



# Toshiba LF470 Quick Start Manual

Electromagnetic flowmeter field intelligent device



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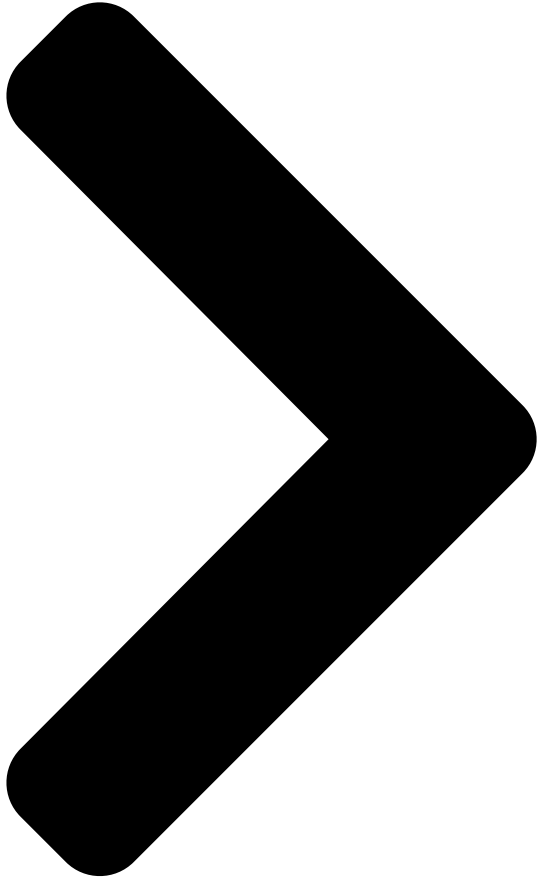
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Field Intelligent Device Series

## Electromagnetic Flowmeter

### Introduction

**TOSHIBA**

Field Intelligent Device Series

## Electromagnetic Flowmeter

1/10"

The electromagnetic flowmeter uses Faraday's Law of electromagnetic induction to measure the process flow.

The device consists of two units: a detector, through which the fluid to be measured flows and in which low-level signals proportional to flow rates are obtained; and a converter, which supplies excitation current to the detector, and amplifies the signals from the detector and processes and converts the signals into the 4–20 mA dc current signal. The LF470 is a small meter size designed to measure small diameter fluids into the 4–20 mA dc current signal. The LF470 is a small meter size





containing substances such as chemicals.

The wetted materials for the LF470 are corrosion resistant ceramic and platinum electrodes and are applicable to almost any kind of fluids. The LF470 is a lightweight palm-sized

# TOSHIBA Field Intelligent Device Series Electromagnetic Flowmeter

1/10"

## Introduction

multi-functional converter LF622 (separate type) and

<sup>1</sup> LF232\* The electromagnetic flowmeter uses Faraday's Law of electromagnetic induction to measure the process flow. The device consists of two units: a detector, through which the fluid to be measured flows and in which advanced algorithms are obtained; and a converter which supplies excitation current to the detector and amplifies the signals from the detector and processes the signals into the 4-20 mA dc current signal. The LF470 is a small meter size detector designed to measure a small amount of fluids containing substances such as chemicals.

The wetted materials for the LF470 are corrosion resistant ceramic and platinum electrodes and are

\*1: Please refer to the document "TIC-LF232".

\*2: HART protocol (Highway Addressable Remote Transducer) is a communication protocol for industrial sensors recommended by the HCF (HART Communication Foundation).

\*\* DevComm2000 Smart Device Communicator available through TIC for performing HART device configurations on PC or laptop.

\*3: PROFIBUS is the communication protocol for factory and process automation that the PROFIBUS Organization recommends. Instead of analog control with a conventional analog signal (4-20mA), it is the fieldbus which digitizes all signals. Flowmeters support PROFIBUS-PA.

\*4: Modbus is the communication protocol that Modicon Inc. developed. Physical layer is RS485.

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LF470  
Figure 2. Electromagnetic Flowmeter LF470

Certification

## Specifications

### Overall Specifications

Measurement range in  
0-1.0ft/s to 0-32.8ft/s

Accuracy: The overall accuracy of LF622 or LF232 conform to the following table.

Flow rate as a percent of range	1.0 (0.3)
50~100%	±0.3
0~50%	±0.5

Note: The accuracy is for normal operating conditions at 25°C.

Fluid conductivity: 50µS/cm

Fluid temperature: 0-100°C

Pipe connection material
Stainless steel and other metals
Polyvinyl chloride (shock-resistant)

Ambient temperature: 0-50°C

Figure 1. Configuration Diagram

detector.  
Combined with  
Power supply  
4-20mA dc output  
and pulse output  
LF622 or LF232  
Converter

1/10", 1/6" 1/4" (2.5, 4, 6mm)

LF470

Figure 2. Electromagnetic Flowmeter

LF470/LF622

Certification number

Field Intelligent Device Series

Electromagnetic Flowmeter

1/10"

# Specifications Introduction

The electromagnetic flowmeter uses Faraday's Law of electromagnetic induction to measure the process flow. The device consists of two units: a detector, through which the fluid to be measured flows and in which low-level signals proportional to flow rates are obtained; and a converter, which supplies excitation current to the detector, and amplifies the signals from the detector and then processes and converts the signals into the 4-20 mA dc current signal. The LF470 is a small meter size detector designed to measure a small amount of fluids containing substances such as chemicals.

The wetted materials for the LF470 are corrosion resistant ceramic and platinum electrodes and are applicable to almost any kind of fluids. The LF470 is a lightweight palm-sized detector. Combined with multi-functional converter LF622 (separate type) and LF232\*1 (separate type) equipped with its patented advanced algorithm, noise and noise suppression circuit and advanced algorithm, the LF470 is highly resistant to noise and provides a stable output even for fluids containing slurries. IR (Infrared) switches enable parameter setting of the converter without removing the cover. Flow direction can be set in either way, and its unique 128 x 128 dot matrix LCD display allows the LCD to be rotated electronically to be rotated to 90, 180 and 270 degrees without opening the cover

Power consumption:  
 \*1: Please refer to the document "TIC-LF232".  
 When combined with the LF622 converter:  
 Standard: 10W (14VA)  
 at AC100V and excitation current: 0.2A  
 MAX: 15W (22VA)  
 \*2: DevComm2000 Smart Device Communicator available through TIC for performing HART device configurations on PC

LF470/LF622  
 LF622  
 Z01207  
 Accuracy  
 3.3-32.8ft/s  
 (1.0-10m/s )  
 ±0.8% of rate  
 ±0.4% of FS  
 Fluid temperature  
 14 to 248 °F  
 (□10°C□120°C)

Structure and 270 degrees without opening the cover  
 Power consumption:  
 \*1: Please refer to the document "TIC-LF232".  
 When combined with the LF622 converter:  
 Standard: 10W (14VA)  
 at AC100V and excitation current: 0.2A  
 MAX: 15W (22VA)  
 \*2: DevComm2000 Smart Device Communicator available through TIC for performing HART device configurations on PC

Standard: 10W (14VA)  
 at AC100V and excitation current: 0.2A  
 MAX: 15W (22VA)  
 \*2: DevComm2000 Smart Device Communicator available through TIC for performing HART device configurations on PC

MAX: 17W (24VA) with PROFIBUS  
 \*3: PROFIBUS is the communication protocol for factory and process automation that the PROFIBUS Organization recommends. Instead of analog control with a conventional analog signal (4-20mA), it is the fieldbus which digitizes all signals. Flowmeters support PROFIBUS-PA.  
 \*4: Modbus is the communication protocol that Modicon Inc. developed. Physical layer is RS485.  
 \*5: Modbus is the communication protocol that Modicon Inc. developed. Physical layer is RS485.

LF470/LF622  
 LF622  
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 3.3-32.8ft/s  
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 14 to 248 °F  
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LF470  
 Figure 2. Electromagnetic Flowmeter

## Specifications

### Overall Specifications

**Measurement range in**  
 0-1.0ft/s to 0-32.8ft/s

**Accuracy:** The overall accuracy is ±0.8% of rate and ±0.4% of FS for LF622 or LF232 converter. See the following table.

Flow rate as a percent of range	Accuracy
0-50%	±0.8%
50-100%	±0.4%

**Note:** The accuracy is for normal operating conditions at 23°C (73°F).

**Fluid conductivity:** 50µS/cm

**Fluid temperature:** 14 to 248 °F (□10°C□120°C)

Pipe connection material
Stainless steel and other metals
Polyvinyl chloride (shock-resistant)

**Ambient temperature:** 14 to 248 °F (□10°C□120°C)

14 to 140 °F  
(□10°C□□60°C)

TIC-LF470H

## Field Intelligent Device Series

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## Related Manuals for Toshiba LF470

### [Plumbing Product Toshiba LF470 Instruction Manual](#)

Electromagnetic flowmeter detector (40 pages)

### [Measuring Instruments Toshiba Electromagnetic Flowmeter LF470/LF612 Specification Sheet](#)

Electromagnetic flowmeter (8 pages)

### [Media Converter Toshiba LF620 Instruction Manual](#)

Electromagnetic flowmeter converter (160 pages)

### [Measuring Instruments Toshiba GF630 Manual](#)

Electromagnetic flowmeter (18 pages)

### [Measuring Instruments Toshiba LF410 Manual](#)

Field intelligent device - mount-anywhere series - wafer electromagnetic flowmeter (15 pages)

### [Measuring Instruments Toshiba LF622 Quick Start Manual](#)

Magmeter (13 pages)

### [Measuring Instruments Toshiba GF642 Manual](#)

Electromagnetic flowmeter (11 pages)

### [Media Converter Toshiba LF620 Manual](#)

Electromagnetic flowmeter converter (8 pages)

### [Measuring Instruments Toshiba LF434 /LF620 Manual](#)

Electromagnetic flowmeter (12 pages)

### [Measuring Instruments Toshiba Sanitary Electromagnetic Flowmeter TIC-LF494B User Manual](#)

Field intelligent device series sanitary electromagnetic flowmeter (17 pages)

### [Measuring Instruments Toshiba LF516 Instruction Manual](#)

Electromagnetic flowmeter capacitance type (157 pages)

### [Measuring Instruments Toshiba LF232\\*F Series Instruction Manual](#)

Electromagnetic flowmeter for partially-filled pipes 6" to 24" (150 to 600 mm) (8 pages)

### [Measuring Instruments Toshiba LF620 B Series Instruction Manual](#)

Electromagnetic flowmeter converter (167 pages)

### [Measuring Instruments Toshiba LF654 Instruction Manual](#)

Lf654 series electromagnetic flowmeter detector (51 pages)

### [Measuring Instruments Toshiba RD-97DTKB Owner's Manual](#)

Hdd & dvd video recorder (96 pages)

### [Measuring Instruments Toshiba LF620F Instruction Manual](#)

Electromagnetic flowmeter converter (162 pages)

## Summary of Contents for Toshiba LF470

[Page 1](#) 4-20 mA dc current signal. The LF470 is a small meter size detector designed to measure a small amount of fluids LF622 LF470 containing substances such as chemicals.

[Page 2](#) Output signals Approximately 14W (25VA) Current output: □ Model LF470 Detectors 4-20mAdc (load resistance 0 to 750□) Fluid pressure: - 15 to 150 psi, or - 1.0 to 10 bar Note:

The current output cannot be used with the (-0.1 to 1 MPa) PROFIBUS-PA communication.

[Page 3](#) Zero span calibration tool allows unit to be See Figure 5 re-calibrated and verified using an internal software MTBF: program. (For more information contact Toshiba Converter: 220,000 hours (25 years) at 77 °F (25 °C) International Corp.) based on strict military specification MIL-HDBK-217F Detector: 350,000 hours (40 years) at 77 °F (25 °C)

#### [Page 4: Installation](#)

This length becomes 78 mm if the pipe If a mounting plate is needed for the LF470, fix the plate (a) connection port thread is Rc (PT) 1/2 above to the bottom of the LF470.

#### [Page 5: Profibus-Pa](#)

Signal common for DI and DO Digital output 1 Grounding with 100Ω or less Power cable Connected detector I/O cable ground resistance Figure 6. Separate type LF470/LF622 flowmeters wiring Diagram Table 1. LF622 Converters Signal Table Symbol Description Cable L1 (□) Power supply Power cable L2 (□)

#### [Page 6: Ordering Information](#)

(3) The fluid to be measured must be held still in the In areas like the following, there may be the case that pipe when the LF470 is being adjusted. If the fluid infrared switches do not function correctly. (If these are can not be stopped after the LF470 installation, unavoidable, use an appropriate cover.)

[Page 7](#) TIC-LF470H Table 4. Specification Code ( LF470 Detector ) Model Specification Code Description 1 2 3 4 5 6 7 8 9 10 11 12 13 14 L F 4 7 0 LF470 Flowmeter Meter size 1/10" (2.5 mm ) 1/6"...

[Page 8](#) Specifications are subject to change without notice. Printed in Japan 2011-6 (TDOC) Misuse of this product can result in damage to property or human injury. © TOSHIBA Corporation 2011 Read related manuals carefully before using this product. All Rights Reserved.

This manual is also suitable for:

[Lf622](#)