

Welcome to

“Manatronics”

Manatronics

**We present a Demonstration of
the Manatronics
“BD12 and EL12 Series”
of Electronic Loads.**

**Manatronics Loads, when reliable,
diagnostic testing is everything.**

- **We are a Certified Quality Assured Company by ISO AS/NZS 9001:2000**

General

- **All Manatronics Load banks have been designed to be rugged and reliable pieces of equipment suitable for use by:**

Battery maintenance personnel

Battery manufacturers

Rectifier manufacturers / repairers

Power Supply manuf. / repairers

- **Our suite of models covers all of the most common Voltage systems used by Telco's and the Utility companies. Furthermore, all models have been designed to be easily adapted to different Voltage Current and Power ratings, please inquire for more details.**

- **All models come with constant current characteristic as standard. Some of the models have Constant Power, resistance and Voltage as standard. Whilst all other models can have these features added as an optional extra.**

- **All Manatronics Load banks have been designed such that parallel operation is easily achieved. This is where our higher currents and powers are required.**

- **User safety**

On the BD Series there is a time delay between when the DC Voltage is first applied to the rear SB connector, before the Load will allow any current to flow. This is a safety feature in case the Load has been left with the Load enabled (i.e. switched on) and the control knobs are turned up. Without this delay the Load could start to pull a very high current before the DC Power connector is firmly plugged in. This may result in a substantial arc being drawn which is not desirable.

- **All models have the following features:**
- **Very Reliable and Robust.**
- **Very Cost effective**
- **Microprocessor controlled.**
- **Continuously variable current**
- **Full Protection against:-**
 - **Over Current**
 - **Over Voltage**
 - **Over Power**
 - **Over Temperature**
 - **Internal Voltage rail failure**
 - **Fan fail on *all* fans**
 - **Low air flow**

- **Extremely low electrical noise, (steady state). Rectifier manufacturers use our Loads for production testing for < 1mV psophometric and < 5mV wideband.**
- **All of these Loads use forced air cooling.**
- **The internal shunt signal is amplified and provided to the user for Data Logging purposes or for display on an external DMM.**
- **These models are small and light weight and have been designed for portable applications. Alternatively the units may be mounted into a 19 inch rack.**

- **All models have an audible alarm to notify the user of the following alarms:**
 - **Over Voltage**
 - **LVD has tripped**
 - **Over Temperature**
 - **Low Air flow**
 - **Fan Fail**
- **All models can be easily customised to suit any particular Voltage range, please enquire for details.**
- **Designed flexibility, in that the unit may be controlled as a stand alone unit, or from an optional remote control box or from a proprietary interface PCB within a PC (personal computer), i.e. for ATE (Automatic Test Equipment).**
- **Basically there are two model ranges. These are the BD12 and the EL12 Series.**

- **The BD 12 Series has been designed primarily for Battery Discharge testing. This model is completely powered from the Batteries under test. No mains supply is required. The minimum current for these models does *not* go down to 0 Amps, due to current required to power the fans. Some models go down to 1 Amp, whilst others may be higher. Please refer to the data sheets for the minimum current. But this current is taken into account by the Load so that the current that you set is not affected.**
- **The EL12 Series is more suited for testing Rectifier's and Power Supplies. This model is mains powered and has a wide operating Voltage range that goes down to 0V at reducing current. The minimum current for these models is 0 Amps.**

- **The following is a detailed explanation of the controls and indicators on the front panel.**



- **Load Off / Enable toggle switch.**
This is a master switch. In the "Load Off" position, it will turn off the Load and prevent the Load from drawing any current. Dependent on other switch positions, when in the "Enable" position the Load will be

enabled, as indicated by the green "Enable" Led. As long as there are no alarm conditions, as indicated by the other LED's on the front panel, the Load may now be used to draw current.

- **Load Control (Rotary Switch).**
This switch has four positions, Off, On, Logger, UPS.
- In the "OFF" position it will prevent the Load from being enabled, and therefore prevent the Load from drawing any current.
- In the "ON" position it will allow the Load to be enabled depending on the Load Enable toggle switch. i.e. both the Load and Enable toggle switch must both be on to enable the Load. This is a safety feature.

- **In the LOG (Logger) position this will allow the Load it to be controlled from a Manatronics Data Logger, i.e. the Logger can switch the Load on and off at a pre-set current level.**
- **UPS position. This allows the Load to be controlled from an external signal. This signal may be an external switch or a relay contact or via a logic high or low signal.**



- **The mode switch (Rotary Switch).**
This selects operating mode for the Load to either:-
 - **CC Constant Current**
 - **CP Constant Power**
 - **CR Constant Resistance**
 - **CV Constant Voltage**
- **This feature is an optional extra for some models. Where this feature is not fitted all Loads will have a CC characteristic.**

- **CC**

In Constant Current Mode as the Battery Voltage drops during a discharge test, the unit automatically adjusts to keep the discharge current constant. This is important as some Battery manufacturers give their discharge data when discharging at a Constant Current.

- **CP**

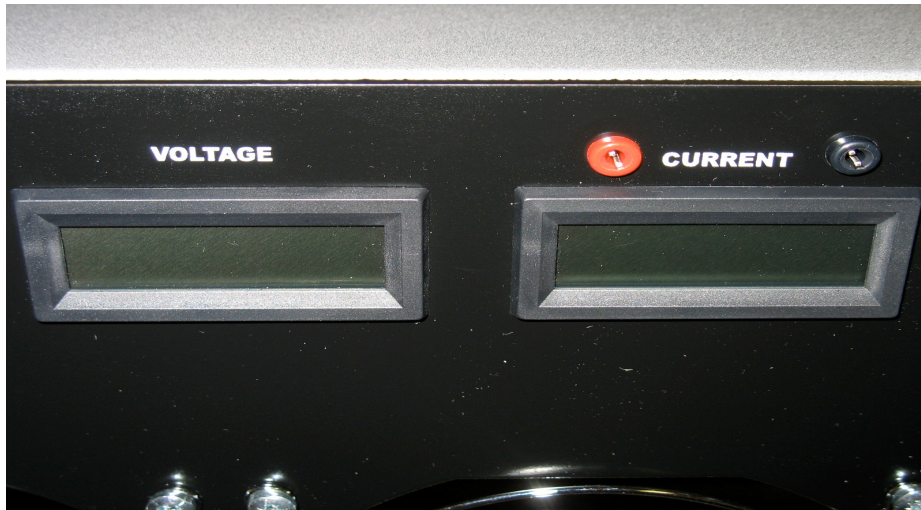
In Constant Power Mode as the Battery Voltage drops during a discharge test, the unit automatically adjusts to keep the Power drain on the Battery constant. This is important as some Battery manufacturers give their discharge data when discharging at a Constant Power. This test may be more relevant as the actual Load in a Telecom exchange has a constant power characteristic.

- **CR**

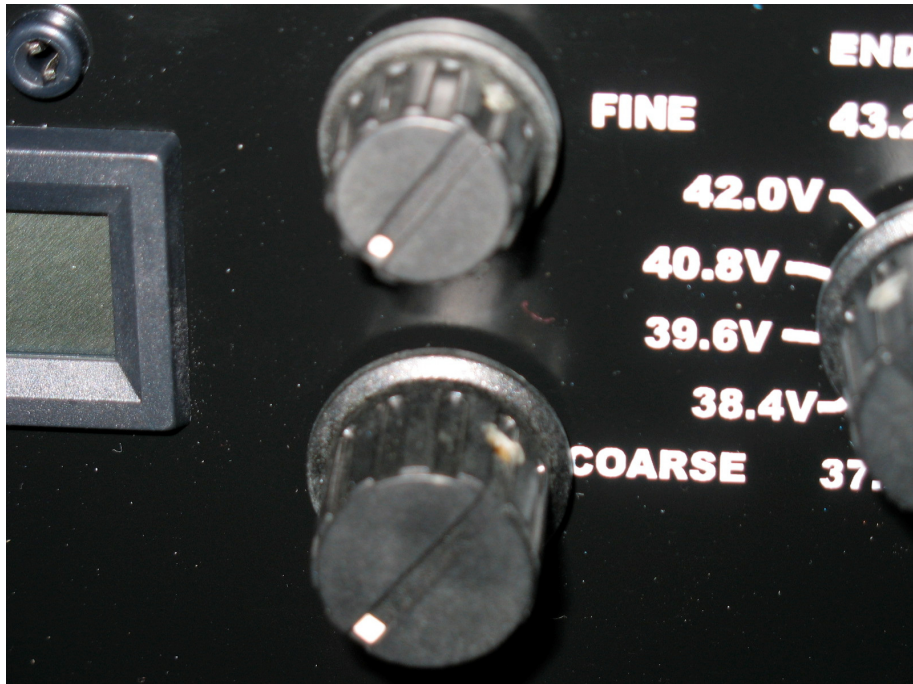
In Constant Resistance Mode as the Battery Voltage drops during a discharge test, the unit automatically adjusts to keep the Load Resistance being applied to the Batteries constant. This feature can be useful when testing Power Supplies / Rectifiers at their current limit. because as current limiting is reached the Load will only pull the Voltage down gradually. A CC or CP Load characteristic may tend to switch rapidly and pull the output Voltage down suddenly making it difficult to check or set the current limit. CR may also give lower noise readings from Power Supplies / Rectifiers due to the extra damping of a Resistive Load.

- **CV**

In Constant Voltage Mode the Load acts as a Voltage clamp whereby if the source, (from a Battery or Power Supply or a Rectifier), tries to go above the Voltage set on the Load, the Load will then clamp the Voltage to the pre-set Voltage. This may be used on a Battery bus to prevent the Voltage rising above a certain Voltage. It may also be used for testing Power Supplies / Rectifiers where instead of testing with short-circuit the output is shorted to a pre-set Voltage level.

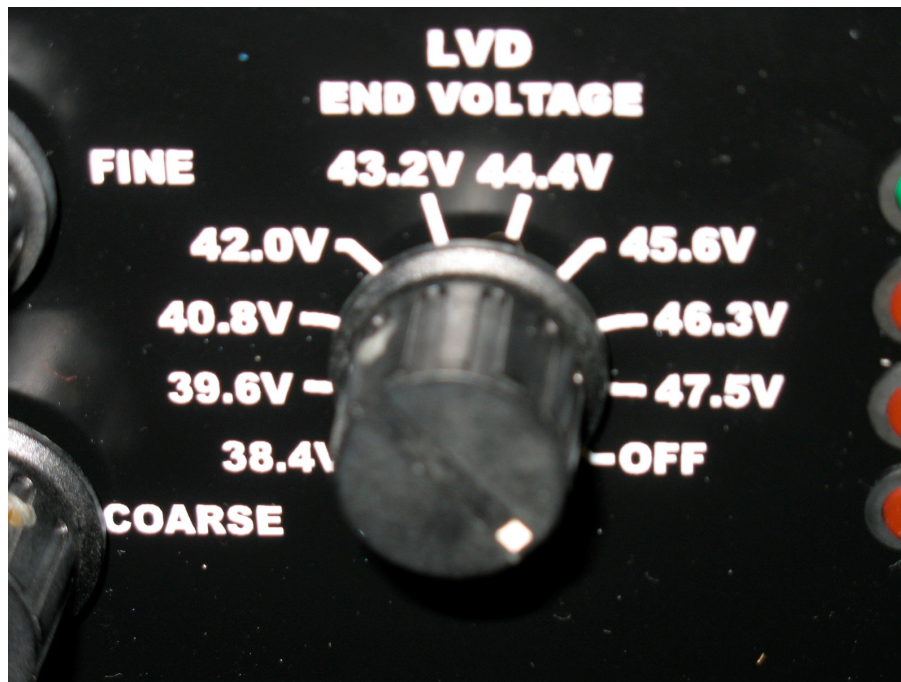


- **Voltage DPM.**
This is a digital panel meter that displays the real time Voltage present at the SB Power collector.
- **Current DPM.**
This is a digital panel meter that displays the real time Current that the Load is drawing.
- **Current Output Sockets**
The internal shunt signal is amplified and output on 2 off, 2mm sockets above the current DPM. This enables the user to measure the current on an external DMM.



- **Coarse and fine knobs.**

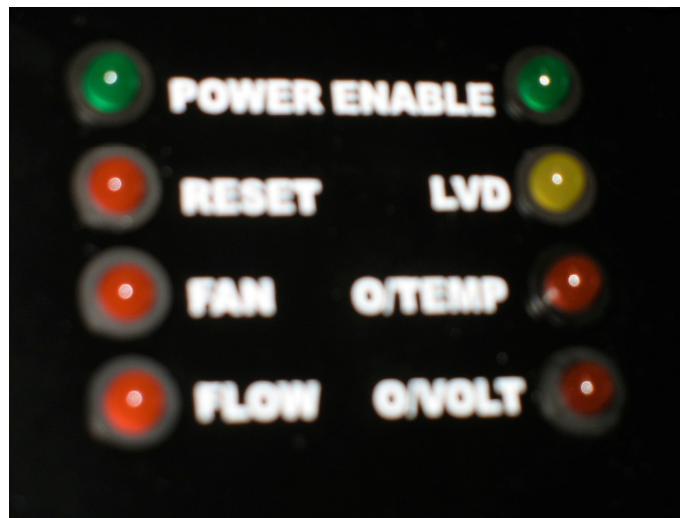
On the front panel are two adjustable knobs. These are to adjust and set the desired current. One has a coarse adjustment and one is a fine adjustment. These knobs are also used to set the power level in CP mode and the resistance in CR mode and the Voltage setting in CV mode.



- **LVD Switch (Rotary)**

This provides a low Voltage disconnect function. This is useful when discharging batteries whereby if the Load is unattended, the Load will continuously monitor the battery Voltage and compare this to the Voltage setting on the LVD switch. If the battery Voltage falls below the LVD Voltage setting, the Load will automatically switch off the Load current and the LVD Led will light and an audible alarm will sound to alert the user. This switch may be

switched to "Off", to completely disable this function, and then even the Load will not switch off regardless of how low the Voltage falls.



- **LED's**

The front panel has eight LED's to indicate the status of Load.

- **Power LED (Green).**

This indicates that power is being applied to the Load. In the case of the BD series, this will be from a DC Voltage applied to the SB power connector. In the case of the EL12 series this will be from the AC mains being connected to the rear panel.

- **Enable LED (Green).**

This indicates that the unit is in a condition whereby it ready to pull a Load current from the DC source. This LED will only light when none of the protection circuits are in an alarm state and the unit has been enabled by the "enable toggle switch" or from an external signal. If any of the protection circuits are in an alarm state, it will prevent the ENABLE LED from coming on. This will mean that the Load cannot draw any Load current.

- **Reset LED (Red).**

All of the Voltage rails within the Load are monitored. If any of these rails are outside of their tolerance, (or if any rail should fail), then the RESET LED will light, this will hold the microprocessor in reset and prevent the Load from drawing any Load current.

- **Fan LED (Red).**

This is the "Fan Fail" alarm. Whenever the fans have stopped the "Fan Fail" LED will light. During normal operation this LED will be off. Should any of the fans fail or become disconnected, this LED will light and prevent the Load from drawing any Load current.

- **Flow LED (Red).**

This is the "Low Air Flow" alarm. Whenever the fans have stopped the "Low Air Flow" LED will light. During normal operation this LED will be off. The internal circuits and microprocessor determine whether there is sufficient air flow through the Load unit. If it is decided that the air flow is too low, this LED will light and prevent the Load from drawing any Load current.

- **LVD LED (Yellow).**

This is the "Low Voltage Disconnect" function. Normally this led will be off. If the LVD has been enabled, when the internal circuits detect that the DC Voltage at the SB power connector has dropped below the pre-set LVD Voltage, this LED will light and prevent the Load from drawing any Load current.

- **O/Temp LED (Red).**

This is the "Over Temperature" alarm. Normally this led will be off. The internal circuits monitor the internal ambient temperature of the Load unit. If this exceeds a pre-set level, this LED will light and prevent the Load from drawing any Load current.

- **O/Volt LED (Red).**

This is the "Over Voltage" alarm. Normally this led will be off. The internal circuits monitor the DC Voltage present at the SB power connector. If this Voltage exceeds a pre-set level, this LED will light and prevent the Load from drawing any Load current.

- **The following is an explanation of the connectors on the rear panel.**
- **The main connector for the DC power is an Anderson SB Series 350 Amp connector. This is an industry standard part.**
- **All models have an D15 sub-miniature connector. This contains an output of the amplified shunt signal. It also has inputs such that an external signal may control the Load.**
- **Where units have been ordered with either a remote control box or the “Remote Module” option to control the Load externally, these will have two D9 sub-miniature connectors.**
- **In the case of the Remote Control Box, one of these D9 connectors will connect to the Remote Control Box.**

- **For two or more Loads connected in parallel, the other D9 just links (daisy-chains) to the D9 connectors on the other Loads.**
- **Alternatively the D9 may be connected to a computer to control the Load. An analogue signal from the computer will control the Load current, whereby a 0V to 5V analogue signal, will give from 0A to full scale current on the Load. Digital output signals from the computer can also control the Load i.e. CC, CP, CR and CV, and can switch the Load on and off. There is also a Digital output from the Load which is a Load status output, i.e. Load is OK or fault condition.**
- **On EL12 models only, there is an IEC mains connector, with an internal fuse.**

- **Remote Control Box (optional extra).**
This box may be ordered where you wish to control the Load at some distance from the Load unit itself e.g. if the Load is under a test bench or in a 19 inch rack etc. This box has the following controls whose functions are the same as detailed above when they are fitted to the front panel:
 - **Load Off / Enable toggle switch**
 - **Mode, i.e. CC CP CR CV**
 - **Coarse and Fine Knobs to set the Current etc.**

- **Parallel operation of several Loads.**

You may either control all of the Loads from one Remote Control Box or control each Load individually from the controls on the front panel of each unit.

Please note that if you wish to control all of the Loads from one Remote Control Box, then if you also wish to operate the Loads separately, at other times, then you will need to order a Remote Control Box for each unit.

- **Wiring for Parallel operation**

For the DC power wiring, this is from the source, (Battery/Rectifier), taken directly to each Load. So you have a star connection from the DC source to each Load.

End.....