APPLICATION GUIDE

AG014A - H7 COMPLIANT TRIP CIRCUIT SUPERVISION IN ALSTOM MICOM RELAYS

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SUMMARY

The trip circuit in most protective schemes extends beyond the relay enclosure and passes through components such as fuses, links, relay contacts, auxiliary switches and other terminal boards.

This complex arrangement, coupled with the importance of the trip circuit, has led to dedicated schemes for its supervision.

This Application Guide details Alstom's recommended schemes for Px4x and AGILE MiCOM relays.

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1. INTRODUCTION

The trip circuit in most protective schemes extends beyond the relay enclosure and passes through components such as fuses, links, relay contacts, auxiliary switches and other terminal boards. This complex arrangement, coupled with the importance of the trip circuit, has led to dedicated schemes for its supervision.

Although there are no dedicated settings for Trip Circuit Supervision (TCS) in MiCOM Px4x relays, the scheme detailed herein can be produced using the Programmable Scheme Logic (PSL).

A user alarm is used in the PSL to issue an alarm message on the relay front display. If necessary, this user alarm can be re-named using the menu text editor to indicate that there is a fault with the trip circuit.

MiCOM AGILE relays have dedicated Trip Circuit Supervision (TCS), and this is described here also.

2. MICOM PX4X RECOMMENDED SCHEME

2.1. DESCRIPTION

An example circuit connection is shown in Figures 1 and 2 below (for 110V and 48V DC nominal auxiliary volts respectively).

Suggested PSL prepared from default is also shown incorporated.

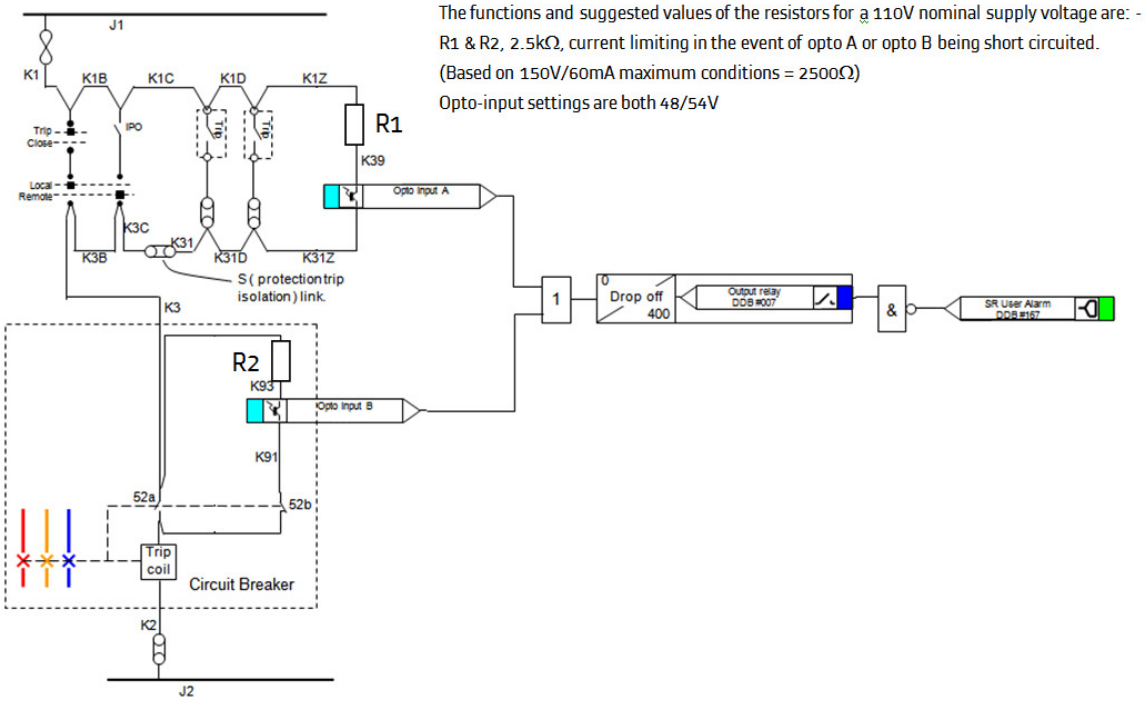

Figure 1: 110V DC

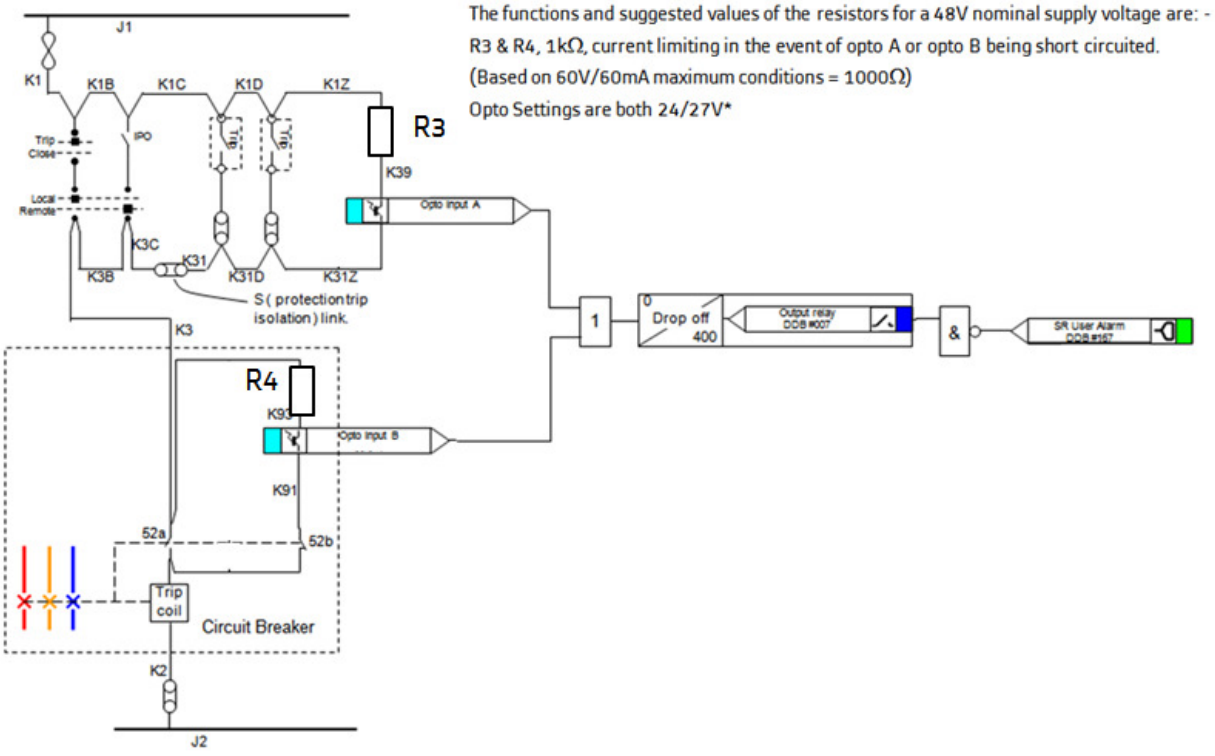

Figure 2: 48V DC

2.2. OPERATION

When the breaker is closed, 52a will be closed, and hence supervision current will flow via opto-input A, resistor R1 and the trip coil via 52a. Operation of opto-input A will maintain the "TCS Healthy" output relay contact closed, and the user alarm will be de-energised.

When the trip contact(s) operate, opto-input A is bypassed, and hence the opto-input drops off. The output contact, however, has a 400ms drop-off delay, and hence remains unaffected during tripping. The user alarm is similarly unaffected.

When the breaker is open, 52a will be open but 52b will be closed. Hence supervision current will flow via opto-inputs A and B, and the trip coil via 52b and resistor R2. Operation of opto-inputs A and B will maintain the "TCS Healthy" output relay contact closed, and the user alarm will be de-energised.

If trip contacts are latched, supervision current cannot flow in opto-input A, but will flow in opto-input B, and hence will maintain the "TCS Healthy" output relay contact closed, and the user alarm will remain de-energised.

Resistors have been chosen as shown in figures 1 and 2, such that the circuit is fully compliant with H7 in terms of maximum current levels, and prevention of tripping for accidental short-circuiting of one component.

REFERENCES

ENA Engineering Recommendation S15 1956 (Published 2003)	Trip Circuit Supervision Scheme H7

REVIEW HISTORY

Issue	Name	Position
A	A.W. Hassall	Senior Applications Engineer

VERSION CONTROL

Issue	Author(s)	Reason for change	Date
A	Name	Original	10/02/12