

# Inflex™ ZM

## Zone Manager

### Model WY5322

#### General

Inflex ZM (Inflex: named for “Infinity” and “Flexible”) Model WY5322, integrated into BMS (building management system), manages remote units (also called as ‘sub-controllers’), such as Inflex VC, Inflex FC, and Inflex SC.

Up to 50 remote units can be connected. Inflex ZM can control these units separately as well as per group.

Inflex ZM communicates with BMS (savic-net™ FX) through the transmission trunk line LC-bus (LonTalk® protocol) and with the remote units through the transmission trunk line LS-bus (LonTalk® protocol).



#### Features

- Compact design  
Small size body ensures space saving.
- Installation:  
A quick-fit screwless (clamp) terminal block is used for the communication terminal block of the I/O module, ensuring the labor saving of the wiring work.  
Additionally, either DIN rail mounting or screw mounting can be selected.
- Management of remote units  
Inflex ZM manages the connected remote units (Inflex VC, Inflex FC, Inflex SC, etc., max. 50 units connectable), allowing the BMS center unit to execute ON/OFF operation, failure monitoring, measuring, and setting of each remote unit separately. Inflex ZM can also manage the remote units by group and is applicable to any group configuration consisting of up to 50 units of Inflex VC and Inflex FC. Additionally, Inflex ZM provides flexible management. For example, group ON/OFF can be commanded even when individual measuring is commanded.
- Risk diversification and high-speed supervision  
Inflex ZM has 50 programs of time schedules, analog alarm monitoring, and runtime/cycle-count integrating in order to manage the connected Inflex VC, Inflex FC, Inflex SC, etc. This achieves diversification of risks and high-speed supervision of BMS.
- Various controls  
One Inflex ZM controls up to 4 sets of VAV (VAV: variable air volume, controlled by Inflex VC) and AHU (controlled by Inflex GC or Inflex AC). Load reset control of supply air temperature, fan speed control, interlocking operation are available. Additionally, the mixing loss control of the interior VAV and perimeter FCU (fan coil unit) can be performed.
- Support functions  
Inflex ZM supports to adjust VAV by setting the max./min. air volume levels of all VAV units included in a specified set. Inflex ZM also supports to adjust AHU/FCU flow rate and to flush the piping by fully opening and closing all the valves that the Inflex FC and Inflex SC control.
- CE Marking certified product:  
Inflex ZM conforms to all the applicable standards of CE Marking (Class A).



\* Yamatake's controller Inflex series: Inflex is named for “Infinity” and “Flexible”.

## Safety Instructions

Please read instructions carefully and use the product as specified in this manual. Be sure to keep this manual near by for ready reference.

### Usage Restrictions

This product is targeted for general air conditioning. Do not use this product in a situation where human life may be affected. If this product is used in a clean room or a place where reliability or control accuracy is particularly required, please contact Yamatake's sales representative. Yamatake Corporation will not bear any responsibility for the results produced by the operators.

### WARNING



- DANGER: To prevent the risk of severe or fatal electrical shock, always disconnect power source and product power supply before performing any wiring.



- Be sure to ground with 100 Ω or lower ground resistance. Improper grounding may cause electrical shock or equipment damages.



- Do not detach the terminal cover at any time except when wiring. After wiring, be sure to attach the terminal cover. Before attaching/detaching the terminal cover, make sure that the wires are not current-carrying to prevent electrical shock.



- Disconnect power before the product replacement to prevent electrical shock.



- Do not disassemble the product. Disassembly may result in electrical shock or equipment damage.

### CAUTION



- Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.



- This product must be operated under the operating conditions (power, temperature, humidity, vibration, shock, installation position, atmospheric condition, etc) specified in this manual to prevent equipment damages.



- All wiring must comply with local codes of indoor wiring and electric installation rules.



- Use crimp terminal lugs with insulation for electric wires connected to the screw terminals.



- Connect cables to the power source with terminals or the like for permanent connection.



- Make sure all the wires are tightly connected to prevent heat generation or equipment damages.



- If more than the rated power supply voltage is applied, product replacement is required for safety.



- Install this product in a location out of reach of unauthorized people. (e.g. Inside of the control panel cabinet)



- Lightning protection based on regional characteristics and building structure is needed in order to minimize lightning damages.



- Noise protection is necessary when the product is installed in a location close to many noise sources.



- Do not block the vent holes of the product to prevent equipment damages. Remove protective sheet after installation and wiring.



- After mounting the product on DIN rail, make sure that the holding parts of all the modules are properly fixed with their whole parts lifted. The product may drop from the DIN rail and be damaged due to improper mounting.



- Dispose of the lithium battery in accordance with the local regulations.



- Dispose of this product in accordance with your local regulations. Do not reuse all or part of this product.

#### Trademark information:

Infilex, Neopanel, PARAMATRIX and savic-net are trademarks or registered trademarks of Yamatake Corporation in Japan or in other countries.

BACnet is a registered trademark of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

LonTalk is a trademark of Echelon Corporation registered in the United States and other countries.

CompactFlash is a U.S. registered trademark of SanDisk Corporation.

**System Configurations**

**Infilex ZM integrated into BMS: savic-net™ FX**

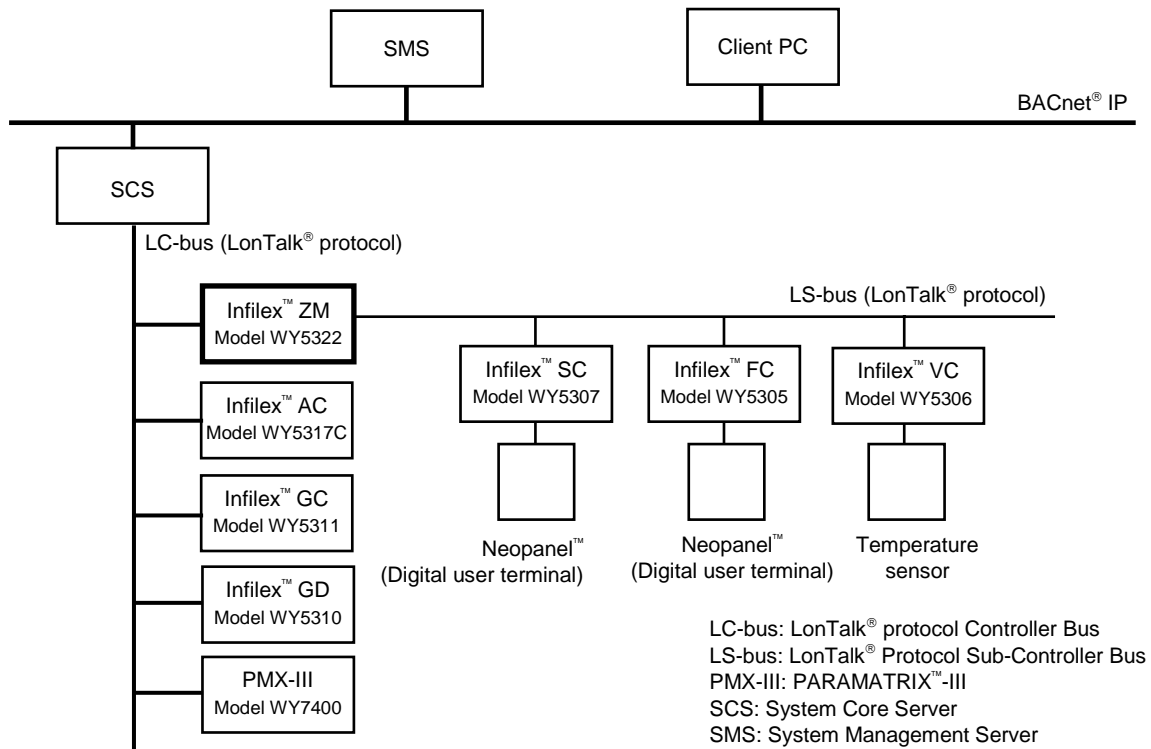


Figure 1. System configuration example of BMS-integrated Infilex ZM

**Notes:**

- \* On 1 channel of LC-bus (2 lines for 1 channel), max. 50 remote units (also called 'controllers') can be connected. For Infilex ZM, however, max. 10 units can be connected on LC-bus (5 units per 1 line, 2 lines for 1 channel).
- \* Max. wiring length of LC-bus (2 lines for 1 channel) is 900 m.
- \* On LS-bus, max. 50 remote units (also called 'sub-controllers') can be connected.
- \* Max. wiring length of LS-bus is 900 m

**Standalone Infilex ZM**

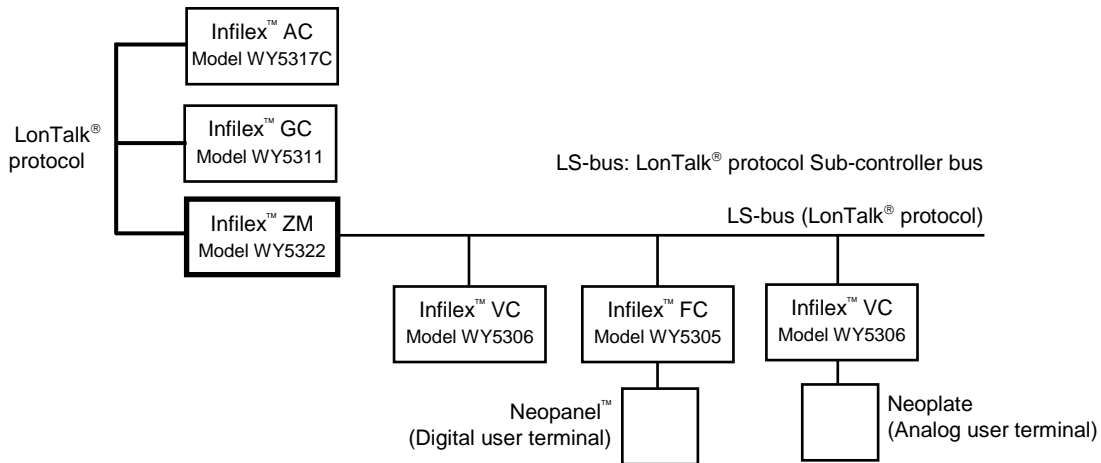


Figure 2. System configuration example of standalone Infilex ZM

**Notes:**

- \* On LS-bus, max. 50 remote units (also called 'sub-controllers') can be connected.
- \* Max. wiring length of LS-bus is 900 m.

**Model Numbers**

Model number		Description
WY5322		Base model number
	W	100 V AC to 240 V AC power
	0000	Fixed

**Parts for Installation**

For details regarding Inflex ZM installation, refer to Installation manual of the Inflex series controllers

Part number	Description
83165861-001	Screw tab
83104567-001	DIN rail mounting bracket

Note:

For mounting Inflex ZM, either the screw tab (for screw mounting) or the DIN rail mounting bracket (for DIN rail mounting) is required. Be sure to separately order depending on your mounting type.

## Specifications

Item		Specification	
Power supply	Rated voltage	100 V AC to 240 V AC, 50 Hz/60 Hz	
	Allowable voltage range	85 V AC to 264 V AC, 50 Hz/60 Hz	
	Power shutdown detection	80 V AC or less	
	Power consumption	10 VA	
Environmental conditions	Rated operating conditions	Ambient temperature	0 °C to 50 °C
		Ambient humidity	10 %RH to 90 %RH (non-condensing)
		Altitude	2000 m or lower
		Vibration	Max. 5.9 m/s <sup>2</sup> at 10 Hz to 150 Hz
	Transport/storage conditions	Ambient temperature	-20 °C to 60 °C
		Ambient humidity	5 %RH to 95 %RH (non-condensing)
		Vibration for storage	Max. 5.9 m/s <sup>2</sup> at 10 Hz to 150 Hz
		Vibration for transport	Max. 9.8 m/s <sup>2</sup> at 10 Hz to 150 Hz
LED indication	Operation	Power supply (POWER)	Green LED ON: Power ON Green LED OFF: Power OFF
		Major failure (ERR1)	Red LED ON: Major failure or system restart Red LED OFF: Normal operation
		Minor failure (ERR2)	Red LED ON: Minor failure or system restart Red LED OFF: Normal operation
		Communication	LC-bus* <sup>1</sup>
	LS-bus* <sup>1</sup>	TX: Transmit, RX: Receive, SERV: Service	
	Power failure backup	RAM, RTC* <sup>2</sup>	Lithium battery backup
	Data file	Non-volatile memory (flash memory) backup	
Communications	LC-bus	Transmission system	LonTalk protocol (TP/FT-10 transceiver)
		Transmission rate	78 kbps
		Transmission distance	900 m (for bus topology connection)
		Remote units (controllers)	Max. 50 remote units connectable
	LS-bus	Transmission system	LonTalk protocol (TP/FT-10 transceiver)
		Transmission speed	78 kbps
		Transmission distance	900 m (for bus topology connection)
		Remote units (sub-controllers)	Max. 50 remote units connectable
Weight		400 g	
Material (housing), color		Modified PPE, light gray	
Terminal block	Power supply, ground	M3 (7.62 mm pitch between terminals)	
	LC-bus/LS-bus communication	Modular connector	

### Notes:

\*1 For the operation of LC-bus and LS-bus LED, refer to Table 1 in the "Parts Identification" section.

\*2 RTC: Real Time Clock. RTC is backed up by a lithium battery to ensure accurate clocking while the power is OFF.

## Wiring specifications

### Basic unit

Item	Wiring	Wiring length	Condition
Power supply	JIS IV2.0 mm <sup>2</sup> or JIS CVV 2.0 mm <sup>2</sup> or greater	—	—
Ground	JIS IV 2.0 mm <sup>2</sup> or JIS CVV 2.0 mm <sup>2</sup> or greater	—	Ground resistance: 100 Ω or lower
LC-bus	EIA/TIA-568 category 5 or over (φ0.5 × 4 poles)	900 m	For bus network topology
LS-bus	EIA/TIA-568 category 5 or over (φ0.5 × 4 poles)	900 m	For bus network topology

### Notes:

\* Pin terminal is not applicable to wiring of Inflex ZM.

\* As M3 screw terminal block is used for power supply and ground, crimped terminal lug is required for the cable end.

\* Organize the cables with cable ties so as not to hide LED, battery holder, and the indication tag.

\* JIS: Japanese Industrial Standards

**Input/Output Terminal Arrangement**

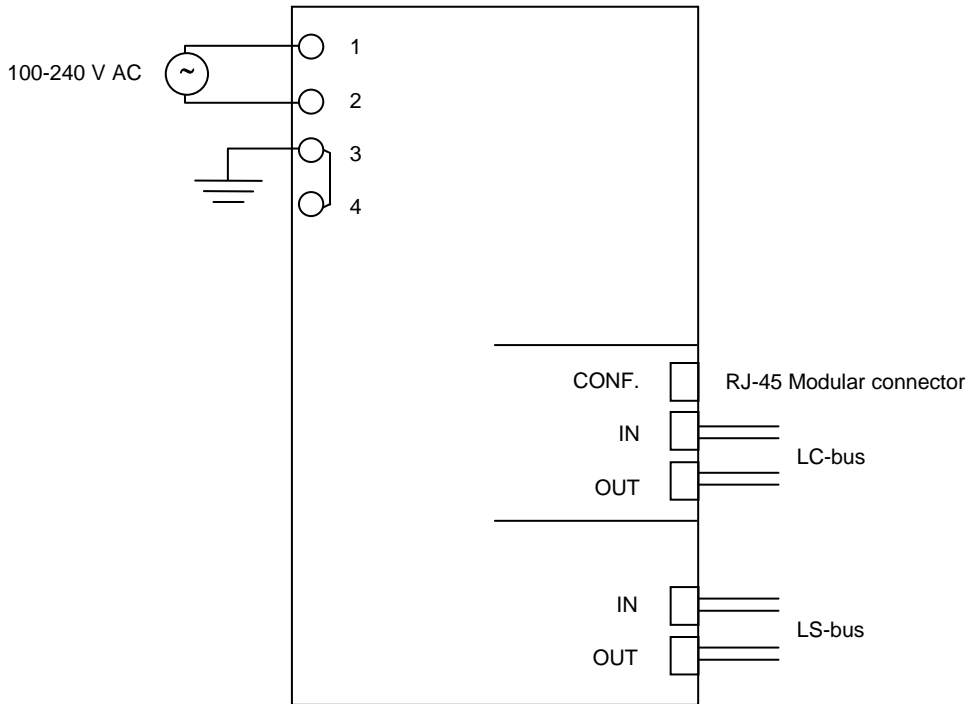


Figure 3. Input/output terminal arrangement

**Dimensions**

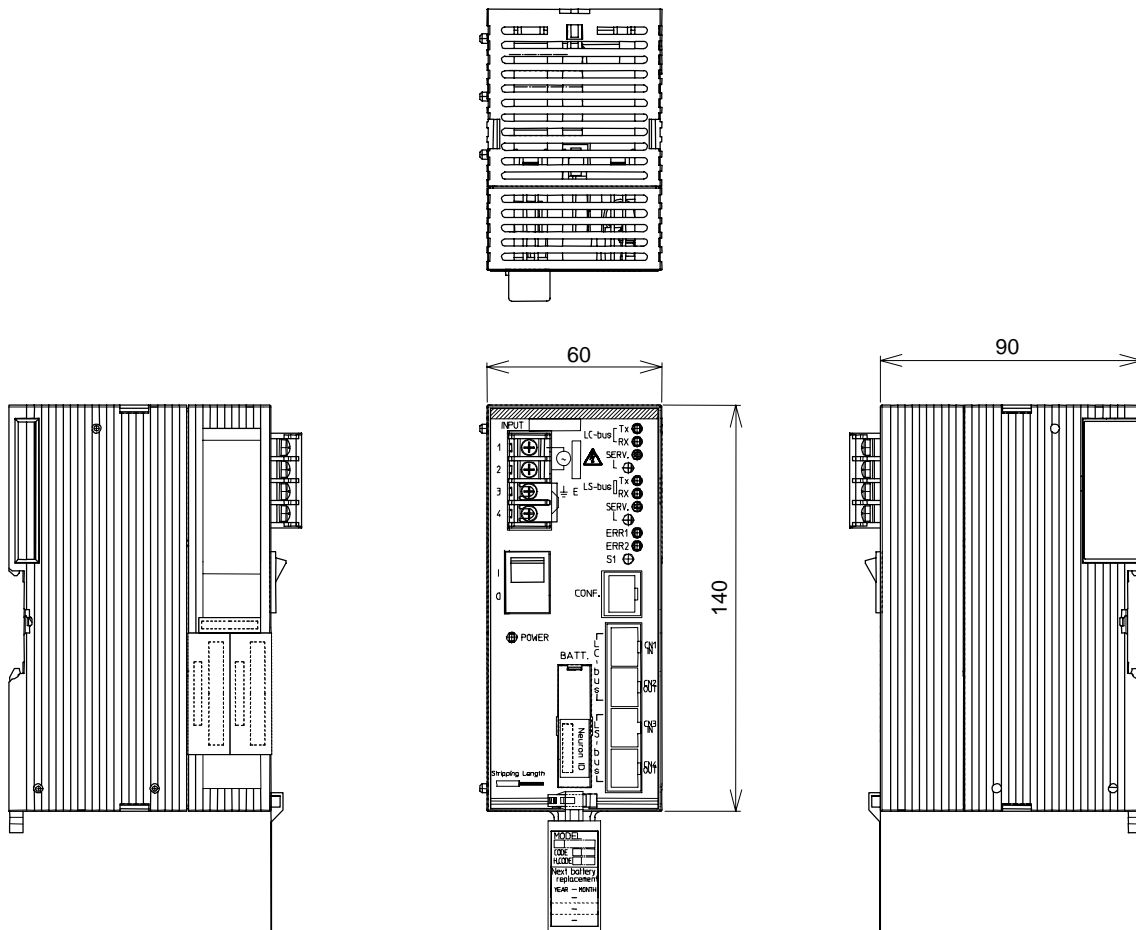


Figure 4. Dimensions (mm)

Parts Identification

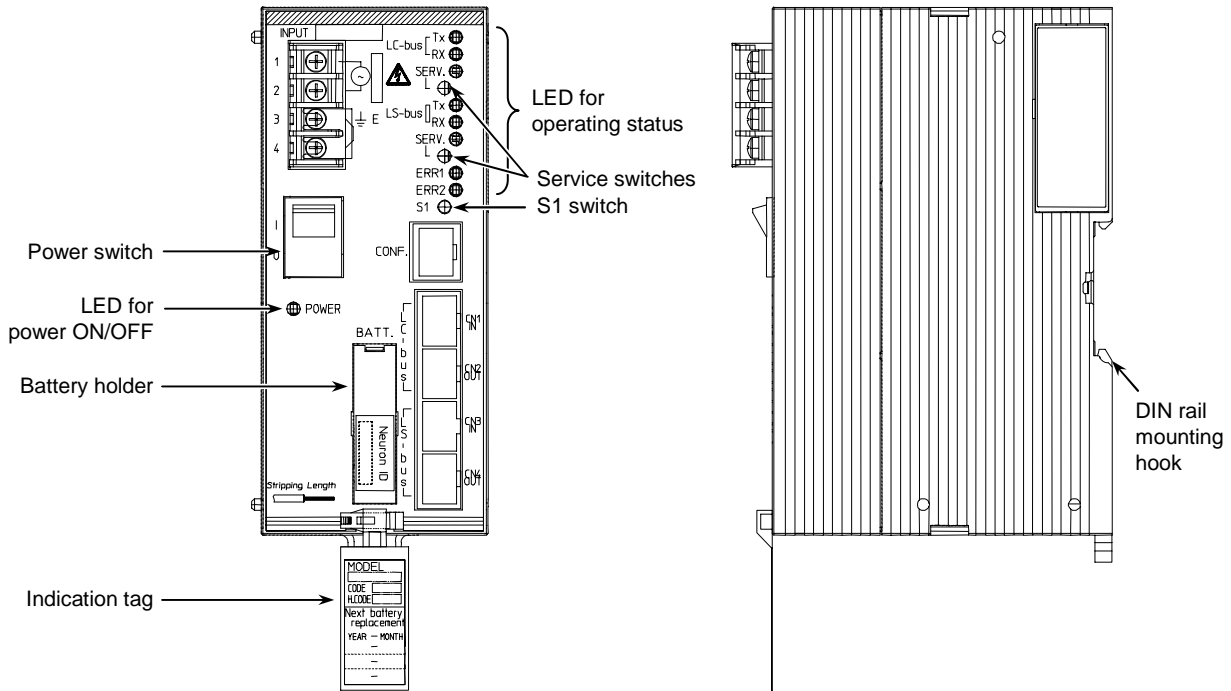


Figure 5. Parts identification

Table 1. Indication and operation of operating status LED

LED indication	LED operation
Data transmitting	LC-bus TX LED: flashing
Data receiving	LC-bus RX LED: flashing
In SERVICE mode	LC-bus SERV LED: ON
Data transmitting	LS-bus TX LED: flashing
Data receiving	LS-bus RX LED: flashing
In SERVICE mode	LS-bus SERV LED: ON
Major failure / initializing	ERR1: ON
Minor failure / initializing	ERR2: ON

**Connection of Data Setter for LonTalk Protocol**

Connect the CompactFlash® memory type Data Setter (Model QY5111B) for LonTalk protocol to LC-bus port or to CONF. port of Infilex ZM with the Data Setter adaptor (Part No. DY5301S0000, with separate order required.).  
 For details of the Data Setter adaptor, refer to its specification sheet.

**For connection to LC-bus port or CONF. port**

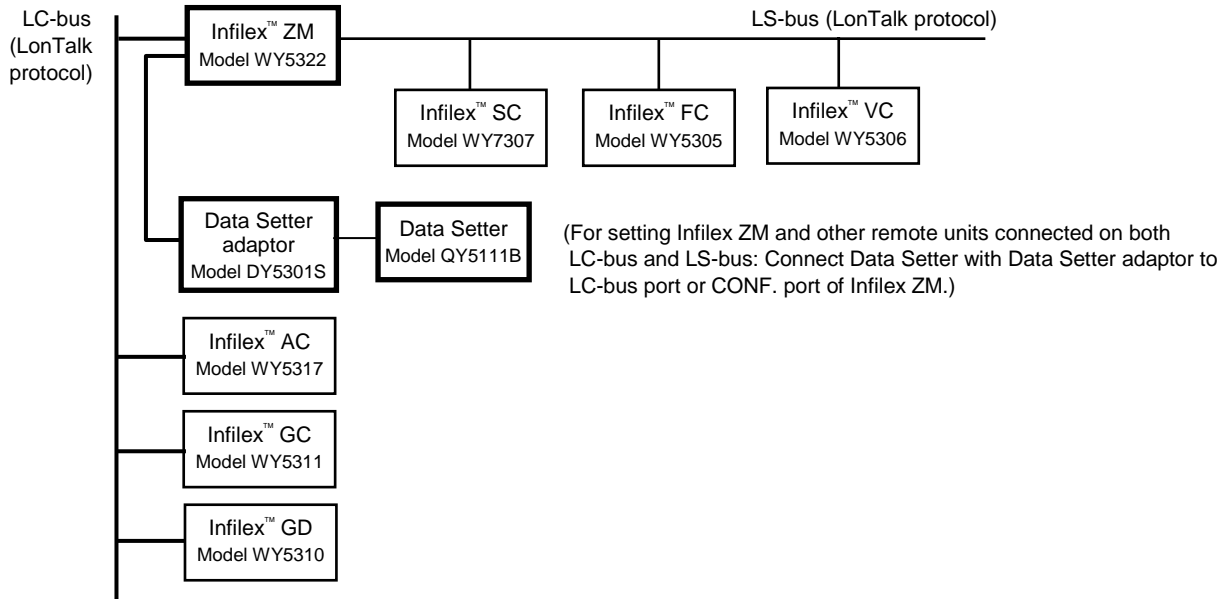


Figure 6. Connection example of Data Setter with Data setter adaptor to LC-bus port/CONF. port

### Mounting Dimensions

#### DIN rail mounting

Mount and fix Inflex ZM on DIN rail so that it does not fall from the DIN rail.

Fasten the bilateral sides of Inflex ZM with two DIN rail mounting brackets (Part No. 83104567-001, separate order is required).

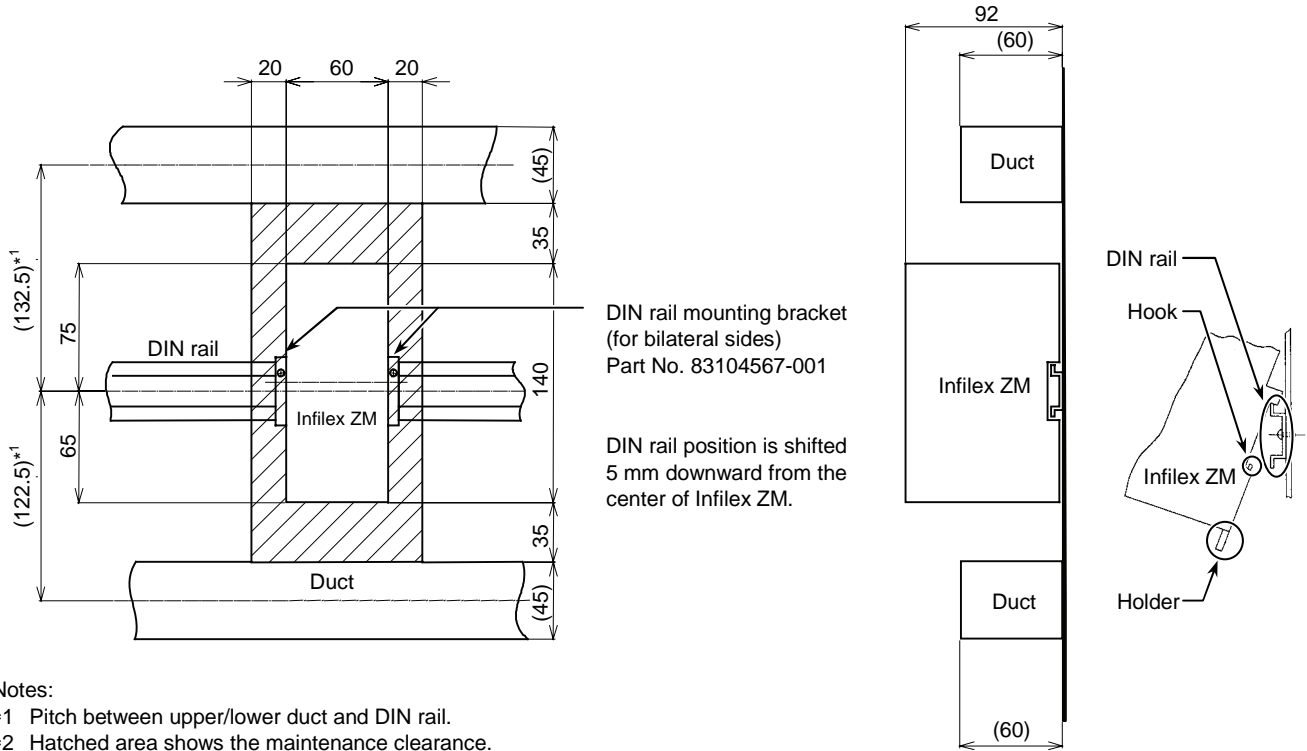


Figure 7. Mounting dimensions: DIN rail mounting (mm)

#### Direct screw-mounting

When Inflex ZM is mounted with screws, the screw tab (Part No. 83165861-001) is required.

Mount and fix Inflex ZM on the wall with two M4 × 8 screws.

#### Lengthwise mounting

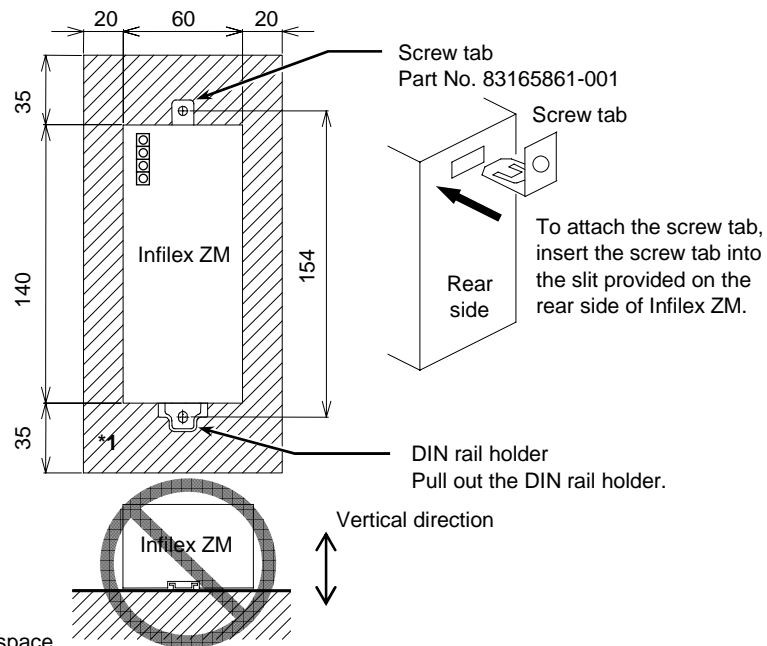


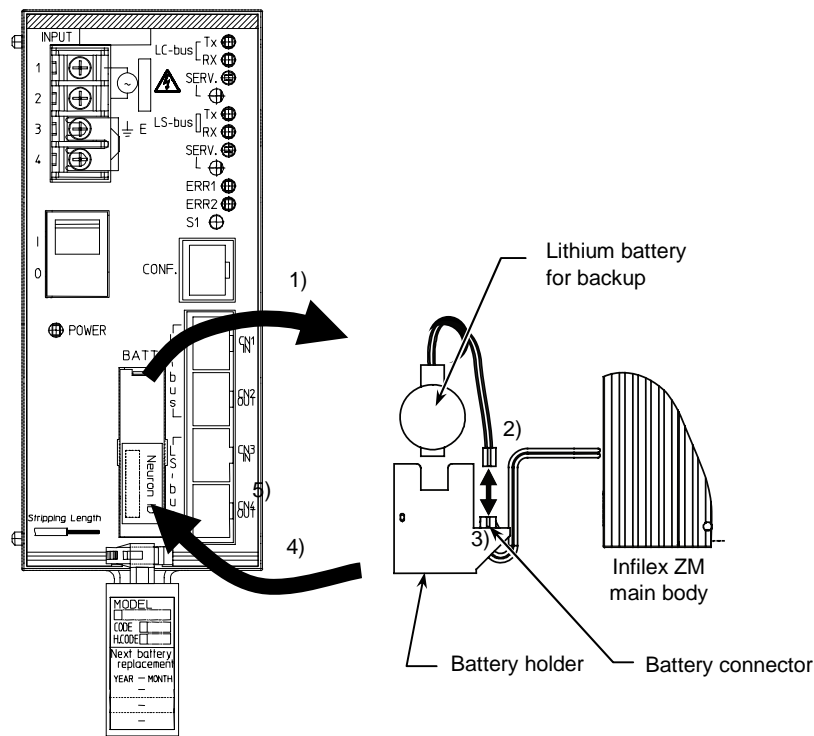
Figure 8. Mounting dimensions: Direct screw mounting (mm)

### Maintenance (Lithium Battery Replacement)

Replace the lithium battery for backup (Part No. 83104934-001) for every 5 years.

- IMPORTANT:**
- Only authorized service personnel is allowed to replace the battery.
  - Do not touch the power supply unit when replacing the battery.
  - Since the remaining battery capacity cannot be checked by measuring the terminal voltage, be sure to replace the battery every 5 years.
  - Replace the lithium battery with the power ON.
  - Replace the lithium battery every 5 years if the product is always in use (in ON state).
  - If the product has never or hardly been operated (in OFF state) for a year, replace the lithium battery before the product operation.

### Battery replacement



\* Replace the battery with the Infilex ZM in ON state.

Figure 9. Battery replacement

- 1) Pull out the battery holder using a slotted screwdriver.
- 2) Disconnect the battery connector and detach the lithium battery from the battery holder.
- 3) Place a new lithium battery in the battery holder and connect the battery connector to it.
- 4) Insert the battery holder into the main body.
- 5) Fill in the date for next replacement (5 years after the replacement) on the indication tag using an oil-based pen.

## Precautions for Use

- Do not mount the product under the conditions of high temperature and humidity.
- Be sure not to drop the product.
- Be sure to shut down the power (disconnect the wiring between the power supply and the product power terminals) for the wire replacement.
- Before turning on the power, make sure that wires are correctly connected.
- Do not connect wires to vacant terminals.
- Several tens of seconds are required for the product normal operation after the power is turned on. During this time, the ERR1 LED (red) for major alarm lights up temporarily, but this does not indicate an error.
- Leave at least 35 mm clearance between the top/bottom surfaces of the product and other devices.
- Peel off the protective sheet on the top surface of the product before turning on the power. (See Fig. 10)

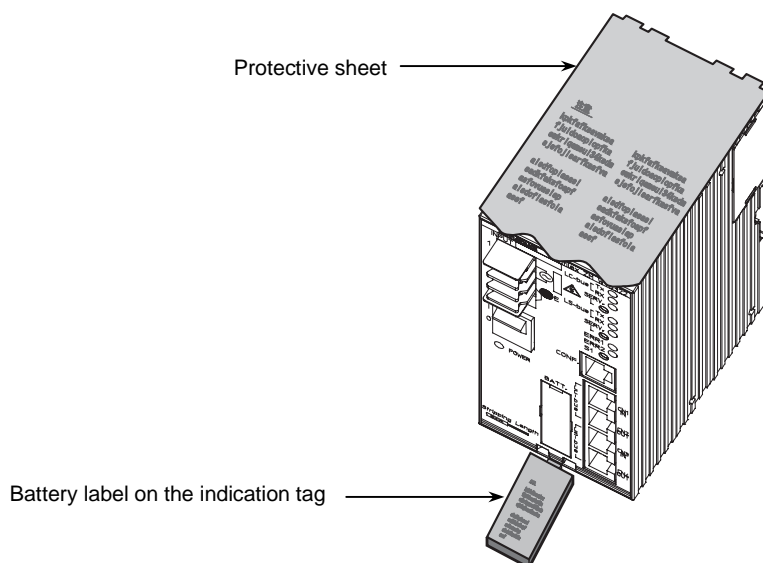


Figure 10. Battery label on the indication tag and protective sheet

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*Specifications are subject to change without notice.*

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