

M3-81RA/D/S/G 7" Teach Pendant Controller

Basic Installation Instructions v1.1

Dear users, please go through the instructions in detail before the installation. Also, please hand the manual to the actual operator of the machine and preserve it properly.

CNC controllers are precision electronic devices. For the safety of both operators and the machine, please ensure all installations, tests, and adjustments are operated by professional personnel. For the description with "DANGER," "WARNINGS," and "CAUTIONS" in the manual, please read them in detail. If there are any concerns, please contact our branches in your region. Our professionals are glad to be at your service.

The following are the guidelines you should comply with before finishing reading the complete manual:

- The installing environment should be indoor and without water vapor, corrosive or flammable gas.
- Implement the wirings according to the wiring diagram.
- Implement the grounding strictly and follow the current National Electrical Code. (References: NFPA 70: National Electrical Code,2005 Ed.)
- Do not modify the wirings while the device is powered up.

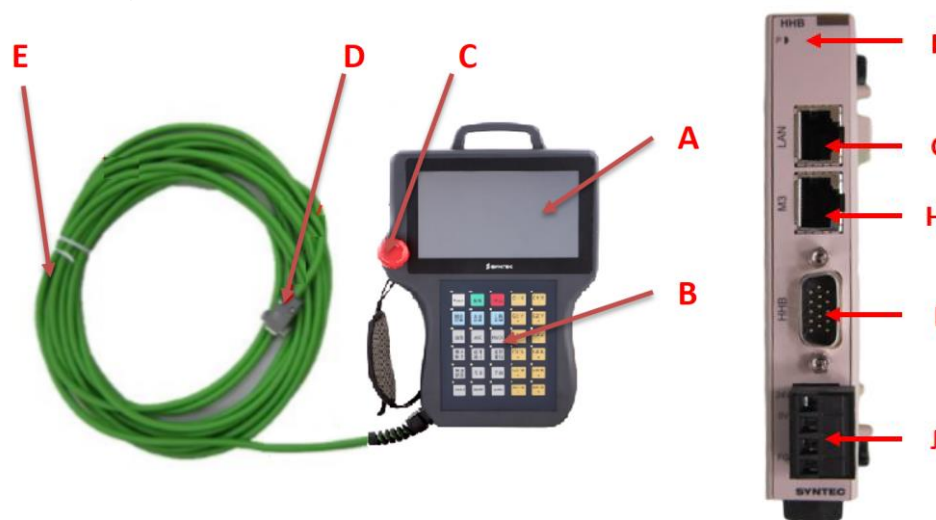
1. Safety Precautions

Please pay extra attention to the instructions below while operating the product.	
	<ul style="list-style-type: none"> ■ Please comply with the manual when installing the teach pendant, and please connect to the controller slot of the matching teach pendant. Do not connect the connector to compatible ports of unknown motors, or it may cause malfunction to the teach pendant due to an abnormal power supply. ■ Please cut off all the external loads when powering up the teach pendant for the first time. The built-in testing PLC program may start the motor immediately after power-up, which might be dangerous for the staff around. ■ Do not operate the product in places exposed to water vapor, corrosive, or flammable gases. It might cause damage to the device, electric shocks, fire, or explosion. ■ Do not install the product at a temperature exceeding the specified range. It might cause device damage or malfunctioning. ■ The product has been tested and found to comply with the limits for KC Class A Commercial equipment) digital device. It was for use in commercial and industrial environments instead of households. ■ Do not apply the product to machines that might lead to casualties, device damage or system shut down.
	<ul style="list-style-type: none"> ■ The teach pendant is a precision instrument. Please prevent non-maintenance staff or non-professional electronic control personnel from disassembling the device. ■ Do not touch the teach pendant and the panel with sharp objects. Doing so may cause damage to the appearance of the teach pendant or the panel. ■ Please apply the correct ground loop to prevent errors from the controller.
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	<ul style="list-style-type: none"> ■ The teach pendant adopts a microcomputer design. Please install the teach pendant in a safe area and keep it clean. Please keep iron shavings, wires, water, corrosive gas, and liquid from the teach pendant to avoid malfunction. ■ Storage temperature range: -20°C~60°C Storage relative humidity range: 0% to 90% and without condensation. ■ Operating temperature range: -10°C~55°C Please ensure that there are proper ventilation and heat dissipation area before operating. ■ The grounding of the teach pendant and machine tool system is necessary for leakage protection and prevention of lightning strikes. Please ensure the teach pendant and the machine tool system are grounded properly before installing. ■ The rated voltage of the teach pendant power system should not exceed 5±5% V. If the operating environment provides an unstable voltage source, please apply a voltage stabilizer so that the controller can function properly. ■ Please turn off the power before plugging/unplugging the cables or modifying the wirings to prevent electric shocks or damage to the teach pendant. ■ Do not fold the wire of the teach pendant and connectors vigorously, or it may cause internal damage to the wire or contact disconnected. ■ Please make sure all the terminals are in the correct positions while wiring to prevent the driver from damage caused by wiring mistakes. ■ Do not touch the terminals within 10 minutes after cutting off the power in case the residual voltage might cause electric shocks.
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2. Interface Specifications

(Teach pendant & Transfer Module: Front View)



A	7-inch Screen	Display Window
B	Key	Edit
C	Emergency Stop Button	For emergency stop
D	Teach pendant Dedicated Connector	Functions Included: 1. The Internet interface 2. 24V Rated Current 300mA 3. 0V 4. The SRI interface 5. The M3 interface
E	Cables	10/17m Cable
F	Power Indicator Light	Indicate the power condition
G	LAN	Connect to the Internet

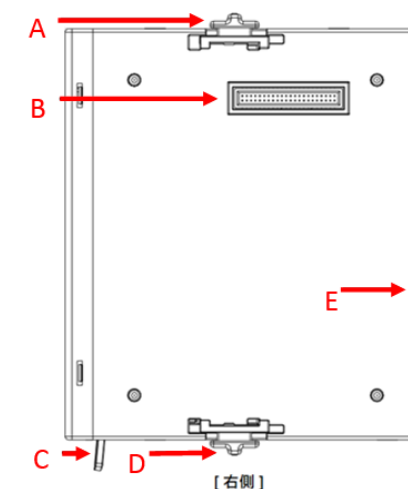
H	M3	M3 serial signal interface
I	HHB	Connect to the teach pendant controller
J	24V Power Input	DC 24V·1A Power input

(Teach pendant: Rear View)

A	USB Port	Connect to the USB
B	Wrist Band	Handheld
C	Key Switch	For unlocking word key



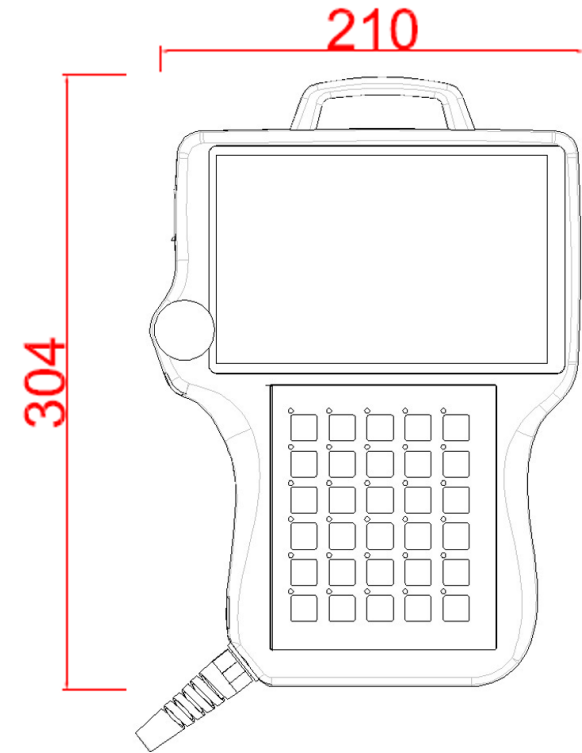
(Side View: Transfer Module)



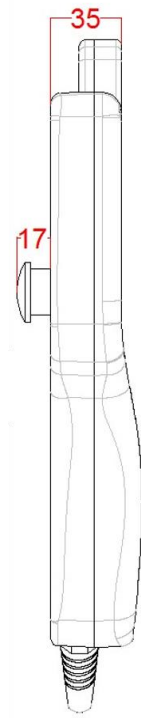
A	Upper Fastener	Connect to the upper fastener of other FC function modules
B	Internal Signal Connector (R)	Connect to other FC function modules for communication
C	Slide Tenon Batch	Control the batch of the slide tenon
D	Lower Fastener	Connect to the lower fastener of other FC function modules
E	Slide Tenon	Fix the tenon on the slide

3. External Dimension (Unit : mm)

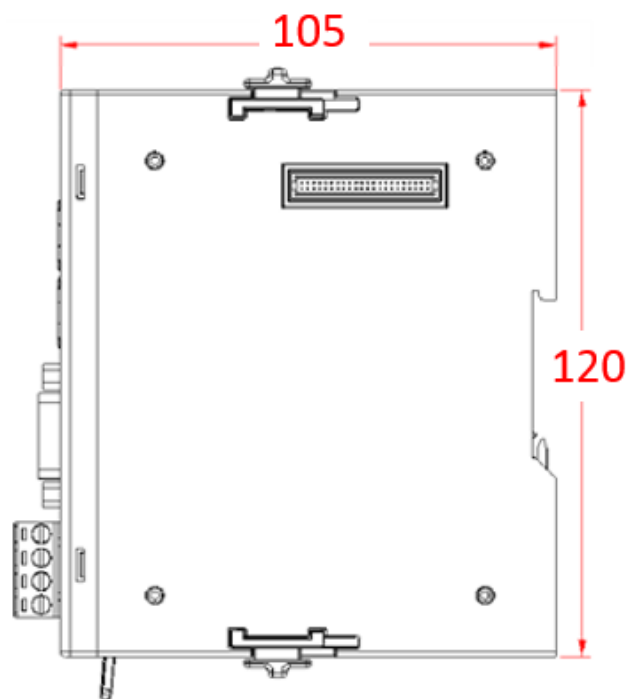
(Teach pendant: Front View)



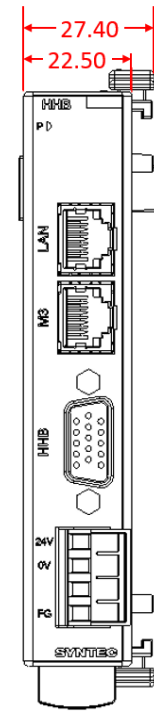
(Teach pendant: Side View)



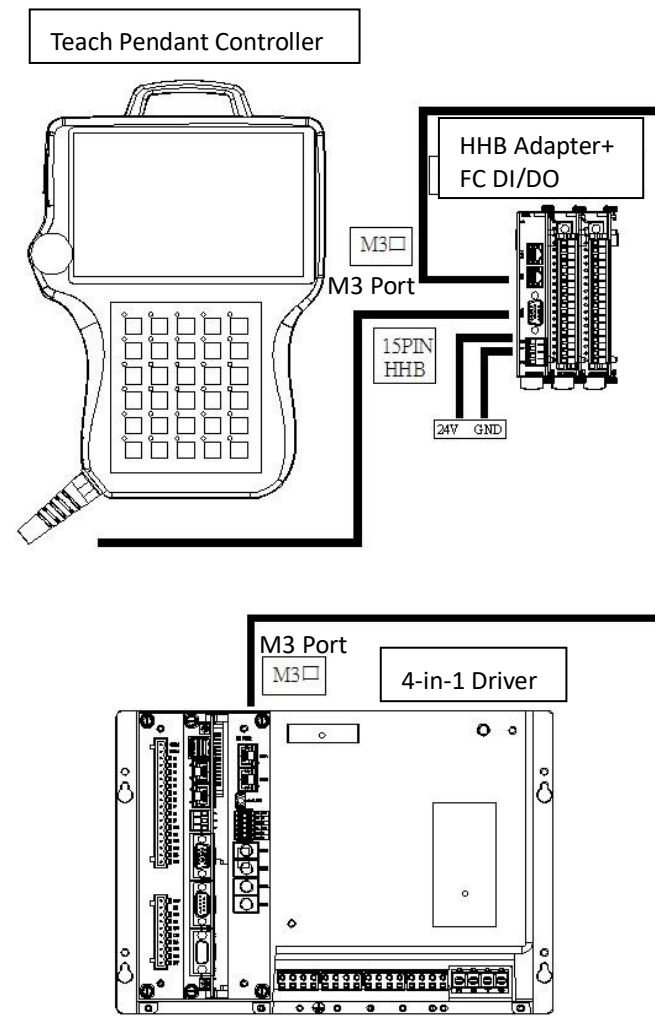
(Transfer Module: Front View)



(Transfer Module: Side View)



4. Basic Wiring Diagram



5. Interface Configurations

Please notice the value and polarities of voltages.

● HHB Arrangement

HHB (47)					
PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	LAN_TXD+	6	---	11	---
2	LAN_TXD-	7	M3_TPT1	12	SRI_D+
3	LAN_RXD+	8	M3_TPTN1	13	SRI_D-
4	LAN_RXD-	9	M3_TPRP1	14	GND
5	---	10	M3_TPRN1	15	24V

● LAN Arrangement

LAN	PIN	SIGNAL
	1	TX+
	2	TX-
	3	RX+
	4	---
	5	---
	6	RX-
	7	---
	8	---

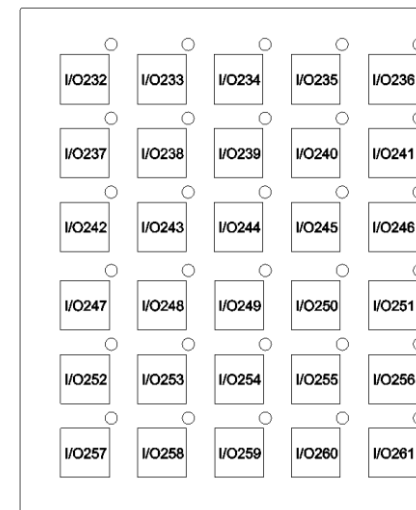
● M3 Arrangement

M3	PIN	SIGNAL
	1	TX+
	2	TX-
	3	RX+
	4	---
	5	---
	6	RX-
	7	---
	8	---

● 24V Power Input Arrangement

24V 電源輸入	PIN	SIGNAL
	1	24V
	2	GND
	3	---
	4	FG

● I/O Arrangement



Note :

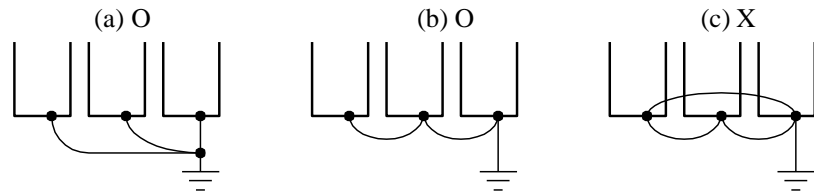
- There are 30 panel keys, 1 emergency stop, and 1 safety switch.
- Each key and light on the panel corresponds to the I/O (I/O232~261) points of the controller. The panel protectors of the teach pendant vary according to different applied situations and applicable modules, but the positions are the same.
- Emergency stops have been inserted in point 163 of the teach pendant controller, which can be used directly in the PLC.
Initial Position : I63 ON
Bottom Position : I63 OFF
- 3-stage safety switch corresponding to two I Points :
Initial Position : I266 ON I267 OFF
1st stage position : I266 OFF I267 ON
2nd stage position : I266 ON I267 OFF

6. Wiring Notifications

- Please connect the ground wire to class-3 (under 100Ω). Poor grounding might cause signal errors, electric shock, or fire.
- When using a solenoid valve or other inductive loads, please apply an arc extinguisher or an RC varistor to ensure the life of the contact points. Advantages of the arc extinguisher:
 - 1) Extend the life of electrical contacts.
 - 2) Reduce the sparks from the contact points.
 - 3) Restrain the impulse voltage.
 - 4) Prevent the inductive loads from interferences caused by back-EMF
- Do not connect other cables to extend the original length. It might cause signal errors or malfunction.
- If the servo line in use is not a standard Syntec cable, please verify all the terminals are connected properly before power-on. Incorrect wirings will lead to controller output command errors and malfunctioning.
- The +5V power capacity provided by the MPG terminal is 200mA, which is only for

a single external MPG. Do not connect to any inductive loads or it might lead to the interference of the controller and cause malfunctioning.

- The external 24V power supply used in wiring should be certificated and protective to avoid the malfunction caused by wiring mistakes. (Recommendation standard : fulfill requirements of both EN60950 or UL1950)
- Please crimp or weld the wire connections while doing the wirings.
- In case of the use of Ethernet, to prevent internet congestion and noise, the CAT5e or CAT6 cable is recommended.
- Do not use counterfeit terminal strips. Those terminal strips cannot provide overall protection for the system. The quality is also not guaranteed and tends to cause electrical control problems of the machine tools.
- Grounding Directions:
 - 1) The length of grounding wires should comply with the electrical equipment regulations; the shorter the better.
 - 2) The grounding wire of the driver should be grounded separately with high-current loads such as electric welders or high-frequency motors.
 - 3) Please refer to the pictures below when the controller is grounded with multiple electrical control devices. Do not make it a loop.



7. Touch Panel Notifications

- Do not press hard on the touchscreen. Operating force (Max.): 200g.
- Please touch the screen with a stylus or fingers.
- Do not touch the screen with sharp objects such as screwdrivers, pens, or pencils other than fingers or stylus. Doing so might cause screen dents, cracks, or scratches.
- Do not wipe the touchscreen with unknown organic solvents. Clean water and glass wipes are recommended for the cleaning.