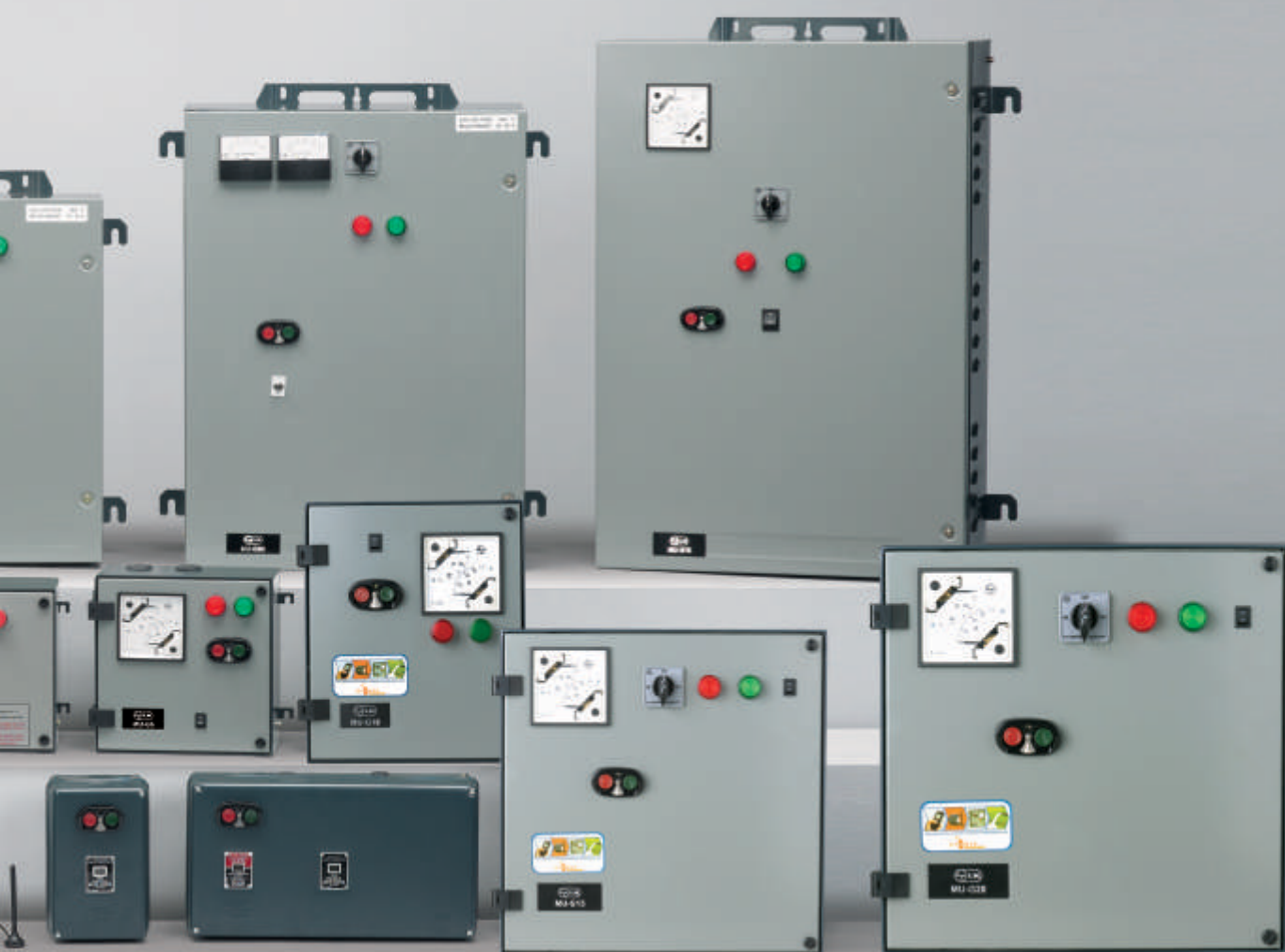




## Shaping India's **Agricultural Growth** Story







## SUBMERSIBLE PUMP CONTROLLERS & ACCESSORIES

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# SUBMERSIBLE PUMP CONTROLLERS & ACCESSORIES







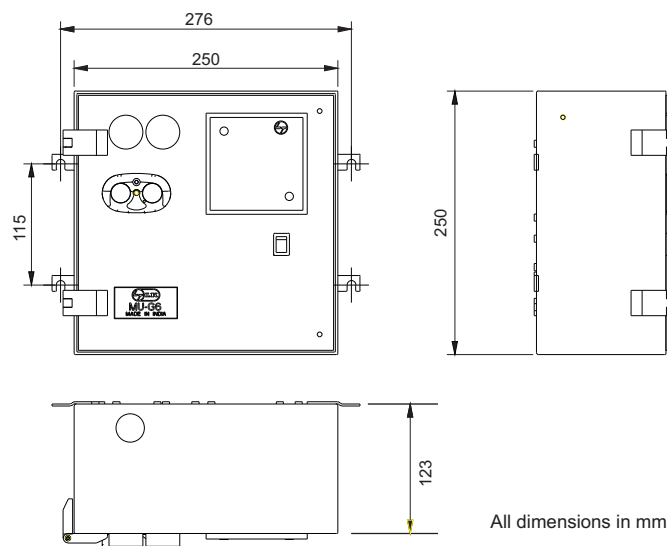
## MU – G6 DOL



### Features

- Protection from Overload Conditions
- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions



	MU - G6 DOL
Rating	Up to 6HP, 415V, 3Ø
Contactor/AC3/AC1	MK1 (Wide band)/15A/22A
Contactor Electrical Life - AC3	1 Million
Mechanical Life	10 Million
Coil Voltage	360V-W(200V-400V)
Overload Relay	MK1
Relay Range	4 - 6.5A, 6 - 10A and 9 - 14A
Relay Type	Thermal Bimetallic Relay
Relay Trip Class	Class 10A
Pick-up Voltage	60% to 110% of Uc
Drop-off Voltage	20% to 50% of Uc
Measurement Offered	Ammeter (0-30A) Voltmeter (0-500 V)
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)
Protection Device (electronic)	SPPR type Sz5
Indicating Lamps	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)
Rated Insulation Voltage	690 V
Rated Operational Voltage	360 V
Rated Impulse Withstand Voltage	8 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity ( Terminal Blocks)	10 sq.mm. with Lug
No.of full start	30 operations per Hour
Back-up Protection	Type 2 with HF fuses
Power Wiring	2.5 sq.mm
Control Wiring	1 sq.mm.
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware confirms to	Salt-spray test (144 hrs.)
Hardware Plating	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V
Impact Capacity	IK6
Provision to connect Dry-run protection unit	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module



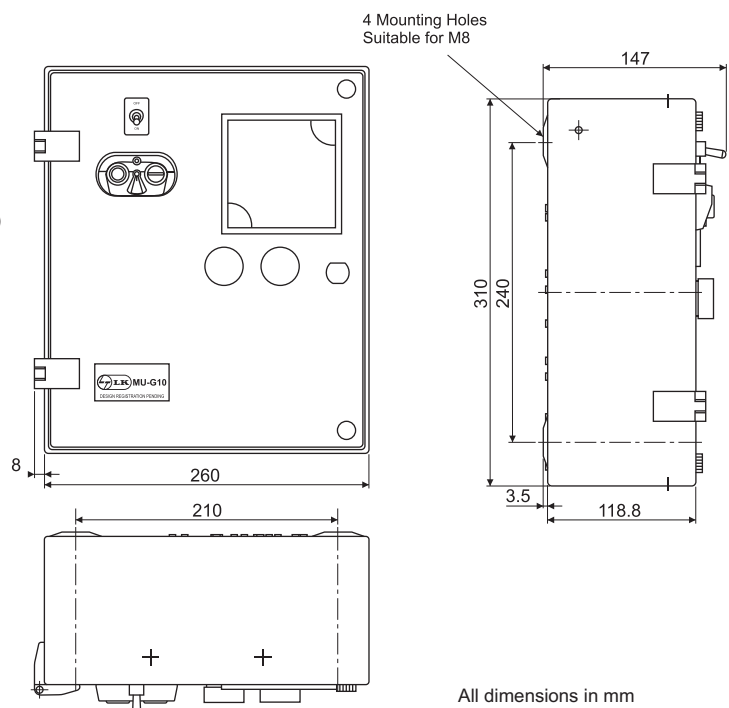
## MU – G10 DOL



### Features

- Protection from Overload Conditions
- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Rugged MU contactor with moulded coil
- Wide band coil operates from 50% to 110% of rated coil voltage
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions





	MU - G10	MU - G10H
Rating	Up to 10HP, 415V, 3Ø	Up to 10HP, 415V, 3Ø
Contactors/AC3/AC1	MU1/16A/55A	MU2/25A/63A
Contactors Electrical Life - AC3	1 Million operations	1 Million operations
Mechanical Life	10 Million operations	10 Million operations
Coil Voltage	415 V, 360 V	415 V, 360 V
Overload Relay	MU1/MU2	MU2
Relay Range	4-6.5A, 6-10A, 9-14A and 13-21A	20 - 32A and 28 - 42A
Relay Type	Thermal Bimetallic Relay	Thermal Bimetallic Relay
Relay Trip Class	Class 10A	Class 10A
Pick-up Voltage	50% to 110% of Uc	50% to 110% of Uc
Drop-off Voltage	25% to 35% of Uc	25% to 35% of Uc
Measurement Offered	Ammeter (0-60A) Voltmeter (0-500 V)	Ammeter (0-60A) Voltmeter (0-500 V)
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V )	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V )
Protection Device (electronic)	SPPR type Sz5	SPPR type Sz5
Indicating Lamps	Supply ON Pump ON	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)	LED (415 V)
Rated Insulation Voltage	690 V	690 V
Rated Operational Voltage	360 V	415 V
Rated Impulse Withstand Voltage	8 kV	8 kV
HV withstand capacity (for 60 Sec)	2 kV	2 kV
Service Temperature	-5°C to 55°C	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	16 sq.mm. with Lug	16 sq.mm. with Lug
No.of full start	30 operations per Hour	30 operations per Hour
Back-up Protection	Type 2 with HF fuses	Type 2 with HF fuses
Power Wiring	4 sq.mm.	10 sq.mm.
Control Wiring	1 sq.mm.	1 sq.mm.
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure	ETP Grade Copper 99.9% Pure
Hardware confirms to	Salt-spray test (144 hrs.)	Salt-spray test (144 hrs.)
Hardware Plating	Zinc plated hardware with better corrosion resistance	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V	Seq. I to Seq.V
Impact Test	IK6	IK6
Provision to connect dry run protection unit	Yes	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module	Possible using Mobile through externally connected M-POWER+ GSM Module

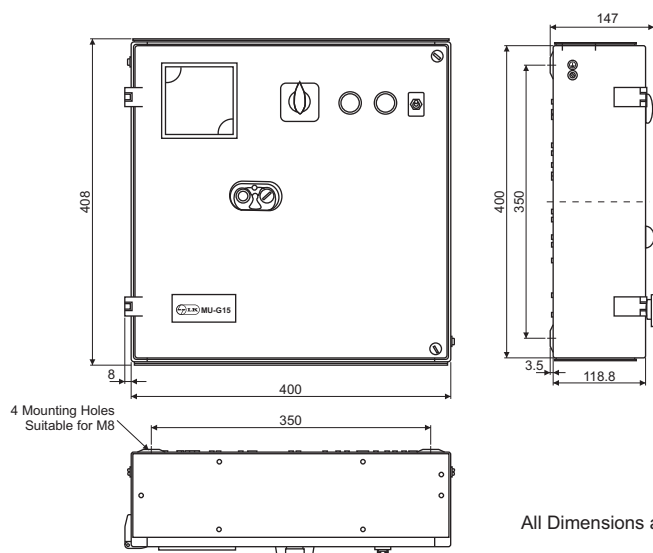
## MU – G15 FASD



### Features

- Protection from Overload Conditions
- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Proven & tested MK1 Contactor
- Wide band coil operates from 65% to 110% of rated coil voltage
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions



All Dimensions are in mm

	MU – G15 FASD
Rating	Up to 15HP, 415 V, 3Ø
Contactors/AC3/AC1	MK1/15A/22A
Contactors Electrical Life - AC3	1 Million operations
Mechanical Life	10 Million operations
Coil Voltage	360 V-W(200 V - 400 V)
Overload Relay	MK1
Relay Range	(6 – 10A), (9 – 14A), (11 – 18A) and (13 – 22A)
Relay Type	Thermal Bimetallic Relay
Relay Trip Class	Class 10A
Pick-up Voltage	65% to 110% of Uc
Drop-off Voltage	25% to 35% of Uc
Measurement Offered	Ammeter (0-30A) Voltmeter (0-500 V) with selector switch
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( 55 ± 5 V)
Protection Device (electronic)	SPPR Type SDz5 (415 V)
Indicating Lamps	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)
Rated Insulation Voltage	690 V
Rated Operational Voltage	360 V
Rated Impulse Withstand Voltage	8 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity ( Terminal Blocks)	16 sq.mm. with Lug
No.of full start	30 operations per hour
Back-up Protection	Type 2 with HF fuses
Power Wiring	4 sq.mm.
Control Wiring	1 sq.mm.
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware confirms to	Salt-spray test (144 hrs.)
Hardware Plating	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq. V
Impact Test	IK6
Provision to connect dry run protection unit	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module



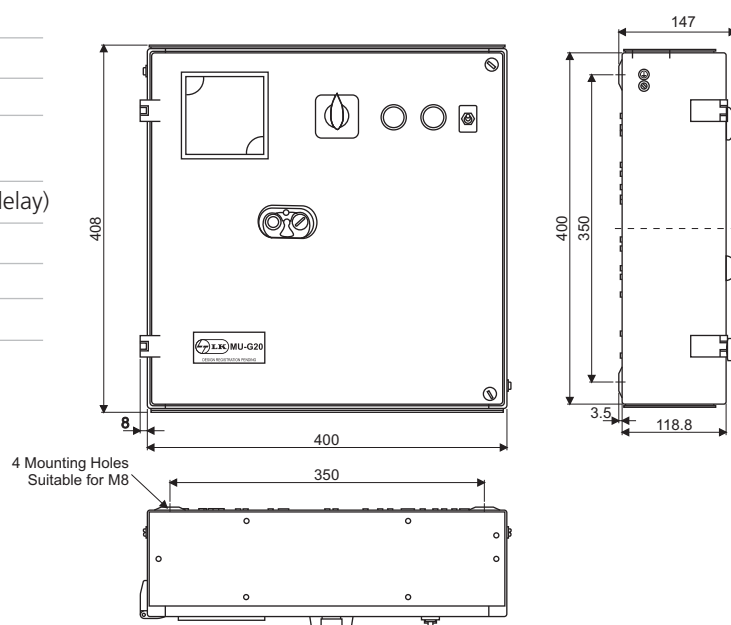
## MU – G20 FASD



### Features

- Protection from Overload Conditions
- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Rugged MU contactor with moulded coil
- Wide band coil operates from 50% to 110% of rated coil voltage
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

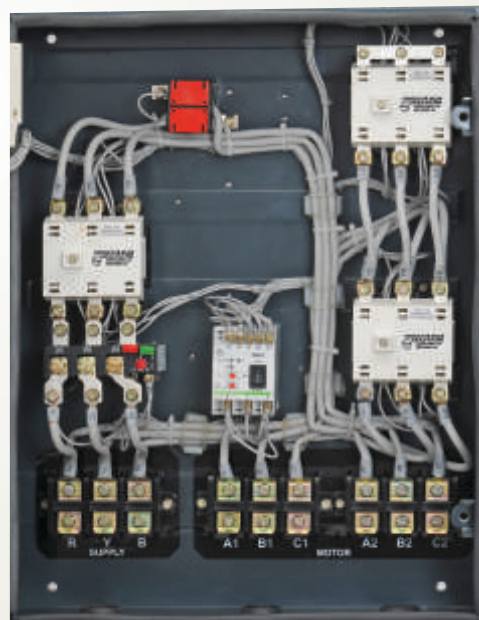
### Overall Dimensions



All Dimensions are in mm

	<b>MU - G20</b>	<b>MU - G20H</b>
Rating	15HP/20HP, 415 V, 3Ø	20HP, 415 V, 3Ø
Contactor/AC3/AC1	MU1/16A/55A	MU2/25A/63A
Contactor Electrical Life - AC3	1 Million Operations	1 Million Operations
Mechanical Life	10 Million Operations	10 Million Operations
Coil Voltage	415 V, 360 V	415 V, 360 V
Overload Relay	MU2	MU2
Relay Range	9 - 14A and 13 - 21A	20 - 32A and 28 - 42A
Relay Type	Thermal Bimetallic Relay	Thermal Bimetallic Relay
Relay Trip Class	Class 10A	Class 10A
Pick-up Voltage	50% to 110% of Uc	50% to 110% of Uc
Drop-off Voltage	25% to 35% of Uc	25% to 35% of Uc
Measurement Offered	Ammeter (0-60A) Voltmeter (0-500 V) with selector switch	Ammeter (0-60A) Voltmeter (0-500 V) with selector switch
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)
Protection Device (electronic)	SPPR Type SDz5 (360 V, 415 V)	SPPR Type SDz5 (360 V, 415 V)
In-built Star-Delta timer	3 to 30 sec	3 to 30 sec
Indicating Lamps	Supply ON Pump ON	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)	LED (415 V)
Rated Insulation Voltage	690 V	690 V
Rated Operational Voltage	415 V	415 V
Rated Impulse Withstand Voltage	8 kV	8 kV
HV withstand capacity (for 60 Sec)	2 kV	2 kV
Service Temperature	-5°C to 55°C	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	16 sq.mm. with Lug	16 sq.mm. with Lug
No.of full start	30 operations per hour	30 operations per hour
Back-up Protection	Type 2 with HF fuses	Type 2 with HF fuses
Power Wiring	4 sq.mm.	6 sq.mm.
Control Wiring	1 sq.mm.	1 sq.mm.
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure	ETP Grade Copper 99.9% Pure
Hardware confirms to	Salt-spray test (144 hrs.)	Salt-spray test (144 hrs.)
Hardware Plating	Zinc plated hardware with better corrosion resistance	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V	Seq. I to Seq.V
Impact Test	IK6	IK6
Provision to connect Dry-run protection device	Yes	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module	Possible using Mobile through externally connected M-POWER+ GSM Module

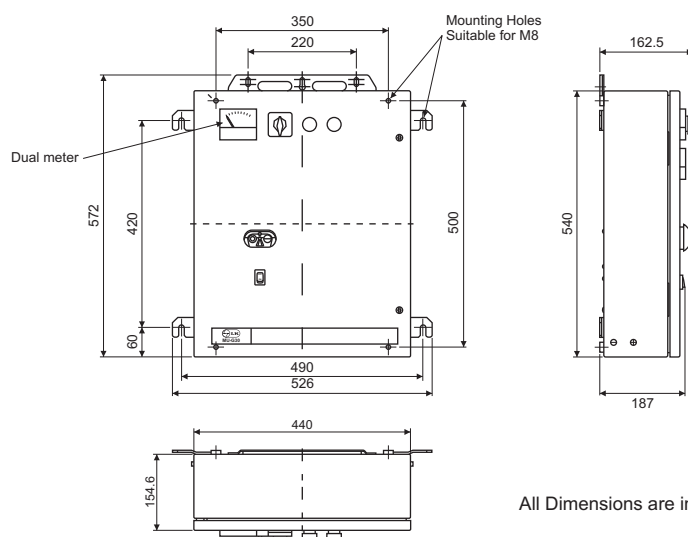
## MU – G30 FASD



### Features

- Protection from Overload Conditions
- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Offers wide operating band (65% - 110%  $U_c$ )
- Selector switch to view voltage of three phases
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions



All Dimensions are in mm



	<b>MU - G30 FASD</b>
Rating	Up to 30HP, 415 V, 3Ø
Contactors/AC3/AC1	ML2 (Wideband)/32A/40A
Contactors Electrical Life - AC3	1 Million operations
Mechanical Life	10 Million operations
Coil Voltage	380 V
Overload Relay	MN5
Relay Range	20 - 33A and 30 - 50A
Relay Type	Thermal bimetallic relay with inbuilt single phasing protection
Relay Trip Class	10A
Pick-up Voltage	65% to 110% of $U_c$
Drop-off Voltage	20% to 50% of $U_c$
Measurement Offered	Ammeter (0-60A) with CT Voltmeter (0-500 V) with selector switch
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)
Protection Device (electronic)	SPPR Type SDz5 (380 V)
In-built Star-Delta timer	3 to 30 sec
Indicating Lamps	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)
Rated Insulation Voltage	690 V
Rated Operational Voltage	415 V
Rated Impulse Withstand Voltage	8 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity ( Terminal Blocks)	35 sq.mm. with Lug
No.of full start	30 operations per hour
Back-up Protection	Type 2 with HN fuses
Power Wiring	10 sq.mm
Control Wiring	1 sq.mm
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware Plating	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V
Impact Capacity	IK6
Provision to connect Dry-run protection unit	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module Remote Operation

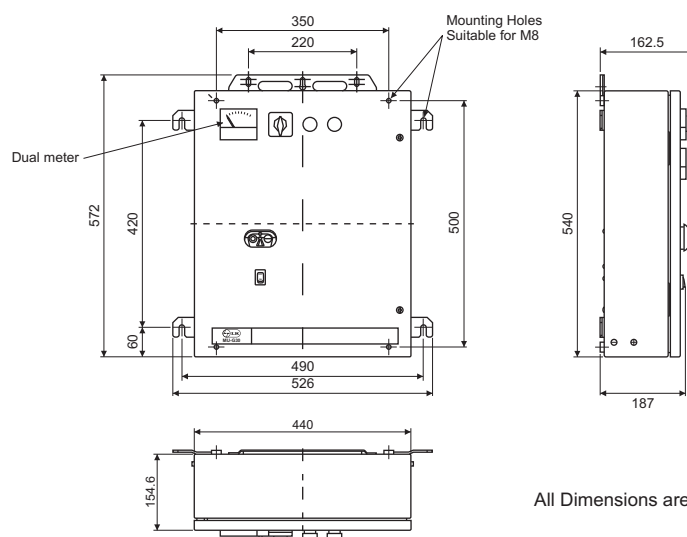
## MU – G40 FASD



### Features

- Protection from Single Phasing.
- Protection from Overload Conditions
- Protection from Negative Phase Sequence
- Offers wide operating band (65% - 110%  $U_c$ )
- Selector switch to view voltage of three phases.
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions



All Dimensions are in mm

	<b>MU - G40 FASD</b>
Rating	Up to 40HP, 415 V, 3Ø
Contactor/AC3/AC1	ML3 (Wide band)/40A/60A
Contactor Electrical Life - AC3	1 Million operations
Mechanical Life	10 Million operations
Coil Voltage	380 V
Overload Relay	MN5
Relay Range	30 - 50A and 36 - 60A
Relay Type	Thermal bimetallic relay with inbuilt single phase protection
Relay Trip Class	10A
Pick-up Voltage	65% to 110% of Uc
Drop-off Voltage	20% to 50% of Uc
Measurement Offered	Ammeter (0-100A) with CT Voltmeter (0-500 V) with selector switch
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)
Protection Device (electronic)	SPPR Type SDz5 (380 V)
In-built Star-Delta timer	3 to 30 Sec
Indicating Lamps	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)
Rated Insulation Voltage	690 V
Rated Operational Voltage	415 V
Rated Impulse Withstand Voltage	8 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	35 sq.mm. with Lug
No.of full start	30 operations per Hour
Back-up Protection	Type 2 with HN fuses
Power Wiring	16 sq.mm
Control Wiring	1 sq.mm
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware Plating	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V
Impact Test	IK6
Provision for Dry-run protection unit	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module

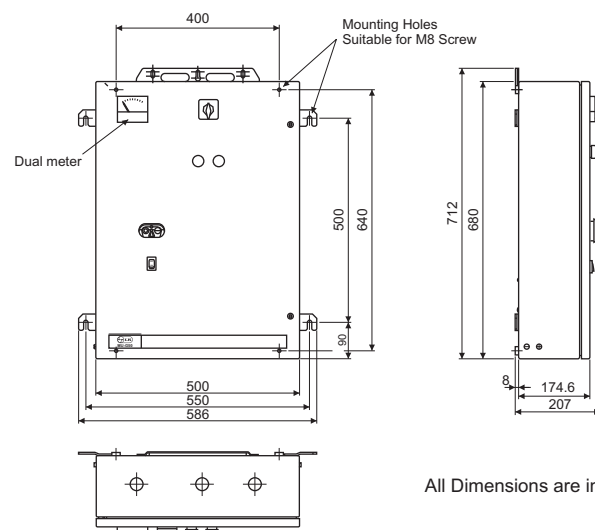
## MU – G50 FASD



### Features

- Protection from Overload Conditions
- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Proven and Tested ML contactors
- Offers wide operating band (65% - 110%  $U_c$ )
- Selector switch to view voltage of three phases
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions

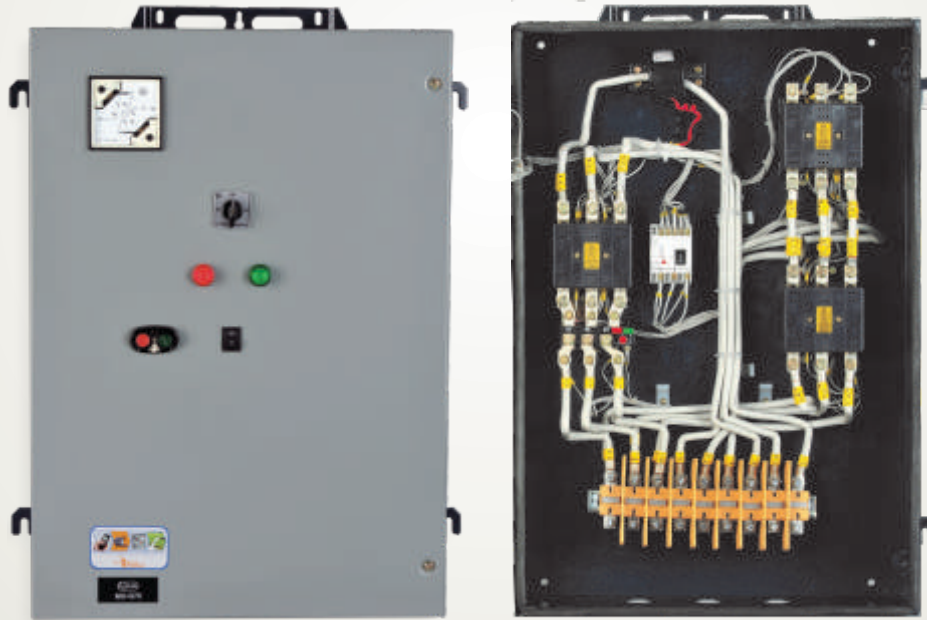


All Dimensions are in mm

	<b>MU - G50 FASD</b>
Rating	Up to 50HP, 415 V, 3Ø
Contactor/AC3/AC1	ML4 (Wide band)/70A/100A
Contactor Electrical Life - AC3	1 Million operations
Mechanical Life	10 Million operations
Coil Voltage	380 V
Overload Relay	MN5
Relay Range	30 - 50A and 45 - 75A
Relay Type	Thermal bimetallic relay with inbuilt single phasing protection
Relay Trip Class	10A
Pick-up Voltage	65% to 110% of Uc
Drop-off Voltage	20% to 50% of Uc
Measurement Offered	Ammeter (0-100A) with CT Voltmeter (0-500 V) with selector switch
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)
Protection Device (electronic)	SPPR Type SDz5 (380 V)
In-built Star-Delta timer	3 to 30 Sec
Indicating Lamps	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)
Rated Insulation Voltage	690 V
Rated Operational Voltage	380 V
Rated Impulse Withstand Voltage	8 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	35 sq.mm. with Lug
No.of full start	30 operations per hour
Back-up Protection	Type 2 with HN fuses
Power Wiring	16 sq.mm
Control Wiring	1 sq.mm
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware Plating	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V
Impact Test	IK6
Provision for Dry-run protection unit	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module



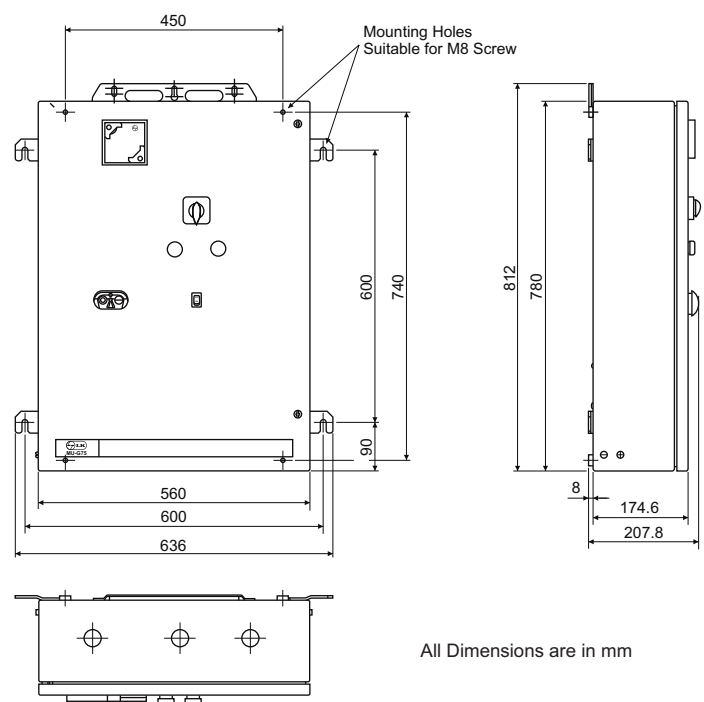
## MU – G75 FASD



### Features

- Protection from Overload Conditions
- Protection from Single Phasing.
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Proven and Tested ML contactors
- Offers wide operating band ( 65% - 110% Uc)
- Selector switch to view voltage of three phases
- Auto Restart (with variable 30 Sec - 5 Min ON delay)
- Power ON & Pump ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions





	MU - G75 FASD
Rating	Up to 75HP, 415 V, 3Ø
Contactor / AC3/AC1	ML6/110A/125A
Contactor Electrical Life - AC3	1 Million operations
Mechanical Life	10 Million operations
Coil Voltage	380 V
Overload Relay	MN5
Relay Range	45 - 75A and 66 - 110A
Relay Type	Thermal bimetallic relay with inbuilt single phasing protection
Relay Trip Class	10A
Pick-up Voltage	65% to 110% Uc
Drop-off Voltage	20% to 50% Uc
Measurement Offered	Ammeter (0-150A) with CT Voltmeter (0-500 V) with selector switch
Additional Protection Offered	Single Phasing, Phase Reversal, Phase unbalance ( $55 \pm 5$ V)
Protection Device (electronic)	SPPR Type SDz5 (380 V)
In-built Star-Delta timer	3 to 30 Sec
Indicating Lamps	Supply ON Pump ON
Indicating Lamp Type	LED (415 V)
Rated Insulation Voltage	690 V
Rated Operational Voltage	380 V
Rated Impulse Withstand Voltage	8 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	125 sq.mm
No.of full start	30 operations per Hour
Back-up Protection	Type 2 with HN fuses
Power Wiring	35 sq.mm
Control Wiring	1 sq.mm
Degree of Protection	IP42
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware Plating	Zinc plated hardware with better corrosion resistance
Test Certificates	NABL Accredited Laboratory
Test Sequence for which unit is tested	Seq. I to Seq.V
Impact Test	IK6
Provision for Dry-run protection unit	YES
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module

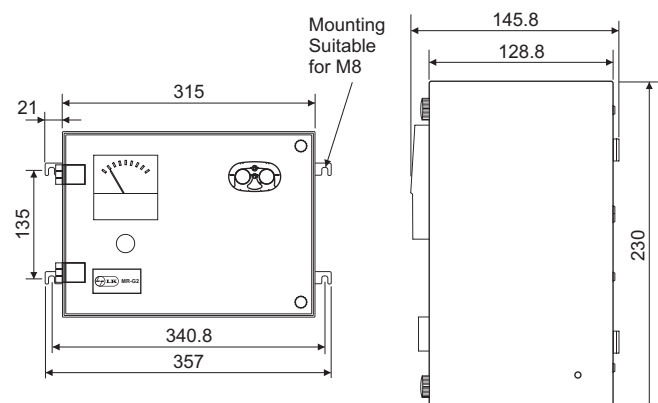
## MR – G2 Single Phase Submersible Pump Controller



### Features

- Fitted with True 2 Pole MU-2P Contactor and Relay
- Presence of heavy duty START & RUN condensers
- Suitable for low voltage conditions
- Motor ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions



All Dimensions are in mm

## MR – G2 Single Phase Submersible Pump Controller

	MR - G2
Rating	Up to 3HP max, 230V, 1Ø
Contactor / AC3/AC1	MU-2P/16A/25A
Contactor Electrical Life - AC3	1 Million operations
Mechanical Life	5 Million operations
Coil Voltage	230 V
Overload Relay	MU-2P
Relay Range	4 - 6A, 6 - 10A, 9 -14A, 11 - 18A and 13 - 22 A
Relay Type	Thermal bimetallic relay
Relay Trip Class	Class 10A
Type of Condenser	Cylindrical
Start & Run Condenser	275 V, 50Hz MFD (Start) & 440 V, 50Hz MFD (Run)
Pick-up Voltage	$\geq 55\% U_c$
Drop-off Voltage	$\leq 35\% U_c$
Measurement Offered	Ammeter (0-30A) Voltmeter (0-300 V)
Indicating Lamps	Motor On
Indicating Lamp Type	240 V (Neon lamp)
Rated Insulation Voltage	660 V
Rated Operational Voltage	230 V
Rated Impulse Withstand Voltage	6 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	2 x 6 sq.mm
No.of full start	30 operations per hour
Back-up Protection	Type 2 with HF fuses
Power Wiring	4 sq.mm
Control Wiring	1 sq.mm
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware confirms to	Salt-spray test (144 hrs.)
Hardware Plating	Zinc plated hardware with better corrosion resistance
Impact Capacity	IK6
Provision for Dry-run protection unit	Yes
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module

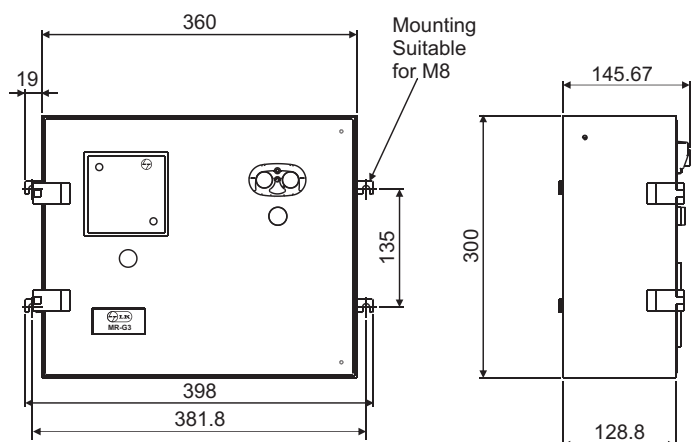
## MR – G3 Single Phase Submersible Pump Controller



### Features

- Fitted with True 2 Pole MU-2P Contactor and Relay
- Presence of heavy duty START & RUN condensers
- Suitable for low voltage conditions
- Motor ON indication
- Dual Voltmeter & Ammeter
- Easy replacement of Spares

### Overall Dimensions



All Dimensions are in mm

## MR – G3 Single Phase Submersible Pump Controller

	MR - G3
Rating	5HP, 230 V, 1Ø
Contactor / AC3/AC1	MU-2P/40A/40A
Contactor Electrical Life - AC3	1 Million Operations
Mechanical Life	5 Million Operations
Coil Voltage	230 V
Overload Relay	MU-2P
Relay Range	20- 32A and 28 - 42A
Relay Type	Thermal bimetallic relay
Relay Trip Class	Class 10A
Type of Condenser	Cylindrical
Start & Run Condenser	275 V, 50Hz MFD (Start) & 440 V, 50Hz MFD (Run)
Pick-up Voltage	≥ 55% Uc
Drop-off Voltage	≤ 35% Uc
Measurement Offered	Ammeter (0-60A) Voltmeter (0-300 V)
Indicating Lamps	Motor On
Indicating Lamp Type	240 V (Neon Lamp)
Rated Insulation Voltage	660 V
Rated Operational Voltage	230 V
Rated Impulse Withstand Voltage	6 kV
HV withstand capacity (for 60 Sec)	2 kV
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	2 x 6 sq.mm
No.of full start	30 operations per hour
Back-up Protection	Type 2 with HF fuses
Power Wiring	6 sq.mm
Control Wiring	1 sq.mm
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)
Copper Contacts Material	ETP Grade Copper 99.9% Pure
Hardware Plating	Zinc plated hardware with better corrosion resistance
Impact Capacity	IK6
Provision for Dry-run protection unit	YES
Remote Operation	Possible using Mobile through externally connected M-POWER+ GSM Module



## MF – G1 Single phase Submersible Pump Controllers

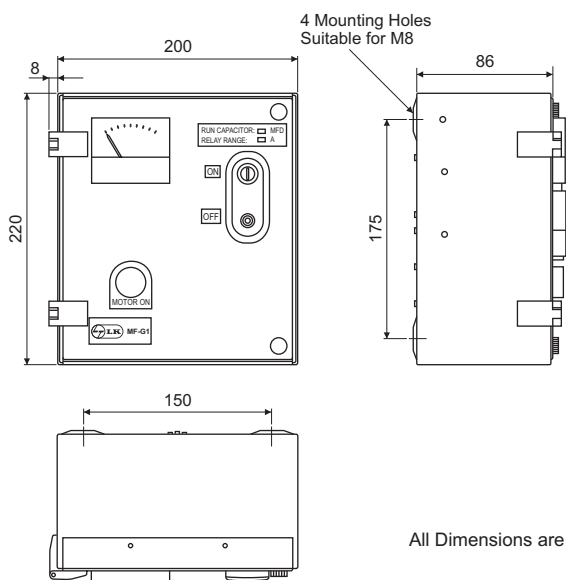




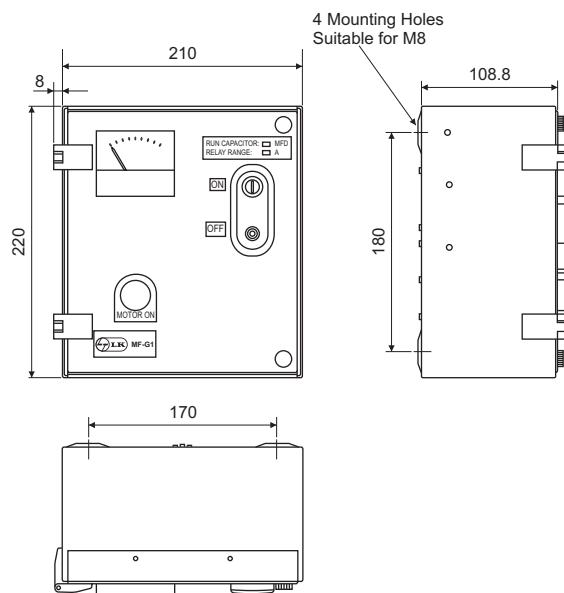
## MF – G1 Single phase Submersible Pump Controllers

### Overall Dimension

MF-G1 with Single Condenser



MF-G1 with Double Condenser



All Dimensions are in mm

### Features

- Reliable overload protection through MF 1 starter
- Fitted with heavy duty run condenser
- Ammeter to monitor motor current
- Voltmeter options MF – G1 Single Phase

	MF - G1
Rating	Up to 2HP max, 230 V, 1Ø
Switch	MF1 (two pole)
Range	6.5 - 11A and 12 - 20A
Indicating Lamps	Motor On
Rated Insulation Voltage	690 V
Rated Operational Voltage	230 V AC
Service Temperature	-5°C to 55°C
Conformity to Standard	IS/IEC 60947-4-1
Terminal Capacity (Terminal Blocks)	2 x 6 sq.mm
Back-up Protection	Type 2 with HF fuses
Degree of Protection	IP54 (Suitable for Humid Dusty and Hot Environment)



## Single Phase and Three Phase Submersible Controller with Water Level Controller.

Three Phase – MU-G 10W/ 20W/ 30W

Single Phase – MR-G2W



MU-G 10W



MU-G 20W



MU-G 30W

## MR –G2W



## Water Level Controller



### Water Level Controller

Cat. No. :  
 XM810520000  
 XM810530000  
 XM810540000  
 XM810550000  
 XM810560000  
 XM810570000  
 XM810580000  
 XM810760000



#### Features:

- One/two level detection of water in a tank.
- One / two tank monitoring for draining or filling or draining and filling the water.
- 2M Enclosure with Din rail/ base easy mounting
- Supports to externally connected 2/3/6 Stainless steel sensor probes of 10cm length
- Supports up to 1000m length cable for longer distance probe sensing
- AC Modulated probe signal to prevent electrolytic corrosion.
- High load switching capacity of output up to 8A
- Adjustable sensitivity of water from 1K to 200Kohm
- Power ON and relay ON status LED indicator
- Manual Start Switch to allow manual pump start for filling while taking care of dry run condition and overflow conditions.
- CE, RoHS Certified.

#### Description:

The water Level Controller is used to detect the water level in a tank where water is electrically conducted and device controls the relay output according to use of Mode. The modes are filling & draining, filling only one tank with 2 levels monitoring, filling only one tank with 1 level monitoring, draining only one tank with 2 levels monitoring, draining only one tank with 1 level monitoring.

The signal completes the electrical path through water, the controller detects the signal and drives relay. The reference resistivity can be set by potentiometer from 1K to 200K to match water resistivity. The output of device can be used to turn ON & OFF pumps, solenoids or valves.

#### Sensitivity Setting:

To set and fix sensitivity according to the water conductivity with the help of sensitivity potentiometer

- Keep CN1, P1 & P2 probes in conductive water & Potentiometer at minimum (1K) position
- Turn the potentiometer towards Maximum (200K Ohm) side till Product RED LED & Relay gets "ON"
- Now remove P1 probe from conductive water & check that product RED LED & Relay switches "OFF" (if relay is not switched off turn the potentiometer again towards maximum side till the relay is switched off)

**Note -Position of potentiometer is adjusted according to conductivity level of water. Do not disturb potentiometer setting once fixed.**

#### Applications:

A din rail mounted water level controller device is supplied with external 10cm stainless steel sensing probes. The device monitors the water level in the tanks and controls the actuation of Pumps or electric valves to regulate water levels in tank according to use of mode. It is also designed to protect submersible pumps against "Dry running" when lower tank is empty and against "Overflow" when upper tank is filled completely.

#### Device controlling mode:

- Draining from lower tank and filling in upper tank.
- Filling only one tank with 2 levels monitoring.
- Filling only one tank with 1 level monitoring.
- Draining only one tank with 2 levels monitoring.
- Draining only one tank with 1 level monitoring.

#### Precautions:

- This device is not recommended for use with pure water, oil, acids, corrosive liquid and flammable liquid.
- For proper functionality /operation of device, it is recommended to keep sensitivity pot arrow or value by two upper positions next to actual position of potentiometer.
- Keep wiring of sensor probes away from live / power wires. Do not allow the direct shorting of these wires with live / power wires.

#### Product Specifications:

Catalogue No. XM810520000 - 6 PROBES XM810530000 - 6 PROBES XM810540000 - 6 PROBES XM810550000 - 3 PROBES XM810560000 - 3 PROBES XM810570000 - 3 PROBES XM810580000 - 3 PROBES

Supply Voltage	240VAC, +/-20%	415VAC, +/-15%	110VAC, +/-20%
Supply Frequency	47Hz - 63Hz		
Power Consumption	3VA		

#### DEVICE CHARACTERISTICS :

Conductive Sensor Probes	Stainless Steel Ss304 , 3 Probes & 6 Probes
Probe Length	10 cm
Sensitivity	1K to 200 K Ohm (Potentiometer adjustable)
Probe Voltage & Current	12 Vp-p, 100 Hz, < 1 mA
Probe cable	Cable gauge (Min): 0.5 sqmm copper cable dia (Min): 1.0mm Cable gauge (Max): 1.0 sqmm copper cable dia (Max): 1.5mm Max Cable Length-1000m (For set value of pot < 50%) Max Cable Length-300m (For set value of pot 100%) Max capacitances between common probe wire & signal probe wire- 80 nF / km
Manual Start Switch	If the water level of lower tank is in between P1 and P2 probe then at power ON, relay remains OFF because tank is partially filled with water. But user can turn the relay ON to start motor pump or electric valve by pressing manual switch. The relay will turn OFF when lower tank water level drops below P1 probe to avoid dry running and when upper tank water level reaches to P4 probe to avoid overflow.
Output Control Mode	Relay ON/OFF
Contact Ratings	1 C/O, 8A @ 250VAC, Resistive, Terminal 15-Pole, Terminal 16-NC, Terminal 18-NO
Utilization Category	AC-15: Rated Voltage (Ue): 120/240V, Rated Current (Ie): 3.0/1.5A DC-13: Rated Voltage (Ue): 24/125/250V, Rated Current (Ie): 2.0/0.22/0.1A
Electrical Life	1 x 10 <sup>6</sup> Operations
Mechanical Life	1 x 10 <sup>6</sup> Operations
LED Indication	GREEN LED: Power ON, RED LED : Relay Output ON
Operating Temperature	-10°C to +60°C
Storage Temperature	-10°C to +70°C
Weight Approx. (Packed)	260 gm
Relative Humidity	5 to 95 % RH (non condensing)
Mounting Type	Base/Din Rail Mounting

#### EMI/EMC COMPLIANCE :

Harmonic Current Emission	IEC 61000-3-2 Class A
ESD	IEC 61000-4-2 Level II
Radiated Susceptibility	IEC 61000-4-3 Level III
Electrical Fast Transient	IEC 61000-4-4 Level IV
Surge	IEC 61000-4-5 Level IV
Conducted Susceptibility	IEC 61000-4-6 Level III
Voltage Dips & Interruptions (AC)	IEC 61000-4-11 All seven Levels
Conducted Emission	CISPR 14-1 Class B
Radiated Emission	CISPR 14-1 Class B

#### SAFETY COMPLIANCE :

Voltage between I/P & O/P	IEC 60947-5-1 2.5 KV
Impulse Voltage between I/P & O/P	IEC 60947-5-1 4 KV
Single Fault test	IEC 61010-1
Insulation resistance	UL 508 > 50K Ohm
Leakage Current	UL 508 < 3.5mA
Degree of Protection	IP 20 for Terminal; IP-40 for Housing
Pollution Degree	II
Type of Insulation	Reinforced

#### ENVIRONMENTAL COMPLIANCE :

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6 5g
Non-Repetitive Shock	IEC 60068-2-27 30g, 15ms

#### Note:

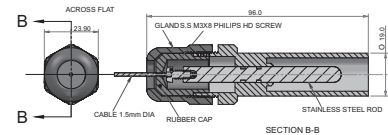
- Technical information provided in this document is correct at the time of going to press.
- Product innovation being a continuous process, we reserve the right to alter specifications without any prior notice.
- Only qualified persons are authorized to install the device.

#### Probe Diagram:

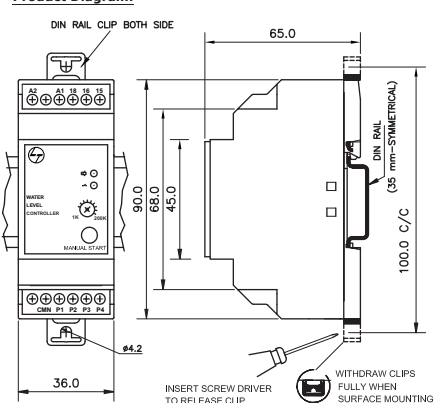
A single pole electrode used for level control in wells or storage tanks. It comprises stainless steel probe with plastic holder and cable gland. A seal ring and the tightening of the cable gland prevent water from entering the cable terminal connector and causing its oxidation. Maximum Operating Temperature -10°C to +65°C

Cable connection: Screw

The external cable diameter must be 1.5 mm to warrant perfect sealing.



#### Product Diagram:



Terminal Details	0.54 N.m (5 Lb.in) Terminal screw - M2.0
Supply Connection	1 x 0.2...3.3 mm <sup>2</sup> Solid Wire 110 ~ 250VAC 415 +/-15%VAC
SPDT Relay Connection	A1 15 A2 16

#### Ordering Code:

Sr. No.	Cat-ID	Description
1	XM810520000	240VAC +/-20%, 50/60 Hz, 1 C/O, 1K to 200K SENSITIVITY, DRAINING & FILLING
2	XM810530000	415VAC +/-15%, 50/60 Hz, 1 C/O, 1K to 200K SENSITIVITY, DRAINING & FILLING
3	XM810540000	110VAC +/-20%, 50/60 Hz, 1 C/O, 1K to 200K SENSITIVITY, DRAINING & FILLING
4	XM810550000	240VAC +/-20%, 50/60 Hz, 1 C/O, 1K to 200K SENSITIVITY, DRAINING
5	XM810560000	415VAC +/-15%, 50/60 Hz, 1 C/O, 1K to 200K SENSITIVITY, DRAINING
6	XM810570000	110VAC +/-20%, 50/60 Hz, 1 C/O, 1K to 200K SENSITIVITY, DRAINING
7	XM810580000	ACCESSORIES, SET OF 3 STAINLESS STEEL SENSORS
8	XM810760000	ACCESSORIES, SET OF 6 STAINLESS STEEL SENSORS



## SPPR – Single Phase Preventer



Sz5

		Sz5 (6 wire variant)	Sz5 (7 wire variant)
Supply Voltage		415 V	
Principle of operation		Voltage Sensing	
Function Display		Green LED on healthy condition	
Mode of operation		Auto/ Bypass/ Manual	
Trip time delay		2 to 5 sec for phase unbalance, phase reversal and <1 sec for single phasing	
Output		Relay – 1 C/O	
Contact Rating		5A (resistive) at 240 V AC/ 5 A resistive	
Mechanical Life		5 million operations	
Electrical Life		0.1 million operations	
Auto Manual Switch	Trip Setting (fixed)	SPDT, 250 V AC/ 5 A resistive	
	Phase to Phase Unbalance	55 V AC, $\pm 5\%$	
Unbalance hysteresis gap		3 to 7 V	
Operating Temperature		$-10^{\circ}\text{C}$ to $70^{\circ}\text{C}$	
Enclosure		Glass filled nylon	
Terminal Capacity		2.5 sq.mm	
Dimension (W x H x D) mm		34 x 101 x 83.1	
Weight		300 gms	
Minimum delay between OFF and ON mode		30 sec, $\pm 5$ sec	
Pick-up voltage		240 V AC + 10 V	
Drop-out voltage		160 V AC	

## SPPR – Single Phase Preventer



SDz5

	SDz5
Supply Voltage	360 V, 415 V (for MU-G15/20/20H), 380 V (for MU-G30/40/50/75)
Frequency	47Hz to 53Hz
Principle of operation	Voltage Sensing
Indications:	
Healthy (Green) LED	Continuous On: Healthy Conditions Continuous OFF: Product OFF Blinking: Unhealthy Conditions
Start (Red) LED	Continuous ON: Star Relay ON Continuous OFF: Star Relay OFF Blinking: Star Contactor Fail to Operate
Delta (Red) LED	Continuous ON: Delta Relay ON Continuous OFF: Delta Relay OFF Blinking: Delta Contactor Fail to Operate
Modes of Operation	Auto/ Manual/ Bypass
Power Consumption	6 VA
Contact Arrangement	1 Pole + 3 NO 1 NO for Star 1 NO for Delta 1 NO for SPP
Contact Rating	5A at 240 V AC ( Resistive Load) OR 1A at 415 V AC (Resistive Load)
Mechanical Life	5 million operations
Electrical Life	0.1 million operations
Restart Voltage	186 V +/-5VAC (for 360 V), 213V +/-5VAC (for 415 V)
Switch ON Response Time	30 sec +/-5 sec
Switch OFF Response Time	2 sec to 5 sec
Star Relay ON time	6 sec to 30 sec
Pause Delay	50 msec+/-5msec
Setting Accuracy	+/-10%
Operating Temperature	-25°C to 80°C
Weight	330 gms (approx.)
Dimensions	55 x 78 x 102 mm
Terminal Capacity	1 – 2.5 sq.mm
Degree of Protection	IP20

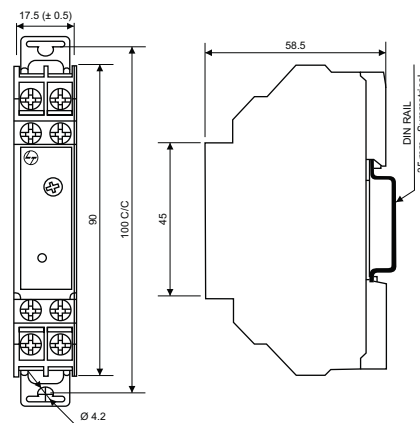


## ST 100 Timer

### Features

- Star Delta Timer with in-built pause time delay.
- Has two time delay ranges (i.e. 3-30sec & 12-120sec) and
- Wide rated operational voltage i.e. 160 V to 500 V

### Overall Dimensions



All Dimensions are in mm

	ST 100 Timer
Set Time	3 sec to 30 sec & 12 sec to 120 sec
Supply Voltage (Un)	160 VAC – 500 VAC
Frequency	47Hz to 53 Hz
Power Consumption (Max)	6W at 500 V
Relay Output	2 NC
Contact Rating (AC15)	5A at 250 VAC, 5A at 30 VDC
Switching Frequency at Max. Load	1,800 operations per hour (under rated load)
Setting Accuracy	+/- 5% of full scale
Repeat Accuracy	+/- 1%
Pause Time	70 to 100ms (depends on Star Contactor release time)
Reset Time	30 ms to 100 ms
Operating Temperature	-10°C to 55°C
LED indications	LED for Star time – Constant ON
Housing	Flame Retardant – UL94-V0
Mounting	DIN Rail/Base
Dimensions	17.5 mm (W) X 90 mm (H) X 58.5 mm (D)
Terminal Capacity	Up to 4 mm , Torque: 0.6 Nm



# M-POWER+ Module for Mobile Starters & Submersible Pump Controller

Now with  
Android app &  
IVRS feature in  
10 regional  
languages

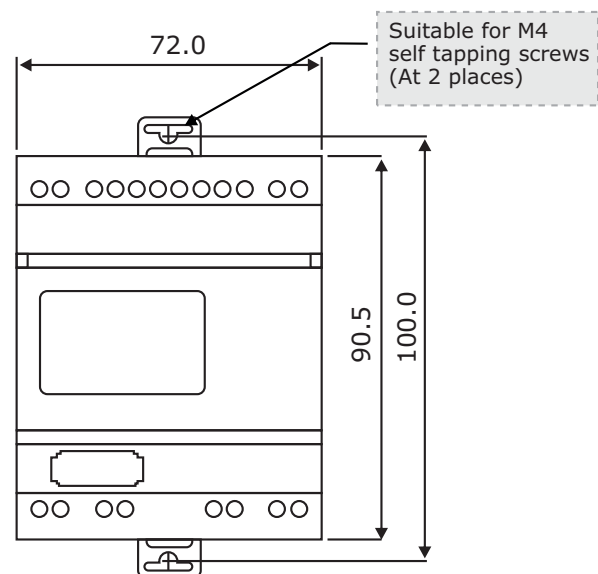
**M POWER+**  
module for mobile starters



## Features

- Easy to install and operate
- GSM based module for operation of starters and controllers from anywhere using mobile phone
- Design tested to perform reliably even in extreme environmental conditions
- Suitable for Single Phase and Three Phase installations
- Communication with IVRS in regional languages
- Three users can control the starter/controller through their mobile phone
- Power fail and feedback SMS in regional languages
- Four different 'time of day' can be set in a day for pump operation
- Controls daily operations of a pump for pre-defined periods
- Helps to avoid wastage of water & electricity
- Ease of operation through M-POWER+ mobile app

## M-POWER+ unit mounting with screw



All Dimensions are in mm

Note: Pull out din clips half way,  
mount M-POWER+ module using screws.



# STARTERS ▶



## MK1 and MK2 Motor Starters



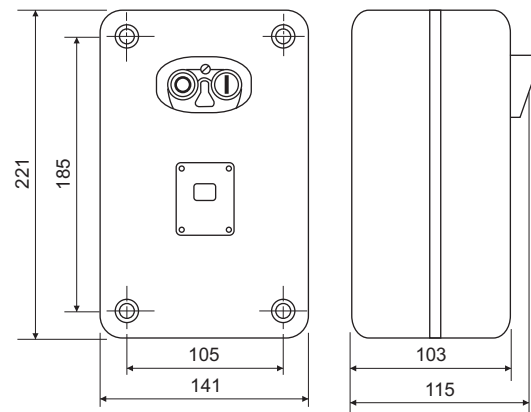
## MK1 and MK2 Motor Starters



### Unique Features

- Enclosure is dust, moisture and vermin proof with cord packing in the cover
- Latch to prevent accidental starting
- Tested for millions of operations without failure
- Robust silver tipped contacts
- Reliable protection against overload

### Overall Dimensions



All Dimensions are in mm

	MK1	MK2
HP Rating	Up to 7.5 HP	7.5 HP
Rated Operational Voltage	415 V	415 V
Rated Insulation Voltage	690 V	690 V
Contactor Type	MK1	MK2
Rating, AC3 (A)	15A	25A
Electrical Life	1 Million Operations	1 Million Operations
Mechanical Life	10 Million Operations	10 Million Operations
Coil Voltage (V)	360 V-W (200 V – 400 V), 360 V, 400/440 V	360 V-W (200 V – 400 V), 360 V, 400/440 V
Pick up Voltage (%)	65% to 110% of $U_c$	65% to 110% of $U_c$
Drop off Voltage (%)	35% to 50% of $U_c$	35% to 50% of $U_c$
Relay Type	MK1	MK2
Relay range (A)	(0.6-1), (1-1.6), (1.5-2.5), (2.5-4), (4-6.5), (6-10), (9-14), (11-18), (13-22)	(13-22) and (20-32)
Built in contacts	1NO and 1NC	1NO and 1NC
Ambient compensated	Yes	Yes
Terminal Capacity, with Lug	10 sq.mm	10 sq.mm
Relay mounting	Direct	Direct
Type of enclosure	SS (powder coated)	SS (powder coated)
Degree of protection	IP54	IP54
Standard compliance	IS/IEC 60947-4-1	IS/IEC 60947-4-1



## MK1 Star-Delta Starters



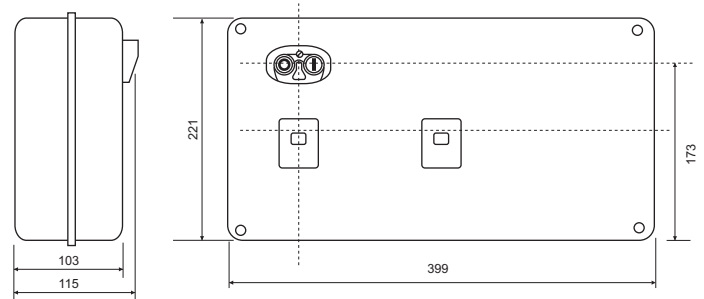
## MK1 Star-Delta Starters



### Unique Features

- Enclosure is dust, moisture and vermin proof with cord packing in the cover
- Latch to prevent accidental starting
- Tested for millions of operations without failure
- Robust silver tipped contacts
- Reliable protection against overload

### Overall Dimensions



All Dimensions are in mm

	MK1 SASD	MK1 FASD
HP Rating	Up to 15 HP	Up to 15 HP
Rated Operational Voltage	415 V	415 V
Rated Insulation Voltage	690 V	690 V
Contactor Type	MK1	MK1
Rating, AC3 (A)	15A	15A
Electrical Life	1 Million Operations	1 Million Operations
Mechanical Life	10 Million Operations	10 Million Operations
Coil Voltage (V)	360 V/440 V	360 V/440 V
Pick up Voltage (%)	65% to 110% of $U_c$	65% to 110% of $U_c$
Drop off voltage (%)	35% to 50% of $U_c$	35% to 50% of $U_c$
Relay Type	MK1	MK1
Relay range (A)	( 4-6.5), (6-10), (9-14), (11-18), (13-22)	( 4-6.5), (6-10), (9-14), (11-18), (13-22)
Built in contacts	1NO and 1NC	1NO and 1NC
Ambient compensated	Yes	Yes
Terminal Capacity, with Lug	10 sq.mm	10 sq.mm
Relay mounting	Direct	Direct
Type of enclosure	SS (powder coated)	SS (powder coated)
Degree of protection	IP54	IP54
Standard compliance	IS/IEC 60947-4-1	IS/IEC 60947-4-1

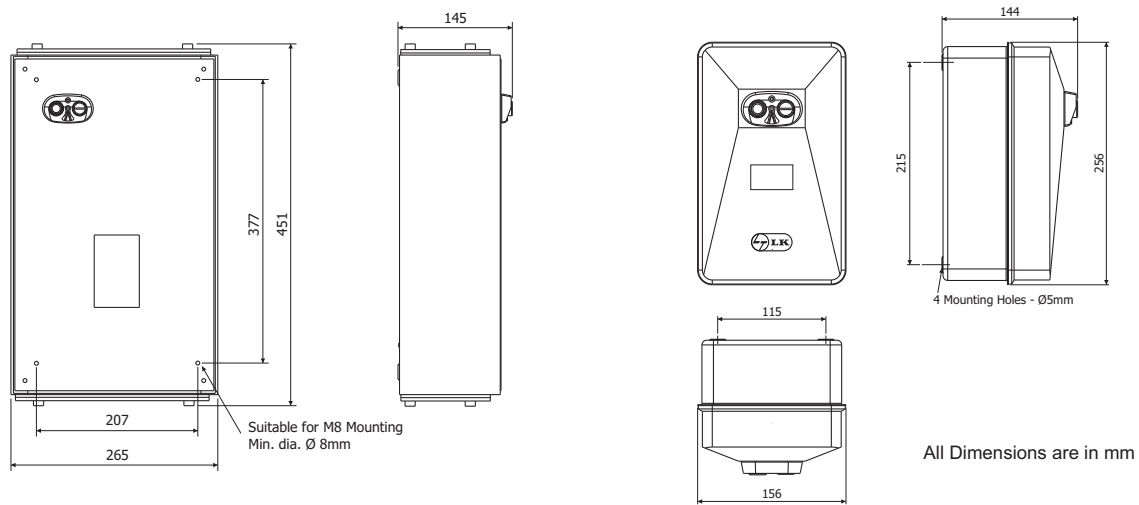




## MU Starter



## Overall Dimension



## Unique Features

- Suitable to work efficiently even at 180 V to 415 V
- Bigger terminals for ease of termination
- Reliable operation & performance under adverse field condition viz.
- Hot & humid environment, supply voltage-unbalance etc.
- Enclosures providing protection against dust, humidity & insect

	MU DOL	MU SASD/FASD
HP Rating	Up to 17.5 HP, 415 V, 3Ø	Up to 30 HP, 415 V, 3Ø
Rated Operational Voltage	415 V	415 V
Rated Insulation Voltage	690 V	690 V
Contactor Type	MU1/MU2/MU3	MU1/MU2
Rating, AC3 (A)	16/25/32A	16/25A
Electrical Life	1 Million operations	1 Million operations
Mechanical Life	10 Million operations	10 Million operations
Coil Voltage (V)	415 V, 360 V	415 V, 360 V
Pick up Voltage (%)	50% to 110% of $U_c$	50% to 110% of $U_c$
Drop off Voltage (%)	25% to 35% of $U_c$	25% to 35% of $U_c$
Relay Type	MU2	MU2
Relay range (A)	(9 – 14), (13 – 21), (15 – 25), (20 – 32), (24 – 38) and (28 – 42)	(9 – 14), (13 – 21), (15 – 25), (20 – 32), (24 – 38) and (28 – 42)
Built in contacts	1 NO	1 NO
Ambient compensated	Yes	Yes
Terminal Capacity, with Lug	10 sq.mm	10 sq.mm
Relay mounting	Direct	Direct
Service Temperature(°C)	-5°C to 55°C	-5°C to 55°C
No. of full start	30 operations per hour	30 operations per hour
Type of enclosure	Deep drawn	Deep drawn
Degree of protection	IP54	IP54
Standard compliance	IS/IEC 60947-4-1	IS/IEC 60947-4-1
Back-up operation	Type 2 with HF uses	Type 2 with HF uses



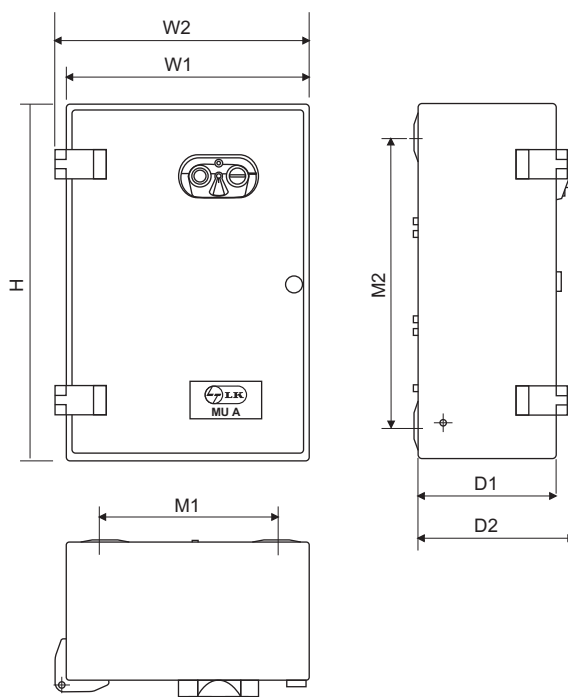
## MU-A Automatic DOL Starters



## Overall Dimension

All Dimensions are in mm

LABEL	DIMENSION
H	289
W1	196
W2	205
M1	146
M2	236
D1	113
D2	129



## Unique Features

- Protection from Single Phasing
- Protection from Phase Reversal
- Protection from Phase Unbalance
- Auto/Manual/Bypass modes of Operation
- Auto-Restart with 30 sec – 5 min settable On-Time delay
- Compact in dimensions

	MU – A DOL
HP Rating	Up to 17.5 HP, 415 V, 3Ø
Rated Operational Voltage	415 V
Rated Insulation Voltage	690 V
Contactor Type	MU1/MU1H/MU2/MU3
Rating, AC3	16/20/25/32A
Rating, AC1	55/55/63/63A
Electrical Life	1 Million operations
Mechanical Life	10 Million operations
Coil Voltage (V)	415 V, 360 V
Pick up Voltage (%)	50% to 110% of Uc
Drop off Voltage (%)	25% to 35% of Uc
Relay Type	ML2/MU2/ML2/MU3
Relay range (A)	(9 – 14), (13 – 21), (15 – 25), (20 – 32), (24 – 38) and (28 – 42)
Additional Protection Offered	Single Phasing, Phase Reversal and Phase Unbalance
Protection Device (electronic)	SPPR Type Sz5
Ambient compensated	Yes
Terminal Capacity, with Lug	10 sq.mm
Relay mounting	Direct
Service Temperature (°C)	-5°C to 55°C
No. of full start	30 operations per hour
Degree of protection	IP54
Standard compliance	IS/IEC 60947-4-1



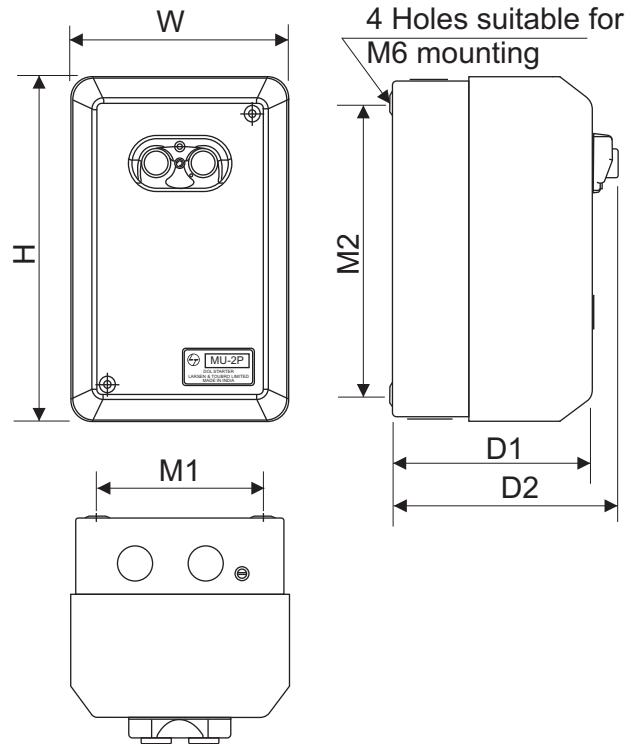
## MU-2P DOL Starter



## Overall Dimension

All Dimensions are in mm

Label	Dimension
H	219
W	139
M1	105
M2	185
D1	128
D2	144.5



## Unique Features

- Starter with true 2 pole contactor and 2 pole relay for complete neutral isolation
- Operating voltage range : 120V to 220V
- Easy installation and maintenance

	MU – 2P
HP Rating	Up to 3 HP
Rated Operational Voltage	240 V
Rated Insulation Voltage	660 V
Contactor Type	MU-2P 16A / MU-2P 25A
Rating, AC3 (A)	16A/25A
Electrical Life	1 Million operations
Mechanical Life	5 Million operations
Coil Voltage (V)	220 V
Pick up Voltage (%)	55% to 110 % of Uc
Drop off Voltage (%)	35% to 50% of Uc
Relay Type	Thermal Overload
Relay range (A)	(1-1.6), (1.5 – 2.5), (2.5 – 4), (4 – 6.5), (6 – 10) (9 – 14), (11 – 18) and (13 – 22)
Ambient compensated	Yes
Terminal Capacity, with Lug	10 sq.mm
Relay mounting	Direct
Type of enclosure	Deep drawn CRCA sheet
Degree of protection	IP54
Standard compliance	IS/IEC 60947-4-1

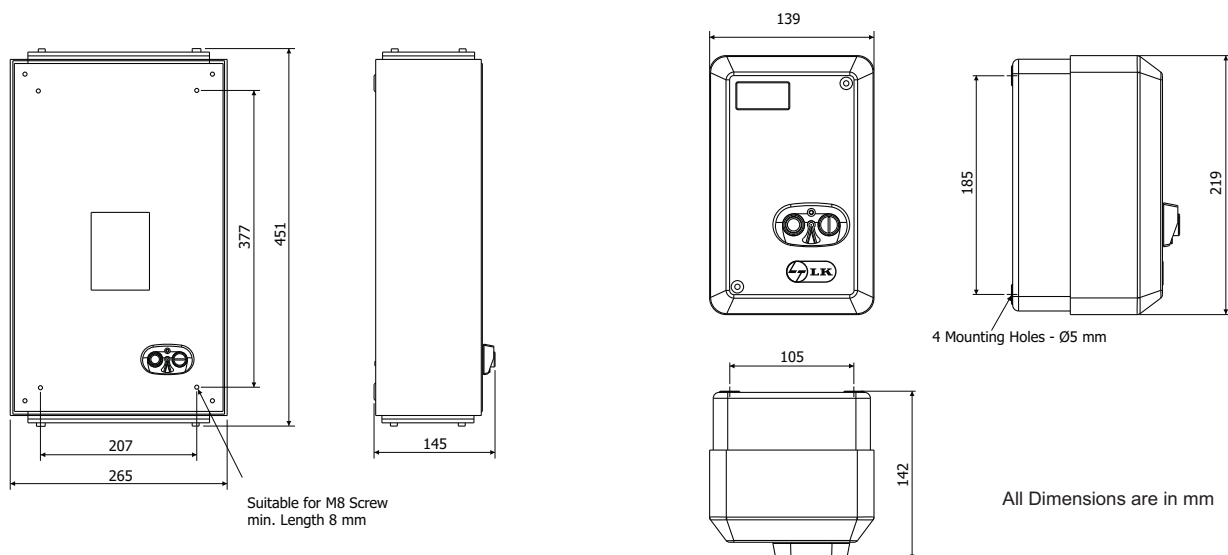


## MB Starters





## Overall Dimension



## Unique Features

- Specially designed bimetal gives complete protection against overload
- Silver tipped contacts for long electrical life
- Dust and vermin proof enclosure
- No need to switch ON the starter in case of power failure, starts the unit automatically when the power gets restored

	MB DOL	MB SASD/FASD
HP Rating	Up to 17.5 HP, 415 V, 3Ø	Up to 30 HP, 415 V, 3Ø
Rated Operational Voltage	690 V	690 V
Rated Insulation Voltage	415 V	415 V
Contactor Type	MU1/MU2	MU1/MU2
Rating, AC3	16/25A	16/25A
Electrical Life	1 Million operations	1 Million operations
Mechanical Life	10 Million operations	10 Million operations
Coil Voltage (V)	415 V, 360 V	415 V, 360 V
Pick up Voltage (%)	50% to 110% of Uc	50% to 110% of Uc
Drop off Voltage (%)	25% to 35% of Uc	25% to 35% of Uc
Relay Type	MN2	MN2
Relay range (A)	(9-15), (14 – 23) and (20 – 33)	(9-15), (14 – 23) and (20 – 33)
Ambient compensated	Yes	Yes
Terminal Capacity, with Lug	10 sq.mm	10 sq.mm
Relay mounting	Direct	Direct
Service Temperature(°C)	-5°C to 55°C	-5°C to 55°C
No. of full start	30 operations per hour	30 operations per hour
Type of enclosure	Deep drawn	Deep drawn
Degree of protection	IP54	IP54
Standard compliance	IS/IEC 60947-4-1	IS/IEC 60947-4-1
Back-up operation	Type 2 with HF fuses	Type 2 with HF fuses



## MF1 – Single Phase and Three Phase Starters



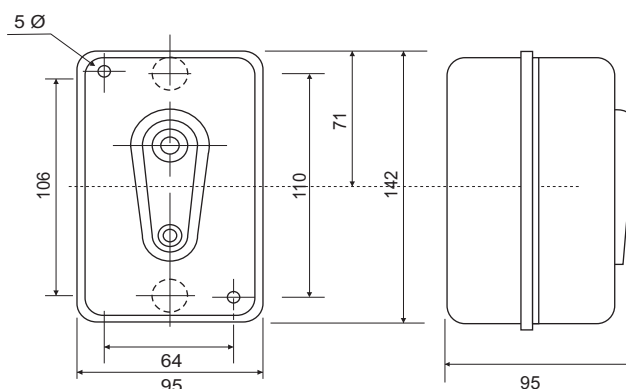
## MF1 – Single Phase and Three Phase Starters



### Unique Features

- Specially designed bimetal elements gives complete protection against overload
- No need to switch ON the starter in case of power failure, starts the unit automatically when the power gets restored
- Silver tipped contacts for long electrical life
- Dust and vermin proof enclosure

### Overall Dimensions



All Dimensions are in mm

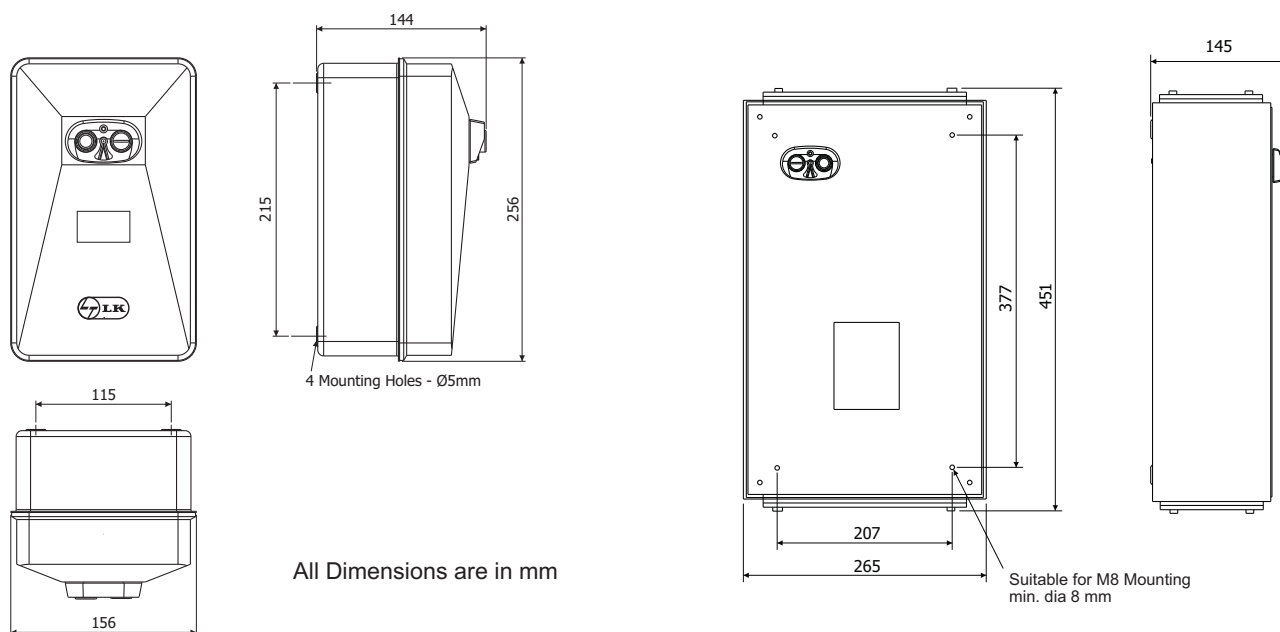
	MF1 – Single Phase	MF1 – Three Phase
HP Rating	Up to 3 HP	Up to 7.5 HP
Rated Operational Voltage	240 V	415 V
Rated Insulation Voltage	660 V	660 V
Rating, AC3	15A	15A
Mechanical Life	100,000 Operation	100,000 Operations
Contact Life	100,000 Operations	100,000 Operations
Relay Type	Thermal Overload	Thermal Overload
Relay range (A)	(4.5 – 7), (6.5 – 11), (10.5 – 17.5) and (12 – 20)	(0.4 – 0.65), (0.6 – 1), (1-1.6), (1.5 – 2.5), (2.5 – 4), (4 – 6.5), (6 – 10), (9 – 15) and (11 – 18)
Terminal Capacity, with Lug	6 sq.mm	6 sq.mm
Type of enclosure	Deep drawn	Deep drawn
Degree of protection	IP54	IP54
Standard compliance	IS/IEC 60947-4-1	IS/IEC 60947-4-1



## ML Starters



## Overall Dimension



## Unique Features

- Sensitive tripping mechanism provides accurate overload protection
- Dust, moisture and vermin proof enclosure
- Tried and tested ML Series Contactors and Thermal Overload Relays

	ML DOL	ML SASD/FASD
HP Rating	Up to 20 HP, 415 V, 3Ø	Up to 35 HP, 415 V, 3Ø
Rated Operational Voltage	415 V	415 V
Rated Insulation Voltage	690 V	690 V
Contactor Type	ML 1.5/2	ML1.5/2
Rating, AC3	25/25A	32/40A
Electrical Life	1 Million operations	1 Million operations
Mechanical Life	10 Million operations	10 Million operations
Coil Voltage (V)	360 V, 380 V and 440 V	360 V, 380 V and 440 V
Pick up Voltage (%)	75% to 110% of $U_c$	75% to 110% of $U_c$
Drop off Voltage (%)	15% to 65% of $U_c$	15% to 65% of $U_c$
Relay Type	ML	ML
Relay range (A)	(9-14), (13 – 21) and (20 – 32)	(9-14), (13 – 21) and (20 – 32)
Ambient compensated	Yes	Yes
Terminal Capacity, with Lug	10 sq.mm	10 sq.mm
Relay mounting	Direct	Direct
Service Temperature(°C)	-5°C to 55°C	-5°C to 55°C
No. of full start	30 operations per hour	30 operations per hour
Type of enclosure	Deep drawn	Deep drawn
Degree of protection	IP54	IP54
Standard compliance	IS/IEC 60947-4-1	IS/IEC 60947-4-1
Back-up operation	Type 2 with HF fuses	Type 2 with HF fuses

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