



# TOSHIBA

Toshiba GF642 Manual

Electromagnetic flowmeter



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11

--

•

## Bookmarks

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Field Intelligent Device

## ELECTROMAGNETIC FLOWMETER

### 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

The electromagnetic flowmeter uses Faraday's Law of current to the detector, and amplifies the signals from the detector. 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

**TOSHIBA**

Field Intelligent Device

ELECTROMAGNETIC FLOWMETER





LF622 (separate type) equipped with its patented Noise-Sentry original noise-suppression circuit and advanced algorithms. The GF642 has a very high tolerance to noise, giving the unit a very stable output even for slurry fluid measurement. IR (Infrared) switches enable parameter setting of the converter without removing the cover. Flow direction can be set in either way.

# TOSHIBA Field Intelligent Device ELECTROMAGNETIC FLOWMETER

## Introduction

The AF900 hand-held terminal (HART) can be used to communicate with the flowmeter from a remote place. PROFIBUS-PA is available as an option. The AF900 hand-held terminal (HART) can be used to communicate with the flowmeter from a remote place. PROFIBUS-PA is available as an option. The AF900 hand-held terminal (HART) can be used to communicate with the flowmeter from a remote place. PROFIBUS-PA is available as an option.

\*1: HART protocol (Highway Addressable Remote Transducer) is a communication protocol for industrial sensors recommended by the HCF (HART Communication Foundation).

\*2: PROFIBUS is the communications protocol for factory and process automation that the PROFIBUS Organization recommends. Instead of analog control with a conventional analog signal (4-20 mA), it is fieldbus which digitizes all signals. Flowmeters support PROFIBUS-PA.

\*3: Modbus is the communication protocol that Modicon Inc. developed. Physical layer is RS485.

### Figure1. Configuration

The AF900 hand-held terminal (HART<sup>\*1</sup> communicator) can be used to communicate with the flowmeter from a remote place. PROFIBUS-PA<sup>\*2</sup> or Modbus<sup>\*3</sup> interface is available as an option.

\*1: HART protocol (Highway Addressable Remote Transducer) is a communication protocol for industrial sensors recommended by the HCF (HART Communication Foundation).

\*2: PROFIBUS is the communications protocol for factory and process automation that the PROFIBUS Organization recommends. Instead of analog control with a conventional analog signal (4-20 mA), it is fieldbus which digitizes all signals. Flowmeters support PROFIBUS-PA.

### Figure2. GF642 Flowmeter

\*3: Modbus is the communication protocol that Modicon Inc. developed. Physical layer is RS485.

Measurement range: (measuring range by flow)

Meter size

Measuring range

Accuracy: (Accuracy when combined with the converter LF622)

Flow rate

1.0 □ 3.28 ft.s

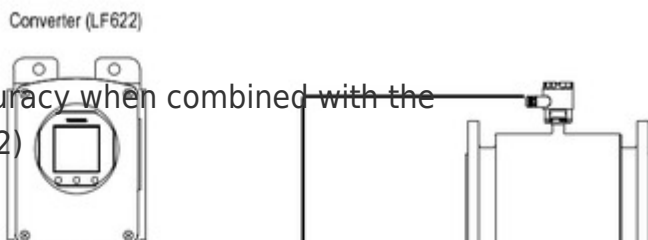


Figure2. GF642 Flowmeter

## General Specifications

### Measurement range

Meter size	
Measuring range	

Accuracy: (Accuracy when combined with the converter LF622)

Flow rate	
0 ~ 100%FS	

Note: The accuracy is based on the standard.

(0.3 □ 1.0m/s)  
0 □ 100%FS  
±0.8% FS

Note: The accuracy above is measured under standard operating conditions using the weighing method at Toshiba admitted flow calibration facility.

# TOSHIBA Field Intelligent Device ELECTROMAGNETIC FLOWMETER

Fluid conductivity:  
5µS/cm minimum

## 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 flow 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 or communication signal. Combined with a multi-functional converter LF632 (separate type) equipped with its patented Noise-Sentry original noise-suppression circuit and advanced algorithms. The GF642 has a very high tolerance to noise, giving the unit a very stable output even for slurry fluid measurement. IR (Infrared) switches enable parameter setting of the converter without removing the cover. Flow direction can be set in either way



[Table of Contents](#)

[Next Page](#)

1  
2  
3  
4  
5

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Electromagnetic flowmeter converter (160 pages)

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

Electromagnetic flowmeter (18 pages)

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Electromagnetic flowmeter (12 pages)

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Density meter (124 pages)

### [Measuring Instruments Toshiba RemotEye 4 Procedure For Installing](#)

On g9000 series ups (pre-installed brackets) (8 pages)

## Summary of Contents for Toshiba GF642

**Page 1** Combined with a multi-functional converter LF622 (separate type) equipped with its patented Noise-Sentry original noise-suppression circuit and advanced algorithms. The GF642 has a very high tolerance to noise, giving the unit a very stable output even for slurry fluid measurement. IR (Infrared) switches enable parameter setting of the converter without removing the cover.

**Page 2** EJL-146C Ambient temperature: Specifications of LF622(Separate type) 14 to 140 °F (-10 to +60°C) Converter Input signals: Storage temperature: Analog signal: 5 to 149 °F (-15 to

+65°C) The voltage signal from detector. Proportional to process flow rate Digital input DI:  
Storage humidity: Signal type: 20 to 30Vdc voltage signal...

[Page 3](#) EJL-146C Pulse output (available only for DO1, DO2): LCD display: Pulse rate: Full dot-matrix 128×128 display Max 10kHz (10,000pps) (DO1) (back-light provided) Max 100Hz (100pps) (DO2) Parameter setting: (Over 1kpps, auto-setting) Parameters can be set as follows: Pulse width: IR Switches: 0.3 to 500ms (but less than half of the period Tree...

[Page 4](#) EJL-146C Vibration resistance: No resonance to the following levels of vibration: □10 to 150Hz with acceleration of 9.8m/s □Vibration of 30Hz with 29.4m/s in 4h in each direction will not cause any defect to unit. Note: Avoid using the flowmeter in an environment with constant vibration.

### [Page 5: Installation](#)

1715 1200 1600 1600 1892 1200 1600 1600 1935 1700 1800 1800 1078 2101 1700 1800 1800 1078 2136 2200 2000 2000 1180 2313 2200 2000 2000 1180 2343 3000 Figure 3: GF642 Meter 20" to 80" (500mm to 2000mm)

### [Page 6: External Connection](#)

EJL-146C External Connection Instrument panel : Ordered separately Grounding with 100Ω or less IV wire 5.5mm or more ground resistance Power switch Grounding with 100Ω or less (External double-pole power switch) ground resistance Power supply Thick walled steel conduit Current output (4□20mAdc) Signal cable or PROFIBUS (2-wire shielded hard-rubber sheathed cable)

[Page 7](#) EJL-146C Wiring Precautions (8) When wiring is completed, make sure to install the terminal block protection cover. (1) Connect the grounding wire (IV wire 5.5mm<sup>2</sup> or (9) Do not carry out withstand voltage test for the more) to a good earth ground (100Ω or less ground resistance).

### [Page 8: Piping Precautions](#)

EJL-146C subject to change or review without prior notice. Piping Precautions (1) Design piping so that the flowmeter detector pipe is always filled with the fluid being measured, whether the fluid is flowing or not. (2) The detector has no adjustable piping mechanism.

### [Page 9: Type Specification Code](#)

EJL-146C Type Specification Code Table4. Type specification code of detector Model number Specification code Contents 2 3 4 5 6 7 8 G F 6 4 2 Electromagnetic flowmeter detector ● ● Meter size 500mm ● ● 600mm ● ● 700mm ●...

[Page 10](#) EJL-146C Table5. Type specification code of converter Model number Specification code Contents 9 10 11 12 LF622 Electromagnetic flowmeter converter (Separate type) Purpose Standard ● Shape Standard type with case ● Converter mounting fitting None ○ Panel, Accessory for wall mounting ●...

[Page 11](#) ISO9001 and ISO14001 are certified. Specifications are subject to change without notice. Printed in Japan 2017-07 © Toshiba Infrastructure Systems & Solutions Misuse of this product can result in damages to property or human injury. Corporation 2017 Read related manuals carefully before using this product.

This manual is also suitable for:

[Lf622](#)

