MITSUBISHI ELECTRIC

TECHNICAL BULLETIN [1 / 12]

[Issue No.] GOT-A-0086-C

[Title] Precautions to Acquire the Type Approval Certificate for the GOT2000 Series

[Date of Issue] August 2015 (Ver. C: August 2021)

[Relevant Models] GOT2000 Series

Thank you for your continued support of Mitsubishi Graphic Operation Terminal (GOT).
The following describes the details on precautions for using GOT2000 series as the system that the classification societies have approved.

Please confirm the model, number, and expiration date, which each classification society approves, at the MITSUBISHI ELECTRIC FA Global Website.

MITSUBISHI ELECTRIC FA Global Website: http://www.MitsubishiElectric.com/fa/

Contents

1. Classification societies to certificate type approval

GOT2000 series has acquired the Type Approval Certificate on the following classification societies.

American Bureau of Shipping	(Abbreviation: ABS)
Bureau Veritas	(Abbreviation: BV)
DNV AS	(Abbreviation: DNV)
Lloyd's Register	(Abbreviation: LR)
Nippon Kaiji Kyokai	(Abbreviation: NK)
Registro Italiano Navale	(Abbreviation: RINA)

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

2. Restrictions

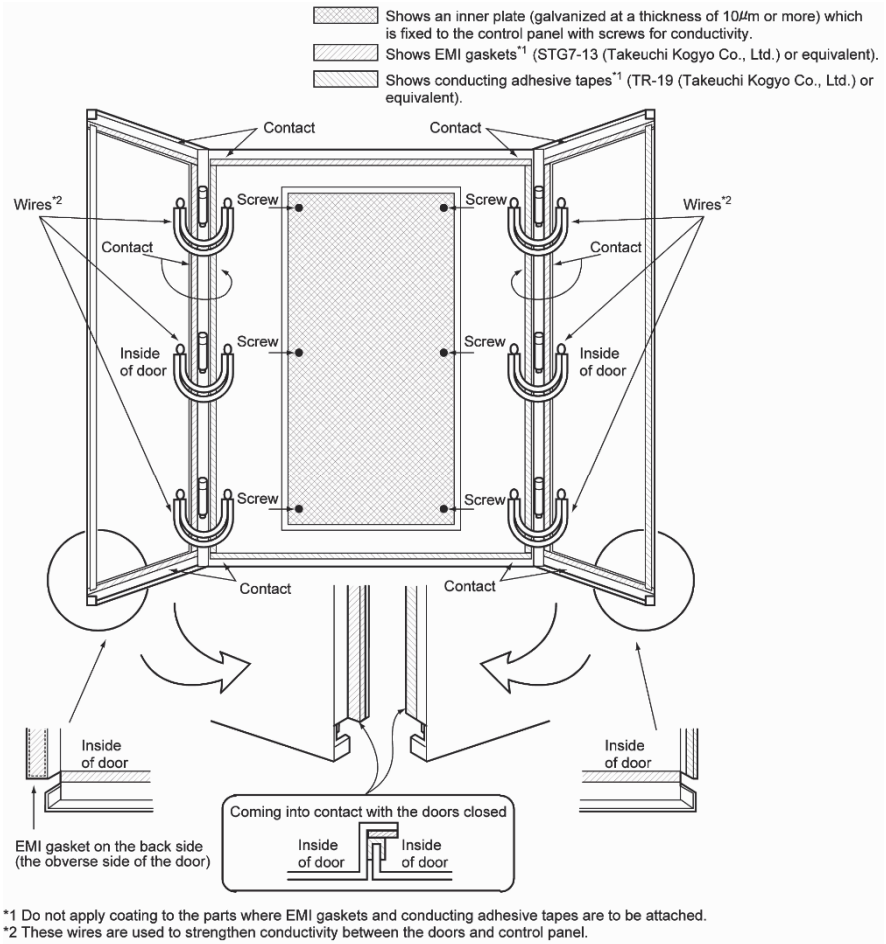
The following describes the restrictions when the GOT2000 series is used as the system that is approved by the classification societies listed in Chapter 1.

2.1 GOT installation

Place the installation fittings (included with the GOT) on the installation fitting attaching part of the GOT, and fix them by tightening the mounting screws in the specified torque range of 0.36 to 0.48N·m.
(Tightening the screws with a torque larger than the torque range may distort the panel and make a surface waviness on the protective sheet.)

2.2 Control panel

- The control panel must be conductive.
- When fixing a top or bottom plate of the control panel with bolts, remove the protective coating from both the plate and bolt surfaces to ensure that they come into electrical contact.
- When using an inner plate, ensure electric contact with the control panel, as an example. (Plating thickness: 10□m or more) (See Fig. 1.)
- In addition, remove the coating of the fixing bolt area of both the inner plate and the control panel to ensure conductivity in the largest area as possible.
- Ground the control panel with a thick ground wire (Cross-sectional area: 2mm^2 or more).
- To suppress the leakage of radio waves, the structure must have minimal openings.
- Ensure that the space between the control panel and its door is the smallest as possible by attaching some EMI gaskets between them. Also, the diameter of the cable hole must be 10cm or less.
- To ensure the electric contact between the control panel and its door, remove the coating of the contact areas, attach EMI gaskets and conducting adhesive tapes and connect the panel and the doors with thick wires. (See Fig. 1.)



*1 Do not apply coating to the parts where EMI gaskets and conducting adhesive tapes are to be attached.
*2 These wires are used to strengthen conductivity between the doors and control panel.

Fig. 1 Example of Control Panel Inside

2.3 Connection of power wire and ground wire

The ground wire and the power wire for the GOT must be connected as described below.

- Provide a ground point near the GOT. Short-circuit the LG and FG terminals of the GOT (LG: line ground, FG: frame ground), and ground them with the thickest and shortest wire as possible (The wire length must be 30cm (11.81 inches) or shorter.). Since the LG and FG terminals pass the noise generated inside the GOT to the ground, ensure the lowest impedance as possible.
  As the wires are used to discharge the noise, the wire itself carries large noise and thus short wiring means that the wire is prevented from acting as an antenna.
  Note) A long conductor is an antenna to discharge noise more efficiently.
- Twist the ground wire led from the ground point with the power wire. By twisting the power wires with the ground wire, noise flowing from the power wires is discharged to a larger area on the ground. However, if a noise filter is installed on the power wires, the power wires and the ground wire may not need to be twisted.

2.4 Noise filter installation

Make sure to attach a noise filter to the power cable. (See 1) in Section 2.10 1) and 2).)
Use the noise filter FR-S5NFSA-1.5K (Mitsubishi Electric Corporation), RSHN-2006 (TDK-Lambda Corporation), or the equivalent.

- Do not install the input and output cables of the noise filter together. Doing so inducts the noise of the output cable to the input cable where noise is removed.

Wire the input and output cables separately. Bundling the input and output cables inducts noise.

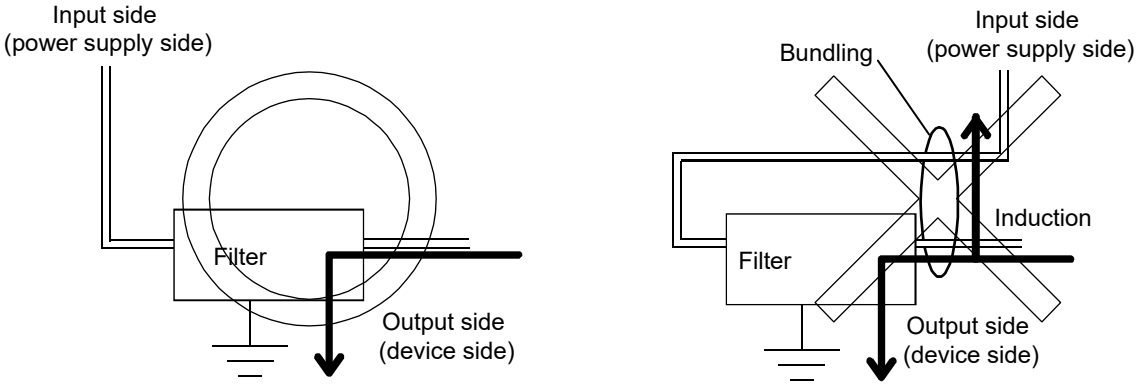
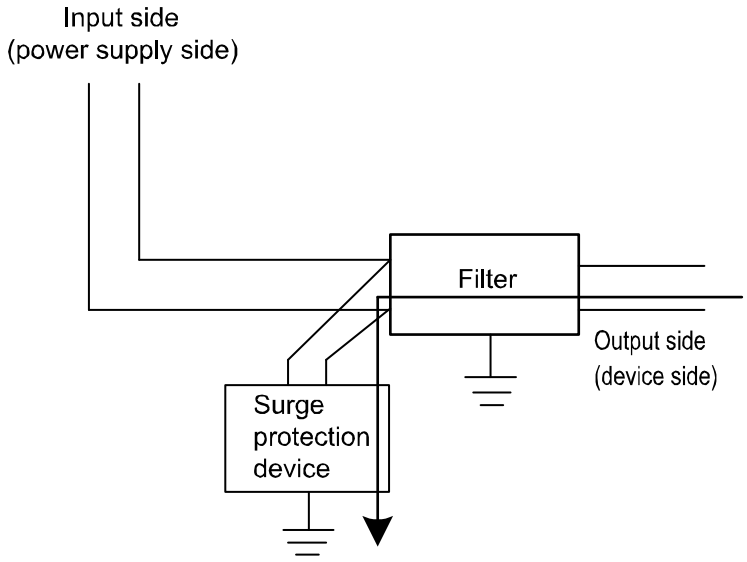


Fig. 2 Precautions on noise filter

- Ground the noise filter's ground terminal to the control panel with the shortest cable as possible (approx. 10cm (3.94 inches) or less).

2.5 Surge protection device installation

For GT2705-V, GT2510-W, GT2507-W, GT2507T-W, GT2505, GT2105, GT2104, and GT2103, make sure to attach the noise filter described in Section 2.4 and the surge protection device to the power cable. (See 1) and 2) in Fig. 2) in Section 2.10.))
Use the surge protection device SG-Z24J (OTOWA ELECTRIC CO., LTD) or the equivalent.

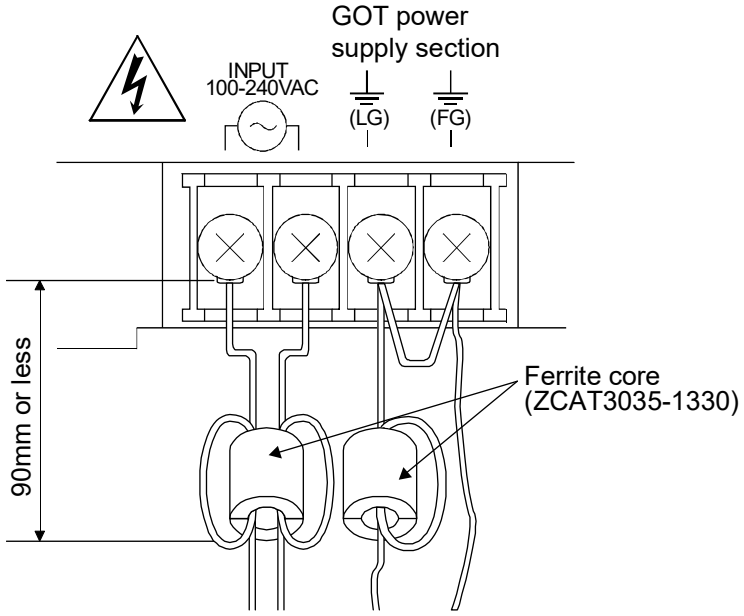


- Ground the ground terminal of the surge protection device to the control panel with the shortest cable as possible (approx. 10cm (3.94 inches) or less).

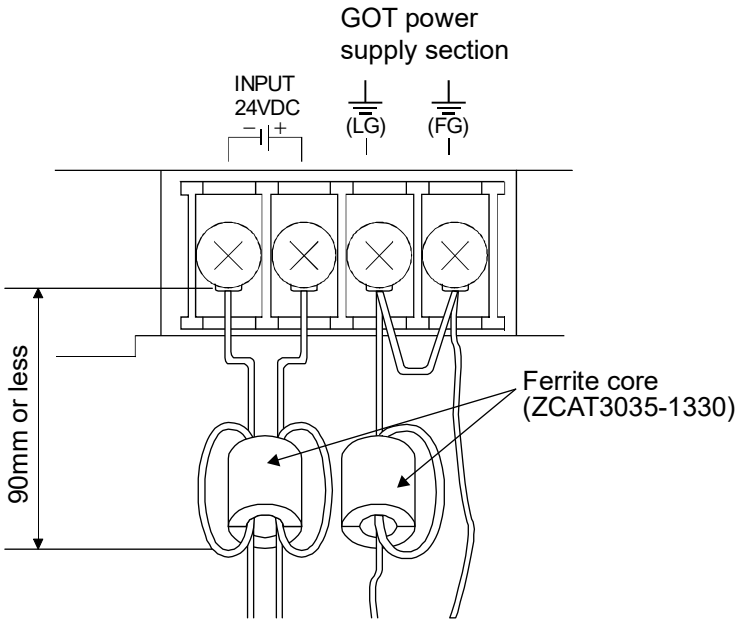
2.6 Wiring method of power wire and ground wire

Connect the power wires and the ground wires as shown in the figures, and attach a ferrite core (ZCAT3035-1330 manufactured by TDK Corporation) within the range shown below if needed. (See 2) in Fig. 1) and 3) in Fig. 2) in Section 2.10.)

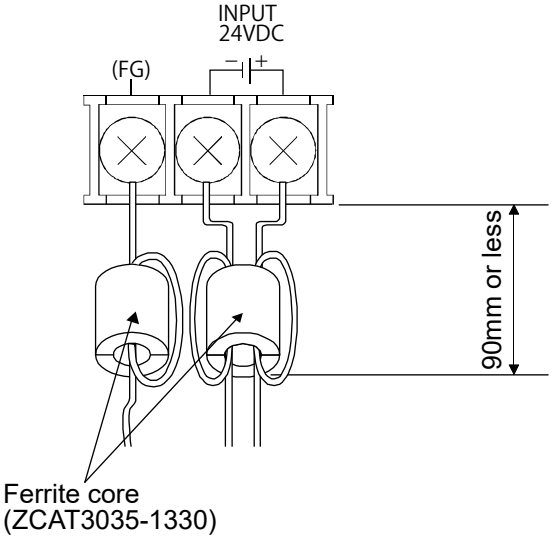
(a) 100-240VAC GOT power supply section



(b) 24VDC GOT power supply section
1) GT27/25 model (excluding (b) 2))



2) For GT2705-V, GT2510-W, GT2507-W, GT2507T-W, GT2505, GT2105, GT2104, and GT2103



2.7 Fabrication method of connection cables

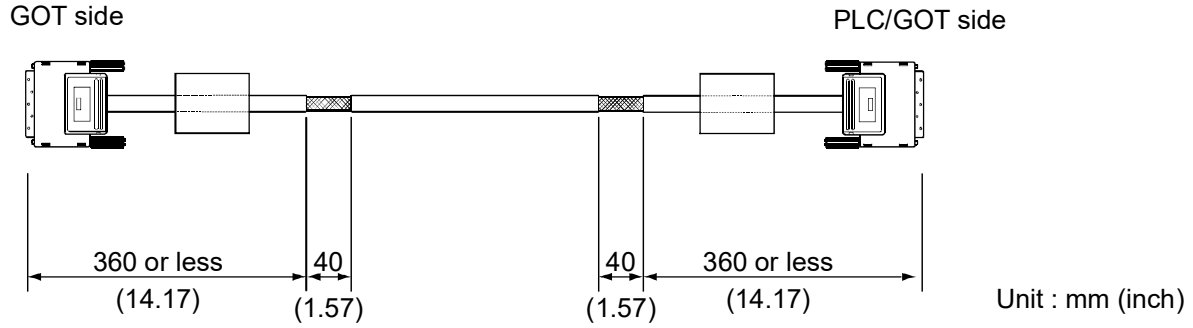
Fabricate the cable used with the GOT with the following method. When fabricating the cable, a ferrite core, a cable clamp, and a cable shield material are required. (See 3) in Fig. 1) and 4) in Fig. 2) in Section 2.10.) The products used by Mitsubishi Electric Corporation for the Type Approval Certificate compatibility test are as shown below.

- Ferrite core : ZCAT3035-1330 ferrite core manufactured by TDK Corporation
- Cable clamp : AD75CK cable clamp manufactured by Mitsubishi Electric Corporation
- Cable shield material : Zipper tube type SHNJ manufactured by Zippertubing (Japan),Ltd.

(a) BUS connection

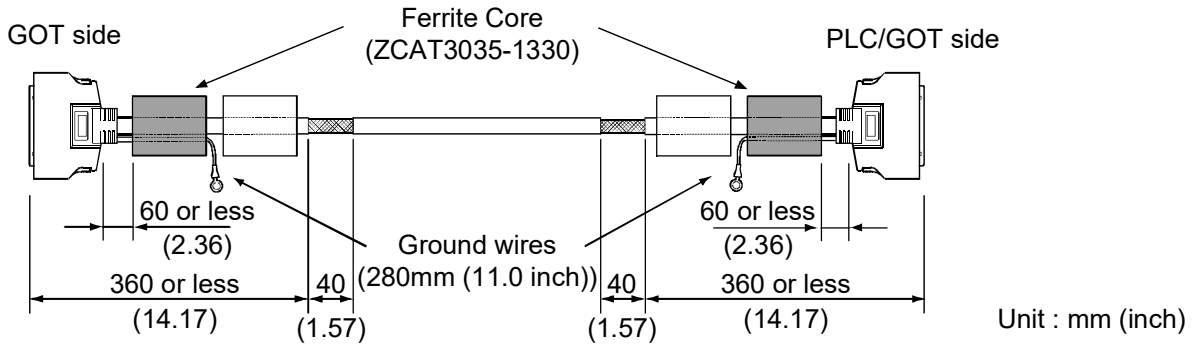
1) GT15-QC□B, GT15-QC□BS

- Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield sections for grounding.
  The braided shield sections are used for grounding with a cable clamp. (For grounding with cable clamps (See Section 2.7.))

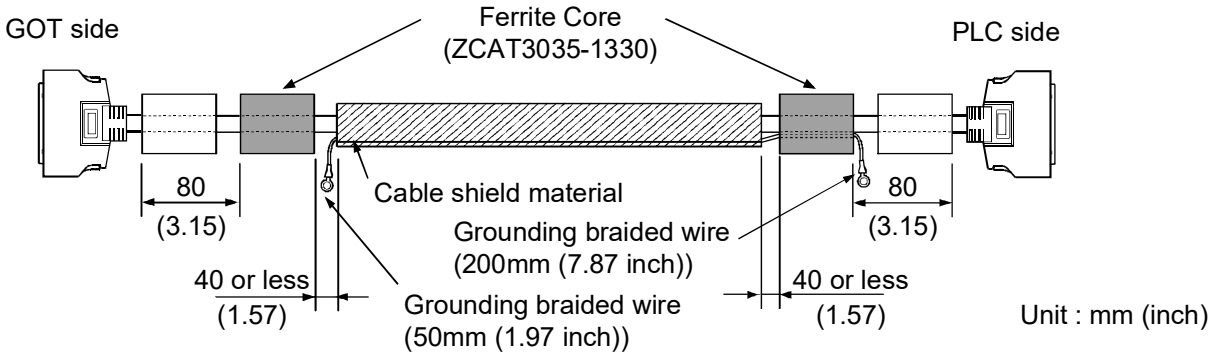


2) GT15-C□BS

- Cut the ground cables from both ends of the cable to the length as shown in the figure below.
- Install ferrite cores to the cable in the positions as shown in the figure below, and insert the ground cables through the ferrite cores.
- Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield sections for grounding. The braided shield sections are used for grounding with a cable clamp. (For grounding with cable clamps (See Section 2.7.))

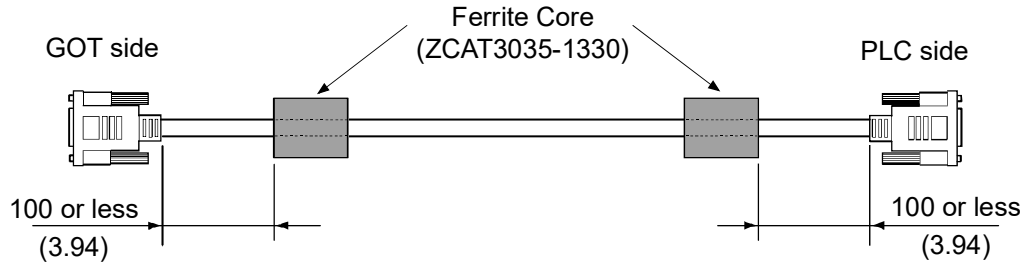


3) Other bus connection cables
- Wrap the cable shielding material around the cable, and pull out the braided cables for grounding from the cable shielding material with the length as shown in the figure below.
- Install ferrite cores to the cable in the positions as shown in the figure below, and insert the braided cable for grounding at the PLC side through the ferrite core.



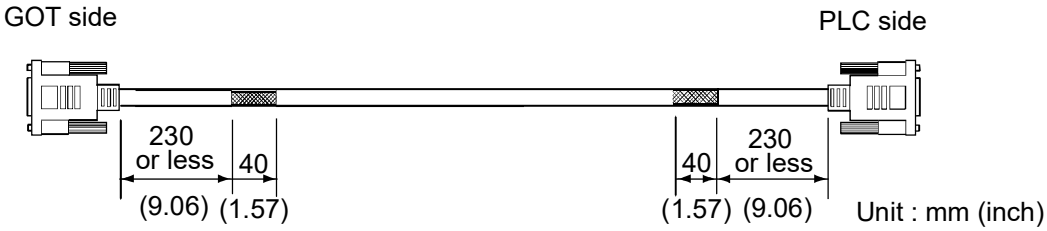
Unit : mm (inch)

(b) Direct CPU connection (serial)
(1) RS-232 cable and RS-422 cable
- Install a ferrite core to the cable in the positions as shown in the figure below.



Unit : mm (inch)

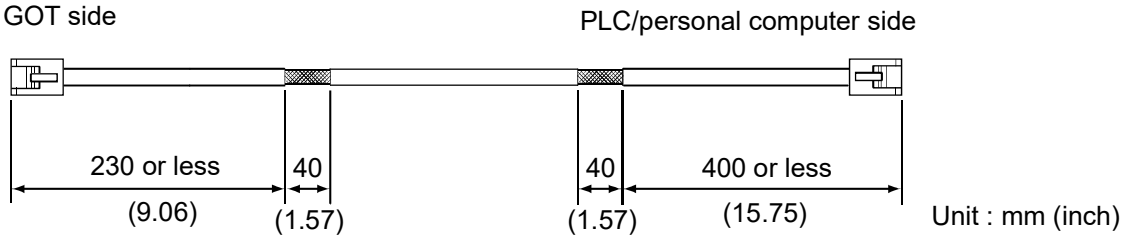
(c) Computer link connection
(1) RS-232 cable and RS-422 cable
- Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield sections for grounding.The braided shield sections are used for grounding with a cable clamp. (For grounding with cable clamps (See Section 2.7.))



Unit : mm (inch)

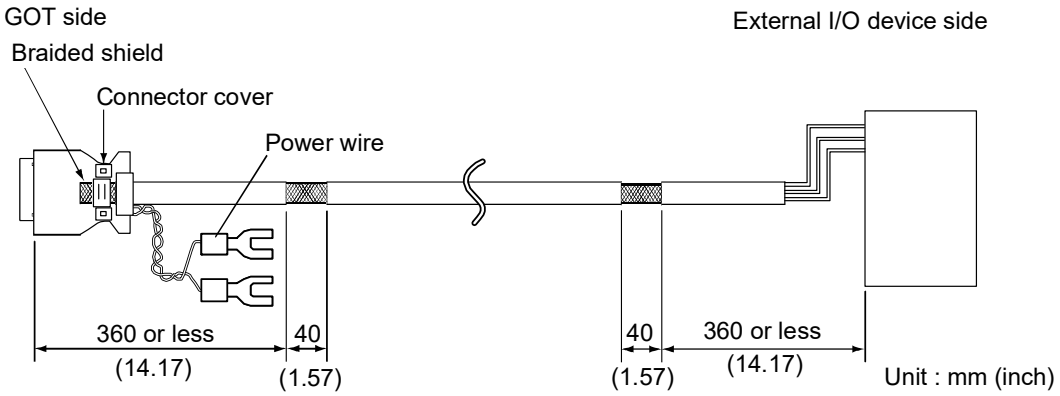
(d) Ethernet connection

- Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield for grounding. The braided shield sections are used for grounding with a cable clamp. (For grounding with cable clamps (See Section 2.7.))



(e) External I/O device connection

- Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield for grounding. The braided shield sections are used for grounding with a cable clamp. (For grounding with cable clamps (See Section 2.7.))
- Connect the braided shield to the connector with the connector cover.
- Twist the power cables.

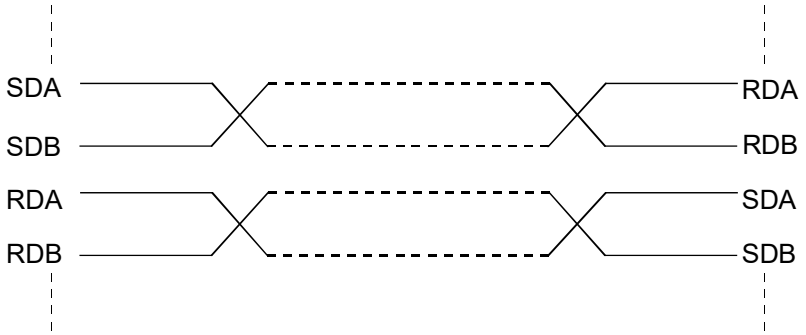


(f) Connection of third party PLC, microcomputer, temperature controller, inverter, servo amplifier, CNC, MODBUS/RTU or MODBUS/TCP

The user is required to produce a cable (RS-232 cable or RS-422/485 cable) for connecting the GOT to a controller. For how to produce the cable, refer to the GOT2000 Series Connection Manual.

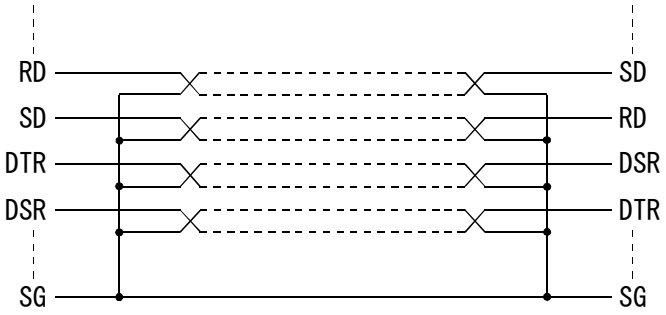
(1) RS-422/485 cable

- When connecting each signal wire (excluding the SG wire and the FG wire), twist two signal wires as illustrated below.

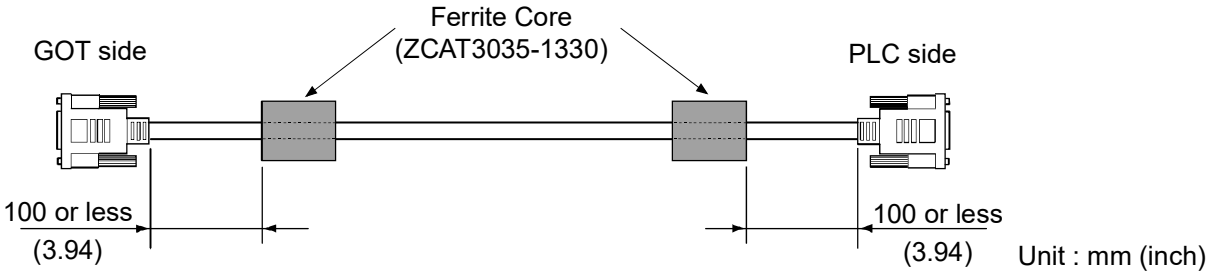


- Connect two or more SG wires.

(2) RS-232 cable
- Twist each signal wire (excluding the SG wire and the FG wire) with the SG wire.



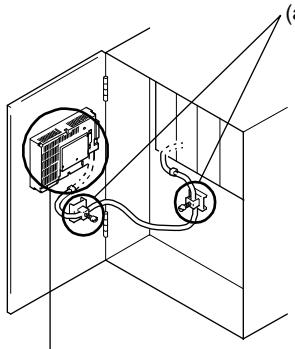
- Attach ferrite cores to the cable in the positions as illustrated below.

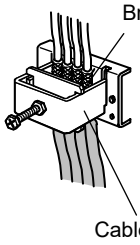


2.8 Grounding the cable

Ground the cable and the ground wire to the control panel where the GOT and the base unit are installed.

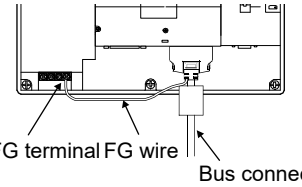
(a) Ground the braided shield of the cable to the control panel with the cable clamp (AD75CK) (See 4) in Fig. 1) and 5) in Fig. 2) in Section 2.10.)





For the cable clamp attaching details,
refer to AD75CK-type Cable Clamping Instruction Manual <IB-68682>.

(i) For GT15-C□EXSS-1 and GT15-C□BS
Ground the ground wire to the FG terminal of the GOT power supply section.



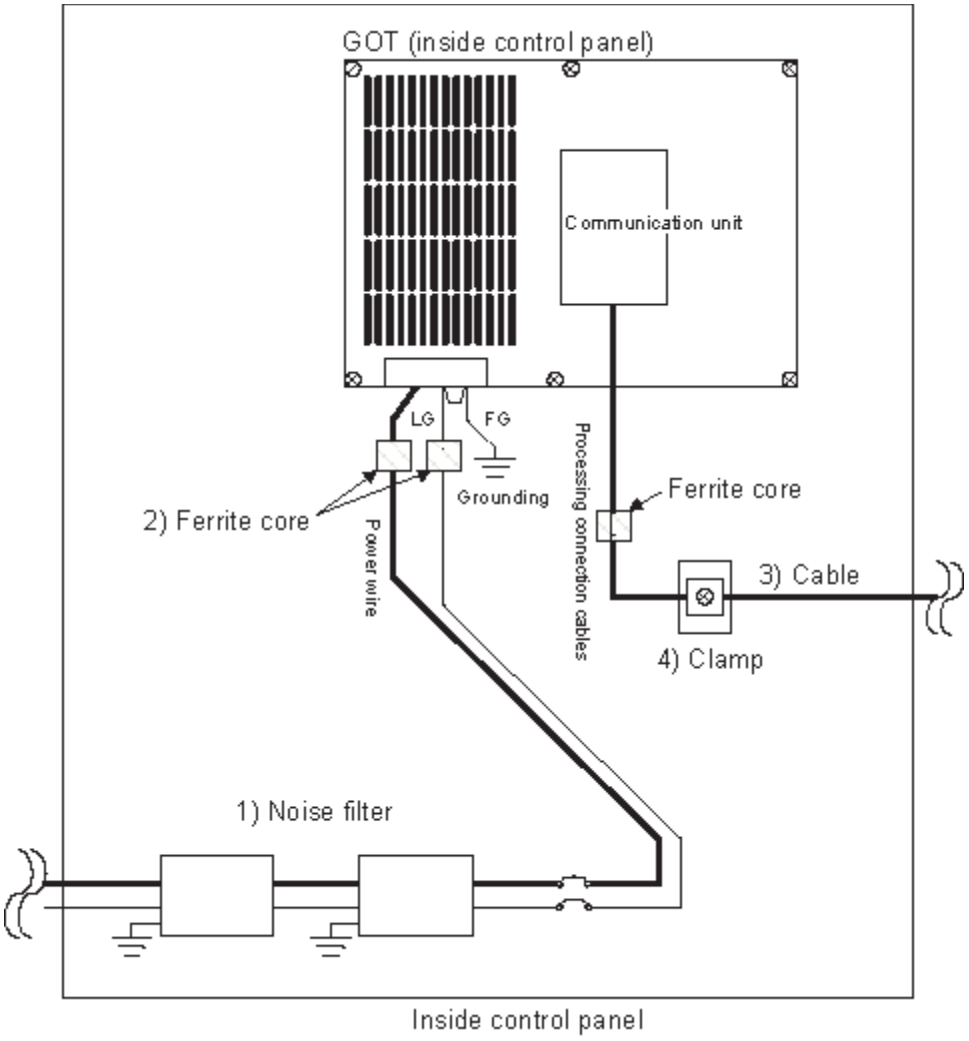
(ii) For other bus connection ccables
Ground the braided wire for grounding to the control panel by tightening a screw.

2.9 Equipment maintenance

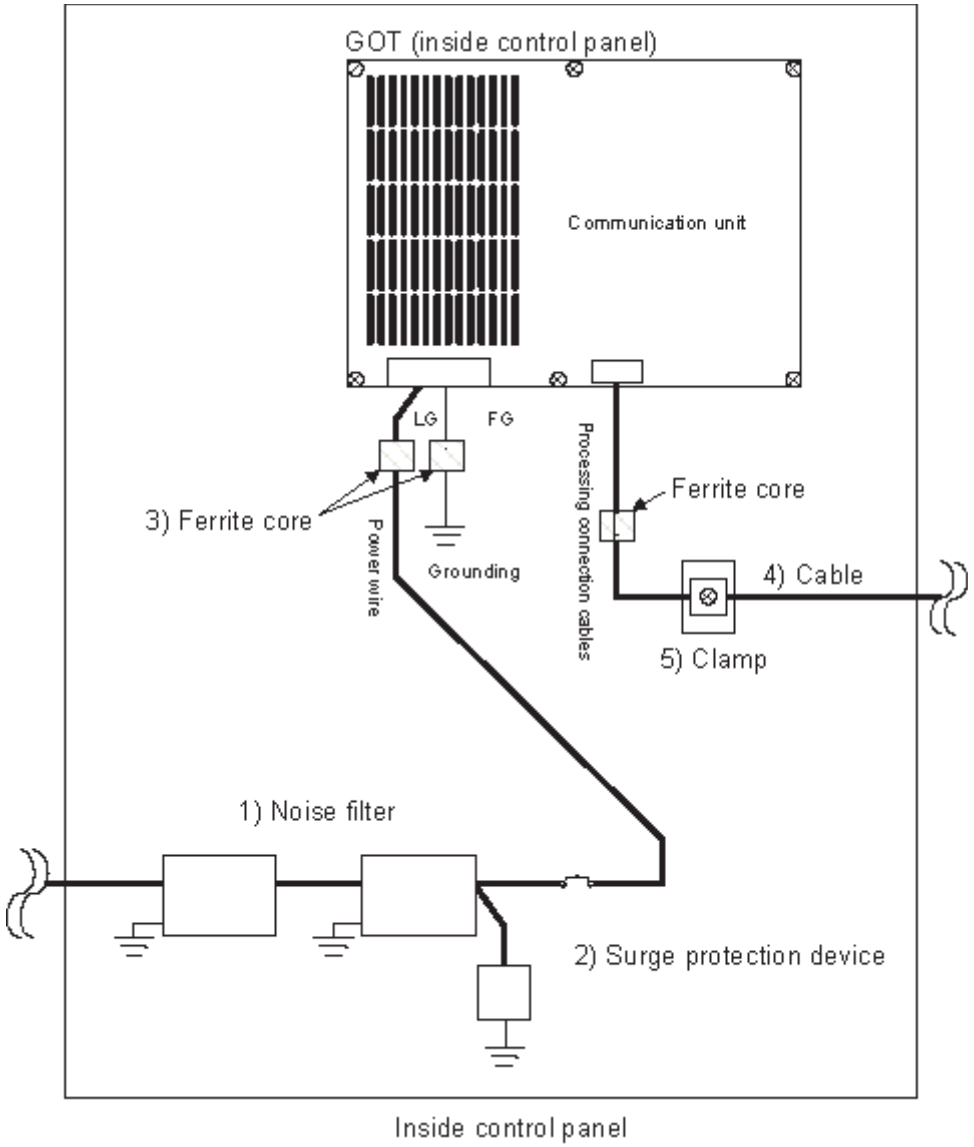
To use the GOT2000 series, work such as maintenance and inspection must be done by a maintenance worker.
The maintenance worker designates a person who has taken appropriate education and training, has work experience, can catch hazards in operation, and can avoid them.

2.10 Example of attaching noise filter / surge protection device / ferrite core inside control panel

1) GT27/25 model (excluding 2))



2) For GT2705-V, GT2510-W, GT2507-W, GT2507T-W, GT2505, GT2105, GT2104, and GT2103



REVISIONS

Version	Print Date	Revision
-	August 2015	- First edition
A	December 2018	- The description of the lightning surge protection device has been added.
B	July 2021	- The name of Classification Society has been changed. - Writing errors have been corrected.
C	August 2021	- GT2705-V has been added as the target model for the surge protection device installation.