DYNAPOWER CORPORATION

USER'S MANUAL

DUAL FEEDBACK ISOLATOR with CURRENT LOOP OUTPUT

EU-10099G

DYNAPOWER INVENTORY NUMBER

Rev. A EUG-7-100990001
Rev. B EUG-7-100990002
Rev. C EUG-7-100990003
Rev. D EUG-7-100990004
Rev. E EUG-7-100990005

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1. SPECIFICATION

EUG-7-100990001 (EU-10099G, Rev. A)

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compl.

Voltage Channel Output ..... adjustable 0 to -10 Vdc abs.

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compl.

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

These signals may be unsuitable for certain types of A/D converters because of the high ripple content of the signal.

EUG-7-100990002 (EU-10099G, Rev. B)

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compl.

Voltage Channel Output ..... adjustable 0 to -10 Vdc abs.

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compl.

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs ..... 20 Hz

EUG-7-100990003 (EU-10099G, Rev. C)

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compl.

Voltage Channel Output ..... adjustable 0 to -10 Vdc

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compl.

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs ..... 20 Hz

EUG-7-100990004 (EU-10099G, Rev. D)

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compl.

Voltage Channel Output ..... adjustable 0 to -10 Vdc .

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compl.

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs 20 Hz

EUG-7-100990005 (EU-10099G, Rev. E)

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compl.

Voltage Channel Output ..... adjustable 0 to -10 Vdc .

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compl.

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs 20 Hz

DYNAPOWER CORPORATION

DUAL FEEDBACK ISOLATOR with CURRENT LOOP OUTPUT

2. DESCRIPTION

Most regulator circuits used in Dynapower power supplies require current feedback signal from a 50 mv shunt and a higher level voltage feedback signal from the output bus.
Also interfaced to the regulator circuits may be signals from external equipment. The regulators and external equipment are thus connected directly to one of the power supply output busses.

It is advantageous to isolate the power supply output bus from the electronic regulating and monitoring circuits. To this end, the Dual Feedback Isolator Circuit may be used. The circuit has large bandwidth, excellent linearity and stability, making it suitable for closed loop applications.

The circuit has two inputs which are isolated from each other. One channel is used as the current feedback channel and the other is used as the voltage feedback channel.

2.1 CURRENT FEEDBACK CHANNEL

The current feedback channel has been designed for an input of 0-50 mv dc. There are three outputs from the current channel:

an absolute value 0 to -50 mv dc to connect to a regulator (see User's Manual)

a bipolar 0 to 10 with adjustable gain

a current loop output, 4-20 ma or 0-20 ma selected with SW2

The current loop output may be converted into an absolute value positive voltage by switching in a resistor.

Outputs are selected by setting dip switches as shown in the following table.

CURRENT CHANNEL DIP SWITCH SETTINGS

OUTPUT	SW2 1	SW2 2	SW2 3	SW2 4	SW2 5	SW2 6
0 - 20 MA	ON	ON	OFF	OFF	OFF	OFF
4 - 20 MA	OFF	OFF	ON	OFF	OFF	OFF
0 - 2 VOLTS	ON	ON	OFF	ON	OFF	OFF
0 - 5 VOLTS	ON	ON	OFF	OFF	ON	OFF
0 - 10 VOLTS	ON	ON	OFF	OFF	OFF	ON
.4 - 2 VOLTS	OFF	OFF	ON	ON	OFF	OFF
1 - 5 VOLTS	OFF	OFF	ON	OFF	ON	OFF
2 - 10 VOLTS	OFF	OFF	ON	OFF	OFF	ON

2.2 VOLTAGE FEEDBACK CHANNEL

The voltage channel has been designed for an input of 0-2.5 Vdc. A voltage dropping resistor must be connected in series with one of the input terminals. The input resistance of the voltage is 10 Kohms.

There are three outputs from the voltage channel:

an absolute value 0 to -10 volts dc with adjustable gain

a bipolar 0 to 10 volts with adjustable gain

a current loop output, 4-20 ma or 0-20 ma selected with SW1

The current loop output may be converted into an absolute value positive voltage by switching in a resistor.

Outputs are selected by dip switch settings as shown in the following table.

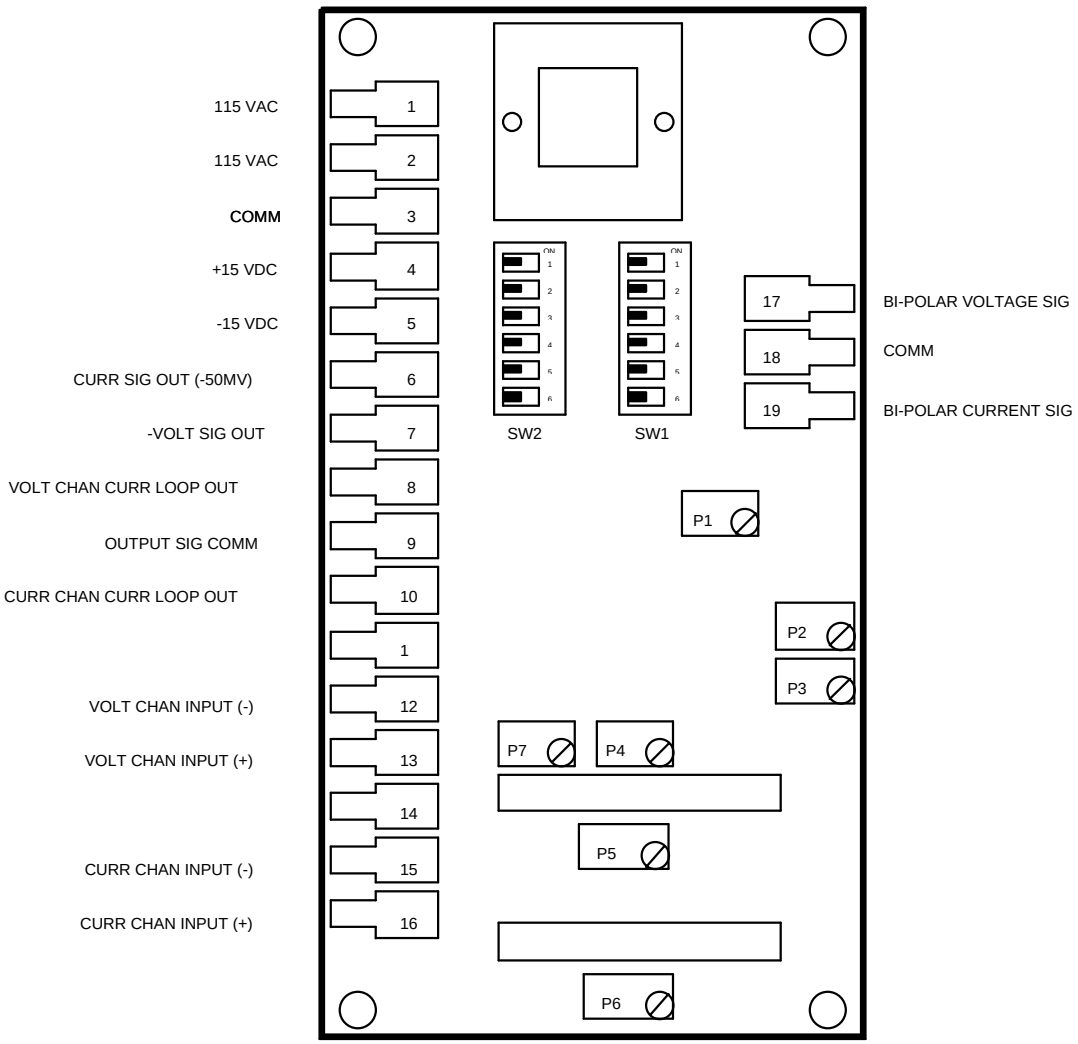
VOLTAGE CHANNEL DIP SWITCH SETTINGS

OUTPUT	SW1 1	SW1 2	SW1 3	SW1 4	SW1 5	SW1 6
0 - 20 MA	ON	ON	OFF	OFF	OFF	OFF
4 - 20 MA	OFF	OFF	ON	OFF	OFF	OFF
0 - 2 VOLTS	ON	ON	OFF	ON	OFF	OFF
0 - 5 VOLTS	ON	ON	OFF	OFF	ON	OFF
0 - 10 VOLTS	ON	ON	OFF	OFF	OFF	ON
.4 - 2 VOLTS	OFF	OFF	ON	ON	OFF	OFF
1 - 5 VOLTS	OFF	OFF	ON	OFF	ON	OFF
2 - 10 VOLTS	OFF	OFF	ON	OFF	OFF	OFF

3. TERMINAL FUNCTIONS

Terminal	Function
1	115 Vac power
2	115 Vac power
3	Power Supply Common
4	+ 15 Volt Power Supply Output
5	- 15 Volt Power Supply Output
6	- 50 MV Current Signal absolute
7	- Voltage Signal absolute
8	Voltage Channel Current Loop Out
9	Output Signal Common
10	Current Channel Current Loop Out
11	N/C
12	Voltage Channel Input (-)
13	Voltage Channel Input (+)
14	N/C
15	Current Channel Input (-)
16	Current Channel Input (+)
17	Voltage Channel Bi-polar Out
18	Output Signal Common
19	Current Channel Bi-polar Out

EU-10099G, Rev. A
EU-10099G, Rev. B
EU-10099G, Rev. C
EU-10099G, Rev. D



DYNAPOWER

EUG-7-100990001

EUG-7-100990002

EUG-7-100990003

4. ADJUSTMENTS

P1 adjusts current channel bi-polar output on terminal 19.

P2 adjusts voltage channel bi-polar output on terminal 17.

P3 adjusts voltage channel absolute value output on terminal 7.

P4 adjusts voltage channel current loop output on terminal 8.

P5 adjusts voltage channel offset.

P6 adjusts current channel offset.

P7 adjusts current channel current loop output on terminal 10.

5. BENCH TEST

1. Set voltage channel for 4 to 20 ma output.

   Set current channel for 4 to 20 ma output.

2. Measure voltage between terminal 4 and common terminal 3

   Should be +15, ± .25 Vdc

3. Measure voltage on terminal 5 and common terminal 3

   Should be -15, ± .25 Vdc

4. Voltage Channel

   Connect milli ammeter in series with 100 ohms to terminal 8 and terminal 9

   Current from terminal 8 should be 4.00 ma, adjust with P5.

   Voltage on terminal 7 should be ± .01

   Voltage on terminal 17 should be ± .01

   Connect 2.50 Vdc to terminal 13 (+) and terminal 12.

   Current from terminal 8, should be 20.00 ma, adjust with P4.

   Voltage on terminal 7 should be -5.00, adjust with P3.

   Voltage on terminal 17 should be +5.00, adjust with P2

   Remove milli-ammeter

5. Current Channel

Connect milli ammeter in series with 100 ohms terminal 10 and terminal 9

Current from terminal 10 should be 4.00 ma, adjust with P6.

Voltage on terminal 19 should be ± .01 volts.

Voltage on terminal 6 should be ± .005 volts.

Connect 50.00 mv dc to terminal 16 (+) and 15.

Voltage on terminal 6 should be -50.0 mv

Current from terminal 10 should be 20.0 ma, adjust with P7.

Voltage on terminal 19 should be +5.00, adjust with P1.

6. FIELD ADJUSTMENTS

The Isolator can be used to close the loop of the regulator controlling the power supply and at the same time provide feedback to the User. Making adjustments to one function may affect the other function, i.e. making adjustments for closed loop may affect feedback to the User and making adjustments to User feedback may affect power supply setpoint.

If adjustments are to be made while the supply is running, adjustment to the voltage feedback should be made with the power supply running in constant current mode, adjustments to the current feedback should be made while in constant voltage mode.

For voltage measurements, terminal 3 is common.

Voltage Channel

Power supply is OFF.

Connect milli ammeter in series with terminal 8 and terminal 9

Current from terminal 8 should be 4.00 ma or 0.00 ma (depending on SW1switch settings), adjust with P5.

Voltage on terminal 7 should be ± .01

Voltage on terminal 17 should be ± .01

Turn supply ON, set output for constant current operation

If feedback current is set for 0 - 20 ma, feedback current should be 20*(actual power supply voltage)/(power supply voltage rating), adjust with P4.

If feedback current is set for 4 - 20 ma, feedback current should be 4 + 16*(actual power supply voltage)/power supply voltage rating, adjust with P4.

Voltage on terminal 7 should be -5.00*(actual power supply voltage)/(power supply voltage rating), adjust with P3. If the voltage from this terminal is used as the feedback voltage to a regulator, then the power supply VOLT LIMIT control will have to be reset.

Voltage on terminal 17 should be +5.00*(actual power supply voltage)/(power supply voltage rating), adjust with P2.

5. Current Channel

Power supply is OFF.

Connect milli ammeter in series with terminal 9 and terminal 10

Current from terminal 10 should be 4.00 ma or 0.00 ma (depending on SW2 switch settings), adjust with P6.

Voltage on terminal 6 should be ± .001

Voltage on terminal 19 should be ± .01

Turn supply ON, set output for constant voltage operation

If feedback current is set for 0 - 20 ma, feedback current should be 20*(actual power supply current)/(power supply current rating), adjust with P7.

If feedback current is set for 4 - 20 ma, feedback current should be 4 + 16*(actual power supply current)/(power supply current rating), adjust with P7.

Voltage on terminal 6 should be -.050*(actual power supply current)/(power supply current rating).

Voltage on terminal 19 should be +5.00*(actual power supply current)/(power supply current rating), adjust with P1.

Note

The output voltages on terminal 17 and 19 are intended to be feedbacks to User equipment and may be set to match the requirements of User equipment.