

# GUARDIAN ASC-03

## Ambient Sub-cooling Controller For Refrigeration Packs

- Differential Temperature Monitoring of Condenser Liquid Out / Condenser Air On
- Change-over Relay Output Rated at 7A 250vAC / 30vDC
- Standard Temperature Probes TP-22
- LED Display of Power On, Output Relay On, & Probe Fault.
- Adjustable Ranges For Relay Time On and Time Off.
- Adjustable Range For Differential Temperature

### Operation and Set-up Manual

<b>Power Supply</b>	24vAC +10% - 20% 45 - 65 Hz.
<b>Temperature Range</b>	- 40°C / 50°C
<b>Temperature Probe Type</b>	TP22 2.2Kohms @ 25°C
<b>Power Input Fusing</b>	250mA type T style TR5
<b>T1 Temperature Sensor</b>	Condenser Liquid Out
<b>T2 Temperature Sensor</b>	Condenser Air On
<b>Accuracy</b>	Cumulative < 2°K
<b>Timing</b>	Cumulative < 0.5 S

The ASC – 03, Ambient Sub-cooling Control Unit, continuously monitors the temperature difference between a Condenser Air On Temperature and the Liquid Refrigerant Temperature at the Condenser Outlet.

It is used to pulse drive an output such as a solenoid valve, when the subcooled condenser outlet temperature rises above a predetermined point relative to its differential to the condenser air on temperature.

Set-up is achieved by adjusting the 3 potentiometers to the user requirements

- 1 TIME ON** :- Adjustable from 1 to 10 seconds
- 2 TIME OFF** :- Adjustable from 1 to 10 seconds
- 3 DIFF°K** :- Adjustable from 3° to 12 ° K (T1 - T2)

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**Fault Condition**

If T1 or T2 is out of range then FAULT LED is ON, and OUTPUT / DUTY LED is OFF

**Control Operation**

If (T1 is Greater than T2 + Differential -1), then generate a pulse output of duration: -  
**Time ON** seconds + **Time OFF** seconds

i.e.

If diff = 3

T1 =22 ,T2 = 20 no operation

T1 =23 ,T2 = 20 start operation

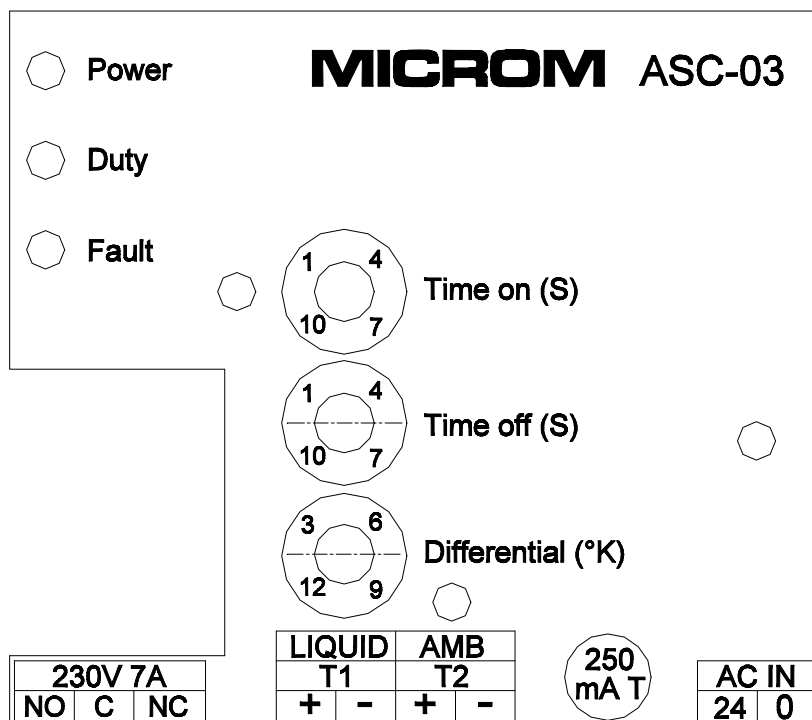
Pulsed output to continue until T1 is less than ( T2 + DIFF )

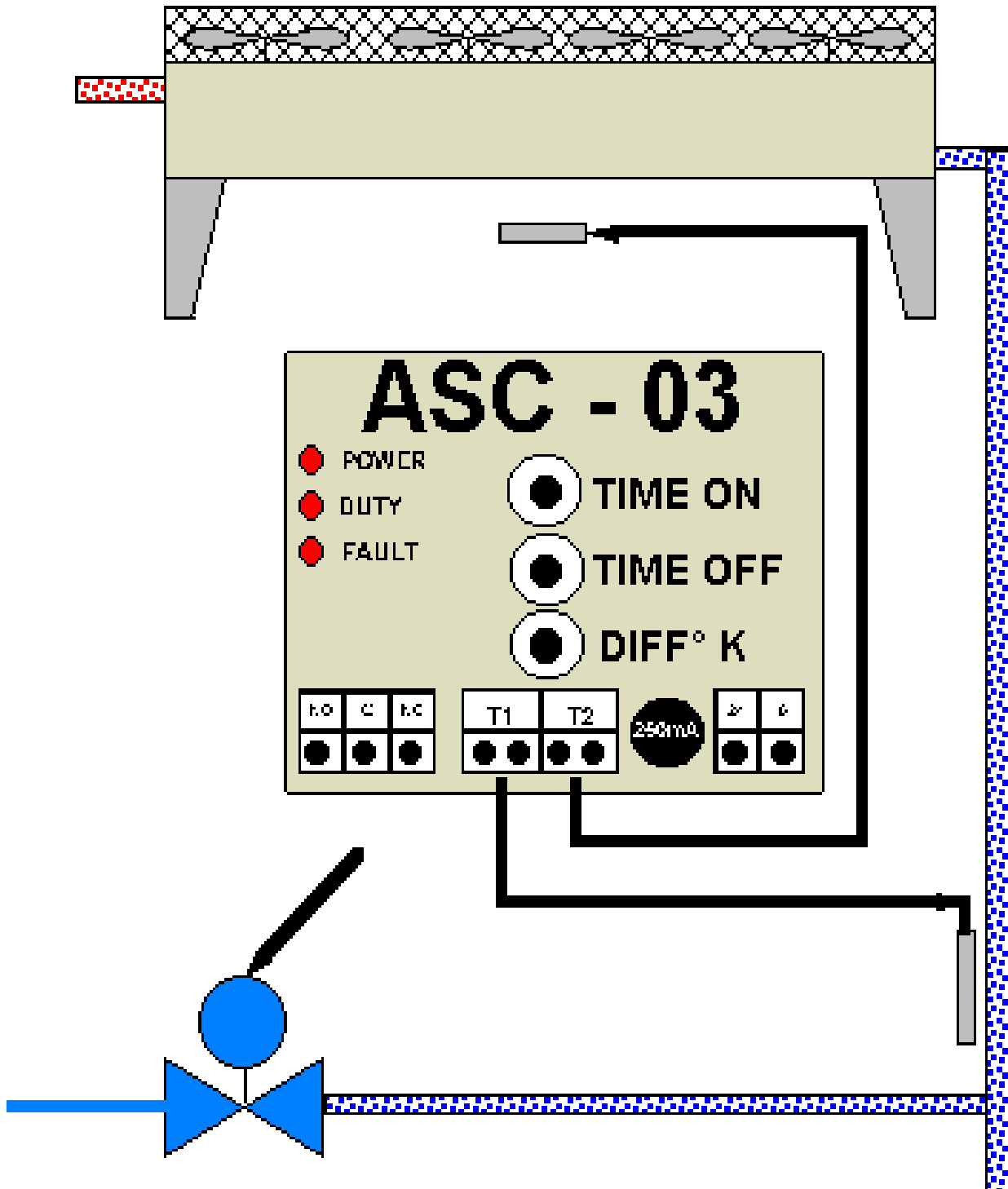
i.e.

T1 =24 ,T2 = 20 continue operation

T1 =23 ,T2 = 20 continue operation

T1 =22 ,T2 = 20 cease operation





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**RESISTANCE / TEMPERATURE DATA for .LOW RANGE TP22 THERMISTORS**  
**2.2 Kohms @ 25°C**

Deg C	ohm	Deg C	ohm
50	811		
49	843	-1	7742
48	876	-2	8152
47	910	-3	8585
46	946	-4	9044
45	984	-5	9535
44	1023	-6	10053
43	1064	-7	10602
42	1108	-8	11183
41	1153	-9	11805
40	1199	-10	12463
39	1249	-11	13165
38	1301	-12	13908
37	1355	-13	14697
36	1412	-14	15539
35	1471	-15	16435
34	1533	-16	17390
33	1598	-17	18403
32	1667	-18	19489
31	1739	-19	20642
30	1815	-20	21871
29	1893	-21	23173
28	1977	-22	24569
27	2064	-23	26078
26	2156	-24	27677
25	2252	-25	29366
24	2353	-26	31190
23	2459	-27	33149
22	2572	-28	35244
21	2689	-29	37473
20	2813	-30	39860
19	2943	-31	42428
18	3081	-32	45175
17	3225	-33	48148
16	3378	-34	51301
15	3538	-35	54679
14	3707	-36	58327
13	3887	-37	62245
12	4074	-38	66434
11	4272	-39	70938
10	4481	-40	75802
9	4702	-41	-----
8	4936	-42	-----
7	5184	-43	-----
6	5445	-44	-----
5	5720	-45	-----
4	6053	-46	-----
3	6319	-47	-----
2	6643	-48	-----
1	6990	-49	-----
0	7355	-50	-----