



Operation Manual

PRODUCT NAME

*Ionizer Separate Controller Ionizer
IO-Link compatible*

MODEL / Series / Product Number

IZT41/42/43 -L Series

This is the operation manual for the IO-Link function of the Separate Controller Ionizer IZT41/42/43-L series.

Refer also to operation manuals for the Separate Controller Ionizer IZT40/42/43 series (Transistor Input/Output) /41-L/42-L Series (IO-Link) and the Separate Controller Ionizer IZT43 series (Transistor Input/Output) /43-L Series (IO-Link).

SMC Corporation

Contents

Safety Instruction	3
1. System construction	6
2. Procedures to Operation	6
2-1. Flow chart to operation.....	6
3. Wiring	7
4. Function	8
4-1. Name of Parts	8
4-2. IO-Link Communication	9
4-2-1. Overview of IO-Link functions	9
4-2-2. IO-Link master configuration	9
4-2-3. Initial setting	9
4-2-4. Communication data.....	10
5. Alarm function	17
6. Dimensions	18
7. Specifications	23



Safety Instruction

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)^{*1)}, and other safety regulations.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
 ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
 IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
 ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots
 etc.



Danger

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



Warning

Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



Caution

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



Safety Instructions

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements". Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Handling

Caution

- 1) Tightening of the M12 connector screw
 - Note that the connector may loosen by vibration when tightening is insufficient.
 - Check that they are tightened enough at appropriate intervals during operation.
- 2) Connecting and disconnecting the M12 connector
 - Do not touch the engagement surface with wet hands.
 - Do not pull the cable out by holding the cable.
 - Note the key direction.
 - When engaging the connectors, insert the connectors until the entire engagement surface is no longer visible and tighten the screws so as not to damage the thread ridges.

Adjustment

Caution

- 1) Refer to the PLC manufacturer's manual for details of programming and address setting.
For the PLC protocol and programming, refer to the relevant manufacturer's documentation.

1. System construction

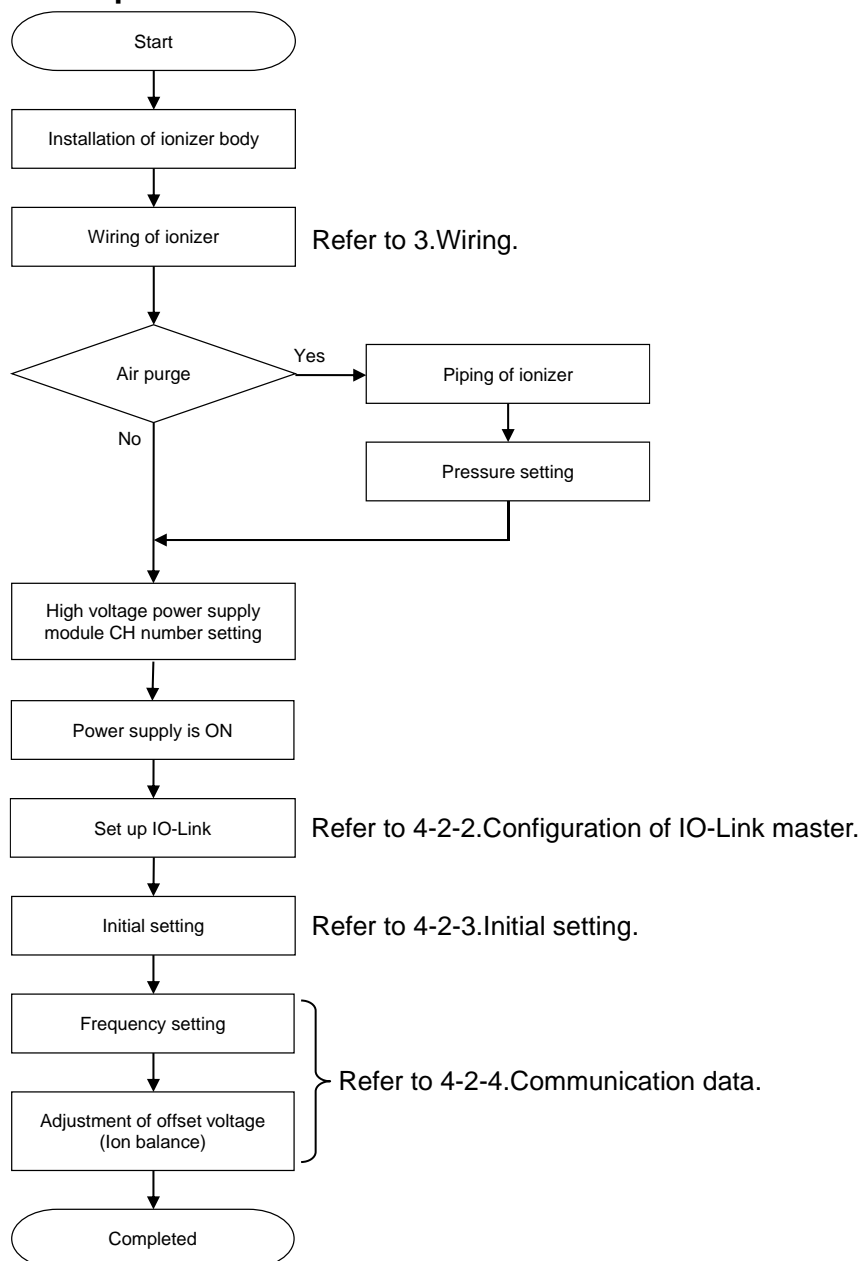
- IZT4□-L series consists of the bar (ion generator), high voltage power supply module, and controller. When selecting the model to use, make sure to refer to "IZT4□ Table of combination" in Table 1. Combinations other than those in the Table are not possible.
 - When multiple products are installed, up to 4 high voltage power supply modules can be connected to one controller.
- The product is not compatible with the transistor input/output controller (IZTC4□) and the high voltage power supply module (IZTP4□). Please pay attention not to install them for this product.

Table1. IZT4□ Table of combination (Representative model that can be connected)

Series	Controller	High voltage power supply module	Ion generator
IZT41-L	IZTC41-L	IZTP41-L	IZTB40
IZT42-L		IZTP42-L	IZTB42
IZT43-L		IZTP43-L	IZTN43

2. Procedures to Operation

2-1. Flow chart to operation



3. Wiring

1) Power supply cable

- A cable for supplying power to the high voltage power supply module.
- Connect the M12 connector of the power supply cable to the power supply connector. The connector key code B is used for the power supply connector. Pay attention to the key alignment when connecting them.
- Connect the lead wires according to the wiring diagram.
- To satisfy the current capacity, make sure to wire two brown cables in which a voltage of DC (+) is connected and two blue cables in which DC (-) is connected.
- **Make sure to connect the F.G. cable (green cable) to Ground with a resistance of 100 ohms or less to use it as a reference electric potential for an ionizer.**

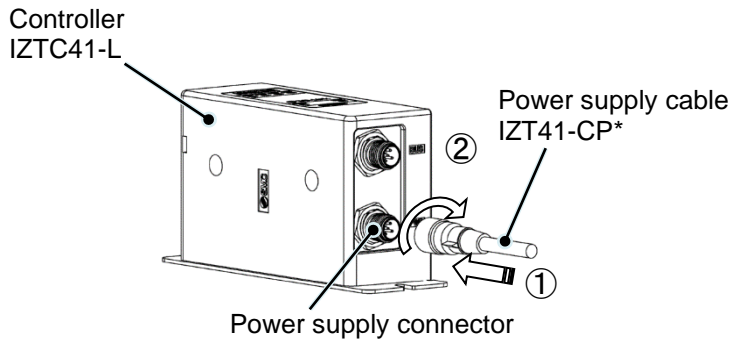


Table of Power supply cable wiring

Connector shape	Pin No.	Cable color	Signal name
	1	Brown	DC(+)
	2	Brown	
	3	Blue	DC(-)
	4	Blue	
	5	Green	F.G.

2) Communication cable

- A cable for power supply and IO-Link communication for the controller.
- Connect the communication cable plug to the communication connector. The connector key code A is used for the communication connector. Pay attention to the key alignment when connecting them.

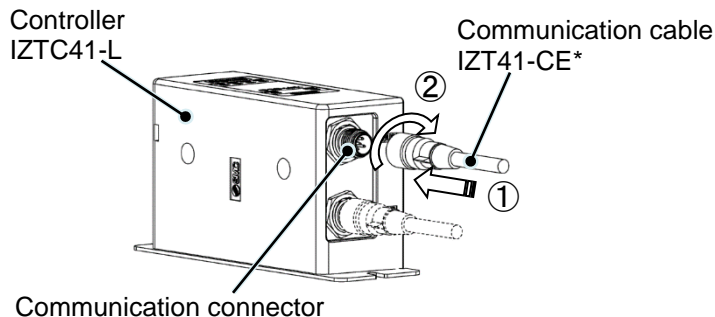


Table of Communication cable wiring

Connector shape	Pin No.	Cable color	Signal name
	1	Brown	L+
	2	-	-
	3	Blue	L-
	4	Black	C/Q
	5	-	-

3) Routing of cable

- Do not apply excess stress to the mounting part of the connector.
- When the cable is bent, maintain the minimum bend radius.

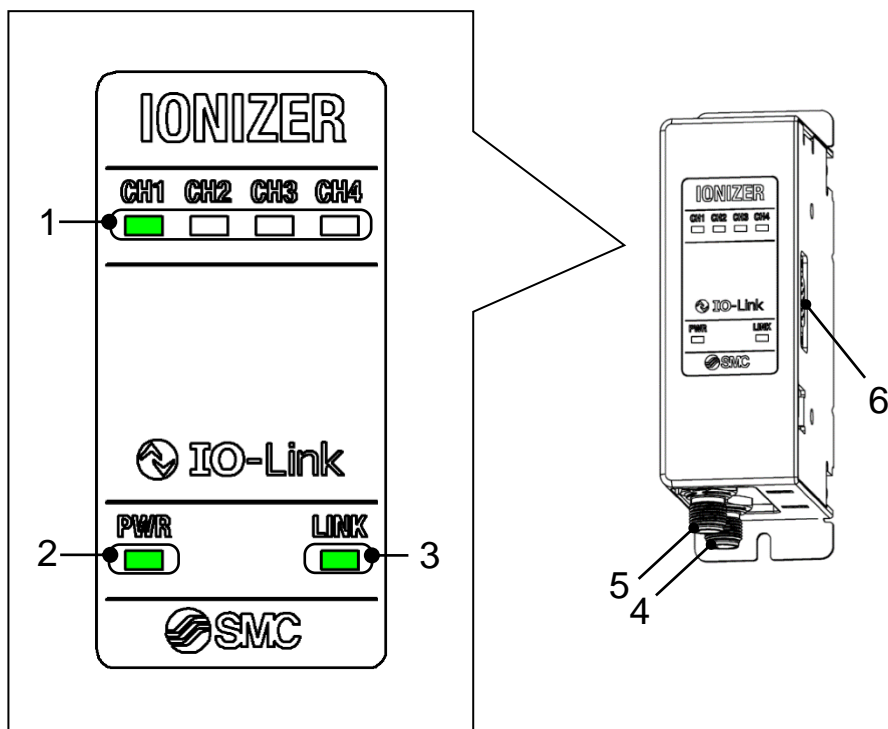
Minimum bending radius

Power supply cable : 48mm

Communication cable : 40mm

4. Function

4-1. Name of Parts



Name of Parts

No	Name	Panel indication	Type	Description
1	CH display	CH□	LED (Green / Red)	The green LED for CH number of the connected high voltage power supply module turns on. The LED flashes green during the initial setting and for maintenance notice. The red LED turns on when a failure occurs. * Refer to "5. Alarm function" for details.
2	Power status display	PWR	LED (Green)	The green LED turns on when supplying power to the power supply connector and communication connector. The LED flashes green when the power supply voltage of either connector is outside of the specification range.
3	Communication status display	LINK	LED (Green)	The green LED flashes when the IO-Link communication is established. The green LED turns on when the communication is not established or when there is a communication error.
4	Power supply connector	PWR	M12 connector (Plug, B code)	Supplies power to the high voltage power supply module.
5	Communication connector	BUS	M12 connector (Plug, A code)	Supplies power to the controller and for communication with IO-Link.
6	High voltage power supply module connector	—	D-sub connector (Socket)	Connects the high voltage power supply module or a separate cable.

4-2.IO-Link Communication

4-2-1.Overview of IO-Link functions

○ Communication function

This product can control and check the offset voltage and the ion generating status using cyclic data communication via the IO-Link system.

○ Product status monitoring function

The failure status and warning status of the product can be monitored by IO-Link communication.

○ Data storage function

The data storage function stores the IO-Link device parameter settings to the IO-Link master.

With the data storage function, the IO-link device can be replaced easily without re-setting the equipment configuration or setting parameters.

When the device parameters are set and downloaded to the device using the IO-Link setting tool, the parameters in the downloaded device will be activated.

After that, these parameters are uploaded to the data storage in the master by system command (back-up communication command).

When the device is replaced with an IO-Link device of the same model due to failure or other reasons, the parameter settings stored in the master are downloaded automatically, and the device can be operated with the parameter settings of the previous device.

The device parameter setting is applicable to three types of back-up levels of the master setting ("Disable", "Backup & Restore", and "Restore"). "Backup" implies the activation of upload and "Restore" implies the activation of download.

○ Operation of this product when IO-LINK communication is interrupted

When the IO-Link communication is interrupted, the product will continue operating while maintaining the setting from before the interruption. It will automatically recover and be controllable when IO-Link communication is reconnected.

4-2-2. IO-Link master configuration

To assign this product to the IO-Link master, install the IODD file in the setting tool of the IO-Link master.

IODD (I/O Device Description) file is a definition file that provides all properties and parameters required for establishing functions and communication of the device. The IODD file includes the main IODD file and a set of image files such as vendor logo, device picture, and device icon.

Refer to the operation manual for the IO-Link master for details of installing the IODD file to the setting tool of the IO-Link master.

Product No.	IODD file ^{Note1),Note2)}
IZTC41-L□□-□	SMC-IZTC41-Lxx-x-yyyymmdd-IODD1.1

Note 1) "yyyymmdd" indicates the file preparation date. yyyy is the year, mm is the month and dd is the date.

Note 2) The IODD file can be downloaded from the SMC Website (<https://www.smcworld.com>).

When connecting to IO-Link, make sure to first upload all parameters from the controller.

When parameters of this product and the configuration of the connecting high voltage power supply module are changed by IO-Link communication, it is necessary to first upload the parameters for the high voltage power supply module connected to the controller, reflect the parameter display setting of the IO-Link setting tool, and change the parameters. The parameter upload status can be checked with the product original parameter "Upload first for setting parameters". (Refer to "Product original parameter")

4-2-3. Initial setting

This product has a function which constantly monitors the emitter contamination. When emitter contamination is detected, it is indicated by an IO-Link communication. Initial setting is necessary for maintenance detection.

When multiple high voltage power supply modules are connected, initial setting can be made for each connected channel.

Do not disconnect the power supply during setting. (Initial setting is completed within 60 seconds.)

Setting cannot be handled simultaneously when multiple controllers are connected. Ion generation stops for CH's that are not subject to operation (if ion generation has started, it will be stopped).

[Initial setting is necessary in the following cases]

- 1) When the "Initial Setting" value of each channel is "0"
- 2) Bar or nozzle replaced.
- 3) Installation environment is changed.

* For 2) and 3), execute "Initial Reset" from SystemCommand and check that the "Initial Setting" value of ProcessDataInput is "0" before handling the initial setting.

4-2-4. Communication data

○Service Data

The tables below indicate the parameters that can be read or written by a simple access parameter (Direct Parameter Page1) and ISDU parameters that are applicable to various parameters and commands.

●Direct Parameter Page1

DPP1 address	Access	Parameter	Initial value(Decimal)	Description
0x07	R	Vender ID	0x0083 (131)	"SMC Corporation"
0x08				
0x09	R	Device ID	0x000245 (581)	IZTC41-Lxx-x
0x0A				
0x0B				

●ISDU parameter

Index (Decimal)	Sub index	Access ^{Note 3)}	Parameter	Initial value	Remarks
0x0002 (2)	0	W	SystemCommand	-	Refer to "SystemCommand" for details.
0x000C (12)	0	R/W	DeviceAccessLock	0x0000	Refer to "DeviceAccessLock" for details.
0x0010 (16)	0	R	VenderName	SMC Corporation	
0x0011 (17)	0	R	VenderText	www.smcworld.com	
0x0012 (18)	0	R	ProductName	-	IZTC41-Lxx-x ^{Note4)}
0x0013 (19)	0	R	ProductID	-	IZTC41-Lxx-x ^{Note4)}
0x0014 (20)	0	R	ProductText	Ionizer	
0x0018 (24)	0	R/W	ApplicationSpecificTag	***** *****	Characters between 16 and 32 can be set.
0x0024 (36)	0	R	DeviceStatus	-	Refer to "DeviceStatus" for details.
0x0025 (37)	0	R	DetailedDeviceStatus	-	Refer to "DetailedDeviceStatus" for details.
0x0028 (40)	0	R	ProcessDataInput	-	The latest value of ProcessDataInput can be read.
0x0029 (41)	0	R	ProcessDataOutput	-	The latest value of ProcessDataOutput can be read.

Note 3) "R" indicates Read and "W" indicates Write.

Note 4) Parameters will be displayed after uploading.

● SystemCommand(Index 2)

The commands shown in the table below can be issued in SystemCommand of ISDU Index 0x002.

The button of each system command is displayed on the IO-Link setting tool.

Click the button to send the system command to the product.

Writeable commands are shown below.

Data type: 8bit UInteger

Command(decimal)	Command name	Description
0x80 (128)	Device Reset	Resets the device. * Certain failure status can be released by device reset. When a failure status cannot be released, follow the procedure in "How to release error after recovery" in "5. Alarm function".
0x81 (129)	Application Reset	The operating time of the high voltage power supply modules of all CH's connected to the controller will be reset.
0x82 (130)	Restore Factory Settings	The setting values of the whole system excluding the operating time will be restored to the factory setting.
0xA0 (160)	Initial Setting CH1	Performs initial settings. This product has a function that constantly monitors the emitter contamination. When emitter contamination is detected, it is indicated by the process data and event data. Make sure to connect and install the ionizer bar to be used before performing this function.
0xA1 (161)	Initial Setting CH2	
0xA2 (162)	Initial Setting CH3	
0xA3 (163)	Initial Setting CH4	
0xA4 (164)	Initial Reset CH1	Resets the high voltage power supply module setting values to the factory setting values.
0xA5 (165)	Initial Reset CH2	
0xA6 (166)	Initial Reset CH3	
0xA7 (167)	Initial Reset CH4	
0xA8 (168)	Operating Time Reset CH1	Resets the operating time.
0xA9 (169)	Operating Time Reset CH2	
0xAA (170)	Operating Time Reset CH3	
0xAB (171)	Operating Time Reset CH4	

● DeviceAccessLock parameter(Index12)

The device access lock conditions are as described in the table below.

Data type: 8bit Record

Value	Description
0	Data storage lock release (Initial value)
2	Data storage lock

[Lock the data storage]

When the "Data Storage" is locked, the data storage function of this product will be disabled. In this case, access is rejected for data storage backup and restore.

● DeviceStatus parameter(Index36)

The readable device status are as follows.

Data type: 8bit UInteger

Value	Definition	Description
0	Operating normally	-
1	Maintenance is required	Maintenance notification
2	Out of operating range	Out of range of power supply voltage specification, Limits of ion balance adjustment
3	Function check	Incorrect high voltage, High voltage power supply module disconnect, CH duplicated
4	Failure	CPU failure, Fan failure, Internal communication error

● DetailedDeviceStatus parameter (Index37)

Event details of the readable device status are as follows.

Sub index	Event name	Event class		Event code	Description
		Definition	Value		
1	Controller failure	Error	0xF4	0x1800	Controller failure
2	High voltage power supply module CPU failure CH1	Error	0xF4	0x1810	<ul style="list-style-type: none"> • Failure of high voltage power supply module CPU • Ionizer Bar or nozzle is not connected
3	High voltage power supply module CPU failure CH2	Error	0xF4	0x1811	
4	High voltage power supply module CPU failure CH3	Error	0xF4	0x1812	
5	High voltage power supply module CPU failure CH4	Error	0xF4	0x1813	
6	Incorrect high voltage CH1	Error	0xF4	0x1814	Abnormal high-voltage discharge is generated
7	Incorrect high voltage CH2	Error	0xF4	0x1815	
8	Incorrect high voltage CH3	Error	0xF4	0x1816	
9	Incorrect high voltage CH4	Error	0xF4	0x1817	
10	Internal communication error CH1	Error	0xF4	0x1818	Failure of internal communication
11	Internal communication error CH2	Error	0xF4	0x1819	
12	Internal communication error CH3	Error	0xF4	0x181A	
13	Internal communication error CH4	Error	0xF4	0x181B	
14	Fan failure CH1	Error	0xF4	0x181C	Failure of the cooling fan motor
15	Fan failure CH2	Error	0xF4	0x181D	
16	Fan failure CH3	Error	0xF4	0x181E	
17	Fan failure CH4	Error	0xF4	0x181F	
18	CH duplicated CH1	Error	0xF4	0x1820	Duplication of the high voltage power supply module CH setting
19	CH duplicated CH2	Error	0xF4	0x1821	
20	CH duplicated CH3	Error	0xF4	0x1822	
21	CH duplicated CH4	Error	0xF4	0x1823	
22	Controller power supply failure	Warning	0xE4	0x1830	Controller power supply voltage is outside the specification range
23	High voltage power supply module power supply failure	Warning	0xE4	0x1831	High voltage power supply module power supply is outside the specification range
24	High voltage power supply module disconnect	Warning	0xE4	0x1832	High voltage power supply module is not connected
25	Ion Balance adjustment limit CH1	Warning	0xE4	0x1833	The adjustment limit value for + or - ion has been reached.
26	Ion Balance adjustment limit CH2	Warning	0xE4	0x1834	
27	Ion Balance adjustment limit CH3	Warning	0xE4	0x1835	
28	Ion Balance adjustment limit CH4	Warning	0xE4	0x1836	
29	Maintenance notification CH1	Notification	0x54	0x1840	Maintenance notification
30	Maintenance notification CH2	Notification	0x54	0x1841	
31	Maintenance notification CH3	Notification	0x54	0x1842	
32	Maintenance notification CH4	Notification	0x54	0x1843	

Refer to 5. Alarm function for releasing failure alarms.

● Product original parameters

Index Hex(Decimal)				Sub index	Access Note5)	Parameter	Data type Note6)	Initial value	Data storage Note7)	Description and Value
CH1	CH2	CH3	CH4							
0x40 (64)	0x41 (65)	0x42 (66)	0x43 (67)	0	R	Series	U8	0	Y	Displays the model information. 0 : None 1 : IZTP41/IZTP43 2 : IZTP42
0x44 (68)	0x45 (69)	0x46 (70)	0x47 (71)	0	R W	IZTP41 /IZTP43 Frequency	U8	7	Y	Sets and displays the frequency. (IZTP41/IZTP43 connected) 0 : 1[Hz] 1 : 3[Hz] 2 : 5[Hz] 3 : 8[Hz] 4 : 10[Hz] 5 : 15[Hz] 6 : 20[Hz] 7 : 30[Hz] 8 : +DC 9 : -DC
0x48 (72)	0x49 (73)	0x4A (74)	0x4B (75)	0	R W	IZTP42 Frequency	U8	9	Y	Sets and displays the frequency. (IZTP42 connected) 0 : 0.1[Hz] 1 : 0.5[Hz] 2 : 1[Hz] 3 : 3[Hz] 4 : 5[Hz] 5 : 8[Hz] 6 : 10[Hz] 7 : 15[Hz] 8 : 20[Hz] 9 : 30[Hz]
0x4C (76)	0x4D (77)	0x4E (78)	0x4F (79)	0	R W	Sensor	U8	1	Y	Sets ON/OFF of the auto balance function. 0 : OFF 1 : ON
0x50 (80)	0x51 (81)	0x52 (82)	0x53 (83)	0	R W	Maintenance detection level	U8	1	Y	Sets the maintenance detection level. 0 : Low 1 : Middle 2 : High 3 : OFF
0x54 (84)	0x55 (85)	0x56 (86)	0x57 (87)	0	W	Offset voltage	U8	-	N	Adjusts the offset voltage. 1 : (+) Slightly increases + ion 2 : (+ +) Largely increases + ion 4 : (-) Slightly increases - ion 8 : (- -) Largely increases - ion
0x58 (88)	0x59 (89)	0x5A (90)	0x5B (91)	0	R W	Ion generation	U8	0	N	Switches the ion generating status. 0 : Ion generation is stopped 1 : Ion generation is performed
0x5C (92)				0	R	Initial upload check	U8	0	N	Displays whether the initial upload is completed or not. 0 : Not uploaded 1 : Uploaded
0x100 (256)	0x101 (257)	0x102 (258)	0x103 (259)	0	R	Operating time	U16	0	N	Displays the ion generating time (in 1h unit)

Note 5) "R" indicates Read and "W" indicates Write.

Note 6) Refer to the table below for the symbols.

Note 7) "Y" indicates that the parameter setting data is saved to the master, and "N" indicates that the parameter is not saved.

Symbol	Data type (IO-Link standard)	Data length Bit [byte]	Description
U8	UIntegerT	8 [1]	unsigned integer
U16		16 [2]	

○ProcessData

Process data is the data exchanged periodically between the master and device.

The discharged state, ion balance, diagnosis information, and other data are configured in this product as shown in the table below.

●ProcessDataInput

Bit offset	Item	Remarks
0	CH4 : Maintenance notification	0: - (No alarm) 1: Maintenance
1	CH3 : Maintenance notification	0: - (No alarm) 1: Maintenance
2	CH2 : Maintenance notification	0: - (No alarm) 1: Maintenance
3	CH1 : Maintenance notification	0: - (No alarm) 1: Maintenance
4	CH4 : Cannel duplicated	0: - (No error) 1: Error
5	CH3 : Cannel duplicated	0: - (No error) 1: Error
6	CH2 : Cannel duplicated	0: - (No error) 1: Error
7	CH1 : Cannel duplicated	0: - (No error) 1: Error
8	CH4 : Fan failure	0: - (No error) 1: Error
9	CH3 : Fan failure	0: - (No error) 1: Error
10	CH2 : Fan failure	0: - (No error) 1: Error
11	CH1 : Fan failure	0: - (No error) 1: Error
12	CH4 : Internal communication error	0: - (No error) 1: Error
13	CH3 : Internal communication error	0: - (No error) 1: Error
14	CH2 : Internal communication error	0: - (No error) 1: Error
15	CH1 : Internal communication error	0: - (No error) 1: Error
16	CH4 : Incorrect high voltage	0: - (No error) 1: Error
17	CH3 : Incorrect high voltage	0: - (No error) 1: Error
18	CH2 : Incorrect high voltage	0: - (No error) 1: Error
19	CH1 : Incorrect high voltage	0: - (No error) 1: Error
20	CH4 : CPU failure (High voltage power supply module)	0: - (No error) 1: Error
21	CH3 : CPU failure (High voltage power supply module)	0: - (No error) 1: Error
22	CH2 : CPU failure (High voltage power supply module)	0: - (No error) 1: Error
23	CH1 : CPU failure (High voltage power supply module)	0: - (No error) 1: Error
27	High voltage power supply module disconnect	0: - (No error) 1: Error
28	Power supply failure (High voltage power supply module)	0: - (No error) 1: Error
29	Power supply failure (Controller)	0: - (No error) 1: Error
30	CPU failure (Controller)	0: - (No error) 1: Error
31	Error diagnosis	0 : OFF 1 : ON
32~47	CH4 : Ion balance	10-bit signed integer
48~63	CH3 : Ion balance	10-bit signed integer
64~79	CH2 : Ion balance	10-bit signed integer
80~95	CH1 : Ion balance	10-bit signed integer
96	CH4 : Ion generating status	0: Stop 1: Ion generation
97	CH3 : Ion generating status	0: Stop 1: Ion generation
98	CH2 : Ion generating status	0: Stop 1: Ion generation
99	CH1 : Ion generating status	0: Stop 1: Ion generation
100	CH4 : Initial setting status	0: Not completed 1: Completed
101	CH3 : Initial setting status	0: Not completed 1: Completed
102	CH2 : Initial setting status	0: Not completed 1: Completed
103	CH1 : Initial setting status	0: Not completed 1: Completed

Bit offset	103	102	101	100	99	98	97	96
Item	CH1: Initial setting status	CH2: Initial setting status	CH3: Initial setting status	CH4: Initial setting status	CH1: Ion generating status	CH2: Ion generating status	CH3: Ion generating status	CH4: Ion generating status

Bit offset	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
Item	Reserved						CH1: Ion Balance (10-bit signed integer)									

Bit offset	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
Item	Reserved						CH2: Ion Balance (10-bit signed integer)									

Bit offset	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
Item	Reserved						CH3: Ion Balance (10-bit signed integer)									

Bit offset	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
Item	Reserved						CH4: Ion Balance (10-bit signed integer)									

Bit offset	31	30	29	28	27	26	25	24
Item	Error diagnosis	CPU failure (Controller)	Power supply failure (Controller)	Power supply failure (High voltage power supply module)	High voltage power supply module disconnect	Reserved		

Bit offset	23	22	21	20	19	18	17	16
Item	CH1: CPU failure (High voltage power supply module)	CH2: CPU failure (High voltage power supply module)	CH3: CPU failure (High voltage power supply module)	CH4: CPU failure (High voltage power supply module)	CH1: Incorrect high voltage	CH2: Incorrect high voltage	CH3: Incorrect high voltage	CH4: Incorrect high voltage

Bit offset	15	14	13	12	11	10	9	8
Item	CH1: Internal communication error	CH2: Internal communication error	CH3: Internal communication error	CH4: Internal communication error	CH1: Fan failure	CH2: Fan failure	CH3: Fan failure	CH4: Fan failure

Bit offset	7	6	5	4	3	2	1	0
Item	CH1: Channel duplicated	CH2: Channel duplicated	CH3: Channel duplicated	CH4: Channel duplicated	CH1: Maintenance notification	CH2: Maintenance notification	CH3: Maintenance notification	CH4: Maintenance notification

●ProcessDataOutput

Bit offset	Item	Remarks
0~9	CH4 : Offset voltage adjustment	10-bit signed integer
16~25	CH3 : Offset voltage adjustment	10-bit signed integer
32~41	CH2 : Offset voltage adjustment	10-bit signed integer
48~57	CH1 : Offset voltage adjustment	10-bit signed integer
64	CH4 : Ion generation	0: Stop 1: Ion generation
65	CH3 : Ion generation	0: Stop 1: Ion generation
66	CH2 : Ion generation	0: Stop 1: Ion generation
67	CH1 : Ion generation	0: Stop 1: Ion generation
71	Process data output valid	0: Disabled 1: Enabled

Bit offset	71	70	69	68	67	66	65	64
Item	Process data output valid	Reserved			CH1: Ion generation	CH2: Ion generation	CH3: Ion generation	CH4: Ion generation

Bit offset	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
Item	Reserved						CH1 : Offset voltage adjustment (10-bit signed integer)									

Bit offset	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
Item	Reserved						CH2 : Offset voltage adjustment (10-bit signed integer)									

Bit offset	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Item	Reserved						CH3 : Offset voltage adjustment (10-bit signed integer)									

Bit offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Item	Reserved						CH4 : Offset voltage adjustment (10-bit signed integer)									

The process data of this product is of a big endian type.

When the transmission method of the upper communication is of a little endian type, the byte order will be changed.

Refer to the table below for the main endian types.

Endian type	Upper communication protocol
Big endian	PROFIBUS、PROFINET etc
Little endian	EtherNet/IP、EtherCAT、CC-Link、IE Field etc

5. Alarm function

IO-Link communication events and LED's are used for the notification of failures.

Note that ion generation may either continue or stop depending on the type of failure.

Event description (Index37 Event name)	Ionizer operation after generating alarm	LED			How to release error after recovery
		PWR	LINK	CH	
Controller failure	Stop	Green (ON)	Green (flash)	Red(ON) Note8)	Turn the power off and on again.
High voltage power supply module CPU failure CH□	Stop	Green (ON)	Green (flash)	Red(ON) Note9)	Turn the power off and on again.
Incorrect high voltage CH□	Stop	Green (ON)	Green (flash)	Red(ON) Note9)	Turn the power off and on again.
Internal COM error CH□	Continue or Stop	Green (ON)	Green (flash)	Red(ON) Note9)	Turn the power off and on again.
Fan failure CH□	Stop	Green (ON)	Green (flash)	Red(ON) Note9)	Turn the power off and on again.
CH duplicated CH□	Stop	Green (ON)	Green (flash)	Red(ON) Note9)	To be reset automatically.
Controller power supply failure	Stop	Green (flash)	Green (flash)	Green(ON) Note10)	To be reset automatically.
High voltage power supply module power supply failure	Stop	Green (flash)	Green (flash)	Green(ON) Note10)	To be reset automatically.
High voltage power supply module disconnect	Stop	Green (ON)	Green (flash)	OFF	Turn the power off and on again.
Maintenance notification	Continue	Green (ON)	Green (flash)	Green(flash) Note11)	To be reset automatically.

Note 8) Red LED's of all CH's turn ON

Note 9) Red LED's of applicable CH's turn ON

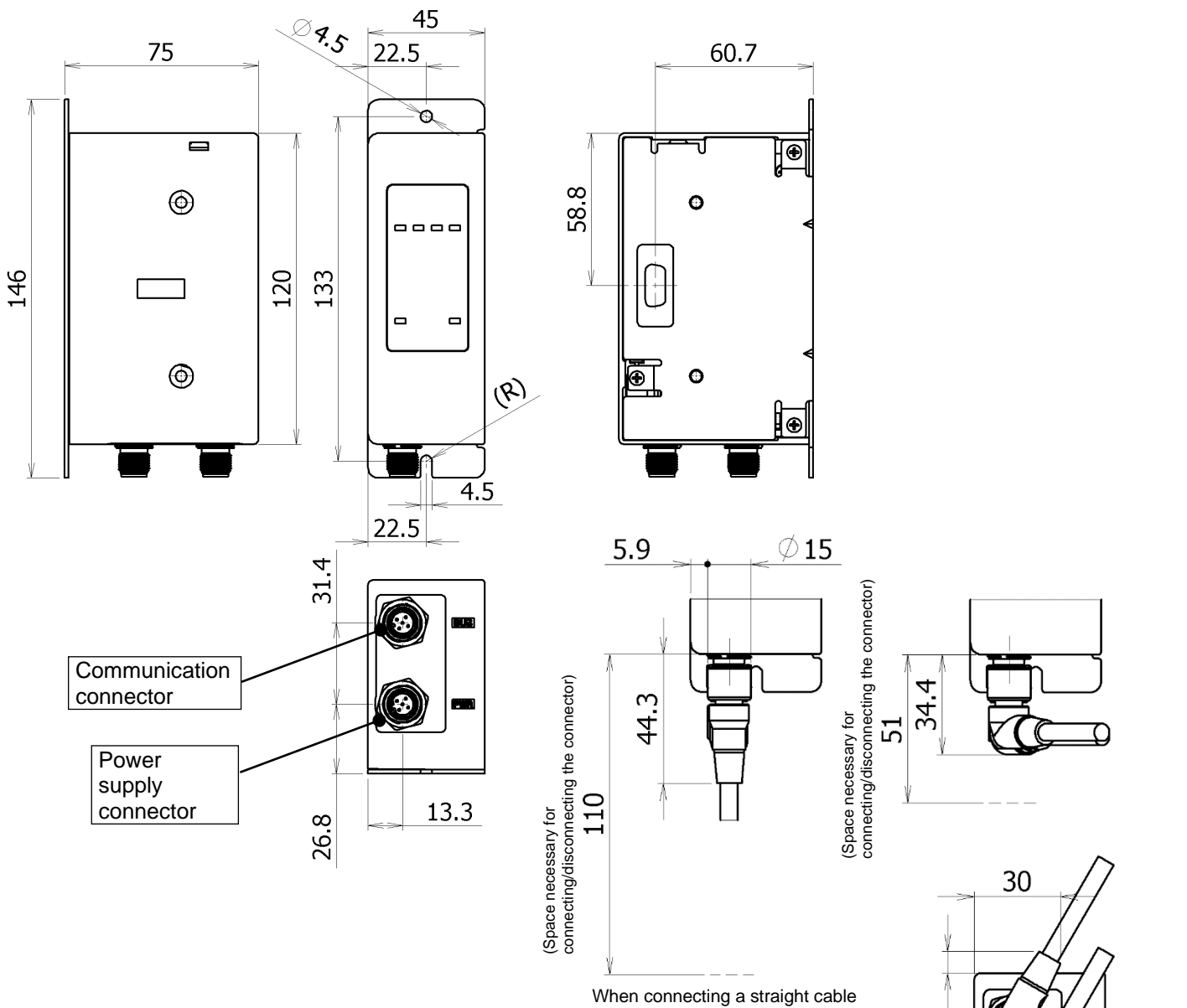
Note 10) Green LED's of connected CH's turn ON

Note 11) Green LED's of connected CH's flash

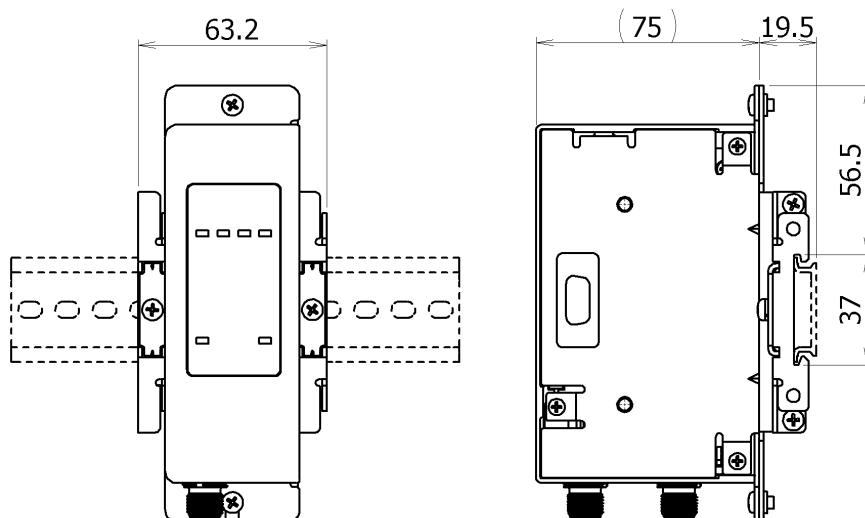
Refer to "DetailedDeviceStatus" for event details.

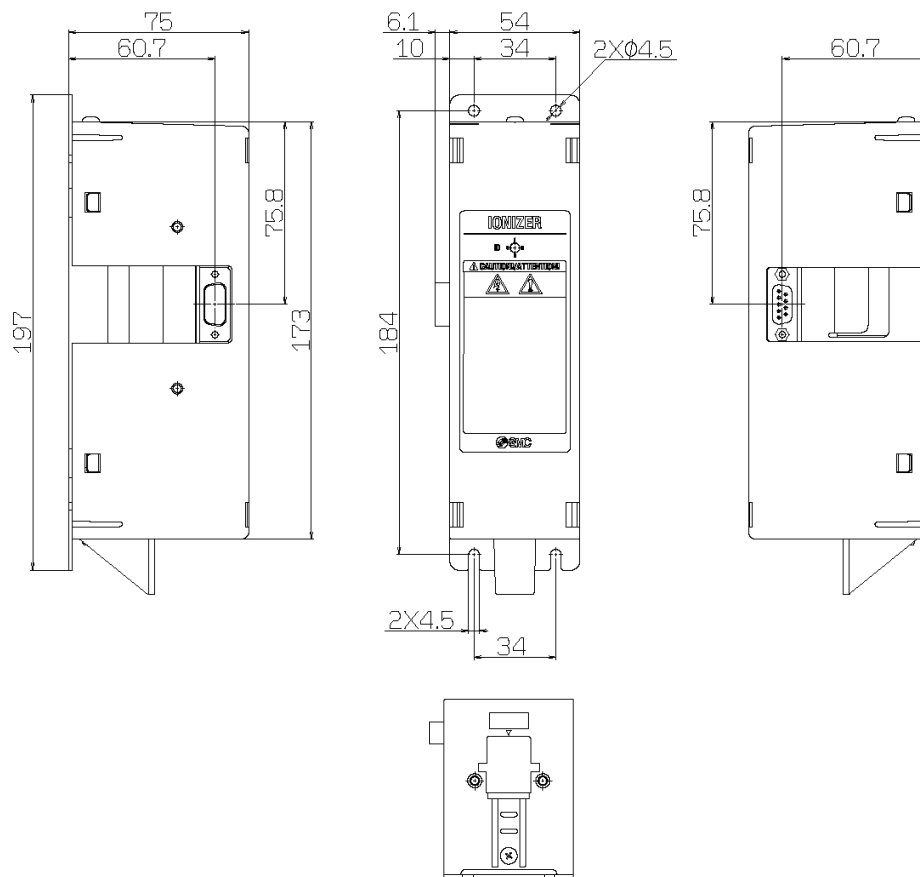
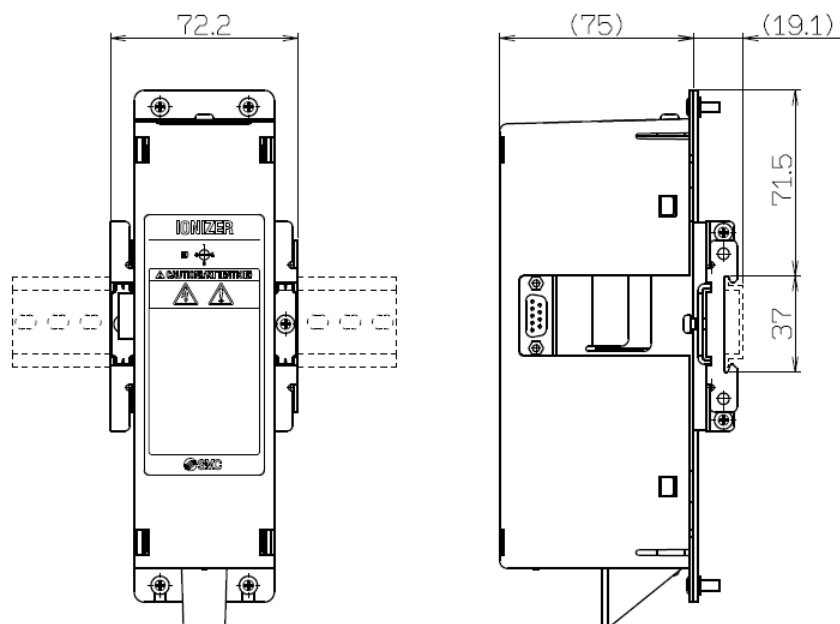
6. Dimensions

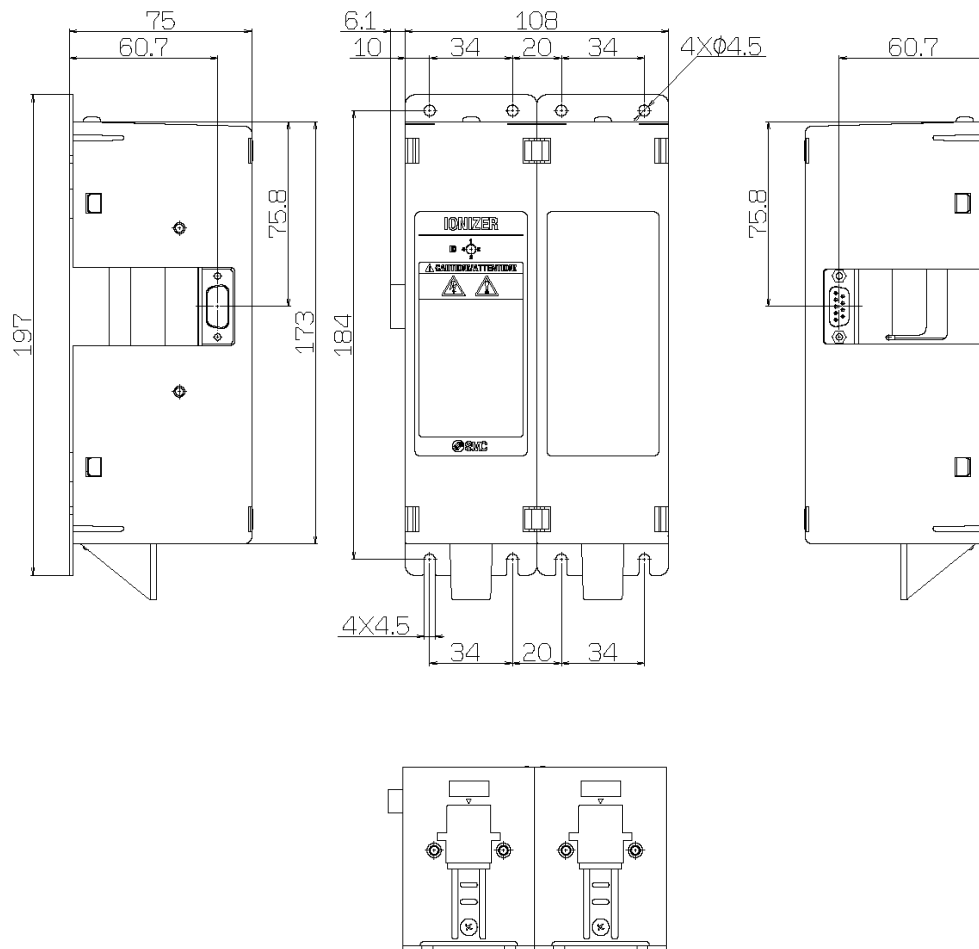
Controller IZTC41-L



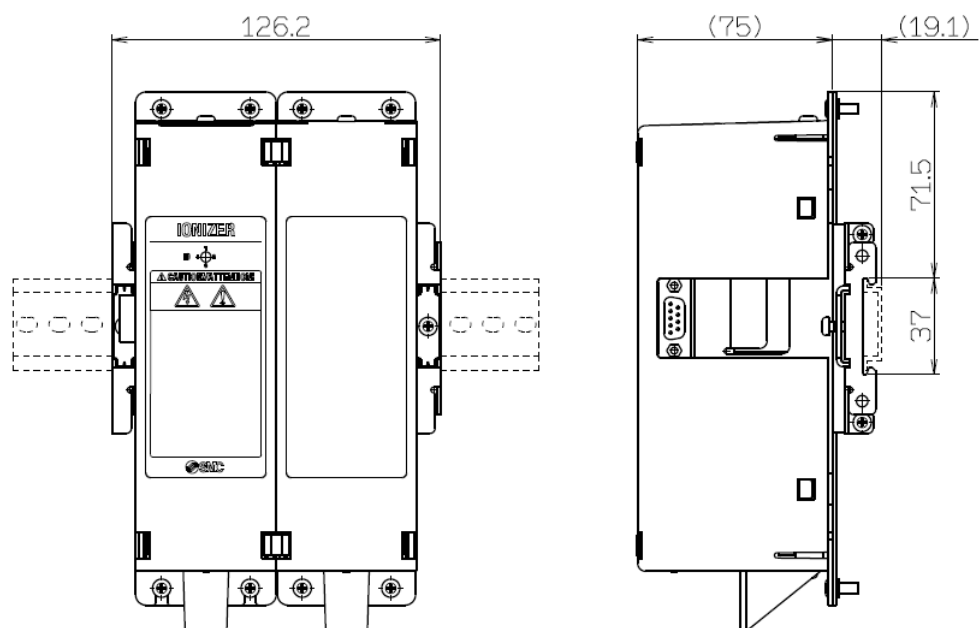
When DIN rail mounting bracket (IZT40-B1) is used



High voltage power supply module IZTP41-LWhen DIN rail mounting bracket (IZT40-B2) is used

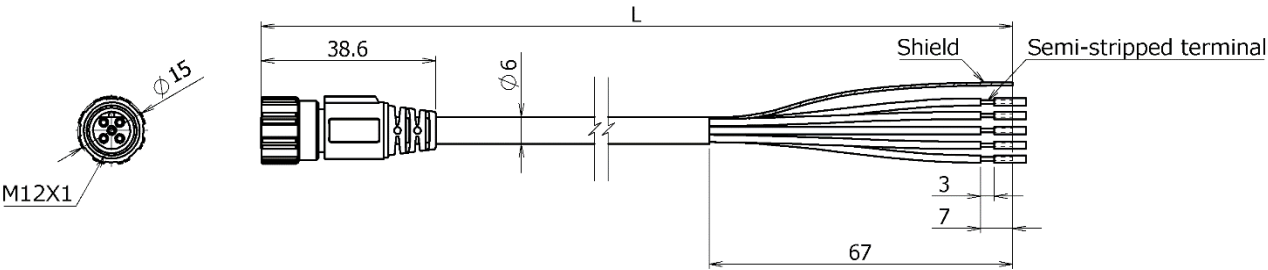
High voltage power supply module IZTP42-L

When DIN rail mounting bracket (IZT40-B3) is used

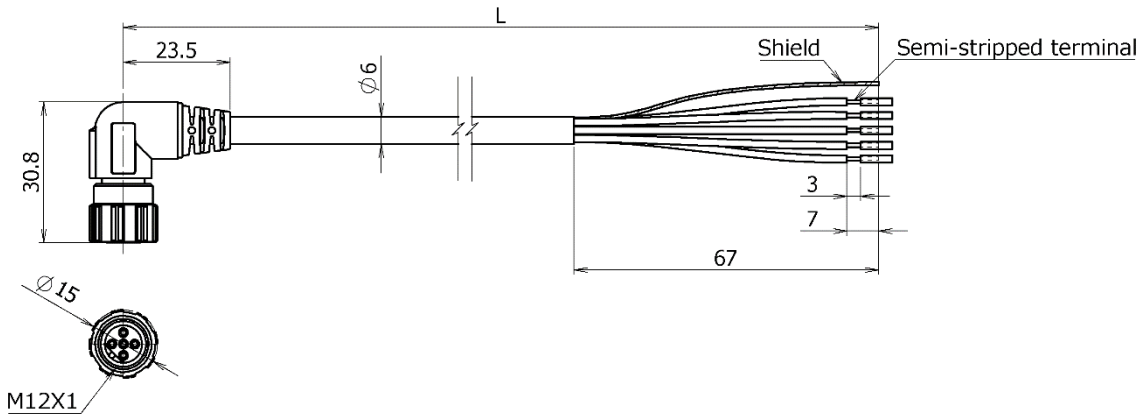


Power supply cable IZT41-CP□

Layout direction: Straight



Layout direction: Angle



Cable layout direction / Length L

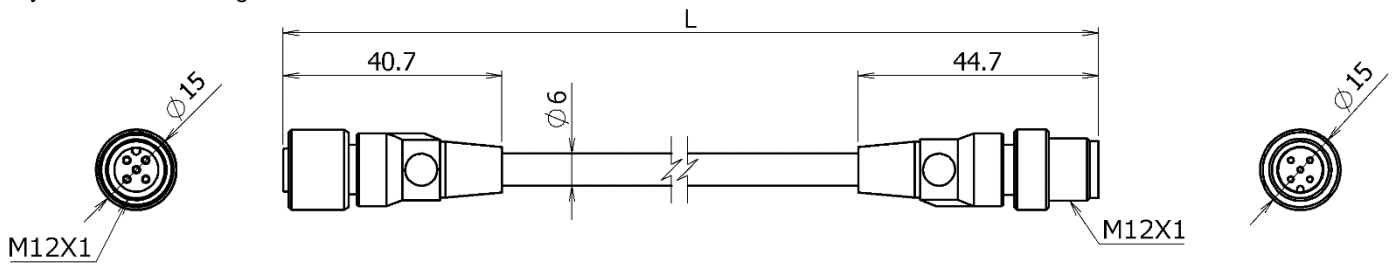
Product No.	Layout direction	Length L(m)
IZT41-CPJ	Straight	3
IZT41-CPK		5
IZT41-CPM		10
IZT41-CPS	Angle	3
IZT41-CPT		5
IZT41-CPZ		10

Cable specification

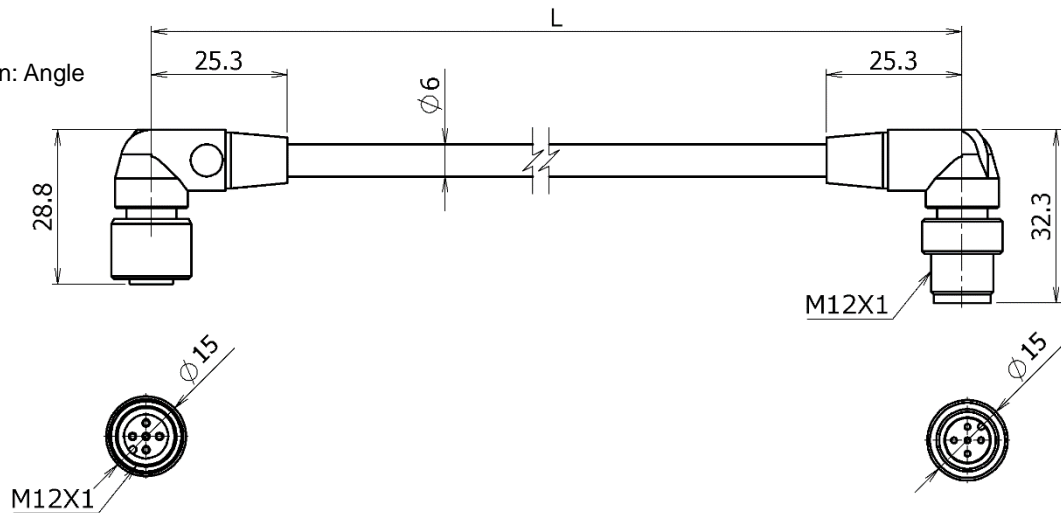
Number of wire / size		5 cables/AWG22
Conductor	Nominal cross section	0.35mm ²
	O.D.	0.76mm
Insulator	O.D.	1.3mm
Sheath	Material	Lead free PVC
	O.D.	6.0mm

Communication cable IZT41-CE□

Layout direction: Straight



Layout direction: Angle

**Cable layout direction / Length L**

Product No.	Layout direction	Length L(m)
IZT41-CEE	Straight	0.5
IZT41-CEG		1
IZT41-CEH		2
IZT41-CEJ		3
IZT41-CEK		5
IZT41-CEM		10
IZT41-CEP	Angle	0.5
IZT41-CEQ		1
IZT41-CER		2
IZT41-CES		3
IZT41-CET		5
IZT41-CEZ		10

Cable specification

Number of wire / size		5 cables/AWG22
Conductor	Nominal cross section	0.3mm ²
	O.D.	0.76mm
Insulator	O.D.	1.5mm
Sheath	Material	Lead free PVC
	O.D.	6.0mm

7. Specifications

Ionizer

Model		IZT41-L	IZT42-L	IZT43-L
Ion generating method		Corona discharging method		
Voltage application method		AC, DC ^{Note12)}	Dual AC	AC, DC ^{Note12)}
Applied voltage		±7,000V	±6,000V	
Offset voltage 注 13)		Within ±30V		
Air purge	Fluid	Air (Clean and dry)		
	Max operating pressure	0.5 MPa or less		0.7 MPa or less
	Connected tube O.D. (One side can be plugged)	In mm : Ø4, Ø6, Ø8, Ø10 In inch : Ø3/16", Ø1/4", Ø5/16", Ø3/8"		In mm : Ø6 In inch : Ø1/4"
Current consumption		0.8 A or less (+0.7A or less per ionizer when connected)	1.4 A or less (+1.3A or less per ionizer when connected)	0.4 A or less (+0.4A or less per ionizer when connected)
Power supply voltage		DC24V±10%		
IO-Link Device		Voltage range : DC18V to 30V Current consumption : 100mA or less		
Effective static neutralizing distance		50 to 2,000mm		
Ambient and fluid temperature	Controller High voltage power supply module	0 to 40°C		
	Bar / nozzle	0~50°C		0~40°C
Ambient humidity		35 to 80%Rh (no condensation)		35 to 65%Rh (no condensation)
Material	Controller	Cover : ABS, Aluminium		
	High voltage power supply module	Cover : ABS, Aluminium		
	Bar / nozzle	Bar body : ABS, Nozzle body : PBT, Stainless		
		Emitter : Tungsten or monocrystal silicon ^{Note14)} Emitter cartridge : PBT		
		High voltage cable : PVC, Silicon rubber, Stainless ^{Note15)}		
Applicable standard		CE, RoHS		

Note 12) Apply cathode or anode to DC

Note 13) With air purge at a distance of 300mm between the workpiece and ionizer

Note 14) Only bar type

Note 15) Only nozzle type

Communication specification

IO-Link type	Device
IO-Link version	V.1.1
Configuration file format	IODD file
Communication speed	COM2 (38.4 Kbps)
Minimum cycle time	8.0ms
Process data length	Input Data : 13 byte、Output Data : 9 byte
On-Request data	Compatible
Data Storage	Compatible
Event	Compatible

Weight

(g)

Model	Controller	High voltage power supply module
IZT41-L	230	690
IZT42-L	230	1360
IZT43-L	230	690

Revision history
A_ P7 Correction of cable color (Blown→Brown).
B_ P3, P4 The Safety Instructions.
P24 The back cover.

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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