Features
The NINJA is a direct insertion-type flowmeter that utilizes ultrasonic transit-time method for measuring flowrate (flow velocity). It can be directly installed to a pipeline using a repair valve, without stopping the water flow. The NINJA can measure positive and negative flow rates, total flow and pulse rates and can perform functions equal to or greater than electromagnetic flowmeters. Therefore, the scope of application is greater with NINJA compared to that of electromagnetic flow meters. It can be used immediately without the necessity to install multiple measuring instruments.

Composition
The NINJA is able to measure flowrate with high resolution, therefore it is very suitable for high-accuracy and high-speed measurement. It can also be operated by DC12V single power supply (DC5V–DC24V) external battery. The main unit is equipped with a SD card, the data is recorded at specified intervals and saved as CSV format which can then be uploaded and edited on a PC.

There are 2 types of NINJA, the integrated type (Type A) and the independent type (Type B).

Integrated Type (Type A)
The controller is independent of the main unit.
The sensors need the control panel in order to operate.
The main unit consists of the sensor and connection box. Type A is mainly suitable for long-term installation.

Independent Type (Type B)
The controller is built-in the Control box.
The settings unit is configured for LCD display only, therefore the sensor is operable without the settings unit. Type B is mainly suitable for spot checks or short term measurement.
## General Specifications

### Measurement
- **Measurement Method**: Transit-time measurement
- **Target Liquids**: Water, Pure water
- **Installation Method**: Mounted on Ball valve flange
- **Storage Temperature**: -10~60°C
- **Operating Altitude**: 2000[m] Max
- **Pollution Degree**: Degree 2
- **Pressure**: Up to 1[MPa]
- **Flow Velocity Range**: ±10.000[m/sec]
- **Velocity Resolution**: 0.003[m/sec]
- **Flow Rate Accuracy**: ±2% (Velocity > 0.3[m/sec])
  ±5% (Velocity < 0.3[m/sec])

### Pipe
- **Pipe Material**: Any material
- **Pipe Compatibility**: DN85~DN300 (3~12 inches)
- **Temperature Range**: 0.0~50.0[°C]
- **Measurement Method**: Velocity-Temperature relationship
- **Temperature Resolution**: 0.1[°C]
- **Temperature Accuracy**: ±1.0[°C] (up to 50.0[°C])
- **Storage Temperature**: -10~60[°C]
- **Operating Altitude**: 2000[m] Max
- **Pollution Degree**: Degree 2

### LCD Unit

#### Control Panel (Type A)
- **Physical dimensions**: H130-W160-D60 Excluding protrusions
- **Material**: ABS Resin
- **Weight**: Approx. 0.8kg
- **Water Protection**: IP54 equivalent (surface)
- **Power Supply**: AC100~240V
- **Power Consumption**: 5W or less
- **Allowable Power Fluctuation**: Source Voltage ±10% or less
- **Overvoltage Category**: 2.5kV (category II)
- **Stora**: 4.3” color LCD with touch panel
- **Sensor Connector**: BNC (50Ω)
- **Signal Connector**: 8P Metal Connector (NJW-168)

#### Settings Unit (Type B)
- **Physical dimensions**: H130-W160-D60 Excluding protrusions
- **Material**: ABS Resin
- **Weight**: Approx. 0.6kg

### Sensor Specifications
- **Sensor**: Ultrasonic
- **Bandwidth Frequency**: 2MHz~5MHz
- **Weight**: Approx. 15kg–Depends on length of shaft
- **Material**: Stainless Steel (SUS304,AISI304)
- **Flange**: JWWA B 126 compatible
- **Water Repellance**: Sensor part (IP67 equiv.)
  Connection Box (IP65 equiv.)

### Electrical Characteristics
- **Power Supply**: DC24V 0.3A
  (DC15~DC26V)
- **Power Consumption**: 5W or less
- **AC Power Source**: AC100~240V
- **Allowable Power Fluctuation**: Source Voltage ±10% or less
- **Overvoltage Category**: 2.5kV (category II)
- **Stora**: 4.3” color LCD with touch panel
- **Sensor Connector**: BNC (50Ω)

### Data
- **Recording Media**: SD Card (MAX 2GB)
- **Parameter Storage**: Nonvolatile memory
  FRAM re-writable 512byte
- **Data File Type**: CSV format (Excel® file)
- **Recording Interval**: 6sec.–1hr.
## Controller Parts

- **Control Panel (Type A)**
  1. SD Card slot
  2. Power switch
  3. Sensor Cable Connector
  4. Signal Cable Connector
  5. Inlet (AC Adapter)

- **Settings Unit (Type B)**
  1. Sensor Cable Connector
  2. Power switch

## Sensor Unit Parts and Dimensions (mm)

1. Connection Box (Type A)
2. Control Box (Type B)

## NINJA Flange Dimensions (mm)

JWWA B 126 equivalent
This manual shows the specifications and details as of May 2nd 2016, and may be subject to change without notice. The NINJA may not be compatible with your installment environment. Please contact our dealer prior to purchasing the NINJA to ensure compatibility.

*SD Card and Modbus cannot be selected together.
*Bluetooth and 4.3" Color LCD cannot be selected together.