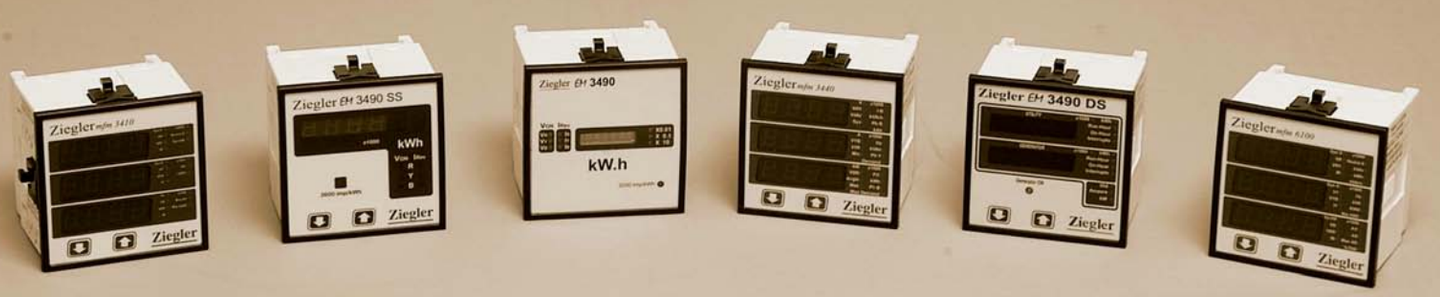
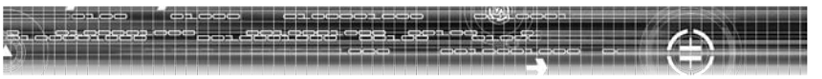
2012-Z-103A

# Digital Multifunction Meters

Digital Multifunction Meters





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Redefine Innovative Metering

# DIGITAL MULTIFUNCTIONAL METERS

## SECTION INDEX

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# Digital Multifunction Meters

3410
3420
3430
3440
6100
2000
3490
3490 SS
3490 DS

Digital multifunction power and energy meters.



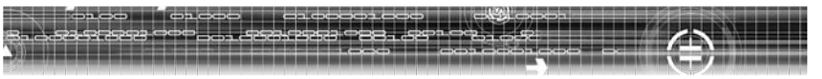
Digital multifunction meters from Ziegler instruments with multiple parameter measurement is world renowned in the power & energy sector.

## GENERAL FEATURES:

| | |
|---|---|
| **APPLICABLE STANDARDS** | |
| EMC | IEC 61326 |
| Immunity | IEC 61000-4-3.10V/m min 3 industrial low level |
| Safety | IEC 61010-1-2001, Permanently connected use |
| IP for water & dust | IEC 60529 |
| Pollution degree | 2 |
| Installation category | III |
| EMC Immunity | DIN EN 61000-4-1 to 4 |
| High Voltage Test | 2.2 kV AC, 50Hz for 1 min between all electrical circuits |
| **ENVIRONMENTAL** | |
| Operating Temperature | -10 to +55ºC |
| Storage Temperature | -20 to +65ºC |
| Relative Humidity | 0..90% non condensing |
| Warm up time | Minimum 3 min |
| Shock | 15g in 3 planes |
| Vibration | 10...55Hz, 0.15mm amplitude |
| Enclosure | IP54 (front face only) IEC60529 |

## FACT SHEET:

| | |
|---|---|
| Casing Details | Moulded case suitable for mounting in control / switchgear panels, machinery console |
| Case Material | Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0 |
| Front Facia | Polycarbonate |
| Color of Bezel | Black |
| Position of use | Vertical |
| Panel Fixing (mountable in a single cutout) | Metal side clamps |
| Panel thickness | 40mm |
| Terminals | Plug-in screw terminal block |
| Display Type | Bright RED seven segment LED |
| Display Count | 1999 |
| Negative display indication | "-" |
| Overload indication | Last 3 digits blank |
| Setting Time | <1sec. (0...99%) |
| **ISOLATION** | |
| DC voltage version | 1kV |
| AC voltage version | 2kV |
| **AMBIENT CONDITIONS** | |
| Operating Temp. | 0...50°C |
| Storage Temp. | -40°C...80°C |



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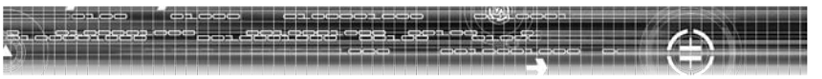
## TECHNICAL SPECIFICATIONS

| Model | MFM 3410 | MFM 3420 | MFM 3430 | MFM 3440 | MFM 6100 | MFM 2000 | EM 3490 | EM 3490SS | EM 3490DS |
|---|---|---|---|---|---|---|---|---|---|
| Number of Parameters Measured | 18 | 14 | 37 | 50 | 28 | 100+ | | 34 | 42 |
| Short Description | Basic VAFd model | kWh Measurement | Complete Electrical Network Information | Includes Demand | %THD measurement | LCD display | Electromechanical counter type Energy meter. | Energy meter : Single Source monitoring. | Energy meter: Dual Source monitoring. |
| **INPUT DETAILS** | | | | | | | | | |
| Voltage Input (AC RMS) | 57.7V $_{L-N}$ to 277V $_{L-N}$ (63.5V $_{L-L}$ to 480V $_{L-L}$ ) | | | | | | | | |
| | 110V $_{L-L}$ (63.5V $_{L-N}$) | | | | | | | | |
| | 230V $_{L-L}$ (133V $_{L-N}$) | | | | | | | | |
| | 415V $_{L-L}$ (239.6V $_{L-N}$) | | | | | | | | |
| | 440V $_{L-L}$ (254V $_{L-N}$) | | | | | | | | |
| PT Primary | Programmable onsite | | | | | | | Programmable onsite | |
| Max continuous input voltage | 120% of rated value | | | | | | | | |
| Current Input (AC RMS) | 1 A or 5 A AC RMS selectable onsite | | | | 1 A/ 5A | 5A | 1 A/ 5A | | |
| CT Primary | Programmable onsite | | | | | | | | |
| System | 1phase 2 wire | | | | NA | NA | 1phase 2 wire | | |
| | 3phase 3 or 4 wire selectable onsite | | | | | | 3phase 3 / 4 Wire | | |
| Max continuous input current | 120% of rated value | | | | | | | | |
| OPERATING MEASURING RANGES | | | | | | | | | |
| Voltage | 5… 120% of rated value | | | | | | | | |
| Current | 5… 120% of rated value | | | | | | | | |
| Frequency | 40…70 Hz | | | | 45Hz…60Hz | 45Hz…66Hz | 45Hz-55Hz | 40…70 Hz | |
| Power Factor | NA | 0.5 Lag ... 1... 0.8 Lead | | | | | | | |
| Voltage for THD measurement | | 50 .. 120% of rated value | | | | | | | |
| Current for THD measurement | | 50 .. 120% of rated value | | | | | | | |
| Apparent power (VA) / Active power (W) / Reactive power (VAr) | 5 .. 120% of rated value, Max 360 Mega VA | | | | | | | 5 .. 120% of rated value, Max 360 Mega VA | |
| Total Harmonic Distortion(Up to15th Harmonic ) | | 0%-40% | | | | | | | |
| AUXILLARY SUPPLY OPTIONS | | | | | | | | | |
| AC Auxiliary Voltage (45 to 66 Hz AC Auxiliary supply frequency range) | 110V AC -15% / +20% / | | | | | NA | Self Powered. | 110V AC -15% / +20% / | |
| | 230V AC -15% / +20% / | | | | | NA | | 230V AC -15% / +20% / | |
| | 380V AC-15% / +20 | | | | | NA | | 380V AC-15% / +20 | |
| AC/DC Auxiliary Supply Voltage | NA | NA | 100 – 250V AC/DC+/- 10% | | | | | 100 – 250V AC/Dc +/- 10% | |
| DC Auxiliary Supply | NA | NA | NA | 12…48Vdc | | | | 12…48Vdc | |
| ACCURACY | | | | | | | | | |
| Voltage | ±0.5% of range (50...100% of rated value) | | | | | ±0.5% | NA | ±0.5% of range (50...100% of rated value) | |
| Current | ±0.5% of range (10...100% of rated value) | | | | | ±0.5% | NA | ±0.5% of range (10...100% of rated value) | |
| Frequency | . 0 15% of mid frequency | | | | 0.16% of mid frequency | ±0.5% | NA | 0.15% of mid frequency | |
| Active Power / Re-Active Power | NA | NA | ±0.5% of range (10... 100% of rated value) | | ±1% of range (Voltage =Rated value | ±0.5% | NA | ±0.5% of range (10... 100% of rated value) | |
| System Apparent Power (VA) | ±0.5% of range (10...100% of rated value) | NA | ±0.5% of range (10... 100% of rated value) | | ±1% of range (Voltage =Rated value | ±0.5% | NA | ±0.5% of range (10... 100% of rated value) | |
| Neutral Current (for 4 Wire only) | ±4% of range (10...100% of rated value) | NA | ±4% of range (10...100% of rated value) | | 3% of range | ±0.5% | NA | ±4% of range (10...100% of rated value) | |



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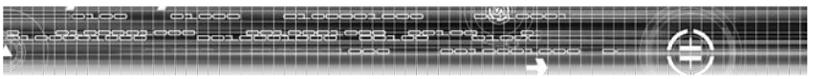
## TECHNICAL SPECIFICATIONS

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Active energy (kWh) / Re Active energy (kVArh) / Apparent energy (kVAh) | | NA | 1% (IEC 62053-21) Active P. F. 0.866 lag... 1...0.866 lead | | | | 2000 | Class 1. | 1% (IEC 62053-21) Active P. F. 0.866 lag... 1...0.866 lead | |
| Ampere Hour (kAh) | | NA | NA | n | 1% | NA | 1% of range | NA | NA | NA |
| Accuracy of Analog Output | | NA | NA | 1 % of Output end value | | NA | | NA | NA | NA |
| Power Factor | | NA | NA | 1% of range | | 1% of Unity (Voltage =Rated value ±2%,Current=40...100% of rated value) | 1% of range | NA | 1% of range | |
| Phase Angle | | NA | NA | 1% of range | | NA | ± 0.013%/°C | NA | 1% of range | |
| Total Harmonic Distortion (THD – R) | | NA | NA | NA | NA | 1% ( Voltage: 60….100% of rated value,Current: 20….100% of rated value) | | NA | NA | NA |
| Temperature coefficient :(for rated value range of use (0…50°C) | | 0.025%/°C for Voltage (50... 120% of rated value) and 0.05%/°C for Current (10... 120% of rated value) | | | | 0.08%/°C for voltage and 0.13%/°C for other | | | 0.025%/°C for Voltage (50... 120% of rated value) and 0.05%/°C for Current | |
| Display update rate: Response time to step input | | 1 sec approx. | min 1 sec approx. (can be programmed up to 5 sec) | | | 550 milliseconds approx. | | | min 1 sec approx. (can be programmed up to 5 sec) | |
| **VA Burden:** | | | | | | | | | | |
| Nominal input voltage burden | | < 0.2 VA approx. per phase | | | | 0.25 VA approx. per | 0.2VA | <15VA per phase. | < 0.2 VA approx. per phase | |
| Nominal input current burden | | < 0.6 VA approx. per phase | | | | 0.65 VA approx. per phase | 0.6VA | <0.2 VA per phase. | < 0.6 VA approx. per phase | |
| AC / DC Supply burden | | 4 VA | | | | 3.5 VA | 3VA | NA | 4 VA | |
| **Overload Withstand:** | | | | | | | | | | |
| Voltage | | 2 x rated value for 1 second, repeated 10 times at 10 second intervals | | | | | 2x10 times | | 2 x rated value for 1 second, repeated 10 times at 10 second intervals | |
| Current | | 20x rated value for 1 second, repeated 5 times at 5 min | | | | | 20x5 times | 20xrated value for 0.5 sec. | 20x rated value for 1 second, repeated 5 times at 5 min | |
| **Options (add ons)** | | | | | | | | | | |
| RS 485 module | | NA | NA | YES | YES | YES | | NA | YES | YES |
| 1 pulse output module | | NA | YES | YES | YES | YES | | YES | YES | YES |
| 2 pulse output module | | NA | YES | YES | YES | YES | | NA | YES | YES |
| 2 Analog output module | | NA | NA | YES | YES | NA | | NA | NA | NA |



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## MFM SELECTION CHART

| Sr. | PARAMETERS OF COMPARISON | Ziegler MFM 3410 | Ziegler MFM 3420 | Ziegler MFM 3430 | Ziegler MFM 3440 | Ziegler MFM 6110 | Ziegler MFM 2000 | Ziegler MFM 3490 | Ziegler MFM 3490 SS | Ziegler MFM 3490 DS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Single Phase Version | * | * | * | * | NA | * | NA | * | * |
| 2 | Three Phase Version | * | * | * | * | * | * | * | * | * |
| 3 | Onsite CT/PT Programmable | * | * | * | * | * | * | * | * | * |
| 4 | User Selectable 1A/5A | * | * | * | * | - | - | - | * | * |
| 5 | User Selectable 3 Phase 3W or 4W | * | * | * | * | - | - | - | * | * |
| 6 | TRMS Measurement | * | * | * | * | * | - | * | * | * |
| 7 | Onsite selection of Auto Scroll or Fixed Screen | * | * | * | * | - | * | - | * | * |
| 8 | Min/ Max Storage of Voltageand Current | - | * | * | * | - | * | - | - | - |
| 9 | User Selectable Low CurrentSuppression | - | * | * | * | - | - | - | - | - |
| 10 | Onsite Adjustable displayupdate time | - | * | - | - | - | - | - | - | - |
| 11 | Phase reversal indication | - | * | - | * | - | - | - | - | - |
| 12 | Parameter Screen recall | - | * | * | * | - | - | - | - | - |
| 13 | Energy Count Storage | - | * | * | * | - | - | - | * | * |
| 14 | Confirguration of Instrumentsvis Modbus | - | - | - | * | - | - | - | * | * |
| 15 | User Assignable resister for RS485 MODBUS | - | - | - | * | - | - | - | * | - |
| 16 | Auto resettable mech counter( 8 Digit ) | - | - | - | - | - | - | * | - | - |
| 17 | Password Protection | * | * | * | * | * | * | - | * | * |
| 18 | EMC Compatibility | * | * | * | * | * | * | * | * | * |
| | **OPTIONS :** | | | | | | | | | |
| 1 | RS 485 MODBUS | - | - | * | * | * | * | - | * | * |
| 2 | Digital outputs ( One orTwo ) | - | * | * | * | * | * | * | * | * |
| 3 | Analog Outputs ( One or Two)(4-20mA/0-1mA) | - | - | * | * | - | * | - | * | * |
| | **PARAMETER MEASUREMENTS** | 18 | 14 | 37 | 50 | 28 | 100+ | 1 | 34 | 42 |
| 1 | System Volts | * | * | * | * | * | * | - | * | * |
| 2 | System Current | * | * | * | * | * | * | - | * | * |
| 3 | Volts L1 – N | * | * | * | * | * | * | - | * | * |
| 4 | Volts L2 – N | * | * | * | * | * | * | - | * | * |
| 5 | Volts L3 – N | * | * | * | * | * | * | - | * | * |
| 6 | Volts L1 – L2 | * | * | * | * | * | * | - | * | * |
| 7 | Volts L2 – L3 | * | * | * | * | * | * | - | * | * |
| 8 | Volts L3 – L1 | * | * | * | * | * | * | - | * | * |
| 9 | Current L1 | * | * | * | * | * | * | - | * | * |
| 10 | Current L2 | * | * | * | * | * | * | - | * | * |
| 11 | Current L3 | * | * | * | * | * | * | - | * | * |
| 12 | Neutral Current | * | - | * | * | * | * | - | | * |
| 13 | Frequency | * | * | * | * | * | * | - | * | * |
| 14 | Import kWh (8 digitresolution) | - | * | - | - | - | - | * | * | - |
| 15 | Export kWh (8 digitresolution) | - | * | - | - | - | - | - | - | - |
| 16 | System Current Demand | * | - | - | - | - | - | - | - | - |
| 17 | System Max CurrentDemand | * | - | - | - | - | - | - | - | - |
| 18 | System KVA Demand | * | - | - | - | - | - | - | - | - |
| 19 | System Maximum KVAdemand | * | - | - | - | - | - | - | - | - |
| 20 | System Active Power(kW) | - | - | * | * | * | * | - | * | * |
| 21 | Active Power L1(kW) | - | - | * | * | - | * | - | * | * |
| 22 | Active Power L2(kW) | - | - | * | * | - | * | - | * | * |
| 23 | Active Power L3(kW) | - | - | * | * | - | * | - | * | * |
| 24 | System Re-active Power(kVAr) | - | - | * | * | * | * | - | * | * |
| 25 | Re-active Power L1(kVAr) | - | - | * | * | - | * | - | * | * |
| 26 | Re-active Power L2(kVAr) | - | - | * | * | - | * | - | * | * |
| 27 | Re-active Power L3(kVAr) | - | - | * | * | - | * | - | * | * |
| 28 | System Apparent Power(kVA) | * | - | * | * | * | * | - | * | * |
| 29 | Apparent Power L1(kVA) | - | - | * | * | - | * | - | * | * |
| 30 | Apparent Power L2(kVA) | - | - | * | * | - | * | - | * | * |
| 31 | Apparent Power L3(kVA) | - | - | * | * | - | * | - | * | * |
| 32 | System Power Factor | - | - | * | * | * | * | - | * | * |
| 33 | Power Factor L1 | - | - | * | * | - | * | - | * | * |
| 34 | Power Factor L2 | - | - | * | * | - | * | - | * | * |
| 35 | Power Factor L3 | - | - | * | * | - | * | - | * | * |
| 36 | System Phase Angle | - | - | - | - | - | * | - | * | * |
| 37 | Phase Angle L1 | - | - | * | * | - | * | - | * | * |
| 38 | Phase Angle L2 | - | - | * | * | - | * | - | * | * |
| 39 | Phase Angle L3 | - | - | * | * | - | * | - | * | * |
| 40 | Active Energy Kwh | - | - | - | - | * | * | - | - | - |
| 41 | Import kWh (8 digit resolution) | - | - | * | * | - | * | - | - | * |
| 42 | Export kWh (8 digit resolution) | - | - | * | * | - | * | - | - | - |
| 43 | Reactive Energy | - | - | - | - | * | * | - | - | - |
| 44 | Import kVArh (8 digit resolution) | - | - | * | * | - | * | - | - | - |
| 45 | Export kVArh (8 digit resolution) | - | - | * | * | - | * | - | - | - |
| 46 | Import kVAh (8 digit resolution) | - | - | - | - | - | - | - | - | - |
| 47 | Export kVAh (8 digit resolution) | - | - | - | - | - | - | - | - | - |
| 48 | KvAh ( 8 digit resolution ) | - | - | * | * | - | * | - | * | * |
| 49 | KAh ( 8 digit resolution ) | - | - | - | * | - | * | - | - | * |
| 50 | Current Demand | - | - | - | * | * | * | - | - | - |
| 51 | KVA demand | - | - | - | * | - | * | - | - | - |
| 52 | KW Demand | - | - | - | - | * | * | - | - | - |
| 53 | KW import Demand | - | - | - | * | - | * | - | - | - |
| 54 | KW export Demand | - | - | - | * | - | * | - | - | - |
| 55 | Max Current Demand | - | - | - | * | * | * | - | - | - |
| 56 | Max KVA demand | - | - | - | * | - | * | - | - | - |
| 57 | Max KW Demand | - | - | - | - | * | * | - | - | - |
| 58 | Max KW import Demnad | - | - | - | * | - | * | - | - | - |
| 59 | Max KW export demand | - | - | - | * | - | * | - | - | - |
| 60 | Run Hour | - | - | - | * | - | - | - | - | * |
| 61 | On Hour | - | - | - | * | - | - | - | - | * |
| 62 | Number of Interruptions | - | - | - | * | - | - | - | - | * |
| 63 | Phase reversal Indication | - | - | - | * | - | - | - | - | - |
| 64 | % THD of System Voltage | - | - | - | - | * | - | - | - | - |
| 65 | % THD of System Current | - | - | - | - | * | - | - | - | - |
| 66 | % THD of all three line voltages (L-L) | - | - | - | - | * | - | - | - | - |
| 67 | % THD of all three phase voltages (L-N) | - | - | - | - | * | - | - | - | - |
| 68 | % THD of all three phase Currents | - | - | - | - | * | - | - | - | - |

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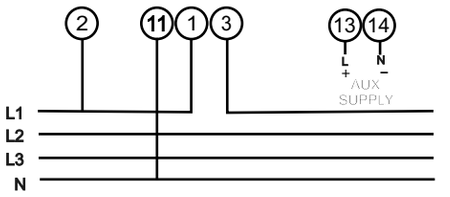
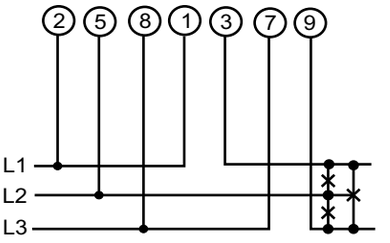
## CONNECTION DIAGRAM

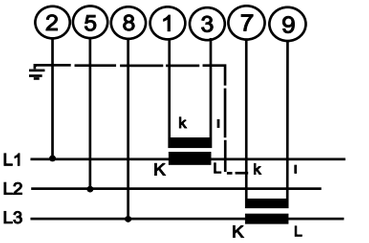
**For Single Phase**




**3 Phase 3 Wire Unbalanced Load**

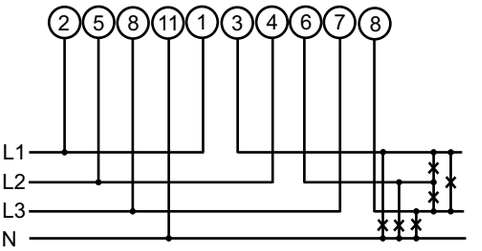



**For Direct operated meter**

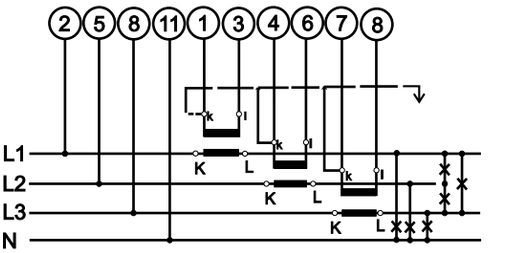



**For CT operated meter**

**3 Phase 4 Wire Unbalanced Load**



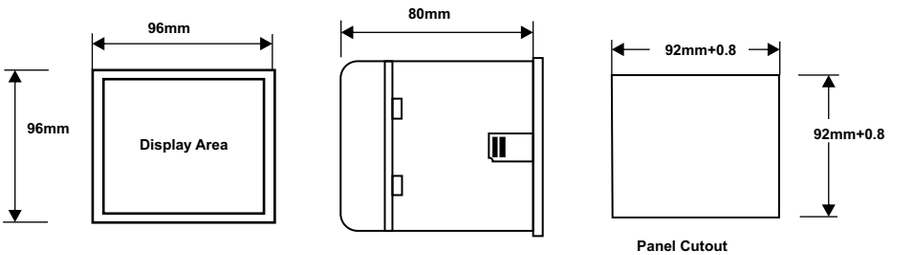

**For Direct operated meter**




**For CT operated meter**

## DIMENSIONS

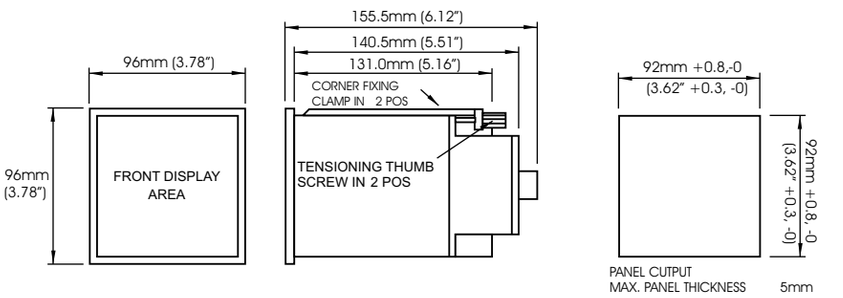
**3410, 3420, 3430, 3440, 6100, 3490, 3490 SS, 3490 DS**

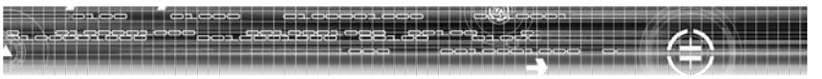



**Panel Cutout**

## DIMENSIONS

**2000**





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## MFM ORDERING INFORMATION

| Type | System Type | Input Voltage | I/p Current | Aux Supply | RS 485 output | Pulse Output | Analog Output |
|---|---|---|---|---|---|---|---|
| **Ziegler 3410** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | NA | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H**<br>100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | NA | NA | NA |
| **Ziegler 3420** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | NA | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H**<br>100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | NA | One Pulse O/P **S**<br>Two Pulse O/P **D**<br>Not Used **Z** | NA |
| **Ziegler 3425** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | NA | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H** | NA | One Pulse O/P **S**<br>Two Pulse O/P **D**<br>Not Used **Z** | NA |
| **Ziegler 3430** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | NA | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H**<br>100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | RS 485 O/P **R**<br>Not Used **Z** | One Pulse O/P **S**<br>Two Pulse O/P **D**<br>Not Used **Z** | 2 O/P( 4-20mA) **1**<br>2 O/P( 0-1mA) **2**<br>Not Used **Z** |
| **Ziegler 3440** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | NA | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H**<br>100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | RS 485 O/P R<br>Not Used Z | One Pulse O/P **S**<br>Two Pulse O/P **D**<br>Not Used **Z** | 2 O/P( 4-20mA) **1**<br>2 O/P( 0-1mA) **2**<br>Not Used **Z** |
| **Ziegler 3490** | 3PH 3W **3**<br>3PH 4W **4** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440**<br>480 LL ( 277LN) **480** | 1 Amp **1**<br>5 Amp **5** | Self Powered **SP** | NA | One Pulse O/P **S** | NA |
| **Ziegler 3490 SS** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | 1 Amp **1**<br>5 Amp **5** | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H**<br>100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | RS 485 O/P **R**<br>Not Used **Z** | One Pulse O/P **S**<br>Not Used **Z** | NA |
| **Ziegler 3490 DS** | 1 Phase **1**<br>3 Phase **3** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | 1 Amp **1**<br>5 Amp **5** | 110VAC (-15%/+20%) **L**<br>230VAC (-15%/+20%) **M**<br>380VAC (-15%/+20%) **H**<br>100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | RS 485 O/P **R**<br>Not Used **Z** | Two Pulse O/P **UG**<br>Not Used **Z** | NA |
| **Ziegler 6100** | 3PH 3W **3**<br>3PH 4W **4** | 110 V L-L(63.5 LN) **110**<br>230V LL ( 133 LN) **230**<br>415 LL (239.6 LN) **415**<br>440 LL (254 LN) **440** | 1 Amp **1**<br>5 Amp **5** | 100-250 VAC/VDC(+/-10%) **AD**<br>12V-48 VDC(+/- 10%) **D** | RS 485 O/P **R**<br>Not Used **Z** | One Pulse O/P **S**<br>Not Used **Z** | NA |