

Installation, Warranty, and
5-Star Service Activation Program



Efficiency Service

LEDL

CE IE2 IE3 IE4 IE5 



Delivering Energy Efficiency
with Service Excellence



Every service call
matters

That's why we respond
on time



LEDL



STAR
SERVICE

**1 HOUR
QUICK RESPONSE.**



Mail: customercare@ledl.in /  1800 570 1101



BECAUSE RELIABILITY
NEVER
SLEEPS

Field visit in 24 Hours

Mail: customercare@ledl.in /

☎ 1800 570 1101

LEDL





**48- HOUR RESOLUTION.
NO EXCEPTIONS.**

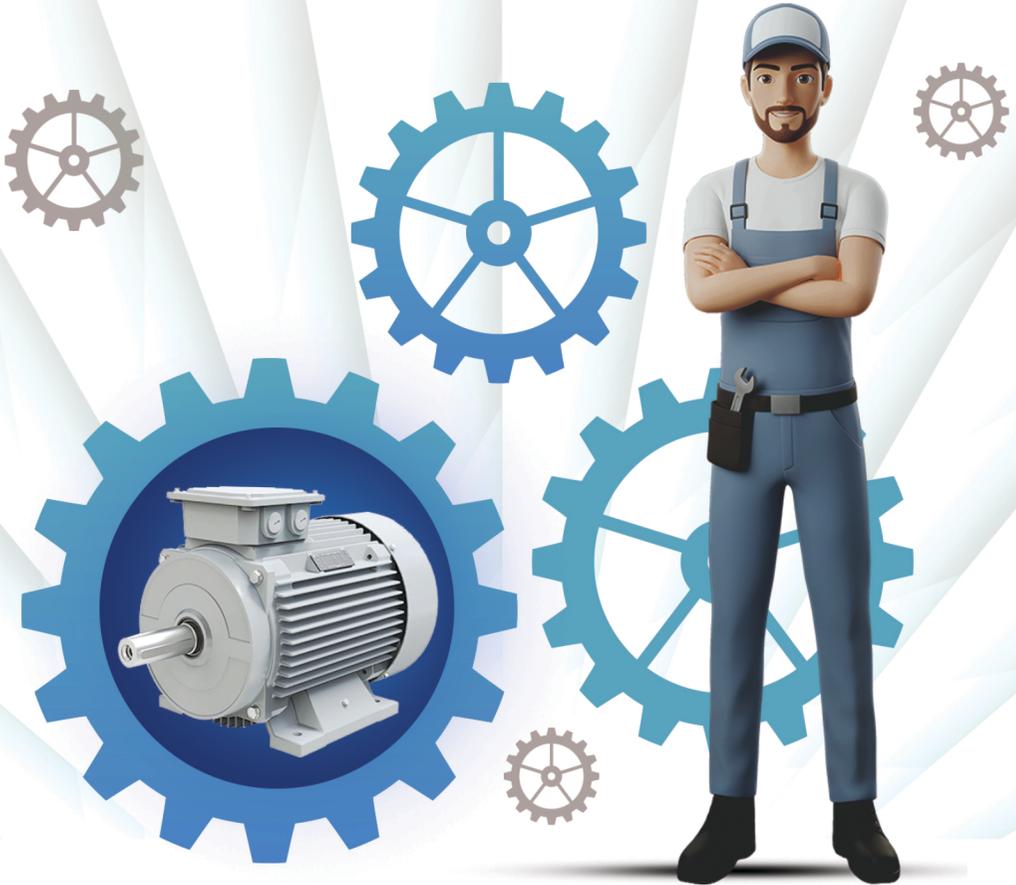
Our service teams are on call **24/7**

Mail: customercare@ledl.in /

 **1800 570 1101**

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PREVENTIVE CARE

GREAT PERFORMANCE STARTS WITH PROACTIVE CARE.
ANNUAL HEALTH CHECK-UP BY LEDL.

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Our service teams are on call **24/7**



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 **1800 570 1101**



For us,
SERVICE doesn't end
WITH A SOLUTION

It continues
with **care**
and **longevity**



LEDL



FOLLOW-UP
& RELATIONSHIP

Mail: customercare@ledl.in /

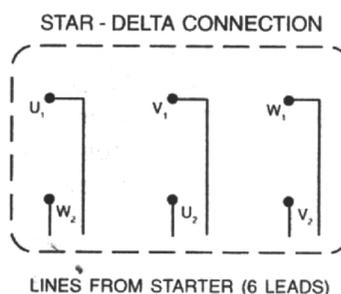
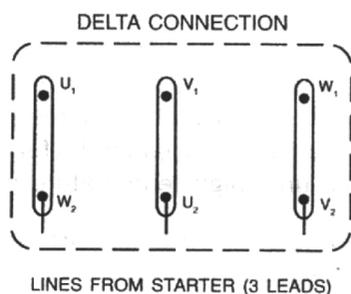
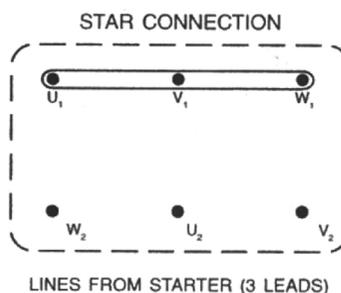
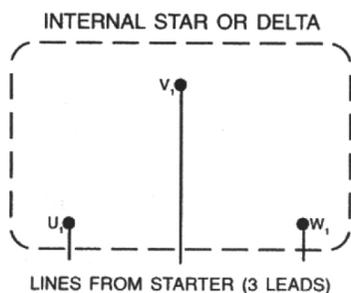
 1800 570 1101

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TERMINAL CONNECTION DIAGRAM

Direct - on-line or Auto Transformer Starting with 3 or 6 leads



Dear Customer,

Thank you for having selected LEDL for your requirements of motors. Please follow the instructions carefully to get maximum trouble free service from the motor.

1. RECEIVING AND STORING

1.1 UNPACKING & INSPECTION

Please unpack the motor carefully without causing any damage to the motor. Compare the nameplate details with Purchase Order to ensure that the motor you have received is in conformity with your requirement.

Every machine should be inspected to see that all parts are intact. While reporting on the damages or missing parts, always quote Motor Name Plate details including its serial number.

A packing case with external signs of damage should be opened only in the presence of an Insurance Surveyor. Similarly, if damage to the contents is observed on opening the case, the matter should be reported immediately to the Insurance Surveyor and then the goods are to be unpacked in his presence.

1.2 STORAGE

Prior to installation, the Motor should be stored in a clean, dry place. The machined parts have a protective coat of anti-rust preservative which should not be taken off during normal storage period. In case of long storage, periodic examination should be carried out and fresh preservative may be applied if removed. During the storage period (and during installation as well as their working life) Motor should be protected from moisture, acid, alkali, oil, gas, dust, dirt and other injurious substances, except of course, in case of Motors specially designed to withstand such conditions.

Special precautions should be taken when Motors are stored for considerable period, to avoid corrosion of bearings and the clog of grease. It is advisable to rotate the shaft periodically as the grease tends to settle at the bottom of the housings and also to avoid static indentation due to self weight of the rotor. However, this is not applicable for sealed bearings or for bearings provided with life time high temperature greases.

Damage to rollers and races may be caused by fretting corrosion if a Motor fitted with roller bearings are subjected to continued vibration for long periods during storage. While stationery, such damage is commonly

called “Stationery Vibration” or “False Brinelling”. A roller bearing Motor should not be stored on a vibrating floor, but, if it is unavoidable, the Motor should be placed on thick blocks of rubber, cork or felt, and the Rotor turned approximately a quarter of revolution every week. Standby sets subjected to vibration should also be turned once in a week.

1.3 HANDLING

Always use lifting hook to life the Motor wherever provided. Do not roll or drag the Motor on floor.

Do not keep totally enclosed fan cooled Motor in vertical position with external cover as base.

Avoid jerks and jolts to Motors to increase the life of bearings.

2. COMMISSIONING

2.1 PRE - INSTALLATION CHECKS

Insulation Resistance between the winding and the body should be checked. If it is below one Mega ohm, the Motor windings should be heated to drive away the entrapped moisture. If the Motor is kept for a long period in idle condition, re-greasing is a must. However, this is not applicable for sealed bearings or for bearings provided with life time high temperature grease.

2.2 HEATING

If the Motor is cold and its insulation resistance is below One Mega ohm, the Motor winding is to be heated by means of one of the following methods:-

- 2.2.1.** Applying a low voltage A.C. supply of 40 V-50 V to the stator terminals without allowing the rotor to rotate.
- 2.2.2.** Placing the motor in an oven maintaining the temperature in the range of 50°C to 60°C maximum.
- 2.2.3.** High wattage lamps.

Care should be taken not to damage the Insulation by over heating. After heating, check the insulation resistance and it should be more than Two Mega ohm.

After de-moisturing, air drying Varnish of recommended class should be applied to improve the insulation resistance.

2.3 MOUNTING

The area where Motor is mounted should be clean and freely accessible for repair and Maintenance. The Motor should be installed on a solid, vibration free base and to be properly bolted. The Motor should be aligned carefully when it is directly coupled to the drive. Care should be taken while fitting the pulleys and fixing keys so that the key has clearance on top. If belt drive is used allow a little slackness and do not overtighten the belt.

2.5 WIRINGS

1. Use aptly sized cable to care of full load current & starting current which is approximately 6-7 times of the full load current. Earthing of the motor body should be done properly.
2. If the rotation direction must be changed. Interchange two of the three power wires Connected.

2.6. Initial Starting

When using a DOL starter or star Delta starter. Confirm that the handle is at the start position.

2.7. Qualified Person

Have Knowledgeable and qualified people perform all wiring, installation & maintenance. Modification or improper work can lead to electric shock or injury.

3. MECHANICAL MAINTENANCE

3.1 NEATNESS

Motor should be kept free from dust, dirt and other aggressive pollutants. Accumulation of pollutants on the motor body will affect the life & performance of the motor. Hence, the motor surface should be periodically cleaned.

3.2 PREVENTIVE MAINTENANCE

Three critical areas are to be checked frequently for assuring the health and satisfactory performance.

3.2.1 Terminal box:

Check for over heating of terminal studs.

Observation of carbon deposit due to any flash over.

Check for loose connections. Check for the total dryness of the terminal box interior.

3.2.2 Stator and Rotor:

Check the insulation resistance and ensure that the insulation resistance value is more than 2 Meg. Ohms. (Normal value lies between 40 - 60 Meg. Ohms).

Check for the free rotation of rotor by hand without energizing.

Check for the vibration while energizing the motor.

3.2.3. Maintenance of Ball Bearings

Before Commissioning:

If stored for more than 3 months, check for free rotation of shaft. Also, study the condition of grease by opening the bearing caps. If the color or quality is deteriorated or cracked, then clean and re-fill with fresh grease.

Ensure that, the filling of grease should occupy only 50% of available volume inside the bearing caps. Over filling may result in over heating & can reduce the bearing life.

Do not mix different types of greases. Use the recommended brands as given below:

GREASE TYPE	SUPPLIER	
1. AKRONEX EP - 2	CONDAT LUBRIFIANTS FRANCE USHA LUBES PRIVATE LIMITED CALCUTTA 700 071	Note: These are not applicable for sealed bearings
2. ALBIDA EP2	SHELL	
3. EXXON MOBIL	ESSO / MOBIL	

3.3. ROUTINE MAINTENANCE:

Check for bearing noise and vibration. Observe the temperature rise of bearings. Normally the bearing temperature rise during working shall be around 20 to 35 deg C above the ambient temperature.

Remove bottom drain screw and pump grease through nipple. If nipple and drain screw are not provided, remove outer bearing cover and apply clean grease directly on to bearings.

Repeat this procedure periodically as indicated below:

Motor rating in kW	Re-Lubrication interval	Quantity of Grease		
		DE	NDE	
Upto 1.5	2500 hrs	15 gms	15 gms	Note : Sealed bearings need not be attended.
Above 1.5 and upto 15	2500 hrs	25 gms	25 gms	
Above 18.5 and upto 60	2500 hrs	40 gms	25 gms	

3.3.1 Maintenance After 25000 hrs / 3 years:

Dismantle motor for visual inspection of bearings, rotor & stator. Check bearings at DE & NDE. Wash the bearings with petrol/diesel and dry. Apply a few drops of low viscous oil and spread it by rotating the outer ring before applying clean grease.

Before re-assembly of motor check and clean the areas if split and dry old grease are found in stator winding, motor frame & inner zone of end covers.

3.4 BEARING REPLACEMENT

When bearings are found noisy and vibrant, check for the shaft play by hand while motor at stand still. The worn - out bearing may indicate either more upward / downward lateral play or more axial inward/outward movement. While replacing, select the bearings with the same category of radial clearance.

Since press fit is followed over the shaft, it is better to heat the bearing in medium oil (for eg. Shell Tellus - 33) at a temperature 80-90°C for an hour which will enable easy dismantling & mounting. After dismantling, bearing should be covered by plastic sheets to keep them free from dust and dirt.

4. RECOMMENDED MAINTENANCE SCHEDULE

4.1 WEEKLY MAINTENANCE:

Check belt tension. Clean the body by forced air. Examine the control gear for any burnt contacts

4.2 MONTHLY MAINTENANCE:

Check the bearing temperature and vibration at DE & NDE.
Check the stator insulation.
Check the motor temperature under normal conditions.

4.3 QUARTERLY MAINTENANCE:

Check motor vibration at DE & NDE.
Check the stator insulation.
Check earthing connection of motor.

4.4 MAINTENANCE AFTER 25000 HRS (36 MONTHS):

Dismantle motor for visual inspection of stator, rotor and bearings.

Stator & Rotor to be cleaned with forced air. If the insulation resistance is found to be low, heat the stator upto 120 deg C and apply class 'F' varnish on winding over hangs and cure at appropriate temperature, if required.

Check the rotor for rusting and colour change. Clean the rotor surface and apply varnish or rust preventive coating.

5. ELECTRICAL MAINTENANCE

5.1. TEMPERATURE

The maximum temperature rise allowed for each class of insulation is tabulated below. Care to be taken to see that the temperature rise will not exceed the limits specified.

INSULATION CLASS	THERMOMETER METHOD	RESISTANCE METHOD
'B'	70°C	80°C
'F'	90°C	105°C

(The above values are based on ambient temperature of 40°C)

Motors tend to get overheated due to over loading of Motors, fluctuations of voltage and frequency, over greasing of bearings, presence of any foreign material in the air gap, etc. As far as possible, maintain a constant voltage & frequency.

By using thermometers, the temperature rise can be measured. By deducting room temperature from Motor temperature, the rise in temperature can be ascertained.

By providing embedded thermistors, in windings, any abnormal rise in temperature is avoided by breaking off the supply line. Always keep the Motor clean and well ventilated.

Varnishing of winding shall be done whenever lower insulation resistance is observed. Use starters with single phase preventor and also with over load and no volt relays. Avoid overloading of the Motor.

When dismantling the Motors for Maintenance or repairs, care should be taken not to damage the windings.

6. AFTER SALES SERVICE

6.1 GENERAL

Before calling our service engineers please ascertain whether the defect noticed is due to manufacturing or due to operation.

When the motor is in operation please check the following.

- a. No breaks in the incoming cables and all terminals are clean and tight.
- b. See that the voltage supplied confirms to rated voltage in three terminals.
- c. Motors are not overloaded.

For any clarification or assistance please contact us. Please always quote the name plate details and motor serial no. while reporting any fault or defect.

6.2 SPARE PARTS

When ordering for spare parts, please give full description of the required part.

6.3 WARRANTY CLAIMS

15 months from the date of despatch from our works or 12 months from the date of commissioning whichever is earlier against inherent manufacturing defects. The warranty is subjected to the conditions that no alterations, addition or repair is made or attempted on the motor.

FUSE RATING FOR INDUCTION MOTORS									
OUTPUT		3000 RPM		1500 RPM		1000 RPM		750 RPM	
kW	HP	RATED CURRENT	FUSE RATING IN AMPS						
0.09	0.12	-	-	-	-	1.2	4	-	-
0.12	0.16	0.65	2	0.62	2	0.73	4	0.8	4
0.18	0.24	0.84	4	0.82	4	0.92	4	1	4
0.2	0.27	0.89	4	0.89	4	0.97	4	1.06	4
0.25	0.33	1	4	1.05	4	1.1	4	1.2	4
0.37	0.5	1.2	4	1.4	6	1.4	6	1.5	6
0.55	0.75	1.6	6	1.7	6	1.9	6	2.1	8
0.75	1	2	8	2.2	8	2.3	8	2.7	10
1.1	1.5	2.8	10	2.9	10	3.4	12	3.5	12
1.5	2	3.7	12	3.8	12	4	12	4.5	16
1.87	2.5	4.39	16	4.49	16	4.79	16	5.35	20
2.2	3	5	16	5.1	16	5.7	20	6.1	20
3	4	6.6	20	6.7	25	7.26	25	8.07	25
3.7	8	8	25	8.1	25	8.8	32	9.8	32
4	5.33	8.5	32	8.65	32	9.45	32	10.53	32
4.5	6	9.3	32	9.6	32	10.5	32	11.8	40
5	6.7	10.17	32	10.48	32	11.62	40	12.98	40
5.5	11	10.5	32	12	40	12.9	40	14.2	50
7.5	15	13	40	15.4	50	16.7	63	19	63
9.3	12.5	18.34	63	18.79	63	19.94	63	22.6	80
11	15	21.5	80	22	80	23.3	80	26	80
11.5	15.3	22.4	80	23	80	23.94	80	27.1	100
15	29	26	80	30	100	32	100	35	125
18.5	35	32	100	36	125	37.5	125	45	160
22	41.5	38	125	43	160	44	160	52	160
30	55	51	160	57	200	59.5	200	70	250
34	45	61.4	200	63.4	200	66.4	200	79.1	250
37	50	67	250	69	250	72	250	86	315
40	53.3	71.88	250	74.6	250	77.6	250	90.9	315
45	60	80	250	84	315	87	315	99	315
55	75	95	315	101	315	107	400	118	400
75	100	130	400	134	500	145	500	153	500
90	120	150	500	164	500	175	630	182	630
110	150	185	630	204	630	214	800	218	800

8. TROUBLE SHOOTING

Sl. No.	Trouble	Cause	Action
1.	Hot bearings	Excessive belt pull Misalignment Bent shaft Overloaded bearings	Decrease belt tension Re-align & correct the drive Straighten or replace shaft Check alignment, side & end trust.
		Insufficient grease	Maintain Proper quantity of grease.
		Excess grease	Reduce quantity of grease
		Broken ball or rough bearing races	Clean the housing and replace with new bearings.
2.	Motor wet	Submerged in flood water	Dismantle and clean the parts.Heat the windings at 90 deg C. Check for the improvement in insulation resistance.
3.	Motor Stalls	Overload Low voltage	Reduce load See that name plate voltage is maintained.
		Open circuit	Check fuses, overload relays starter & Push button.
		Mechanical locking in bearings or at air gap.	Dismantle, clean & repair bearings / air gap.
4.	Motor connected but does not start	No supply voltage, one phase open, voltage too low.	Check voltage on each phase
		Motor may be over loaded	Reduce load or try to start uncoupled from load.
		Control gear defective	Examine each setp of the control gear for bad contacts or open circuit.
		Rotor defective	Look for broken end rings.
5.	Motor runs and dies down	Power failure	Check for loose connection to line, to fuse and to control gear.
		Overload	Examine overload trips and see that they are set correctly to approximately 150 percent of full load current
6.	Motor does not come up to speed	Voltage too low at motor terminals because of line drop	Use higher voltage tap on transformer terminals or reduce load.
		Starting load too high	Check the starting load on the motor.
		Broken rotor bars	Look for cracks near the end rings. Replace with new rotor.

Sl. No.	Trouble	Cause	Action
7.	Motor takes too long to accelerate	Excess loading Defective sq. cage rotor Applied voltage too low	Reduce load, If motor is driving & heavy load or is starting up a long line of shafting, start more slowly. Replace with new rotor. Maintain proper voltage
8.	Wrong rotation	Wrong phase sequence	Reverse connections of motor or at switch board.
9.	Motor overheats While running with load	Overload Ventilating paths may be clogged with dirt to prevent proper ventilation of motor.	Reduce load. Proper ventilation to be ensured
10.	Motor vibrates after connections are made.	Motor misaligned. Coupling out of balance. Driven equipment unbalanced. Defective ball bearings. Bearings not in line. Balancing weights shifted. Motor running in one phase. Excessive end play.	Re-align. Balance coupling. Rebalance driven equipment. Replace bearings. Line up properly. Rebalance the rotor. Check for open circuit. Adjust bearings or add washers.
11.	Unbalanced line current on polyphase motors during normal operations.	Unequal terminal voltage. Single phase operation.	Check leads and conditions. Check for open contacts.
12.	Scraping noise	Fan rubbing air / end shield. Fan striking insulation. Loose on bed plate.	Remove interference. Clean fan. Tighten holding bolts.
13.	Magnetic noise	Air gap not uniform Rotor unbalance	Check and correct endcover fits or bearings. Re-balance.
14.	Oil Seal Noise	Friction between Oil seal and shaft	Provide lubrication oil between shaft and Oil seal.

SPECIAL NOTE :

*As and when Motor complaints are referred to LEDL, complete name plate details of Motor including serial number should be furnished along with nature of complaints.

* Ring frame Opti-Power series motors

LEDL – 5-Star Service Assurance Complete Installation Manual Insert

LEDL 5-Star Service Assurance – End Customer Instructions

To activate the LEDL 5-Star Service Assurance, the end buyer MUST register the installation details of the motor for availing the warranty. The registration has to be done on the LEDL website immediately after installation with images.

The channel through which the Motor is sold has to ensure this. The channel is Dealer, OEM, or ASC.

LEDL's warranty policy is void if the channel abstains from activating LEDL 5-Star Service Assurance.

LEDL 5-STAR SERVICE EXPLANATION

STAR 1 : QUICK RESPONSE

LEDL acknowledges every service request within 1 hour with a human technical response.

STAR 2 : 24×7 ON-SITE SUPPORT

LEDL's ASC technician will reach the customer's site within 24 hours

STAR 3 : FAST RESOLUTION

LEDL resolves by decisions on customer complaints within 48 hours.

STAR 4 : PREVENTIVE CARE

LEDL provides preventive maintenance and motor health checks to avoid failures, only if Annual Service contract / Annual maintenance contract is signed with LEDL ASCs. Terms of the contract will be set by LEDL CSD.

STAR 5 : FOLLOW-UP & RELATIONSHIP

LEDL ensures customer satisfaction by taking feedback with a CSR annually from the date of installation.

For details contact:

customercare@ledl.in

Toll free number: 1800 570 1101

Installation details filled by End User to avail 5 Star service Promise.

END BUYER COPY

A. MOTOR & APPLICATION DETAILS

Motor Rating (kW / HP): _____
 Efficiency Class (IE2 / IE3 / IE4 / IE5): _____
 Motor Serial Number: _____
 Application / Equipment : _____
 Installation Location / Plant: _____

B. PRE-INSTALLATION VERIFICATION

- Voltage, phase, frequency match site power supply
- Rated RPM matches application requirement
- Duty type suitable (S1 / S3 / S4 etc.)
- IP protection adequate for environment

C. MECHANICAL MOUNTING & ALIGNMENT

- Correct mounting type used
- Foundation level and rigid
- Soft foot eliminated
- Shaft alignment within tolerance
- Coupling guard installed

D. ELECTRICAL INSTALLATION

- Correct cable size selected
- Proper termination and gland fixing
- Phase sequence verified
- Double earthing provided
- CB / MCCB & overload relay set correctly

E. COMMISSIONING CHECKS

- Insulation resistance tested
- No-load run completed
- Direction of rotation verified
- Load current within nameplate limits
- No abnormal noise or vibration

F. WARRANTY ACTIVATION CONFIRMATION

- Installation photographs attached
- Commissioning readings recorded
- Warranty registration submitted on LEDL portal

DECLARATION

We confirm that the motor has been installed, aligned, wired, and commissioned as per LEDL's recommended practices. This document supports activation of the LEDL 5-Star Service Program.

Installed by (Dealer / ASC/ OEM / End user Technician): _____

Name & Signature: _____ Date: _____

Customer / End User Signature: _____ Date: _____

.....perforation.....

LEDL CSD COPY

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 Name & Signature: _____ Date: _____
 Customer / End User Signature: _____ Date: _____

LEDL

CE IE2 IE3 IE4 IE5 

®



Efficiency Service

1-hour
Response

Follow-up &
Relationship

24x7
On-Site
Support

Preventive
Care

48-Hour
Resolution

www.ledl.in



Delivering



Energy
Efficiency



The scope of LEDL
is not limited to products and solutions
presented in the catalogue

To see our portfolio, contact us



**For LEDL Worldwide
operations visit our website**

www.ledl.in



1800 570 1101



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Distributor



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The information contained is reference values.