



GE Drive Systems

INSTRUCTIONS

**531X152IOCA_G1
INSTANTANEOUS OVERCURRENT CARD**

Renewal Part

**IMPORTANT
INFORMATION**

CAUTION: To ensure proper operation of the motor drive controller, these instructions must be followed for proper set-up and installation of this replacement card.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to General Electric Company

WARNING - BURN AND SHOCK HAZARD:

Always disconnect power to the drive before removing or installing a printed circuit card. Failure to do so may cause serious injury to personnel and damage to the drive or driven machinery.

NOTE: Refer to all WARNINGS, CAUTIONS, and NOTES as listed in the appropriate instruction book (GEK) for the particular controller prior to installing or removing this card.

GENERAL DESCRIPTION

The IOC card is a four-channel isolator with latched or unlatched logic outputs which indicate that a set level of input voltage has been exceeded. Meter signals are available at the output of adjustable gain amplifiers. The card is S-22 pan mounted and is typically used with the shunts that have a 100mV drop at rated current.

INPUT/OUTPUTS

The power inputs are made by way of a card-edge connector while the input signals are brought into APL, BPL, CPL, and DPL stab-on connectors. The trip and meter output signals are brought out through the card edge connector.

OPERATION (Refer to Elementary Diagram)

The isolation function is implemented with optically isolated amplifiers. The isolation amplifiers require isolated power supplies for the high potential (input) side of the amplifier. This is provided by a high frequency transformer on the card with four isolated windings. An oscillator operating at approximately 30 kHz chops the +24 VDC input to the primary. The output of the four isolated secondaries is rectified and filtered to power the input side of the isolation amplifiers.

The amplifiers are current matching devices. Input resistors are used to change the operation to a voltage amplification mode (Gain =10).

The output of the isolation amplifiers are absolated and applied to comparators to detect a trip level greater than the threshold, which is set by a potentiometer adjustment.

The comparators may be operated in a latching or non-latching mode that is selectable by jumpers. If latched, they may be reset by a common reset input. To reset, apply +15 or +24 VDC to RST (Tab 17). LEDs are provided to indicate a tripped condition. The output of the comparators is directed to open collector transistor outputs. No pull-up resistors are provided on the card. The transistor is turned off on a trip and is capable of sinking 20mA at up to 48 VDC.

The isolated input signals are buffered by non-inverting amplifiers with adjustable gains from 1 to 11 and connected to the meter output tabs. The isolation amplifier gain is 10. Overall gain is 10 to 110. Output capability is 12 VDC at 2mA.

CONNECTIONS

Power is required as follows:

| <u>Power</u> | <u>Card Nom.</u> | <u>Tabs</u> |
|---------------------------|------------------|----------------|
| Common | ACOM PCOM | 6X,7X 27,28 |
| +15VDC@50ma | +15V | 5,6 |
| -15VDC@50ma | -15V | 16X,17X |
| +24VDC@15ma | +24V | 20,21 |
| Reset (+15 or +24V DC) | RS(momentary) | 17 |

Input signals are connected to APL, BPL, CPL, and DPL. If the connector marked "R" is made positive with respect to the connector marked "W", the corresponding IMET signal will be positive.

The inputs, outputs, and indicators correlate as follows:

| <u>CHANNEL</u> | <u>INPUT</u> | <u>OUTPUT/TAB</u> | <u>TRIP OUTPUT/TAB</u> | <u>LED IND.</u> |
|----------------|--------------|-------------------|------------------------|-----------------|
| A | APL (R,W) | IMETA 15 | TRPA 19 | 1 |
| B | BPL (R,W) | IMETB 13 | TRPB 12 | 2 |
| C | CPL (R,W) | IMETC 11 | TRPC 16 | 3 |
| D | DPL (R,W) | IMETD 18 | TRPD 14 | 4 |

JUMPERS AND ADJUSTMENTS

| <u>Jumper</u> | <u>Function</u> | <u>Position</u> |
|--|-------------------------|-----------------|
| JP1- JP4 <i>(for channels A, B, C, D respectively.)</i> | Latching mode (default) | 1-2 position |
| | Non-Latching mode | 2-3 position |

| <u>Potentiometer</u> | <u>Function/Position</u> | <u>Setting</u> |
|---|--------------------------|----------------|
| P1, P3, P5, P7 <i>(for channels A, B, C, D respectively)</i> | Trip Level | |
| | Full Counterclockwise | =4.8 volts |
| | Full Clockwise | =1.2 volts |

| <u>Potentiometer</u> | <u>Function/Position</u> | <u>Setting</u> |
|---|--------------------------|-------------------------------------|
| P2, P4, P6, P8 <i>(for channels A, B, C, D respectively)</i> | IMET gains | |
| | Full Counterclockwise | gain is 1 (Overall gain is 10) |
| | Full Clockwise | gain is 11 (Overall gain is 110) |

TEST POSTS

- LA Trip Level - channel A
- LB Trip Level - channel B
- LC Trip Level - channel C
- LD Trip Level - channel D

LED INDICATORS

- 1 Trip Indicator - channel A
- 2 Trip Indicator - channel B
- 3 Trip Indicator - channel C
- 4 Trip Indicator - channel D

ADJUSTMENT / SET-UP PROCEDURE

- a) Turn P2, P4, P6, or P8 full counterclockwise (unity gain) dependent on which channel is being set.
- b) Select latching or non-latching mode with JP1, JP2, JP3, or JP4.
- c) Calculate the shunt output voltage in millivolts for the desired trip level.
NOTE: Trips on peak level.
- d) Multiply the trip level by a gain of 9.95 to obtain the voltage setting for L (A, B, C, or D).
NOTE: Channel must not be in a tripped state when making adjustment.)
- e) Set P1, P3, P5, or P7 (dependent: on channel[s] being adjusted.)
- f) Set P2, P4, P6, or P8 as required for meter output. (May be set by applying a calibrated millivolt source to input connections and adjusting for appropriate meter output).

EXAMPLE:

- Set Channel A, latching
- Shunt rating = 80 Amp/100 mV
- Desired trip level = 160 Amp
- a) Turn P2 full counterclockwise
- b) Set JP1 in the 1-2 position (latching mode)
- c) Trip level = $\frac{160 \text{ Amp}}{80 \text{ Amp}} \times 100\text{mV} = 200\text{mV}$
- d) $200\text{mV} \times 9.95 = 1.99 \text{ volts (2.0 volts)}$
- e) Set P1 for 2.0 volts at test point LA
- f) Set P2 for required meter output.

PERFORMANCE

Isolation Amplifiers

The nominal input range is 0 to +/- 100mV, with the +/- 100mV being considered 100% or 1 per unit (PU). Maximum range capability +/-500% (500mV or 5 PU input). The meter driver output will be positive when the input polarity is such that the tab marked "R" is positive with respect to the "W" tab.

The isolation stage gain is 9.95 +/- 3% with an offset of +/- 0.133V. Frequency response is limited by an output filter with a break at approximately 2,000 radians per second.

Maximum input signal +/- 0.5 VDC.

Input to output isolation= 600V RMS, 0-360 Hz.

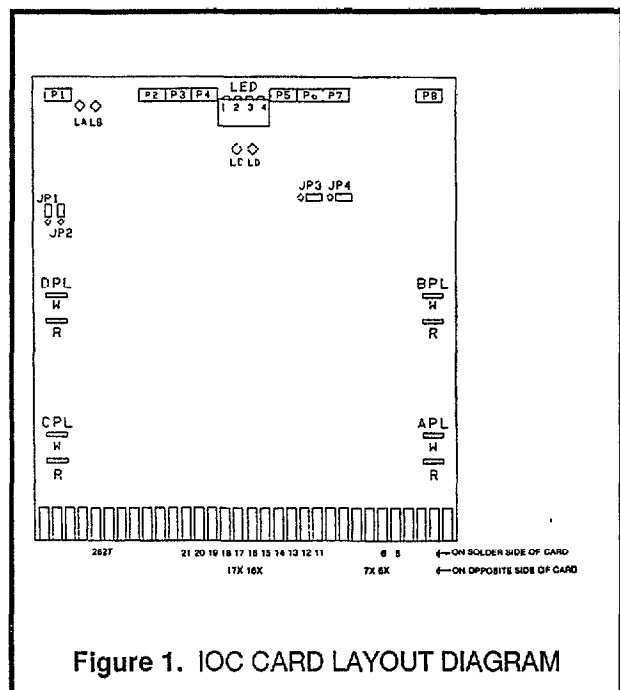
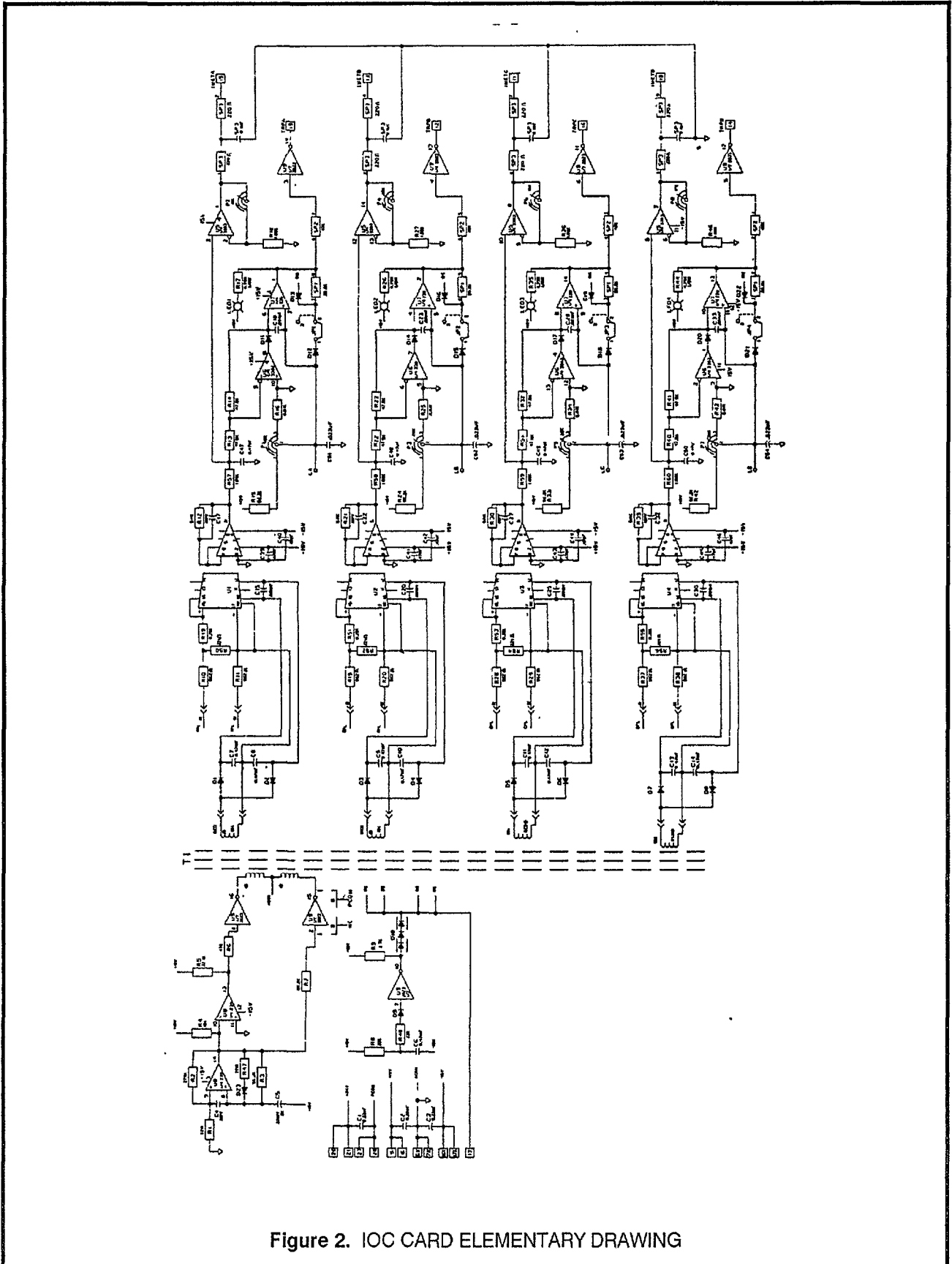


Figure 1. IOC CARD LAYOUT DIAGRAM





GE Drive Systems

GEK-24957 (4/87)

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