

FEATURES

Resistor Programmable Voltage or Current Output

Voltage: +1V dc to +15V dc @ 125mA max

Current: 100 μ A to 10mA ($V_{COMPL} = +10V$)

Dual Fixed Output: $\pm 15V$ dc @ $\pm 65mA$ max

Excellent Regulation: Line $\pm 0.01\%$ max; Load $\pm 0.02\%$ max

Low Drift: 0.006%/°C max (2B35K)

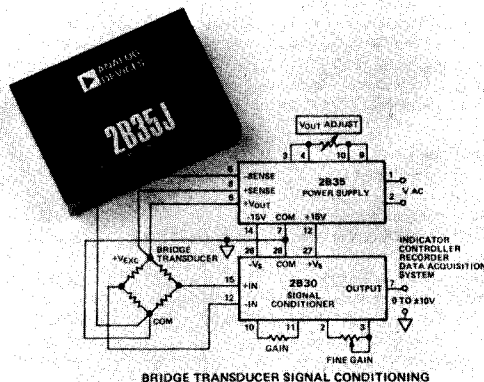
No Derating Over $-25^{\circ}C$ to $+71^{\circ}C$ Operating Range

APPLICATIONS

Measurement and Control Instruments and Systems

Excitation Source For:

Strain Gages, Pressure Transducers, Load Cells,
Torque Transducers, RTD's



GENERAL DESCRIPTION

The 2B35 is a triple output modular power supply designed to provide regulated excitation to a wide variety of transducers as well as $\pm 15V$ power for amplifiers and other analog circuits of an instrumentation system. The single-resistor programmable transducer excitation output may be operated in two modes: constant voltage, providing a +1V to +15V output or a constant current, adjustable from 100 μ A to 10mA.

The programmable output in the voltage mode features current rating of 0 to 125mA, suitable to excite four 350 Ω transducers at 10V. Current limiting protects the output against accidental overload and remote sensing corrects for the transducer cable resistance variations. In the constant current mode, externally set 100 μ A to 10mA output offers a 0 to +10V compliance voltage range. The $\pm 15V$ outputs feature 0.5% tracking accuracy and current rating of 0 to $\pm 65mA$ max.

Two accuracy selections are available offering guaranteed low temperature coefficient; 2B35K: 0.006%/°C max and 2B35J: 0.05%/°C max. Line and load regulation are also guaranteed; 2B35K: 0.01% and 0.02%, and 2B35J: 0.08% and 0.1%, max, respectively.

APPLICATIONS

The 2B35 is designed for ac powered signal conditioning instrumentation applications used for data acquisition, control, indication or recording. This compact module may be applied as a power source for the model 2B30 strain gage transducer/RTD signal conditioner in a high accuracy transducer interface application. Some typical applications involve strain gages for stress/strain measurements, pressure transducers, load cells, torque transducers and RTD's.

OPERATION

Figure 1 illustrates operation of the 2B35K providing an adjustable voltage output and dual 15V dc outputs. The resistor programmable output (+VOUT) is set between +1V to +15V by the R_{TRIM} . R_{TRIM} may be determined by using either the table shown in Figure 1 or the graph shown in Figure 2. For example, to provide an adjustable range from +1V to +6V, R_{TRIM} should be a 5k Ω pot.

The remote sensing inputs (pins 5 and 8) are connected at the transducer (load) to the voltage output (SENSE HIGH to +VOUT and SENSE LOW to COMMON).

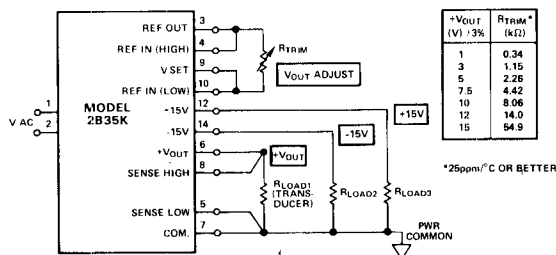


Figure 1. Model 2B35K Connection Diagram for Dual 15V dc and Adjustable +1V to +15V Output

For optional input voltage ranges, see note 1, next page.

(typical @ +25°C and 115V ac 60Hz unless otherwise noted)

Model	2B35J	2B35K
INPUT		
Input Voltage Range ¹	105V ac to 125V ac	*
Input Frequency Range	50Hz to 400Hz	*
ADJUSTABLE OUTPUT		
Voltage Mode		
Output Voltage Range	+1V to +15V dc	*
Output Voltage Stability		
vs. Temperature — % $V_{OUT}/^{\circ}\text{C}$ max	± 0.05	± 0.006
vs. Time — % V_{OUT}/month	± 0.01	*
Output Current (-25°C to $+71^{\circ}\text{C}$) ²	0 to 125mA max	*
Output Impedance — @ dc, max	0.1Ω	*
Noise and Ripple (dc to 1MHz) — mV p-p max	1	*
— mV rms max	0.25	*3
Regulation		
Line (full range) — % V_{OUT} max	± 0.08	± 0.01
Load (no load to full load) — % V_{OUT} max	± 0.1	± 0.02
Remote Sensing Impedance	$30k\Omega$	*
Short Circuit Current Limit ³ (-25°C to $+71^{\circ}\text{C}$)	200mA	*
Current Mode		
Output Current Range	100 μA to 10mA	*
Output Current Stability		
vs. Temperature — % $I_{OUT}/^{\circ}\text{C}$ max	± 0.05	± 0.006
vs. Time — % I_{OUT}/month	± 0.01	*
Compliance Voltage Range	0 to +10V	*
Noise and Ripple (dc to 1MHz) — μA p-p	0.1	*
Line Regulation (full range) — % I_{OUT} max	± 0.08	± 0.01
DUAL FIXED OUTPUTS		
Output Voltage	$\pm 15\text{V}$ dc	*
Voltage Error — mV max	-0, +300	*
Accuracy Tracking (-15V Ref to +15V) — % max	± 0.5	*
Stability vs. Temperature — %/ $^{\circ}\text{C}$ max	± 0.02	± 0.006
Output Current ⁴	0 to $\pm 65\text{mA}$ max	*
Output Impedance — @ dc, max	0.1Ω	*
Noise and Ripple (dc to 1MHz) — mV p-p	1	*
— mV rms	0.25	*
Regulation		
Line (full range) — % max	± 0.08	± 0.01
Load (no load to full load) — % max	± 0.1	± 0.02
Short Circuit Current Limit ³ (-25°C to $+71^{\circ}\text{C}$)	$\pm 180\text{mA}$	*
INPUT TO OUTPUT ISOLATION		
Breakdown Voltage — Continuous, ac or dc	$\pm 500\text{V}$ pk max	*
Isolation Resistance	$50M\Omega$	*
TEMPERATURE RANGE		
Operating, Rated Performance	-25°C to $+71^{\circ}\text{C}$	*
Storage	-25°C to $+85^{\circ}\text{C}$	*
MECHANICAL		
Case Dimensions — Inches	$2.5 \times 3.5 \times 1.25$	*
Weight — Grams	550	*
Mating Socket	AC1212	*

NOTES

*Specifications same as model 2B35J.

¹ Optional input voltage ranges: "E" Option; 205-240V ac, 50 to 400Hz.

"F" Option; 90-110V ac, 50 to 400Hz

"H" Option; 220-260V ac, 50 to 400Hz

Order option desired as a suffix to model number.

² Maximum output current available over the entire output voltage and temperature range without derating.

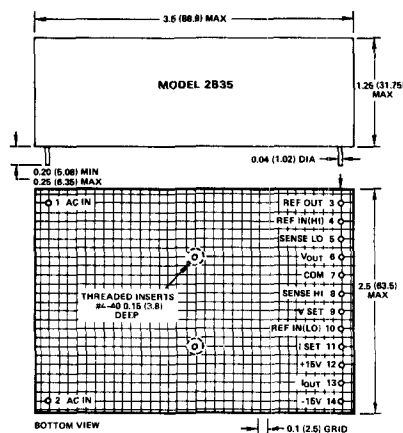
³ Output protected for continuous short circuit over the temperature range.

⁴ Unbalanced load operation is permissible for any combination of $+I_O$ and $-I_O$ which does not exceed a total of 130mA.

Specifications subject to change without notice.

OUTLINE DIMENSIONS

Dimensions shown in inches and (mm).



MATING SOCKET: AC1212

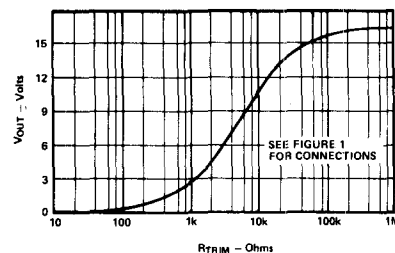


Figure 2. Voltage Output vs. R_{TRIM}

ADJUSTABLE CURRENT OUTPUT WITH DUAL 15V dc OUTPUTS

Pin connections to provide dual 15V dc and a constant current output are shown in Figure 3. The current output is adjusted from 100 μ A to 10mA via R_{TRIM}. The value of programming resistor R_{TRIM} may be calculated from the relationship: R_{TRIM} = 2.46/I_{OUT} where R_{TRIM} is in k Ω and I_{OUT} in mA.

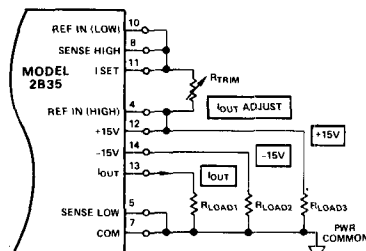


Figure 3. Model 2B35 Connection Diagram to Provide Dual 15V dc and Adjustable 100 μ A to 10mA Current Output