EPCT Board

The EPCT contains isolation transformers for critical generator voltage and current measurements. Two three-phase generator PT voltage inputs are input to EPCT. Two generator CT current inputs, with current levels of 1 A or 5 A, are input. In addition, one analog input, which can be either 0 - 10 V or 4 - 20 mA, is brought into EPCT. All the signals are interfaced to the EMIO board. For more information, refer to *Chapter 4* and *GEI-100459*.

Note EPCT receives and conditions generator PT and CT feedbacks.

Exciter Customer Terminal Board (ECTB)

The ECTB supports excitation contact inputs and contact outputs. There are two versions: the ECTBG1 for redundant and the ECTBG2 for simplex applications. Each version contains two trip contact outputs for driving a customer lockout device (86G), and four general-purpose form-C relay contact outputs. Six auxiliary contact inputs are powered (wetted) with 70 V dc by ECTB. Also, the board processes 52G and 86G contact inputs.

EXHS Board

The EXHS board supports pilot relay contact outputs, contact inputs, and signal conditioning circuits. EXHS cables to the EMIO board through the EBKP backplane.

Note EXHS handles field flashing and protection functions.

Pilot relays for the breaker/contactor close 41, and flashing contactors 53A, and 53B are located on the board, plus pilot relays for the trip relay 41T and the de-excitation relay KDEP. Crowbar status signals and de-excitation status signals from the EDEX board are conditioned on EXHS and sent to EMIO. Three contact inputs from 41, 53A, and 53B are powered (wetted) by 70 V dc on EXHS. Power for the contacts is from the M1 and M2 power supplies (redundantly), and the resulting status signals are sent to EMIO in the control rack. Different groups of EXHS are available for controlling either a field breaker or a contactor in the field circuit. These groups are defined in *EXHS Board Groups*. For more information, refer to *GEI-100475*.

EXHS Board Groups

Type of Redundancy	Board	Control Mode	Trip Relay 41T used	Close Relay 41 used
Redundant control	EXHS G1	Contactor Mode	No	Yes
Redundant control	EXHS G3	Breaker Mode	Yes	Yes
Simplex control	EXHS G2	Contactor Mode	No	Yes
Simplex control	EXHS G4	Breaker Mode	Yes	Yes

Analog Input

The EPCT board provides an analog input for customer use. This input is jumper selectable for either ±10 V dc or 4 - 20 mA. The EMIO samples the input at 2000 samples per second, and the accuracy is better than 1% full scale.

Customer Contact I/O

Customer contact inputs and relay contact outputs are wired to the ECTB board.

In addition to six general purpose contact inputs, there are two dedicated contact inputs, wetted by 70 V dc from the exciter, as follows:

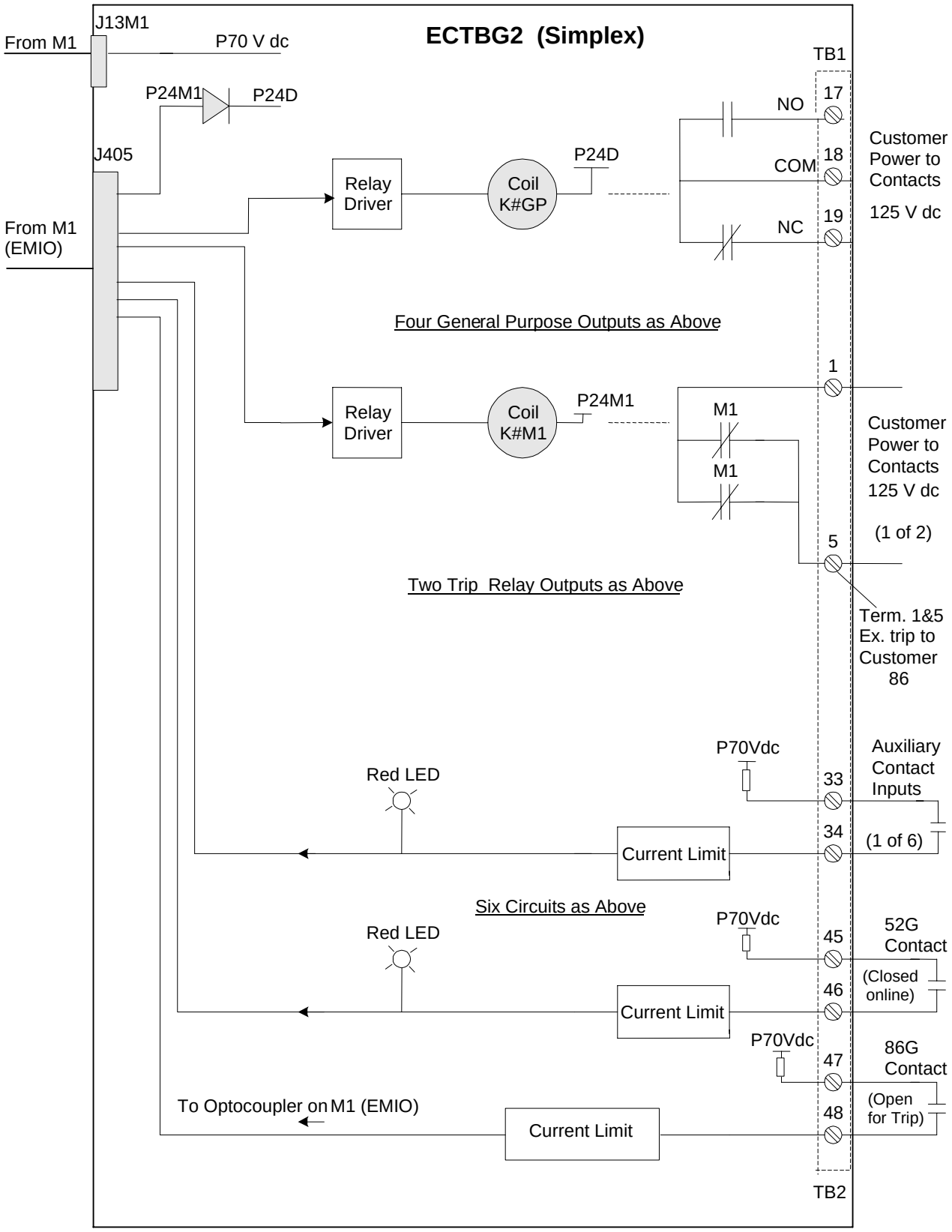
- 86G contact input used as a lockout during normal operation
- 52G contact input gives the online status of the generator

ECTB provides four general purpose Form C contact outputs controlled by EMIO. These are used for 94EX and 30EX and other outputs. For each relay, the coil current and the status of a relay auxiliary contact is monitored. These feedbacks are cabled to EMIO in the controller. Refer to the figure *Customer I/O wired to ECTBG2 Simplex Board* and the table *General Purpose Relay Contact Characteristics.*

General Purpose Relay Contact Characteristics

Item	Description			
Customer Power	125 V dc nominal (24 V dc min)			
Relay break characteristic	Resistive load	2 A	28 V dc	
		0.5 A	125 V dc	
	Inductive	1 A	28 V dc	0.007 s (L/R)
		0.1 A	125 V dc	0.007 s (L/R)
Suppression	External suppression supplied by customer on induction loads			

ECTBG1 is the redundant control version of the ECTB. This fans inputs to three connectors J405, J408, and J418 that are cabled to the three controllers. For relay control, the board does two-out-of three voting, and the 70 V dc and 24 V dc inputs are redundant.



Customer I/O wired to ECTBG2 Simplex Board