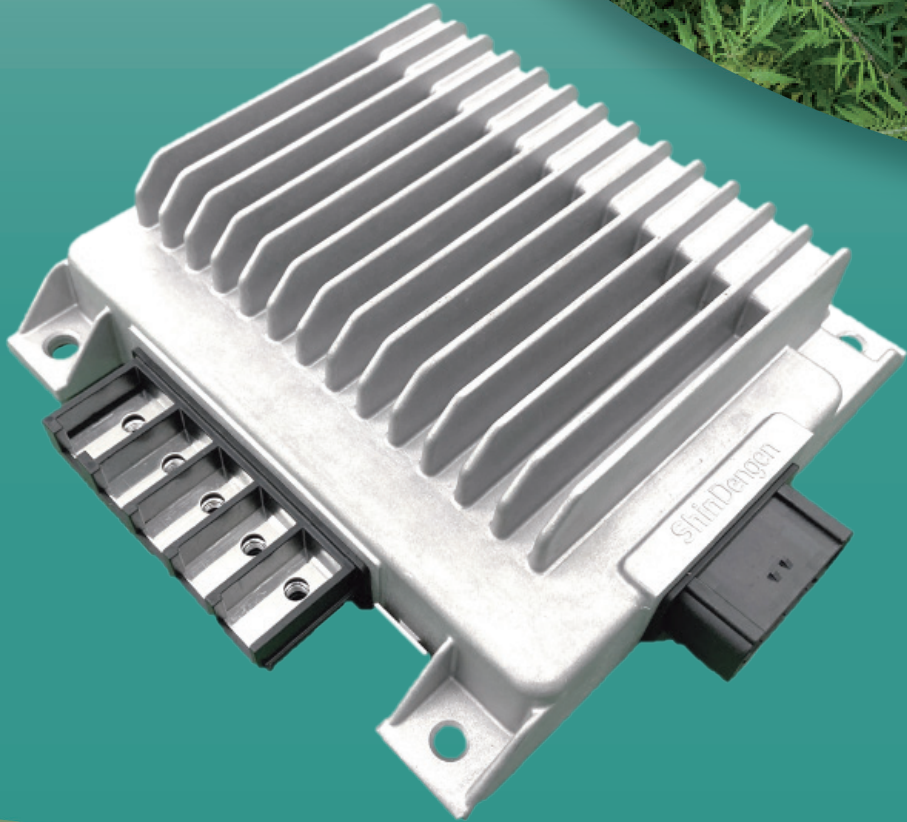


Innovative Solutions Catalog

Shindengen Electric
Manufacturing Co., Ltd.
<https://www.shindengen.com/company/>



**Bharat
Mobility**
GLOBAL EXPO 2024

For a Bright Tomorrow: President Nobuyoshi Tanaka Welcomes You to Our Visionary Showcase!

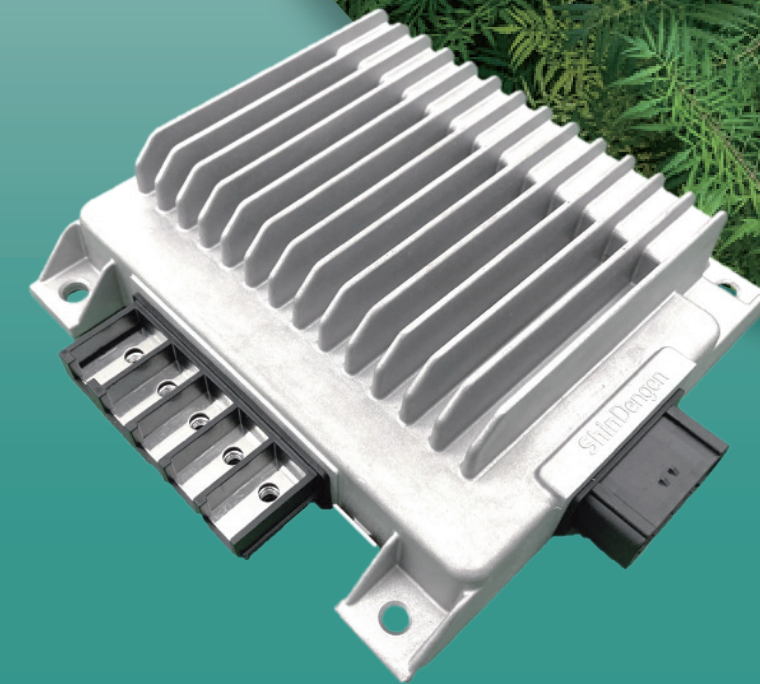


We are pleased that Bharat Mobility GLOBAL EXPO 2024 is being held on a grand scale and that Shindengen is able to exhibit at the show. There has been remarkable growth in India's mobility market and while India's domestic automobile production is current 4th in the world, it is expected to overtake Japan and become the 3rd largest automobile producer within several years. In response to serious discussions for achieving carbon neutrality around the world, the Indian government is aiming for 30% of new cars sold to be EV by the year 2030, which is driving increased demand for EV parts. Under our corporate mission of

"Maximizing energy conversion efficiency for the benefit of humanity and society", we work to develop products which utilize technologies that contribute to reduction of power loss and more efficient power usage. We established Shindengen India in August 2012, and as BS6 was applied in 2020 to enact stricter emissions regulations, we expanded our plant to 2.5 times its original scale. Product of DU012 PCU (Power Control Units) for electric motorcycles began in 2023, and we are very proud to be able to contribute to India's environmental initiatives. In addition to these PCU, at Bharat Mobility GLOBAL EXPO 2024 we are also exhibiting MOSFETs, DC/DC converters, BCU (Battery Control Units), motorcycle EV chargers, and modules. The PCU feature a collection of Shindengen technologies, including having MOSFET developed by Shindengen built-in to their inverters, and being equipped with software developed by Shindengen. We believe that we can be of service in helping India establish a sustainable mobility society going forward. We hope you will have the opportunity to visit the Shindengen booth and speak with us.

**Bharat
Mobility**
GLOBAL EXPO 2024

1 – 3 FEBRUARY 2024 BHARAT MANDAPAM, PRAGATI MAIDAN, NEW DELHI



Power control unit
for 48V 6kWpk Electric 2-wheeler

**High
Reliability**

**High
Output
power**

**High
Efficiency
Excellent
Drivability**

Shindengen has developed a new motor controller for 48V high-power vehicles, where demand is expanding in India

POWER CONTROL UNIT FOR EV 2 WHEELER

Our advanced Indian motor controller Made in India

It provides a smoother ride and longer range, reflecting the quality and innovation of Japanese engineering, making your exploration towards EV more comfortable and confident.

Features

✓ Make in India

We have our factory in Bangalore and the mass production of 2kw motor controller has already started.

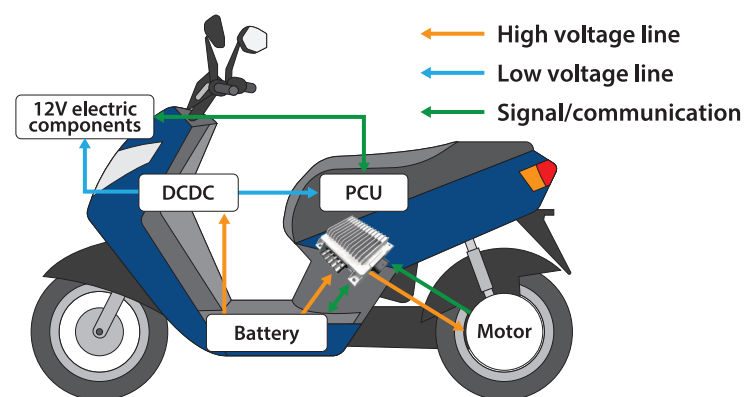
✓ High Efficiency

Power supply technology cultivated for more than half a century extends the range of your vehicles.

✓ Drivability

Real-time detection of vehicle condition helps in smooth vehicle operation.

System overview

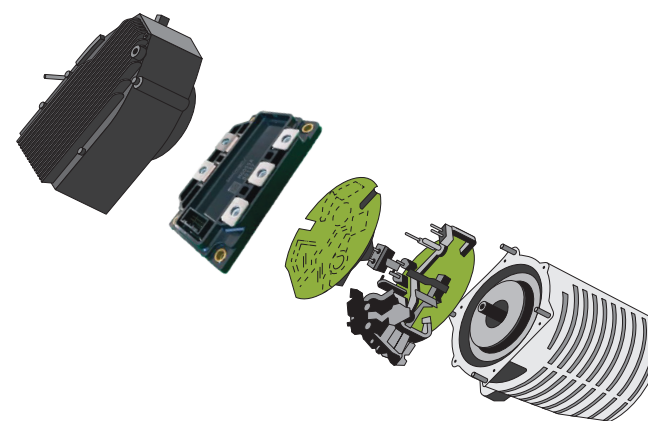


Specification

PCU Line up	Target EV capacity & House name	2kWpk (Typ1.2kW) DU012	6kWpk (Typ2.0 – 3.6kW) DU015	8kWpk (Typ3.6 – 4.8kW) In development
Ratings	Input operation voltage	High 30V-60V / Low 8V-16V	High 30V-60V / Low 8V-16V	High 30V-60V / Low 8V-16V
	Output max phase current	Start : 100Arms (140Apk) -2sec Operation : 30Arms ※Air cooling	Start : 160Arms (230Apk) -3sec Operation : 60Arms ※Air cooling	Start : 220Arms (320Apk) -3sec Operation : 80Arms ※Air cooling
Size	Size (W*L*H mm) ※Excluding mounting part and connector	115 * 108 * 40	133 * 168 * 47	164 * 210 * 45
	Weight (kg)	0.84	1.6	2.7
Motor	Motor type	3 phase synchronous motor		

Inverter Integrated Motor powered by MODULE

Progressed inverter Integrated Motor with our Power modules. Our Power module make inverter smaller



✓ Merit of Inverter Integrated Motor

- high efficiency
- enhanced drivability
- simplified maintenance

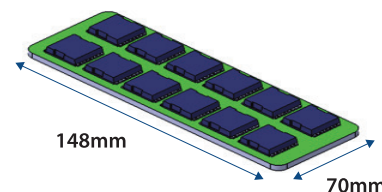
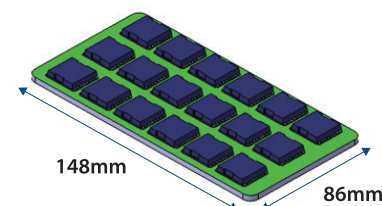
✓ What is Power module?

Our Power module can integrate FETs more efficiently than discrete implementation and it contributes to miniaturization of inverter.

Advantage of Power Module

- The main advantage of the POWER MODULE is that FETs can be integrated
- Since it is box connector, It can be connected one touch
- Large current is achieved because heat is dissipated not only directly under the chip but also from the clip terminal

Discrete implementation



Inverter Specification

Number of MOSFETs	VDSS	ID
18 =3parallel	100V	420A

It is possible to achieve these inverter performances while downsizing.

Number of MOSFETs	VDSS	ID
12 =2parallel	200V	220A

Module



Product	VDSS	ID	Thermal Resistance (j-c)	RDS (ON Typ)	Weight
MG055F	100V	420A	0.25°C/W	0.64mΩ	180g
MG055N	200V	220A	0.31°C/W	3.15mΩ	180g

POWER MOSFET FOR EV 2 WHEELERS

TOLL PACKAGE PRODUCT

Large current power MOSFET LG (TOLL) package

Features and strengths

- T_{ch} 175degC, Small & Thin PKG for Automotive
- High Current capability and low on resistance
- Board mounting space reduced by 25% as below compared to previous version



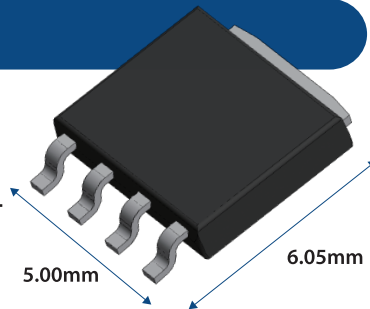
Part Name	VDS (min) [V]	ID (max) [A]	VTH (typ) [V]	Ron[mΩ] VGS=10V		Ciss VDS=25V (typ) [pF]	Coss VDS=25V (typ) [pF]	Crss VDS=25V (typ) [pF]	Status
				(typ)	(max)				
P232LG10GNK	100	232	3.0	1.83	2.20	8140	1425	27	RS
P166LG15GNK	150	166	3.0	3.56	4.45	TBD	TBD	TBD	In development
P120LG20GNK	200	120	3.0	7.8	9.8	5822	447	27	RS

LF PACKAGE PRODUCT

EETMOS 5 series LF package

Features and strengths

- T_{ch}=175°C PKG for Automotive Application
- 5x6mm dimension (equivalent footprint to SOP8, HSON)
- By adopting Cu-Clip, Lower Rdson, High Current (~180A)
- By having Gull-Wings lead in one side, mechanical stress onto PCB is relieved
- Low noise



Part Name	VDS (min) [V]	ID (max) [A]	VTH (typ) [V]	Ron[mΩ] VGS=10V		Ciss VDS=25V (typ) [pF]	Coss VDS=25V (typ) [pF]	Crss VDS=25V (typ) [pF]	Status
				(typ)	(max)				
P180LF4RNK	40	180	3.0	0.72	0.90	6064	1847	158	In development
P120LF6RNK	60	120	3.0	1.14	1.43	5258	2193	100	In development
P96LF4PQLK	-40	-96	-2.0	3.1	3.9	5413	802	459	RS
P63LF6PQLK	-60	-63	-2.0	6.8	8.5	5515	561	321	RS

DC-DC CONVERTER

Optimized Power Conversion with GaN Devices

We provide highly efficient and highly reliable Non-isolation DC-DC converters by leveraging the technology we have cultivated over many years with products for motorcycles and automobiles.

250W DC-DC Converter

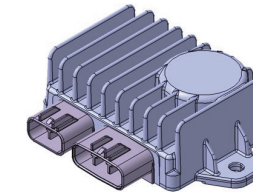
Features

- Small size with GaN device
- High Vibration resistance (20G)
- IP67

Specification

Input Voltage	48V
Output Voltage	14.4V
Output Current	17A
Efficiency (max)	92%
Operating temp	-20 to 60°C
Size (W* L* H mm)	135 x 70 x 40

Planning



500W DC-DC Converter

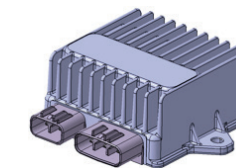
Features

- Small size with GaN device
- EMC: CISPR25 Class4
- High Vibration resistance (20G)
- IP67

Specification

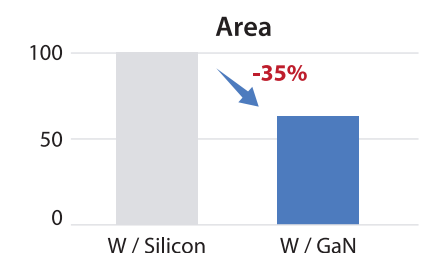
Input Voltage	48V
Output Voltage	14.4V
Output Current	35A
Efficiency (max)	92%
Operating temp.	-20 to 60°C
Size (W* L* H mm)	135 x 95 x 47

In Development



Improve efficiency in the small case

With electrification, power efficiency have become extremely important for the environment and product competitiveness. The GaN device achieves higher efficiency than conventional products and is 35% smaller with the same output.



BODY CONTROL UNIT FOR 2 WHEELERS

All in One Unit for Modern 2 Wheelers

It is the theme of our BCU. Riders want many kinds of function to help their riding easier, more comfortable, and safer. This unit will help to create those "Modern 2 Wheelers".

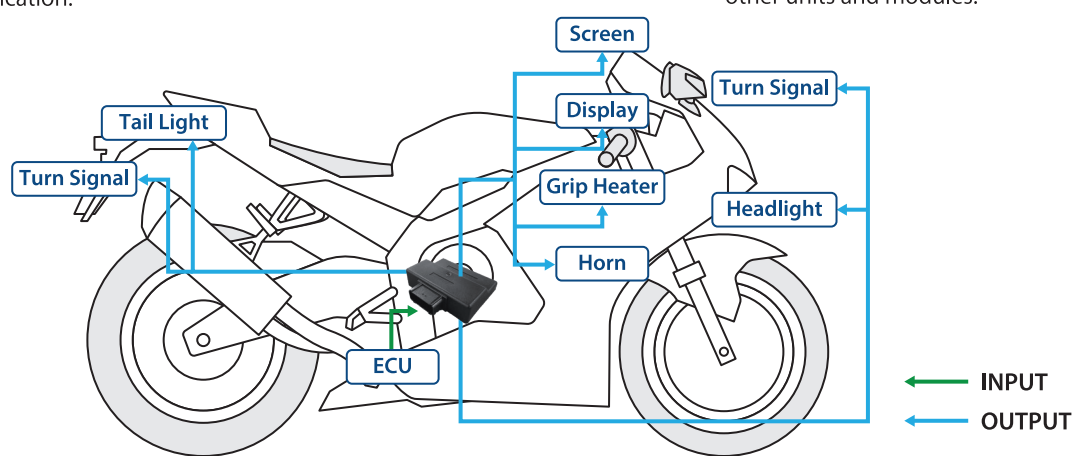
System overview & Features

What is BCU doing?

BCU mainly controls light equipment and some accessories, and we can build the system ordered by customers with deep communication.

Smarter than ever

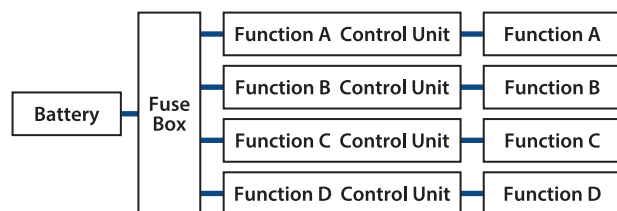
BCU works very smartly and accurate with our software, and information sent from ECU, ABS, other units and modules.



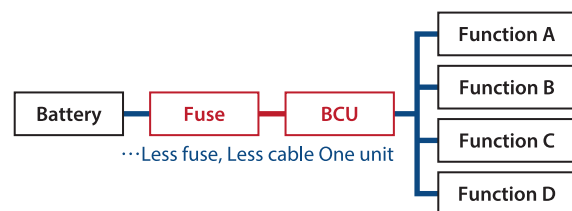
Reducing Connected Items

Using BCU means that connecting cables to the functions are combined into one harness, because it is just one unit. No more units, no more fuses for each. Finally, those changes make 2 wheelers-weight lighter, and the cost lower.

Conventional system



BCU overview



Specification

BCU	BCU type	Few Functions	Multi Functions
Size	Size (W*L*H mm)	64 * 61 * 28	84 * 108 * 28
	Weight (kg)	0.11	0.26

CHARGER FOR EV 2 WHEELERS

Smart charging for smart future

From engines to motor. We provide infrastructure support for EV to help society to work towards a post-carbon society.

Designed by Japanese engineering, you can customize your product specification to meet the customer's needs.

Features

Total Charging Support

Compatible with various charging applications, from automotive to Motorcycle use.

High Performance

Save your time with our high efficiency and high-capacity charger. It helps you to reduce your charging time.

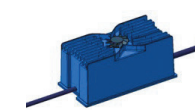
EV chargers



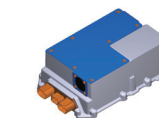
DC quick charger for EV



AC Charger for EVs/PHEVs



Off board charger for 2 wheelers

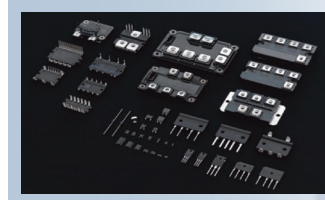


On board charger for 2 wheelers

Specification

	Off board charger	On board charger
Cooling	Coercion Air Cooling (Built-in Fan)	Coercion Air Cooling (Built-in Fan)
Output Power (Peak)	1.2 kW	2.0 kW
Conversion Efficiency	90% or more Vin=AC200V, Vo=48V, Wo=1200W	90% or more Vin=AC240V, Vo=200V, Wo=2000W
Input Voltage	AC85~264V	AC85~264V
Output Voltage	30~60V, 20Amax	72~200V 14Amax
Charging Method	CC-CV	CC-CV
Communication Method	CAN	CAN+EVSE

Our Synergy and Global network



Electronic Device

- Bridge Diodes
- High Speed Rectifier Diodes
- Thyristors
- SIDACs
- Power MOSFETs
- Power IC
- Power Modules



Car Electronics

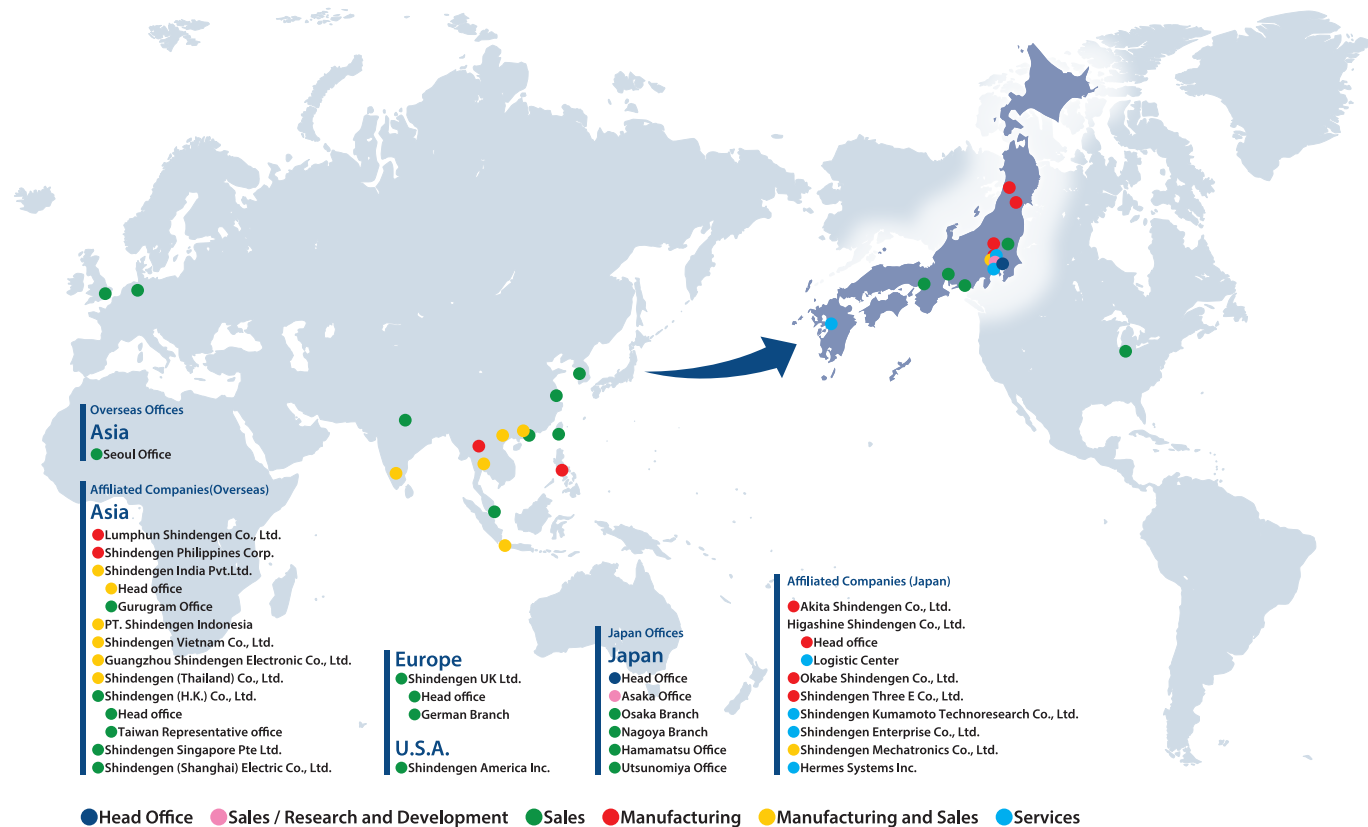
- Products for Motorcycles
- Products for Automobiles
- Products for Power Equipment



Energy Systems & Solutions

- Rectifiers for Communication Stations
- Rectifiers for Mobile-Phone Base Stations
- Inverters for Communication Stations
- Monitoring Units
- AC Charger/DC Charger for Evs/PHEVs
- Energy Management Systems

Be with our Customers by using our Global Outlook



Shindengen India Pvt. Ltd.



Gurgaon Office

Office Unit No.103C, First Floor, Time Tower, MG Road, Gurugram, Haryana-122002, India

Bangalore Plant

Plot No.283/2, Bommasandra-Jigani Link Road, Jigani Industrial Area, Jigani Hobli, Anekal Taluk, Bangalore, Karnataka - 560 105 India

Managing Director



Kenji Fuseya

Employee Numbers



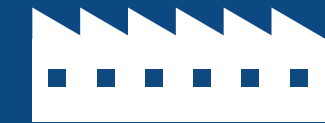
794
persons

Capitals



1,840,000,000 Rs.

Established



Aug 21
2012

2012
Established COI

2017
Start Production
Single phase Full wave REG

2019
Start Production
BS6 ECU

2014
Start Production
Lamp REG
Ignitor Units

2018
Start Production
3 phase Full wave REG

2023
Start Production
3 Motor Controller
for EV 2wheelers

Contact

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