

#### General Gas

**Gases:** Handles most gases for which the critical temperature, pressure and specific gravity are known

**Compressibility:** Calculated using the Redlich-Kwong<sup>1</sup> equation

**Temperature Range:** -273°C to 450°C

**Pressure Range:** 0 kgf /cm<sup>2</sup> to 100 kgf/cm<sup>2</sup> abs

#### Natural Gas

**Calculation:** Uses NX-19 equation to calculate supercompressibility  $F_{pv}$

**Temperature Range:** -40°C to 115°C

**Pressure Range:** 0 kgf /cm<sup>2</sup> to 100 kgf/cm<sup>2</sup> abs

**SG Range:** 0.554 to 1.000

**Carbon Dioxide:** 0 to 15% mole

**Nitrogen:** 0 to 15% mole

#### Steam

**Calculations:** Uses 1997 IFC Formulation (ASME) equation to calculate specific weight and enthalpy of steam

**Steam Type:** Saturated and Superheated

**Temperature Range:** 100°C to 450°C

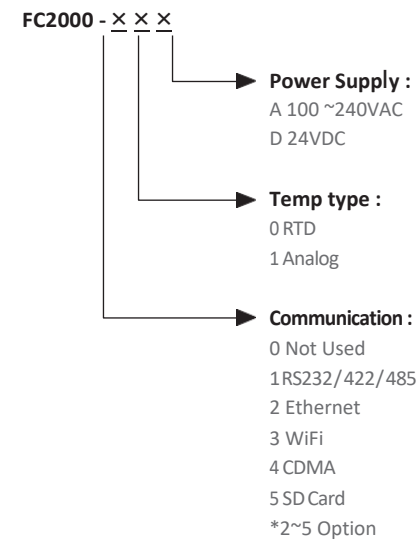
**Pressure Range:** 0 kgf /cm<sup>2</sup> to 100 kgf/cm<sup>2</sup> abs

**Saturated Steam:** When measuring saturated steam, it is possible to omit either the pressure or temperature sensor since, on the saturated line, there is a corresponding pressure for all temperatures.

#### Approvals

KC

#### Ordering Information



# FC2000 Gas & Steam Flow Computer

새롭게 선보입니다!

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유량계측기기의 선두주자 오벌엔지니어링

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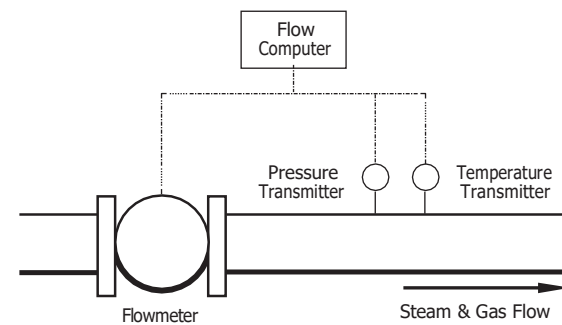
# FC2000 Gas & Steam Flow Computer

## Overview

The FC2000 Gas & Steam Flow Computer는 가스 및 증기 (응축수포함)에 대해 다음과 같은 보정 방정식을 사용합니다.  
**이상기체(Ideal Gas)** 온도와 압력을 보정하지만 압축성은 무시합니다.  
**일반가스(General Gases)** Redlich-Kwong 상태 방정식을 사용하여 압축률을 계산합니다.  
 이 방정식은 알려진 특성을 갖는 가스에 적합하며 일반적인 산업용 가스에 대한 정보는 매뉴얼에 제공됩니다.  
**천연가스(Natural Gas)** NX-19 방정식을 사용하여 수퍼 압축률을 계산합니다.  
**Steam 방정식** 포화 및 과열 증기에 대한 스팀 방정식 (응축수). 질량 및 에너지 유속은 증기의 비 및 엔탈피를 결정하기위해표준 방정식을 사용하여 계산됩니다.  
 와류, 터빈, 오리피스 플레이트, 평균 피토 튜브 웨지 및 양방향 차압유량계 하여 광범위한 유량계의 입력을 처리 할 수 있습니다. 또한 두 개의 차압 전송기가 오리피스 또는 유사 장치에서 사용되는 경우 측정된 유량 범위를 늘리기 위해 두개의 차압 전송기 입력이 자동 크로스 오버로 개별적으로 허용되고 조정됩니다.

## Features

- 질량유량, 보정된 부피유량, 에너지유량을 표시
- 아날로그 와 펄스입력이 가능
- 온도와 압력 보정
- 두 개의 범위를 갖는 차압 전송기 입력
- 14-28V DC 또는 AC 전원에서 작동
- 단순화 된 프로그래밍
- 데이터 로깅 메모리 및 출력
- 다양한 프로토콜을 지원하며 프린터 출력을 포함한 직렬 포트 출력 가능
- Backlight기능이 지원되는 대화면 디스플레이



## Specifications

### General

**Display** : 96X31mm Graphic LCD (Backlight)  
**TransducerSupply**: 8-24V dc field adjustable, 100mA max  
**Power Requirements** :  
**DC Supply** : 240VDC  
**AC Supply** : 100~240VAC  
**Operating Temperature** : 0 to 55°C  
**Dimension** : 146mm(w) X 75mm(h) X 151mm(d)  
**Panel cutout** : 139mm(w) X 66.5mm(h)

### Frequency Input

**Range** :  
**Minimum** : 0.25Hz on Rate, 0Hz on Total  
**Maximum** : 10KHz  
**Input Circuits** : Sine, logic and proximity switch inputs, Current Pulses, Open Collect Pulses  
**Meter factor Range** : 0.000001 to 1000  
**Non-Linear Correction** : Up to 10 correction points

### 4-20mA Input

**Input Types** : Flow (2 ranges), pressure and temperature  
**Input Impedance** : 250 ohms  
**Measurement Range** :  
**Pressure** : 0 kgf /cm<sup>2</sup> to 100 kgf/cm<sup>2</sup> abs  
**Temperature** : -273°C to 800°C  
**Flow** : 999,999  
**Accuracy** : 0.1%  
**Circuit** : 250 ohm resistors connected to a common signal ground (current sinking)  
**Non-Linear Correction** :  
 A 10 point curve can be applied to the flow input

### RTD Input

**Type** : Platinum PT100 4Wire or 2,3Wire  
**Range** : -100°C to 300°C  
 (Note a wider temperature range can be handled via a 4 - 20mA input.)  
**Accuracy**: 0.1°C  
**Linearity**: The non-linearity of the RTD is internally compensated for

### Pressure Input

**Type**: Absolute or gauge  
**Span**: Absolute or gauge pressure is programmable at 4mA and 20mA  
**Atmospheric**: If a gauge pressure sensor is used, the atmospheric pressure is programmable

### Pulse Output

**Corrected Pulse** :  
**Pulse Width** : 10, 100, 250, 500ms (negative going pulse)  
**Duty Cycle** : 50 pulses/sec. max.  
**Uncorrected Pulse** : Specification of the output is the same as the input.  
**Output** : Open collector transistor will sink 50mA max.  
 (Note: Suitable for driving remote counters or PLC's.)  
 Current Pulse. (Only Corrected pulse.)

### 4 - 20mA Output

**Function**: Output flow rate in calculated volume, mass and Energy.  
 The 4 - 20mA Point  
**Resolution**: 12 Bits  
**Accuracy** : Better than 0.1%  
**Maximum Load** : 600 ohms internally powered.  
**Isolation** : Output is isolated

### RS232/422/485

**Type** : Both RS232 and RS422 are provided.  
 (Note: When using the RS422, multi-point communication (RS485) can be implemented with up to 32 instruments connected to a common bus.)  
**Function** : Printer and computer protocols are fully programmable  
**Printer** : A print is initiated on each reset or at a programmable time interval. (Note : Protocols are provided for roll & column printers.)  
**Computer** : An ASCII based protocol enables all displayed parameters to be read and the totals to be reset  
**Baud Rate** : 300 to 19200  
**Data Bits** : 7 or 8  
**Parity** : None , Odd or Even  
**Protocol** : ASCII, ASCII2, MODBUS RTU, MODBUS ASCII  
**Data Logging** : Output generated at intervals of once a minute to once every 24 hours. The totals can be programmed to reset on each print or at 24 : 00 hours  
**Time** : A real time clock is provided to give time and date on each output

### Relay Output

**Function** : High and low flow rate alarms based on the flow rate in mass, corrected volume or energy  
**Maximum Ratings** : **Power** : 250VA  
**Voltage** : 250VAC, 30VDC  
**Current** : 5 Amps

### Ideal Gas

**Display** : Corrected Volume, Mass  
**Temperature Range** : -273°C to 400°C  
**Pressure Range** : 0 kgf /cm<sup>2</sup> to 100 kgf/cm<sup>2</sup> abs

