

10nm feedback stage FS-PX

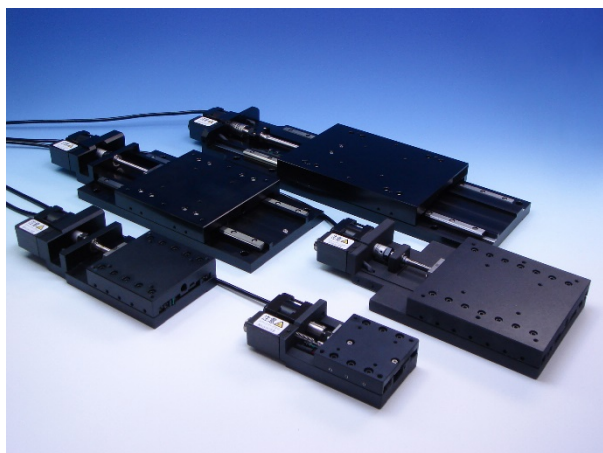
RoHS

FS-PX is feedback stage with 10nm resolution positioning.

In-house optical linear encoder are built-in at the center of stage to detect position.

Positioning to target position, positioning repeatability and holding the position with high resolution is achieved by feedback control using position information of encoder.

There are five types of the stages. It is ideal for collecting the data in a wide range or for performing precise positioning and movement of a sample on a single stage by the large travel range.



Applicable controller and cable	
Controller	FC-511 (except FS-3200PX)
Cable	PM-CA (except FS-3200PX)

Applicable controller and cable	
Controller	FC-514 (FS-3200PX only)
Cable	PM4N-CA-*SD (except FS-3200PX)

Specifications						
Part number		FS-1020PX	FS-1050PX	FS-1100PX	FS-3150PX	FS-3200PX
Mechanical spec	Travel [mm]	20	50	100	150	200
	Size of the stage [mm]	60×60	120×120	120×120	120×170	160×230
	Feed screw [mm]	Ball screw dia.4, 1mm lead	Ball screw dia.6, 1mm lead	Ball screw dia.6, 1mm lead	Ball screw dia.8, 1mm lead	Ball screw dia.10, 2mm lead
	Positioning slide	Crossed roller	Crossed roller	LM guide	LM guide	LM guide
	Primary material	Aluminum				
	Finish	Black anodized				
	Motor type	□28mm 5 phase stepping motor				
Weight [kg]	0.5	1.6	2.1	2.8	5	
Accuracy spec	Minimum Resolution [nm] ※1	10	10	10	10	10
	Positional repeatability [nm] ※1	+/- 20	+/- 20	+/- 20	+/- 20	+/- 20
	Load capacity [N]	49(5kgf)	98(10kgf)	98(10kgf)	98(10kgf)	196(20kgf)
	Running parallelism [μm]	10	10	10	10※2	10※2
	Max speed [mm/sec]	10	10	10	10	20
Sensor	Limit sensor	Equipped	Equipped	Equipped	Equipped	Equipped
	Slow down sensor	None	None	None	None	Equipped
	Origin sensor	None	None	None	None	None
	Proximity origin sensor	None	None	None	None	None
Equipped scale	Signal cycle	4μm	4μm	4μm	4μm	4μm
	Scale cable (※3)	2m	2m	2m	2m	2m

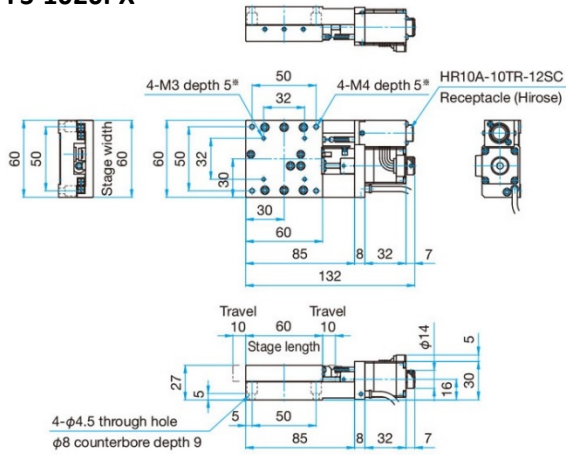
※1 : Minimum resolution and position repeatability accuracy for built-in scale read.

※2 : Running parallelism per 100mm travel.

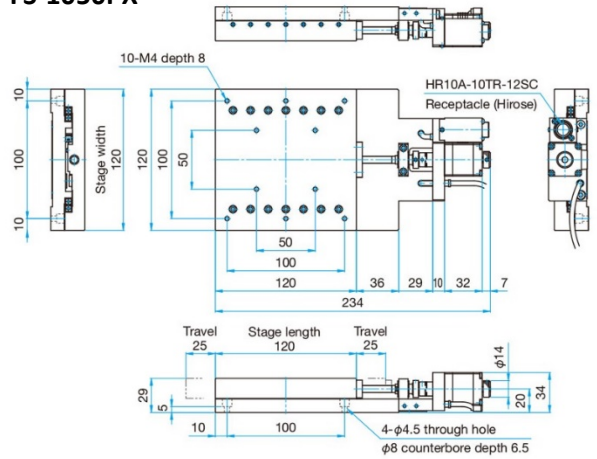
※3 : Scale cable comes directly out of the stage. Please prepare "extension cable for scale" separately if 2m or longer cable are needed.

Outline drawing

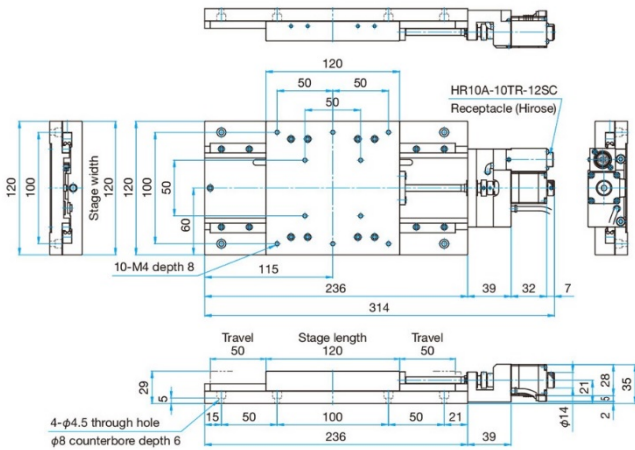
FS-1020PX



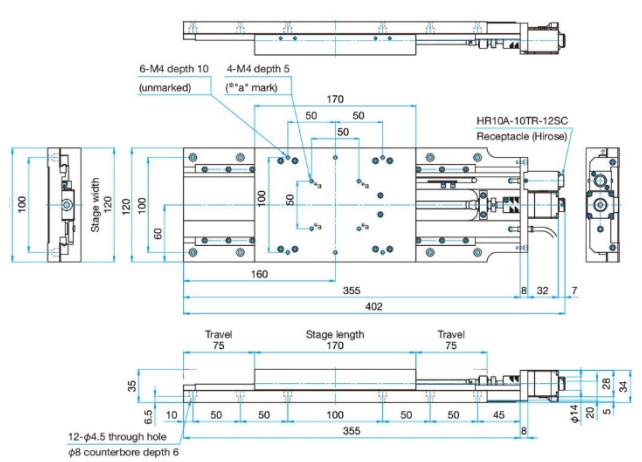
FS-1050PX



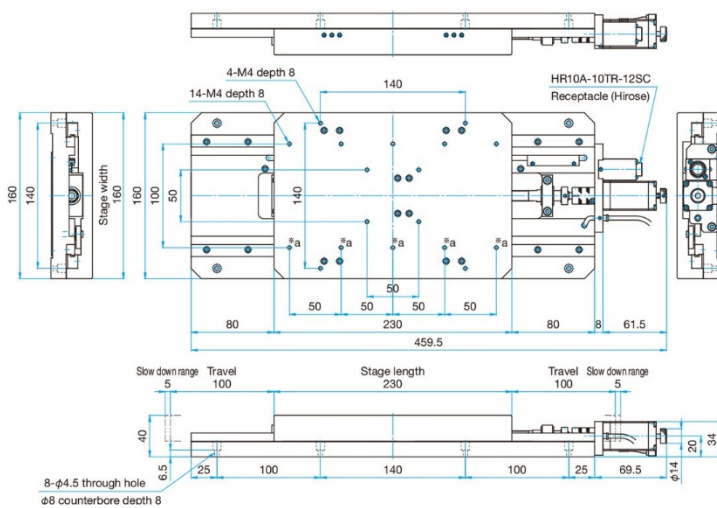
FS-1100PX



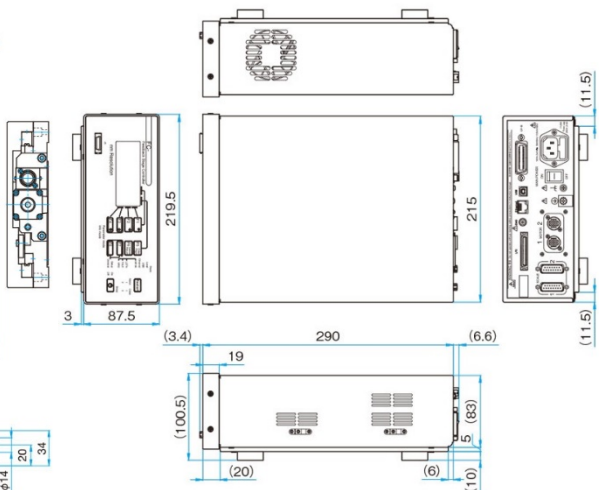
FS-3150PX



FS-3200PX



FC-511/514



FS-PX dedicated controller for 10nm feedback stage **FC-511/FC-514**

RoHS

Dedicated controller for 10nm feedback stage (FS-PX series) to control with 10nm resolution. Highly safe and easy to operate with various error detection functions, general-purpose I / O, and teaching functions.



Specifications				FC-511	FC-514	
Part number				FC-511	FC-514	
Primary spec	Number of control axes			2		
	Minimum command unit			10nm		
	In position range			+/- 10nm (+/- 30, +/- 70nm selectable)		
	Max operating speed set value			50mm/sec		
	Max travel range set value			-1342.17728~+1342.17727mm		
	Number of control interface port	Jog controller			1	
		Emergency stop			1	
		GP-IB			1	
		USB			1	
		Ethernet			1	
General I/O			1			
Teaching	Number of register channel			5		
	Number of registered lines per channel			200		
	Operational interface		Controller key operation		Controller key operation	
			Jog controller key operation		Jog controller key operation	
Communication command				Communication command		
General I/O				General I/O		
Power voltage				AC100~240V 50/60Hz	AC100~240V 50/60Hz	
Power supply voltage fluctuation allowable range				AC90V~264V	AC90V~264V	
Power consumption				110VA max	110VA max	
Fuse				250V, 2.5A, time lag, 2	250V, 2.5A, time lag, 2	
Outer dimensions (W×H×Dmm)				W220×H88×D290mm	W220×H88×D290mm	
Weight [kg]				5.2	5.2	
Operating temperature/humidity				0 deg.C to 40 deg.C / 20% to 80%RH(without condensation)	0 deg.C to 40 deg.C / 20% to 80%RH(without condensation)	
Storage temperature/humidity				-10deg.C to 55 deg.C / 20%~80%RH (without condensation)	-10deg.C to 55 deg.C / 20%~80%RH (without condensation)	
Connectable option				JC-01	JC-01	
Slow down sensor input				N/A	Applicable	
General spec	Communication port	GP-IB	Address		1~30	
			Delimiter		CR+LF, EOI, CR, LF	
			Service request		Valid or invalid	
		USB	Flow control		None (fixed)	
			Function		Virtual COM port	
			Transfer speed		Full speed transfer (12Mbps max)	
	Ethernet	Delimiter		CR+LF, CR, LF		
		Standard		IEEE802.3x standard flow control compliant		
		Transfer speed		10Mbps and 100Mbps		
		Delimiter		CR+LF, CR, LF		
	General I/O port	Input	General input		3 port	
			Teaching		1 set	
			Busy error cancel		1 set	
Output		General output		3 port		
		Scale division pulse signal		1 set for each axis		
		Alarm signal		1 set for each axis		
		In position signal		1 set for each axis		
Teaching status		1 set				
Emergency stop input				B contact (fixed)		

Jog controller JC-01

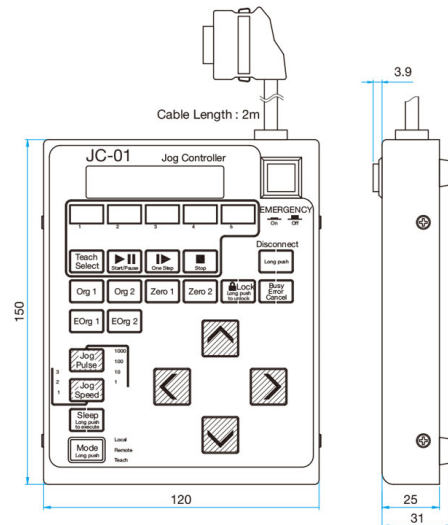
RoHS

JC-01 is used by connecting the feedback controller of feedback stage(FS series).
 JC-01 can be operated at hand by connecting a dedicated controller (FC series).
 It allows stage operation, teaching operation, emergency stop, mode switching or run sleep.

Outline drawing



JC-01



Specification		JC-01	
Part number		JC-01	
Primary spec	Controller connection number	1	
	Controller	FC-911、FC-611、FC-511、FC-514、FC-411、FC-414	
	Number of control axis	2 axes (Simultaneous control available)	
	Stage operation		Cross JOG operation, JOG speed step switching, JOG command pulse amount switching
			Mechanical origin return, electrical origin return
			Coordinate value zero clear, busy error cancel
	Teaching	Select teaching channel, execute start, pause or one step	
Others		Execute and stop	
		Mode switching, run sleep, key operation invalid, power supply cut off	
		Emergency stop	
General spec	Power voltage	DC5V	
	Weight [kg]	0.8	
	Outer dimensions (W×H×Dmm)	120×31×150	
	Cable length [m]	2	
	Operating temperature/humidity	0 deg.C to 40 deg.C / 20% to 80%RH (without condensation)	
Storage temperature/humidity	-10deg.C to 55 deg.C / 20%~80%RH (without condensation)		

Cable for feedback stage F-CABLE



Dedicated cables for feedback stage system.

The cables are Lead free and susceptible to noise by a braided shield robot cable.

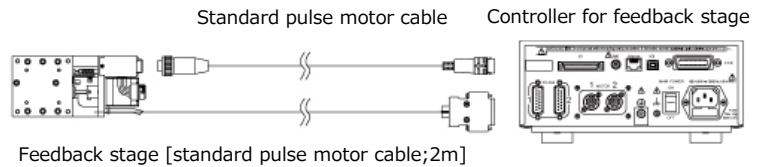
Both the cable for motor and scale are required to connect the feedback stage and dedicated controller.

Please refer the connection example to select the cable.

■ Connection example

Minimum configuration to connect stage and controller. It consists of standard pulse motor cable (2m) and scale cable (2m) directly connected with stage.

Standard pulse motor cable is required other than stage and controller.

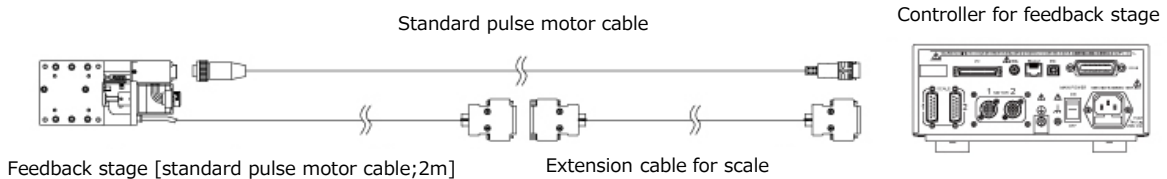


■ Extend cable configuration

[To extend the cable longer than 2m]

It consists of standard pulse motor cable (5m), scale cable (2m) directly connected with stage and extension cable (3m) for scale.

Standard pulse motor cable and extension cable for scale are required other than stage and controller.



■ Standard pulse motor cable

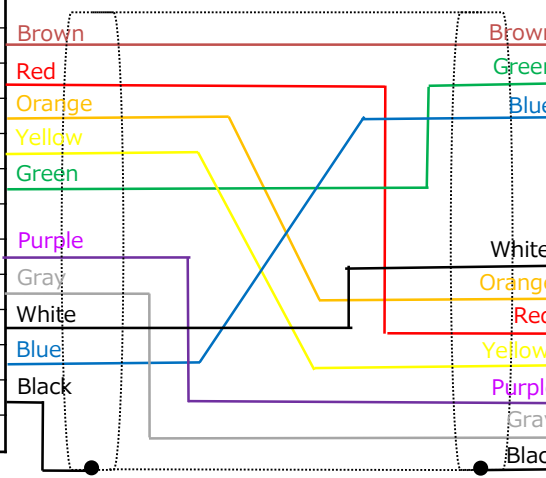
Specifications		
Part Number	PM-CA-2	PM-CA-5
Cable length [m]	2	5
Controller	FC-411、FC-511、FC-611、FC-911	
Stage	FS-1020***、FS-1050***、FS-1100***、FS-3150***	

Controller side (12pin)
RP17-13P-12PC(Hirose Electric Co., Ltd.)

Pin Number	
1	Motor lead
2	Motor lead
3	Motor lead
4	Motor lead
5	Motor lead
6	N.C
7	+Vs
8	GND
9	LS1(CCW)
10	LS2(CW)
11	F.G
12	N.C

Stage side (12pin)
HR10A-10TP-12PC
(Hirose Electric Co., Ltd.)

Pin Number	
1	Motor lead
2	Motor lead
3	LS2(CW)
4	N.C
5	N.C
6	N.C
7	LS1(CCW)
8	Motor lead
9	Motor lead
10	Motor lead
11	+Vs
12	GND

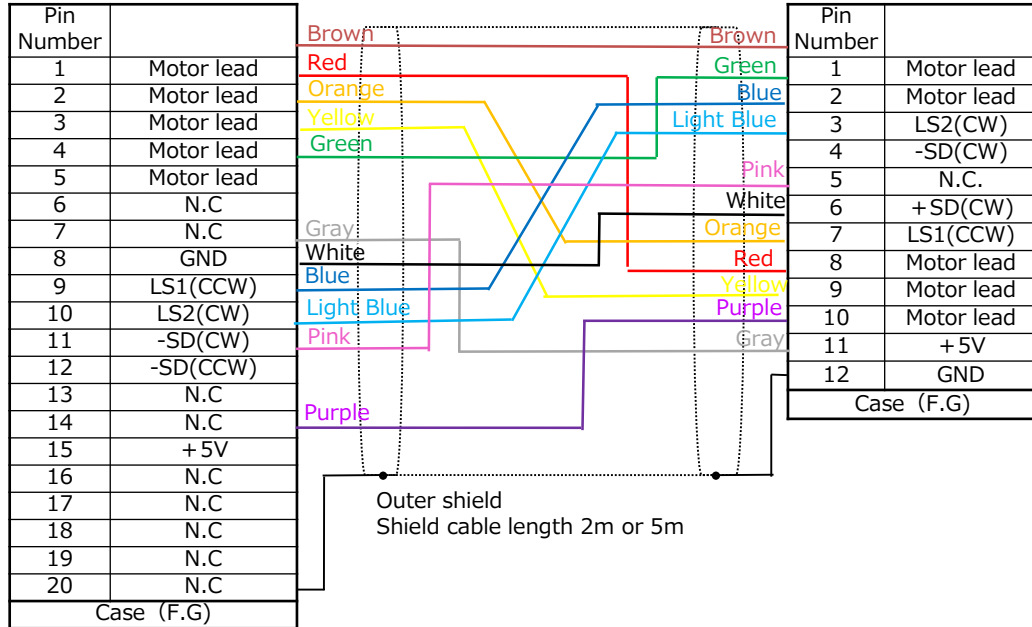


Outer shield
Shield cable length 2m or 5m

■ Cable for pulse motor (for the stage with slow down sensor)

Controller side (D-sub 20pin)
HR10A-13P-20PC (73)
Hirose Electric Co., Ltd.

Stage side (D-sub 12pin)
HR10A-10TP-12PC
Hirose Electric Co., Ltd.

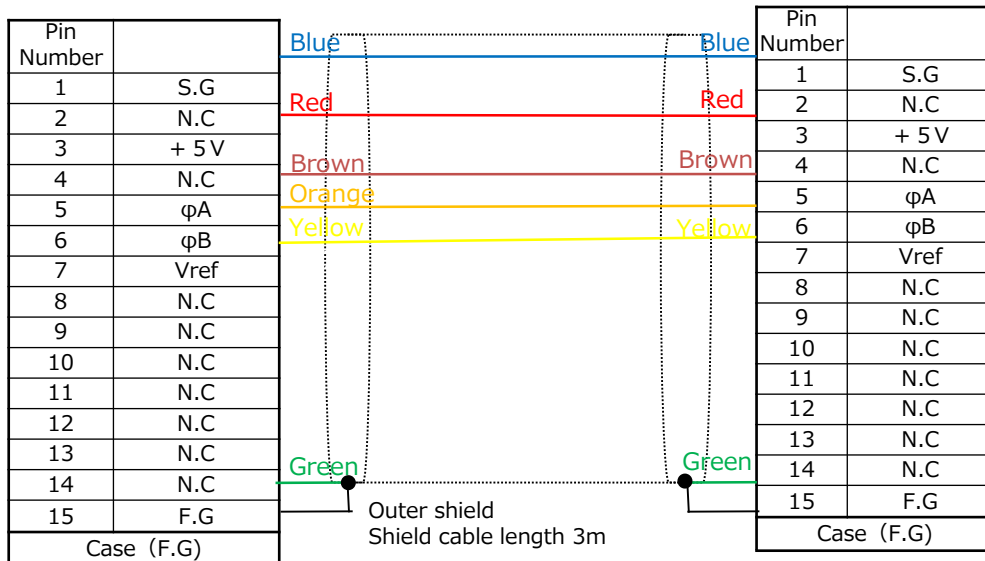


Specifications		
Part Number	PM4N-CA-2SD	PM4N-CA-5SD
Cable length [m]	2	5
Controller	FC-414, FC-514	
Stage	FS-3200**, FS-3300, FS-3400	

■ Extension cable for scale

Controller side (D-sub 15pin)
17JE-23150-02(D1)
(Male Type) DDK Ltd.

Stage side (D-sub 15pin)
17JE-13150-02(D1)
(Female Type) DDK Ltd.



Specification	
Part number	PS-EX-3
Cable length [m]	3
Stage controller	FC-911, FC-611, FC-511, FC-514, FC-411, FC-414
Feedback stage	Scale cable