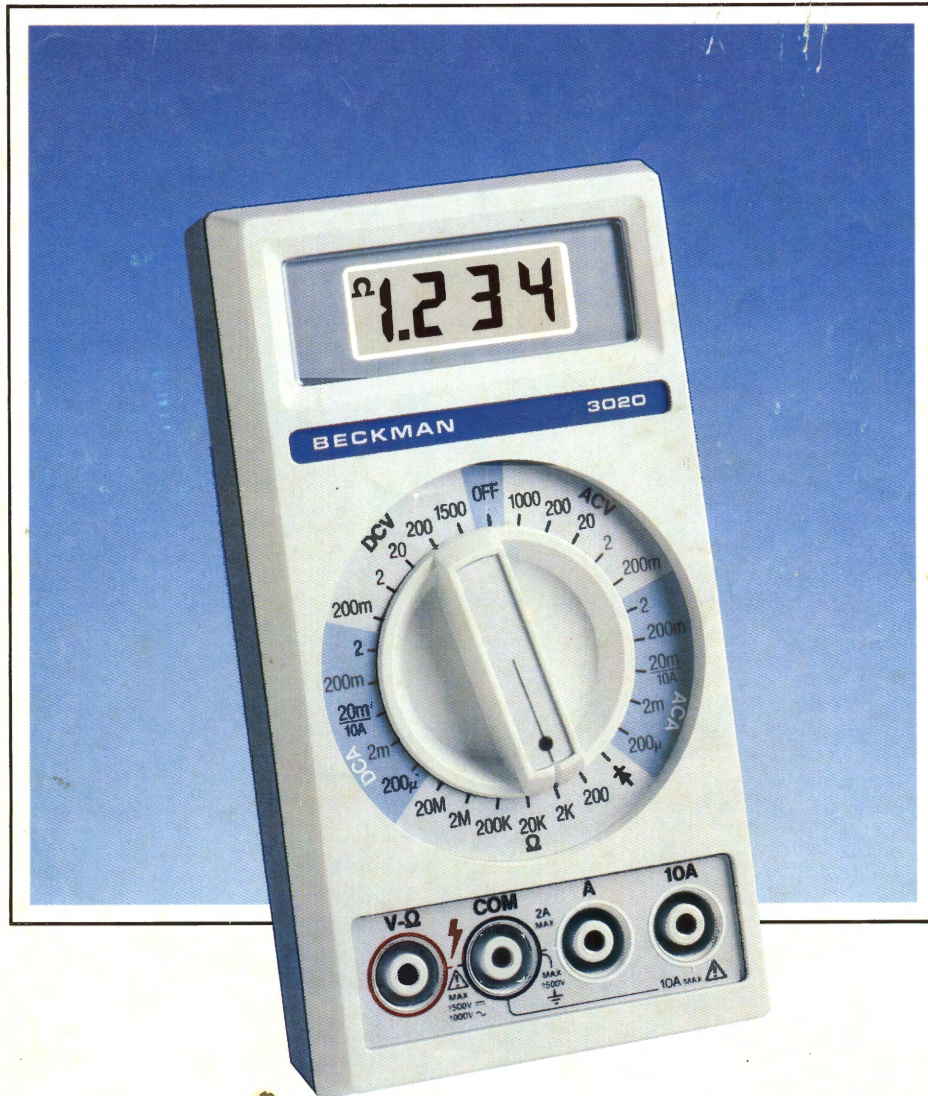


BECKMAN

Digital Multimeters

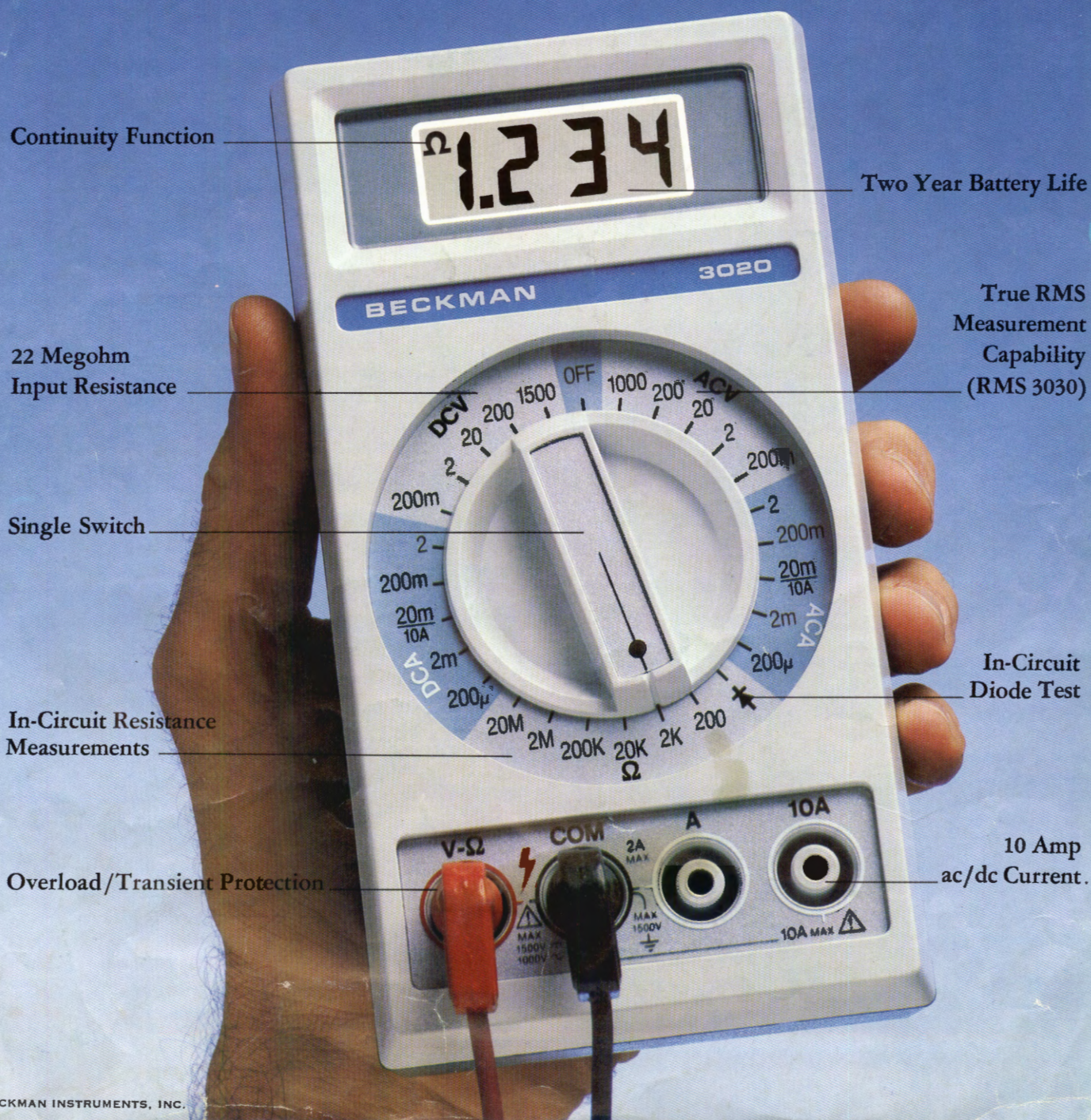
MODELS 3010, 3020 AND RMS 3030

S/No. 00923464.



Digital Multimeters that work the way you do!

You do your job as well as it can be done. Now there's a line of digital multimeters that does the same. A new generation of $3\frac{1}{2}$ digit multimeters a step above all other digital and analog multimeters. We've combined the best of both to give you useful and easy-to-use features found in no other multimeter.



Specifications Accuracies are $\pm$ (% reading + no. of digits) guaranteed for 1 year, 25°C $\pm$ 5°C.

DC Voltage

Model	3010	3020	RMS 3030
Ranges	200mV, 2V, 20V, 200V, 1500V		
Resolution	100 μ V on 200mV range		
Accuracy	0.25% rdg. + 1 digit	0.1% rdg. + 1 digit	0.1% rdg. + 1 digit
Input Impedance	22 M Ω , all ranges		
Normal Mode Rejection	>60 dB above 49Hz		
Common Mode Rejection	>160 dB up to 1500 Vdc		
Response Time	Less than 1 second		
Overvoltage Protection	1500 Vdc or peak ac, any range		

AC Voltage

Model	3010	3020	RMS 3030
Ranges	200mV, 2V, 20V, 200V, 1000V		
Resolution	100 μ V on 200mV range		
Accuracy			
45Hz-2kHz	0.75% rdg. + 3 digits	0.6% rdg. + 3 digits	0.6% rdg. + 3 digits
2kHz-5kHz	1.5% rdg. + 5 digits	1% rdg. + 5 digits	1% rdg. + 4 digits
5kHz-10kHz	2.5% rdg. + 9 digits	2.0% rdg. + 9 digits	1.5% rdg. + 5 digits
10kHz-20kHz	Not Specified	Not Specified	2% rdg. + 7 digits
Conversion Type	Average sensing — RMS calibrated sine wave		True RMS (ac + dc)
Input Impedance	2.2M Ω shunted by <75pF.		
Response Time	Less than 2 Seconds*		
Overvoltage Protection	1000 Vrms/1500V peak ac or 250Vdc (5 seconds max. above 450V rms, 200mV range)		
Crest Factor**	Not applicable	Not applicable	1:1 to 5:1

*Response Time on RMS 3030 specified only for inputs above 10% of full scale.

Resistance

Model	3010	3020	RMS 3030
Ranges	200 Ω , 2k Ω , 20k Ω , 200k Ω , 2M Ω , 20M Ω		
Resolution	0.1 Ω on 200 Ω range		
Accuracy			
200 Ω to 2M Ω ranges	0.5% rdg. + 1 digit	0.2% rdg. + 1 digit	0.2% rdg. + 1 digit
20M Ω range	1.5% rdg. + 1 digit	1.0% rdg. + 1 digit	1.0% rdg. + 1 digit
Maximum Open Circuit Voltage	500mV		
Maximum In-Range Voltage	250mV		
Maximum Test Current	2.5mA		
Response Time	Less than 1 second, except 20M Ω range, less than 4 seconds		
Overload Protection	300 Vdc or rms ac any range		

**Crest Factor = $\frac{\text{Peak Voltage}}{\text{RMS Voltage}}$

Insta-Ohms™ Continuity Function

Model	3010	3020	RMS 3030
Response Time	< 100 milliseconds		

Diode Test

Model	3010	3020	RMS 3030
Range	0 to 2V		
Resolution	1mV		
Accuracy	0.25% rdg. + 2 digits	0.1% rdg. + 2 digits	0.1% rdg. + 2 digits
Test Current	5mA, $\pm$ 10%		
Response Time	Less than 1 second		
Overload Protection	300 Vdc or rms		

DC Current

Model	3010	3020	RMS 3030
Ranges	200 μ A, 2mA, 20mA, 200mA, 2A, 10A		
Resolution	100 nA on 200 μ A range		
Accuracy			
200 μ A to 2A ranges	0.75% rdg. + 1 digit	0.35% rdg. + 1 digit	0.35% rdg. + 1 digit
10A range	1.5% rdg. + 1 digit	1.0% rdg. + 1 digit	1.0% rdg. + 1 digit
Response Time	Less than 1 second		
Voltage Burden	250mV maximum at full scale except 2A and 10A ranges, 700mV		
Overcurrent Protection (A input)	2 Amps/250V (Fused)		
Overcurrent Protection (10A input)	Up to 20 Amps for 30 seconds (Unfused)		

AC Current

Model	3010	3020	RMS 3030
Ranges	200 μ A, 2 mA, 20 mA, 200 mA, 2A, 10A		
Resolution	100nA on 200 μ A range		
Accuracy			
45Hz-2kHz (except 10A)	1.5% rdg. + 3 digits	0.9% rdg. + 3 digits	0.9% rdg. + 3 digits
2kHz-5kHz (except 2A & 10A ranges)	Not Specified	Not Specified	1.5% rdg. + 3 digits
45Hz-400Hz (10A range)	2.0% rdg. + 3 digits	1.5% rdg. + 3 digits	1.5% rdg. + 3 digits
Conversion Type	Average Sensing	Average Sensing	True RMS (ac + dc)
Response Time	Less than 2 seconds*		
Voltage Burden	250mV maximum at full scale except 2A and 10A ranges, 700mV		
Overcurrent Protection (A input)	2 Amps/250V (Fused)		
Overcurrent Protection (10A input)	Up to 20 Amps for 30 seconds (Unfused)		

*Response Time on RMS 3030 specified only for inputs above 10% of full scale.

Choice of Models

The Model 3020 has all above features, 7 functions, 29 ranges, plus 0.1% Vdc accuracy.

The Model 3010 has all the above features with a 0.25% Vdc accuracy.

The Model RMS 3030 features 0.1% Vdc accuracy plus True RMS ac measurement capability.

Whichever model you choose, you get long-term accuracy, reliability and Beckman's warranty.

Completely Equipped

All Beckman multimeters come ready for use and are equipped with 9V battery, a space fuse, safety-designed test leads, operator's manual and Beckman's warranty.

Beckman Warranty

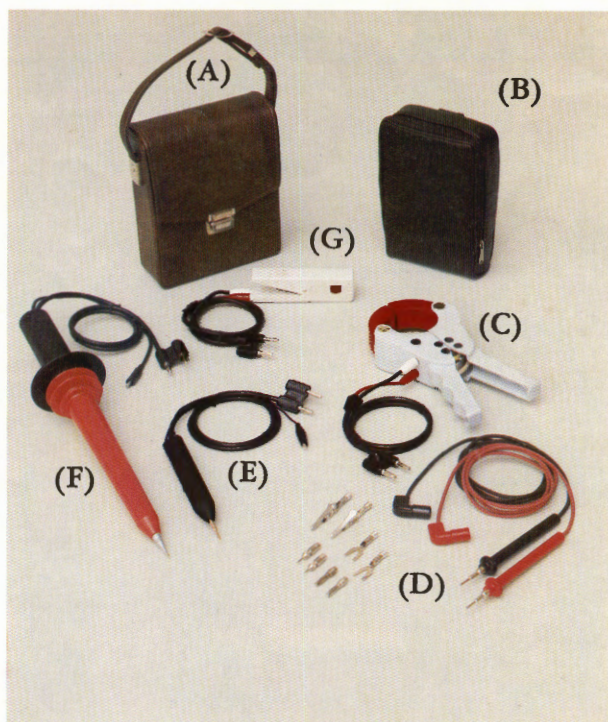
Beckman Multimeters have been designed for maximum reliability and trouble-free operation. For this reason, each instrument comes with a one-year limited warranty under which Beckman agrees that if the instrument fails for any reason whatsoever, except abuse, Beckman will (at its election) repair or replace the Multimeter with a new or reconditioned unit of equivalent quality. The user must fill out and return the Warranty Card as a condition precedent to Warranty coverage. Thereafter, the user simply mails the unit back to the factory or the local authorized service center with a check for \$3.00 to cover postage and handling. A new or reconditioned instrument will then be returned by air, typically with only one working day turnaround at the Service Center.

Beckman Means the Finest in Precision Instrumentation

For more than 40 years, Beckman has been recognized as a leader in scientific instruments. Today Beckman employs over 10,000 people in manufacturing facilities worldwide. The Beckman network of professionally staffed sales and service organizations spans more than 120 nations.

Safety-Designed
Test Leads

Complete Line of Accessories



Carrying Cases — Two durable cases are available for extra instrument protection. Both have room for the instrument, test leads and operator's manual.

(A) Deluxe Case (DC-202) : Ruggedized, leather-grained vinyl. Adjustable carrying strap.

(B) Vinyl Case (VC-201) : Padded, fabric-lined vinyl. Zipper closed. Belt loop.

(C) AC Current Clamp (CT-232) : Extends the ac current measurement capability to 1000A without breaking the circuit. Accuracy from $\pm 1\%$ (60Hz) to $\pm 2\%$ (1000Hz).

(D) Deluxe Test Lead Kit (DL-241) : Includes Beckman safety-designed test leads and complete assortment of screw-in probe tips.

(E) RF Probe (RF-221) : Extends the ac measuring capability of the multimeters to 200MHz. Accuracy is $\pm 1\%$ from 2kHz to 10MHz and $\pm 1\text{db}$ from 10MHz to 100MHz for inputs up to 25Vrms. Overvoltage protected to 130Vrms.

(F) High Voltage Probe (HV-211) : Extends the dc voltage measurement capability to 50kV with an accuracy of $\pm 2\%$ at 25kV.

(G) AC Current Clamp (CT-231) : Extends the ac current measurement capability to 150A without breaking circuit. Accuracy from $\pm 3\%$ (60Hz) to $\pm 4\%$ (1000Hz).

Order Now!

Beckman multimeters and accessories are available from electronic and instrument distributors worldwide. For the name of your nearest distributor, write or call Advanced Electro-Products Division, Beckman Instruments, Inc., 2500 Harbor Blvd., Fullerton, CA 92634 (714) 871-4848 ext. 3651.

Continuity Function

With Beckman's new Insta-Ohms™ continuity indicator, you no longer need an analog meter for fast continuity measurements. Circuit shorts and other electrical continuity checks can now be made more quickly and easily than ever before possible with a digital multimeter. Now you can zip along a connector as fast as with an analog meter to find a particular connection, but there's no needle movement to break. In any resistance range, an ohm symbol appears in the display the instant continuity is established with the test leads.

True RMS Measurement Capability (RMS 3030)

The Beckman RMS 3030 measures both ac voltage and ac current in True RMS (ac + dc). Signals with high harmonic content and complex waveforms such as in switching power supplies and SCR regulators can be measured easily and accurately.

10 Amp ac/dc Current Capability

Measure up to 10 amps ac or dc continuously without adding special adaptors.

22 Megohm Input Resistance

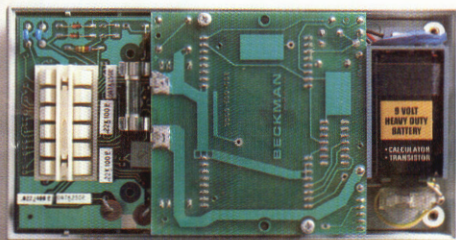
Reduce reading errors caused by circuit loading. 22 Megohm input impedance on all dc voltage ranges means less than *half* the circuit loading of other DMMs with only 10 megohms and far less loading than most VOMs.

Superior Reliability

To insure exceptionally high instrument reliability, Beckman designed a custom CMOS LSI circuit to replace most discrete components. Since all active multimeter functions are performed by this one integrated circuit, the total number of electronic parts in each instrument has been reduced to less than 40, (less than 50 in the RMS 3030), far fewer than in other comparable multimeters. Reliability is further enhanced by 100% burn-in of each instrument and complete factory test of every function and range.

Guaranteed Long-Term Accuracy

Long term accuracy is assured using a highly stable band-gap reference element and thin-film resistor networks. Specified accuracies are guaranteed for a full year. When calibration is required, only one adjustment is needed on Models 3010 and 3020, and only four are needed in the RMS 3030.



1500V Overload and 6kV Transient Protection

Forget worrying about burned-out components. All voltage inputs are protected for inputs above 1500Vdc or 1000Vrms and all resistance ranges to 300Vdc or rms ac. All voltage and resistance ranges are protected against voltage transients up to 6kV. The 2 amp current input is protected by an easy-to-replace fuse. All models are rated for up to 20 amps for 30 seconds on the 10A current input.

Two Year Battery Life

Common 9V transistor battery provides up to 2000 hours of *continuous* operation. A battery will last up to 2 years under typical use. Decimal point blinks during last 200 hours of battery life. Compared to other multimeters with no better than 200 hours of use, Beckman multimeters save you at least 10 battery replacements.

In-Circuit Resistance Measurements

Low-power ohms in *all* resistance ranges permits accurate measurements of resistors in or out of circuits. Low test voltage ignores common diode and transistor junctions for in-circuit measurements.

In-Circuit Diode/Transistor Test Function

A dedicated Diode Test function allows accurate measurements of forward voltage drops across diode and transistor junctions. No need to search among several ranges for appropriate semiconductor test capability. A constant current source forces 5mA into the semiconductor junction and the actual voltage drop is displayed. Semiconductor junctions can also be measured while in-circuit with as little as 200 ohms shunt resistance.

Single Center Switch Saves Time

One single center switch makes the instrument easier to use and more reliable than push-button digital multimeters. Because you go directly to the function and range you seek, there is less chance of error. There are no confusing rows of push-buttons or multiple switches.

Safety-Designed Test Leads

Designed to protect the operator from accidental shock hazards.

Easy to Carry and Use

Take your Beckman multimeter anywhere. It's free from external power requirements and weighs only 16 ounces. It fits easily into either a tool kit or attache case. A convenient built-in tilt-bail snaps open for hanging or bench use. Anti-skid pads keep the instrument solidly in place when measurements are being made.

Designed to Last

Rugged enough to operate reliably in heavy-duty use, Beckman multimeters can even take a 6 foot fall and still keep on working. Recessed display and single rotary switch prevent damage while in the tool box or on the job. The case keeps out dirt, fluids, and other contaminants that can cause malfunctions in other multimeters.

General

Operating Temperature	0 to $\pm 50^{\circ}\text{C}$
Storage Temperature	-40°C to $+65^{\circ}\text{C}$, battery removed
Maximum Common Mode Voltage	1500 Vdc or peak ac
Display	3½-digit LCD (1999 max count)
Power	Single standard 9V battery, NEDA 1604
Battery Life	Alkaline: 2000 continuous hours typical Zinc-carbon: 1600 continuous hours typical
Low Battery Indicator	Decimal point blinks during last 200 hours of battery life
Shock and Vibration	Meets MIL-T-28800 specifications
Relative Humidity	0-80%, 0 to 35°C ; 0-70%, 35°C to 50°C
Temperature Coefficient	Less than 15% of applicable accuracy spec. per $^{\circ}\text{C}$ (0°C to 20°C , 30°C to 50°C)
Dimensions	6.85 in. L x 3.65 in. W x 1.8 in. H (17.4 cm L x 9.3 cm W x 4.6 cm H)
Case Material	High Impact, Fire Retardant ABS plastic
Weight	16 oz. (453g) including battery
Calibration	Accuracy specifications guaranteed for 1 year
Calibration Adjustments	One adjustment for Models 3010 and 3020 Four for RMS 3030
Measurement Rate	4 Measurements per Second, nominal

BECKMAN

Beckman Instruments, Inc. • Advanced Electro-Products Division • 2500 Harbor Boulevard • Fullerton, California 92634
(714) 871-4848 • TWX: 910-592-1260 • Telex: 06-78413