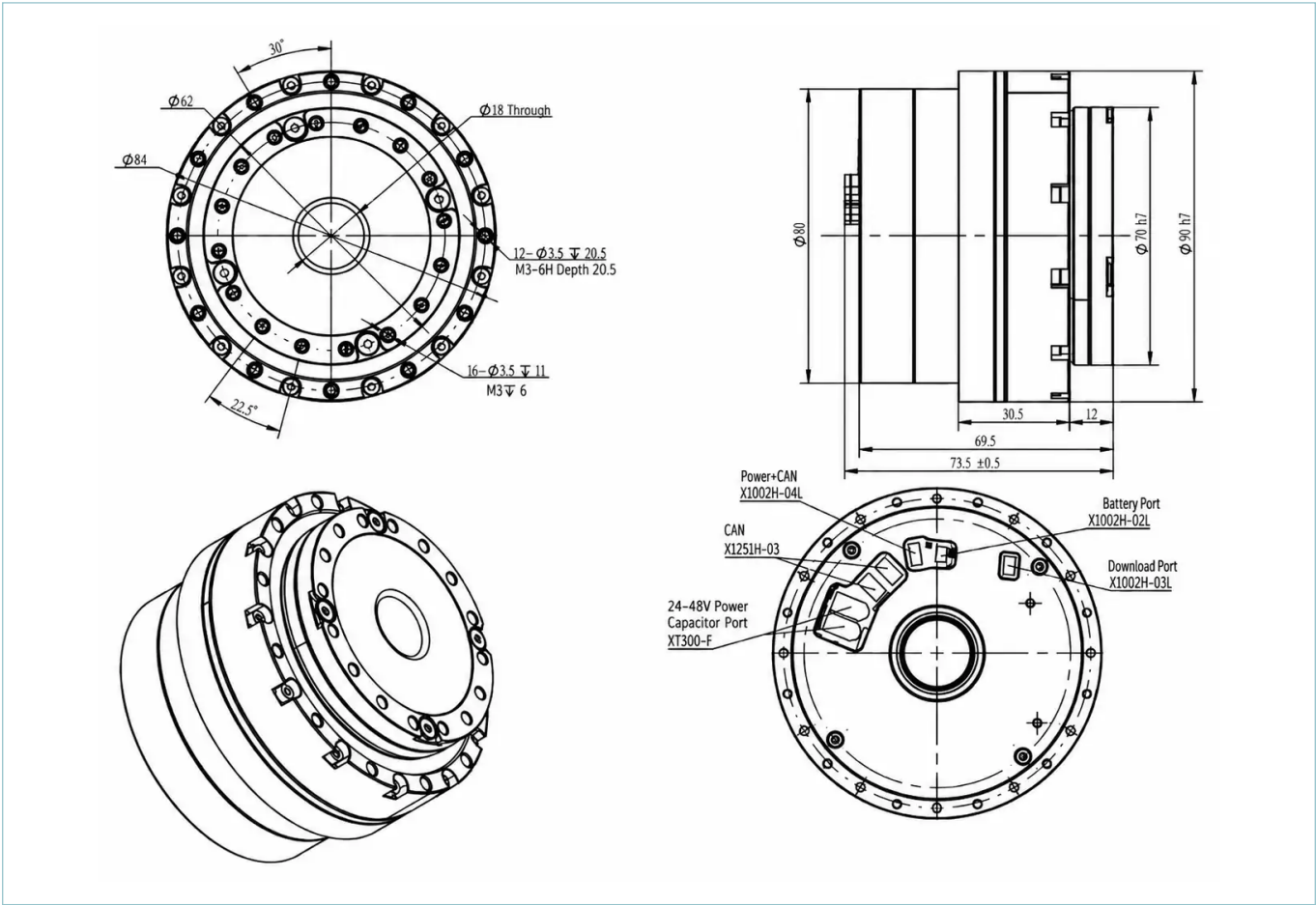
TSL-CRA-RI70-90

Ø90 mm Robot Joint Module | Harmonic Gearbox

Website: micromotorpro.com
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Tel: +86 18318138408

2. Single Encoder Dimension Drawing - Without Brake

All dimensions are in millimeters unless otherwise specified.



Configuration	Single encoder - 73.5 mm version (without brake)
Overall Length	73.5 ± 0.5 mm
Referenced Length	69.5 mm
Outer Diameter	Ø90 h7; rear body Ø80
Front Interface	Ø70 h7; Ø84 and Ø62 reference diameters
Center Hole	Ø18 through
Brake Torque	0 N·m (no brake)
Communication Interfaces	CAN, Power + CAN, 24-48 V power capacitor port, battery port, download port
Mounting Features	12 × Ø3.5 depth 20.5 / M3-6H depth 20.5; 16 × Ø3.5 depth 11 / M3 depth 6; hole patterns as shown

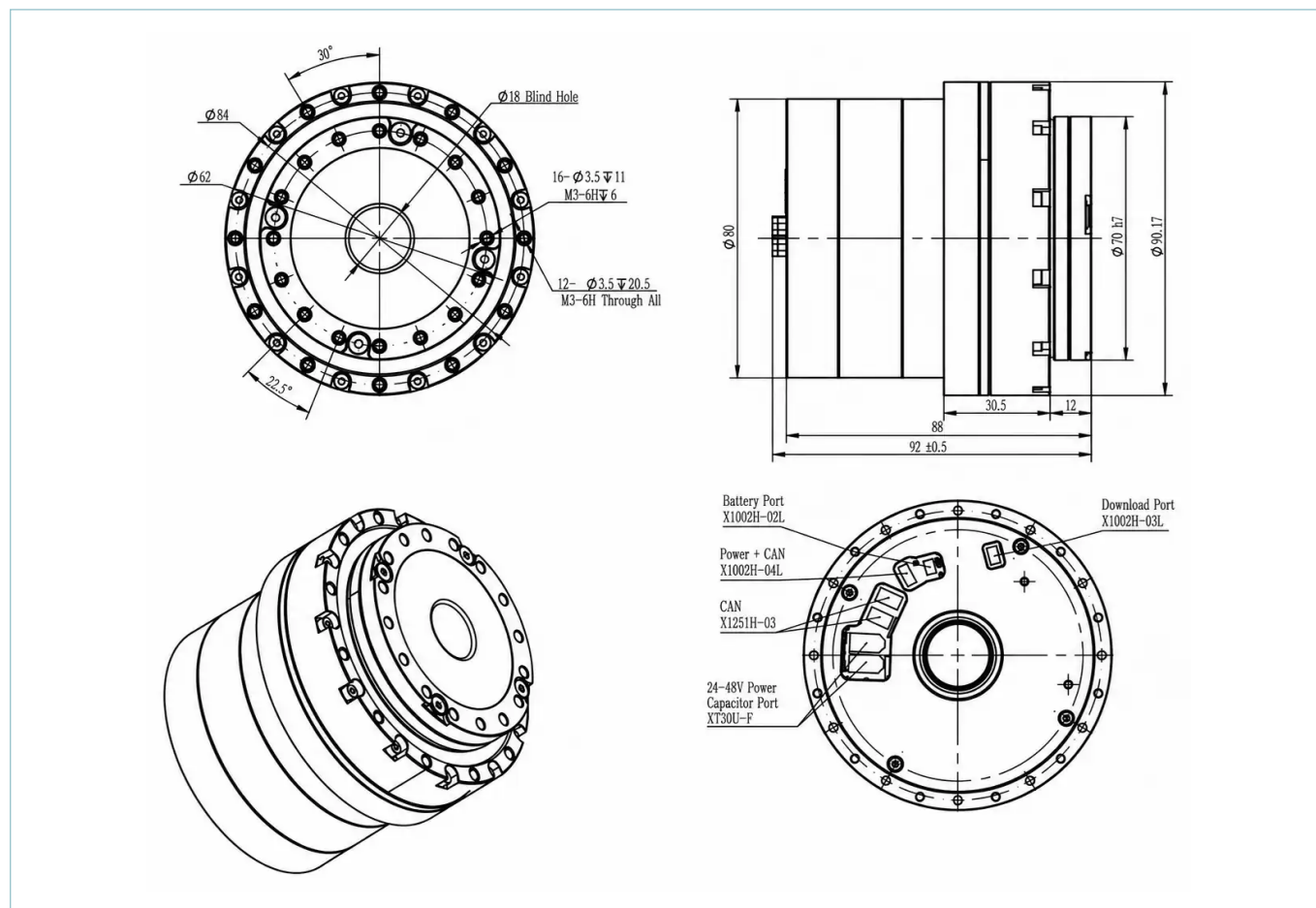
TSL-CRA-RI70-90

Ø90 mm Robot Joint Module | Harmonic Gearbox

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3. Single Encoder Dimension Drawing - With Brake

All dimensions are in millimeters unless otherwise specified.



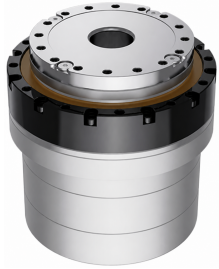
Configuration	Single encoder - 92 mm version (with brake)
Overall Length	92 ± 0.5 mm
Referenced Length	88 mm
Outer Diameter	Ø90 h7; rear body Ø80
Front Interface	Ø70 h7; Ø84 and Ø62 reference diameters
Center Hole	Ø18 blind hole
Brake Torque	1 N·m
Communication Interfaces	CAN, Power + CAN, 24-48 V power capacitor port, battery port, download port
Mounting Features	12 × Ø3.5 depth 20.5 / M3-6H through all; 16 × Ø3.5 depth 11 / M3-6H depth 6; hole patterns as shown

DUAL ENCODER

TSL-CRA-RI70-90

Ø90 mm Robot Joint Module | Harmonic Gearbox

Dual encoder configuration with 16/18-bit feedback and CAN/EtherCAT communication.



Reduction Ratio

**51:1 / 81:1 / 101:1 /
121:1**

Rated Torque

32 / 42 / 50 / 50 N·m

Peak Torque

69 / 91 / 102 / 108 N·m

Communication

CAN / EtherCAT

1. Electrical, Mechanical and Control Parameters

Ratio	Unit	51	81	101	121
Start-Stop Peak Torque	N·m	69	91	102	108
Average Load Torque Allowable Maximum (Robot Scenario)	N·m	42	58	61	61
Rated Torque at 2000rpm/(Reduction Ratio) (Industrial Scenario)	N·m	32	42	50	50
Output End Peak Speed	rpm	77	48	40	30
Rated Speed (with 1/2 Rated Torque)	rpm	61	38	30	25
Backlash	arcsec	20	20	10	10
Rated Power	W	340			
Supply Voltage	V	24 - 48			
Encoder Resolution	bit	16/18			
Communication Bus	-	CAN/EtherCAT			
Brake Torque (No Brake/With Brake)	N·m	0/1			
Stiffness	10 ⁴ N/rad	1.24	1.52	1.52	1.52
Radial Allowable Load	kN	22			
Axial Allowable Load	kN	50			
Allowable Bending Moment	N·m	190			
Length (No Brake/With Brake)	mm	73.5±0.5/94±0.5			
Through Hole	mm	18			
Weight (No Brake/With Brake)	kg	1.3/1.5			
Inertia (No Brake/With Brake)	g·cm ²	622.79/783.02			

Parameters can be customized based on customer needs. Final installation dimensions shall follow the corresponding dimension drawing.

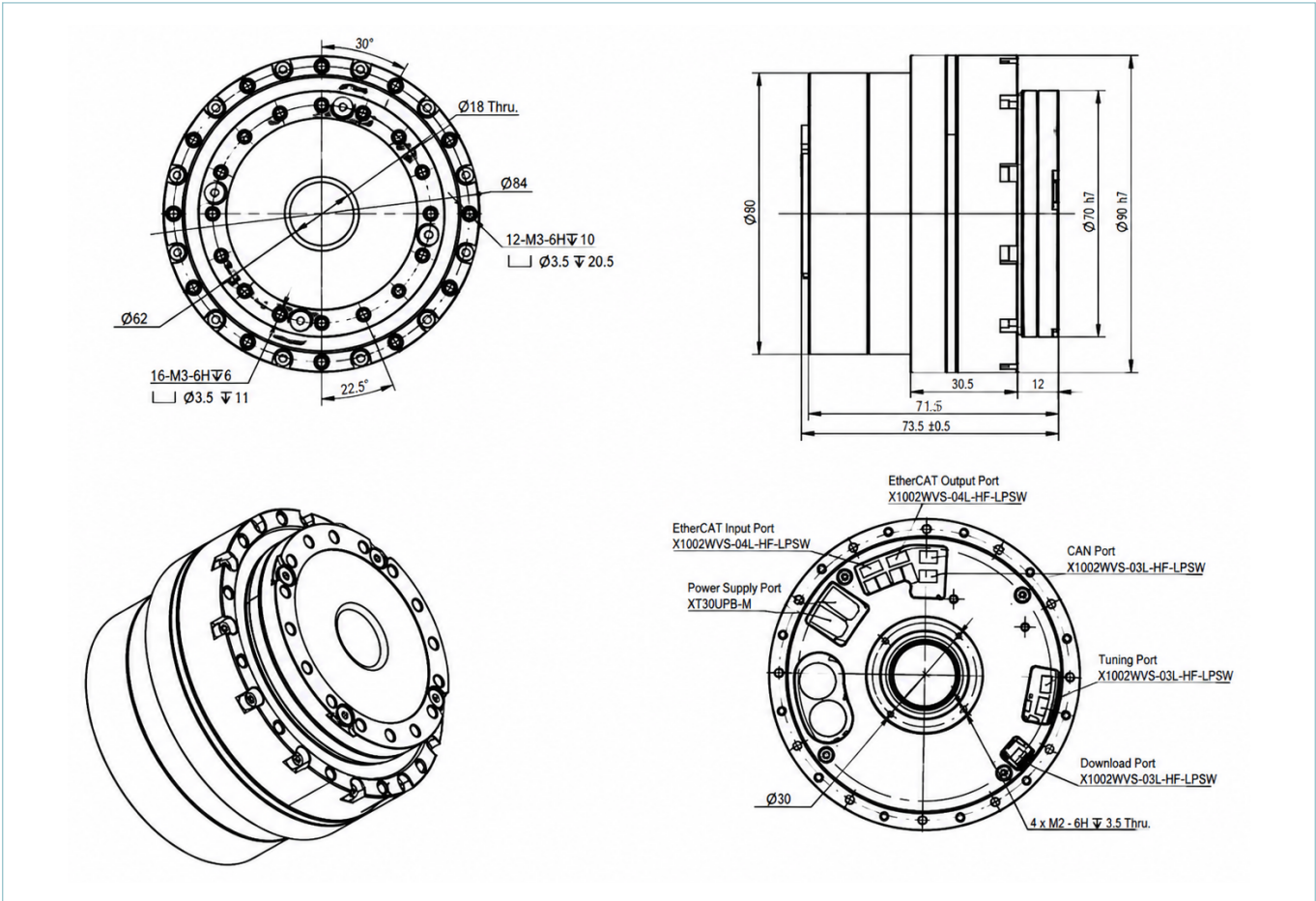
TSL-CRA-RI70-90

Ø90 mm Robot Joint Module | Harmonic Gearbox

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4. Dual Encoder Dimension Drawing - Without Brake

CAN/EtherCAT configuration. All dimensions are in millimeters unless otherwise specified.



Configuration	Dual encoder - 73.5 mm version (without brake)
Overall Length	73.5 ± 0.5 mm
Referenced Length	71.5 mm
Outer Diameter	Ø90 h7; rear body Ø80
Front Interface	Ø70 h7; Ø84 and Ø62 reference diameters
Center Hole	Ø18 through
Brake Torque	0 N·m (no brake)
Communication Interfaces	CAN, EtherCAT input/output, power supply, tuning and download interfaces
Mounting Features	12 × M3-6H depth 10 / Ø3.5 depth 20.5; 16 × M3-6H depth 6 / Ø3.5 depth 11; 4 × M2-6H through; hole patterns as shown

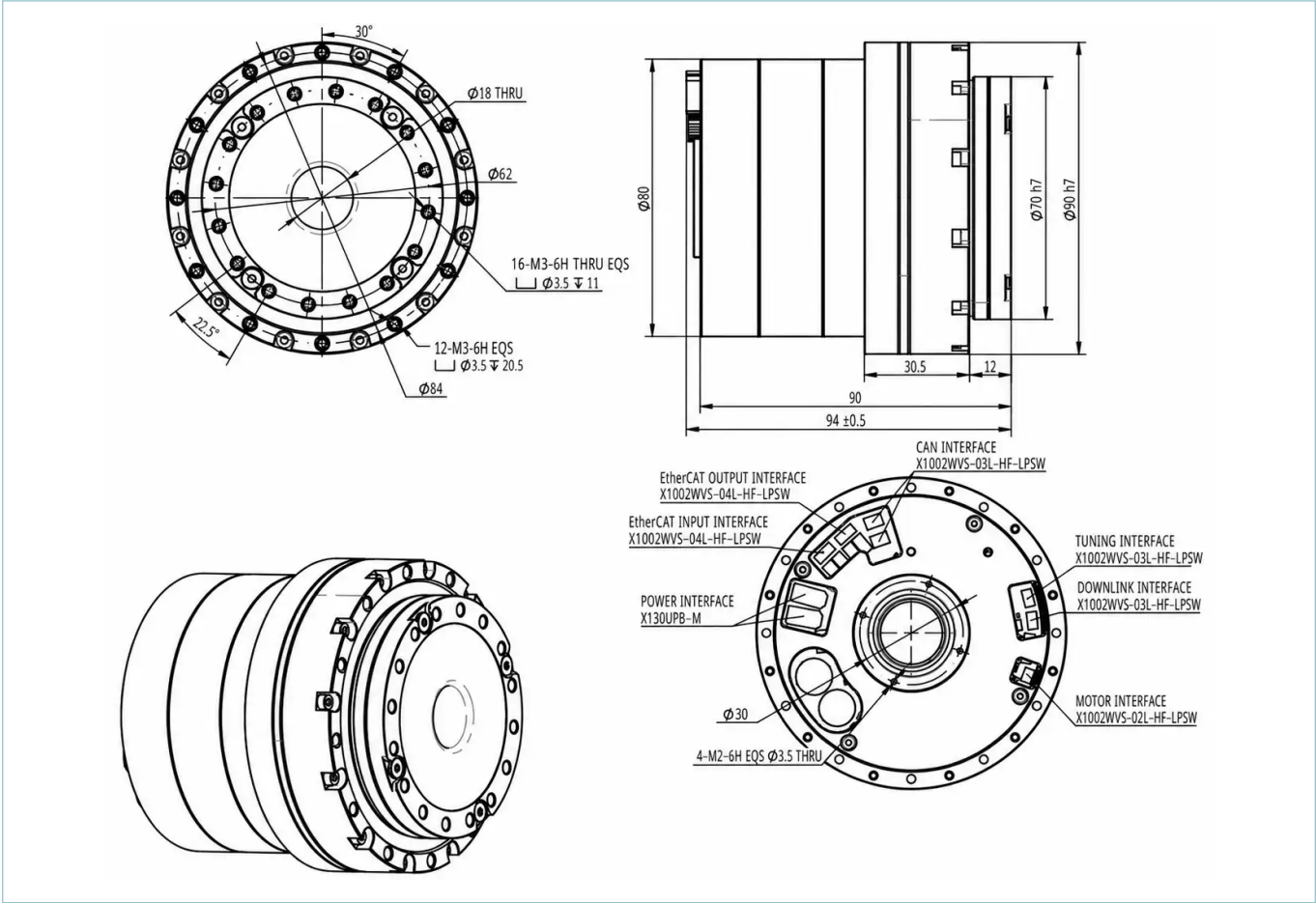
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5. Dual Encoder Dimension Drawing - With Brake

CAN/EtherCAT configuration. All dimensions are in millimeters unless otherwise specified.



Configuration	Dual encoder - 94 mm version (with brake)
Overall Length	94 ± 0.5 mm
Referenced Length	90 mm
Outer Diameter	$\varnothing 90$ h7; rear body $\varnothing 80$
Front Interface	$\varnothing 70$ h7; $\varnothing 84$ and $\varnothing 62$ reference diameters
Center Hole	$\varnothing 18$ through
Brake Torque	1 N·m
Communication Interfaces	CAN, EtherCAT input/output, power, tuning, downlink and motor interfaces
Mounting Features	12 $\times$ M3-6H / $\varnothing 3.5$ depth 20.5; 16 $\times$ M3-6H through / $\varnothing 3.5$ depth 11; 4 $\times$ M2-6H through; hole patterns as shown