

Signal Follower Card

Instruction Manual
Model C10032-000

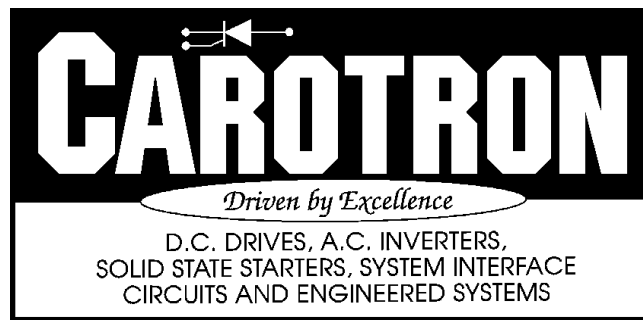


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General Description

Model C10032-000 Signal Follower Card is designed to handle a multitude of applications where signal conditioning is required without input to output isolation. Voltage signals from 0 to 1 VDC through 0 to 100 VDC can be accepted on the input and calibrated for 0 to 10 VDC or 4 to 20 mA on the output. Current signals such as 1 to 5 mA or 4 to 20 mA can also be used as inputs and converted to 0 to 10 VDC or 4 to 20 mA on the output output.

A +15 VDC supply is available on the input terminal strip to source as 10,000 Ohm potentiometer which can also be used as an input reference source.

Positive or negative inputs can be applied to the C10032-000 Signal Follower Card. The polarity of the output will be the same as the input signal. A terminal is also provided for an optional Summing Input.

The Summing Input is inverted and summed with the main input to modify the output.

Calibration is made simple by the use of three board-mounted multi-turn pots. The OFFSET pot sets the null point with minimum input from the reference source. The BIAS pot sets the minimum output level desired with minimum input. The GAIN pot sets the maximum output-level when maximum input is received from the reference source.

An optional external Trim potentiometer can be used to trim the output manually or via a dancer. An on board single turn Trim Range pot sets the range of trim available from the external Trim pot.

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Features

- Linearity:
- 0.1% of 10 Volt span
- Selectable Voltage or Current source output
- Voltage input ranges:
0 to 10 VDC or 0 to 100 VDC
- Current input ranges:
1 to 5 mA or 4 to 20 mA
- Accepts positive or negative inputs
- Output polarity identical to input polarity
- Metal film resistors and cermet potentiometers for temperature stability
- 0 to 50°C ambient temperature rating
- Multi-turn pots for critical calibration adjustments
- +15 VDC supply available for external pot reference
- Clamp type terminals for all customer connections
- Adjustable Trim range for external Trim pot
- Test points for ease of circuit access
- Self retaining standoffs to simplify mounting
- Inverting summing input to modify main input

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Typical Applications

- Tachometer follower
- Dancer Trim interface
- Buffer amplifier
- Voltage to current converter
- Current to voltage converter
- Voltage scaler
- Pot signal transmitter
- Summing amplifier
- Meter calibration

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Specifications

Power Requirement

115 VAC $\pm 10\%$, 50/60 Hz, 1.2 VA max.

Signal Inputs

(for 0 to 10 VDC or 4 to 20 mA input)

TB1-4: 0 to 10 VDC min., 0 to 100 VDC max.

TB1-5: 0 to 1 VDC min., 0 to 10 VDC max.

TB1-6: 1 to 5 mA min., 4 to 20 mA max.

Power Supply : TB1-3

+15 VDC $\pm 5\%$ @ 2 mA max

Summing Input: TB2-4

± 10 VDC max. input

Output = -1 x Summing input

Output Ranges

(Typical with specified input ranges)

Voltage mode: 0 to 10 VDC

Current mode: 0 to 20 mA into 500

Ohms max. **NOTE:** The Output may

be biased to operate from 2 to 10 VDC or 4 to 20 mA by using the internal BIAS pot

Trim Range
(Trim pot = 10k Ohms, BIAS = 0 VDC)
Min. range: 83 to 100% of output
Max. range: 0 to 100% of output

Linearity
0.1% of 10 VDC span

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Adjustment Procedure

NOTE: All voltage readings are made with respect to circuit common, TB1-7, TB2-2 or TP1.

- Connect the unit per Connection Diagram C10073.
- If a Trim pot. is connected to TB2-5, 6 & 7, adjust it to full clockwise. Adjust the Trim Range pot as follows to set the desired range of adjustment for the Trim pot.

Trim Range setting Trim Pot Range

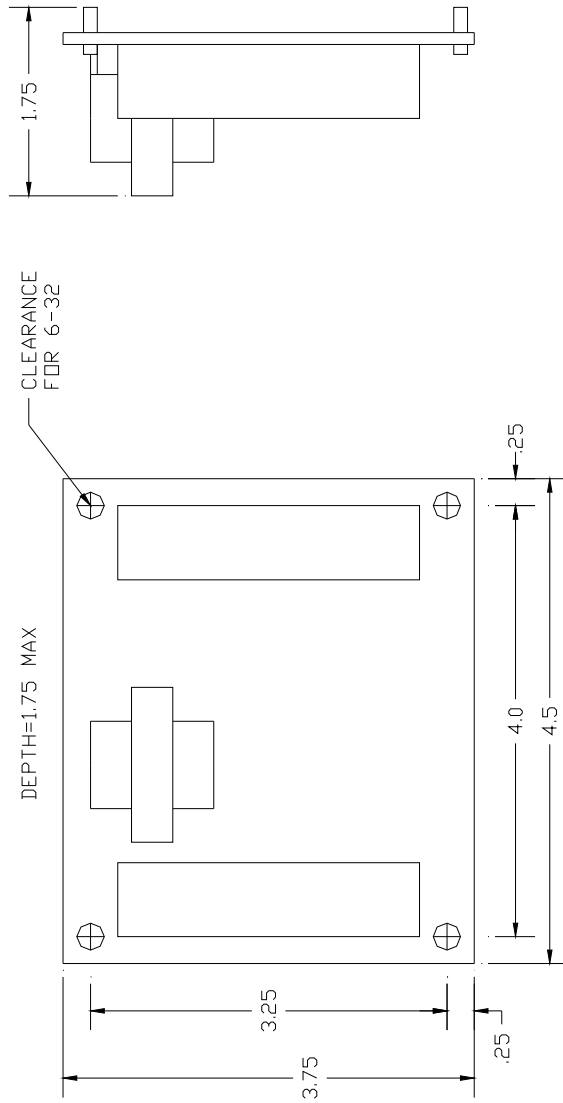
Full CCW	0 to 100%
25% CW	55 to 100%
50% CW	71 to 100%
75% CW	9 to 100%
100% CW	3 to 100%

If a Trim pot is not used, jumper TB2-5 to TB2-6.

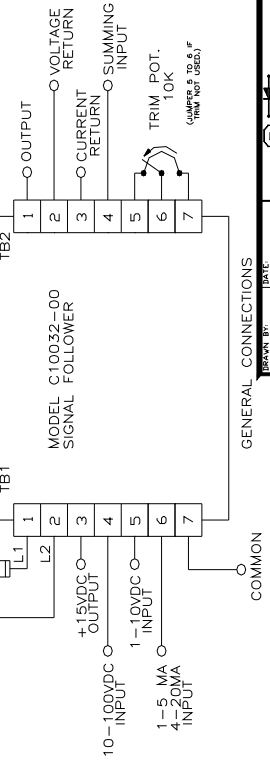
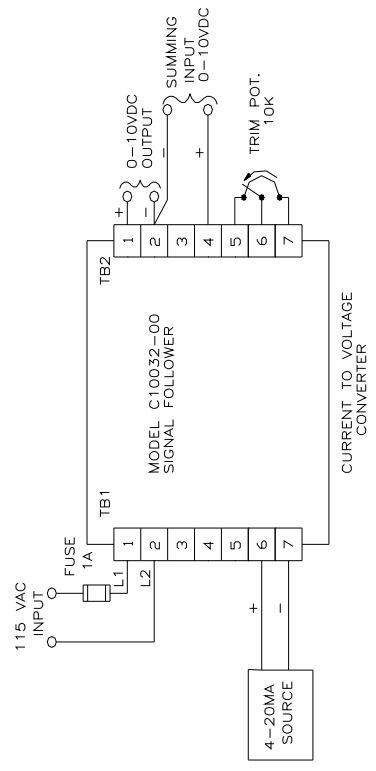
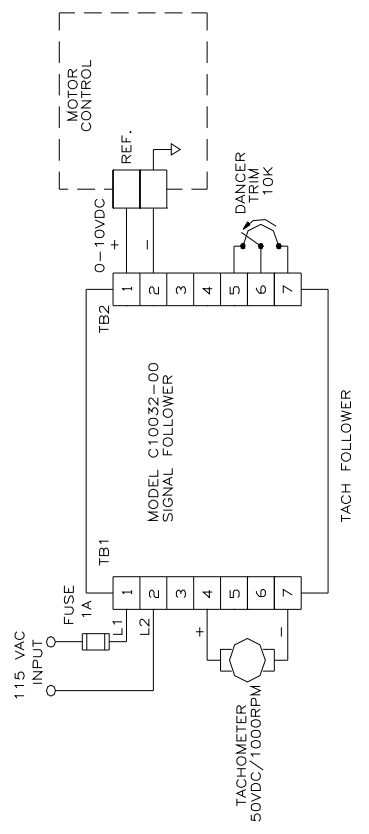
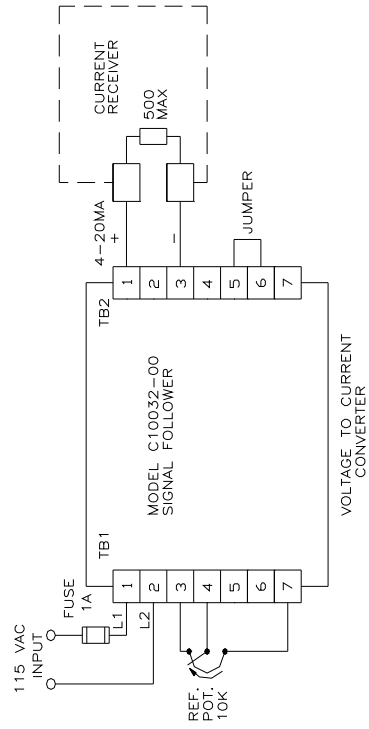
- Select the Output Mode using Jumper J1. Position V selects the voltage output mode and terminals

TB2-1 and 2 should be used for the output. Position I selects the current mode output and terminals TB2-1 and 3 should be used as the output.

- With minimum input signal on TB1-4, 5, OR 6, adjust the Gain pot full clockwise (approximately 20 turns). Adjust the Offset pot for 0.0 VDC at TB2-5. Turn the Gain pot full counterclockwise (approximately 20 turns).
- Adjust the Bias pot for the desired minimum output at TB2-1 with input signal at minimum.
- Increase the input signal at TB1-4, 5, or 6 to maximum. Adjust the Gain pot for the maximum desired output at TB2-1.
- The unit is now ready for operation.



DESIGNED BY MWJ	DATE 6-16-85	 <i>Driven by Excellence</i>
APPROVED BY	DATE	
DIMENSIONS + .007 3 DEC. PL. + .007	HEADQUARTERS HEATH SPRINGS, SC TEL. 803-586-6663 FAX 803-586-6663	TITLE DIMENSION DIAG. MODEL C10032-00 SIGNAL FOLLOWER CARD
SCALE	REV. A	SH. 1 OF 1
DRAWING NUMBER B10074		

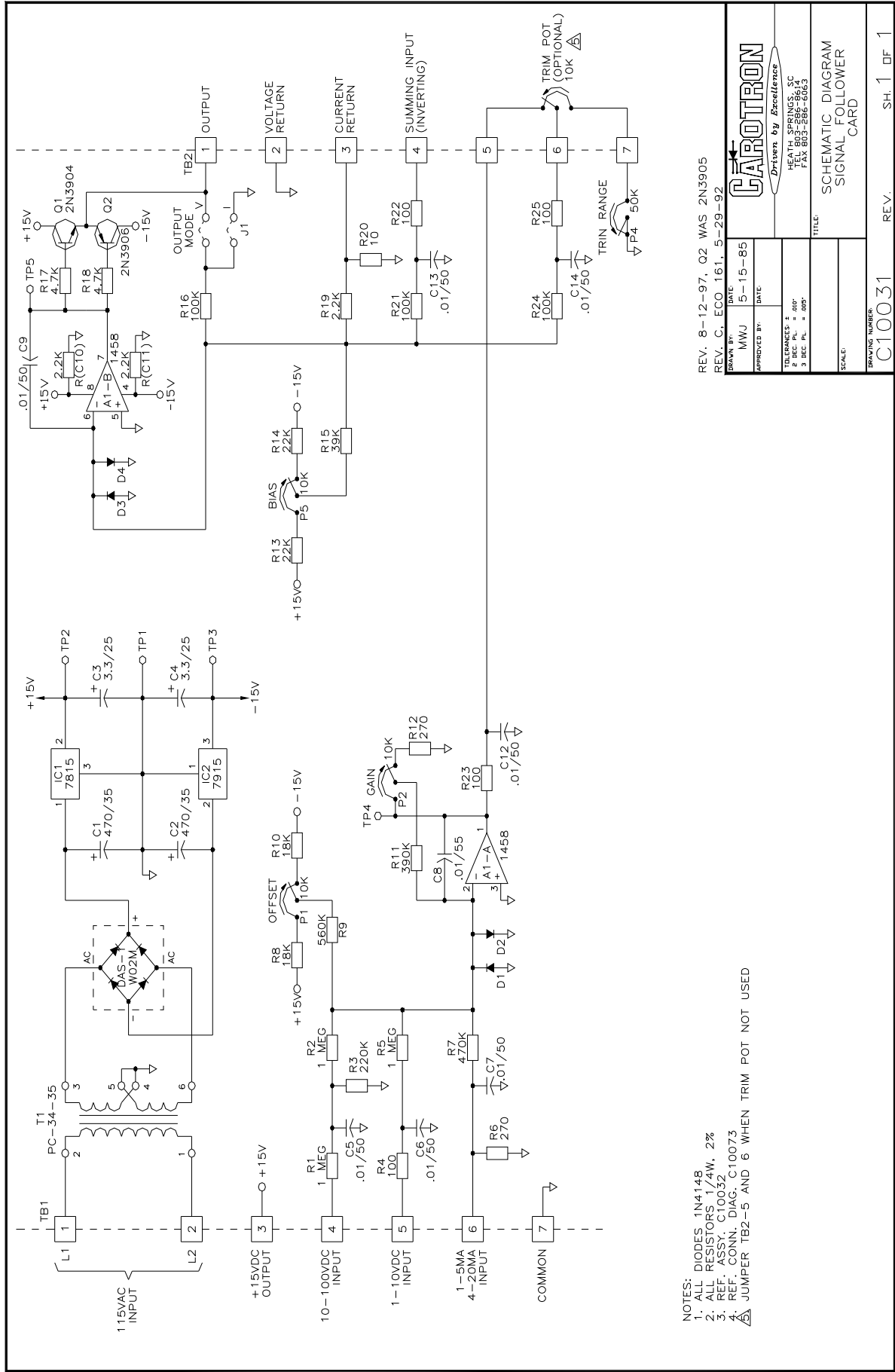


DESIGNED BY	DATE
APPROVED BY	DATE
<i>Driven by Excellence</i>	
HEATH SPRINGS, SC TEL. 803-265-3614 FAX 803-265-6065	
TOLERANCES	1
5 DEC PL	• 00P
3 DEC PL	• 00P
SCALE:	
TITLE	CONN. DIAG.
MODEL C10032-00	SIGNAL FOLLOWER CARD
DRAWING NUMBER	REV. A
C10073	SH. 1 OF 1

GENERAL CONNECTIONS

1. REF. SCHEMATIC C10031, ASSEMBLY C10032.

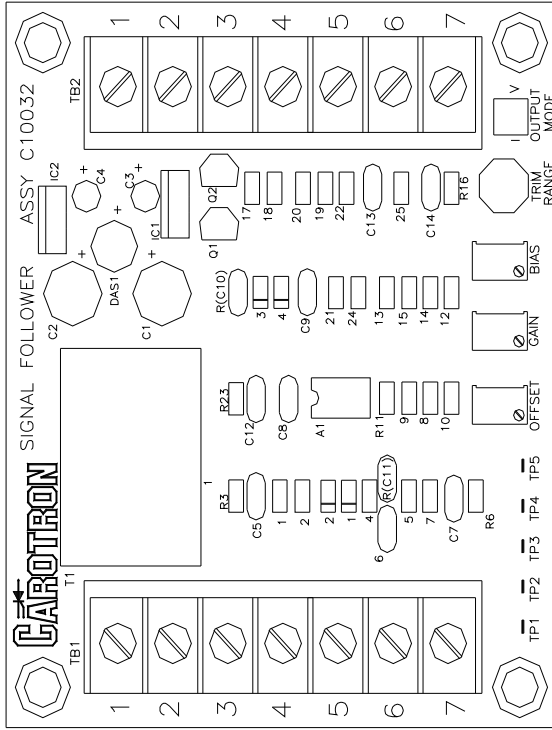
UPGRADED TO AUTOCAD 2/1/02 AEB



REV. 8-12-97, Q2 WAS 2N3905
 REV. C, ECO 161, 5-29-92

DATE	5-15-86
APPROVED BY	MWJ
GAROTRON <i>Driven by Excellence</i>	
HEATH SPURNS, SC TEL 803-286-8614 FAX 803-286-6063	
TITLE: SCHEMATIC DIAGRAM SIGNAL FOLLOWER CARD	
DRAWING NUMBER: C10031 REV. 1 DF 1	

- NOTES:
1. ALL DIODES 1N4148
 2. ALL RESISTORS 1/4W, 2%
 3. REF. ASSY. C10032
 4. REF. CONN. DIAG. C10073
- ▲ JUMPER TB2-5 AND 6 WHEN TRIM POT NOT USED



DRAWN BY:	DCS	DATE:	6/85
APPROVED BY:		DATE:	
TOLERANCES:	1 ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED		
	2 SEC. PL. = 0.01"		
	3 SEC. PL. = 0.005"		
TITLE:	ASSEMBLY - SIGNAL FOLLOWER		
SCALE:			
DRAWING NUMBER:	C10032	REV. A	SH. 1 DF. 1



TEL: 803-286-8614
 FAX: 803-286-6063

Standard Terms & Conditions of Sale

1. General

The Standard Terms and Conditions of Sale of Carotron, Inc. (hereinafter called "Company") are set forth as follows in order to give the Company and the Purchaser a clear understanding thereof. No additional or different terms and conditions of sale by the Company shall be binding upon the Company unless they are expressly consented to by the Company in writing. The acceptance by the Company of any order of the Purchaser is expressly conditioned upon the Purchaser's agreement to said Standard Terms and Conditions. The acceptance or acknowledgement, written, oral, by conduct or otherwise, by the Company of the Purchaser's order shall not constitute written consent by the Company to addition to or change in said Standard Terms and Conditions.

2. Prices

Prices, discounts, allowances, services and commissions are subject to change without notice. Prices shown on any Company published price list and other published literature issued by the Company are not offers to sell and are subject to express confirmation by written quotation and acknowledgement. All orders of the Purchaser are subject to acceptance, which shall not be effective unless made in writing by an authorized Company representative at its office in Heath Springs, S.C. The Company may refuse to accept any order for any reason whatsoever without incurring any liability to the Purchaser. The Company reserves the right to correct clerical and stenographic errors at any time.

3. Shipping dates

Quotation of a shipping date by the Company is based on conditions at the date upon which the quotation is made. Any such shipping date is subject to change occasioned by agreements entered into previous to the Company's acceptance of the Purchaser's order, governmental priorities, strikes, riots, fires, the elements, explosion, war, embargoes, epidemics, quarantines, acts of God, labor troubles, delays of vendors or of transportation, inability to obtain raw materials, containers or transportation or manufacturing facilities or any other cause beyond the reasonable control of the Company. In no event shall the Company be liable for consequential damages for failure to meet any shipping date resulting from any of the above causes or any other cause.

In the event of any delay in the Purchaser's accepting shipment of products or parts in accordance with scheduled shipping dates, which delay has been requested by the Purchaser, or any such delay which has been caused by lack of shipping instructions, the Company shall store all products and parts involved at the Purchaser's risk and expense and shall invoice the Purchaser for the full contract price of such products and parts on the date scheduled for shipment or on the date on which the same is ready for delivery, whichever occurs later.

4. Warranty

The Company warrants to the Purchaser that products manufactured or parts repaired by the Company, will be free, under normal use and maintenance, from defects in material and workmanship for a period of one (1) year after the shipment date from the Company's factory to the Purchaser. The Company makes no warranty concerning products manufactured by other parties.

As the Purchaser's sole and exclusive remedy under said warranty in regard to such products and parts, including but not limited to remedy for consequential damages, the Company will at its option, repair or replace without charge any product manufactured or part repaired by it, which is found to the Company's satisfaction to be so defective; provided, however, that (a) the product or part involved is returned to the Company at the location designated by the Company, transportation charges prepaid by the Purchaser; or (b) at the Company's option the product or part will be repaired or replaced in the Purchaser's plant; and also provided that (c) the Company is notified of the defect within one (1) year after the shipment date from the Company's factory of the product or part so involved.

The Company warrants to the Purchaser that any system engineered by it and started up under the supervision of an authorized Company representative will, if properly installed, operated and maintained, perform in compliance with such system's written specifications for a period of one (1) year from the date of shipment of such system.

As the Purchaser's sole and exclusive remedy under said warranty in regard to such systems, including but not limited to remedy for consequential damages, the Company will, at its option, cause, without charges any such system to so perform, which system is found to the Company's satisfaction to have failed to so perform, or refund to the Purchaser the purchase price paid by the Purchaser to the Company in regard thereto; provided, however, that (a) Company and its representatives are permitted to inspect and work upon the system involved

during reasonable hours, and (b) the Company is notified of the failure within one (1) year after date of shipment of the system so involved.

The warranties hereunder of the Company specifically exclude and do not apply to the following:

- a. Products and parts damaged or abused in shipment without fault of the Company.
- b. Defects and failures due to operation, either intentional or otherwise, (1) above or beyond rated capacities, (2) in connection with equipment not recommended by the Company, or (3) in an otherwise improper manner.
- c. Defects and failures due to misapplication, abuse, improper installation or abnormal conditions of temperature, humidity, abrasives, dirt or corrosive matter.
- d. Products, parts and systems which have been in any way tampered with or altered by any party other than an authorized Company representative.
- e. Products, parts and systems designed by the Purchaser.
- f. Any party other than the Purchaser.

The Company makes no other warranties or representation, expressed or implied, of merchantability and of fitness for a particular purpose, in regard to products manufactured, parts repaired and systems engineered by it.

5. Terms of payment

Standard terms of payment are net thirty (30) days from date of the Company invoice. For invoice purposed, delivery shall be deemed to be complete at the time the products, parts and systems are shipped from the Company and shall not be conditioned upon the start up thereof. Amounts past due are subject to a service charge of 1.5% per month or fraction thereof.

6. Order cancellation

Any cancellation by the Purchaser of any order or contract between the Company and the Purchaser must be made in writing and receive written approval of an authorized Company representative at its office in Heath Springs, S.C. In the event of any cancellation of an order by either party, the Purchaser shall pay to the Company the reasonable costs, expenses, damages and loss of profit of the Company incurred there by, including but not limited to engineering expenses and expenses caused by commitments to the suppliers of the Company's sub-contractors, as determined by the Company.

7. Changes

The Purchaser may, from time to time, but only with the written consent of an authorized Company representative, make a change in specifications to products, parts or systems covered by a purchase order accepted by the company. In the event of any such changes, the Company shall be entitled to revise its price and delivery schedule under such order.

8. Returned material

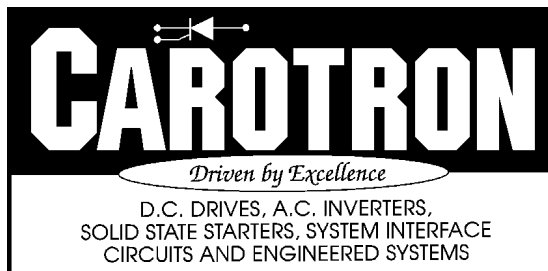
If the Purchaser desires to return any product or part, written authorization thereof must first be obtained from the Company which will advise the Purchaser of the credit to be allowed and restocking charges to be paid in regard to such return. No product or part shall be returned to the Company without a "RETURNTAG" attached thereon which has been issued by the Company.

9. Packing

Published prices and quotations include the Company's standard packing for domestic shipment. Additional expenses for special packing or overseas shipments shall be paid by the Purchaser. If the Purchaser does not specify packing or accepts parts unpacked, no allowance will be made to the Purchaser in lieu of packing.

10. Standard transportation policy

Unless expressly provided in writing to the contrary, products, parts and systems are sold f.o.b. first point of shipment. Partial shipments shall be permitted, and the Company may invoice each shipment separately. Claims for non-delivery of products, parts and systems, and for damages thereto must be filed with the carrier by the Purchaser. The Company's responsibility therefor shall cease when the carrier signs for and accepts the shipment.



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