

Current Ratio Alarm / Latch

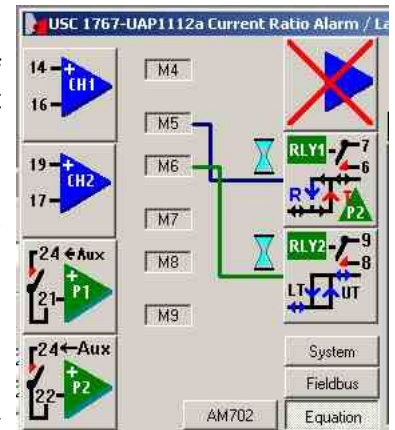
Description

A DC haul truck has a retard grid which is used to dissipate heat when the truck is generating electricity in retard mode. The retard grid is a series of heavy duty resistors combined with a DC blower that is connected across part of the grids that uses the voltage drop across this portion to run the blower.

A loss of this blower could cause the the grid box to catch on fire. The Grid Current and Grid blower current are measured to ensure they are within a correct ratio range and if not RL1 will be energised.

Grid Current is measured on CH1 0 to -1.4VDC = 0 to 1400 amps which comes from existing truck hardware (this signal is Negative - the signal does go positive also but only when the truck is in propel)

The Blower Current is measured on CH2 0 to 5V = 400 amps (0-125A over operational range) which comes from a HCT018 Hall Effect CT.



The limits need to also cover the following:

1. System enabled by 24V DC digital signal on input P1
2. After the system is enabled a start-up time occurs usually set to 2 seconds. After the start-up time RLY2 will energise and the current measurement logic will start to work (Use the modify wizard on relay 2 and set the on delay).
3. If the grid current is below 250A the alarm sensing function is disabled and relay 1 will remain at it present state.
4. If ('Grid Adc') > ('Blow Adc' x 'BlowFact') for more than 5 seconds relay 1 will latch on (Use the modify wizard on relay 1 and set the on delay).
5. Relay 1 will remain on until reset by input P2.

USC701 Assignments

CH1: 'Grid Adc' -1.4 to 0 Vdc = 1400 to 0 '

CH2: 'Blow Adc' 0 to 5 Vdc = 0 to 400

P1: Contact = ENABLE

P2: Contact = RESET

RLY1: Direct acting latch on operation sensing value on M5, On delay Sec: 5, Reset by P2

RLY2: Direct acting on/off operation sensing value on M6, On delay Sec: 2.

M5: 'BlowLow', equation output 0 = good 1 = fail

M6: 'P1_State', follows state of P1 input.

Con a: 'MinGrd A' (250)

Con b: 'BlowFact' (8.9)

Con i: 'Zero' (0)

Con j: 'One' (1)