# MFM384

# Multifunction Meter




96 x 96mm

## Features :

- 3Ø True RMS (Voltage, Current)
- 3Ø Power (Active, Reactive, Apparent), Energy (Active, Reactive, Apparent)
- Programmable CT / PT Primary / Secondary
- CT Polarity error detection
- Variable pulse width selection
- Single phase network with phase selection
- Modbus RTU communication (RS485)
- Baragraph representation for current
- % THD Up to 31st level
- Max demand for power
- Single pulse output / Demand
- Phase sequence detection

Certification : CE cULus LISTED

### Display specifications

| | |
|---|---|
| Display | LCD with Backlight, 4rows, 8 digit for energy display |
| Digits | 4 digits (Lowest 8 digits for energy display) |
| Digit height | 0.45 inch |
| Bargraph | For Current representation |
| Resolution | For energy : 0.01k, 0.1k, 1k, 0.01M, 0.1M, 1M (depending upon CT ratio x PT ratio)<br>For Power, Voltage, Current : Auto resolution<br>For Power factor : 0.001 |

### Input specifications

| | |
|---|---|
| Type of measurement | TRUE RMS |
| Sampling rate | 64 Samples / Cycle |
| Electrical connections | 3Ø - 3 wire (Delta), 3Ø - 4 wire (Wye), 2Ø - 3 wire, 1Ø - 2 wire (L - N) |
| Data update rate | 1 sec |
| **Input-voltage** | |
| PT primary | 100V to 500kV (Programmable for any value) |
| PT secondary | 100V to 500V AC (L-L) (Programmable for any value) |
| Voltage nominal | 240VAC L - N / 415V AC L - L |
| Measured V with full range | 11 to 300V AC [L - N], 19 to 519V AC [L - L] |
| Impedance | ≥0.8MΩ |
| Frequency range | 45 - 65Hz |
| VA burden | <0.2VA at 300V AC L-N / Phase |
| **Input current** | |
| CT ratings primary | 1 / 5A to 10kA (Programmable for any value) |
| CT ratings secondary | 1 / 5A (Programmable for any value) |
| Current nominal | 5A |
| Measured Amps with over range & Crest factor | 11mA to 6A |
| Withstand | 120A for 1sec |
| Frequency range | 45 - 65Hz |
| VA burden | 0.5VA at 5A / phase |

### Measurement Accuracy

| Measurement | Accuracy | |
|---|---|---|
| | MFM384-C-CE<br>MFM384-C-CU | MFM384-C-CE-CL05 |
| Voltage $V_{L-N}$ | ±0.5% of F.S. | ±0.5% of F.S. |
| Voltage $V_{L-L}$ | ±0.5% of F.S. | ±0.5% of F.S. |
| Current | ±0.5% of F.S. | ±0.5% of F.S. |
| Frequency | ±0.1% ; For L-N V>20V, For L-L V>35V | ±0.1% ; For L-N V>20V, For L-L V>35V |
| Active Power | 1% | ±0.5% |
| Apparent power | 1% | ±0.5% |
| Reactive Power | 1% | ±1% |
| Power factor | ±0.01 | ±0.005 |
| Active energy | Class 1 | Class 0.5S (IEC 62053-22) |
| Reactive energy | Class 1 | Class 2 (IEC 62053-23) |
| Apparent energy | Class 1 | Class 0.5S |
| MAX / MIN kW | 1% | ±0.5% |
| MAX / MIN kVAr | 1% | ±1% |
| MAX kVA | 1% | ±0.5% |

### Output specifications

| | |
|---|---|
| Pulse output | Voltage range : External 24V DC max<br>Current capacity : 100mA max<br>Pulse width : 100ms ±5ms<br>Configurable pulse weight from 1 to 9999000 pulses / kWh |
| Device ID & Parity | 1 to 255 & None, Odd, Even |
| Protocol & Interface | RS485 and MODBUS RTU |
| Transmission mode | Half duplex |
| Data types | Float and Integer |
| Transmission distance | 500m maximum |
| Transmission speed | 1200, 2400, 4800, 9600,19200 (in bps) |
| Stop bits | 1 or 2 |
| Response time | 100ms (max and independent of baud rate) |
| Isolation | 2kV RMS |

### Mechanical specifications

| | |
|---|---|
| Weight | 318gms (11Oz) |
| Material | LEXAN 923-701 BLACK |
| IP degree of protection | (IEC 60529) IP54 Front only |
| Torque at terminals | 0.68N-m to 0.79 N-m |
| Wire gauge at terminals | 20 to 14AWG;75°C |
| Mounting position | Vertical |

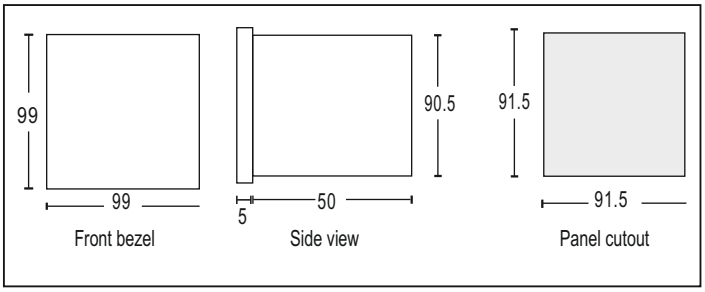
### Auxiliary supply specifications

| | |
|---|---|
| Supply voltage | 85 to 300V AC, 50 / 60 Hz, (±5%) |

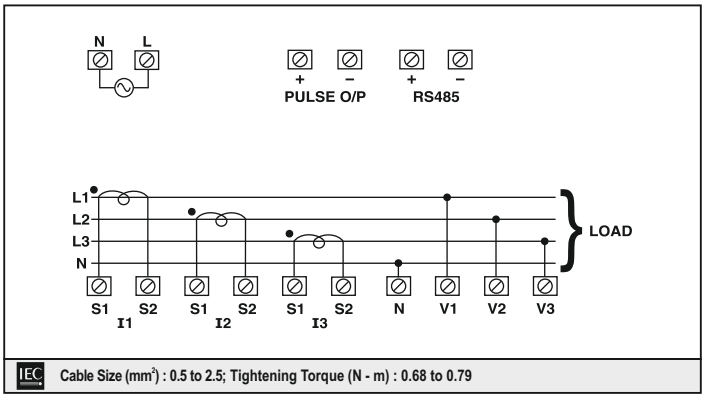
### Environmental specifications

| | |
|---|---|
| Operating temperature | Meter -10°C to +55°C (14°F to 131°F) |
| Storage temperature | Meter -20°C to +75°C (-4°F to +167°F) |
| Humidity | Up to 85% RH (Non-Condensing) |
| Altitude | Up to 2000 meters (6561 ft.) |
| Measurement category | CAT III |
| Pollution degree | 2 |

### Dimensions (All are in mm)




### Terminal connection




Cable Size (mm²) : 0.5 to 2.5; Tightening Torque (N - m) : 0.68 to 0.79

### Compliance

| Applicable EMI / EMC Standards | |
|---|---|
| **Product Standard :** IEC 61326 - 1 | |
| **Category** | **Standards compliance** |
| Electrostatic discharge | IEC 61000 - 4 - 2 |
| Immunity to electromagnetic RF fields | IEC 61000 - 4 - 3 |
| Conducted immunity | IEC 61000 - 4 - 6 |
| Immunity to magnetic fields | IEC 61000 - 4 - 8 |
| Immunity to voltage dips and interruptions | IEC 61000 - 4 - 11 |
| Fast transient | IEC 61000 - 4 - 4 |
| Immunity to surge waves | IEC 61000 - 4 - 5 |
| Conducted and radiated emissions | CISPR-22 / CISPR-11 |
| **Safety and Standards** | |
| IEC61010 Edition 3.0 CAT III, Protection class II | |
| IEC 61326 - 1 | |

## Ordering information

| Product code | Supply voltage | Output | | Certification | |
|---|---|---|---|---|---|
| | | Pulse Output | Comm. (RS485) | | |
| **MFM384-C-CE** Class 1 | 85 to 300V AC 50/60Hz (±5%) | YES | YES | CE | -- |
| **MFM384-C-CE-CL05** Class 0.5S | 85 to 300V AC 50/60Hz (±5%) | YES | YES | CE | -- |
| **MFM384-C-CU** Class 1 | 100 to 240V AC 50/60Hz (±5%) | YES | YES | CE | c UL us LISTED |