

MagneW 3000

Electromagnetic Flowmeter Converters

Model KIX20B

Introduction

Smart MagneW3000, incorporating a microprocessor, is an remote-type electromagnetic flowmeter which has remote communication capability. This remote communication is effected by the Smart Communicator (SFC).

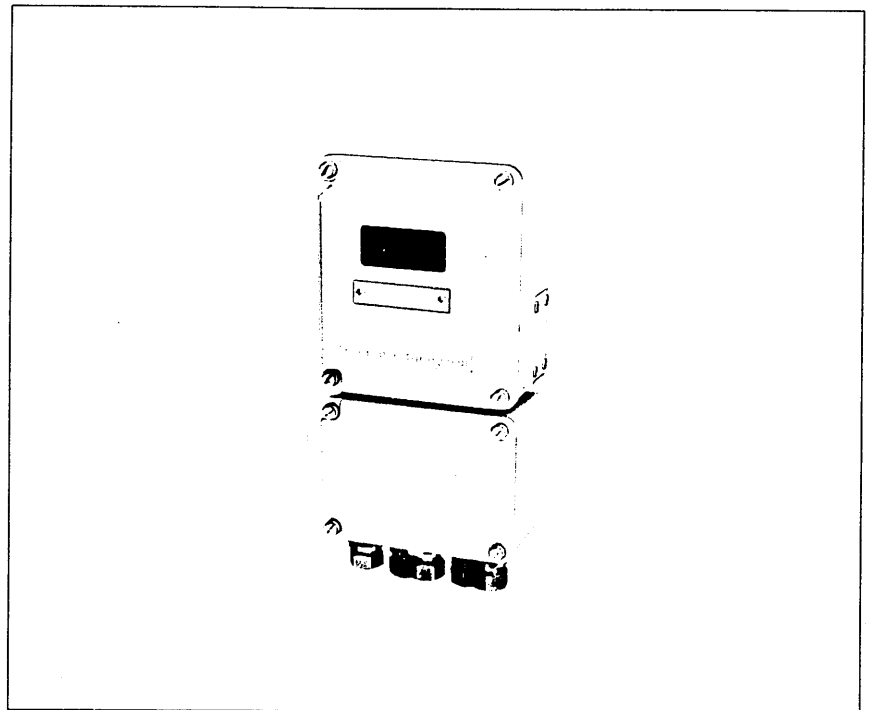
Features of Smart MagneW3000

- 1) By using Smart Communicator (SFC), communications are possible including calibration, setting, or self-diagnoses remotely.
- 2) Stabilized measurement can be realized for various fluid noise through application of digital signal processing technique on auto spike cut or others.
- 3) An integral configuration is also available. This Remote type can be easily changed to a integral type.
- 4) Multi-card structure is employed on the pulse unit, display unit, and setting unit, allowing flexible function additions or deletions by card exchanges. Also, each card, adopting a connector interface method, can be quickly inserted or removed. (When the pulse unit is not provided, parameters on pulses are not displayed. This feature contributes to improving controllability.)

Measurable Liquids

Any liquids, provided that their electrical conductivity is $3\mu\text{S}/\text{cm}$ or higher, can be measured irrespective of their properties or states (viscosity, temperature, pressure, or slurry).

| | |
|------------------|--|
| Water: | Potable, sewage, industrial, irrigation, sea, or drain water |
| Chemicals: | Acidic, alkaline, or corrosive liquids |
| Slurries: | Cement, lime, alumina, latex, and others slurries |
| Suspensions: | Pulp, drain, mud, or filthy liquids |
| Beverages: | Beer, milk, juice, soy sauce |
| Viscous liquids: | Paste, jam |



Combinable MagneW detectors

- Type NNP with diameters of 25mm or more
- Type NNK with any diameters
- Type KID with any diameters

Functions

Ranging functions

- Single range
- Automatic-switching dual range
- External-switching dual range
- Direct/reverse, automatic-switching range
- Direct/reverse, external-switching range

Built-in totalizer functions

- Totalizer
- Totalizer with pressing
- Direct/reverse differential flow rate integration

Contact input functions

- External 0% lock
- External automatic zero adjusting
- Built-in totalizer resetting
- External range switching

Contact output functions

- Alarm (flow rate alarm, self-diagnosis, empty status detection)
- Range switching
- Preset totalizer

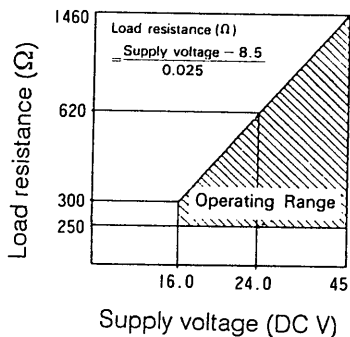
Flow rate display functions

- %
- Engineering units (m^3/h , l/min , cc/min , GPM, BPD or others)
- Totalizer

Lightning arresting functions

Built-in lightning arrestors (12 kV, 1,000A) at each terminal for power supply, excitation, analog output, pulse output, and contact point input/output.

Instrument Specifications

| Item | Specifications | | |
|---|---|---|--|
| Power requirement | 100, 110, 120V AC $\pm 10\%$, 50/60 Hz ± 2 Hz 200, 220, 240V AC $\pm 10\%$, 50/60 Hz ± 2 Hz 24V DC $\pm 10\%$ | | |
| External power supply for SFC communication | <p>Refer to the figure. (Load resistance of 250 ohms minimum is required to enable communications with SFC. When SFC communication function is not used, external power supply is not required. In this case, load resistance of current output is 0 to 600 ohms.)</p>  | | |
| Power consumption | 14W (22VA) including detector and converter | | |
| Input signal | <p>Flow signal: Flow rate proportionate signal from detector Contact input: Any one point of the following signals among semiconductor contact points or no-voltage contacts points</p> <ul style="list-style-type: none"> • 0% signal lock signal • Automatic zero adjust signal • Internal counter, External reset. | | |
| Output signal | <p>Excitation current: Output to detector excitation coil Current output: 4 to 20mA DC Contact output: Any one point among the following under open-collector external load of 30V DC. max. 200mA max. (in case of resistance load)</p> <ul style="list-style-type: none"> • Upper/lower limit alarm, self-diagnosis alarm, empty-status detection • Range discrimination • Pre-set totalizer <p>Pulse output:</p> <ul style="list-style-type: none"> • Open-collector output 0 to 2,000Hz, pulse widths 0.3, 0.5, 1, 7, 10, 15, 30, 50, 100ms External load 30V DC max., 200mA max. • Electromagnetic totalizer drive output 0 to 20Hz, pulse widths 30, 50, 100ms External load 24V DC, 210Ω • Mercury relay contact output 0 to 20Hz, pulse widths 30, 50, 100ms External load 30V DC max., 300mA max. | | |
| Display | <p>Display card: 7-segments LED, 6 digits Local setting card: LED, 7-segment/6 digits, LCD, 16 digits/2 lines Instantaneous flow rate percentage display: % Instantaneous flow rate display in engineering units: Volumetric units; m³, l, cc, B (barrel), KG (kilogallon), G (gallon), mG (milligallon) Time units; day, hour, min., sec. Built-in totalizer: m³/p, l/p, cc/p, B/p, KG/p, G/p, mG/p.</p> | | |
| Setting method | <p>Local setting card: 5 key-switches Remote setting by SFC</p> | | |
| Flow velocity range | 0 – 0.1/sec. to 0 – 10m/sec. | | |
| Damping time constant | 0, 0.5, 1, 2, 3, 4, 5, 10, 50, 100 sec. (min, response 0.5 sec. in 63.2% response) | | |
| Dropout | 2 to 10% FS of pulse output (variable integers) | | |
| Low flow cutoff | 0 to 10% FS of current output (variable integers) | | |
| Reference condition accuracy (combination with KID detector) | Max. measuring span (Vs) | Flow rate $\geq 25\%$ | Flow rate $\leq 25\%$ |
| | Vs=1.0 to 10m/s | $\pm 0.5\%$ of rate | $\pm 0.125\%$ FS |
| | Vs=0.1 to less than 1.0m/s | $\pm \left(\frac{0.1}{V_s} + 0.4 \right) \%$ of rate | $\pm \frac{1}{4} \left(\frac{0.1}{V_s} + 0.4 \right) \%$ FS |
| Ambient temperature | -10 to +50°C | | |
| Ambient humidity | 10 to 90%RH | | |

| Item | Specifications |
|--|--|
| Cables (Between detector and converter) | Signal cable: 2-core individually double-shielded cable (Yamatake-Honeywell standard 0.75mm ² , outside dia. 11.4mm), or equivalent cable (CVVS, CEEV, etc.) Excitation cable: 2-core chloroprene cable 2RNCT, JIS C3327 (2mm ² , outside dia. 11.4mm) or equivalent cable (vinyl-sheathed cable CVV, JIS C3401, etc) |
| Cable length | Max. 300m |
| Mounting | Wall mounting, 2" pipe |
| Ground | Class 3 ground (Ground resistance not greater than 100Ω) |
| Case material | Aluminium alloy |
| Case structure | Equivalent to JIS C0920 water-proof type, NEMA4, IEC IP66 |
| Case finish | Acryl finish |
| Case finish color | Light beige (Munsell 4Y7.2/1.3) |
| Electrical conduit | G ¹ / ₂ internal thread, CM20 internal thread, ¹ / ₂ NPT internal thread |
| Weight | 3.9kg |

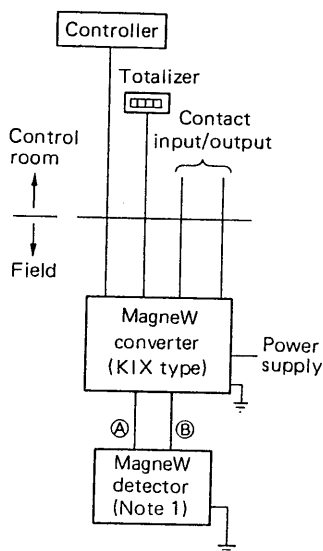
Semi-standard Specification

| | |
|---|--|
| Corrosion-resistant finish (Y 138A, B) | Corrosion-resistant finish (Y 138A): Baked acryl finish Corrosion-proof finish (Y 138B): Baked epoxy finish |
|---|--|

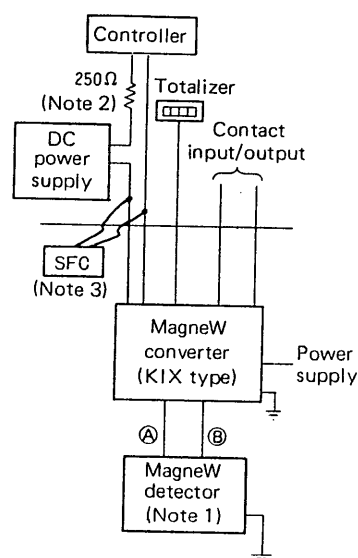
Configuration of Smart MagneW3000

Smart MagneW3000 is composed of a detector, a converter, and a cable used to connect these two units. KIX-type MagneW converter, mounted with a micro-processor, can conduct remote setting of various parameters by external communications with SFC.

1) No communication function provided



2) Communication by SFC



Notes:

- 1) Detectors of NNM type with diameters below 15mm can not be combined with those of NNP type with diameters below 15mm.
- 2) Under configuration of "communication by SFC", DC power supply for loop and resistance of over 250Ω are required on the current output line.
- 3) Wire connection of SFC is effected only when communication is made.
- 4) Exclusive-use cables
 - Ⓐ Excitation cable (KIW type)
 - Ⓑ Signal cable (KIW type)

Model Number Table

Ex: KIX20B-A12X2SV-XXX
KIX20B-A1102SV-XSF2A31

| Basic model No. | Selections | | | | | | | Options | | | | Description |
|-----------------|--------------|---------------|---------|--------------|---------------------------------|----------|--------------------|-------------------|---------------|----------------------|---|-------------|
| | Power supply | Output | | | Terminal box lightning arrester | Mounting | Conduit connection | Water-tight gland | Communication | Function designation | | |
| | | Analog output | Display | Pulse output | | | | | | | | |
| I | II | III | IV | V | VI | VII | VIII | IX | X | | | |
| KIX 20B | | | | | | | | | | | Remote type converter | |
| | -A | | | | | | | | | | 100V AC, 50/60Hz | |
| | -C | | | | | | | | | | 110V AC, 50/60Hz | |
| | -E | | | | | | | | | | 120V AC, 50/60Hz | |
| | -G | | | | | | | | | | 200V AC, 50/60Hz | |
| | -I | | | | | | | | | | 220V AC, 50/60Hz | |
| | -K | | | | | | | | | | 240V AC, 50/60Hz | |
| | -M | | | | | | | | | | 24V DC | |
| | | 1 | | | | | | | | | 4 to 20mA DC | |
| | | | X | | | | | | | | w/o display card | |
| | | | 1 | | | | | | | | w/ display card | |
| | | | 2 | | | | | | | | w/ local setting card | |
| | | | | X | | | | | | | None | |
| | | | | O | | | | | | | Open-collector output | |
| | | | | P | | | | | | | Electromagnetic totalizer drive output | |
| | | | | Q | | | | | | | Mercury relay contact output (Note 2) | |
| | | | | | 2 | | | | | | Terminal box with lightning arrester | |
| | | | | | | S | | | | | Wall-mounting | |
| | | | | | | T | | | | | 2" pipe | |
| | | | | | | | V | | | | G 1/2 Internal thread | |
| | | | | | | | W | | | | CM20 Internal thread | |
| | | | | | | | Y | | | | 1/2 NPT Internal thread | |
| | | | | | | | | | | | Water-tight gland is not available. | |
| | | | | | | | | -X | | | w/o water-tight gland | |
| | | | | | | | | -1 | | | With brass (Ni-plated) water-tight gland | |
| | | | | | | | | -2 | | | With plastic water-tight gland | |
| | | | | | | | | X | | | w/o communication function | |
| | | | | | | | | S | | | Communication by SFC | |
| | | | | | | | | | X | | Not designated (Note 3) | |
| | | | | | | | | | | F□□□□ | Designated (used according to function designation table) | |

Notes:

- Data must be set, changed through communication with SFC.
- Cannot be selected for vertical mounting.
- Functions (default value)
 - w/o pulse output:
 - Ranging function → Single range
 - Built-in totalizer function → Not provided
 - Contact input function → Not used
 - Contact output function → Not used
 - w/ pulse output:
 - Ranging function → Single range
 - Built-in totalizer function → Built-in totalizer
 - Contact input function → Not used
 - Contact output function → Not used

Function Designation Table (F)

Designate the device type number according to the following tables. The converter will be shipped by incorporating the designated functions. Also, changes of designated functions can be achieved by the "Local Setting Card" or by communications.

1) Single range

| Function designation | Function designation | | | | Description |
|----------------------|----------------------|--------------------|---------------|----------------|---|
| | Ranging | Built-in totalizer | Contact input | Contact output | |
| F | I | II | III | IV | |
| | 0 | | | | Single range |
| | X | | | | None |
| | A | | | | Totalizer (Note 1) |
| | B | | | | Totalizer with preset (Note 1) |
| | X | | | | None |
| | 1 | | | | External 0% lock |
| | 2 | | | | External auto zero adjustment |
| | 4 | | | | Built-in totalizer reset |
| | X | | | | None |
| | 1 | | | | Alarm output (w/empty-status detection) |
| | 3 | | | | Preset totalizer output (Note 2) |

2) Direct/reverse automatic-switching range

| Function designation | Function designation | | | | Description |
|----------------------|----------------------|--------------------|---------------|----------------|--|
| | Ranging | Built-in totalizer | Contact input | Contact output | |
| F | I | II | III | IV | |
| | 3 | | | | Direct/reverse automatic-switching range |
| | X | | | | None |
| | A | | | | Totalizer (Note 1) |
| | C | | | | Direct/reverse differential flow rate integration (Note 1) |
| | X | | | | None |
| | 1 | | | | External 0% lock |
| | 2 | | | | External auto zero adjustment |
| | 4 | | | | Built-in totalizer reset |
| | 2 | | | | Range discrimination signal output |

3) Direct/reverse external-switching range

| Function designation | Function designation | | | | Description |
|----------------------|----------------------|--------------------|---------------|----------------|---|
| | Ranging | Built-in totalizer | Contact input | Contact output | |
| F | I | II | III | IV | |
| | 4 | | | | Direct/Reverse external-switching range |
| | X | | | | None |
| | A | | | | Totalizer (Note 1) |
| | B | | | | Totalizer with preset (Note 1) |
| | C | | | | Direct/reverse flow rate integration (Note 1) |
| | 3 | | | | External range switching |
| | X | | | | None |
| | 1 | | | | Alarm (w/empty-status detection) |
| | 2 | | | | Range discrimination signal output |
| | 3 | | | | Preset totalizer output (Note 2) |

4) Automatic-switching dual range

| Function designation | Function designation | | | | Description |
|----------------------|----------------------|--------------------|---------------|----------------|------------------------------------|
| | Ranging | Built-in totalizer | Contact input | Contact output | |
| F | I | II | III | IV | |
| | 1 | | | | Automatic-switching dual range |
| | X | | | | None |
| | A | | | | Totalizer (Note 1) |
| | X | | | | None |
| | 1 | | | | External 0% lock |
| | 2 | | | | External auto zero adjustment |
| | 4 | | | | Built-in totalizer reset |
| | 2 | | | | Range discrimination signal output |

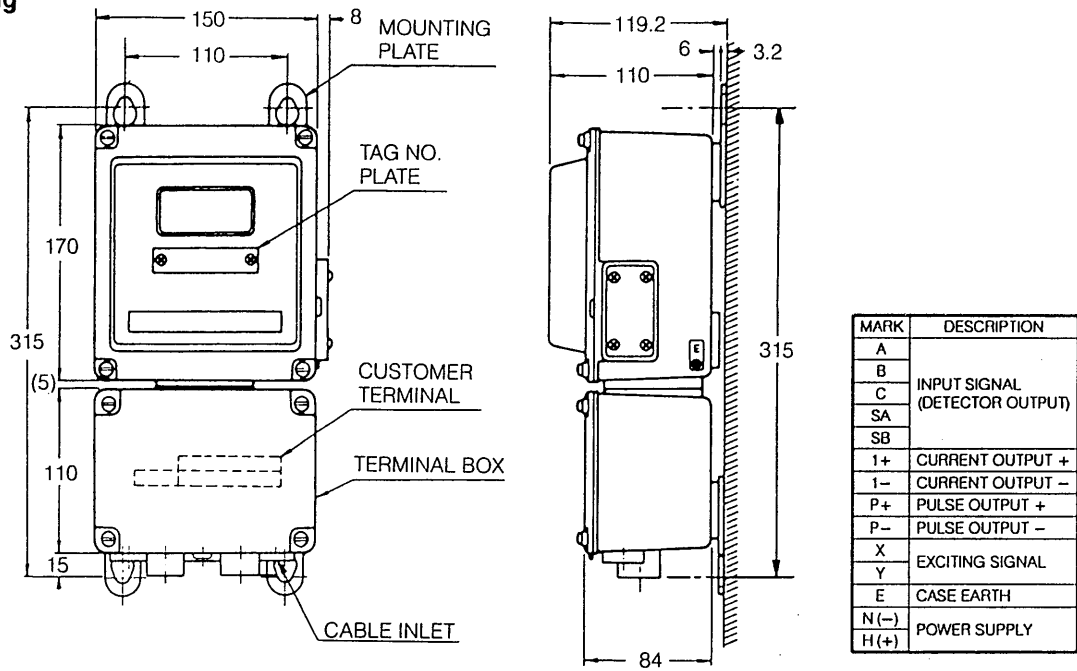
5) External-switching dual range

| Function designation | Function designation | | | | Description |
|----------------------|----------------------|--------------------|---------------|----------------|---|
| | Ranging | Built-in totalizer | Contact input | Contact output | |
| F | I | II | III | IV | |
| | 2 | | | | External-switching dual range |
| | X | | | | None |
| | A | | | | Totalizer (Note 1) |
| | B | | | | Totalizer with preset (Note 1) |
| | 3 | | | | External range switching |
| | X | | | | None |
| | 1 | | | | Alarm output (w/empty-status detection) |
| | 2 | | | | Range discrimination signal output |
| | 3 | | | | Preset totalizer output (Note 2) |

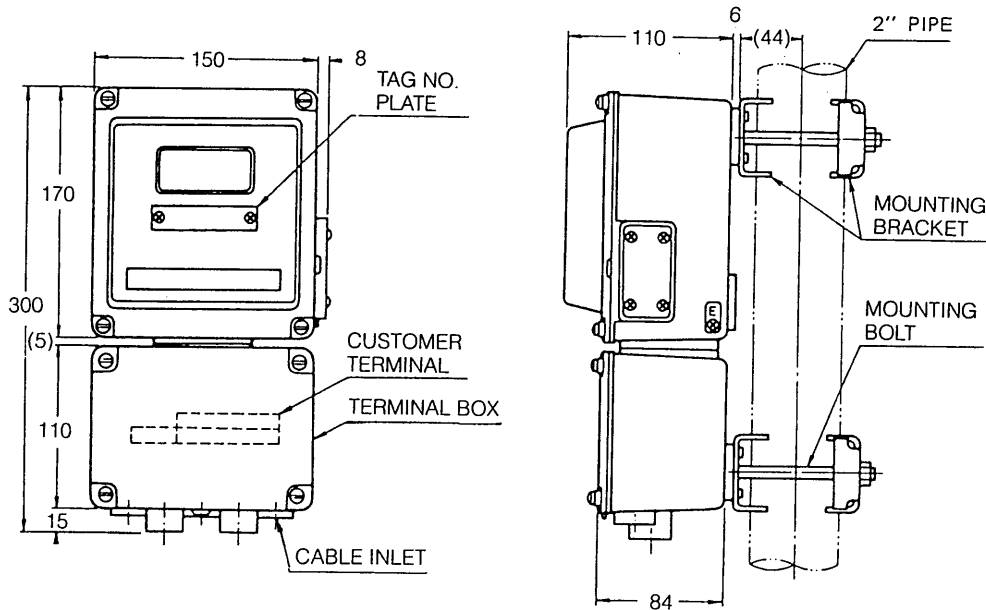
- Notes:
- Conditions to allow selection:
 - Requires to select "w/ display card" or "w/ local setting card" in the Model No. as well as to select "pulse output".
 - Conditions to allow selection:
 - Automatically selected only when selecting "Totalizer with preset" in the Built-in totalizer.

Dimension Drawings

Wall Mounting



2" Pipe Mounting



Ordering Information

When ordering, please specify:

- 1) Model number
- 2) Flow span
 - Flow velocity m/s or Flowrate m³/h
- 3) For pulse output
 - Pulse width and weight

Specifications are subject to change without notice.