

FEATURES

- ✦ Pressure & Temp. Compensation.
- ✦ mA, Volt, Pulse - Flow Input.
- ✦ Dual Six digit displays.
- ✦ Battery backed Totalised Counter.
- ✦ Flow Computed re-transmission output.
- ✦ Front Panel Programmability..
- ✦ Tamper proof Software Calibration.
- ✦ Set of Powerful software modules.
- ✦ Wide supply tolerance - 90 to 270V.



About *Smart Tot - FC*....

Smart Tot - FC, the mass flow Totaliser is a constituent of the Cerebrum Series of Smart Instruments from MCIH. With a microcontroller based hardware structure, Smart Tot-FC can perform mass flow computation for Fluid flow applications. The "mass flow Totaliser" has three input channels meant to accept the signals representing flow, pressure and temperature, from field Transmitters. For mass flow calculation of Gas, the algorithm makes use of the following formula.

$$V_d = K \{(\text{process}) * (T_d * P_m)/(T_m * P_d)\}^A$$

$$= K[(\text{process})^{\text{PIND}} * \{(T_d * P_m)/(T_m * P_d)\}^{\text{FIND}}]$$

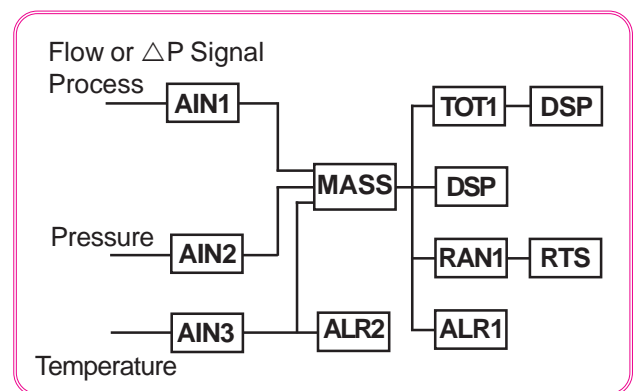
where

- V_d is the Volume at the design temp. & pressure
- T_d is the Design Temperature .
- P_d is the Design Pressure
- T_m is the measured Temperature.
- P_m is the measured Pressure.
- PIND** is the Process Index.
- FIND** is the Function Index.
- A** is 0.5 (or) 1
- K** is the constant to be derived using the design Values

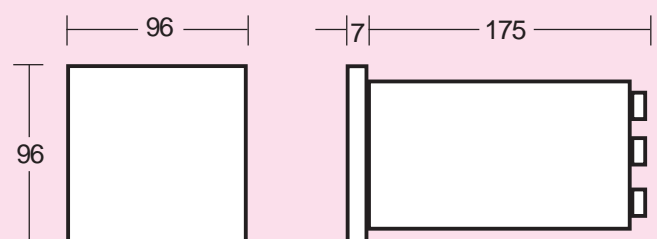
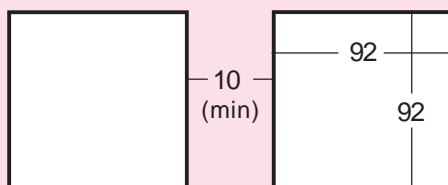
Smart Tot - FC, the ultimate in flexibility....

The SMART TOT FC has the powerful functional and mathematical software modules with special features demanded by flow instrumentation applications. From programming through reconfiguration to calibration, Smart Tot eliminates access to internal hardware, which means increased operational reliability, reduced setup time during installation and easy maintenance.

Mass Flow Compensation Template



CUTOUT DETAILS (All Dimensions are in mm)



PERFORMANCE SPECIFICATIONS

POWER SUPPLY

90 to 270V AC / 50-60 Hz; Can work with any of the following power lines.

a. 220V b. 230V c. 240V d. 110V

INPUT : Primary (CH-1) & Auxiliary (CH-2 & 3)

Filter : User configurable Digital filter.

Impedance : 470 K Ω min for Voltage inputs.
6 Ω max for mA inputs.

Tx - Powering : Two two-wire Transmitters can be powered. Short circuit protected to prevent loop burn out.

Calibration : By Software through keypad.
No screw driver adjustments or hardware access required.

Basic Ranges¹

Type	Range	Limits	Accuracy %FS
V1	0 to ± 2 V	$\pm 40V$	± 0.25
V2	0 to ± 10 V	$\pm 40V$	± 0.1
mA1	0 to ± 4 mA	$\pm 40mA$	± 0.25
mA2	0 to ± 20 mA	$\pm 40mA$	± 0.1

Note 1: User can define any range confined within the limits of the Basic range. However Accuracies refer to the Full Scale of Basic Range.

AUXILIARY I/P(CH-3)

Input Type : 4-20mA D.C

Accuracy : $\pm 0.1\%$ of FS.

INPUT : Pulse

Sensitivity : 3 Volts (peak) minimum.

Isolation : Opto isolated from Analog inputs and output.

Type	Range	Limits	Accuracy %FS
Pulse ²	0.13 to 10,000Hz	$\pm 24V$	± 0.1

Note 2: Conditioned pulse inputs are only accepted. Eg. outputs of Pulse Amplifiers, Turbine Flow Transmitters etc.

TOTALISER MODULES

Backup : On-line charged Ni-Cd battery backed Totaliser counters.

Reset : Can be reset from front panel.

PULSE TOTALISER (PTOT)

Scaling : Totalised Engg. Unit/Pulse(s) is software configurable.

ANALOG INPUT TOTALISER

Resolution : Configurable upto three decimals.

DISPLAY

Type : Dual - 6 digit / 8 mm LED display

Range : -1999 to 999999.

Resolution : one LSD.

Temporary Display : Up to two variables can be viewed
(Choice by software)

RETRANSMISSION OUTPUT (ISOLATED)

Type : 0 - 20mA / 4 - 20mA / 1 - 5V / 0 - 5V
0 - 10V software Configurable.

Accuracy : $\pm 0.1\%$ of 20mA/10V - refers to output module only.

Load : mA output - 600 Ω maximum.
Voltage output - 10 K Ω minimum.

ALARMS

Type : Hi / Lo / Deviation / Count.

Setting : Can be set directly in engineering units or in % by software.

Hysteresis : Software settable.

Indication : By front panel LEDs.

Output : Two potential free change over contacts rated for 220V AC / DC
1 Amp (non inductive).

GENERAL SPECIFICATIONS

DIMENSIONS

Bezel : 96 mm x 96 mm

Cutout : 92 + 0.8 mm x 92 + 0.8 mm

Depth : 175 mm

Mounting : Flush Panel

ENVIRONMENT

Operating Temperature : 0 to 55 $^{\circ}C$

Storage Temperature : 0 to 70 $^{\circ}C$

Humidity : 0 - 90 %
(Non Condensing)

ORDERING INFO

Model : Smart Tot FC

No other ordering information is required as all the parameters are user configurable.

Other products in this series : Dual channel totaliser, Batch Controller, Smart Indicator.

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Specifications are subject to change without any notice due to continuous development.