DUAL BATTERY BANK CONTROLLER   *Mi*

Innovative Electronics for a changing world

Manual

Dual Battery bank controller

Software V1.1

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DBC-20 : DUAL BATTERY BANK CONTROLLER - for 12V and 24V battery systems

The Mi Dual battery bank controller was designed to ease the implementation of 2 separate battery banks to one system that requires dc battery backup power with local LCD display and Ethernet connectivity with SNMP support.

Large 65Amp power terminals to easily connect wires of up to 16mm$_2$

Maintenance can be conducted on anyone of the battery banks without interrupting the DC output to the system if switched correctly and the unit can be configured to switch between different battery banks when voltages falls below the user defined voltage levels of the battery banks.

!! NB this is not a hot swop controller

The Mi DBC-20 will seamlessly switch the output power between the two battery banks should they fall below the user configured battery low voltage levels **without any interruption** of the DC output power ensuring a constant DC power output to the system being powered.

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Suddenly disconnecting wires to the system coming from the Battery bank currently active will cause a power loss on the output side for a couple of milliseconds before the system will switch over to the other battery bank that might reboot equipment.

Never disconnect wires from a Battery Bank that is currently selected to the output terminal

If Battery **Bank A** is currently selected to the output, **Bank B** can be disconnected for maintenance

If Battery **Bank A** is currently selected to the output and **BANK A** needs maintenance, first login to the user settings page and force the system to switch to **BANK B** before disconnecting **BANK A**

After maintenance of **BANK A**, select **return to normal operation** in the user settings page.

This can be done on site or remotely, the user can select the Force to BANK B function and then return to the status page to see if BANK B is now selected to power the output before disconnecting BANK A

The Mi Dual battery bank controller use **P channel mosfet** transistors to reduce losses in the system.

P channel Mosfets have a voltage and wattage loss far less than normal silicon diodes, thus reducing heat dissipation and losses in the system.

One dedicated slow turn on P channel mosfet is used on the main output of the system to reduce inrush current to the system to be powered once a battery pack is connected and switched to the output on start up.

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Block diagram system description
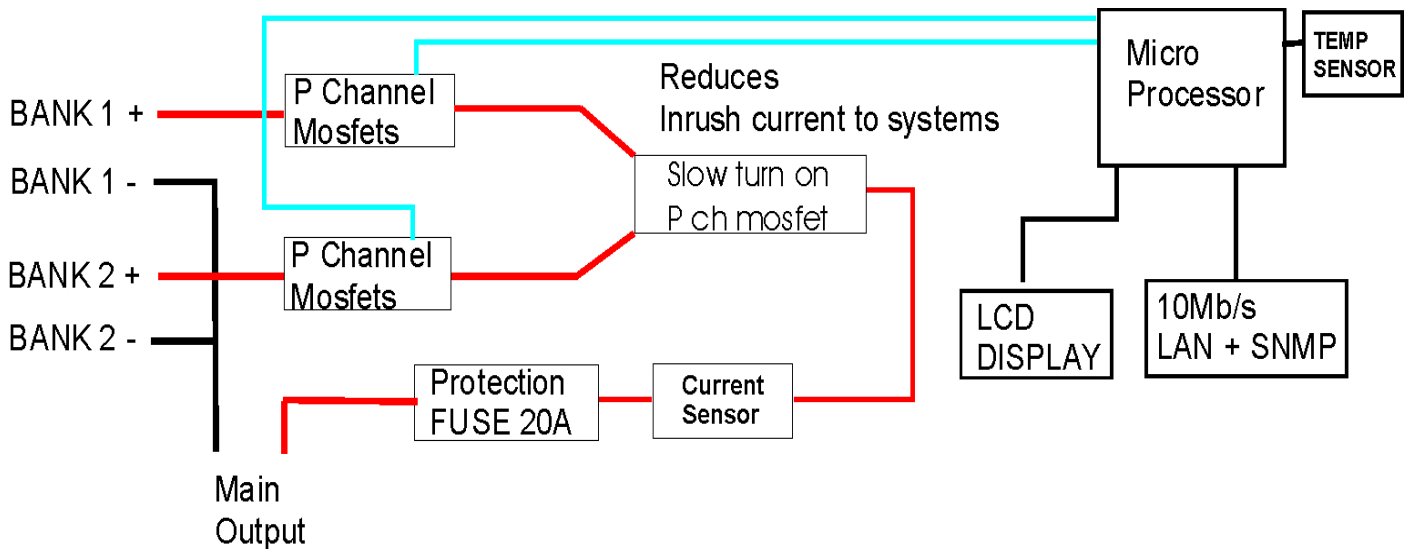
 Battery bank 1 will always be the main (primary) battery bank.

The user can program a low voltage disconnect value for **battery bank 1** (this is the level where the unit will automatically switch over to **bank 2**)

The user can program a high voltage re-connect value for battery **bank 1** (this is the level where the unit will switch back to **Bank 1 from bank 2**)

The user can also set a low voltage disconnect value for **battery bank 2** where all power will be turned off to protect the battery banks from a deep level discharge if BANK **A** and BANK **B** is below the user programmed values.

The unit can also be used as a battery low voltage protector to protect batteries from a deep level discharge state.

The system was designed to automatically draw its operating current of about 140milli-Amp always from the battery bank with the highest voltage level.

The unit can safely continuous switch 25 Amp to the load output. The output current is also measured via an isolated Hall effect current sensor, build in Temperature sensor to measure ambient temp, all values available via SNMP and in the web pages.

Normally closed potential free alarm input terminal on the side of the unit, no voltages should be injected here, only a potential free switch (relay contact) connection. The LCD will indicate Alarm and the SNMP Alarm value will change from 0 to a 1 for 5min in SNMP values

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3. Features

P channel Mosfets for switching between battery banks
One dedicated slow turn on Mosfet to limit inrush current to equipment at startup connected to the battery controller
Local LCD display for onsite readings of voltages and currents
Internal isolated hall effect current sensor to measure output current
Output short circuit protected via a ATO (automotive) 25Amp Blade fuse
Embedded web pages
Unit supports SNMP V1 / V2 for remote monitoring
Alarm input: Normally closed potential free alarm input terminal
Internal Temperature sensor on the side to measure ambient temperature around the system
Large 65 Amp connection terminals for battery banks - up to 16mm2 cables

Typical connections
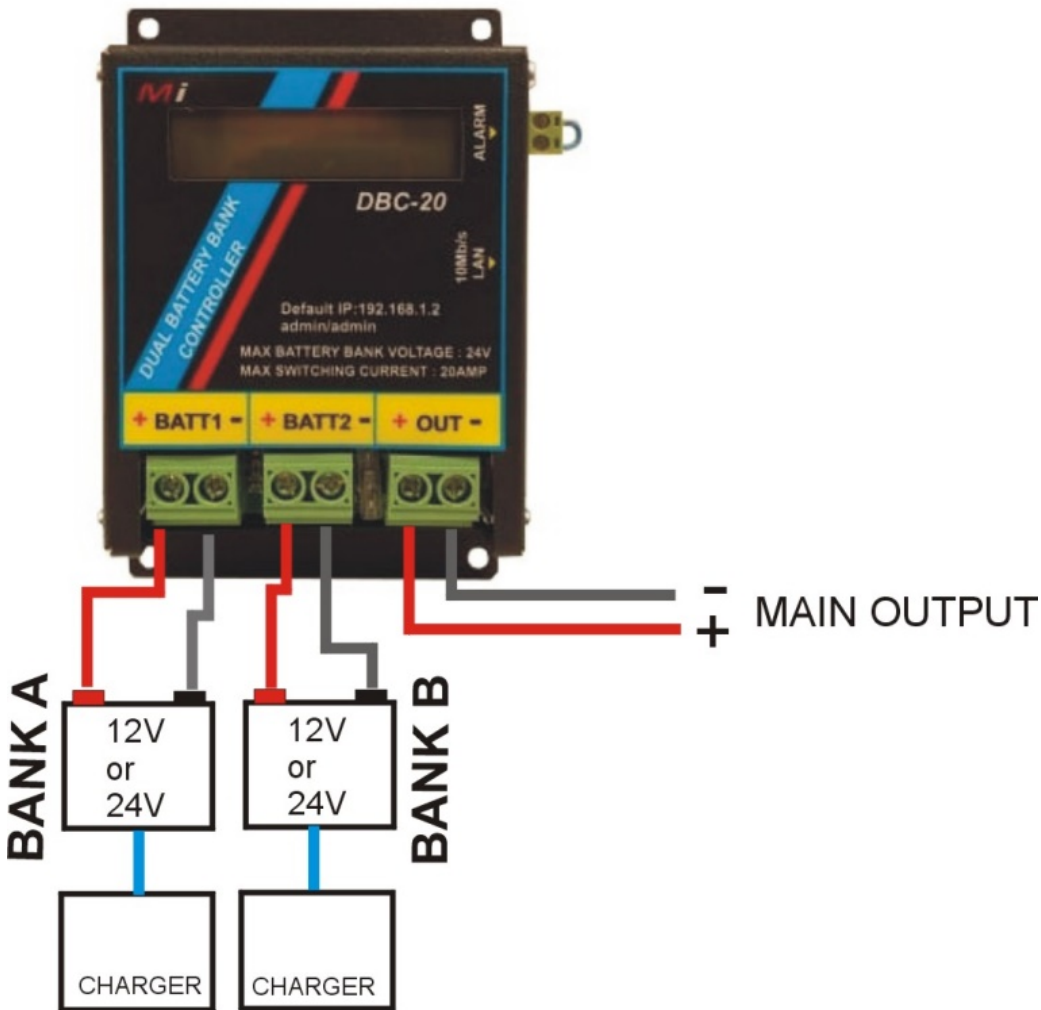
Both the voltages for BANK A and BANK B is displayed on the LCD

The output current is displayed and the active Battery BANK- A or B is displayed

Home Page

All Pages with user settings is Password protected:

DUAL BATTERY BANK CONTROLLER

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Status Page:

Micro Instruments

DUAL BATTERY CONTROLLER

Home Page

Status

User Settings

Network Configuration

SNMP Configuration

STATUS

build date of the HEX file programmed and serial number:.

```
Jun 11 2020 serial # Mi-0001
```

Temperature sensor in Degrees Celcius:.

```
+18.8 D
```

Battery Bank A Volts:.

```
14.4V
```

Battery Bank B Volts:.

```
13.6V
```

Current LCD Display image:.

A: = Battery Bank A Volts

B: = Battery Bank B Volts

OUT: = Current selected Battery bank

I: = Load current on unit

```
A:14.4V  B:13.6V
OUT: A    I:00.0A
```

Settings Page:

User settings Page

This Page application controls the switching voltage between Battery banks

Bank A is always the primary battery bank

Enter the High and low voltage levels for both banks as eg. 10.0 to set the voltage levels to 10.0V

When Bank A reaches the disconnect voltage level the unit will switch to Bank B

When Bank A reaches the re-connect voltage level the unit will switch back to Bank A

When Bank B reaches the disconnect voltage level and Bank A is still below the disconnect level the unit will turn off to protect batteries

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Bank A Name(max5): 100A
Bank B Name(max5): 50A

Save

Voltage level to disconnect Bank A:
11.3

Voltage level to Re-connect Bank A:
12.5

Voltage level to disconnect Bank B:
11.0

Save

Force to BANK B for BANK A Maintenance

Force to BANK B Normal operation ⌄

Save

!! Never disconnect the current active battery bank which is routed to the output while in use, disconnect the **in-active** bank only, should the current active battery bank be Bank A and Bank A requires maintenance , use the **force to BANK B button** , make sure the display indicates that Bank B is the selected battery for the output , then disconnect A , after maintenance remember to select **Normal operation** again.

Network Page:

Micro Instruments

DUAL BATTERY CONTROLLER

Home Page

Status

User Settings

Network Configuration

SNMP Configuration

Network Configuration

This page allows the configuration of the network settings.

CAUTION: Incorrect settings may cause the unit to lose network connectivity.

Enter the new Network settings below:

MAC Address:	00:19:F6:00:23:89
Host Name:	NPM-R10
Password: [max 9]	admin
IP Address:	192.168.1.2
Gateway:	192.168.1.1
Subnet Mask:	255.255.255.0
	Save Config and Reboot

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SNMP Page:

DUAL BATTERY CONTROLLER

Home Page

Status

User Settings

Network Configuration

SNMP Configuration

SNMP Community Configuration

Read/Write Community String configuration for SNMPv2c Agent.

Configure multiple community names if you want the SNMP agent to respond to the NMS/SNMP manager with different read and write community names. If less than three communities are needed, leave extra fields blank to disable them.

Read Comm1 :	public
Read Comm2 :	read
Read Comm3 :	
Write Comm1:	private
Write Comm2:	write
Write Comm3:	public

Save Config

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SNMP OID TABLE

1.3.6.1.4.1.45501.1.3.1.0 = Battery BANK A voltage

1.3.6.1.4.1.45501.1.3.2.0 = Battery BANK B voltage

1.3.6.1.4.1.45501.1.3.3.0 = Load current sensor value

1.3.6.1.4.1.45501.1.3.4.0 = Temperature sensor value

1.3.6.1.4.1.45501.1.3.5.0 = Alarm input value

1.3.6.1.4.1.45501.1.3.6.0 = LCD display string image

Physical dimensions and weight:

L = 140mm

W = 95mm

H = 35mm

Weight: 0.5 Kg