GFP Heat pipe ASSY Test configuration in JAXA/ISAS

Logger No. 1
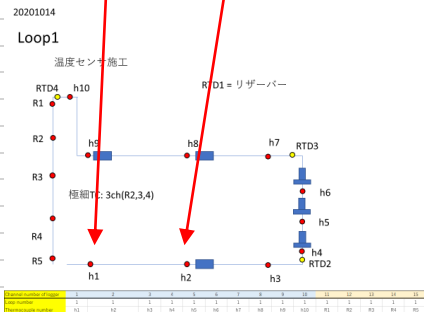Temperature of the heat pipe tube, coupler, ambient and reservoir.

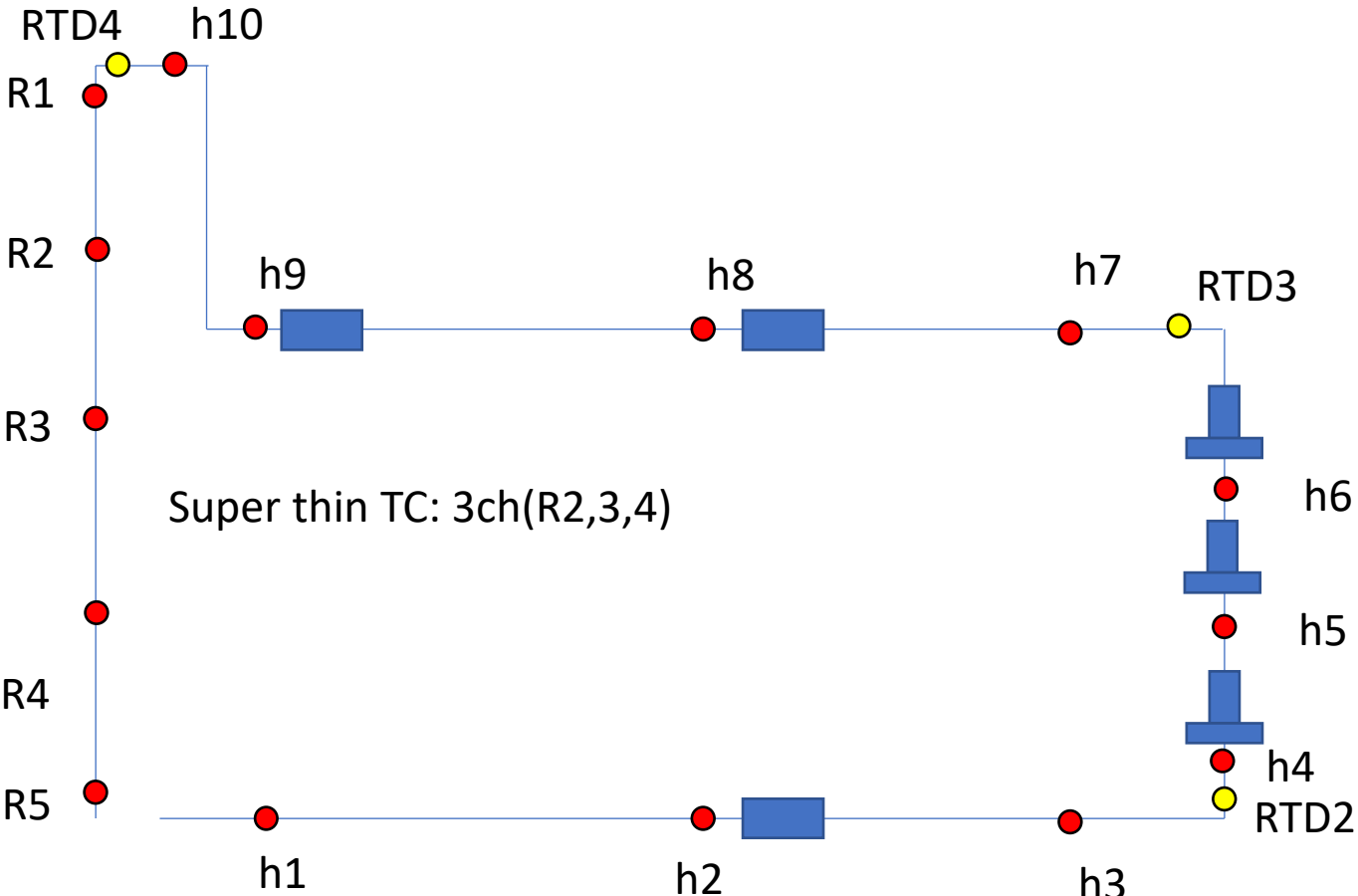# Channel number of logger means the number in red circle

87	CH77	CH77	DC	50V	Off	200	-200 V
88	CH78	CH78	DC	50V	Off	100	-100 V
89	CH79	CH79	DC	50V	Off	200	-200 V
90	CH80	CH80	DC	50V	Off	200	-200 V
91	Logic/Pul: Off
92	測定値

番号	日付 時間	ms	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15	CH16	CH17	CH18	CH19	CH20	CH21	CH2
NO.	Time	ms	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
1	2020/12/3 11:17	0	-46.6	-50.1	-50.3	-50.4	-50.5	-50.2	-49.5	-45.8	-16.3	-3.8	-24.3	-53.8	-54.7	-56.5	-55.4	-49.9	-50.5	-51	-51.1	-51.3	-50.3	
2	2020/12/3 11:17	0	-46.6	-50.1	-50.3	-50.3	-50.5	-50.2	-49.4	-45.7	-16.3	-3.7	-24.3	-53.8	-54.7	-56.5	-55.4	-49.9	-50.4	-51	-51	-51.3	-50.3	
3	2020/12/3 11:17	0	-46.5	-50.1	-50.3	-50.3	-50.5	-50.1	-49.5	-45.7	-16.2	-3.7	-24.4	-53.8	-54.8	-56.5	-55.4	-49.9	-50.5	-51	-51.1	-51.3	-50.3	
4	2020/12/3 11:17	0	-46.6	-50.1	-50.3	-50.3	-50.5	-50.1	-49.5	-45.7	-16.4	-3.8	-24.4	-53.8	-54.8	-56.5	-55.4	-49.9	-50.5	-51	-51.1	-51.3	-50.3	

Tube	Tube on Radiator	Coupler for connecting the heat pipe tube and Al frame	Cold plate and liqud in the chiller loop

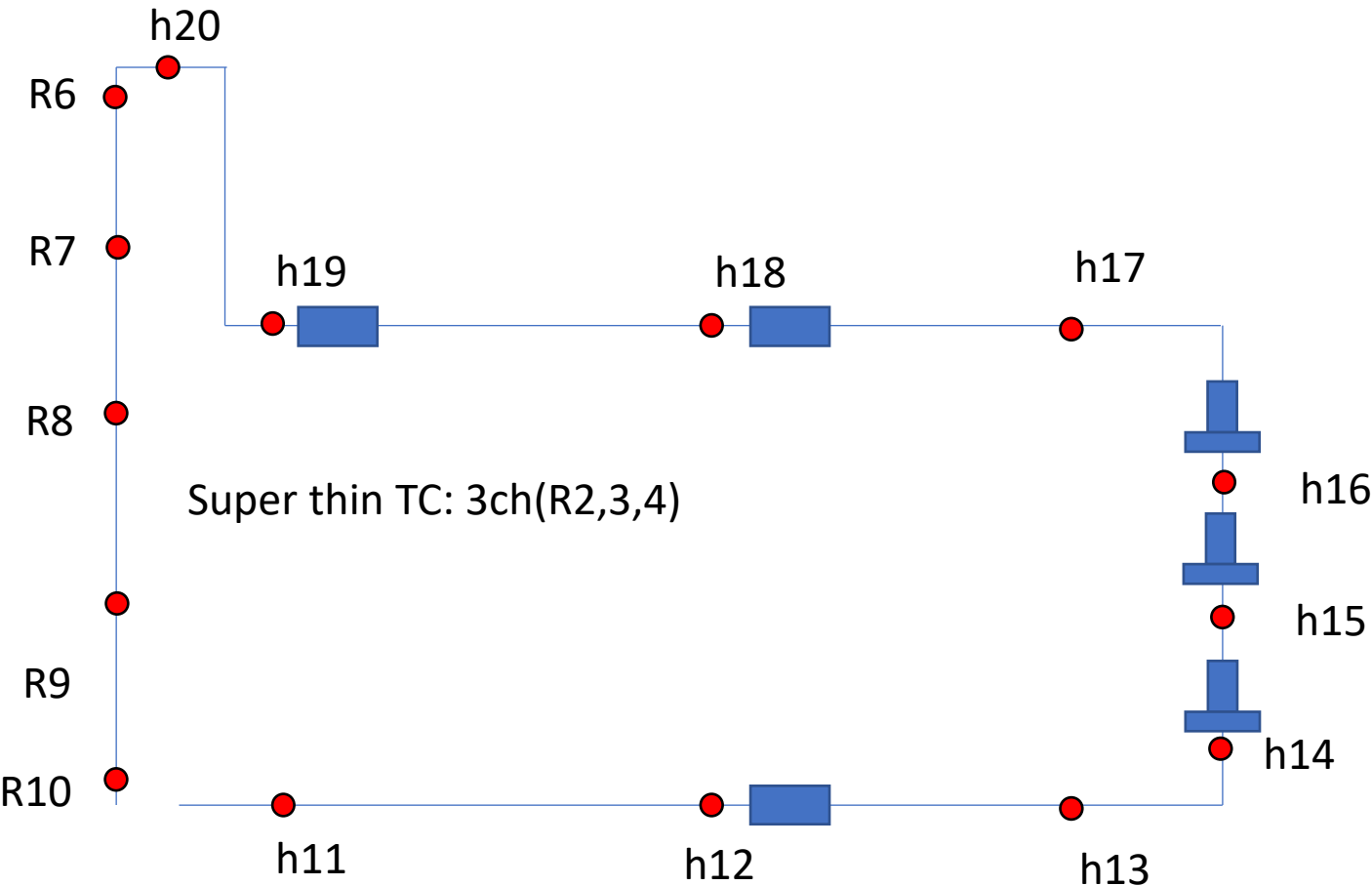**Thermocouple number is the number of thermocouple shown in following slide**

Channel number of logger	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Loop number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Thermocouple number	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	R1	R2	R3	R4	R5

Channel number of logger	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Loop number	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Thermocouple number	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	R6	R7	R8	R9	R10

Channel number of logger	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Loop number	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thermocouple number	h21	h22	h23	h24	h25	h26	h27	h28	h29	h30	R11	R12	R13	R14	R15

Channel number of logger	46	47	48	49	50	51	52	53	54	55	56
Loop number	6	6	6	6	6	6	6	6	6	N/A	N/A
Thermocouple number	c1	c2	c3	c4	c5	c6	c7	c8	c9	N/A	N/A

Channel number of logger	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Loop number		Cold plate surface temperature									Liquid temperature in chiller circulation loop			
Thermocouple number	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14

Channel number of logger	71	72	73	74	75	76
Loop number	Reservoir	Room temperature	N/A	Sub-heater surface		
Thermocouple number			N/A			

20201014
Loop1
温度センサ施工
RTD4 h10
R1
RTD1 = リザーバー
R2   h9   h8   h7 RTD3
R3
極細TC: 3ch(R2,3,4)   h6
h5
R4
R5   h4 RTD2
h1   h2   h3

20201014

Loop1

Super thin TC: 3ch(R2,3,4)

Channel number of logger	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Loop number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Thermocouple number	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	R1	R2	R3	R4	R5

Loop6

Super thin TC: 3ch(R2,3,4)

Channel number of logger	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Loop number	6	6	6	6	6	6	12	12	12	12	12	12	12	12	12
Thermocouple number	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	R6	R7	R8	R9	R10

20201014

Loop12

RTD10 h30
R11
R12   h29   h28   h27 RTD9
R13   Super thin TC: 3ch(R2,3,4)   h26
                                         RTD8
                                         h25
R14   RTD7
                                         h24
R15   RTD6
   RTD5 h21   h22   h23
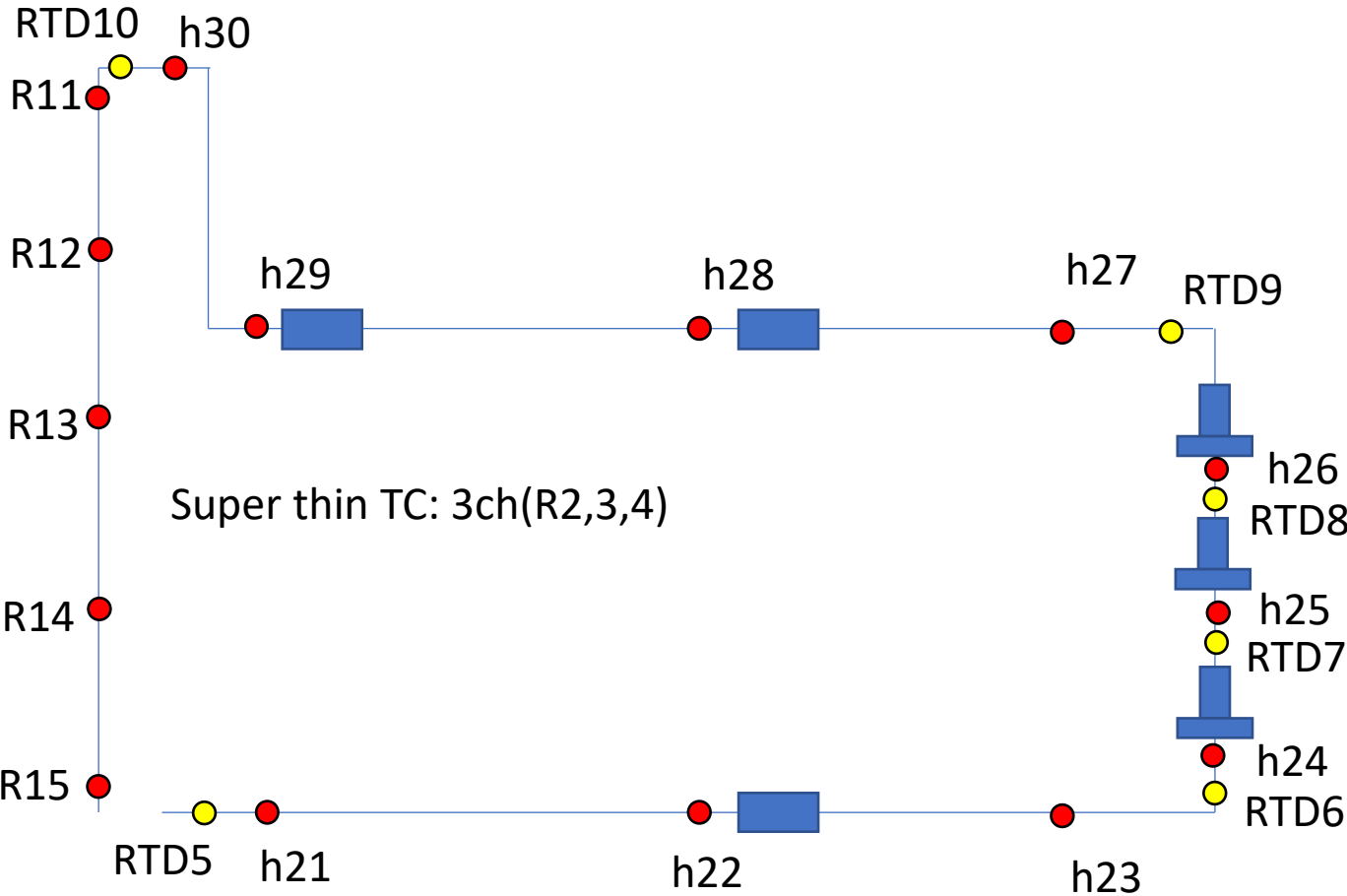
Tube on radiator plate

Loop6
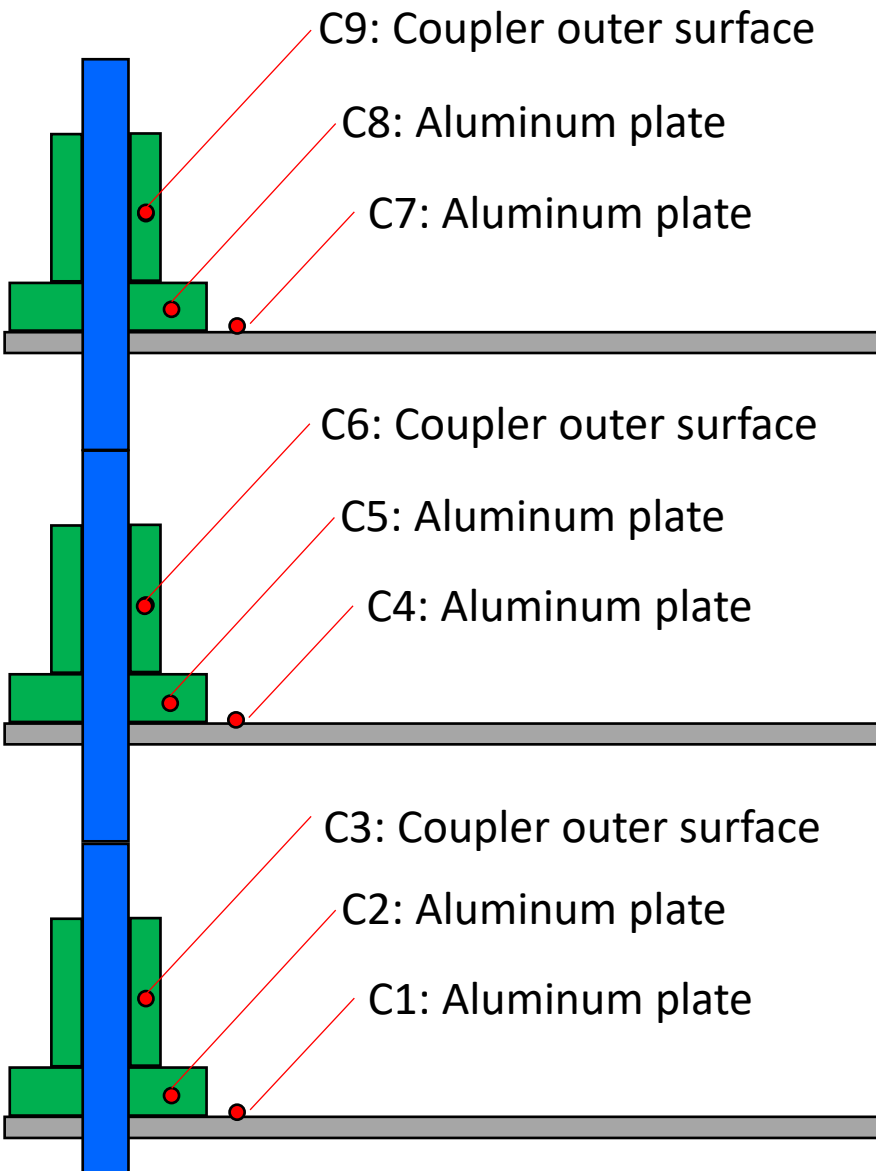
C9: Coupler outer surface

C8: Aluminum plate

C7: Aluminum plate

C6: Coupler outer surface

C5: Aluminum plate

C4: Aluminum plate

C3: Coupler outer surface

C2: Aluminum plate

C1: Aluminum plate

Channel number of logger	46	47	48	49	50	51	52	53	54	55	56				
Loop number	6	6	6	6	6	6	6	6	6	N/A	N/A				
Thermocouple number	c1	c2	c3	c4	c5	c6	c7	c8	c9	N/A	N/A				

Chiller loop and cold plate

CH70
(Thermocouple meaning
the liquid temperature)

CH69
(Thermocouple meaning
the liquid temperature)

CH67
(Thermocouple meaning
the liquid temperature)

Flow direction

Chiller
TRL75SLP

CH65

CH57

CH58

CH59

CH60

1000

CH61

Bracket

CH62

CH63

CH71

CH66

CH64

50   227   50

200

52.8

10-15巻きくらい？？

CH68
(Thermocouple meaning
the liquid temperature)

Channel number of logger	57	58	59	60	61	62	63	64	65	66	67	68	69	70	
Loop number	Cold plate surface temperature										Liquid temperature in chiller circulation loop				
Thermocouple number	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	

Channel number of logger	71	72	73	74	75	76									
Loop number	Reservoir	Room temperature	N/A	Sub-heater surface											
Thermocouple number			N/A												

Logger No. 2
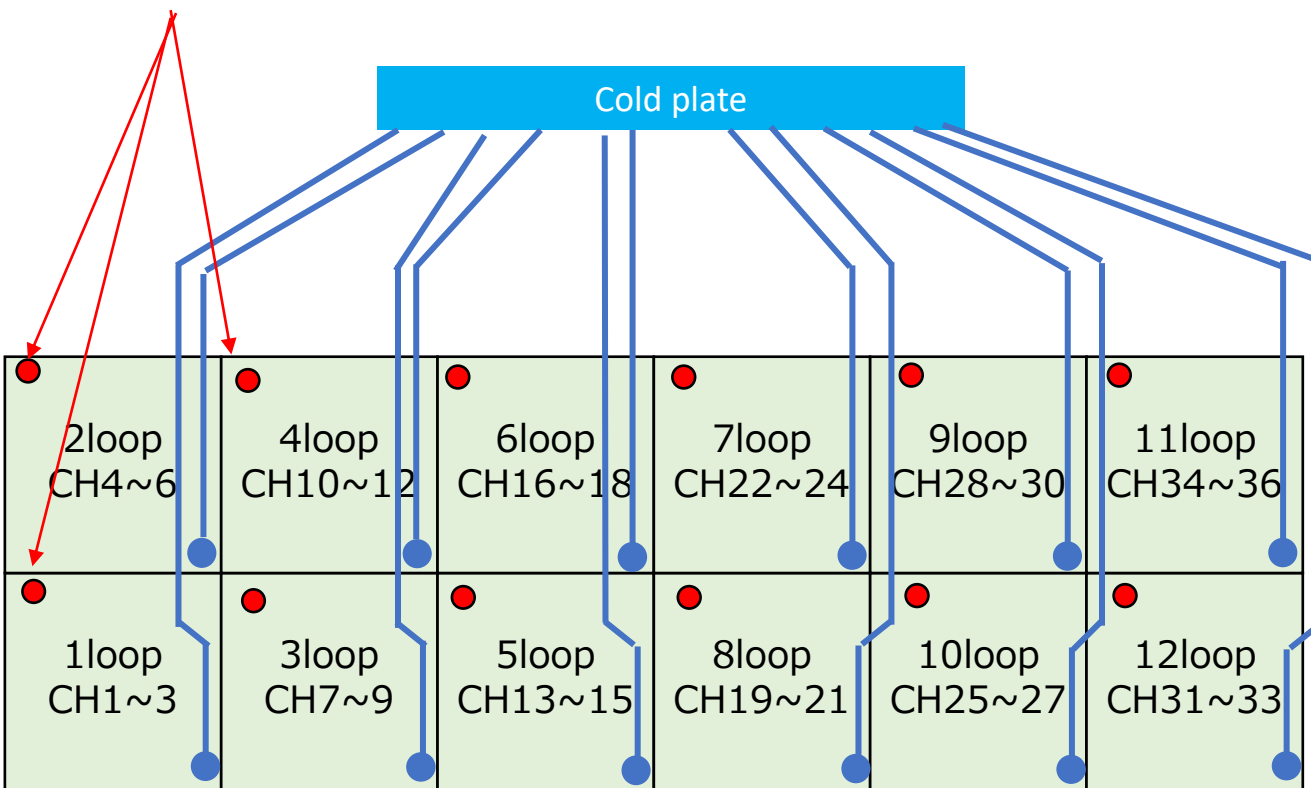Temperature of the aluminum plate
（Opposite corner of the coupler）

For every aluminum plate, the thermocouple was attached to the edge of the aluminum plate at the opposite corner where the coupler was attached.
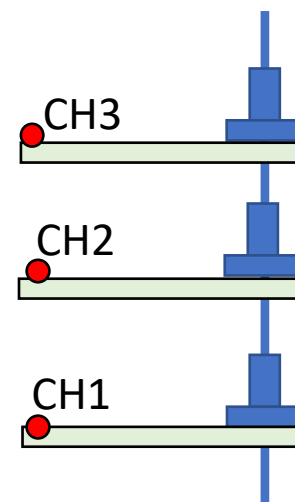
Position of the thermocouple

Aluminum plate
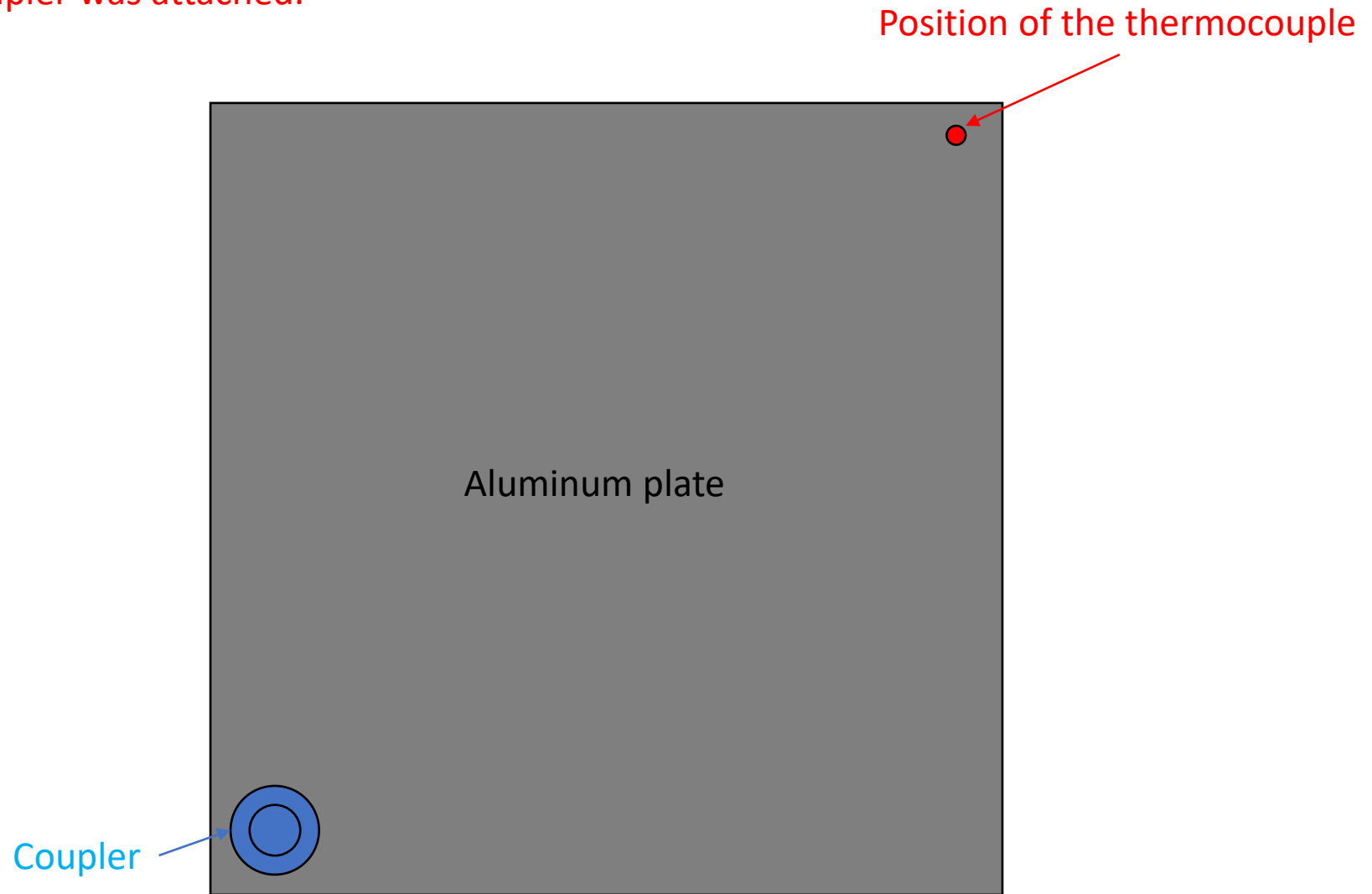
Coupler

Top view of the aluminum plate

NOTE: Additional thermocouples were attached around the coupler for loop no.6 to measure the temperature in detail. (Page 8)

Position of the thermocouple

Cold plate

| 2loop CH4~6 | 4loop CH10~12 | 6loop CH16~18 | 7loop CH22~24 | 9loop CH28~30 | 11loop CH34~36 |
| 1loop CH1~3 | 3loop CH7~9 | 5loop CH13~15 | 8loop CH19~21 | 10loop CH25~27 | 12loop CH31~33 |

Top view

CH3

CH2

CH1

Side view

The number of the thermocouple on loop No.1 is shown as an example. The number was counted from the bottom to the top layer.