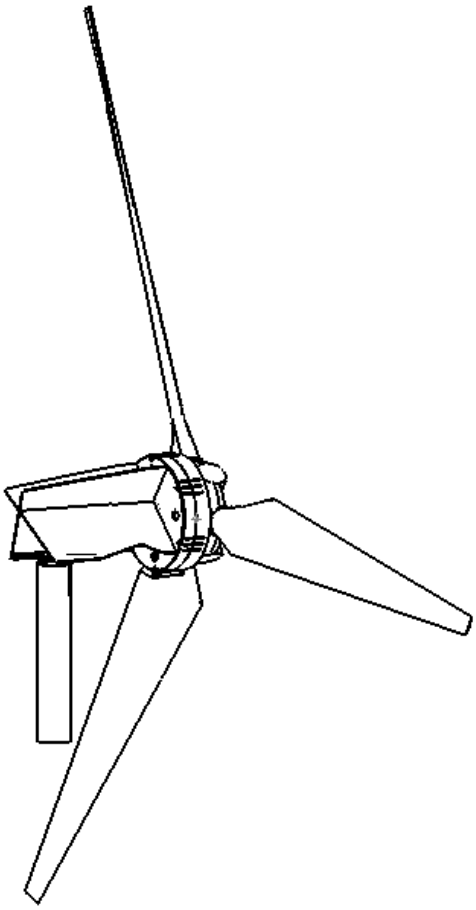
Merlin Small Wind Turbine
Installation & Operation Guide



3.0m Diameter Wind Turbine for generating clean and renewable electricity anywhere the wind blows…

From Samrey Ltd

Contents

Disclaimer

- All specifications are subject to change without prior notice.
- The information given in this user manual is believed to be accurate and reliable. *Samrey Ltd* assumes no responsibility for omissions or inaccuracies.
- The user of this information and product assumes full responsibility and risk.
- The Merlin turbine is a source of electrical power. It must be installed in accordance with local building and electrical regulations. Consult your local planning (zoning) office for details.
- The Merlin turbine has moving parts that may cause injury due to poor installation and unsafe operation. *Samrey Ltd* assumes no responsibility for problems caused by unsafe or unsatisfactory installation or operation.
- This document is a guide only. We recommend that the Merlin turbine and associated products are only installed by Samrey Certified installers.

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Introduction

Please read this manual thoroughly before attempting to assemble, install or operate your *Merlin* wind turbine. This will assure optimum performance and safety.

Samrey Ltd has been developing the ideas and technology behind your *Merlin* Turbine for the last eight years. The M*erlin* Turbine features an array of innovations and construction techniques as well as heavy-duty engineering.

The *Merlin* has been designed to be simple, low cost, durable and to give excellent performance.

Your *Merlin* Turbine features:

- Innovative design axial flux alternator using neodymium iron boron magnets
- Laser-cut heavy duty steel chassis
- Maintenance-free, low friction bearing arrangements
- Quiet glass reinforced nylon blades
- Maintenance free yaw pivot slip-rings
- Easy tower-top installation
- Simple design for low cost and durability.
- Downwind layout for running stability and low visual foot print
- High voltage transmission for lower cost of installation and high efficiency

Merlin is at home in land-based environments.

Applications include:

- Off-grid power systems
- Grid connected power systems
- Remote Homes / Caravans
- Wind-electric water pumping
- Street lighting and road signage or utilities
- Farm utilities (electric fencing, irrigation, etc)
- Cathodic Protection
- Monitoring sites
- Telecommunications
- The Developing World
- Other industrial applications

Safety Precautions

Safety must always be your primary concern during the assembly, installation and operation of your *Merlin* Turbine. Always be aware of the risks involved with mechanical and electrical installation work. If in doubt about any issue regarding your turbine, please seek further assistance before proceeding. Ideally, a qualified and experienced installer should install the *Merlin* turbine and related equipment.

Mechanical Safety Hazards

- The main rotor is the most obvious and serious mechanical safety risk. When the turbine is operating at its rated performance, the blades will be very difficult to see due to the speed of rotation. Never approach the turbine whilst it is operating. Always shut down the turbine by waiting until the turbine is stationary on a calm day and activating the stop switch. **Ensure that the turbine is installed in a suitable position where nobody can approach or interfere with the path of the rotor blades.**
- Working with tools of any kind can be dangerous. Your *Merlin* Turbine requires mechanical assembly with hand and power tools. If you are in any doubt about how to use these tools correctly, please seek advise from a suitably experienced person.
- Your *Merlin* Turbine must be installed upon a tower. This may mean working at height. Always ensure that all personnel in the immediate vicinity are aware of any lifting / hoisting operations that will be occurring. Check that are no loose components or tools likely to fall and cause injury during the lifting operation. Where possible, all assembly work should be completed at ground level.
- Ensure that the batteries / grid-tie inverter are disconnected during the installation procedure.
- Never install the turbine upside down or in any orientation other than that depicted on the installation instructions.
- Install your turbine during a calm day (wind speeds below 12mph)
- When performing routine inspection or maintenance, always ensure the turbine is stationary.

Electrical Safety Hazards

- *Merlin* generates high voltage wild 3-phase AC which is then converted to DC at the PCU. At these voltages there are inherent risks. Caution should always be used when connecting *Merlin* to the electrical system.
- Ensure that you have followed the cable-sizing chart (page 12) to ensure that the correct size of transmission cable has been selected. If a cable of insufficient cross-sectional area is used, heat will build up in the cables causing a potential fire hazard. A properly sized fuse or circuit breaker should be used in the cables connected to the battery. This will stop the risk of short circuit currents.
- Batteries used in renewable energy systems can deliver a serious amount of current. A short circuit in the battery circuit can lead to hundreds of amps flowing through the battery cables. This will cause a heat build up and ultimately an electrical fire. Batteries are also susceptible to explode when shorted. Always use insulated electrical tools when working on the battery's electrical connections.
- Batteries are very heavy. Do not attempt to move batteries by yourself. Always use manual handling tools and an assistant.
- Always keep lead-acid batteries the correct way up. Do not allow the acidic electrolyte to spill or come into contact with your skin or face. Always follow the manufacturer's safety instructions when handling lead-acid batteries.
- Install a grid-tie inverter in accordance with local regulations and guidelines.

Please use common sense when installing and operating your turbine!

Specifications

Turbine Name: *Merlin*
Part Number: GA-MRLN-002
Nominal Battery Voltage: 24 or 48 VDC
Grid-tie Capable: Via Samrey Grid Tie Inverter
Rotor Diameter: 3000mm
Rated Wind Velocity: 8m/s
Rated Output: 1100 Watts
Max Output: 2500 Watts
Rated RPM: 350
Start-up Wind Velocity:1.5-2m/s
Total weight: 54Kg
Tower mount: 88.9mm Outer Diameter Tube
Chassis Construction: Laser-cut Steel
Rotor Blades (3-off): Glass Reinforced Nylon

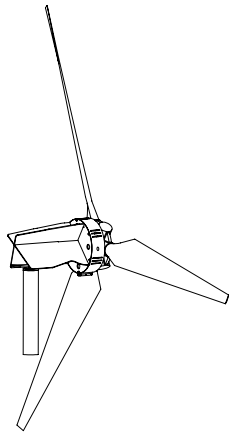


Fig-1: Dimetric View

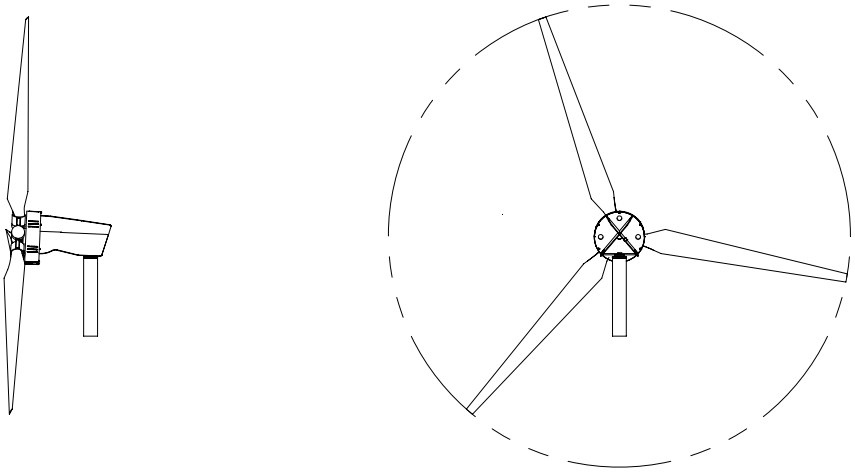


Fig-2: Operating Envelope

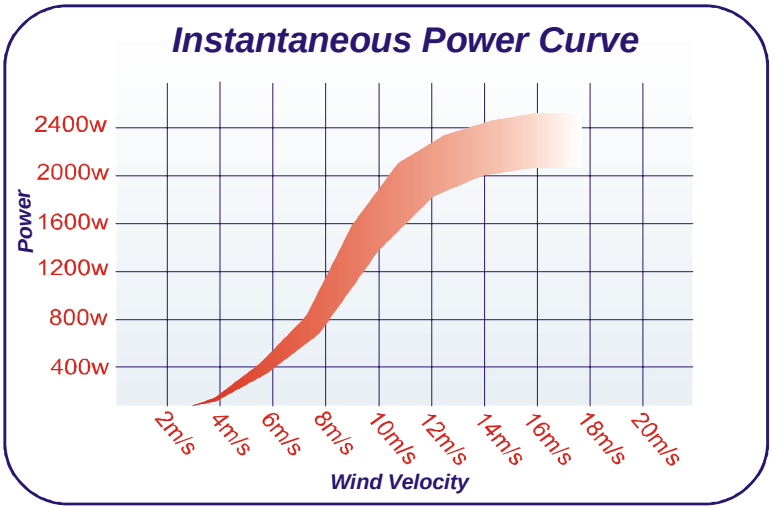
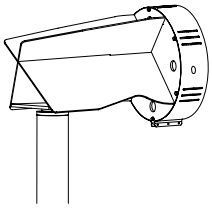


Fig-3: Energy Conversion

Package Contents

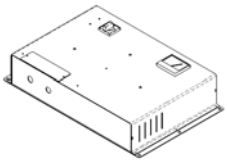
Your *Merlin* Turbine kit will arrive containing the components shown below. If any of the components are missing or damaged, please contact your dealer immediately.



Merlin Chassis: Qty 1

Hub Sections & Blank Plugs: Qty 3

Rotor Blades: Qty 3



Power Conditioning Unit: Qty 1

Hub Cover plate: Qty 1

User Manual: Qty 1

General Fixings Kit: Qty 1

Tools Required For Assembly

You will required the following tools to assemble your *Merlin* Turbine:

- Metric spanner or ratchet set (17mm a/f up to 30mm a/f)
- A Set of Metric Standard Hexagon Keys
- Electrical screw drivers
- Electrical side-snips / pliers and crimp tools
- Digital multi-meter capable of measuring AC / DC Volts
- Tape measure or steel rule

Mechanical Assembly Procedure

1) ***Unpacking-*** Inspect the contents of the delivery pallet and ensure that all items are present and free from damage. If any of the components are missing or damaged, please contact your dealer immediately.
2) ***Check Alternator assembly & Continuity-*** Ensure that the alternator hub assembly at the front of the turbine is free turning and does scrape or rub as it rotates. The surrounding hoop guard may need to be adjusted as it may have slipped during transit. See Fig 4. You may feel a slight resistance from the bearings at this stage. The bearing units used in the magnet rotor assembly are factory lubricated and sealed for life. It will take approximately 100 hours of normal operation for the bearing seals to 'bed-in' and the lubrication to be distributed correctly around the bearing raceways and ball cages. During this period you may notice a reduced performance caused by the additional friction of the bearing seals. In operating temperatures of –10 degrees Centigrade or lower, this 'bedding-in' period will be extended by a further 50 hours of normal operation. Connect a digital multi-meter to any two of the three spade terminals at the bottom of the yaw bearing. With the multi-meter set to detect AC Volts (0-200V), a voltage should be displayed when the alternator assembly is spun. This voltage will vary with the speed of rotation. If the alternator rubs, or no voltage is detected whilst turning the magnet rotor, please contact your dealer immediately.

Warning: The alternator on your *Merlin* Turbine is constructed using neodymium iron boron rare earth magnets. These are extremely powerful magnets and can cause injury if not handled with respect. Take care when working with ferrous materials (such as spanners and screwdrivers) close the magnetic poles. The magnetic forces between ferrous materials and the magnet rotor will be very strong. This may cause a sudden snapping action that can pinch or trap your fingers or skin.

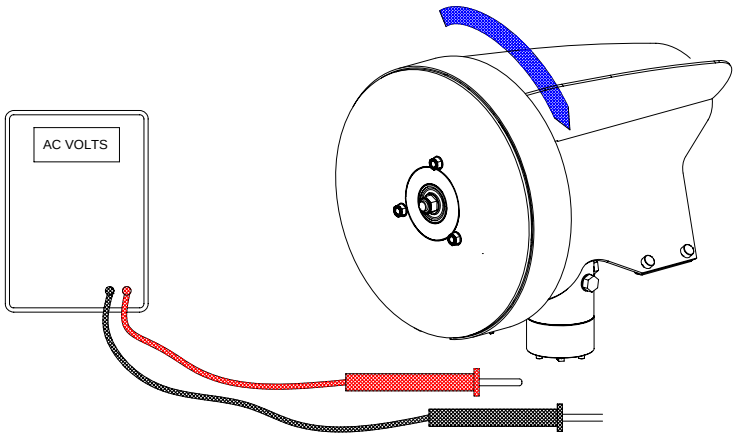


Fig-4: Checking alternator rotation and continuity

3) ***Rotor Blade Assembly-*** Take the three rotor blades and rotor hub sections (2-off). Be careful when handling the blades, they may have sharp edges. Push the blade sockets into the receptacles in one of the rotor hub sections taking care to align the pitch pin with the notch in the hub section. See Fig 5. The blades should all be fixed to the hub section on the same side, with the blades in the same orientation as depicted. A blanking cap should be fitted in between the blades by pushing them into the empty receptacles in the rotor hub section. Once satisfied, fit the second rotor hub section ensuring that the centre holes are clear through. Use M8 X 40lg set screws in every other hole around the outer perimeter of the hub. Secure with M8 Nylock nuts. Use M8 X 70lg set screws in the remaining holes around the perimeter of the hub (the excess tail of the set screws should point towards the back curved side of the blades).Tighten the fixings until the blades are safely secured. Do not over-tighten the nuts as this may damage the blades and fixings.

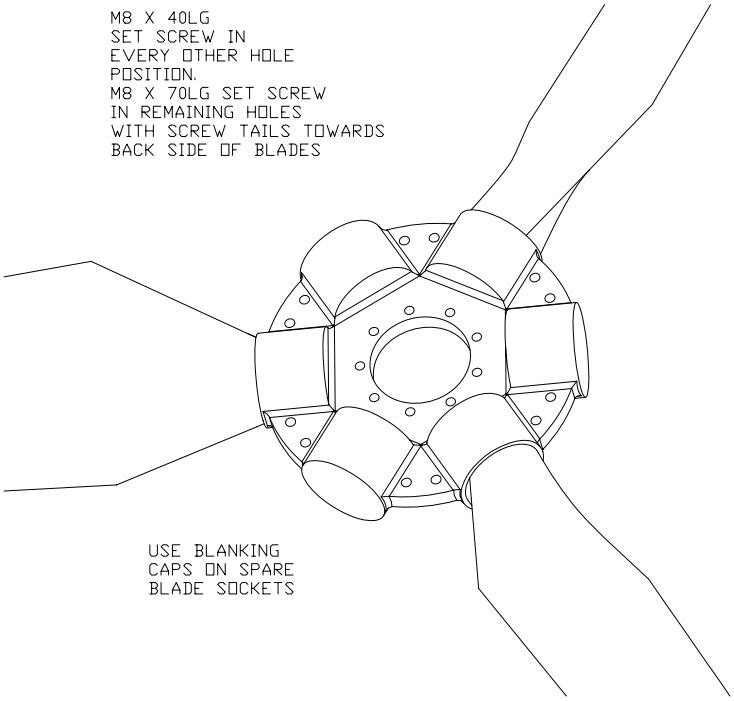


Fig-5: Attaching the 3 rotor blades to the hub

4) ***Prepare the Turbine Mount-*** If you have purchased a *Merlin Guyed tower or Merlin Free Standing tower* from a *Samrey* Dealer; please refer to the separate installation instructions supplied with the Samrey tower product. No further work is required to install *Merlin* onto these Samrey tower products once they have been installed as per the instructions. However, if you have sourced your tower from an alternative supplier, it is likely that 12mm diameter holes will need to be drilled in order to secure the turbine. Each hole should be drilled 30mm and 110mm from the top of the tower and should be perpendicular to the surface and equi-spaced around the circumference. See Fig 9.

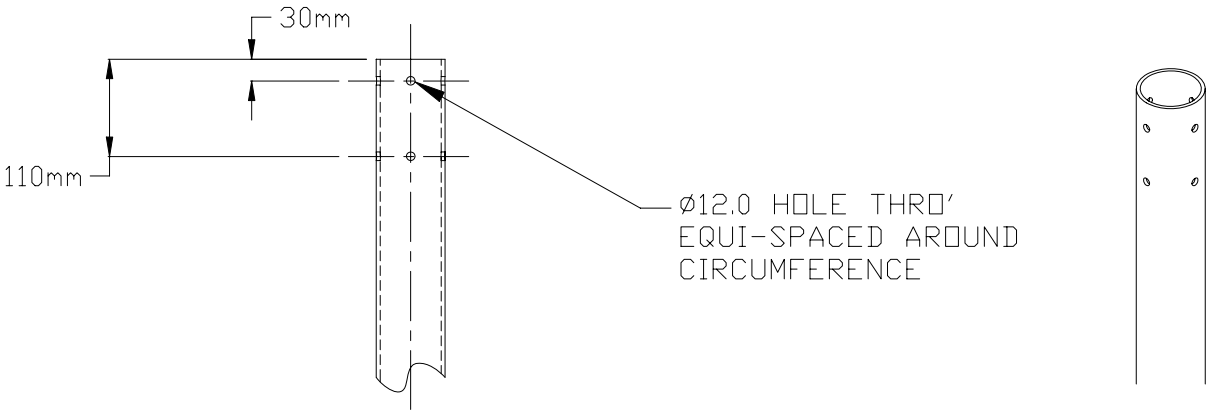


Fig-9: Drill through top of tower

5) ***Install the Transmission Cables-*** When your turbine tower is ready to receive its turbine, the next stage is to run the cables from the tower to where the Power Conditioner Unit and batteries / Grid-tie inverter will be located. Follow the table below to select the correct wire size (cross-sectional area). Thanks to the high voltage transmission system utilised on the Merlin turbine, smaller cable of a lower cost can be used when compared to other small wind turbines. The cable sizes listed below have been selected with efficiency and cost in mind, as it is unlikely that your turbine will be running at full capacity 100% of the time. If in doubt, consult your local electrical supplier. The cable should be installed in accordance with local electrical regulations and guidelines. If in doubt, use a local electrical contractor to complete the cable installation. Three-core cable is required to transmit the power from the Merlin turbine and this should be armoured or installed in conduit (consult local regulations). It is recommended that the turbine and tower are earthed independently from the Power Conditioning Unit and batteries / grid-tie inverter. Depending on the type of tower being used, it is recommended that a terminal box be positioned at the base of the tower to allow quick and easy connection / disconnection during erection or lowering of the turbine.

Warning: If a cable of insufficient cross-sectional area is used, heat will build up in the cables causing a potential fire hazard. Cable capacities quoted below are based upon 'Tri-Rated' cables (BS6231) for a Battery Charging Merlin transmitting 3-Phase 115vac Nominal.

	Transmission Distance – Battery Charging Merlin			
	<= 50 Metres (150 feet)	<= 100 Metres (300 Feet)	<= 500 Metres (1500 Feet)	<= 1000 Metres (3000 Feet)
Cable Size	4.0mm²	10.0mm²	50.0mm²	Not Recommended

Warning: If a cable of insufficient cross-sectional area is used, heat will build up in the cables causing a potential fire hazard. Cable capacities quoted below are based upon 'Tri-Rated' cables (BS6231) for a Grid Tie Merlin transmitting 3-Phase 260vac Nominal.

	Transmission Distance – Battery Charging Merlin			
	<= 50 Metres (150 feet)	<= 100 Metres (300 Feet)	<= 500 Metres (1500 Feet)	<= 1000 Metres (3000 Feet)
Cable Size	2.5mm²	4.0mm²	10.0mm²	16mm²

6) ***Mount the Merlin Turbine chassis onto the Support Structure-*** Ensure that the previously installed power transmission cables are not yet connected to any batteries and are 'shorted' together at opposite end to the turbine connection. This will prevent the turbine from operating during the installation process. Once this has been done, connect the transmission cable to the spade terminals on the bottom of the yaw pivot (crimp terminals and securing P-Clip are provided). Now offer the turbine up to the support structure and push the turbine yaw pivot into the tower. Ensure that no cables are snagged. Use eight M10 x 20 set screws along with penny / plain washers to secure the turbine. See Fig 10. A suitable thread-locking compound should also used to ensure that the fixings do not work loose during long-term turbine operation. Ensure that each M10 set screw is securely fastened. ***Note: The Merlin chassis is heavy and bulky. It is recommended that two or more people complete this stage of the assembly. Failing this, suitable hoisting equipment should be used to support the turbine whilst it is being electrically connected and mechanically fitted to the tower structure.***

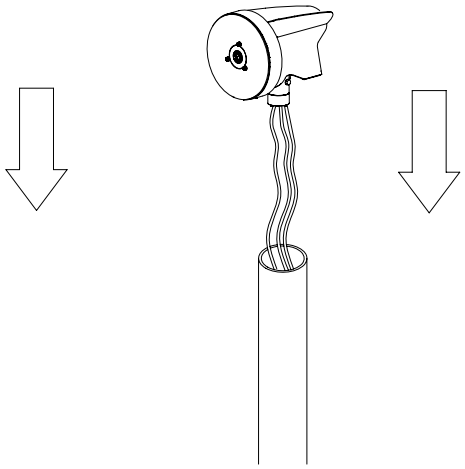


Fig-10: Fitting the turbine onto the support structure

7) ***Fit the rotor assembly to the Merlin Chassis-*** Now that the turbine is installed on the tower, the rotor assembly can now be refitted in. Use nine M8 X 40 set-screws and washers to attach the rotor assembly to the alternator. Ensure that the rotor assembly is attached in the correct orientation and that the fixings are secure.

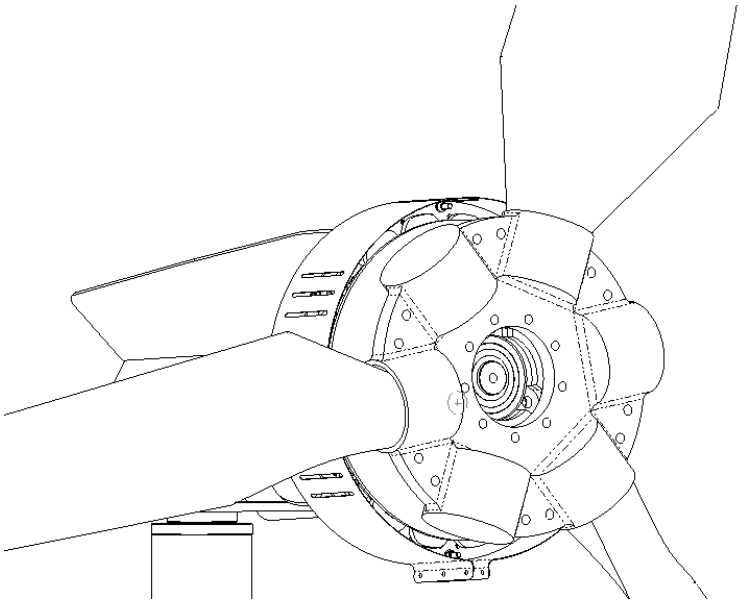


Fig-11: Fit the rotor blade assembly

8) ***Fit the hub cover plate-*** Take the hub cover plate and offer it to the rotor hub (over the tails of the protruding M8 X 70lg set screws). Use M8 nylock nuts to secure to the rotor hub cover.

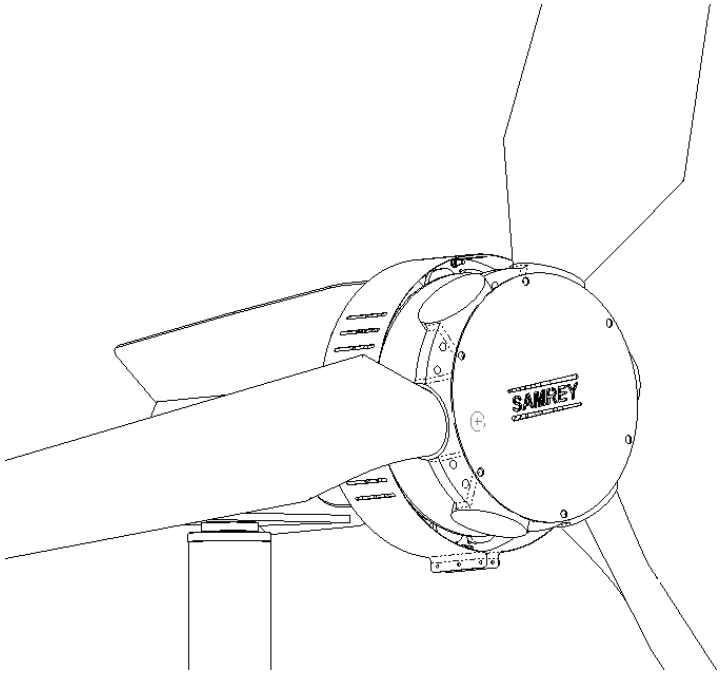


Fig-12: Fit the hub cover plate to the rotor assembly

9) ***Refit / Reposition the alternator guard-*** Securely refit the alternator guard around the perimeter of the alternator (if it has been removed). Tighten up to clamping screws, and ensure that the guard does not rub or interfere with any of the moving parts. Reposition the guard if required.

Electrical Installation

Please refer to Fig-14 /15 on page 15 for a generic wiring diagram. In a battery charging renewable energy system, there may be many different ways of wiring small wind turbines, photovoltaic panels, charge controllers and batteries together. This type of system will often expand 'organically', but the following guidelines should be followed:

- ***Follow the appropriate electrical code-***The electrical wiring of your Merlin turbine and associated electrical systems must be done in accordance with national and local electrical codes and regulations.

- ***Do not connect the turbine or batteries during the installation-*** Ensure that the turbine is not running or connected to the batteries during the installation or wiring process. Connect the output cables of the turbine together to prevent the rotor from starting up.

- ***Galvanic Corrosion of electrical joints-*** Try to avoid connections between dissimilar metals. For example, connecting copper and aluminium together will result in galvanic corrosion of the connection. This will increase the electrical resistance of the connection (wasting energy), and reduce the mechanical integrity of the joint. Where possible, use a fluxed solder to make electrical joints.

- ***Protect the cables-*** The power transmission cables must be protected from mechanical damage and fatigue. Run the cables through an approved conduit / trunking.

- ***Cable strain relief-*** Prevent mechanical strain on the transmission cables running down the tower from the turbine. Clip the cables to the inside of the tower. Failure to do this will result in excessive mechanical strain on the cable joints within the slip-ring assembly and will cause a failure.

- ***Cable Selection-*** The cable size table shown on page 12 should be used to select the minimum sized cable for a given transmission distance. Voltage drop in the cable will be improved if a larger cable is used. We recommend using 'Tri-Rated' cable as it should comply with the wiring codes for your area.

- ***Charge Controllers-*** A diversion charge controller is required to prevent the batteries from being overcharged and damaged. A diversion charge controller operates by switching on a dump load once the batteries reach high voltages. The dump load then consumes the power from the turbine. This means that the turbine's power output is being consumed at any point, whether the batteries are fully charged or not. Depending on the size of the dump load, the turbine may slow down or stall during a period when the power is being diverted. The use of photovoltaic charge controllers should be avoided. This type of charge controller operates by disconnecting the PV panel when the battery voltage gets too high. If a turbine is connected to this type of controller (instead of a PV panel), the turbine may be allowed to operate off-load for long periods of time. This may damage the turbine and will increase wear and tear. Some brands of PV charge controller 'short-out' the PV panel once the battery voltage increases. Again, the connection of this type of controller should be avoided. Once the batteries are fully charged, the controller will start to 'short-out' the turbine intermittently to regulate the battery voltage. This will damage the blade roots due to the turbine constantly being shorted out during high winds. Larger capacity battery banks will be able to store more energy and so the dump load will be used less.

- ***'Hybrid' Systems-*** The Merlin turbine can be used in parallel with PV panels. We recommend that the PV panels be wired independently with a separate charge controller specifically designed for use with PV panels, and connected in parallel with the battery bank.

- ***Use of Grid-connect Inverters-*** It is possible to connect your Merlin to a grid connect inverter. It is recommended that only Grid-tie inverters supplied by Samrey are used to ensure that an appropriate MPPT curve has been programmed.

Please refer to the following wiring diagrams as a guide.

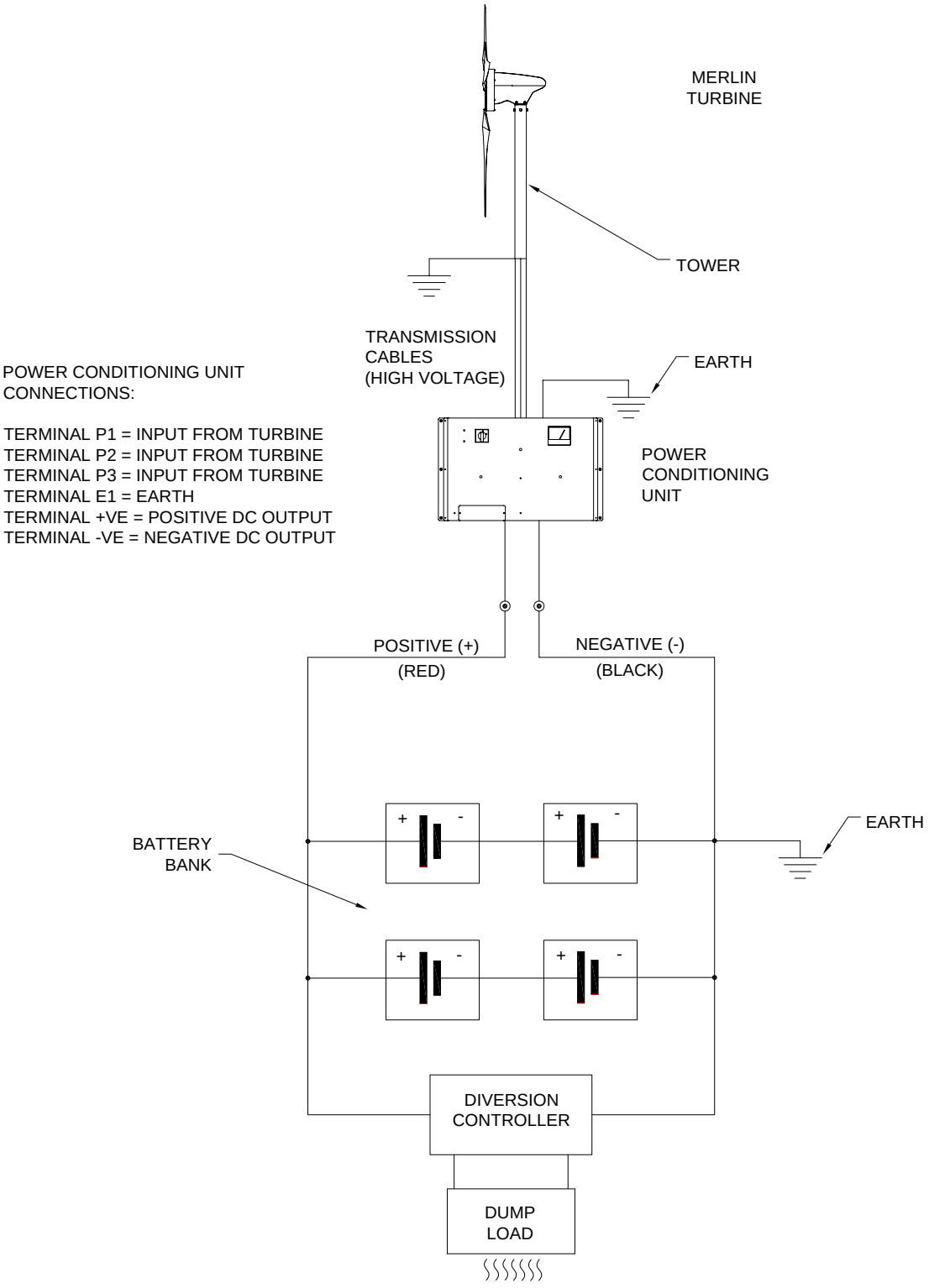


Fig-14: Typical battery based System Wiring Diagram

POWER CONDITIONING UNIT
CONNECTIONS:

TERMINAL P1 = INPUT FROM TURBINE
TERMINAL P2 = INPUT FROM TURBINE
TERMINAL P3 = INPUT FROM TURBINE
TERMINAL E1 = EARTH
TERMINAL +VE = POSITIVE DC OUTPUT
TERMINAL -VE = NEGATIVE DC OUTPUT

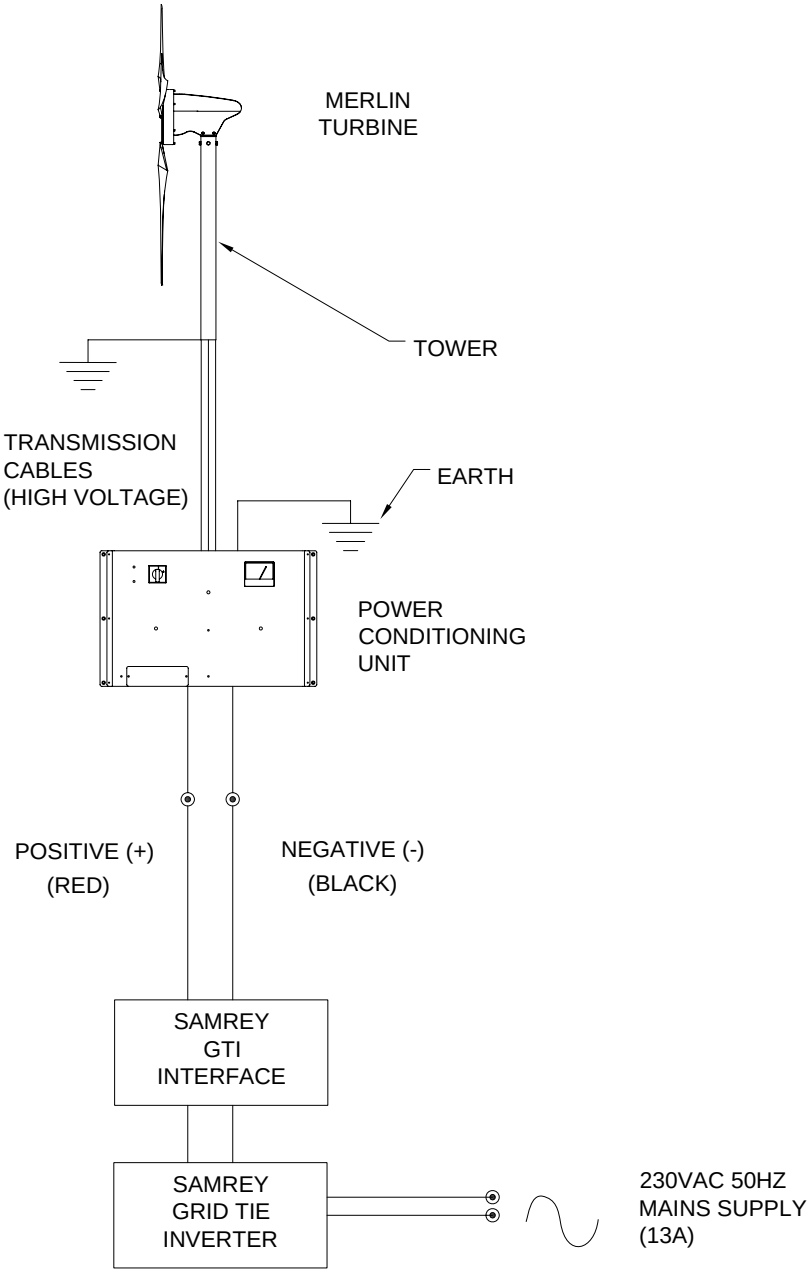


Fig-15: Typical Grid-tie System Wiring Diagram

Turbine Operation

The Merlin turbine is based on a simple design for ease of installation and reliable operation. You may notice the following behaviour during normal operation:

- ***Cut-in-*** The turbine will not begin to charge the batteries or deliver power to a grid-tie inverter until the rotor is spinning above cut-in speed (this may vary slightly depending on the system configuration). Whilst operating below this speed, the turbine will be 'off-load' and will be freewheeling. Once the turbine output voltage becomes equal to the nominal battery voltage, or equal to the cut-in voltage programmed into the firmware of a Samrey grid-tie inverter, the turbine will come 'on-load' and begin to deliver power. During the off-load stages of rotation, the rotor blades rotate very freely. This allows the rotor to build up speed and allows aerodynamic lift to be generated by the blades. Often, the turbine rotor will be more audible during this period of operation.

- ***Normal Operation-*** Once the rotor is spinning at cut in speed, electrical current will be delivered to the batteries or grid-tie inverter. As the rotor speed increases, so too, will the current and voltage. In a battery charging system, excessive wind speed may increase the battery voltage to a high level. Once this happens, the diversion charge controller will recognise that the battery voltage is too high, and switch the turbine output to the dump load. In a Grid-tie system, the Samrey Grid-tie inverter will increase the power delivery to the mains until limits are reached. ***Note: Only use Samrey Grid-tie inverters with the Merlin wind turbine. Performance and safety may be compromised if an alternative grid-tie inverter is used which has a power curve that is not suitable for use with the Merlin turbine.***

- ***Charge Regulation (battery charging systems only)-*** Once the charge controller has switched over to the dump load, excess power will be delivered to the dump load (available from Samrey). Depending on the capacity of the dump load and the system setup, the turbine may be seen to rotate more slowly. The battery voltage will begin to drop to normal levels during the regulation period. Once the battery voltage is back within acceptable limits, the charge controller will allow the batteries to commence charging once again. Refer to the charge controller user manual for specific operational instructions.

- ***Shut Down-*** By activating the brake switch found on the Merlin Power Conditioning Unit, an infinite load is placed on the alternator causing the turbine to stall preventing the turbine from picking up speed. This is to be used for maintenance purposes. ***The brake switch must only be activated when the turbine is stationary or slowing. The brake switch must not be activated in wind conditions above 40mph – This may result in the alternator becoming damaged. The stop switch is set to stop the turbine in the "1" position and run the turbine in the "2" position. It is not recommended that the stop switch be activated whilst the rotor is spinning at high speed. This sudden braking action will stress the blades and other components. Activate the stop switch during a 'lull' when the rotor is not spinning excessively fast.***

- ***High Winds-*** The Merlin is designed to run through high wind events. The turbine blades will flex slightly during high winds which in turn regulates the turbine rpm and output. The turbine should be shut down using the brake switch in advance of extreme wind events and storms (60 MPH+).

- ***Grid-Tie Applications-*** When connected to a grid-tie inverter, Merlin will operate in much the same manor as when it is charging batteries (except for the use of dump loads). It is important that the Grid-tie inverter characteristics are matched to the power curve of the turbine to ensure optimum performance. An appropriate electrical interface may also be required depending on the inverter equipment being used. It is generally only recommended that Samrey approved and programmed inverters be used with the Merlin turbine. Refer to your Samrey dealer for more information on this

Note: Never allow the turbine to run 'un-loaded' with no connection to a battery bank or dump load. Doing so will allow dangerous open circuit voltages to be generated by the turbine. These voltages may be dangerous and will damage the alternator coils within the turbine.

Maintenance

Please follow the preventive maintenance program listed below. This will ensure that the turbine operates reliably and safely with good efficiency.

Always shut down the turbine before attempting to carry out maintenance.

Post-Installation Checks (to be carried out one month after installation):

- Check that the turbine - tower fixings are secure and have not worked loose. Adjust if required.
- Ensure that the rotor hub is still securely fitted.
- Ensure that the rotor blades rotate freely and are still balanced. Rebalance if required.
- Monitor the output. Ensure that the turbine and charge controller are functioning correctly.

Annual Maintenance:

- Inspect the tower / support structure.
- Remove the rotor blade assembly (reverse the process used on page 13).
- Inspect the edges of the rotor blades for damage such as dents or chips. The blades will become unbalanced if they are damaged. This will cause vibration, noise and poor performance. If many significant dents have occurred along the edges of the blades, a new set of rotor blades should be fitted (part numbers available in the Spares section on page 20).
- Inspect the roots of the blades (attachment tabs) for signs of stress cracking or fatigue. A new set of rotor blades should be fitted if any cracks of fractures have occurred (part numbers available in the Spares section on page 20).
- Remove any build-up dirt and debris from the rotor blades using mild detergent in warm water.
- Check the blade hub fixings for tightness.
- Check and rebalance the rotor blades as required (see page 10).
- Check that all electrical connections are sound and free from corrosion.
- Generally ensure that the turbine is in good working condition and is safe for continued use.

Other Considerations:

- The equipment used in the charging system (batteries, charge controller, PV panels, invertors, etc) should be maintained according to the instructions published by the relevant manufacturer.
- Where lead acid batteries are used, it is especially important that they are maintained carefully. Failure to do so will result in the batteries being rendered useless in a short period of time.

Spares

The following components may need to be replaced during the service life of your Merlin turbine. Please contact your nearest *Samrey* Dealer, and quote the part numbers listed below.

Rotor Blade: DP-MRLN-012

Warranty

Your *Merlin Turbine* carries a two-year warranty from the original purchase date.

During the warranty period, any component found to be defective in material or workmanship will, at the discretion of *Samrey*, be replaced or repaired at no charge.

This may be done on a 'return-to-base' arrangement for serious defects. For minor component failures, replacements may be sent directly to the customer / dealer for replacement. This can be negotiated at the time of the warranty claim to come to a mutually convenient arrangement for all parties. *Samrey* will take all reasonable action to ensure customer satisfaction. You will always receive a warm, courteous service in or out of your warranty period.

Your turbine must be installed and operated in accordance with this guide and local codes. Failure to do so will result in this warranty becoming null and void. Any unauthorised modifications to the turbine design will void the warranty and may comprise the safety of the machine.

What is not covered by your Warranty:

If your turbine is commissioned by *Samrey*, the following are excluded from the Warranty

- Damage caused by the neglect of periodic maintenance in the manner recommended.
- Damage caused by repair or maintenance performed using methods not specified by *Samrey* or by non-authorised dealers of *Samrey* products.
- Damaged caused by the use of non-genuine parts, or from the use of liquid agents or lubricants in or on the turbine, tower or control equipment.
- Damage caused by operating the turbine in conditions outside of those specified in the Owners Guide – including, but not limited to, allowing the turbine to run off-load.
- Damage caused by modifications to the turbine, tower or control equipment not approved by *Samrey*.
- Damage caused to the turbine, tower and control equipment by improper storage or transport.
- Damage caused by lightning strikes
- Damage due to extremely high winds and storm conditions (60mph+)
- Damage caused by flying debris.
- Aesthetic phenomena that do not affect performance.

If your turbine was <u>not</u> commissioned by *Samrey*, the following are additional Warranty exclusions.

- Damage caused by unsatisfactory installation of the turbine, tower and/or control equipment.
- Damage caused by unsatisfactory tower / support structure design
- Damage caused by incorrect connection to external electrical equipment, or failure to observe current regulations concerning connection to external electrical networks, equipment or any other devices.

If you should experience a problem with your turbine, your first 'port-of-call' should be the reseller or installer from whom you purchased the product. They will be able to resolve the problem quickly and efficiently. If you are unable to contact the original reseller, then please contact us directly. Please quote the serial number of your turbine when dealing with Warranty issues. The serial number can be found on the nameplate positioned on the underside of the chassis.

For your future reference please make a note of the serial number below:

S/N _____

We strongly recommend that you complete and return the attached registration form with this Installation and Operation Guide. This will enable us to respond more quickly in the event of any enquiry or warranty claim you may make and also to keep you informed of any issues that may impact on your use of the turbine.

Registration Document

Please fill in the following details, detach and return to:

Samrey Ltd
Pondlye Barn
Cuckfield Road
Ansty
West Sussex RH17 5AL
United Kingdom

Merlin model (please tick)	**24 VDC / 48 VDC / Grid-Tied**
Serial No.	
Owners name - Last	
First	
Date of purchase	
Owners address	
Installation address (if different)	
Installers name & address (if any)	
Type of mount (please tick)	**Guyed Tower / Free Standing Tower**
Diversion Controller (Y/N)	
Dump Load (Y/N)	
Grid-Tie (Y/N)	