IDEC

Safety Commander™

HT3P

Safety Commander™

Add safety features to tablets on the production floor

APEM

an IDEC company

Tablets used on the production floor is on the rise, and safety is an issue

Tablets are now often used as control terminals at manufacturing sites. From the standpoint of ISO/IEC safety standards, however, when tablets or other operation devices are used near sources of danger from machinery, the tablets need to be equipped with safety devices, such as an enabling switch and an emergency stop switch for immediately shutting down the machinery.

Safety device attaches easily to tablet

With Safety Commander™, a tablet can be readily equipped with a safety device

Improves safety and operability

With Safety Commander™, tablets can be used safely. Operability is also improved by the ergonomic design. Furthermore, lower operating terminal costs and work efficiency is enhanced.

Adapts to both vertical and horizontal use

The tablet can be used in both vertical and horizontal orientation, thanks to a rotating holder. The emergency stop switch, which must be usable in an instant, can be positioned for ease of use.

Vertical right-hand and left-hand use

Horizontal left-hand use

Horizontal right-hand use

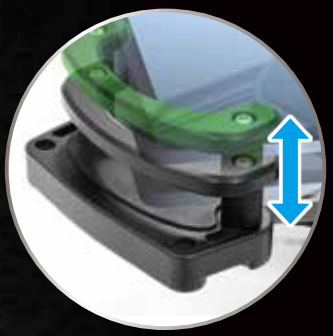
Operability regardless of handedness

The ergonomic holder design and enabling switch position result in ease of holding and operability.

Held with left hand

Held with right hand

Tablet size: 8 to 11 inches



Thickness: up to **24**mm (*1)

Usable with tablets of various sizes

The adjustable docking structure enables use with screen sizes of 8 to 11 inches. Thicknesses of 10 to 24 mm (*1) are accommodated by spacer replacement. Can be attached to rugged tablets with extra thickness.

*1)Standard width: up to 10mm
When accessory "tablet thickness adjustment kit A" is used: up to 18mm
When accessory "tablet thickness adjustment kit B" is used: up to 24mm

Emergency stop switch with LED indicator

Equipped with safety lock mechanism, safety potential structure, and direct opening action. The LED indicator visibly shows the enabled status of the emergency stop switch.

Three-position enabling switch

Safety during work operations is assured by the ergonomically designed three-position action (OFF→ ON→OFF) for avoiding danger.

Rugged construction with drop resistance of 1.2 meters

Designed for assurance, the product has passed drop tests assuming accidental droppage or impact while carrying. (*1)

*1) Drop resistance has been tested for tablet weights up to 1.1kilogram. Protection of the product or tablet from dropping is not guaranteed.

IP54 protection

Usable even in dusty environments or when exposed to splashing or spraying.

USB port: Type-C

USB charging port

Can be used while charging the tablet, with no worries about losing battery power during use.
* 5V DC-1.5A output

Key locking function

Prevents careless removal of the tablet.

- Photo shows the product mounted on a commercially available tablet.
- The tablet is not included with this product and must be prepared separately by the customer.

Combining Safety Commander™ with a tablet solves common problems on the work floor

Can the need for dedicated terminal development be eliminated?

BEFORE

Creating dedicated terminal devices in house can be costly, including the development costs. Keeping up with changing needs as features are removed or upgraded is also a burden.

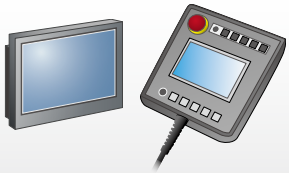
AFTER

Combining Safety Commander™ with a tablet results in a low-cost dedicated control terminal. Hardware development is unnecessary, and discontinuations or upgrades can be handled readily at the software level. Safety and security are also maintained.

Is there a way to improve touch panel functions?

BEFORE

A dedicated touch panel is used for equipment control. We would like to increase the functions but also want to keep costs down.



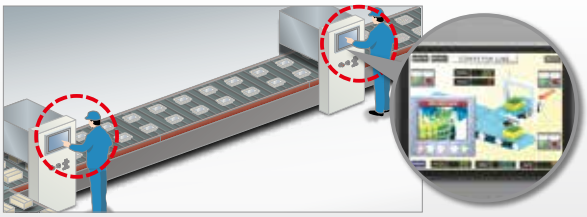
AFTER

Combining Safety Commander™ with a tablet enabled use for process control, viewing of drawings, and operation log checking. Along with safety assurance on-site work efficiency is improved. Costs have also been kept low.

Can the number of different touch panels on panel boards be reduced?

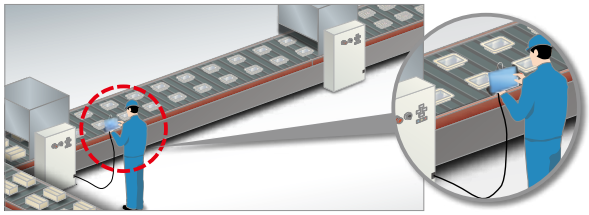
BEFORE

Individual touch panels are installed on multiple panel boards, but this is inefficient as the panels are used infrequently.



AFTER

Using one detachable Safety Commander™ and tablet, operations can be performed in multiple workplaces. It is no longer necessary to install permanent touch panels in each workplace. Safety is also improved, since the safety features are right at hand.



Can an existing tablet be used for equipment control?

BEFORE

We already have a tablet for process control and would like to use it also for controlling equipment, but are concerned about safety.

AFTER

By simply attaching safety features onto the tablet, we were able to use it for equipment control. We also saved equipment costs.

Application examples

Robot teaching

Manual control of AGVs and AMRs

Control of automobile production lines and conveyor lines

Add safety to tablets used on the factory floor

Control of large equipment or equipment operations

Control of semiconductor manufacturing equipment, and chip mounters

Maintenance of automated car parking systems

Web browser functions on PLCs

Safer use of industrial tablets

The story of Safety Commander™ development

For more than 20 years, IDEC has been engaged in development of devices that merge SUI (*1) and GUI (*2). Along the way, as tablets have come into wide use, we turned to development of the Safety Commander™, aimed at easy-to-use touch panels and reliable switches, while being built both for ergonomics and ruggedness.

*1) SUI (Solid User Interface)
Human/machine interface based on operation of physical switches, buttons and other such parts.

*2) GUI (Graphical User Interface)
Human/machine interface based on operation of virtual parts displayed on a screen, such as figures and icons.

1997 ~ *2003 ~* *2019* *2021*

Development of control & teaching pendants that combine the operating/display devices of each era with the concept of SUI and GUI merging

HG2R / S

Large LCD touch panel. Equipped with "CC click" providing operating feedback

HG1T HG1H HG1U

Small LCD + mechanical switches. Membrane and mechanical switches became mainstream

HG1P

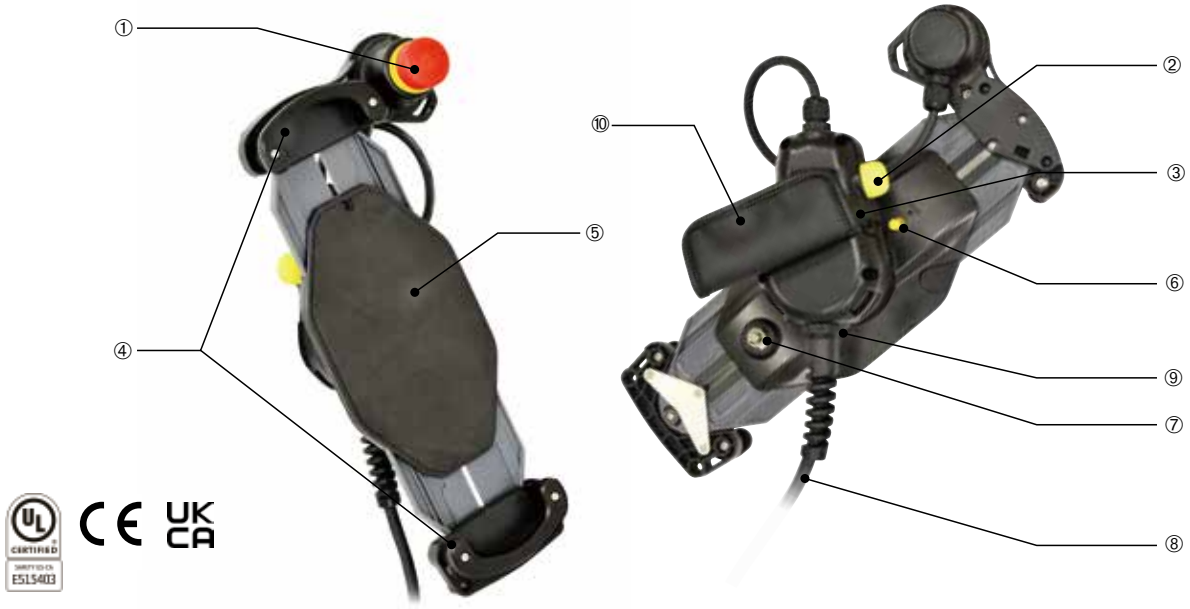
High-resolution touch panel + mechanical switches

HT3P

Tablet + mechanical switches
Merged tablet with emergency stop switch/enabling switch

HT3P Safety Commander™

Enhance safety and usability



No.	Name	Details
1	Emergency stop switch with LED indicator	XA1E-LV302Q4R (IDEC)
2	Three-position enabling switch	HE5B-M2PY (IDEC)
3	Grip switch	Grip of the product
4	Hook	Tablet holding part
5	Emergency stop switch	Tablet holding part
6	Tablet holder unit	Tablet holding part
7	Extendable lock lever	Extendable lever for tablet holder
8	Extendable lock key	Key lock for extendable lever
9	Cable	5m wire
10	USB interface	USB charging port USB port: Type-C
11	Hand strap	Accessory

HT3P

Main unit

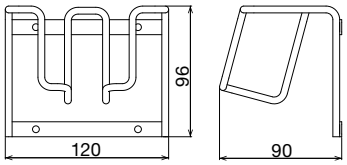
Package quantity: 1

Name	Table size	Part no. (Ordering no.)	Part no. (Ordering no.)
Safety Commander™	8 to 11 inches	HT3P-SLNP-5M	Switches used: Emergency stop switch XA1E-LV302Q4R Enabling switch HE5B-M2PY

Maintenance Parts

Name	Shape	Specification	Part no. (Ordering no.)	Package Quantity	Remarks
Hand strap		Artificial leather	HT9Z-3PS1	1	Back hand hold type
Extendable lock release key		Metal	HT9Z-3PK01	2	–
Sponge sheet for thickness adjustment		EVA foam Height: 4mm	HT9Z-3PHa04	1	Used when there is a gap between the tablet and tablet holder
Hook		Frame: Plastic Spacer: Aluminum Rubber tube: Rubber	HT9Z-3PHZ	1	Hook to hold the tablet

Accessories

Name	Shape	Material	Part no. (Ordering no.)	Package Quantity	Remarks
Wall mount bracket		Stainless steel	HT9Z-3PF1	1	For mounting on walls The mounting centers of the screws comply with VESA standards 
Tablet thickness adjustment kit A		Spacer: Aluminum Rubber tube: Rubber	HT9Z-3PHB08	Spacer: 4 Rubber tube: 4	For tablets with 11 to 18mm thickness tablets
Tablet thickness adjustment kit B		Spacer: Aluminum Rubber tube: Rubber	HT9Z-3PHB14	Spacer: 4 Rubber tube: 4	For tablets with 19 to 24mm thickness
Neck strap		Artificial leather	HT9Z-3PS2	1	To wear around the neck. For safety, the strap will loosen when a certain amount of load is applied.

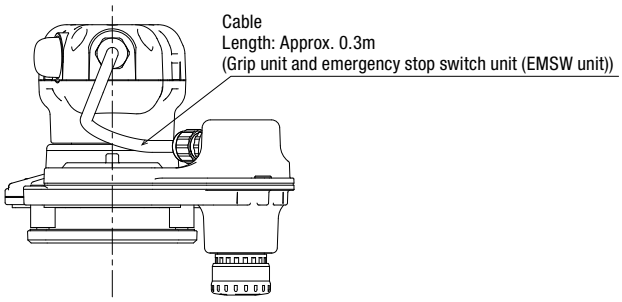
General Specifications

Environmental specifications	Operating temperature		-20 to +55ºC (USB power supplied while holding the grip: -20 to +35ºC)
	Operating temperature		-20 to +55ºC
	Operating humidity		45 to 85%RH (without condensation)
	Storage humidity		45 to 85%RH (without condensation)
	Pollution degree		3
Electrical specifications (*2)	Rated input voltage		XA1E illuminated part: 24V DC±10% USB power input: 24V DC –15%/+20% (*1)
	Rated input voltage		60V
	Contact rating (*3)	XA1E-LV302Q4R (Illuminated type)	2A/30V DC (resistive load) 1A/30V DC (inductive load)
		HE5B-N2PY	1A/30V DC (resistive load) 0.7A/30V DC (inductive load)
EMC		Immunity Zone	Zone A
Mechanical specification	Vibration		5 to 8.4Hz: amplitude: 3.5mm 8.4 to 150Hz acceleration: 9.8m/s² (2 hours on each of 3 directions)
	Shock		147m/s², 11ms (5 times on each of 6 directions)
Construction Specifications	Degree of protection		IP54 (*4)
	Table size		Tablet diagonal length: 234 to 300mm (when expanded: up to 320mm) Screen size : 8 to 11 inch
	Compatible tablet thickness (*5)		Standard thickness: up to 10mm (*6)
	Weight (approx.) (*7)		530g (Approx.) (Excluding Cable) 980g (Approx.) (Including Cable)
	Tablet holder rotation angle		200° Approx.
	Housing		Black
USB specifications		Interface	USB Type-C connector Power supply only: 5V DC-1.5A output
Applicable standards			IEC/EN 60947-5-1 IEC/EN 60947-5-5 (XA1E-LV302Q4R) IEC/EN 60947-5-8 (HE5B-M2PY) UL 508 UL 60947-1 UL 60947-5-1 UL 60947-5-5
		Safety standards	IEC/EN 61010-1 IEC/EN 61010-2-201
		Applicable standards for use	ISO 12100 IEC/EN 60204-1
		EMC standards	IEC/EN 61131-2
Certification standard			UL508 UL60947-5-5

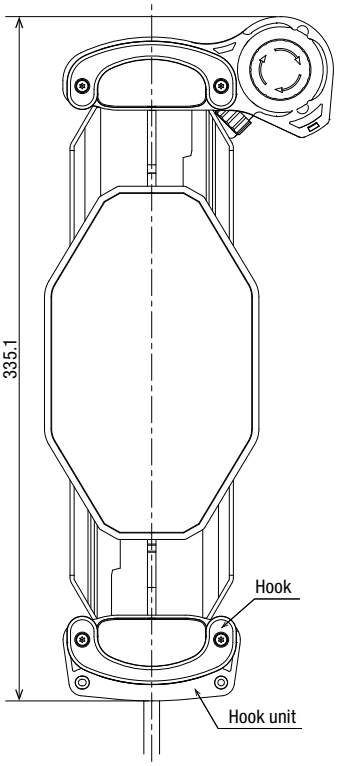
*1) If there is a risk of malfunction or destruction to the USB power supply or tablet due to noise from the connected power supply, use a dedicated USB power supply power supply that is independent of other power supplies.
*2) Safety approval ratings
UL certification Overall Device: Rated Class 2
Switch Contact: 30V dc/0.7A Resistive
Illumination for Switch: 24V dc/11mA
USB Power Supply Input: 24V dc/0.5A
USB Power Output: 5V/1.5A
Maximum ambient temperature: 40°C
Environmental rating: Type 1
Certified with a maximum tablet weight of 1.1 kg
*3) Product specifications of consisting items
*4) Except when connecting a USB cable.
*5) Some tablets may not apply depending on the shape.
*6) If the tablet does not have enough thickness, use a sponge sheet for adjusting the thickness.
When the tablet thickness is 11 to 18mm, use HT9Z-3PHB08, when the thickness is 19 to 2mm, use HT9Z-3PHB14 as additional parts.
*7) Excluding hand strap and other accessories.

Dimensions

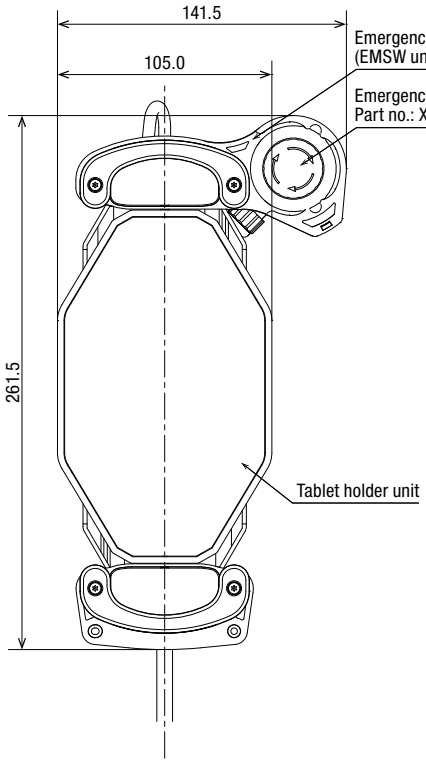
Dimensions in mm

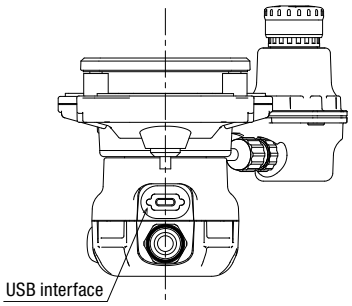


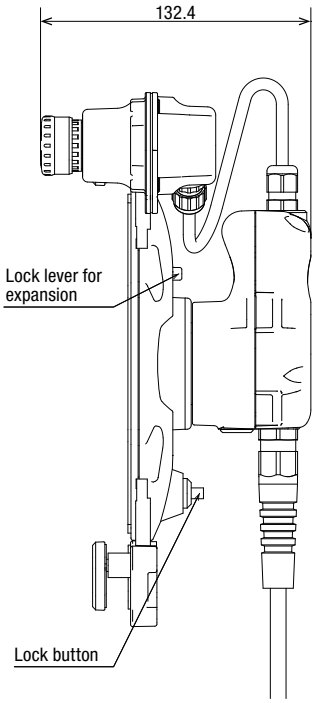
Tablet holder unit
Maximum expansion

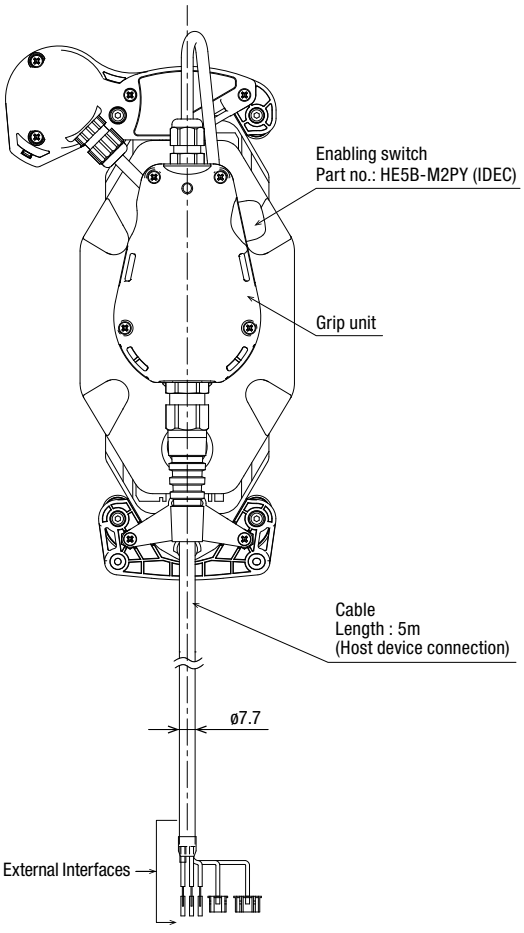


Tablet holder unit
Minimum expansion

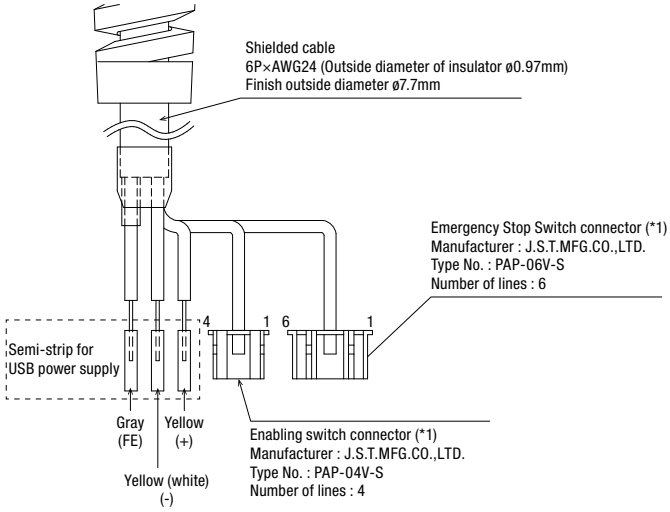








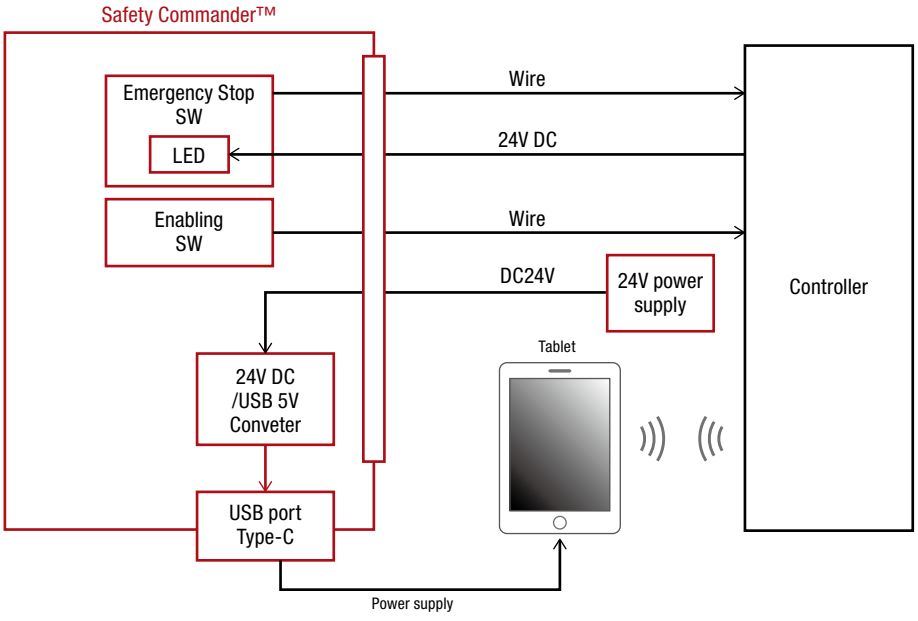
External Interface



*1) Disconnect the connector if it is not necessary.
When mounting the connector to the end of the cable, select the connector depending on the specifications of the cable and the operating environment.
Recommended connector: CA-12PIN128007-1619709 (PHOENIX CONTACT)
The connector part is not UL approved.

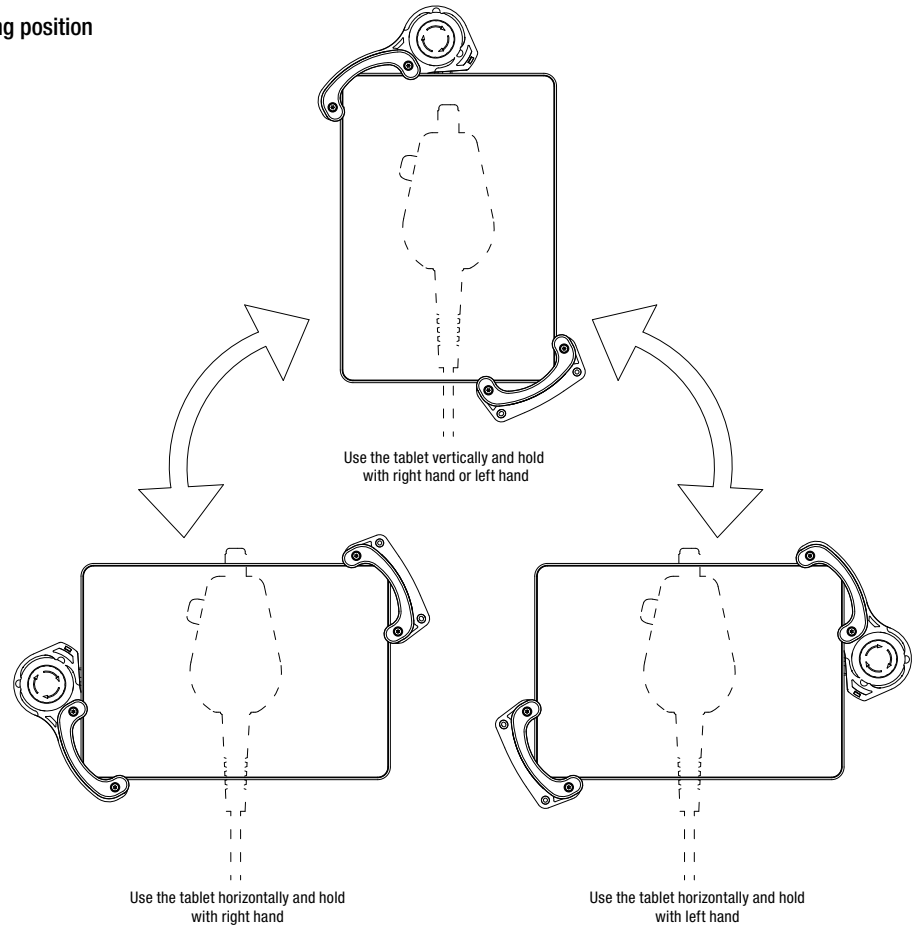
	Connector terminal no.	Wire color	Function name
Emergency stop switch	1	Red	LED lamp (24V DC)
	2	Black	LED lamp (0V DC)
	3	Green	Contact 1 (NC)
	4	Green (white)	Contact 1 (NC)
	5	Red (white)	Contact 2 (NC)
	6	Black (white)	Contact 2 (NC)
Enabling switch	1	Brown	Contact 1 (NC)
	2	Brown (white)	Contact 1 (NC)
	3	Blue	Contact 2 (NC)
	4	Blue (white)	Contact 2 (NC)
USB power supply	–	Yellow	+ (24V DC)
		Yellow (white)	- (0V)
		Gray	FE

System Configuration

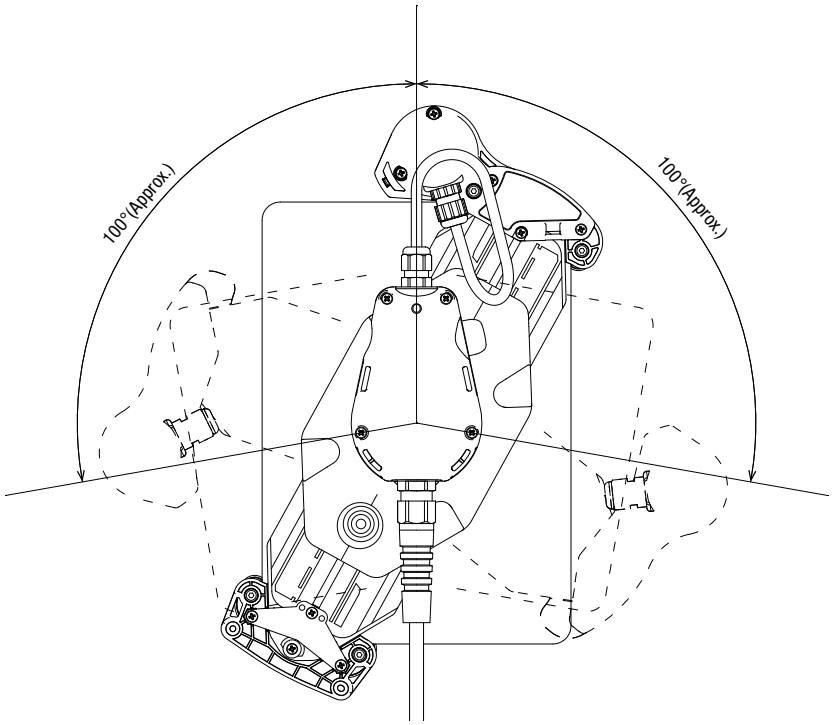


Tablet holder unit rotating mechanism

• Tablet base installing position



• Rotatable angle of the tablet holder unit relative to the grip unit (*1)



*1) Do not force the tablet holder to rotate. Otherwise, damage may occur..

⚠ Safety Precautions

Turn off the power before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shock or fire hazard.

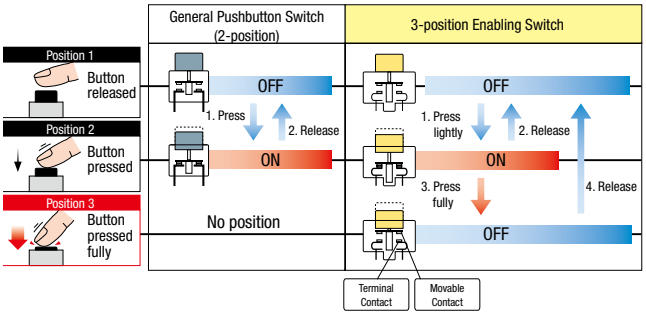
Instructions

Be sure to read the instruction sheet before installation, wiring, operation, and maintenance of the product.

For details on installation, wiring, and maintenance, see the Instruction sheet and User's Manual from the URL below.
URL: https://product.idec.com/?product=HT3P

- When using the HT3P in applications which require high level of safety, add a fail-safe or backup functionality, and verify an adequate level of safety using the product specifications.
- Turn off the power to the HT3P before installation, removal, wiring, maintenance, and inspection of HT3P.Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install and wire the HT3P. Users without such expertise must not perform installation or wiring.
- An emergency circuit must be configured outside of the HT3P by using the emergency stop switch mounted on HT3P unit.
- Connect the emergency stop switch and the enabling switch on the HT3P to function as either a category 0 or category 1 stop in accordance with IEC/EN60204-1.
- Do not, under any circumstances, hold the enabling switch on the HT3P in position 2 with tape, string, or deform the rubber cover. The intrinsic function of the enabling switch will be lost, and the enabling switch may not work in case of an emergency situation.
- When using the HT3P, place your finger firmly on the enabling switch.
- Perform regular checks to confirm that the emergency stop switch and enabling switch work properly. It is extremely dangerous if the enabling switch no longer returns to position 1 due to a foreign object becoming lodged in the switch because position 2 will be maintained even when you remove your hand.
- The enable functionality must be evaluated with the robot.
- Stop using the HT3P if it is accidentally dropped or exposed to significant shocks, check for damage, and confirm that its various functions work safely and correctly.
- Malfunction may result due to noise. Follow the instructions below
  – Set the FE terminals to class D grounding
  (Class 3 grounding : Grounding resistance: 100Ω or less).
  – Do not connect the grounding conductor to the grounding conductor of the power unit.
  Do not supply power to the USB with foreign matter or water on the product.
- Do not pull or apply load to the cable, USB cable, or the connector. Otherwise, fire or malfunction may occur.
- Use a dedicated optional neck strap. Be careful not to get neck straps getting caught in machines during operation.
- Use the emergency stop switch indicator LED to determine whether the emergency stop switch is enabled or disabled. When the product is disconnected from the control device (when the emergency stop switch is disabled), make sure to store the product where it is not accessible to the operator so that it will not accidentally be operated.
- HT3P is designed for indoor use only (Not for outdoor use)
- Do not apply strong shock such as dropping the HT3P. Otherwise damage or malfunction will result.
- Use of the product in high temperature or high-humidity environments, or in locations where it is exposed to condensation, corrosive gas or large shock loads, can create the risk of electric shock or fire.
- HT3P is designed for use in pollution degree 3 environment. Use the HT3P under pollution degree 3 environment. (according to IEC60664-1 rating)
- Be sure to prevent metal fragments or wire chips from dropping inside the HT3P housing. Ingress of such fragments and chips may cause fire hazard, damage, and malfunction.
- Use a power supply of the rated value. Using a wrong power supply or wiring in reverse polarity may cause fire hazard and damage.
- Make sure of safety before starting and stopping HT3P. Incorrect operation of HT3P may cause mechanical damage or accidents.
- Do not attempt to disassemble, repair or modify HT3P. This can create the risk of fire or electrical shock.
- When disposing of HT3P, do so as an industrial waste.
- Install according to the instructions. Improper installation may result in, failure, electrical shock, fire hazard, or malfunction.
- Use the HT3P only for its intended purpose. Otherwise functions of the product may be impaired.
- Please note that some tablets may interfere with power or volume buttons at installation.

3-position operation of enabling switch



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