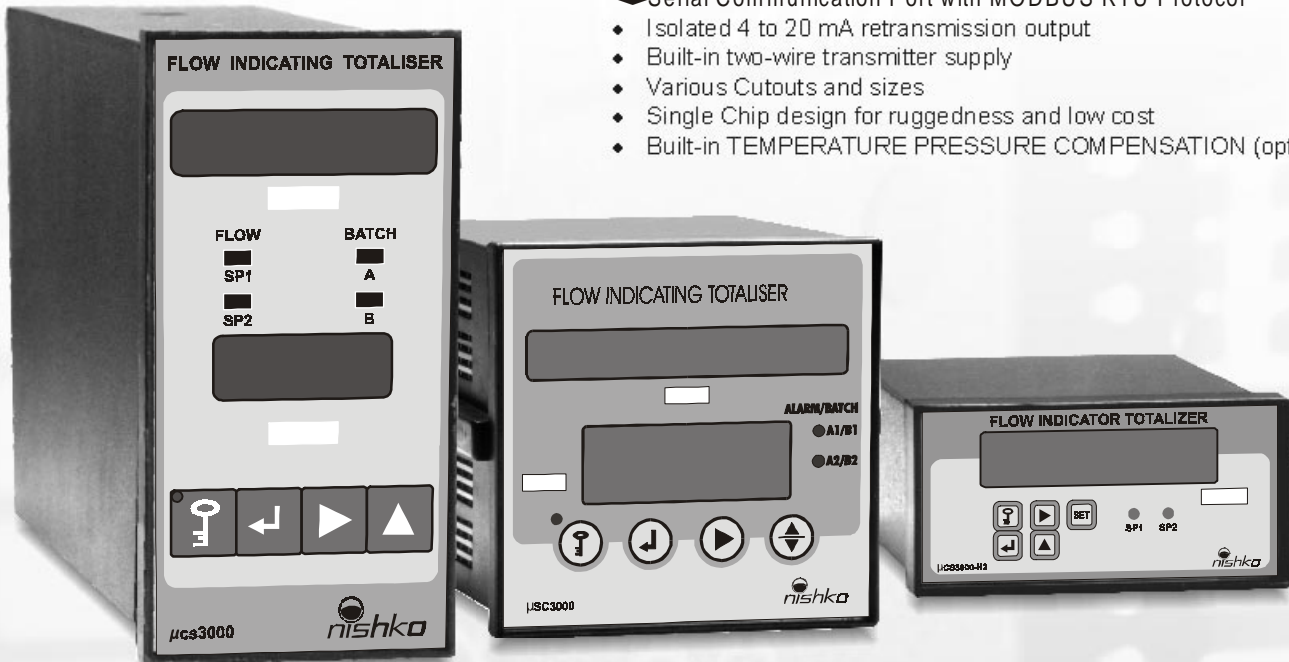




**SALIENT FEATURES**

- ◆ Programmable Microcontroller Based Unit
- ◆ Eight / Six digit counter with non-volatile memory
- ◆ Independent display for flow rate indication
- ◆ Programmable Alarm (on flow rate) and Batching Facility
- ◆ Serial Communication Port with MODBUS RTU Protocol
- ◆ Isolated 4 to 20 mA retransmission output
- ◆ Built-in two-wire transmitter supply
- ◆ Various Cutouts and sizes
- ◆ Single Chip design for ruggedness and low cost
- ◆ Built-in TEMPERATURE PRESSURE COMPENSATION (optional)



The  $\mu$ CS 3000 series Flow Integrator Totalizers are precision instruments used along with flow meters, flow transmitters to indicate the instantaneous flow rate and carry out the totalization of flow. Two set-points are provided which can be configured on flow rate or on batches and hence can be used as batch controllers.

**TECHNICAL SPECIFICATIONS**

Input	: 1) 4 to 20 mA DC, 0 to 20 mA DC (Input Impedance < 200 ohm)	
	: 2) 1 to 5 V DC, 0 to 5 V DC (Input Impedance > 2K ohm)	
	: 3) Frequency 0 to 1 / 10 KHz (optional)	
Input Type	: Linear / square root programmable	
Range	: Calibrated as per customers requirement from front key pad	
Display	: 1) 4 digit, 1/2" red LED for Flow Rate indication	
	: 2) 6 / 8 digit, 0.3" red LED for Totalized Flow (resettable)	
Memory Back-up	: Non-volatile memory (EEPROM) storage uptill 10 years	
Set Points	: 2 nos programmable over flow rate or batching	
Output Relays	: 1 NO + 1 NC per set-point / batch, rated at 230 V AC, 5 A resistive load	
Transmitter Supply	: 24 V DC, 30 mA	
Retransmission Output	: 4 to 20 mA (Isolated) optional	
Programming	: All parameters programmable by splash proof front key pad	
Accuracy	: < +/- 0.2% of FSD	
Supply	: 230 V AC, 50 Hz (others on request)	
Mounting	: Flush on panel	
Dimensions	Cutout	Bezel
	1) 92mm X 92mm	1) 96mm X 96mm
	2) 138mm(H) X 68mm(W)	2) 144mm(H) X 72mm(W)
	3) 92mm(W) X 45mm(H)	3) 96mm(W) X 48mm(H)
Depth	: Less than 200mm	
Operating Temperature	: 0 to 65 deg C	
Temperature Coefficient	: 0.015% / deg C	
Humidity	: 90% maximum (non-condensing)	

For **Flow Computing Unit** having built-in **Temperature Pressure Compensation**, there will be two additional inputs, one from pressure transmitter and other from temperature sensor in addition to the input from Flow Transmitter. All other specifications will be as above.

Flow Computing Unit is used for measuring corrected flow of steam / gases. It is well known that the flow of any gas varies substantially with the change in temperature or pressure. As a result normal flow measuring techniques do not give the proper flow measurement. To obtain the proper / corrected flow, one has to take into consideration the changes in temperature and pressure. It is specifically for this application that our Flow Computing Unit has been designed.

**The Flow Computing Unit will accept three inputs :**

- 1) From Differential Pressure Transmitter (or any flowmeter) corresponding to uncorrected flow
- 2) From Gauge Pressure Transmitter corresponding to actual pressure
- 3) From Temperature Sensor or Temperature Transmitter

The Flow Computing Unit utilizes the following formula for correction :

$$Q = Q' \times \text{Sq.rt.}(DP * P/T)$$

Where,

- Q = Corrected Flow
- Q' = Uncorrected Flow
- DP = Input from DP Transmitter (4 to 20 mA DC)
- P = Input from Pressure Transmitter (4 to 20 mA DC)
- T = Input from RTD, Th/C sensor or Transmitter (4 to 20 mA DC)



**FLAMEPROOF FLOW INDICATING TOTALIZERS**

Series  $\mu$ CS 3000-EX

The  $\mu$ CS 3000-EX is suitable for field mounting in hazardous areas and can be fully programmed without opening the enclosure.

The double compartment enclosure having separate compartment for terminals is easy for mounting and maintenance.

- Mounting : Field, wall
- Enclosure : Cast Aluminium
- Protection : Flameproof Gr IIA, IIB (IIC on request),  
weatherproof IP65
- Dimensions : 350mm(H) X 188mm(W) X 120mm(D)
- Programming : From front without opening enclosure

**FLOW INDICATOR TOTALIZERS (NON-PROGRAMMABLE)**

Series 3300 (electromechanical counter type)

Series 3400 (digital counter type)



- Input : 4 to 20 mA DC or pneumatic (3 to 15 psi) optional
- Square Root Extraction: Provided in-built (optional)
- Range : Adjustable at site
- Count Rate : Adjustable at site
- Display : 3 1/2 digit, 1/2" red LED for flow rate
- Counter : 6 digit, Electromechanical or 6/8 digit, digital with battery back-up
- Transmitter Supply : 24 V DC provided for powering two-wire transmitter
- Retransmission output : 4 to 20 mA DC (optional)
- Supply : 230 V AC, 50 Hz (others on request)
- Mounting : Flush on panel
- Dimensions : Cutout  
1) 92mm X 92mm  
2) 138mm(H) X 68mm(W)
- Bezel  
1) 96mm X 96mm  
2) 144mm(H) X 72mm
- Depth : Less than 200mm