

10-01-2019 08:40:45



Measurements

°C

Ar1	Max	85.8
	Min	26.1
	Average	40.1
Sp1		85.8
Sp2		80.7

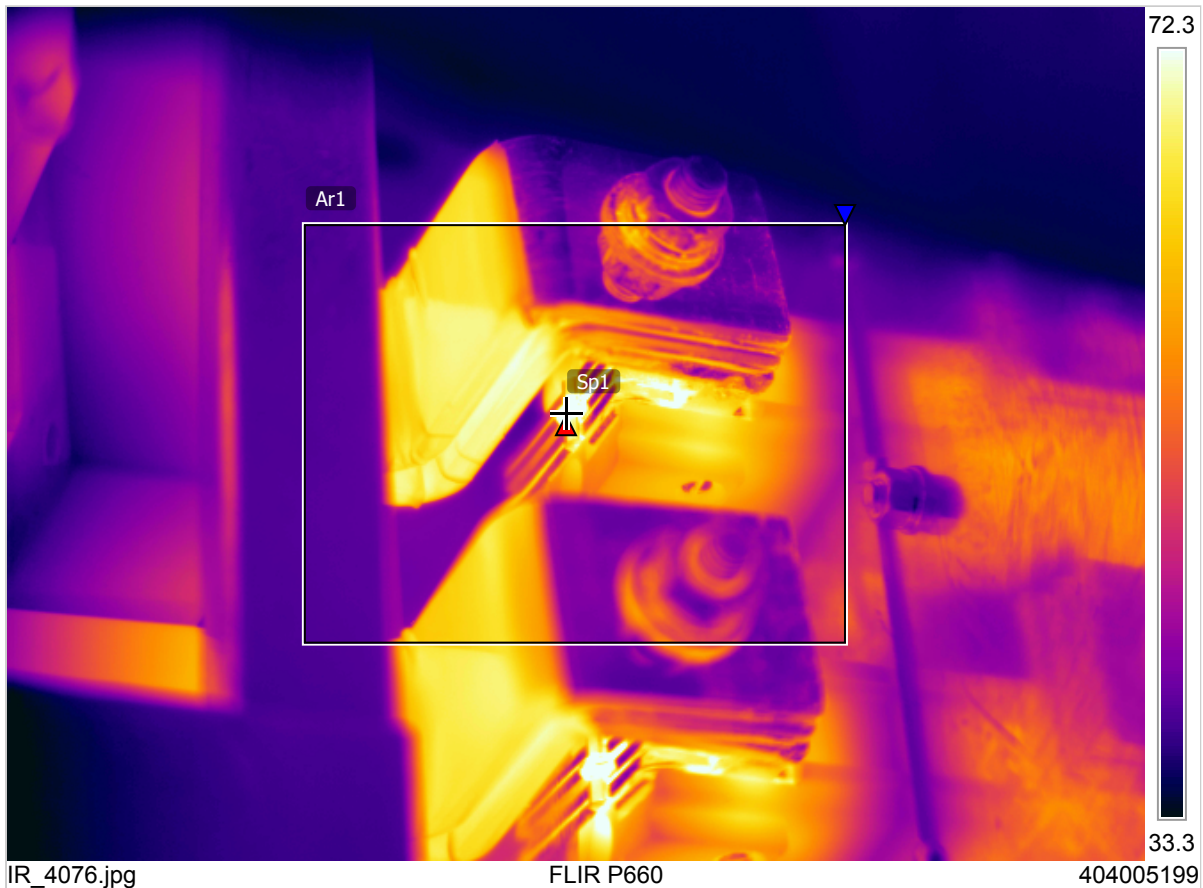
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1, Y Ph Cable Terminal

10-01-2019 08:41:12



Measurements

°C

Ar1	Max	80.5
	Min	36.5
	Average	52.0
Sp1		80.1

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 B Ph Incoming side

10-01-2019 08:41:18



Measurements

°C

Ar1	Max	79.5
	Min	36.7
	Average	51.0
Sp1		78.6

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 Y Ph Incoming side

10-01-2019 08:41:39



Measurements

°C

Ar1	Max	68.9
	Min	30.5
	Average	46.1
Sp1		68.7

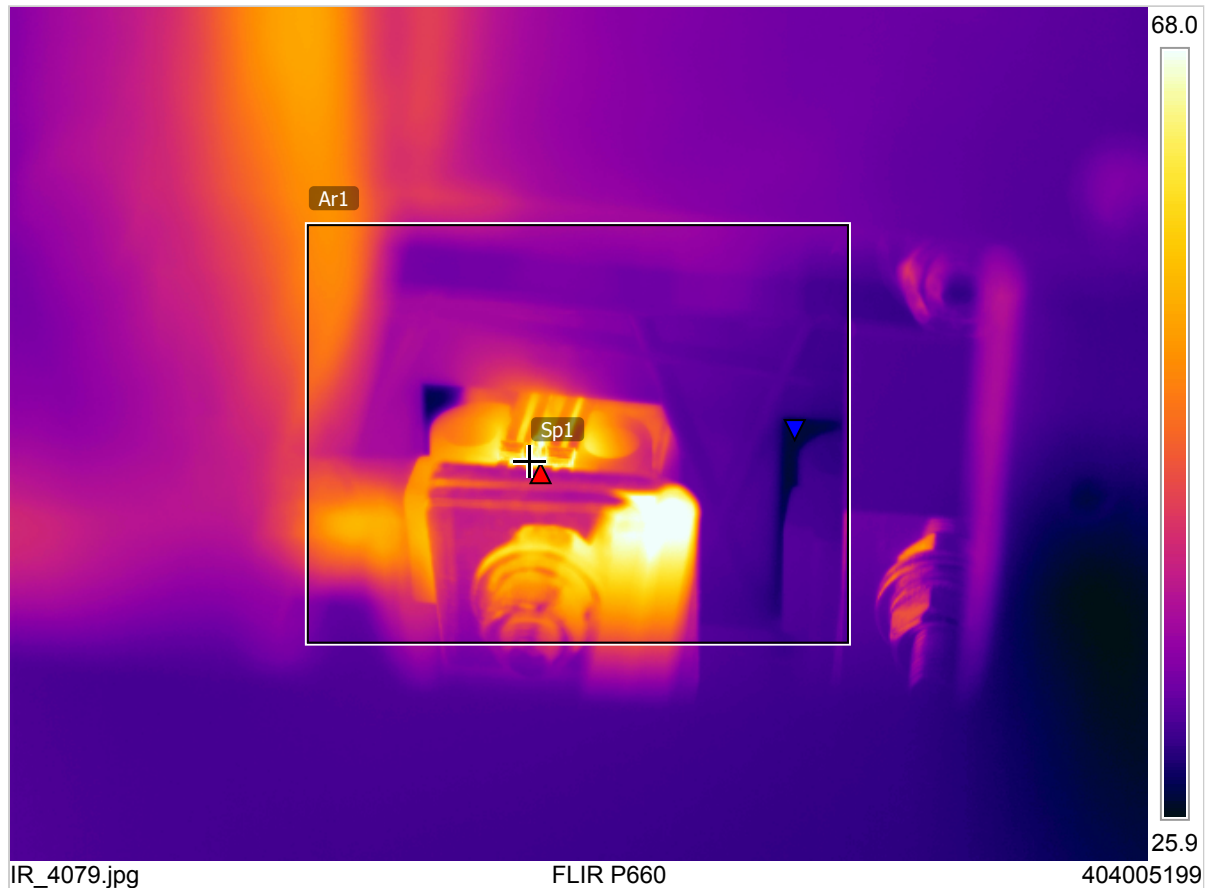
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 B Ph Incoming side

10-01-2019 08:42:06



Measurements

°C

Ar1	Max	73.4
	Min	26.9
	Average	41.2
Sp1		72.5

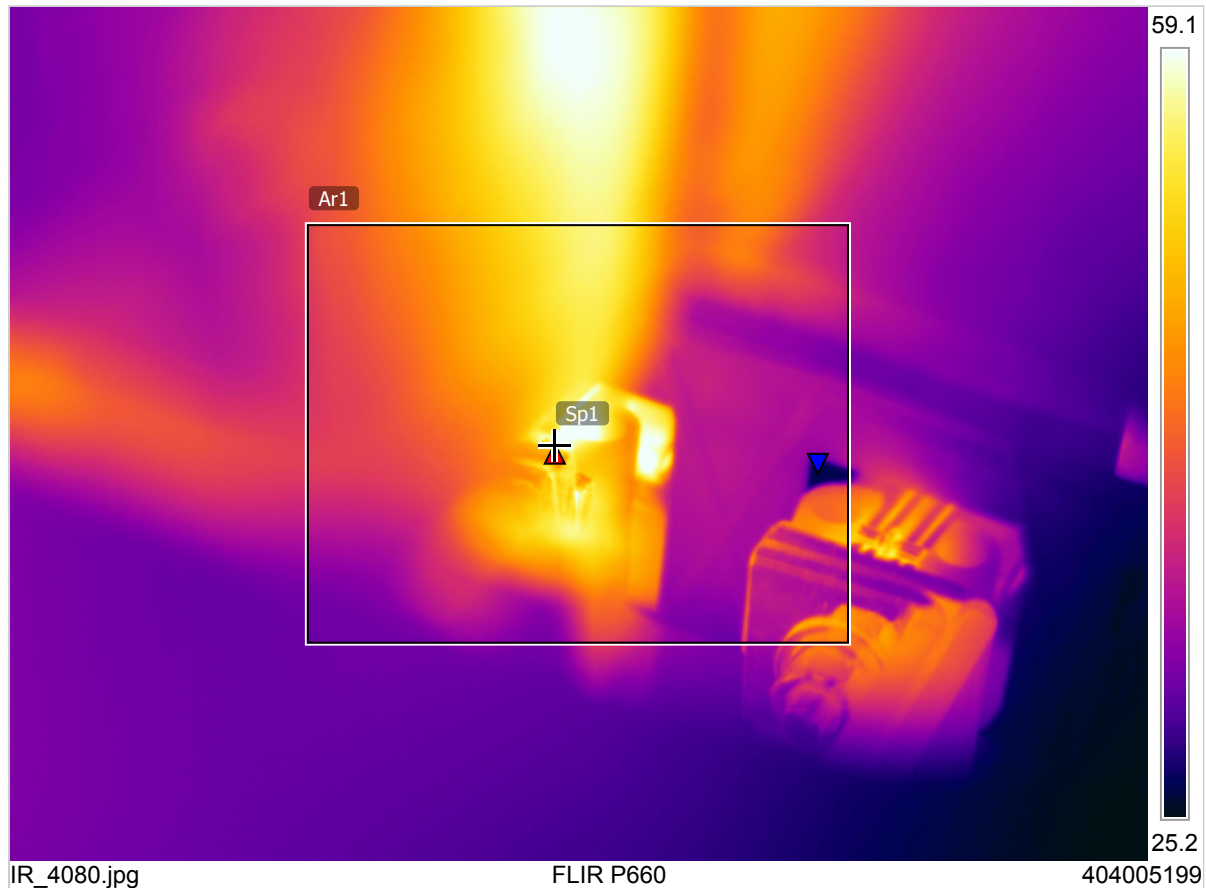
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 B Ph outgoing side

10-01-2019 08:42:34



Measurements

°C

Ar1	Max	64.1
	Min	26.6
	Average	42.7
Sp1		64.0

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 Y Ph out going side

10-01-2019 08:43:21



Measurements

°C

Ar1	Max	88.5
	Min	26.5
	Average	42.7
Sp1		82.4
Sp2		88.5

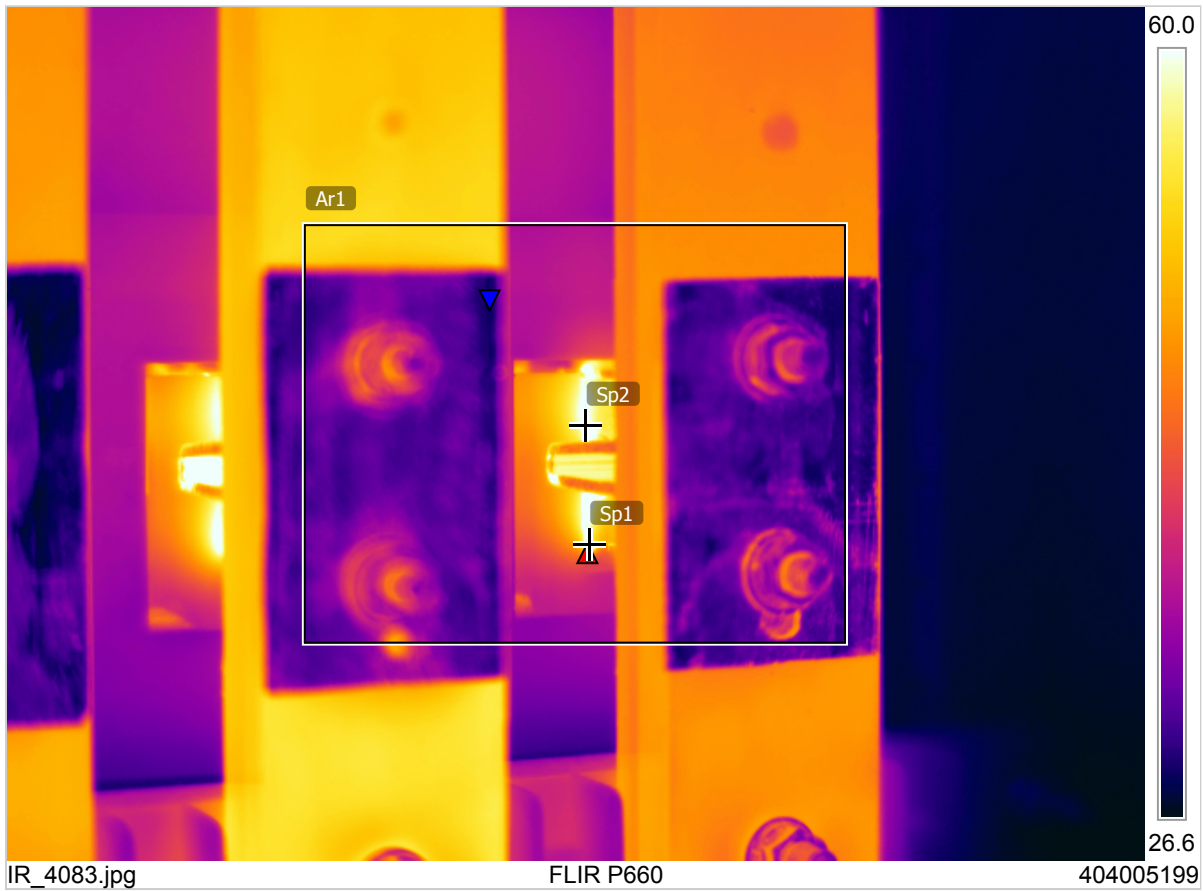
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 Y Ph Incoming side Cable terminal

10-01-2019 08:43:49



Measurements °C

Ar1	Max	69.3
	Min	28.6
	Average	38.3
Sp1		69.1
Sp2		62.7

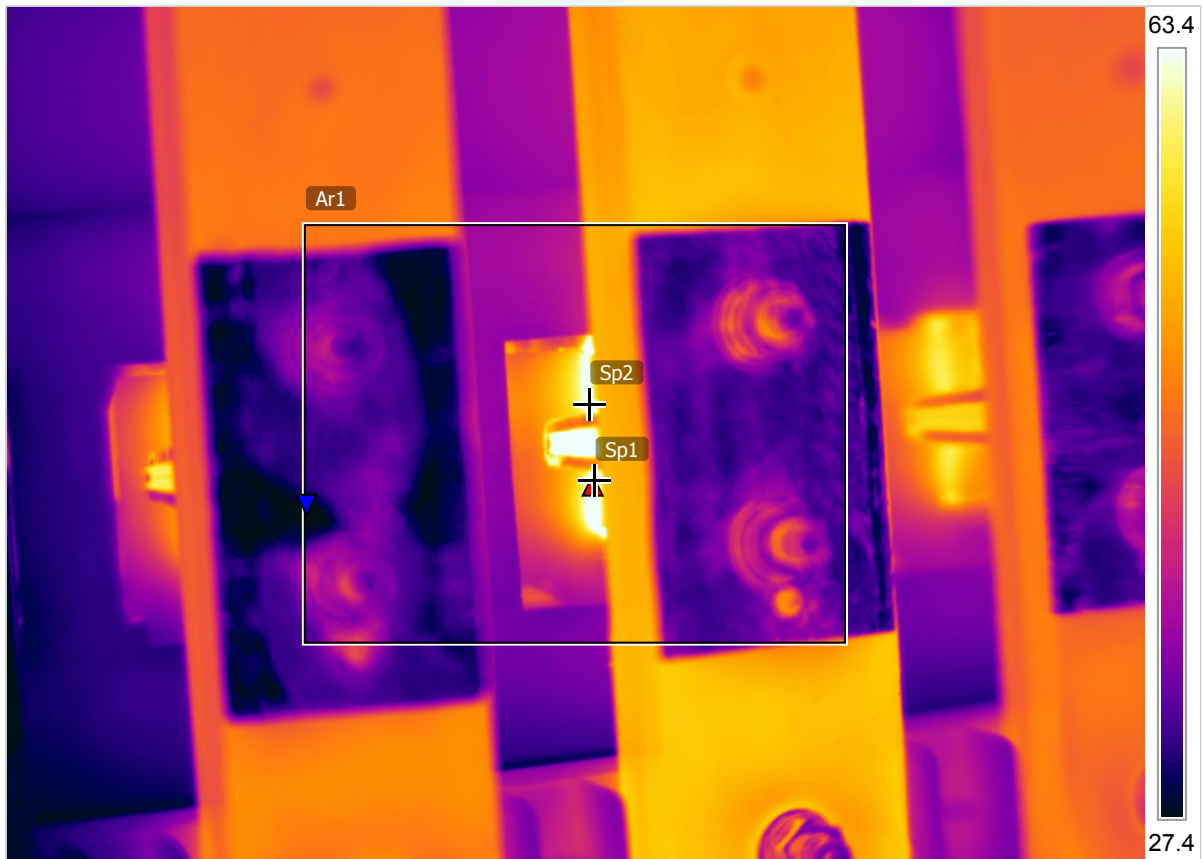
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 R Ph out going side

10-01-2019 08:44:02



IR_4084.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	77.7
	Min	27.1
	Average	38.0
Sp1		77.0
Sp2		76.3

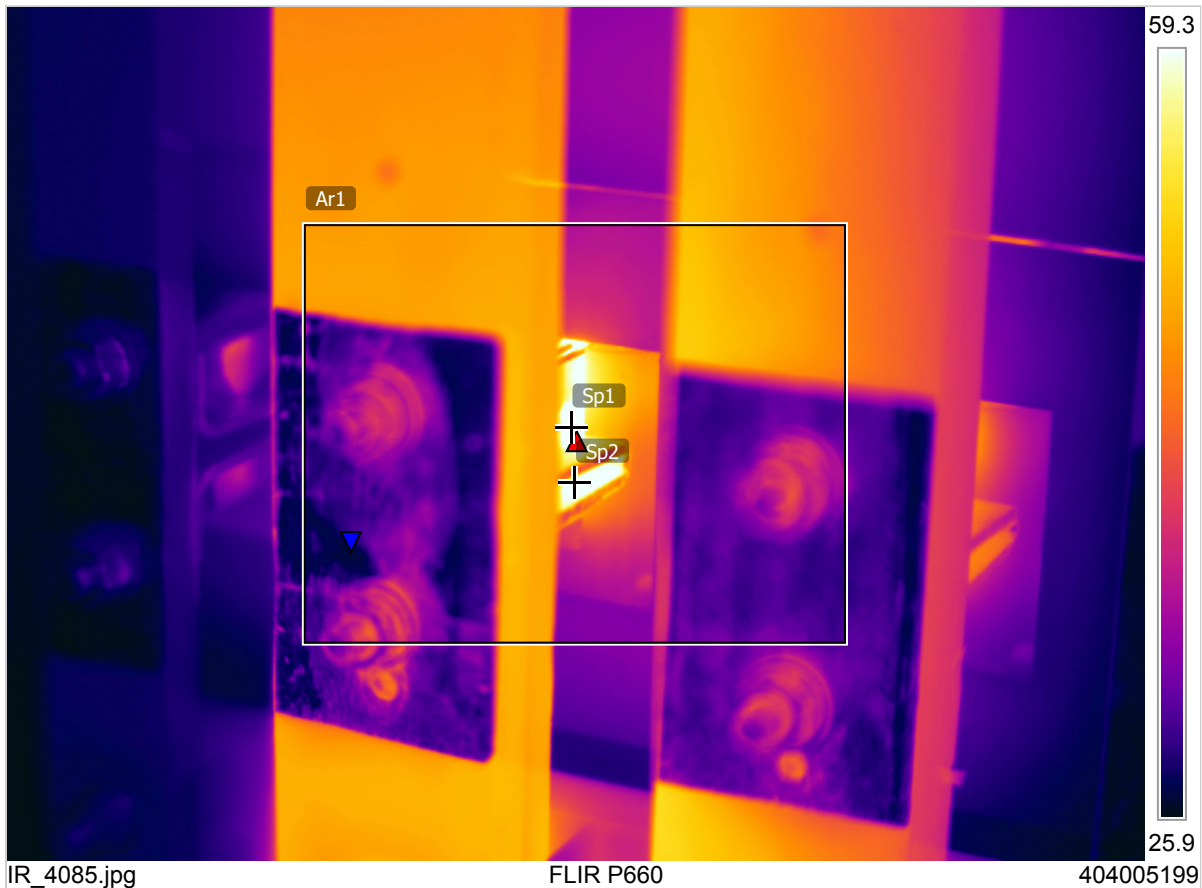
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 Y Ph out going side

10-01-2019 08:44:18



Measurements

°C

Ar1	Max	71.8
	Min	26.8
	Average	39.7
Sp1		69.0
Sp2		60.9

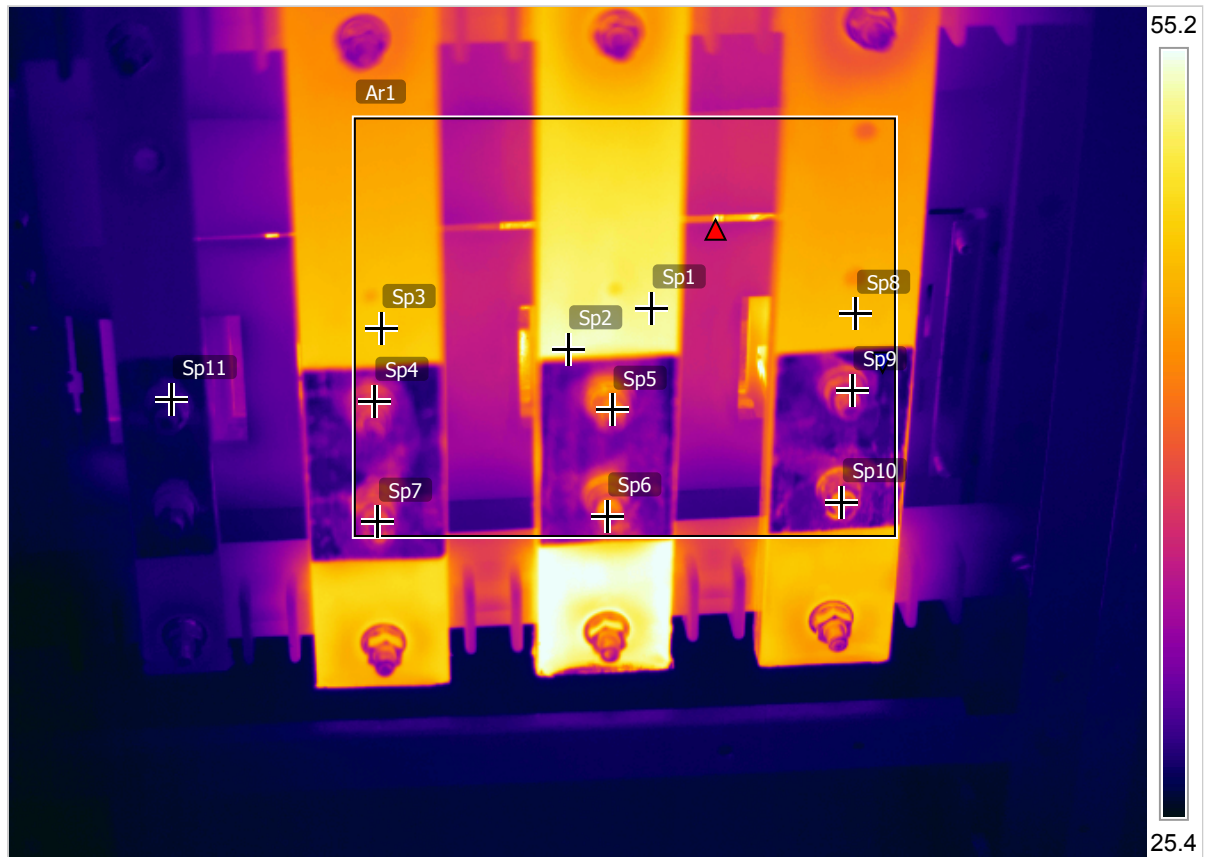
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 B Ph out going side

10-01-2019 08:44:38



IR_4087.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	59.2
	Min	27.7
	Average	40.2
Sp2		54.2
Sp3		48.4
Sp4		38.3
Sp5		44.0
Sp6		40.9
Sp7		37.5
Sp8		47.4
Sp9		37.5
Sp10		41.0
Sp1		53.3
Sp11		28.2

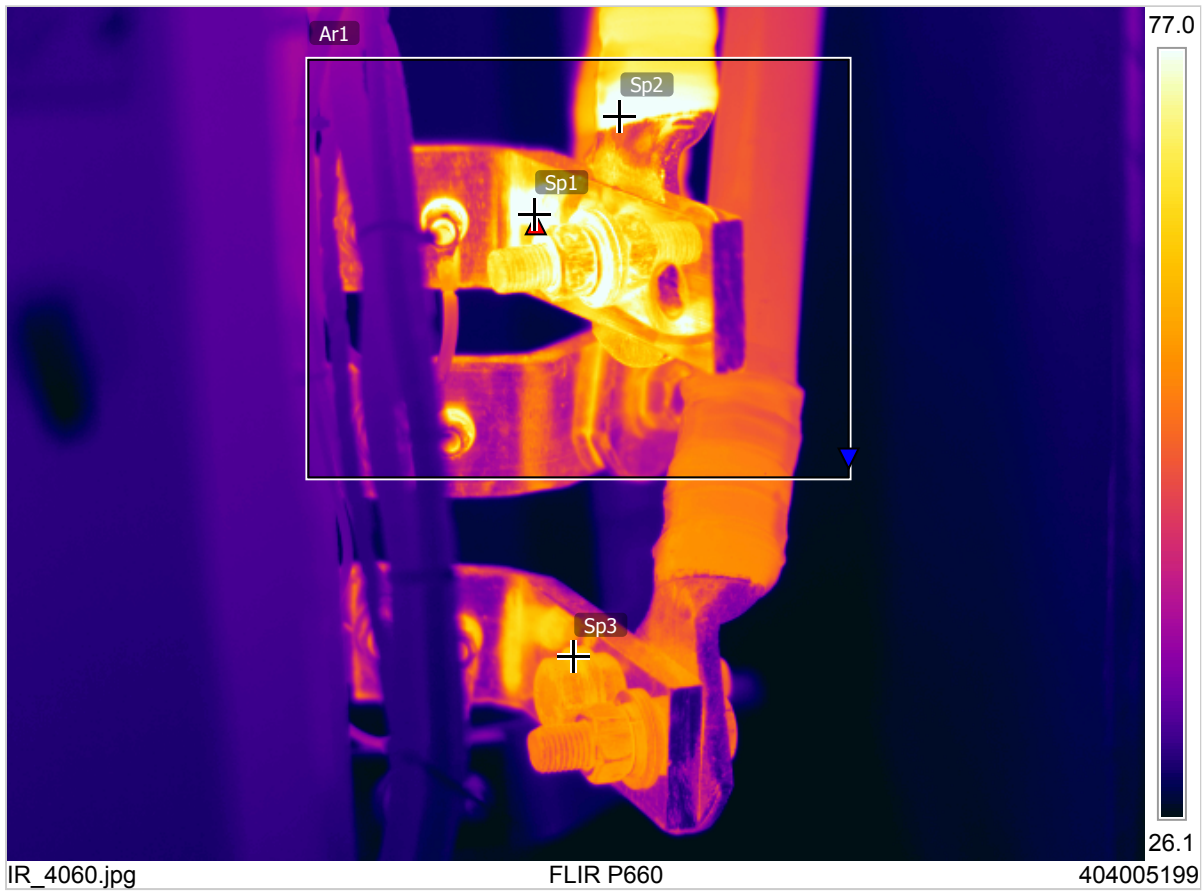
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 1 R Y B N Ph out going side Bus Bar

10-01-2019 07:22:43



Measurements °C

Ar1	Max	82.4
	Min	26.5
	Average	46.9
Sp1		82.2
Sp2		79.3
Sp3		64.6

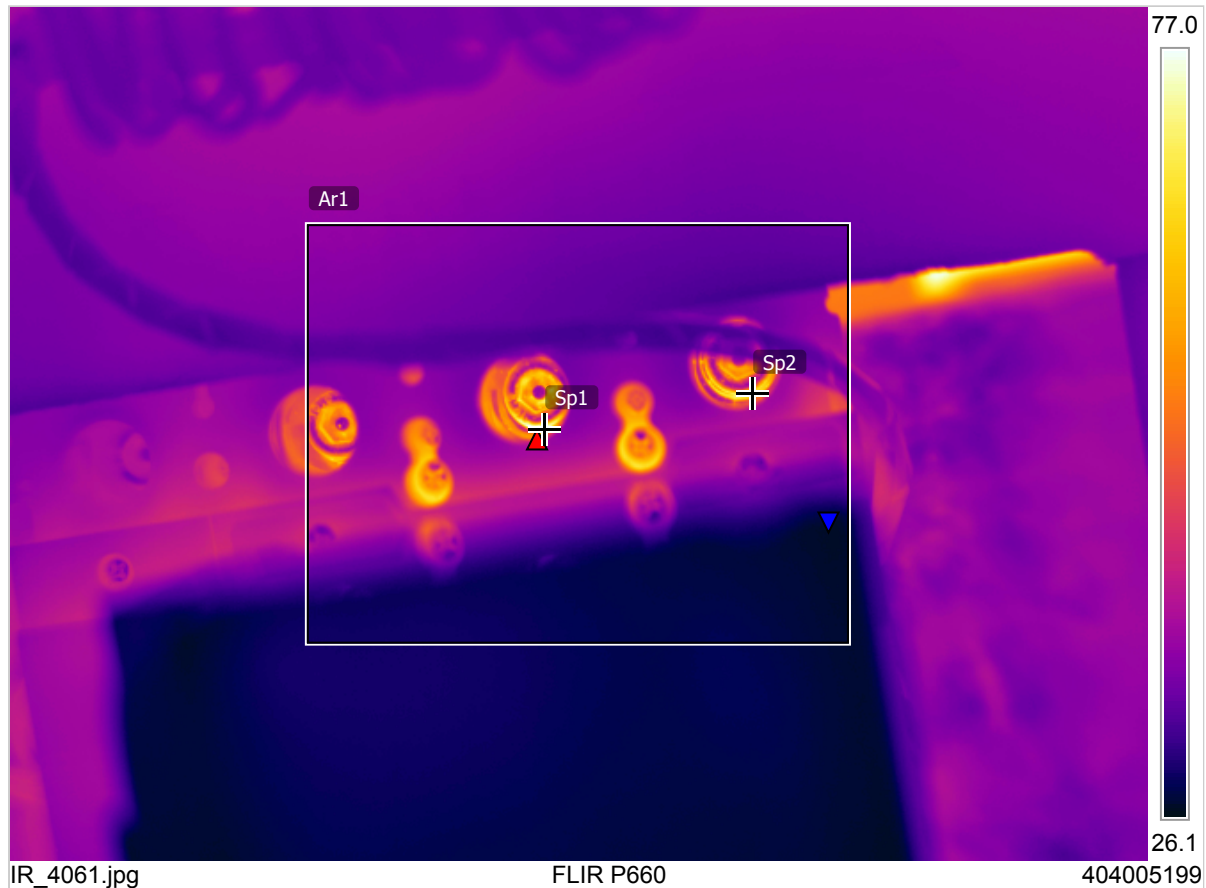
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 B & R Cable Terminal

10-01-2019 07:23:35



Measurements

°C

Ar1	Max	78.2
	Min	26.7
	Average	37.3
Sp1		76.8
Sp2		70.2

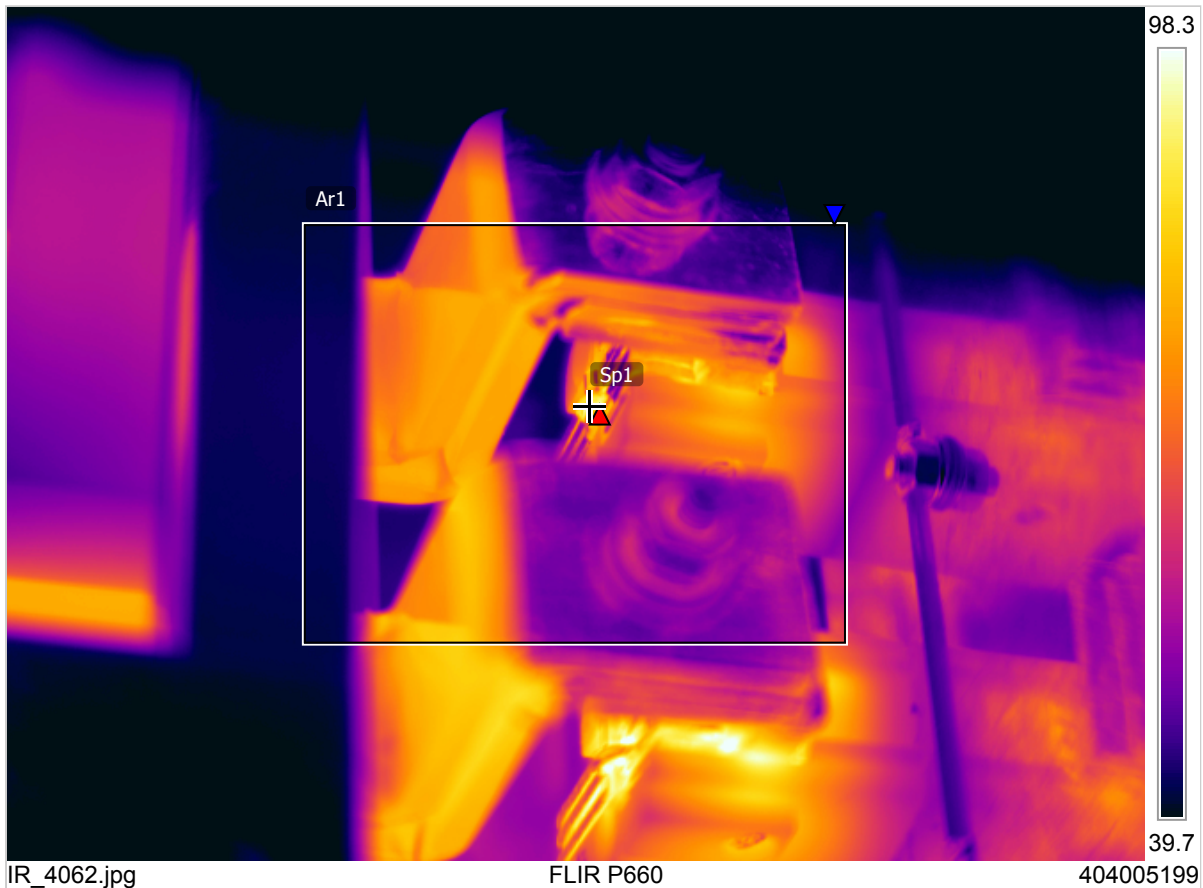
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 CB Terminal

10-01-2019 07:27:50



Measurements °C

Ar1	Max	95.7
	Min	40.1
	Average	62.3
Sp1		95.4

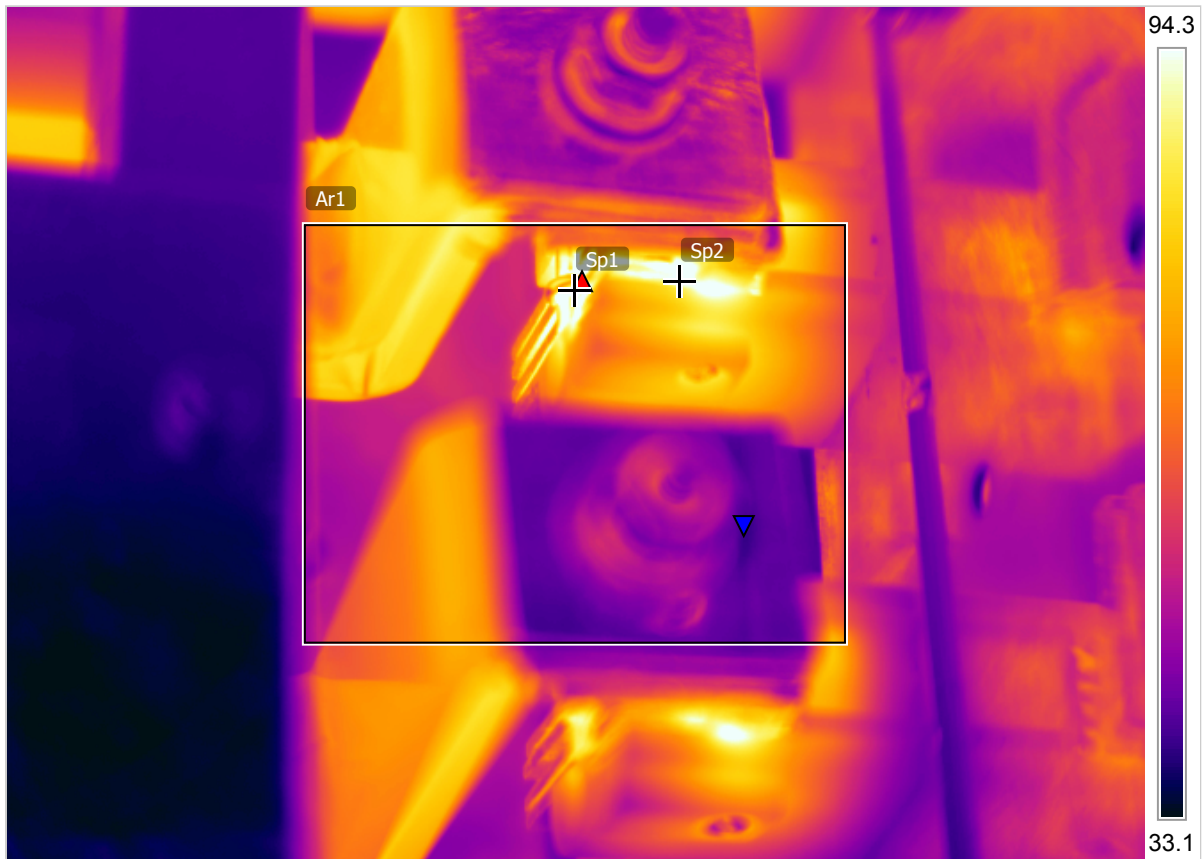
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 B Ph Incomer side

10-01-2019 07:28:02



IR_4063.jpg

FLIR P660

404005199

Measurements °C

Ar1	Max	107.6
	Min	39.9
	Average	63.4
Sp1		105.2
Sp2		102.2

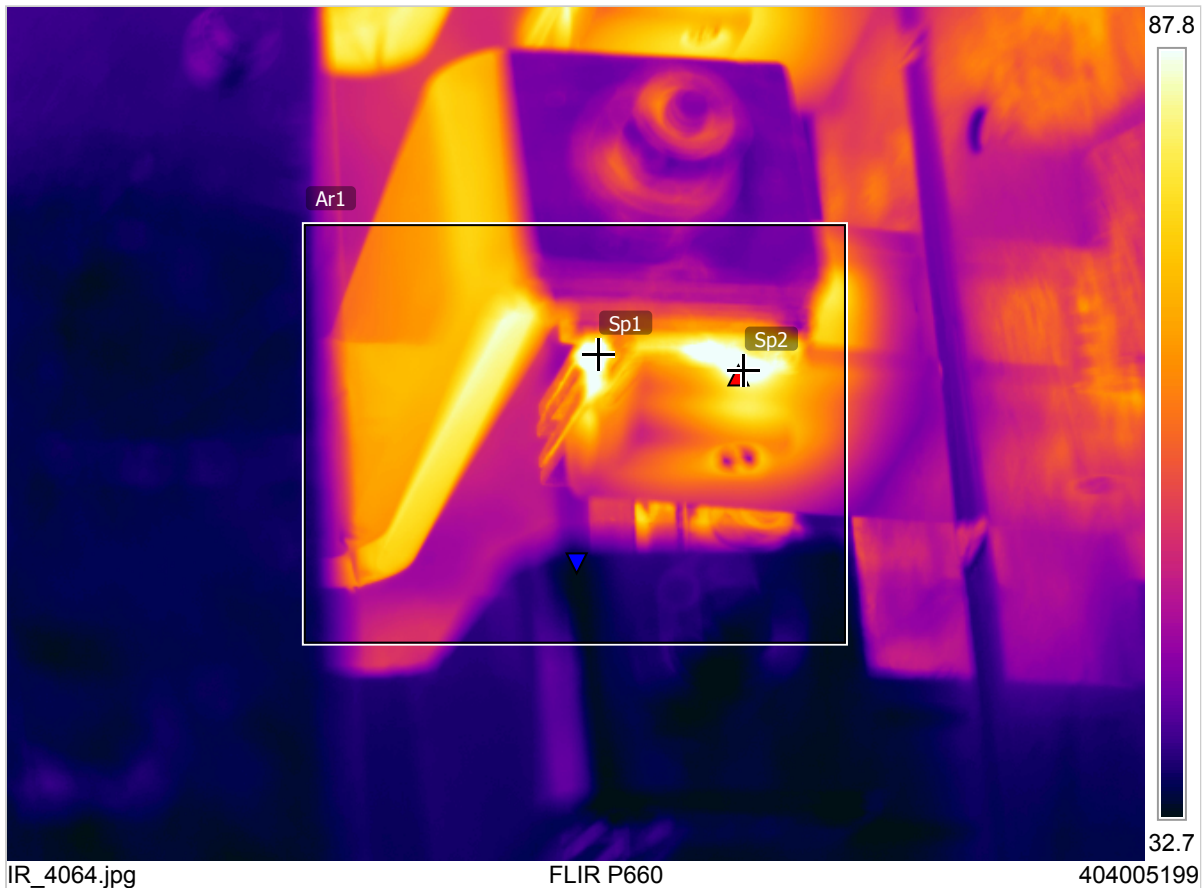
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 Y Ph Incomer side

10-01-2019 07:28:23



Measurements

°C

Ar1	Max	98.5
	Min	33.0
	Average	57.6
Sp1		92.4
Sp2		97.1

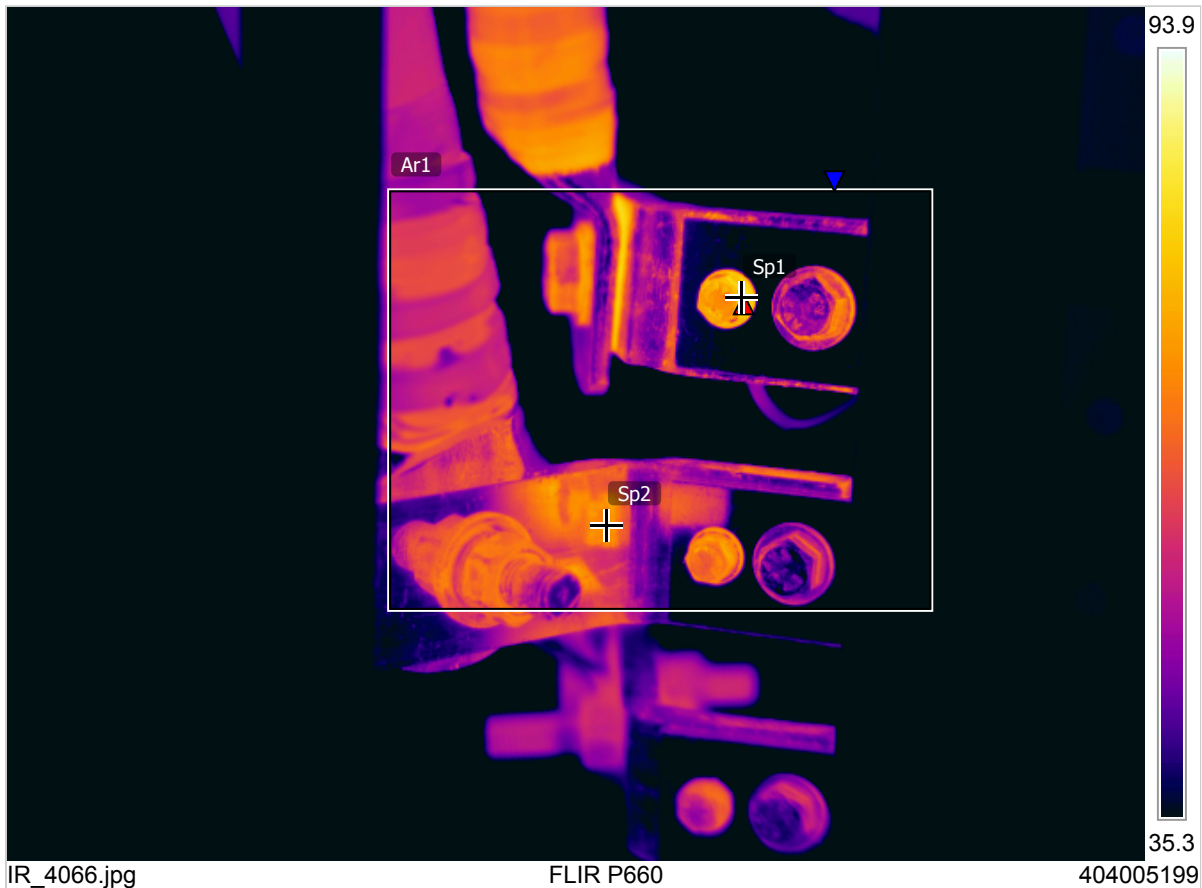
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 R Ph Incomer side

10-01-2019 07:29:16



Measurements °C

Ar1	Max	84.8
	Min	24.8
	Average	46.4
Sp1		84.3
Sp2		74.4

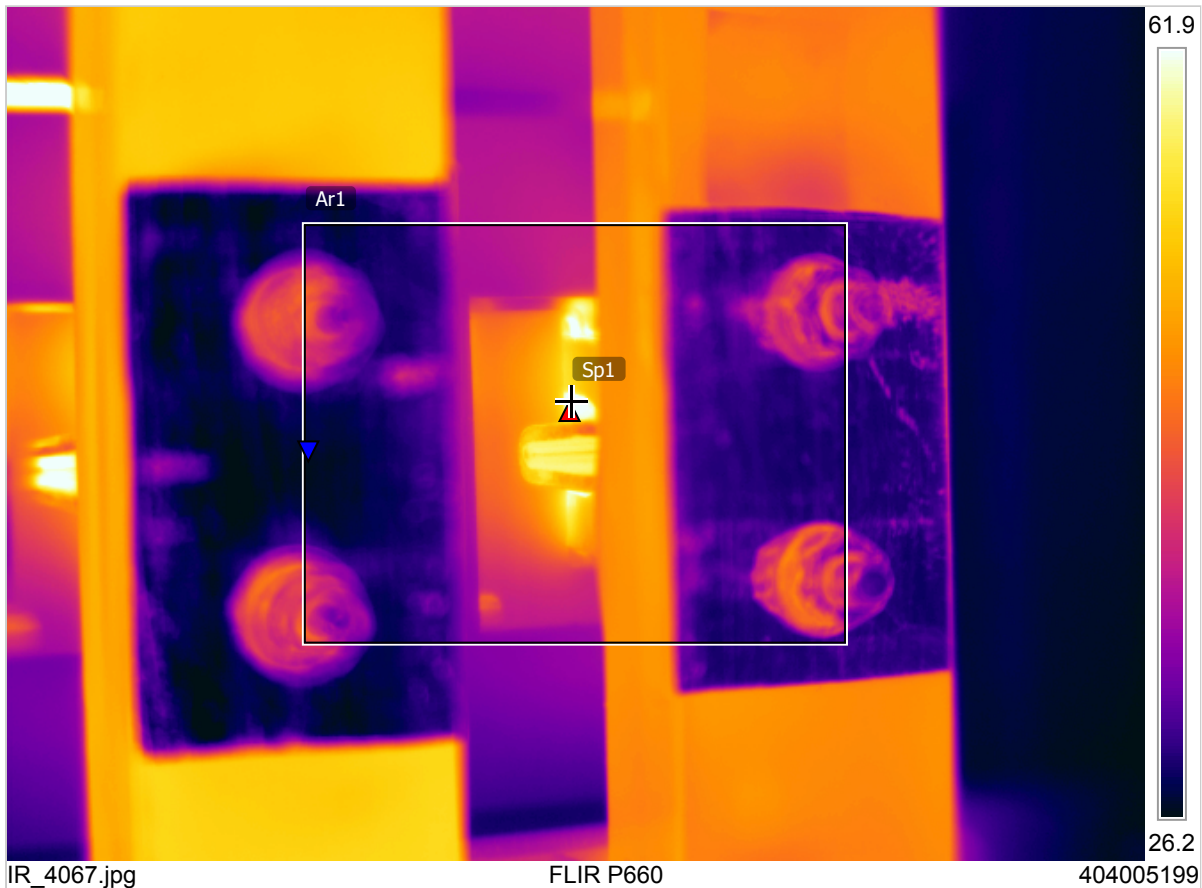
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 B & Y Ph Cable terminal

10-01-2019 07:30:07



Measurements

°C

Ar1	Max	64.3
	Min	26.5
	Average	37.9
Sp1		64.2

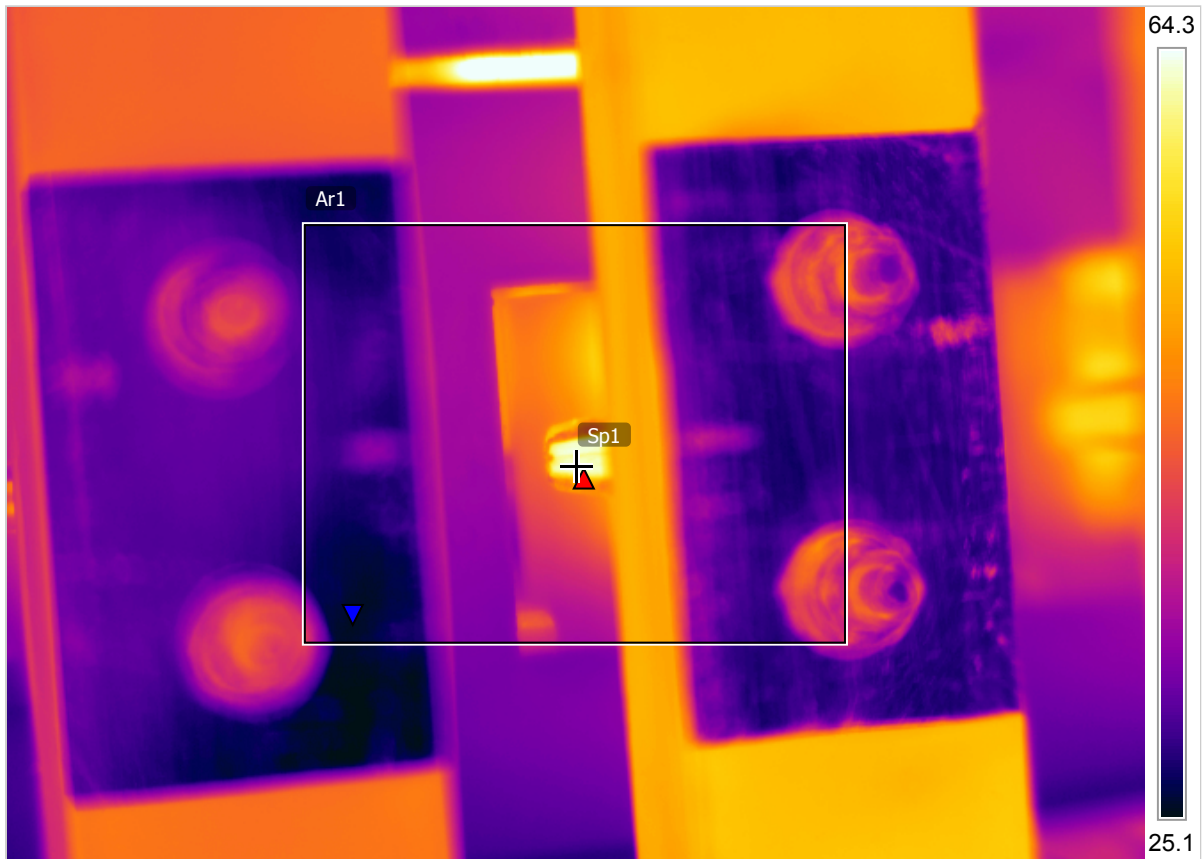
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 R Ph Outgoing side

10-01-2019 07:30:52



IR_4068.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	63.6
	Min	25.5
	Average	37.3
Sp1		63.1

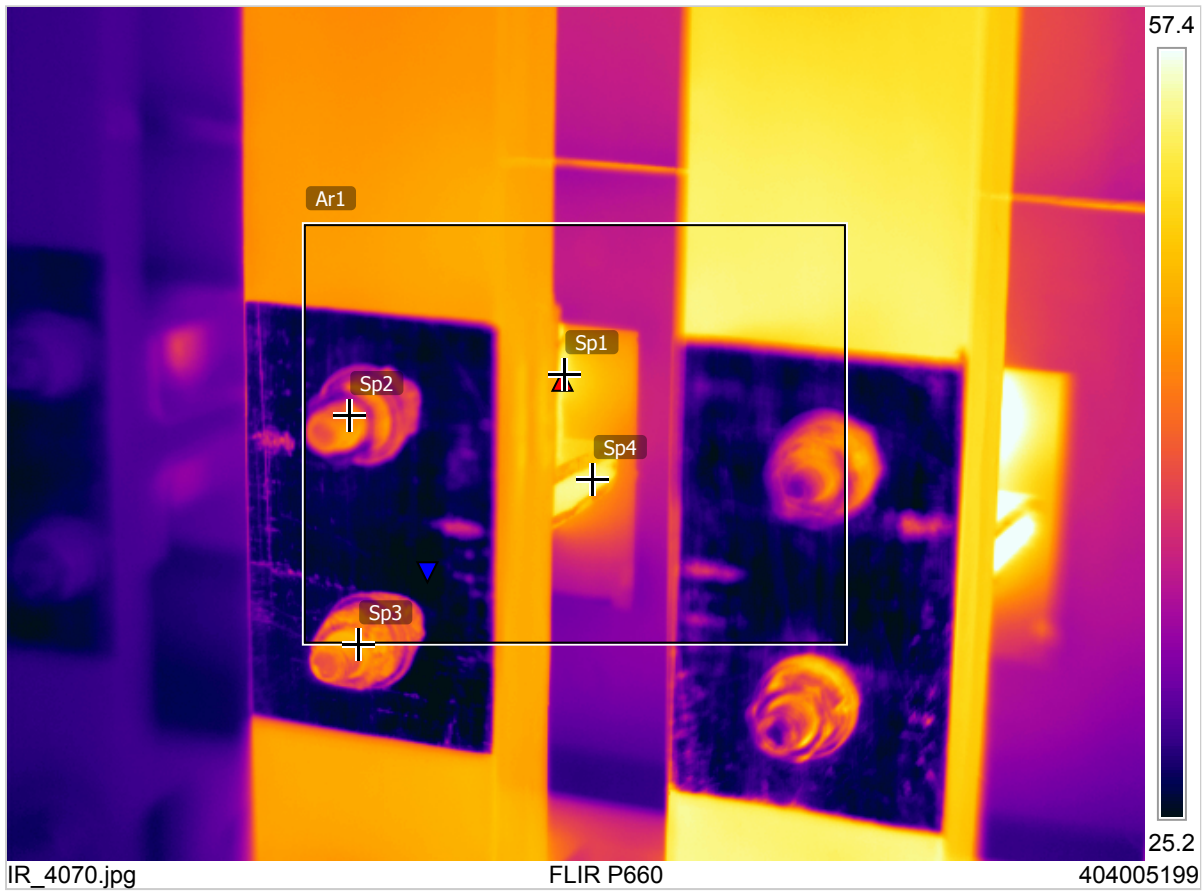
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 Y Ph Outgoing side

10-01-2019 07:31:19



Measurements

°C

Ar1	Max	55.9
	Min	24.7
	Average	37.6
Sp1		55.5
Sp2		43.9
Sp3		48.3
Sp4		55.6

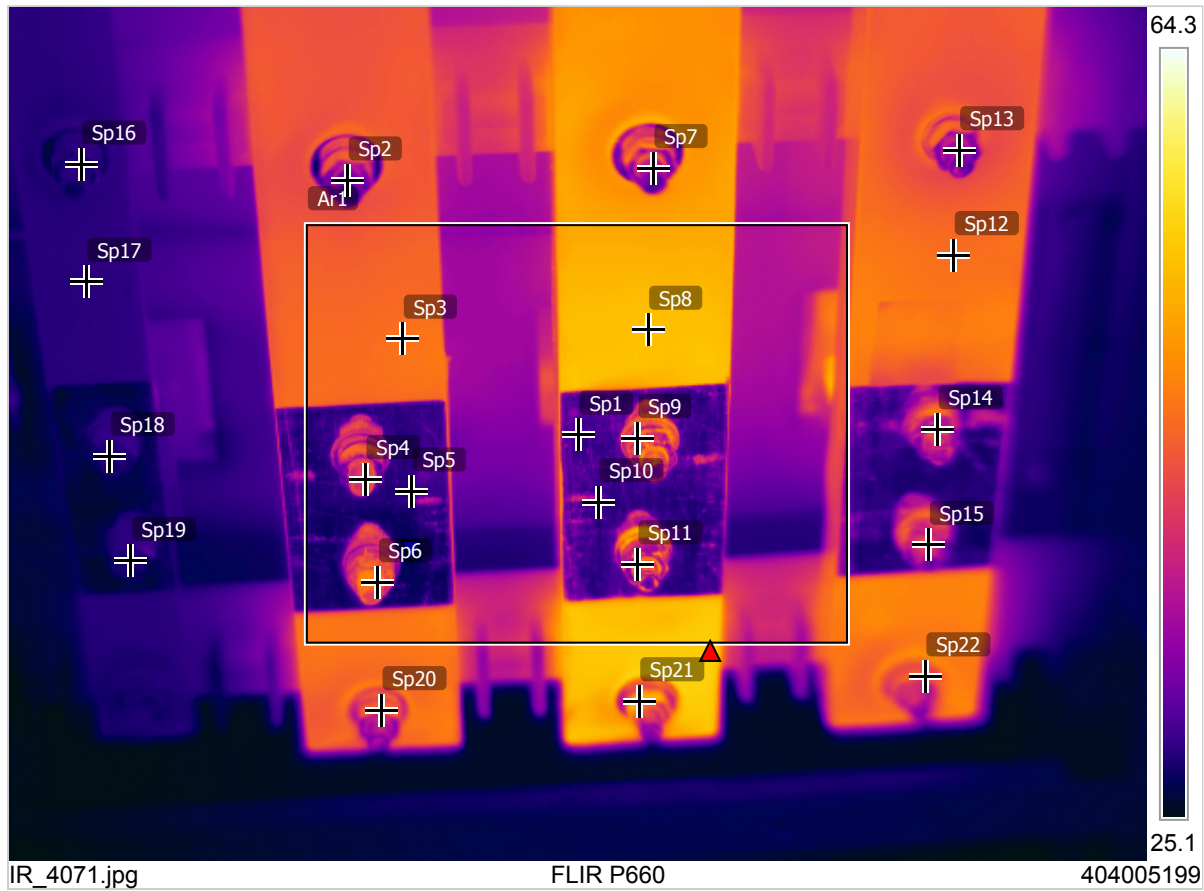
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 B Ph Outgoing side

10-01-2019 07:31:34

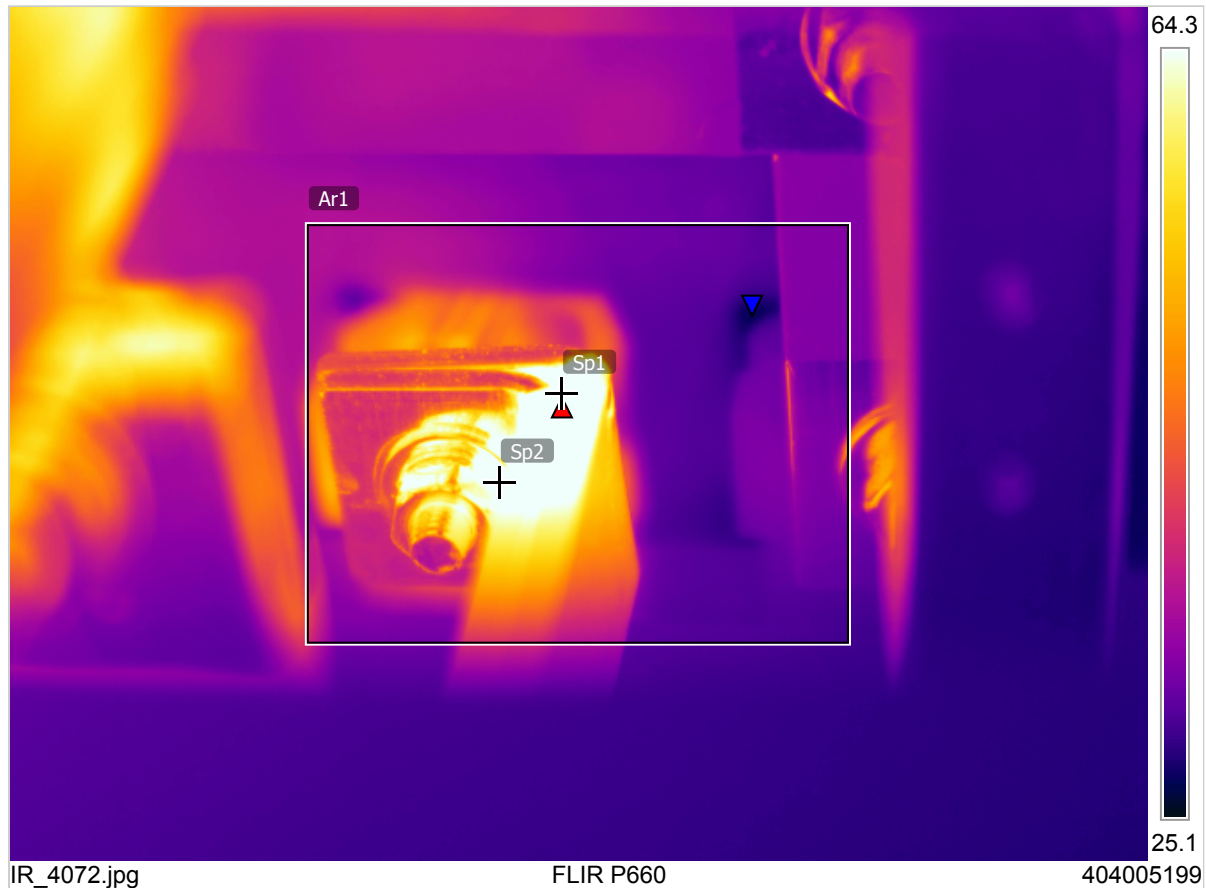


Measurements

°C

Ar1	Max	56.0
	Min	26.8
	Average	39.8
Sp1		29.6
Sp2		35.5
Sp3		47.5
Sp4		44.7
Sp5		28.8
Sp6		47.1
Sp7		39.0
Sp8		54.7
Sp9		42.8
Sp10		29.3
Sp11		46.7
Sp12		47.2
Sp13		37.2
Sp14		40.2
Sp15		43.1
Sp16		28.6
Sp17		29.0
Sp18		28.8
Sp19		28.1
Sp20		43.3
Sp21		52.2
Sp22		46.0

10-01-2019 07:32:20



Measurements

°C

Ar1	Max	68.2
	Min	27.2
	Average	40.9
Sp1		68.1
Sp2		66.1

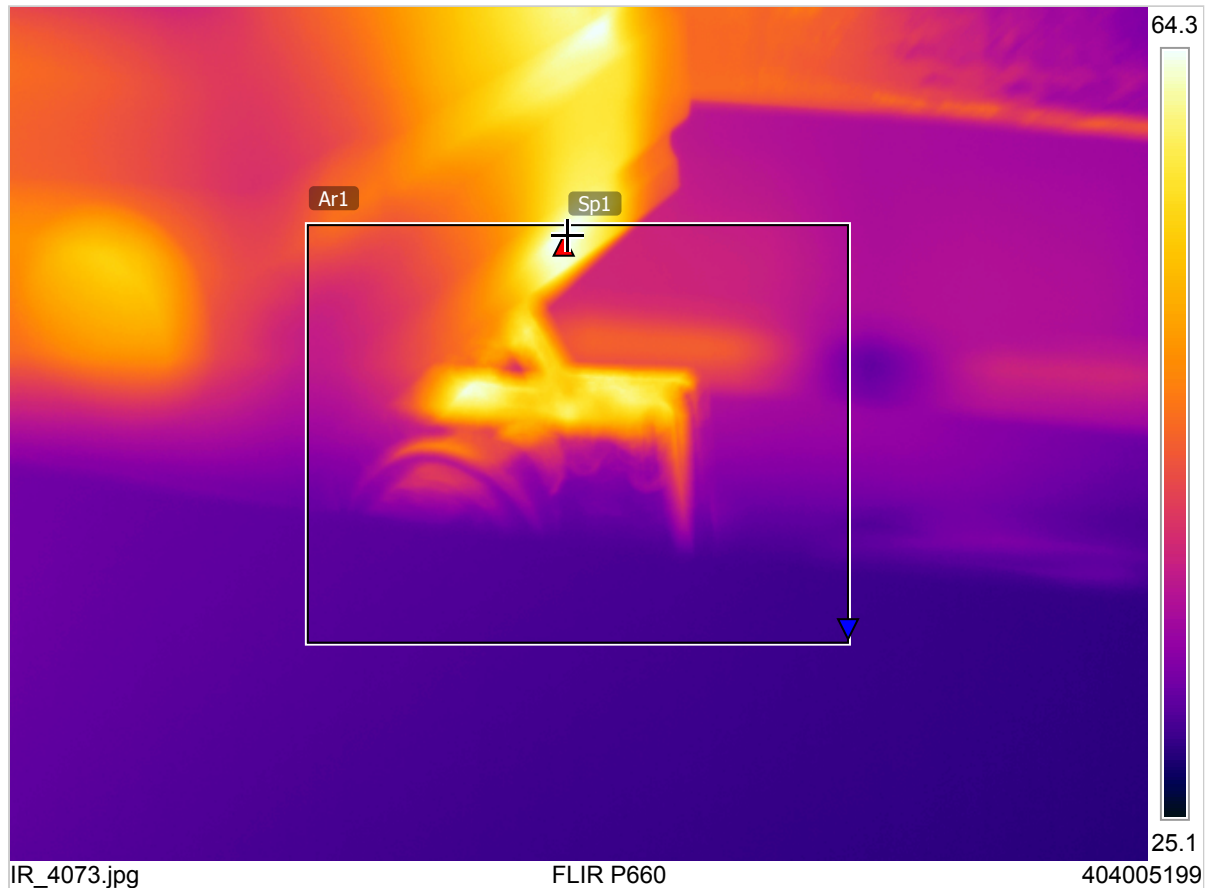
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 B Ph Outgoing side

10-01-2019 07:32:54



Measurements

°C

Ar1	Max	64.6
	Min	29.7
	Average	39.1
Sp1		64.4

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-1 IC 2 Y Ph Outgoing side

22-02-2019 07:43:48



Measurements

°C

Ar1	Max	105.7
	Min	26.0
	Average	47.9
El1	Max	102.9
	Min	28.9
	Average	53.8
Sp1		102.9
Sp2		92.7

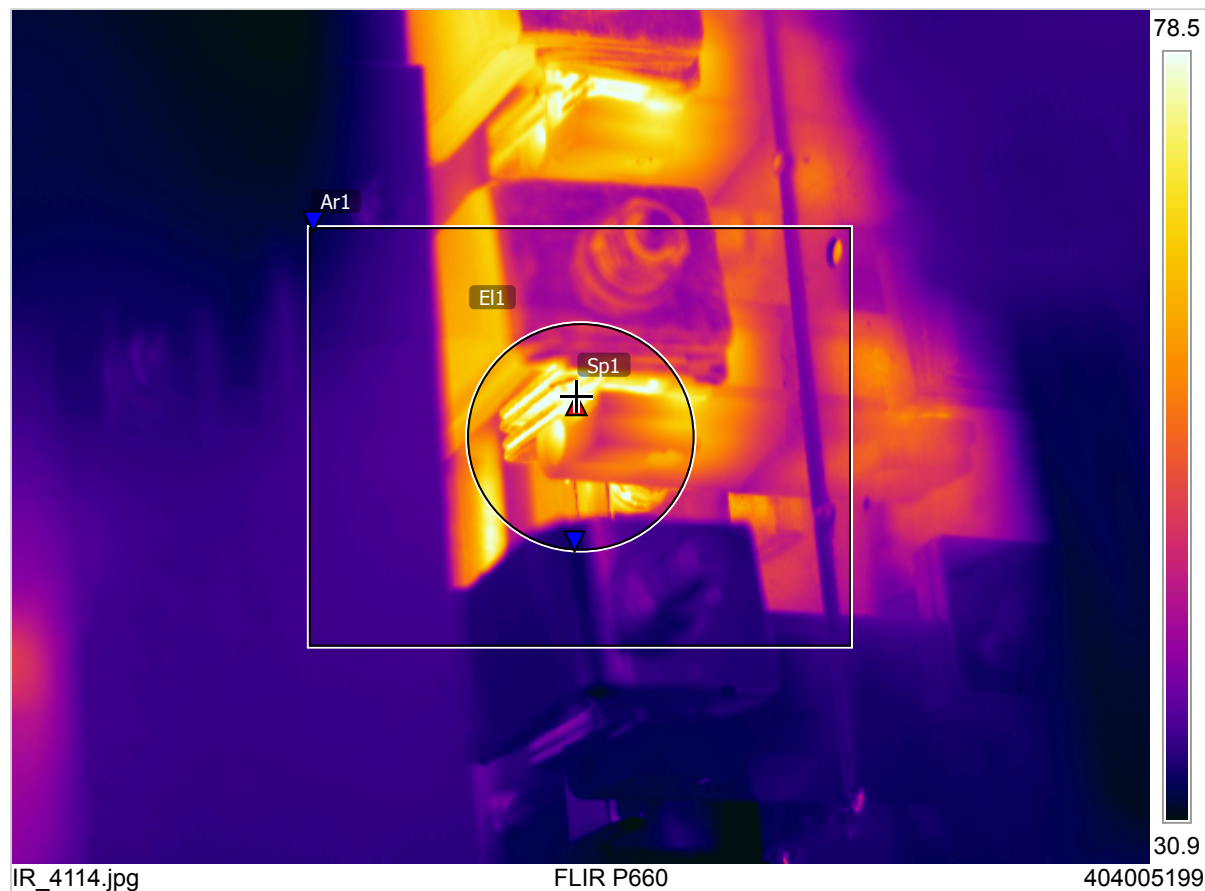
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 R Ph CABLE TERMINAL

22-02-2019 07:44:26



Measurements °C

Ar1	Max	89.3
	Min	32.9
	Average	47.6
El1	Max	89.3
	Min	34.1
	Average	59.4
Sp1		89.1

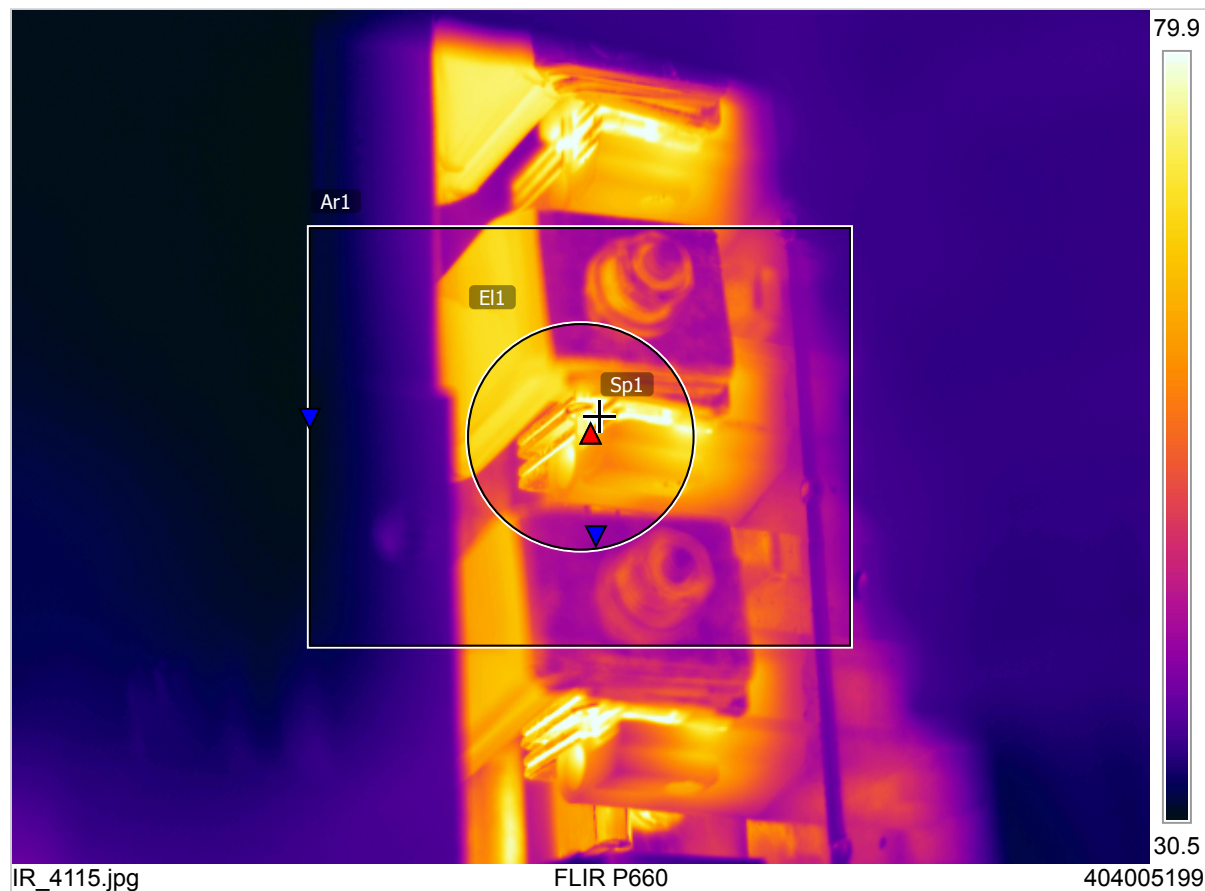
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 R Ph INOMING SIDE CANTACT

22-02-2019 07:44:45



Measurements

°C

Ar1	Max	86.0
	Min	30.9
	Average	49.9
El1	Max	86.0
	Min	43.6
	Average	62.4
Sp1		83.3

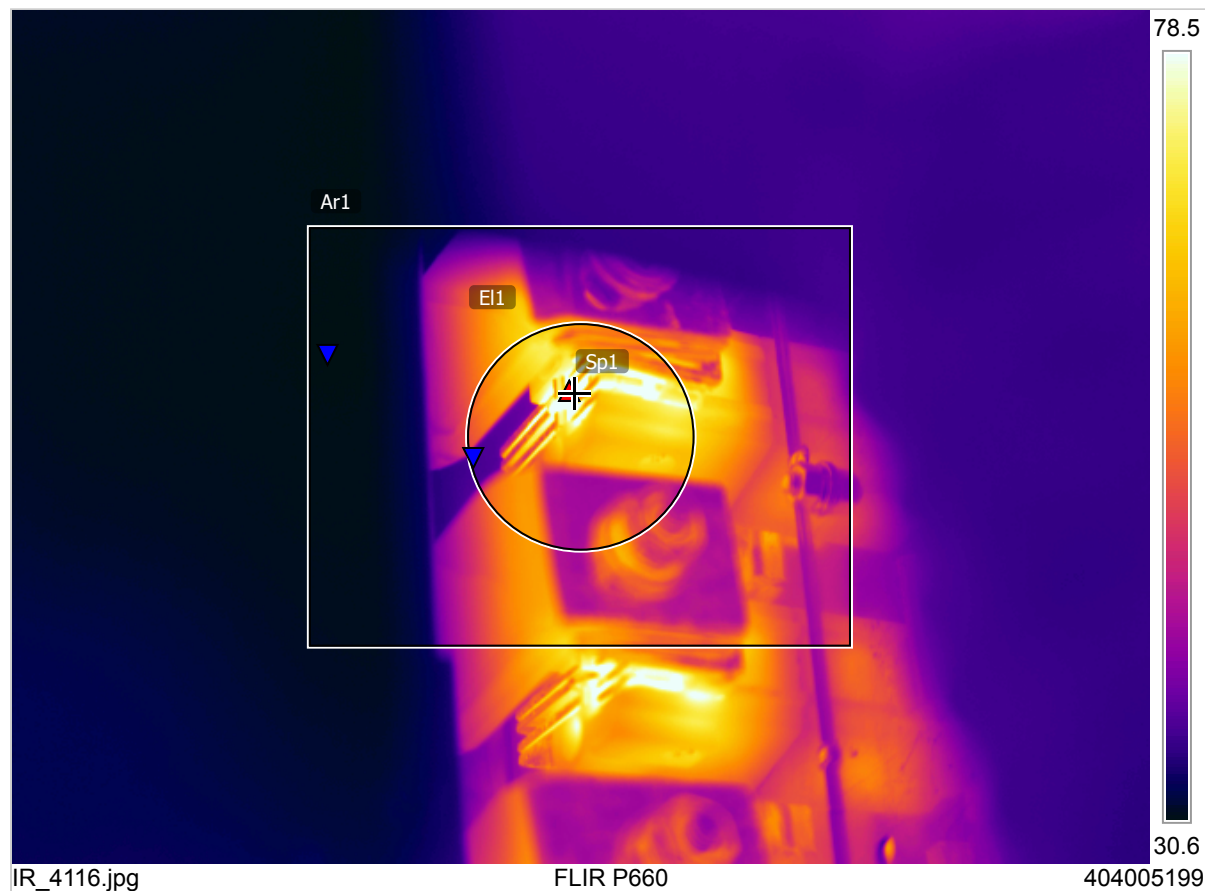
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 Y Ph INCOMING SIDE CANTACT

22-02-2019 07:44:58



Measurements

°C

Ar1	Max	85.5
	Min	30.6
	Average	47.4
El1	Max	85.5
	Min	37.2
	Average	61.3
Sp1		84.8

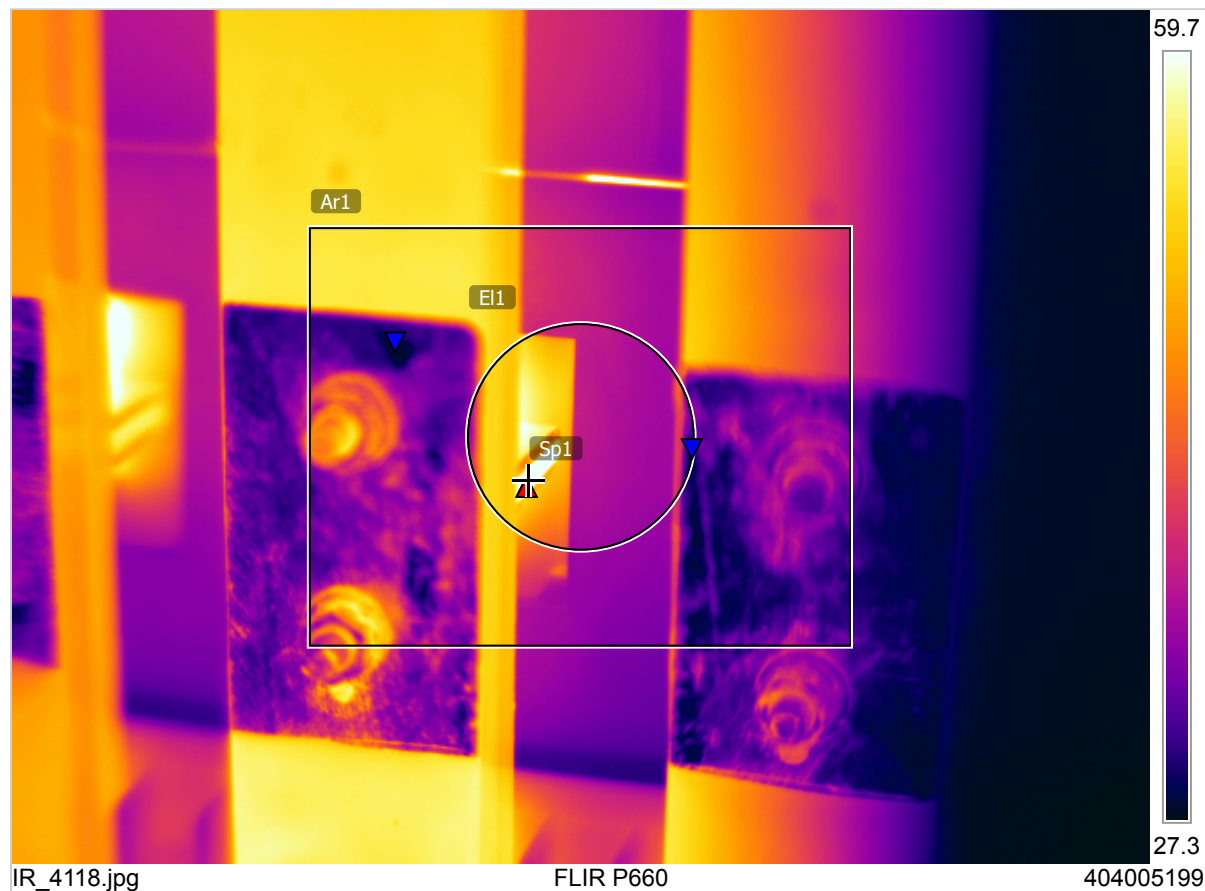
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 B Ph INCOMING SIDE CANTACT

22-02-2019 07:46:04



Measurements

°C

Ar1	Max	64.8
	Min	27.9
	Average	40.7
El1	Max	64.8
	Min	28.5
	Average	43.9
Sp1		64.3

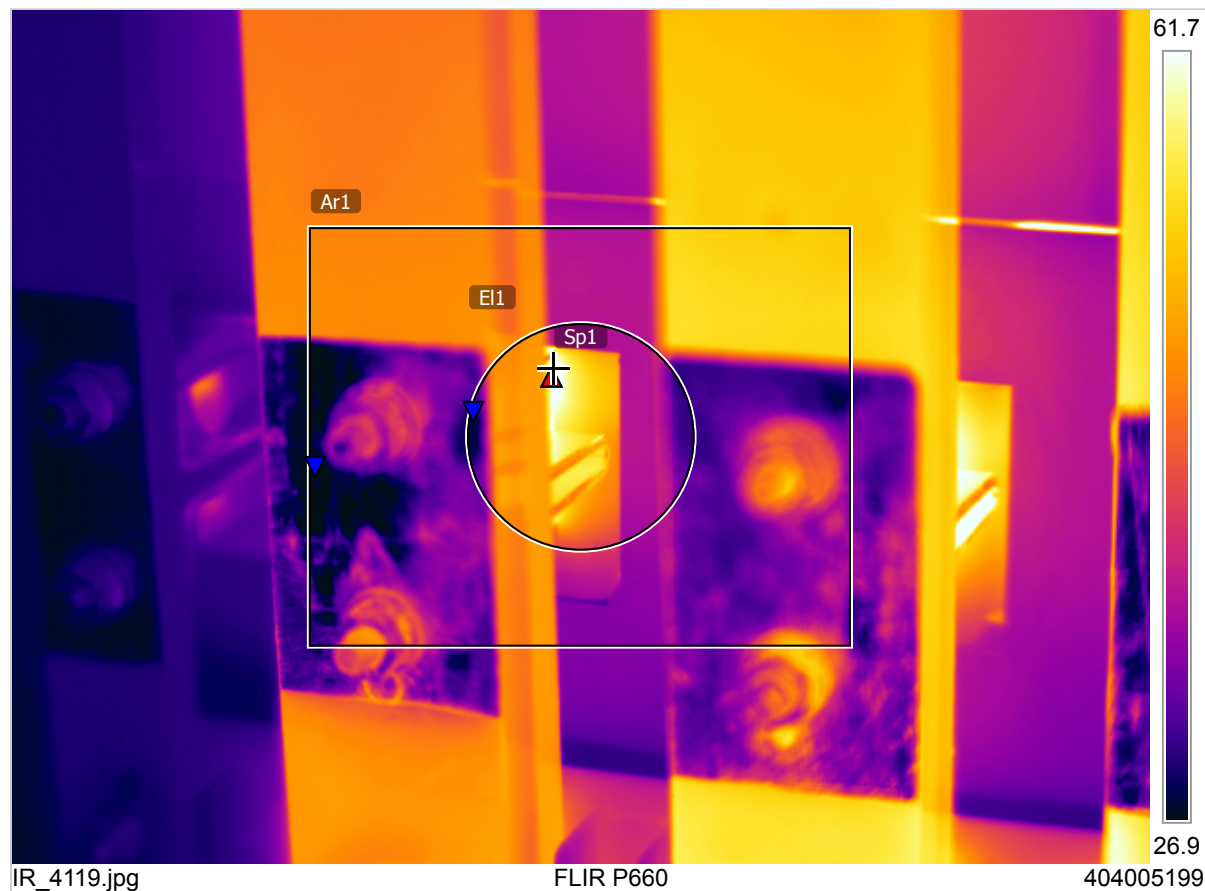
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 Y Ph OUTGOING SIDE CANTACT

22-02-2019 07:46:17



Measurements

°C

Ar1	Max	65.0
	Min	26.6
	Average	41.5
El1	Max	65.0
	Min	27.5
	Average	45.8
Sp1		64.9

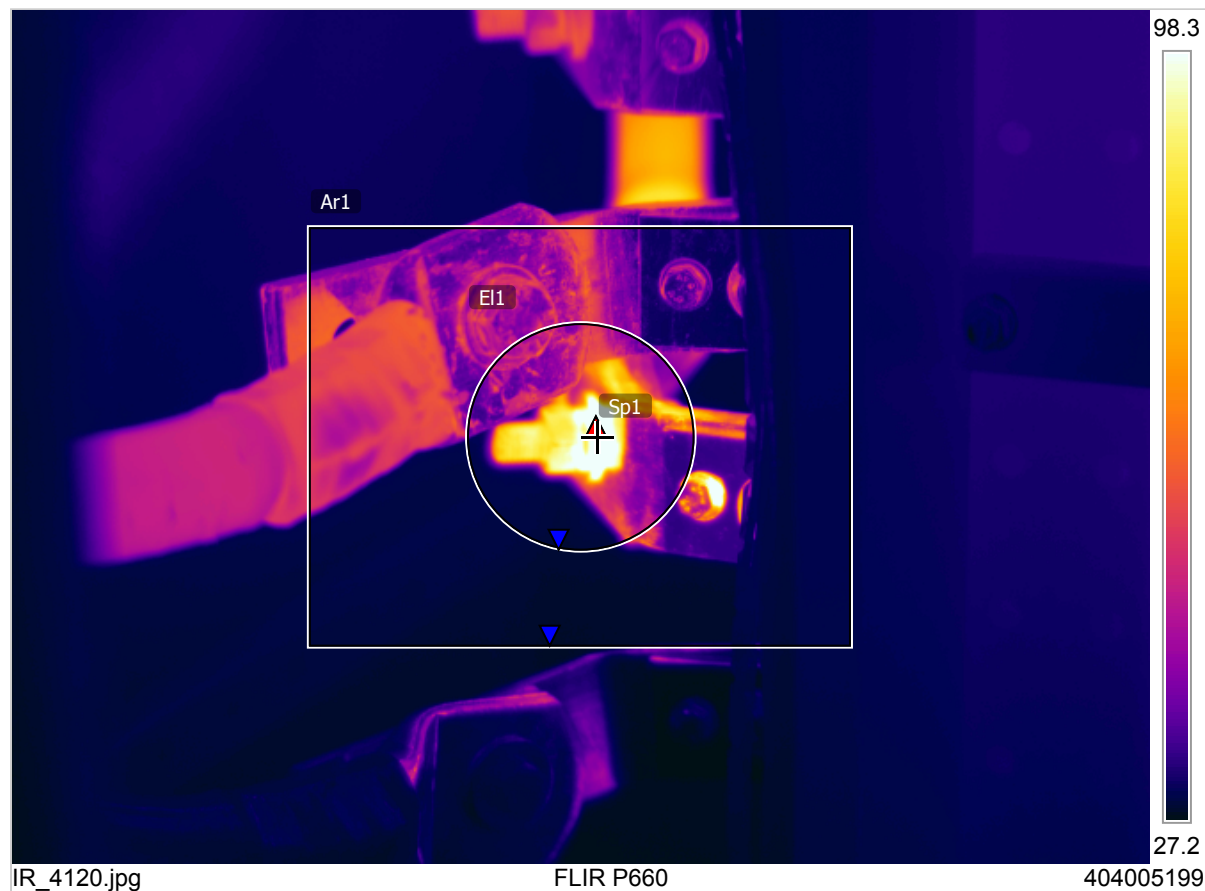
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 B Ph OUTGOING SIDE CANTACT

22-02-2019 07:47:07



Measurements °C

Ar1	Max	110.3
	Min	28.3
	Average	41.4
El1	Max	110.3
	Min	28.9
	Average	56.0
Sp1		109.1

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-1 R Ph CABLE TERMINAL CONTACT

22-02-2019 07:47:22



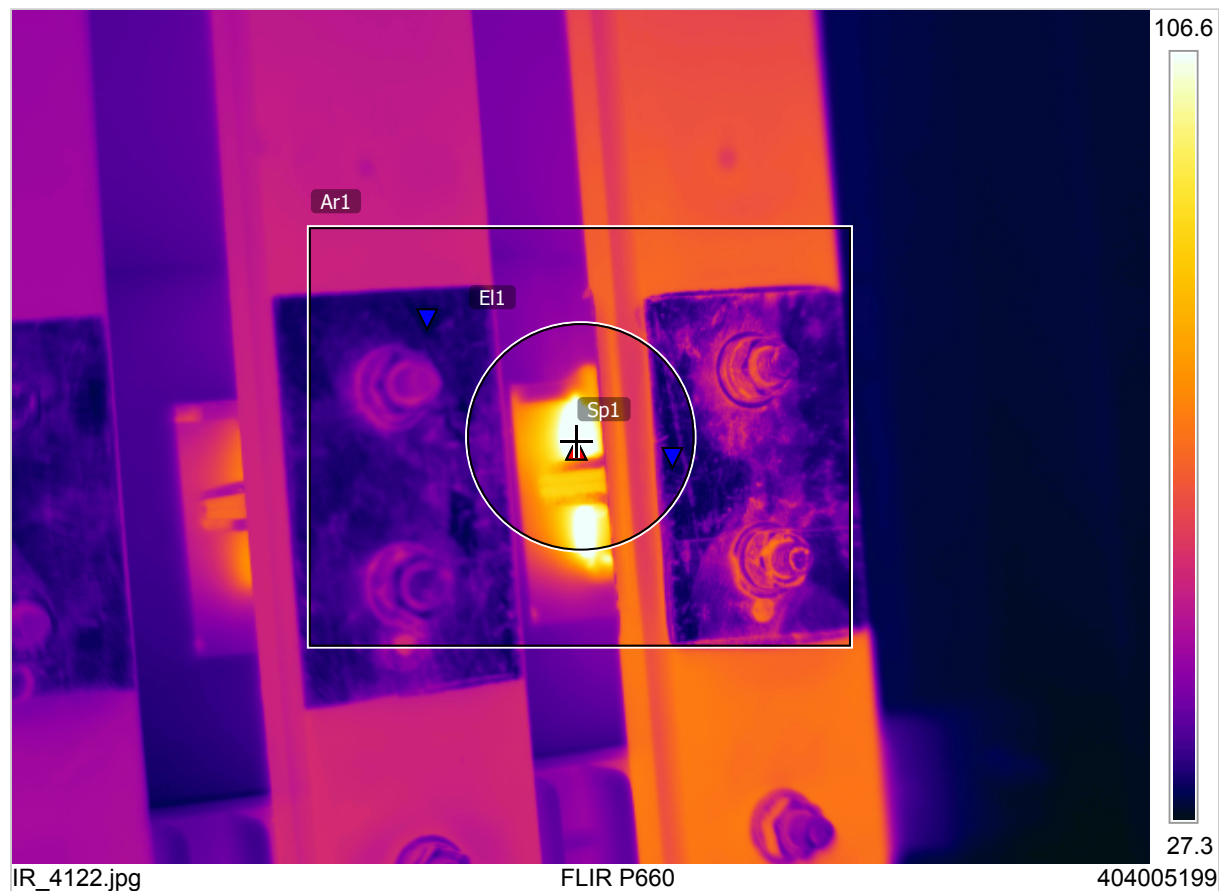
Measurements °C

Ar1	Max	89.8
	Min	29.6
	Average	38.3
El1	Max	74.5
	Min	30.2
	Average	44.4
Sp1		45.5

Parameters

Emissivity	0.95
Refl. temp.	20 °C

22-02-2019 07:56:02

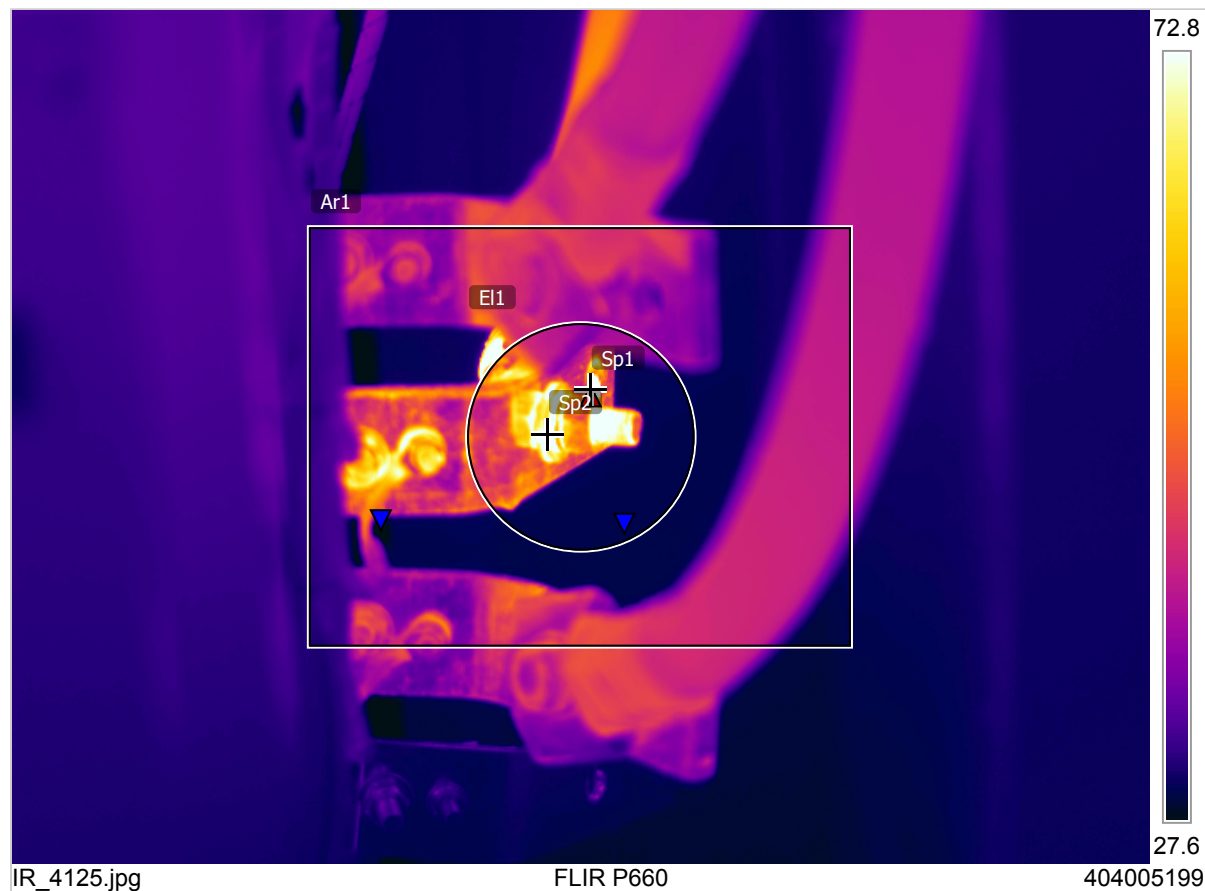


Measurements			°C
Ar1	Max	127.8	⚠
	Min	30.1	
	Average	49.8	⚠
El1	Max	127.8	⚠
	Min	31.1	
	Average	65.3	⚠
Sp1		127.7	⚠

Parameters	
Emissivity	0.95
Refl. temp.	20 °C

Note
POLE-2 MCC IC-1 R Ph OUTGOING SIDE CANTACT

22-02-2019 08:55:00



Measurements °C

Ar1	Max	89.2
	Min	27.2
	Average	40.4
El1	Max	89.2
	Min	29.5
	Average	43.3
Sp1		88.2
Sp2		71.2

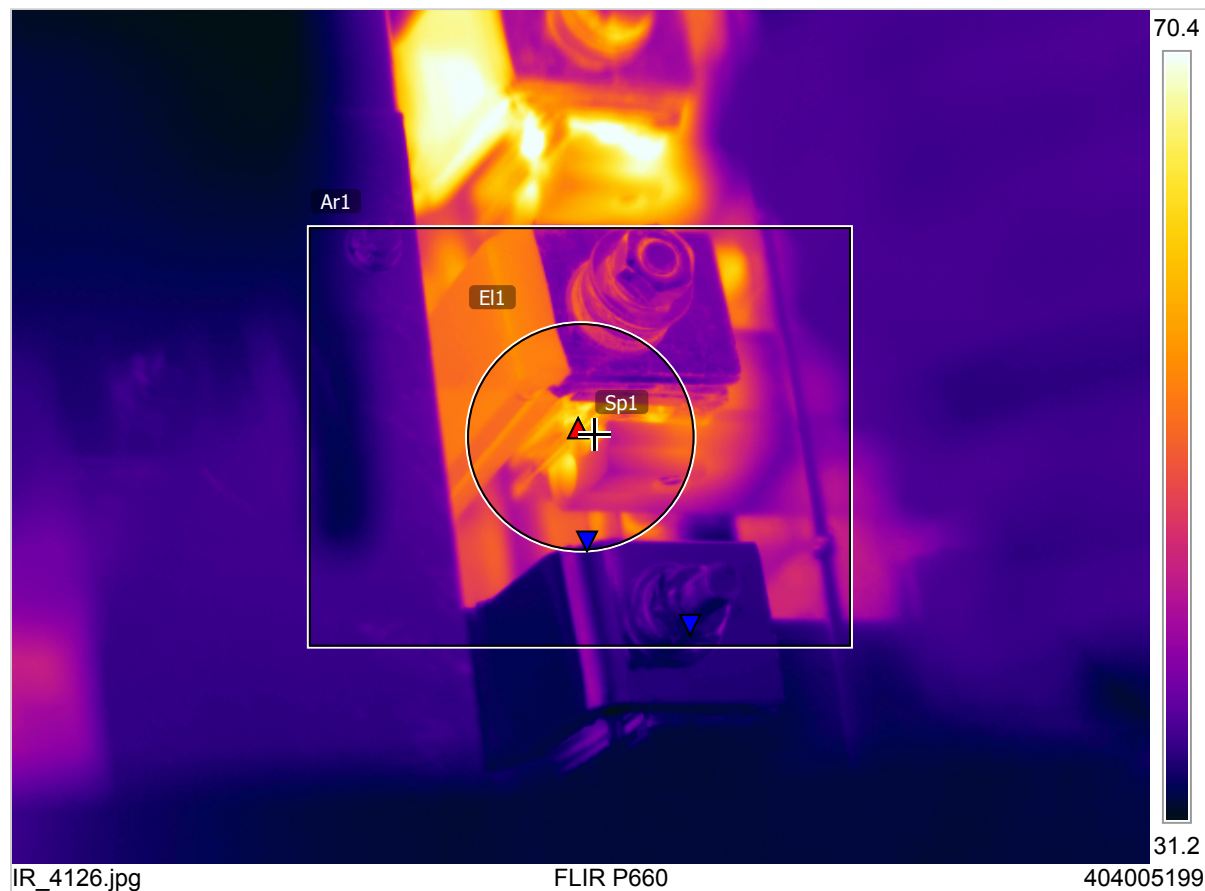
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 Y Ph CABLE TERMINAL

22-02-2019 08:55:32



Measurements

°C

Ar1	Max	66.6
	Min	32.1
	Average	42.5
El1	Max	66.6
	Min	34.8
	Average	50.0
Sp1		61.8

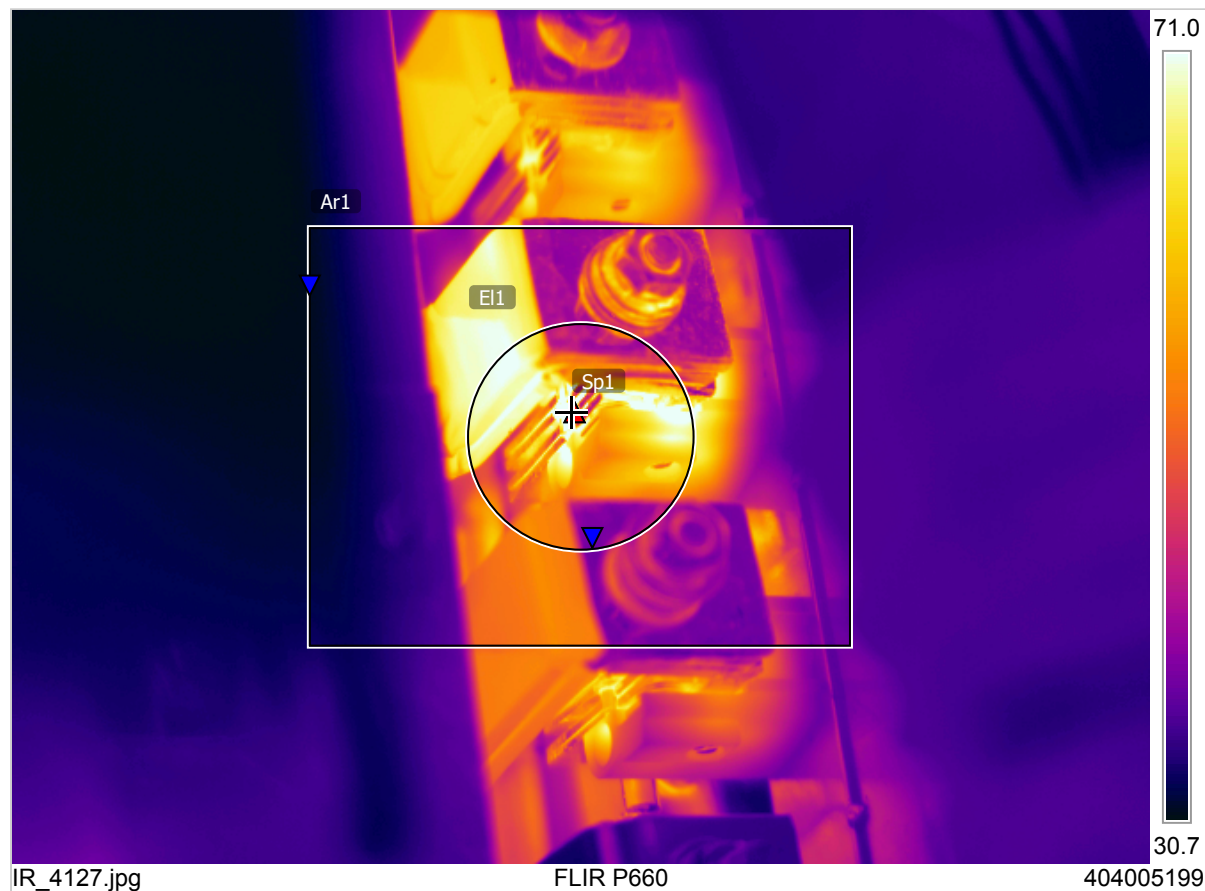
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 R Ph INCOMING SIDE CANTACT

22-02-2019 08:55:41



Measurements

°C

Ar1	Max	85.8
	Min	31.1
	Average	46.5
El1	Max	85.8
	Min	38.8
	Average	58.1
Sp1		85.6

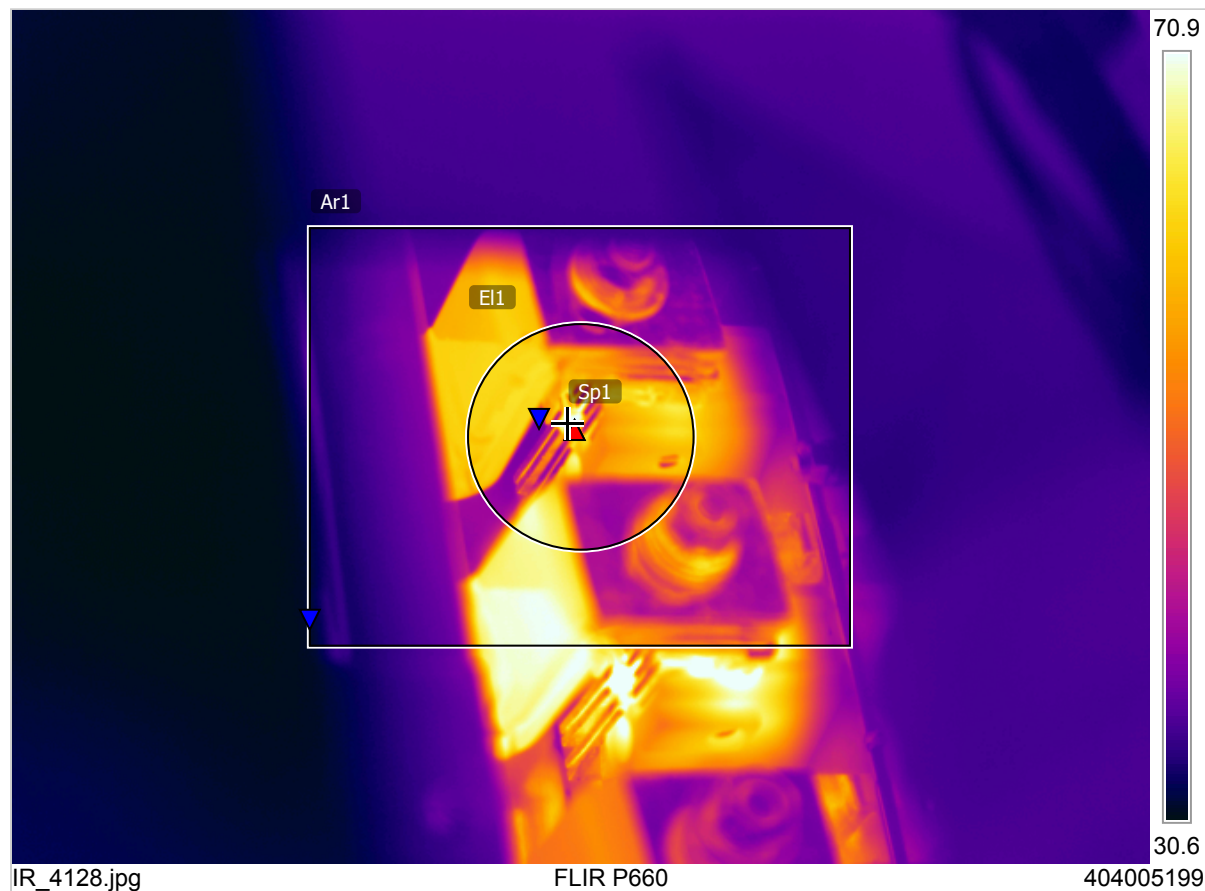
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 Y Ph INCOMING SIDE CANTACT

22-02-2019 08:55:54



Measurements

°C

Ar1	Max	72.9
	Min	31.4
	Average	46.6
El1	Max	72.9
	Min	39.1
	Average	55.9
Sp1		71.4

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 B Ph INCOMING SIDE CANTACT

22-02-2019 08:56:34



Measurements

°C

Ar1	Max	86.6
	Min	28.7
	Average	41.5
El1	Max	86.6
	Min	31.6
	Average	61.0
Sp1		85.0

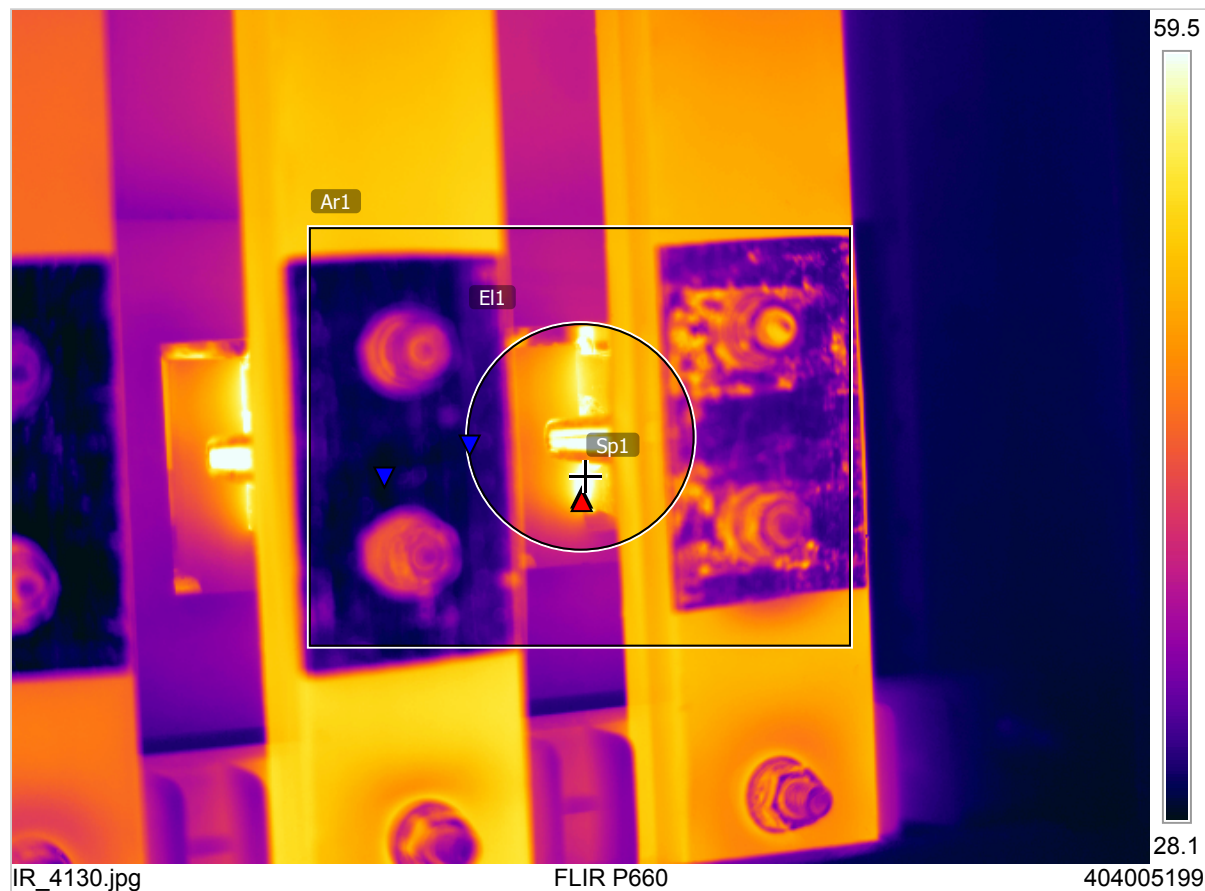
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 Y Ph VABLE TERMINAL

22-02-2019 08:56:56



Measurements

°C

Ar1	Max	65.3
	Min	28.2
	Average	39.4
El1	Max	65.3
	Min	30.2
	Average	47.3
Sp1		62.2

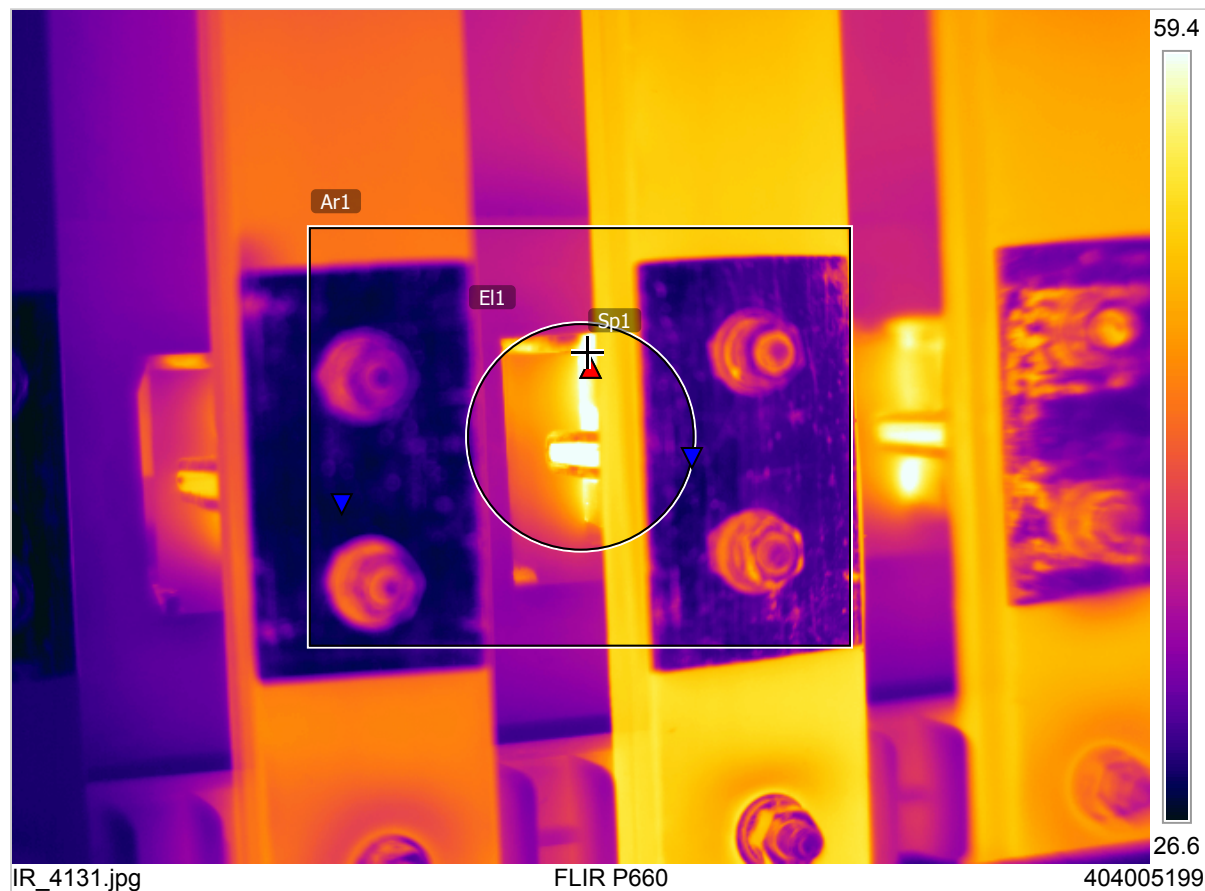
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 R Ph OUTGOING SIDE CANTACT

22-02-2019 08:57:23



Measurements

°C

Ar1	Max	72.0
	Min	27.5
	Average	37.0
El1	Max	72.0
	Min	28.9
	Average	45.8
Sp1		69.6

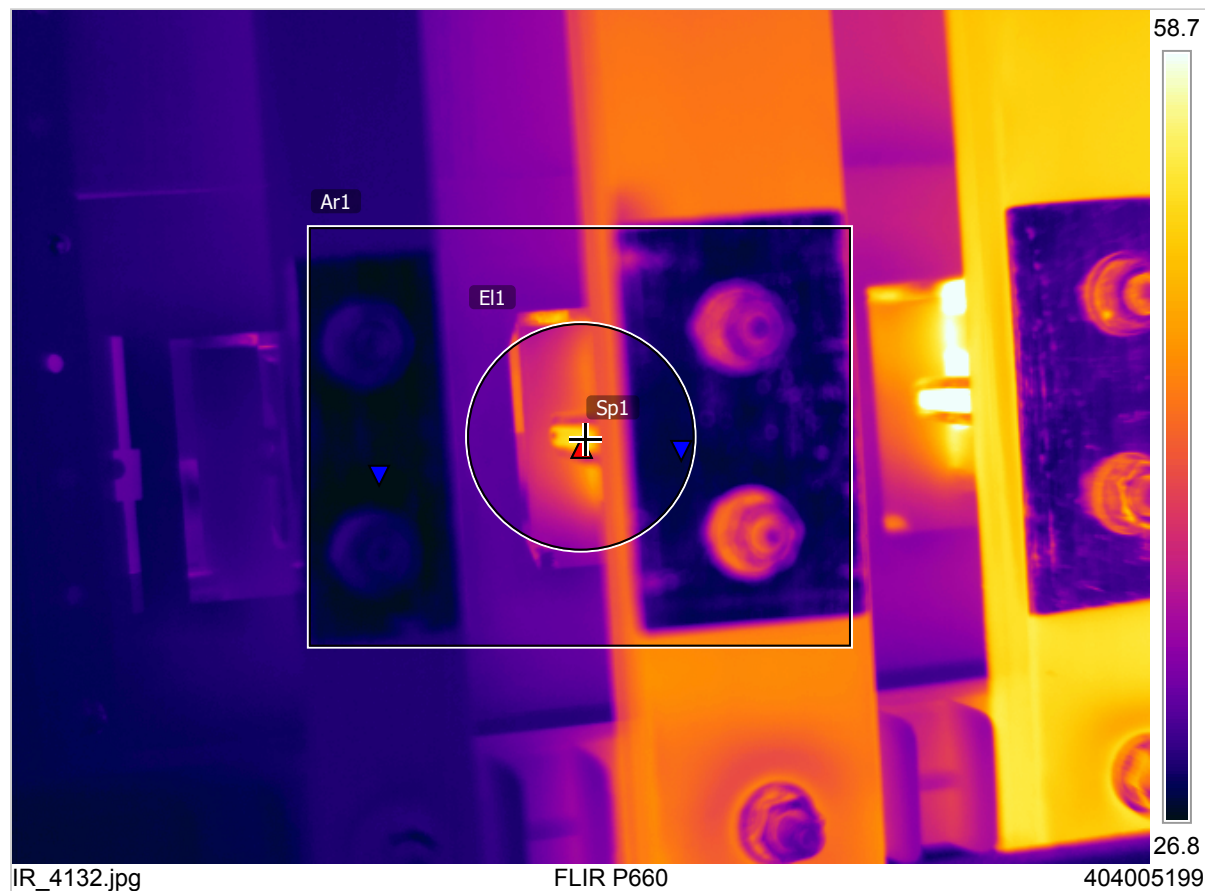
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 Y Ph OUTGOING SIDE CANTACT

22-02-2019 08:57:33



Measurements °C

Ar1	Max	53.7
	Min	26.4
	Average	32.2
El1	Max	53.7
	Min	27.7
	Average	37.1
Sp1		53.7

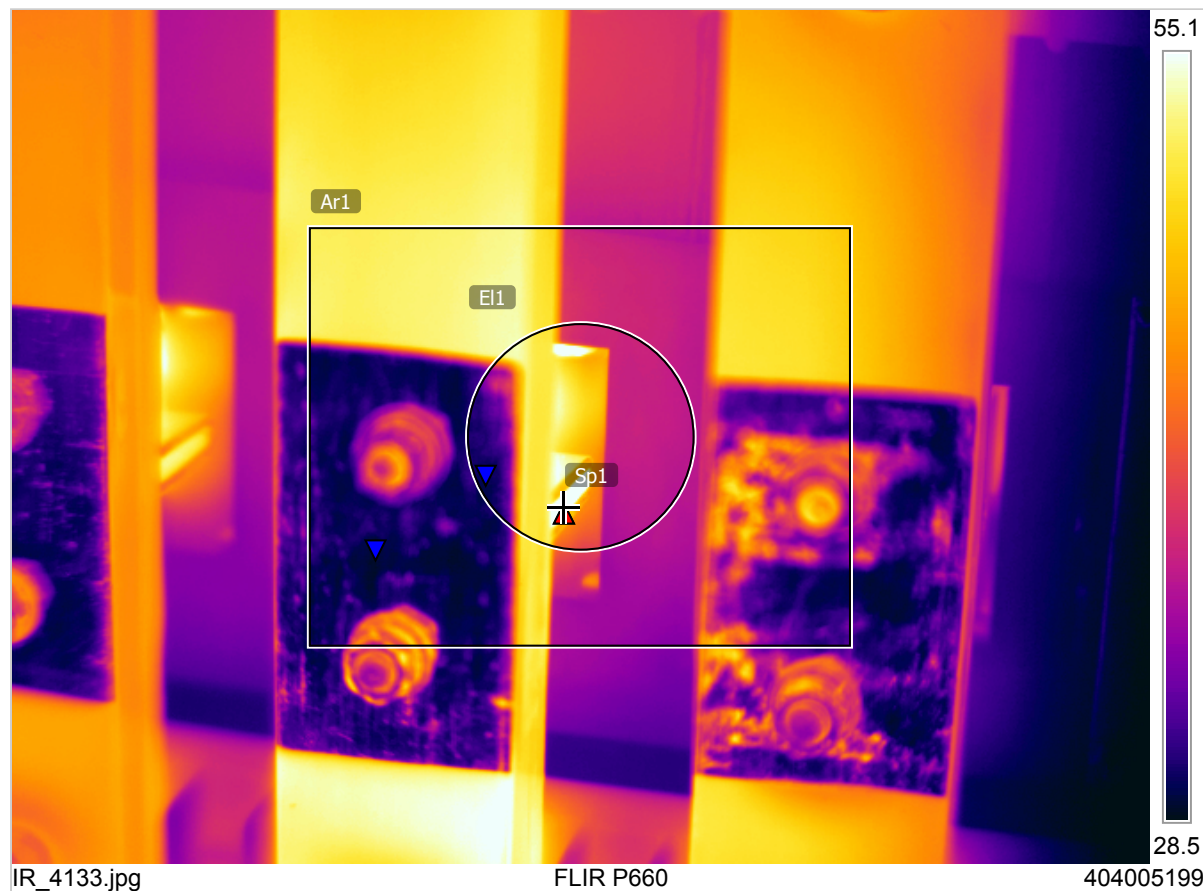
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 B Ph OUTGOING SIDE CANTACT

22-02-2019 08:57:45



Measurements °C

Ar1	Max	62.4
	Min	28.8
	Average	40.8
El1	Max	62.4
	Min	29.5
	Average	42.9
Sp1		62.1

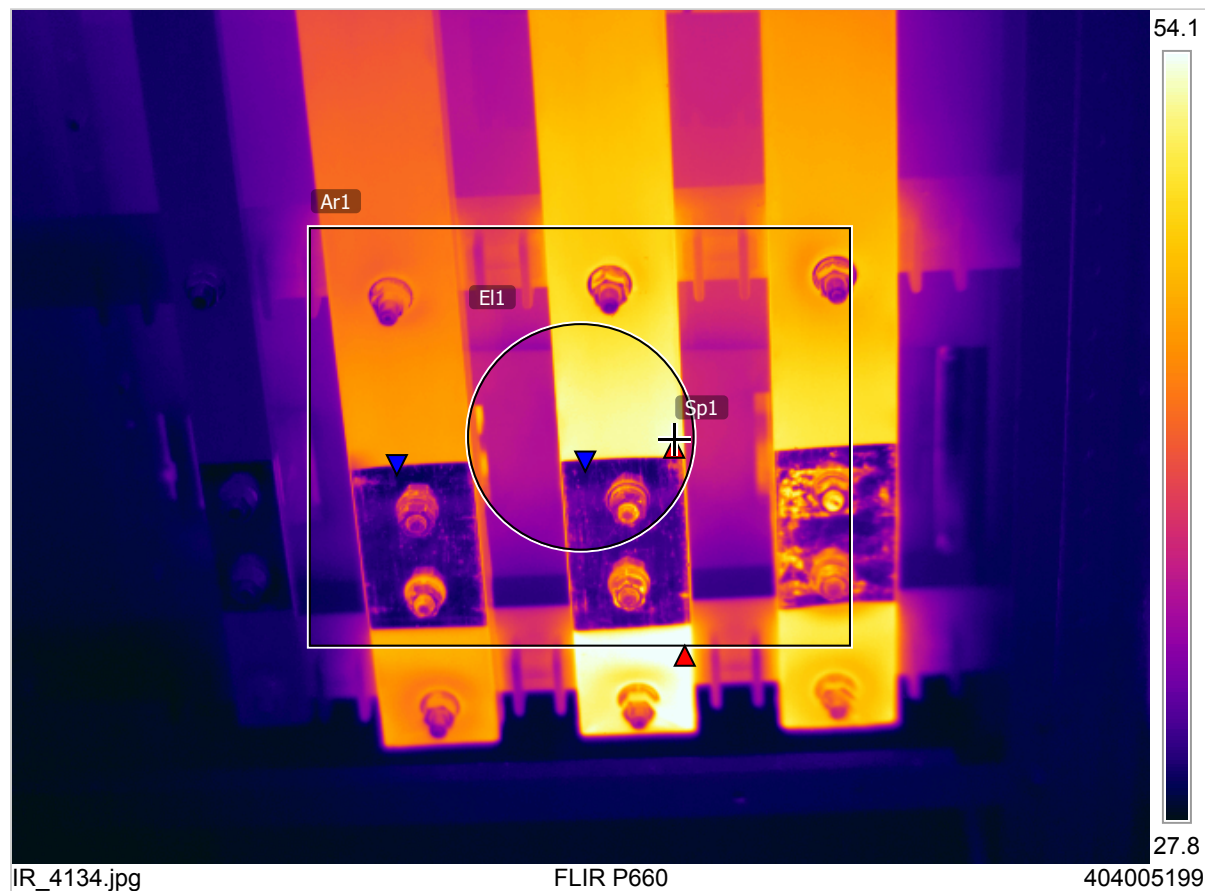
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 Y Ph OUTGOING SIDE CANTACT

22-02-2019 08:57:57



Measurements

°C

Ar1	Max	55.1
	Min	29.0
	Average	40.3
El1	Max	53.5
	Min	29.7
	Average	41.9
Sp1		53.4

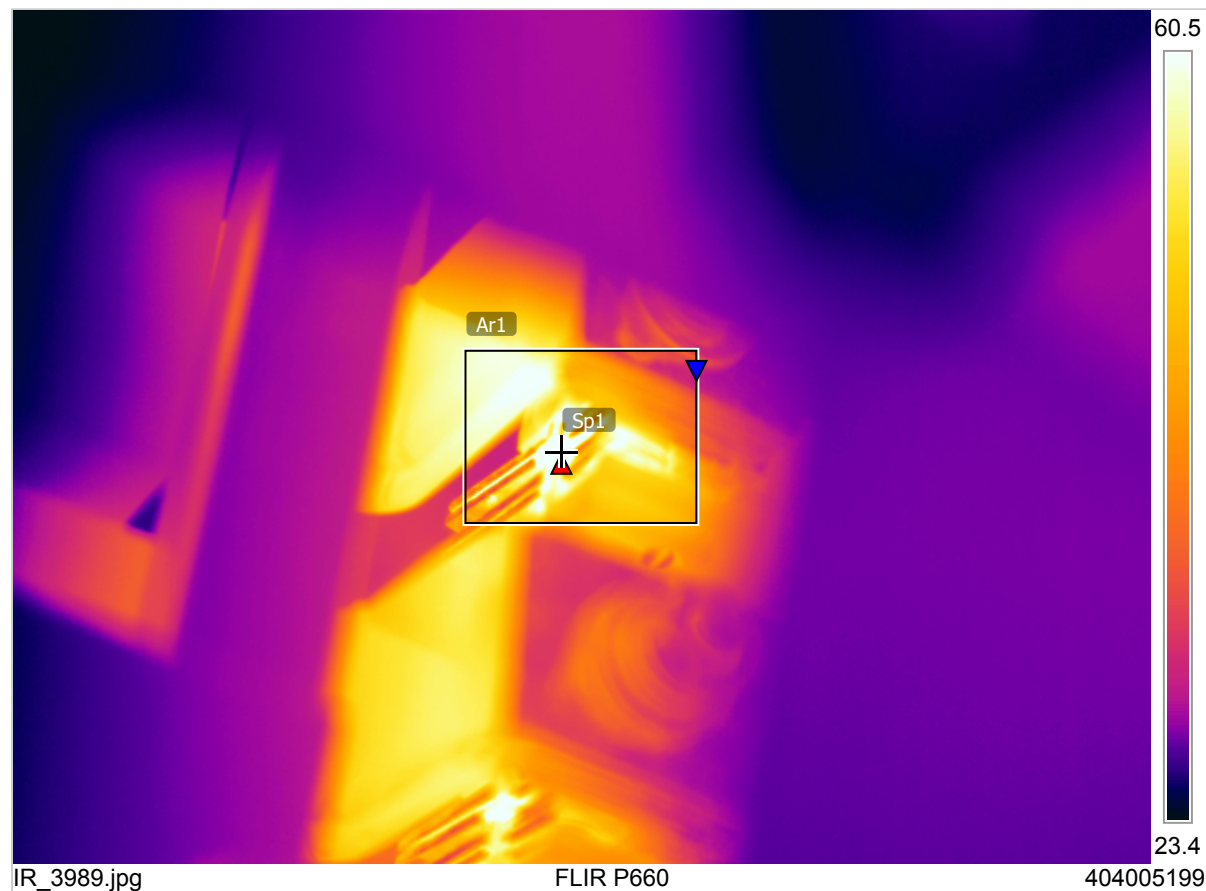
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE-2 MCC IC-2 Y Ph OUTGOING SIDE BUS BAR

09-01-2019 06:38:19



Measurements

°C

Ar1	Max	73.9
	Min	31.0
	Average	50.3
Sp1		73.7

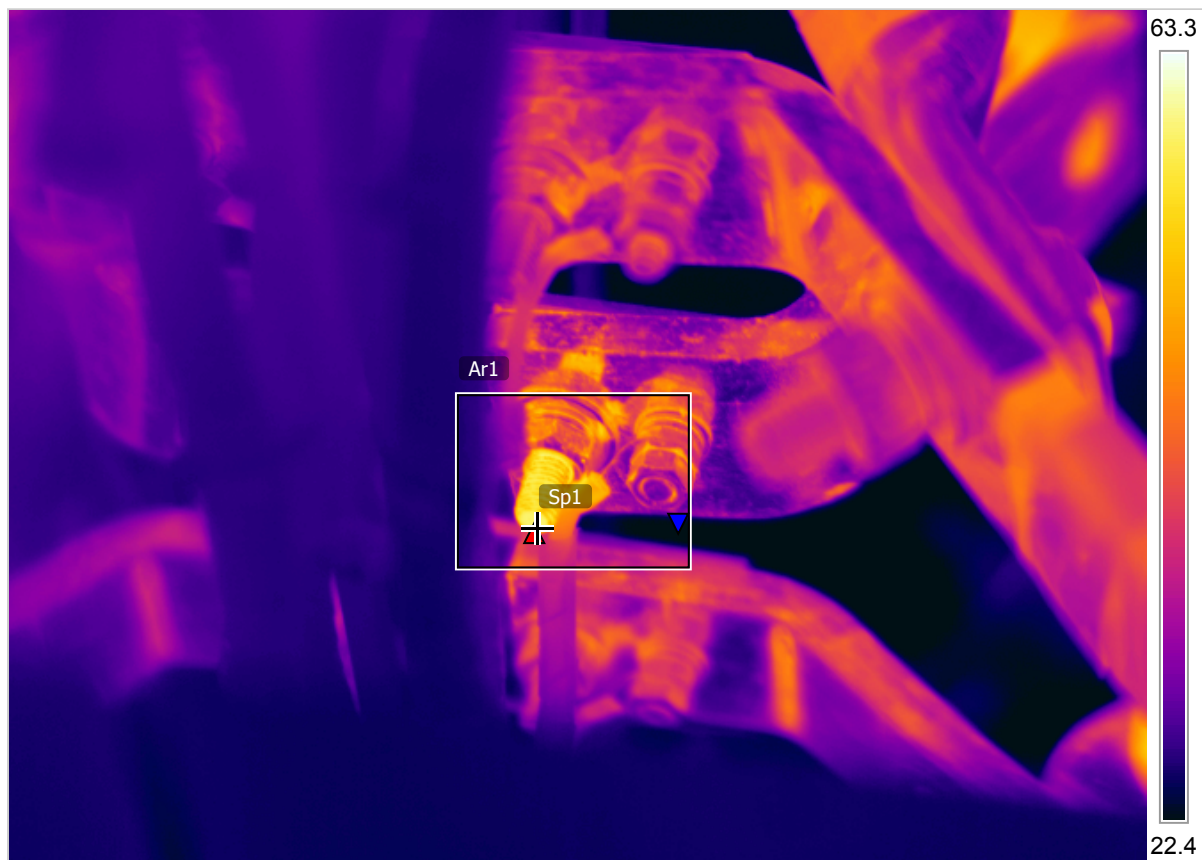
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 B PHASE INCOMING SIDE

09-01-2019 06:53:10



IR_3990.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	59.8
	Min	22.2
	Average	37.9
Sp1		59.3

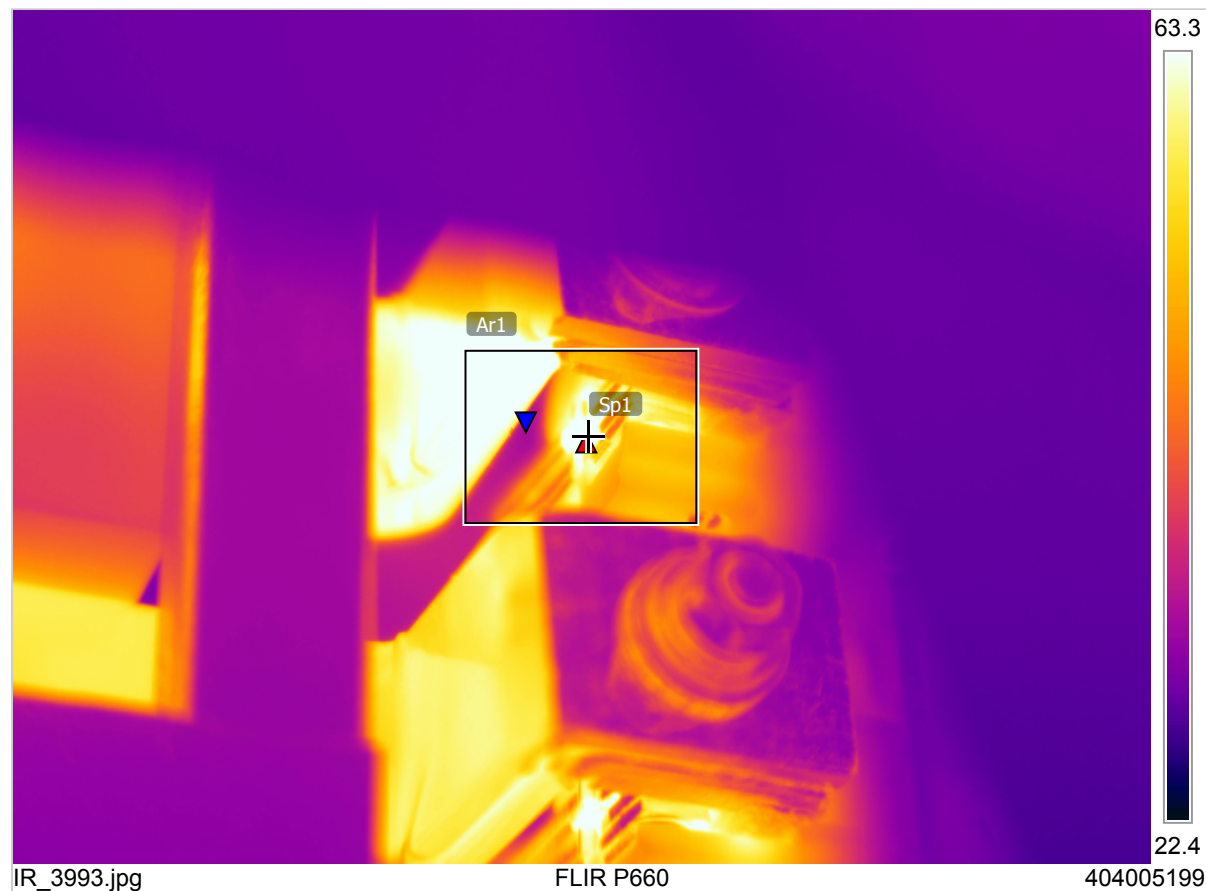
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 INCOMING SIDE Y PHASE NUT

09-01-2019 06:54:15



Measurements °C

Ar1	Max	74.1
	Min	34.7
	Average	53.3
Sp1		73.5

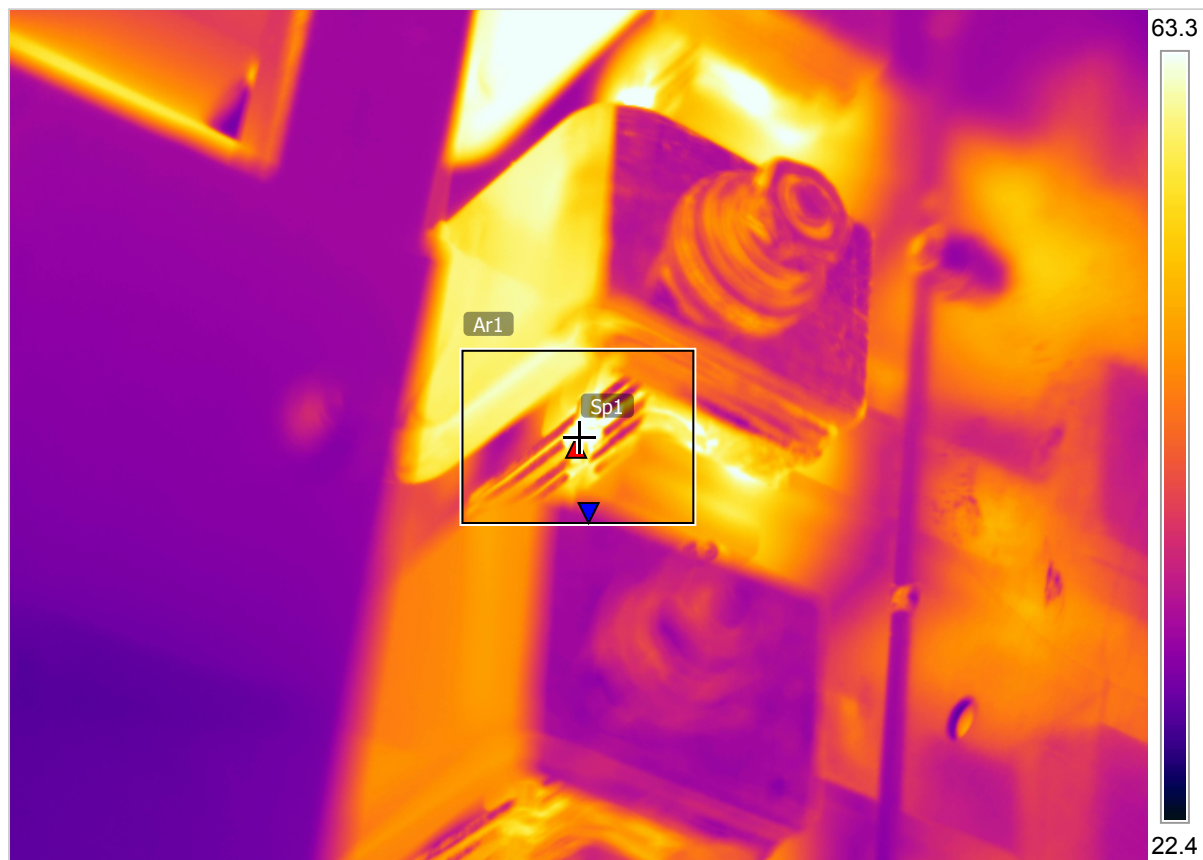
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 INCOMING SIDE B PHASE

09-01-2019 06:55:00



IR_3994.jpg

FLIR P660

404005199

Measurements °C

Ar1	Max	68.4
	Min	34.7
	Average	51.6
Sp1		67.8

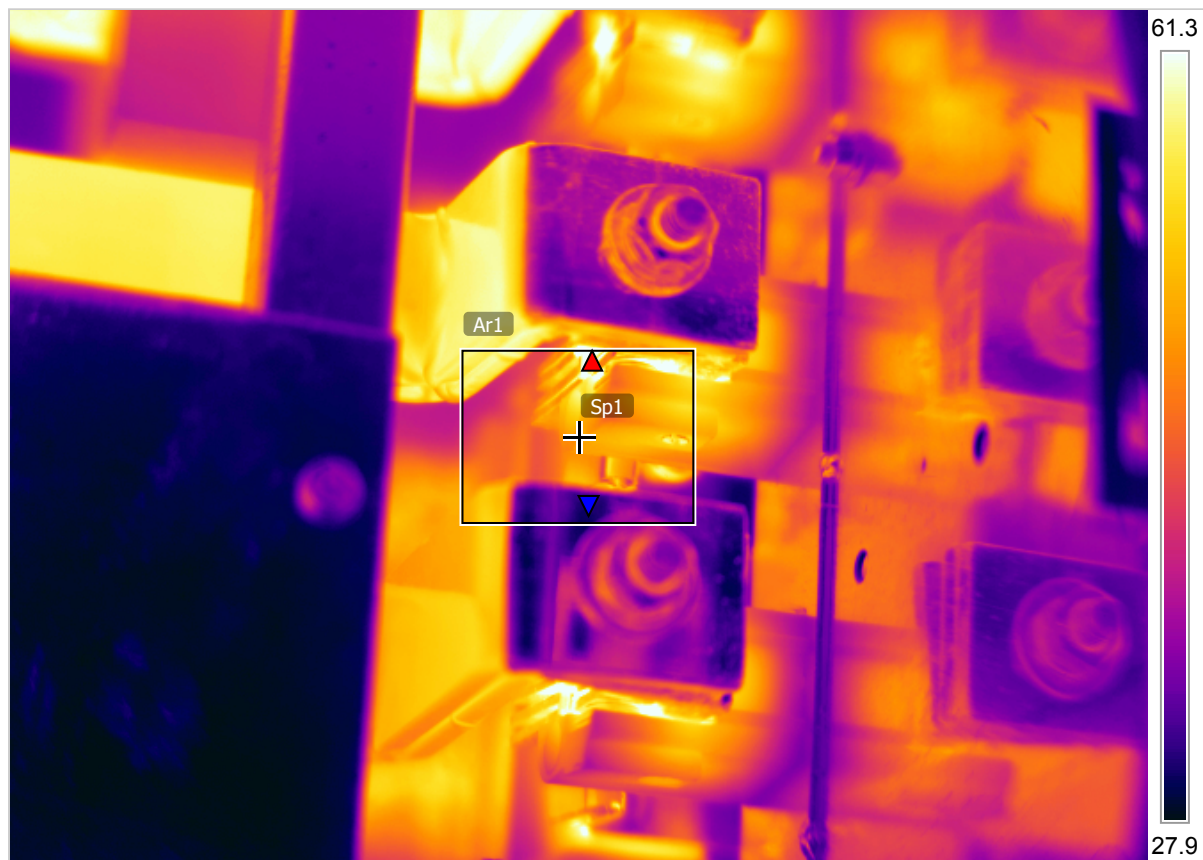
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 Y PHASE INCOMING SIDE

09-01-2019 07:59:55



IR_4007.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	67.1
	Min	29.8
	Average	47.6
Sp1		50.3

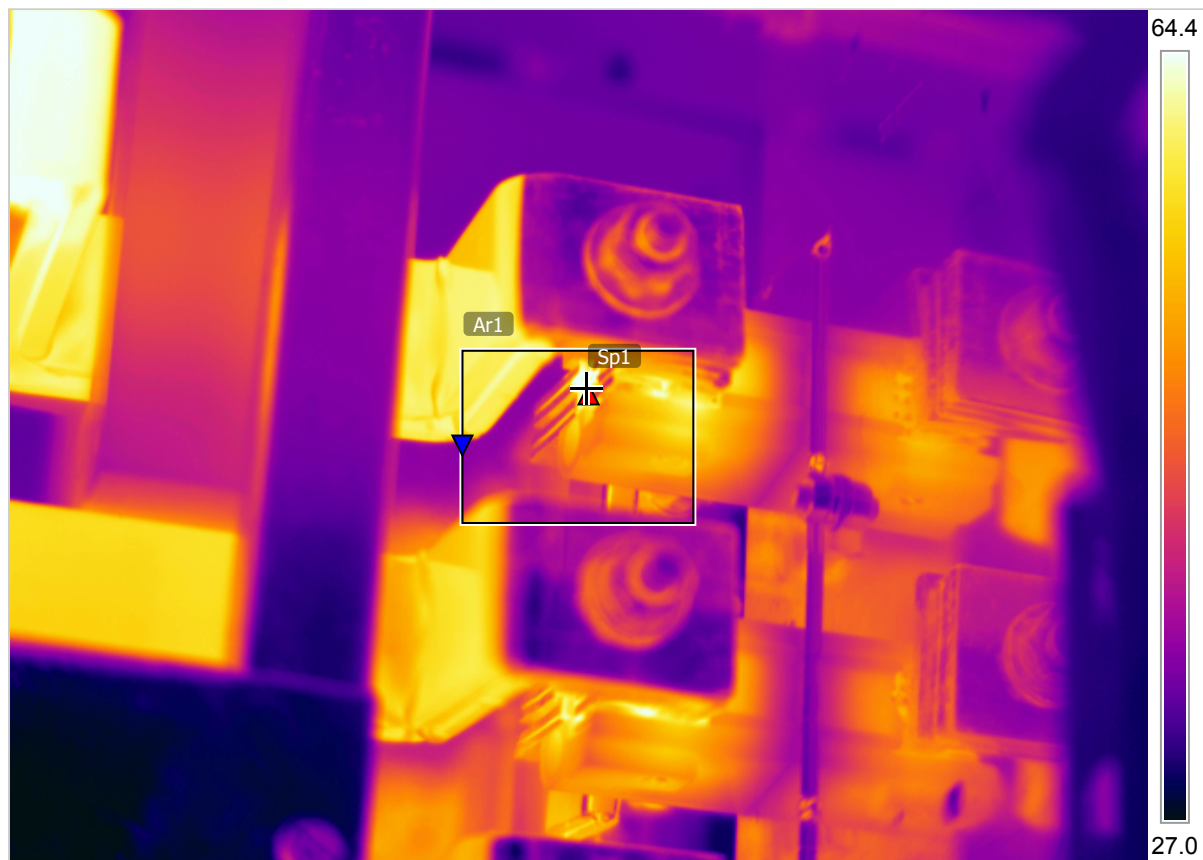
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 Y PHASE INCOMING SIDE

09-01-2019 07:59:39



IR_4006.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	66.5
	Min	36.2
	Average	49.6
Sp1		62.4

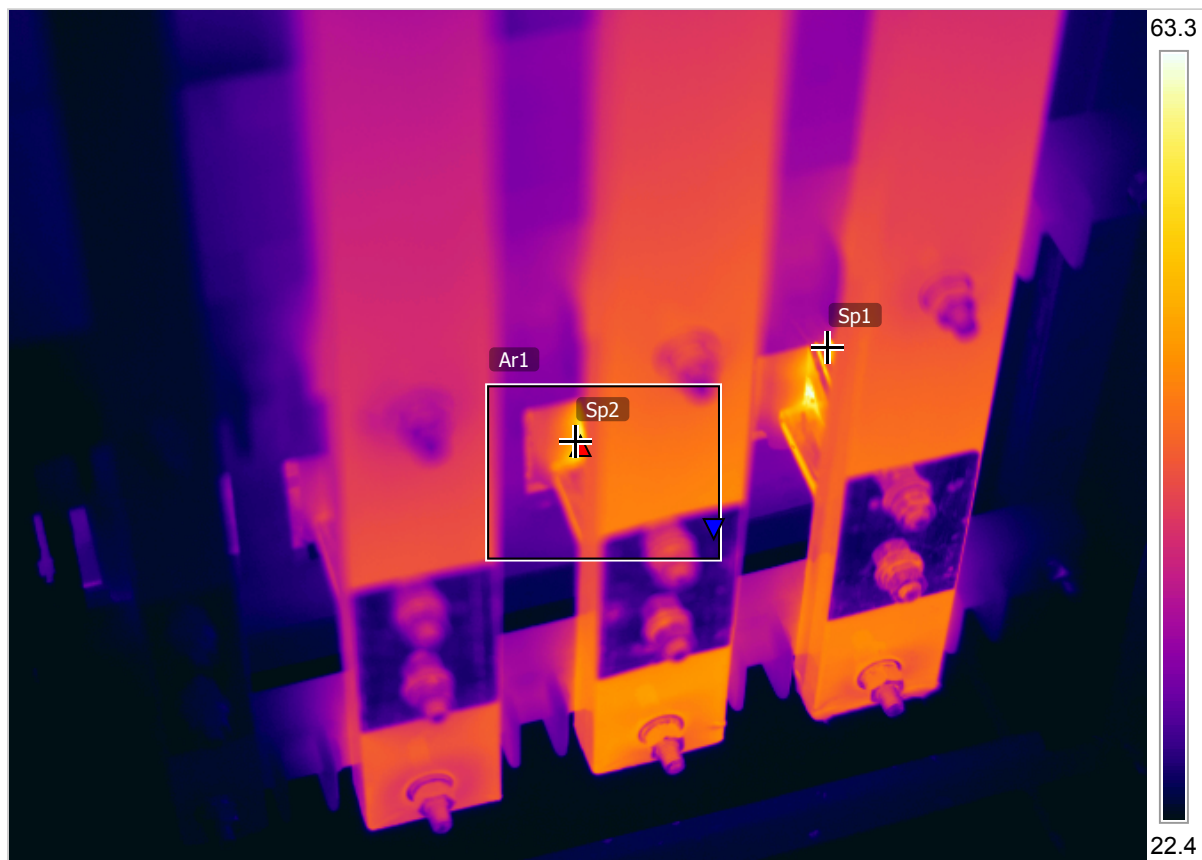
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 B PHASE INCOMING SIDE

09-01-2019 06:56:17



IR_3999.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	60.1
	Min	25.8
	Average	40.4
Sp1		63.1
Sp2		51.9

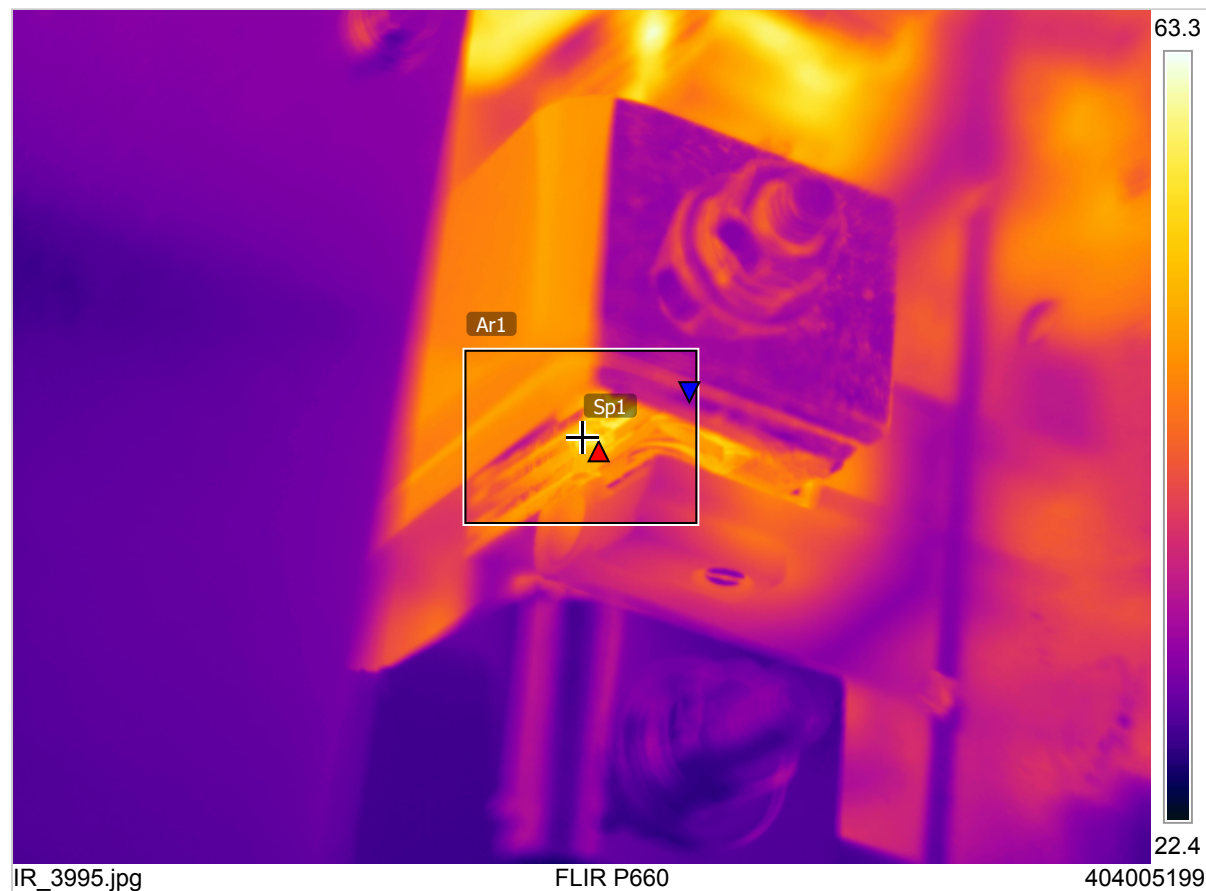
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 OUTGOING SIDE B PHASE,Y PHASE

09-01-2019 06:55:14



Measurements

°C

Ar1	Max	59.3
	Min	33.6
	Average	45.4
Sp1		57.1

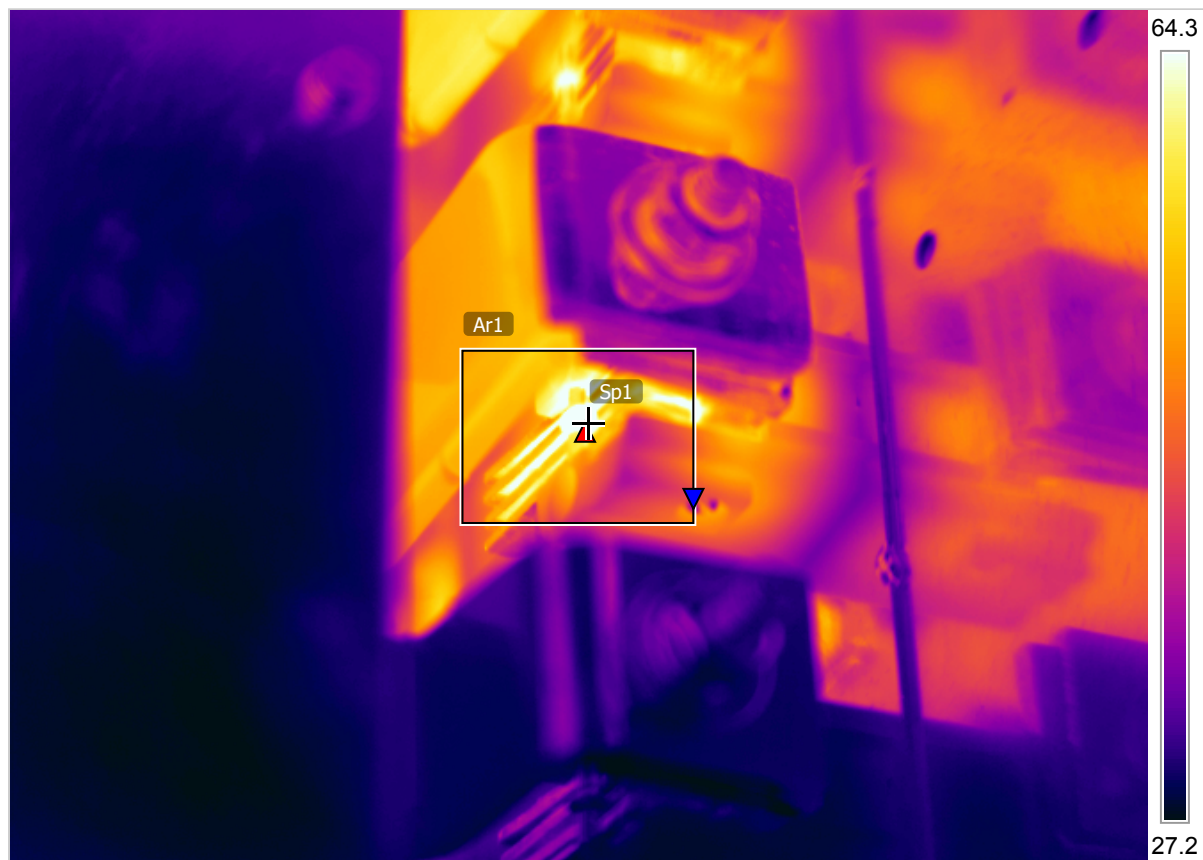
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 R PHASE INCOMING SIDE

09-01-2019 08:00:32



IR_4008.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	75.0
	Min	37.1
	Average	51.6
Sp1		72.9

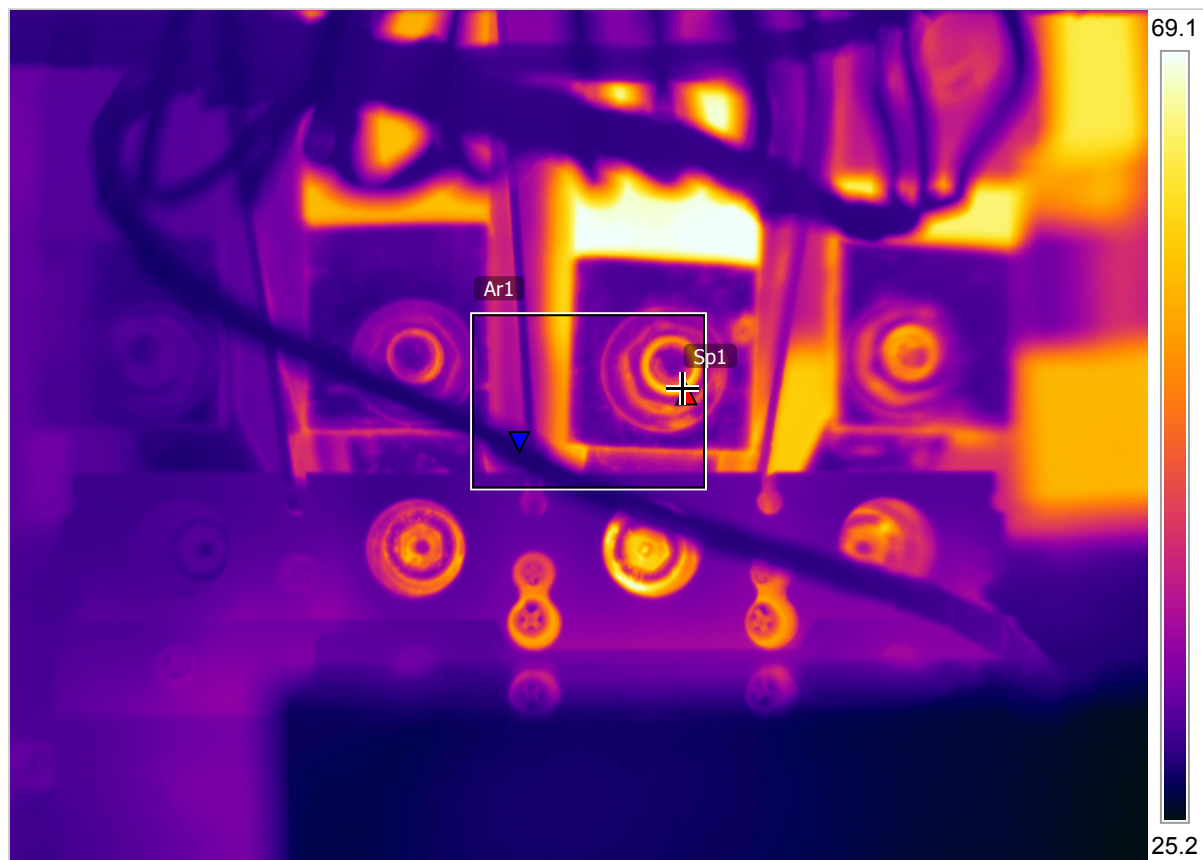
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 INCOMING SIDE R PHASE

09-01-2019 08:00:59



IR_4009.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	63.2
	Min	28.7
	Average	38.9
Sp1		62.1

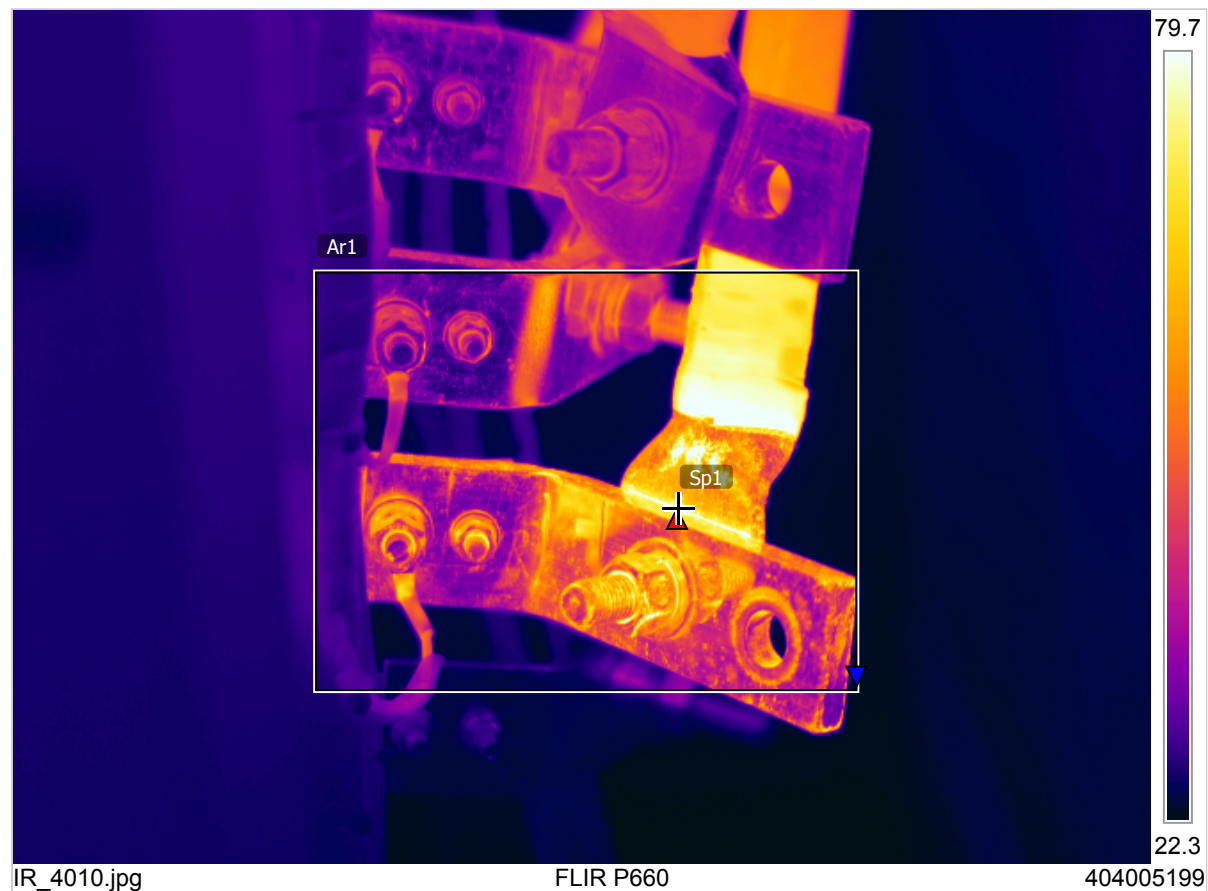
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R PHASE INCOMING BRAIKER TERMINAL

09-01-2019 08:02:22



Measurements °C

Ar1	Max	90.1
	Min	23.0
	Average	43.4
Sp1		89.0

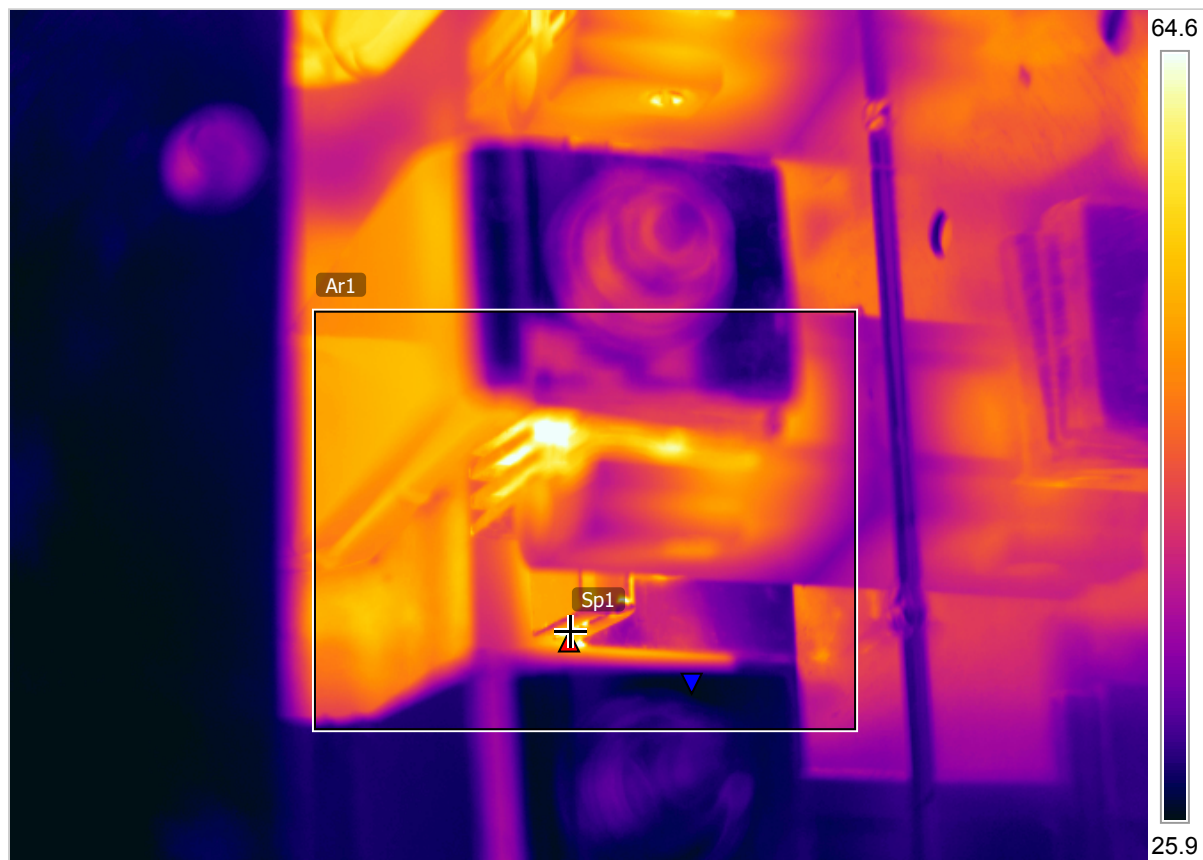
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R PHASE CABLE GLAND

09-01-2019 08:09:05



IR_4012.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	73.4
	Min	26.1
	Average	44.0
Sp1		71.2

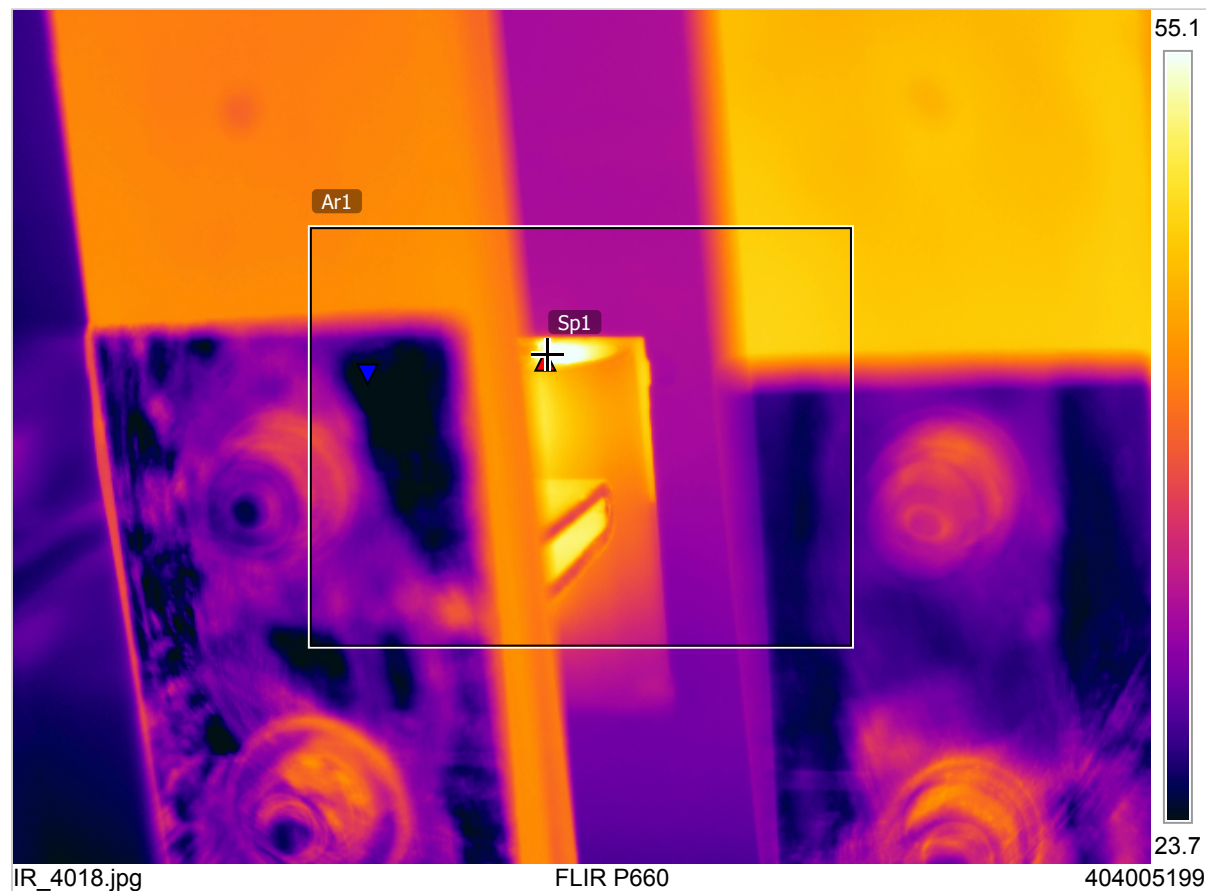
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R PHASE INCOMING SIDE

09-01-2019 08:15:13



Measurements °C

Ar1	Max	60.4
	Min	22.0
	Average	36.3
Sp1		59.4

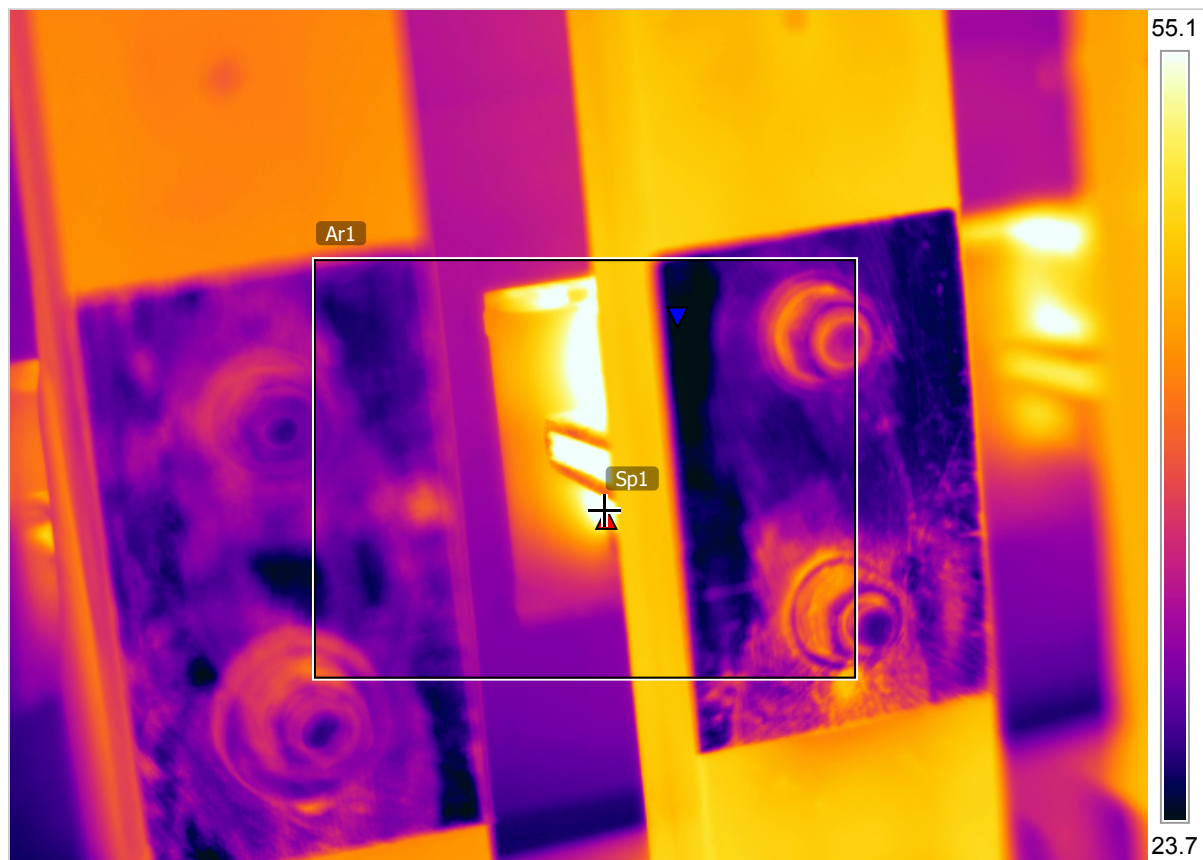
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 B PHASE

09-01-2019 08:14:26



IR_4017.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	63.5
	Min	22.9
	Average	35.2
Sp1		62.8

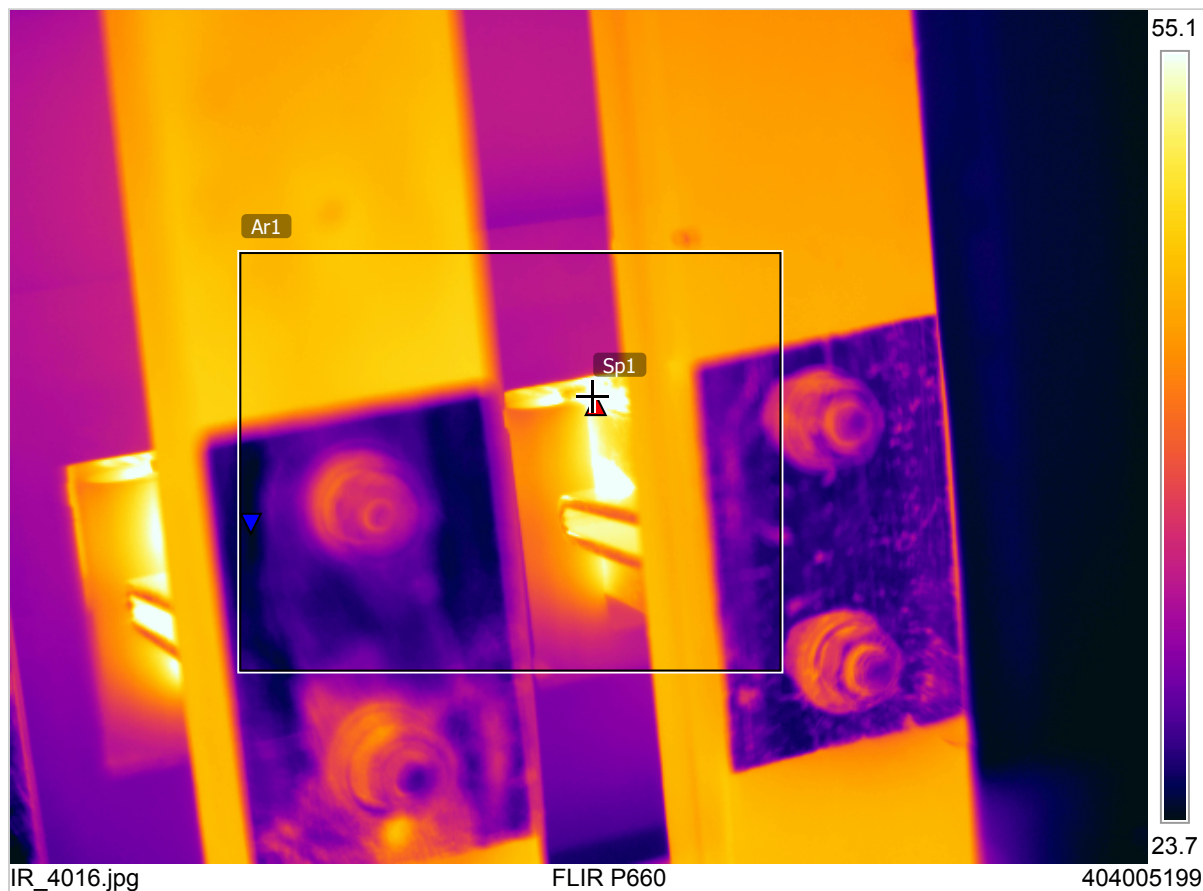
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 Y PHASE

09-01-2019 08:14:07



Measurements

°C

Ar1	Max	66.7
	Min	23.8
	Average	38.1
Sp1		65.2

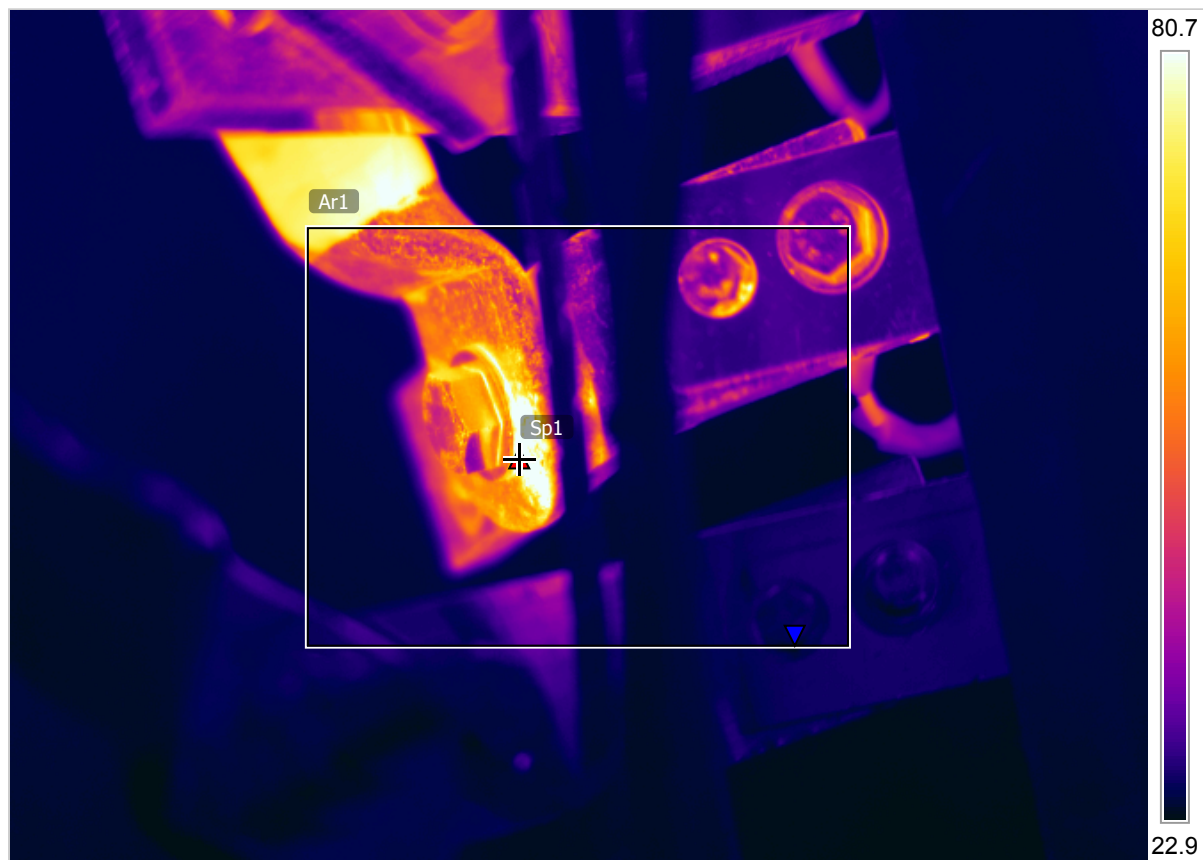
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R PHASE

09-01-2019 08:12:42



IR_4013.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	92.3
	Min	23.3
	Average	34.4
Sp1		90.4

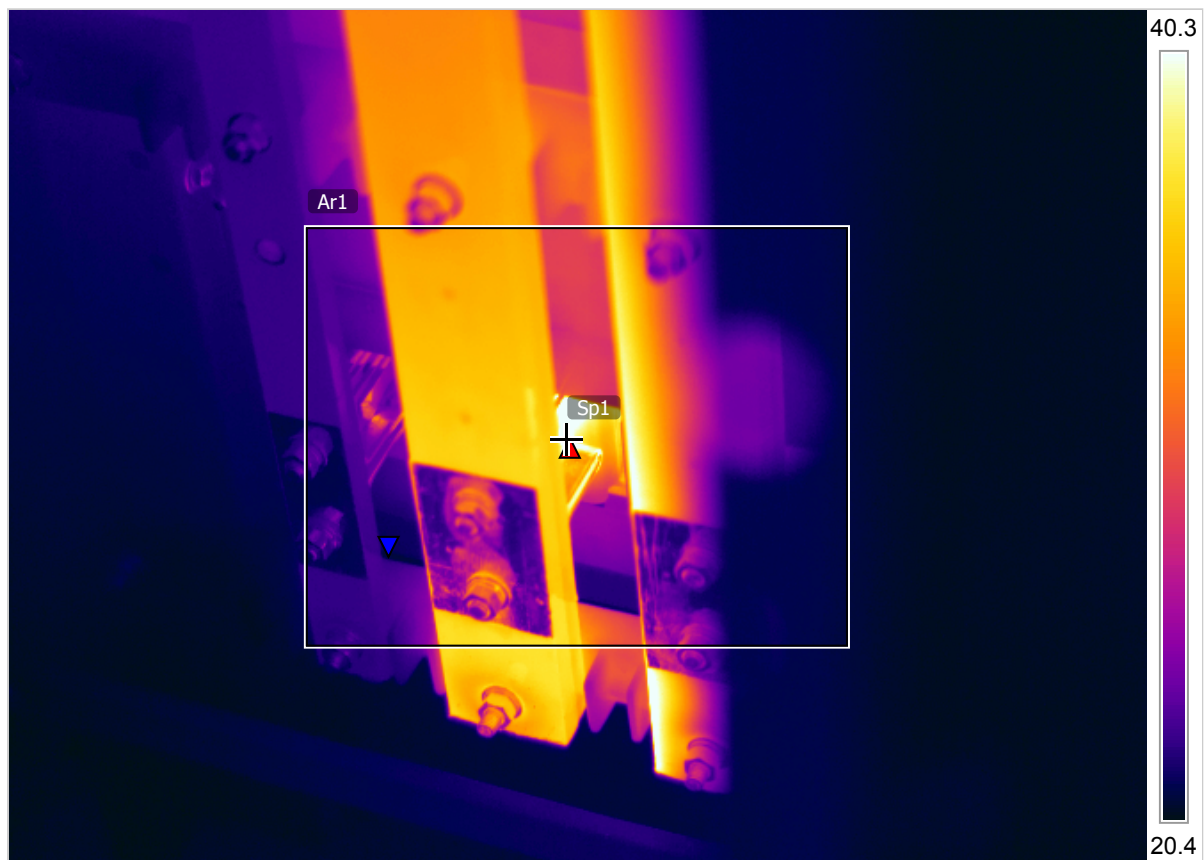
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R PHASE CABLE GLAND

11-01-2019 13:39:04



IR_4098.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	50.9
	Min	20.9
	Average	27.5
Sp1		49.2

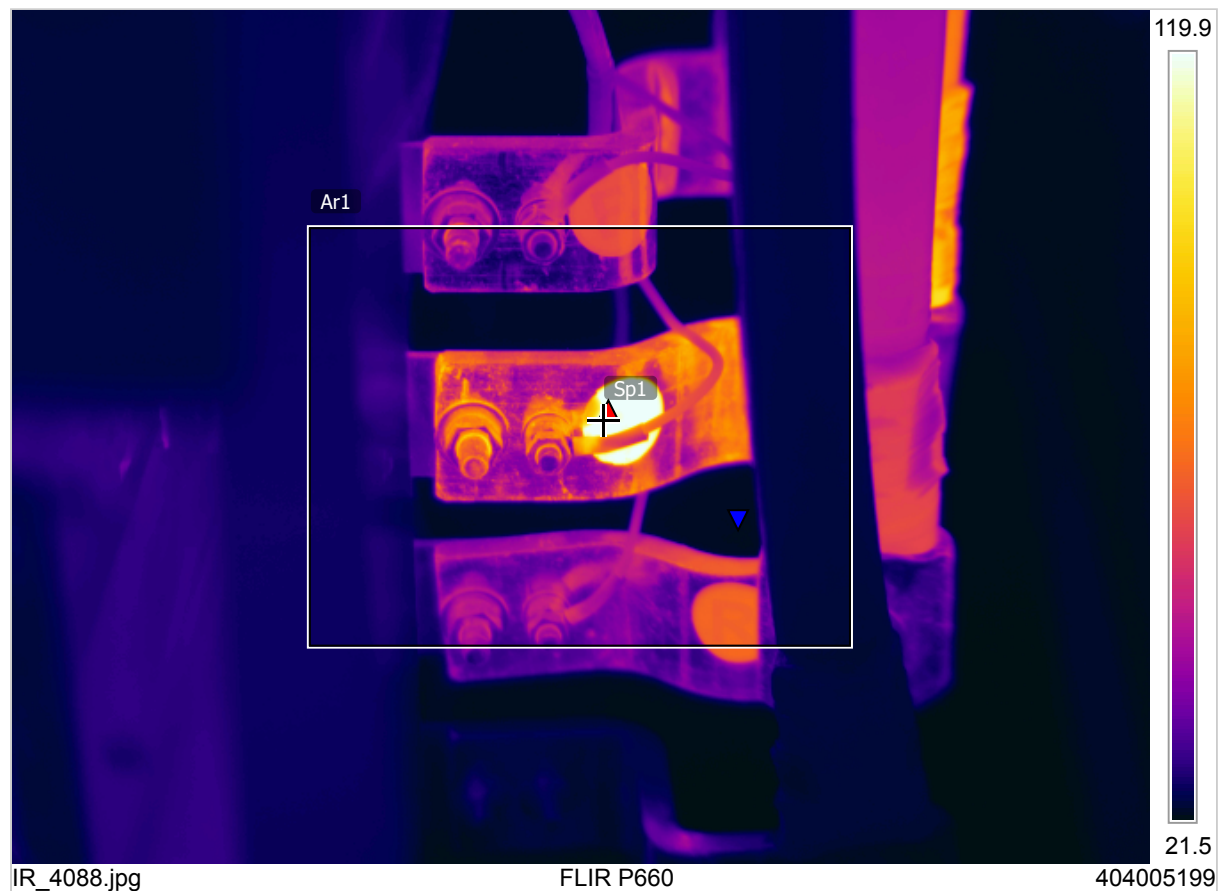
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 B PHASE OUTGOING SIDE

11-01-2019 13:33:36

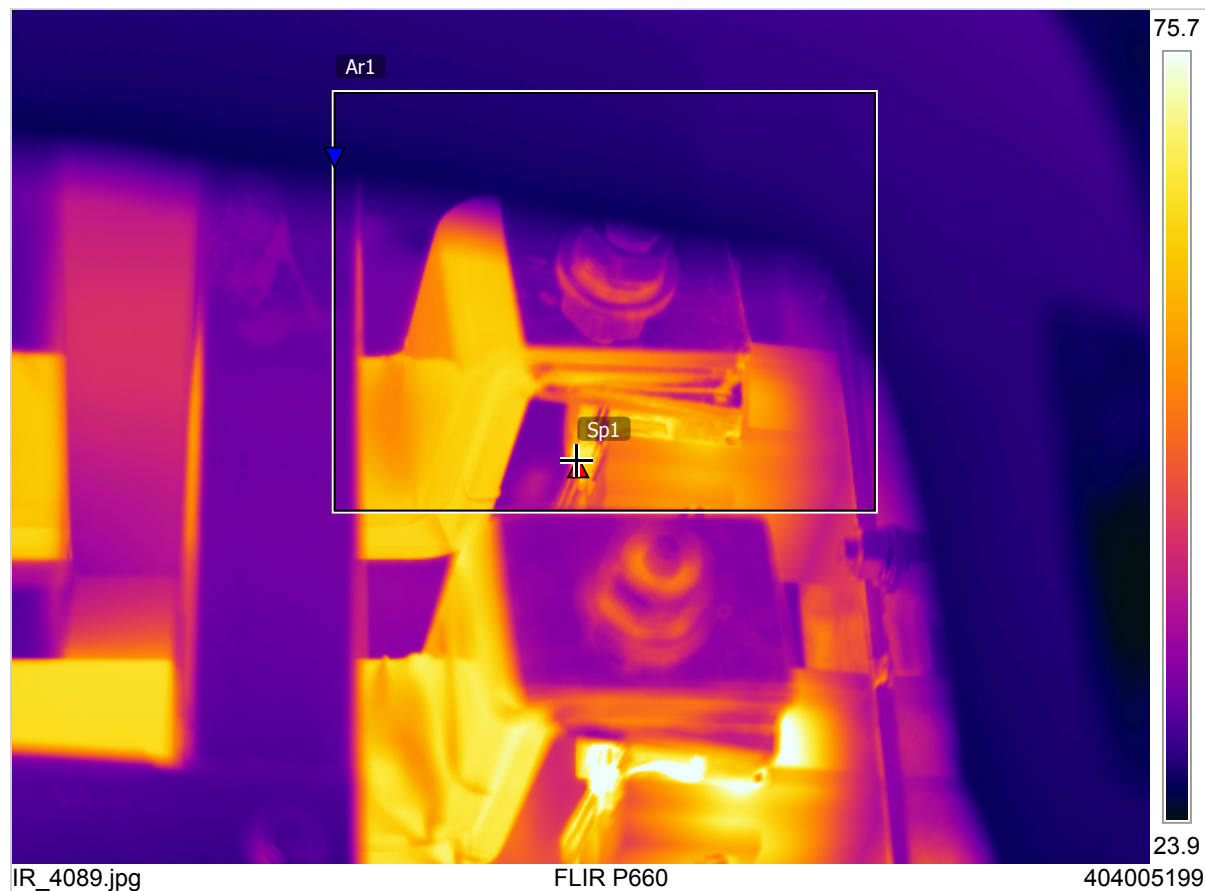


Measurements			°C
Ar1	Max	123.1	
	Min	22.6	
	Average	41.0	
Sp1		121.8	

Parameters	
Emissivity	0.95
Refl. temp.	20 °C

Note
IC1 Y PHASE CABLE BUS PLATE

11-01-2019 13:34:50



Measurements

°C

Ar1	Max	70.7
	Min	27.1
	Average	41.2
Sp1		69.3

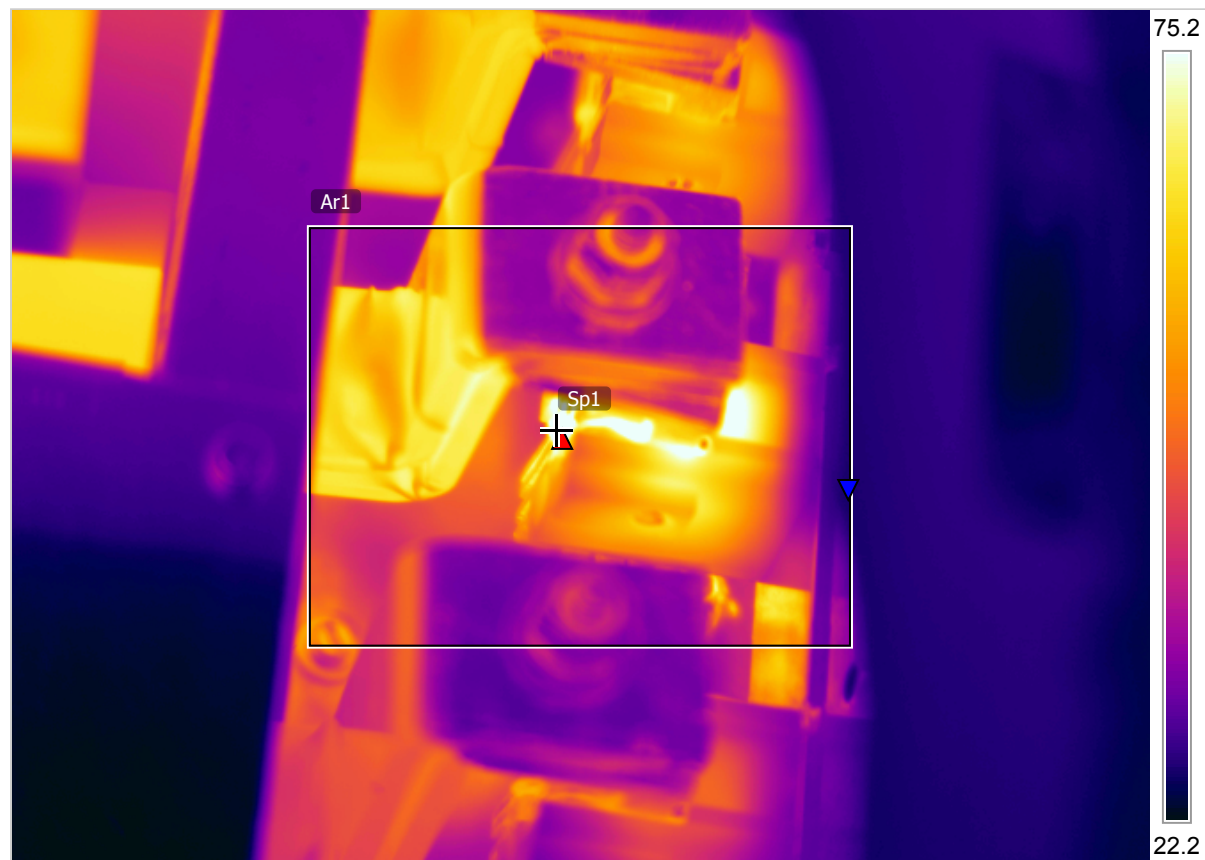
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 B PHASE INCOMING SIDE

11-01-2019 13:36:08



IR_4091.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	92.3
	Min	26.5
	Average	48.8
Sp1		90.8

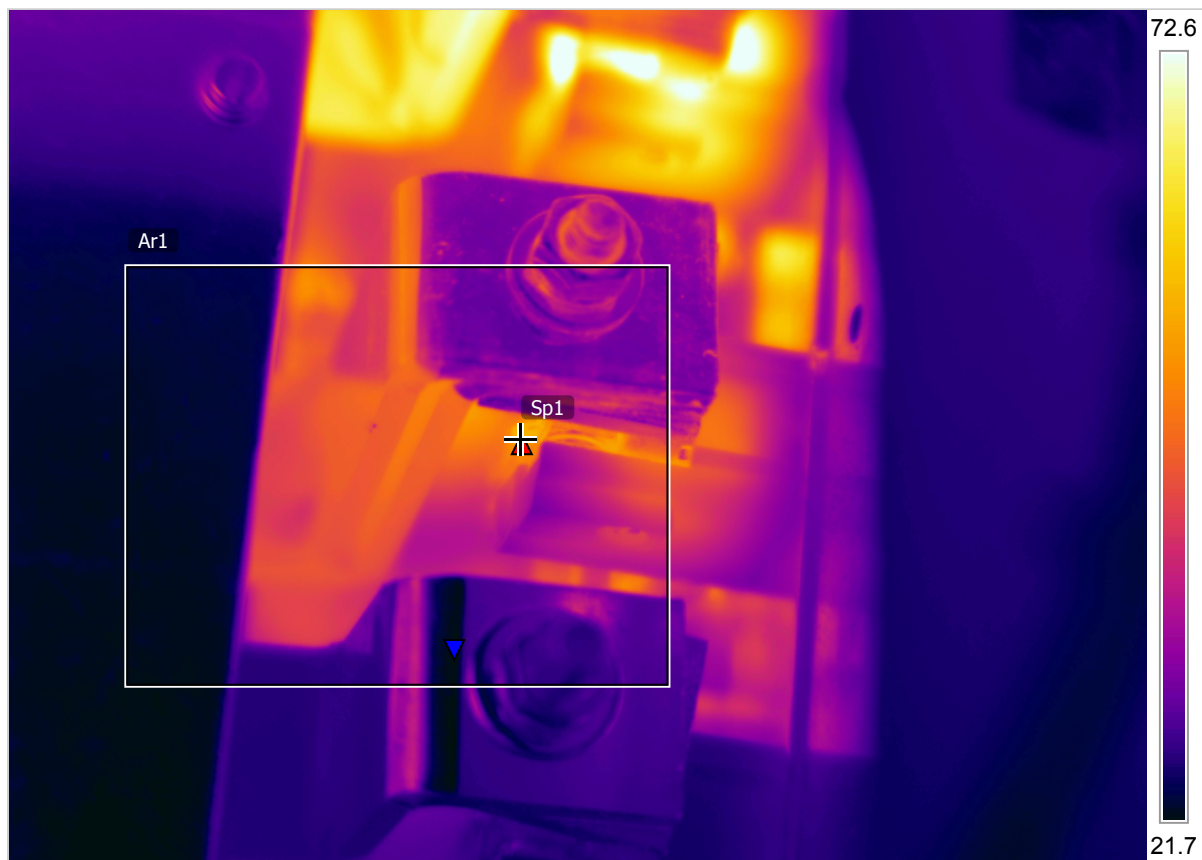
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 Y PHASE INCOMING SIDE

11-01-2019 13:36:21



IR_4092.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	59.2
	Min	21.7
	Average	35.8
Sp1		58.2

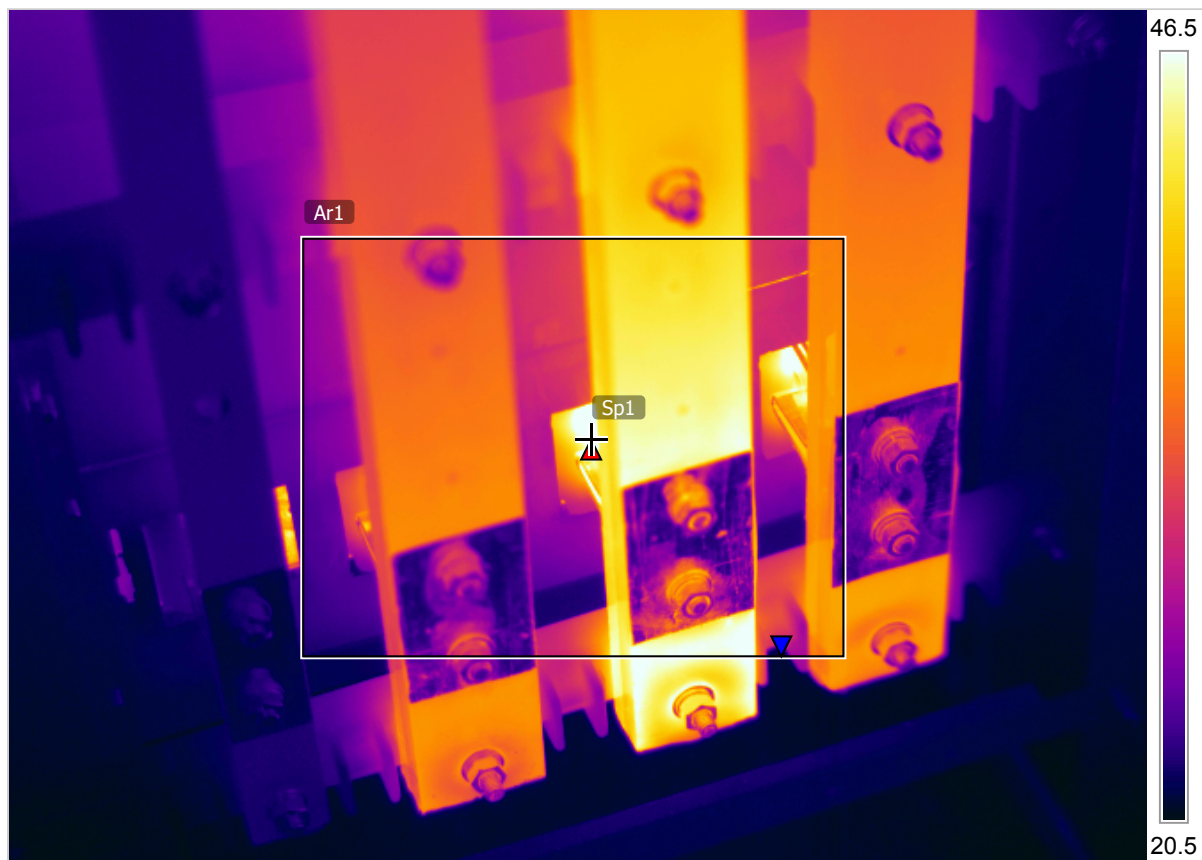
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R HASE INCOMING SIDE

11-01-2019 13:38:41



IR_4097.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	66.0
	Min	21.2
	Average	33.8
Sp1		66.0

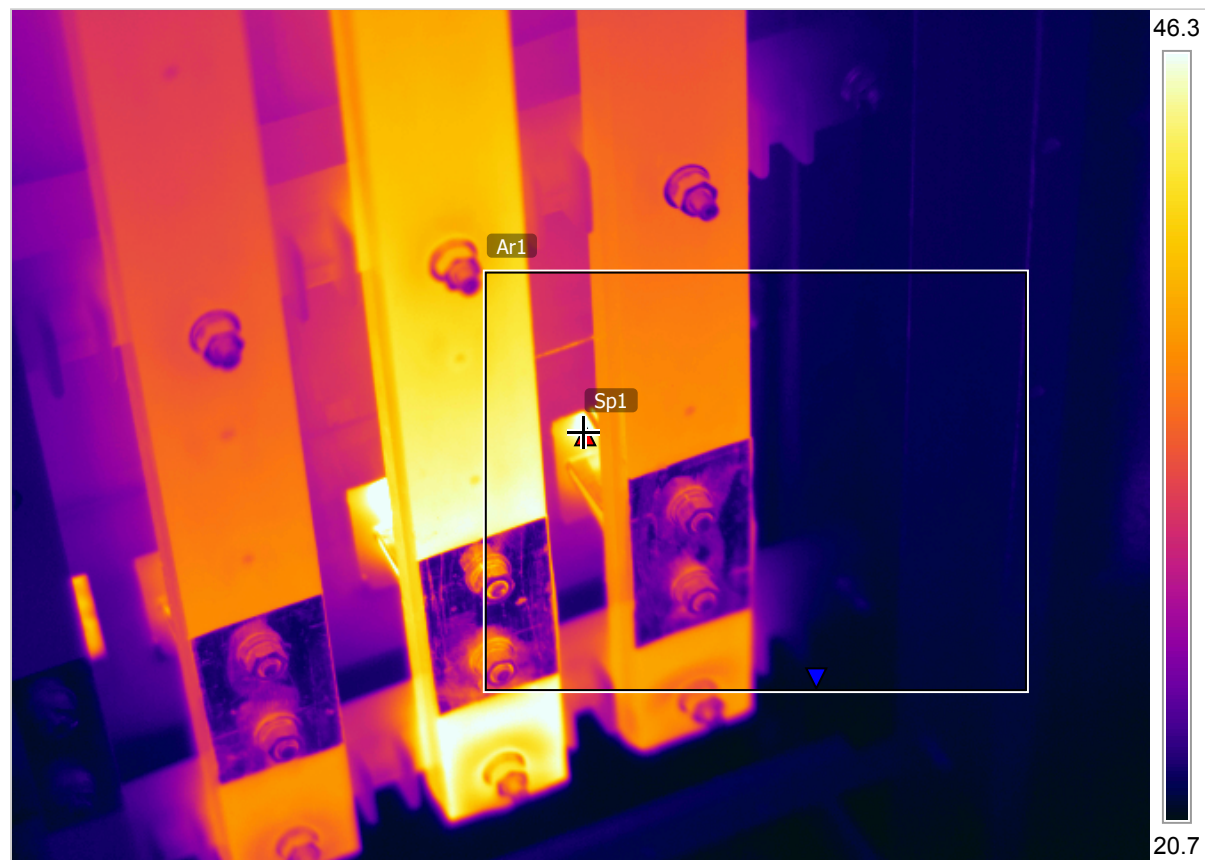
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 Y PHASE OUTGOING SIDE

11-01-2019 13:38:29



IR_4096.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	50.9
	Min	20.9
	Average	27.8
Sp1		49.3

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 R PHASE OUTGOIN SIDE

11-01-2019 13:38:07



Measurements

°C

Ar1	Max	109.7
	Min	20.7
	Average	33.6
Sp1		104.8

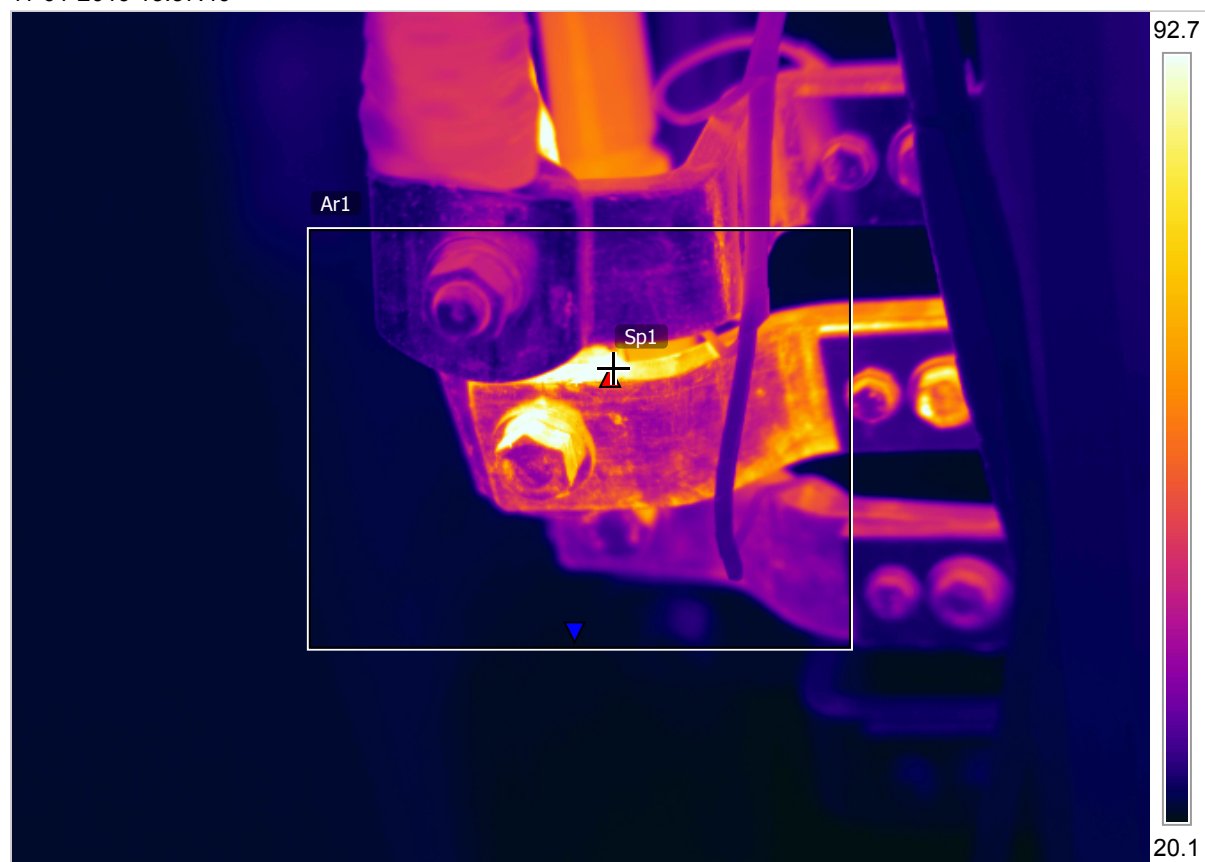
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 Y PHASE INCOMING SIDE CABLE

11-01-2019 13:37:40



IR_4093.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	110.5
	Min	21.2
	Average	36.0
Sp1		108.1

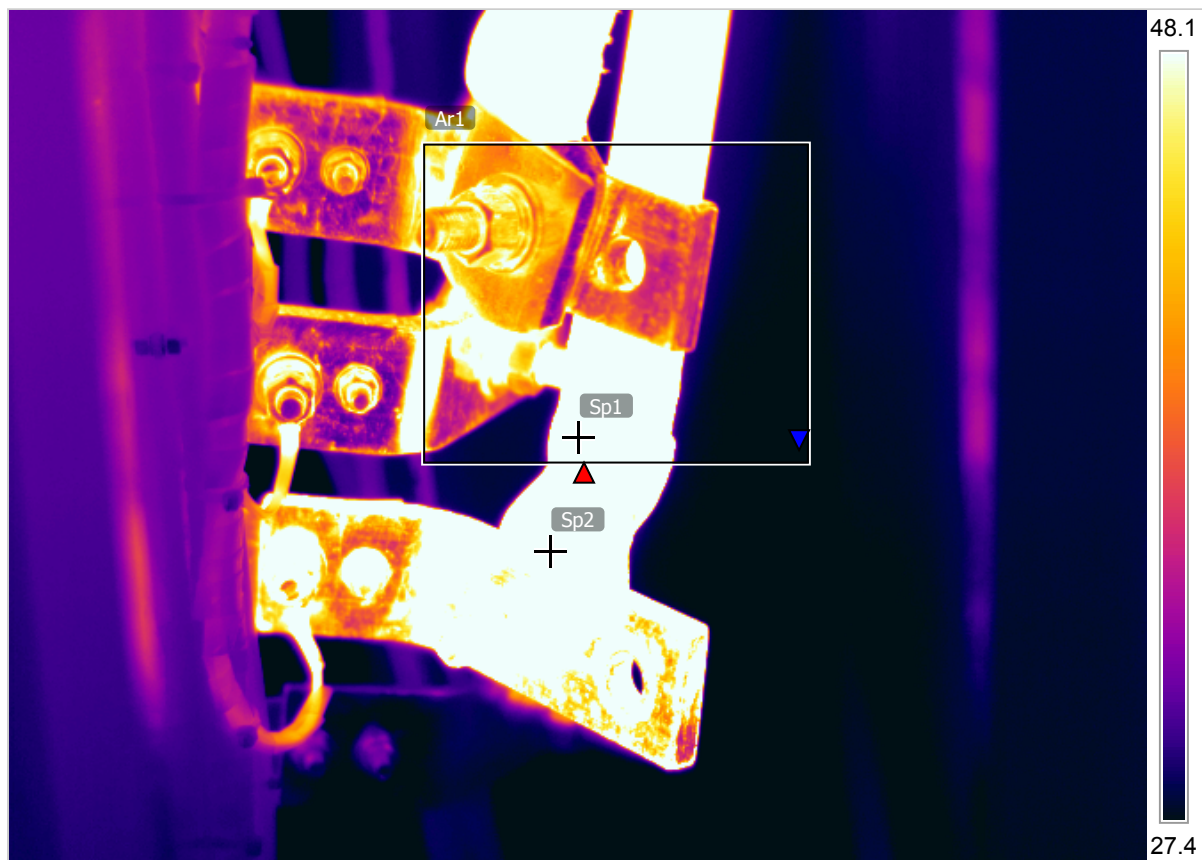
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC1 Y PHASE CABLE GLAND

05-11-2018 11:52:38



IR_3925.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	81.4
	Min	27.1
	Average	42.0
Sp1		78.7
Sp2		89.4

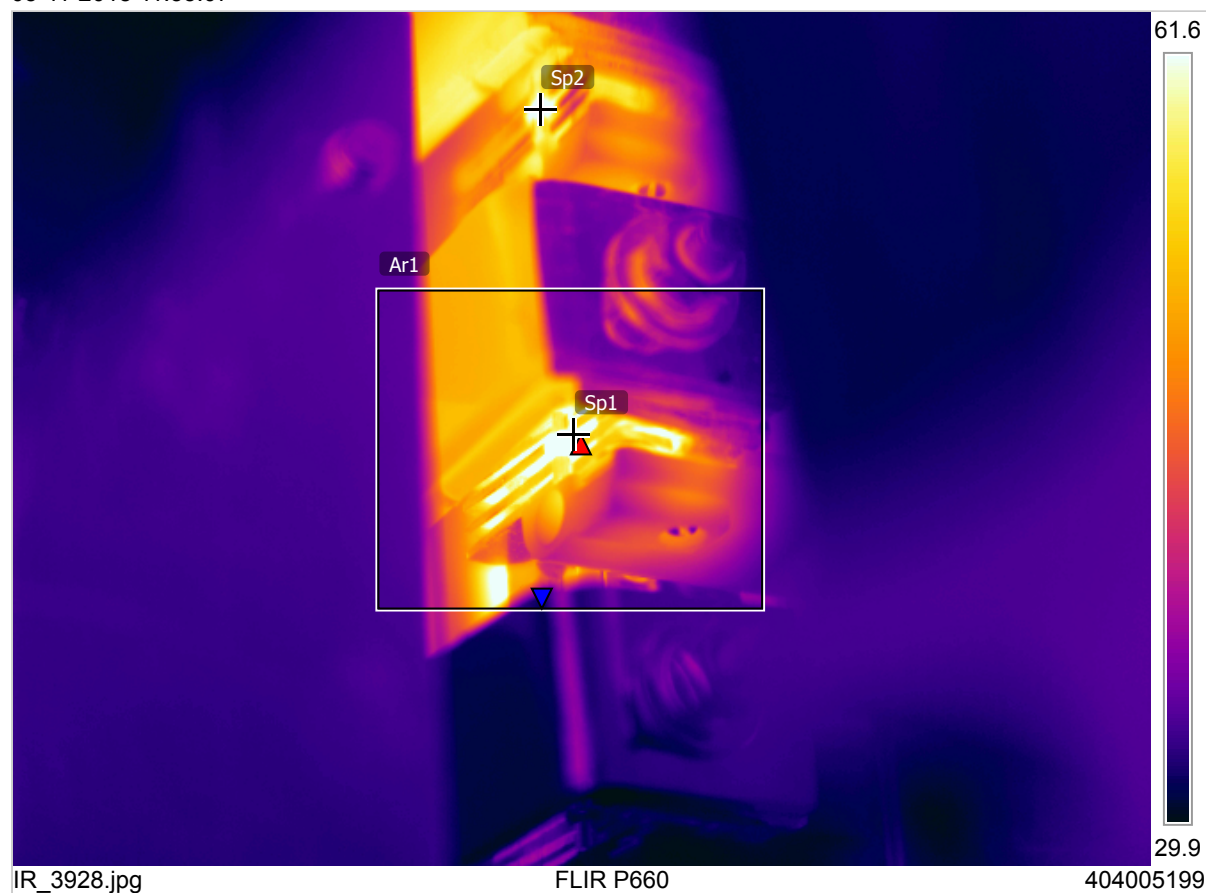
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

IC2 R PHASE CABLE

05-11-2018 11:55:07



Measurements °C

Ar1	Max	71.5
	Min	31.9
	Average	44.3
Sp1		70.5
Sp2		64.6

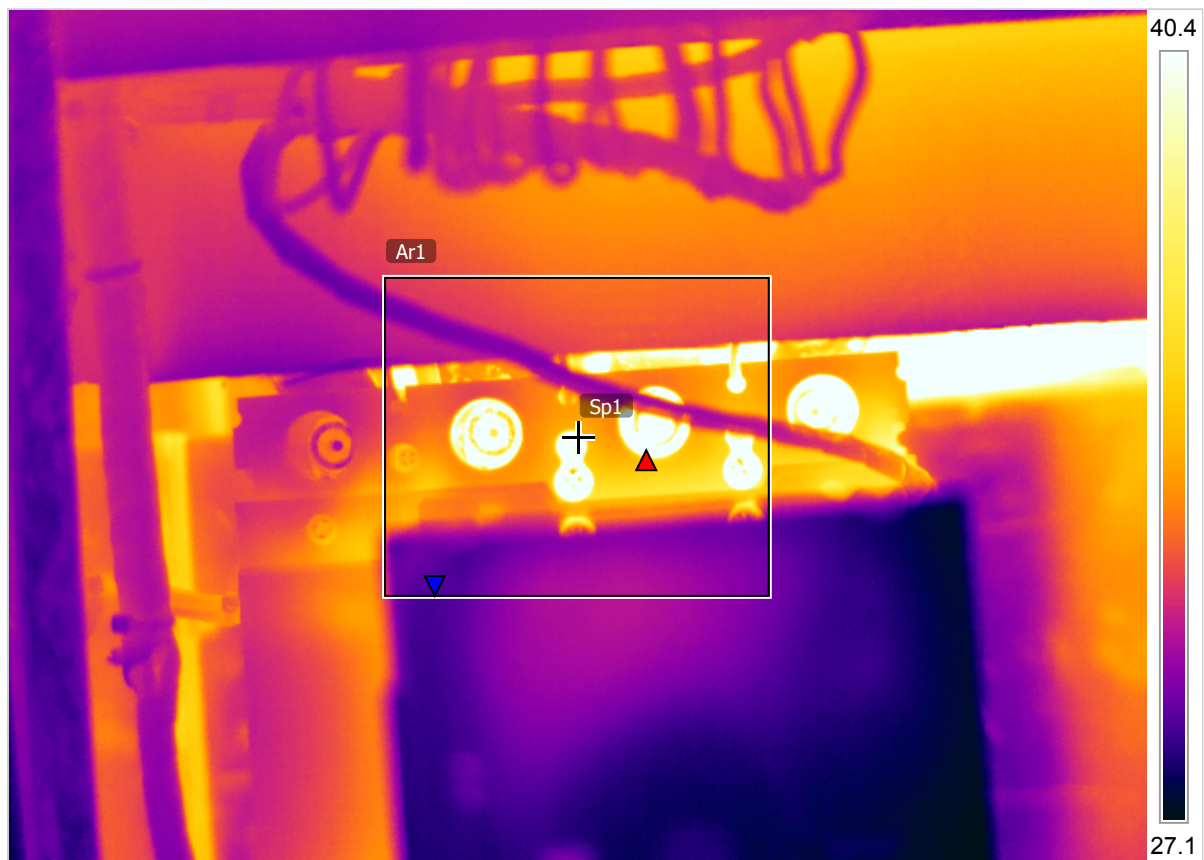
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE4 IC2 Y PHASE,B PHASE INCOMING SIDE

05-11-2018 11:55:39



IR_3929.jpg

FLIR P660

404005199

Measurements

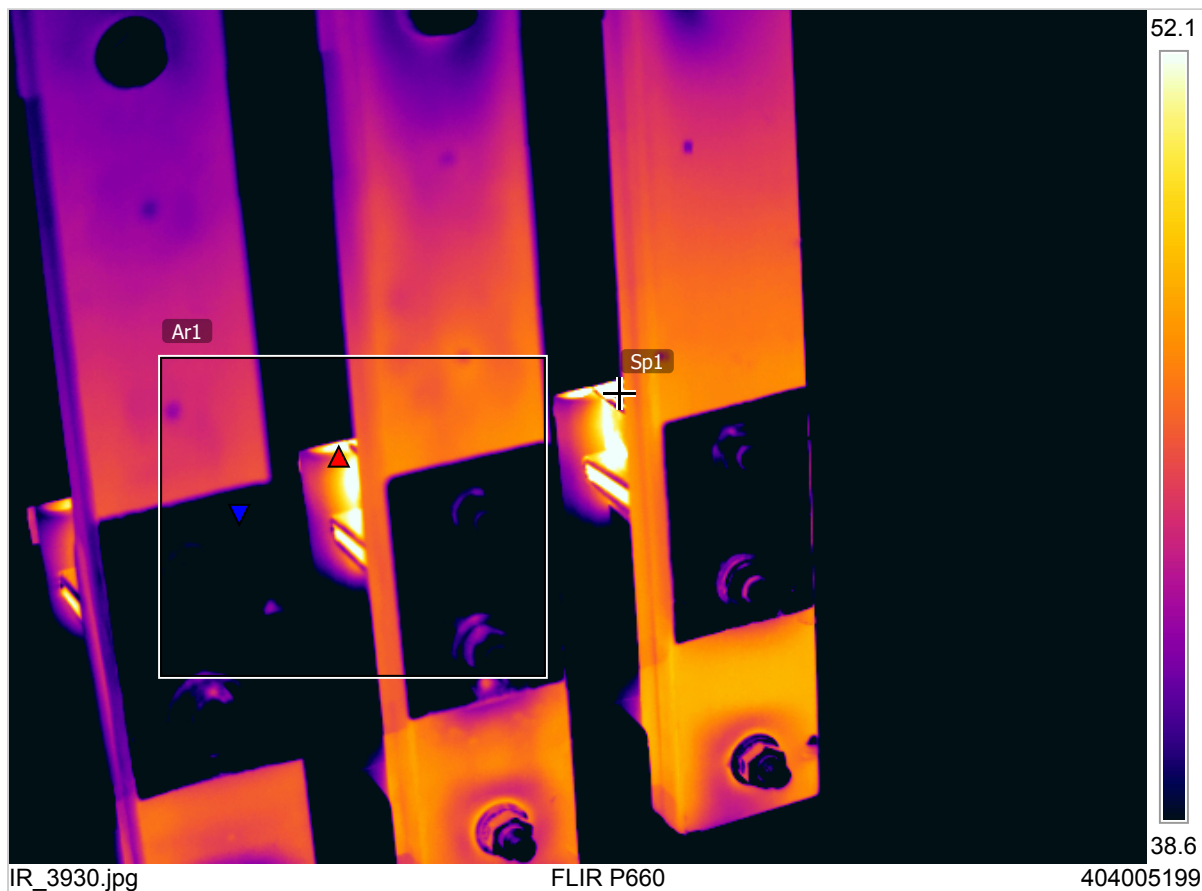
°C

Ar1	Max	67.4
	Min	28.7
	Average	33.3
Sp1		42.9

Parameters

Emissivity	0.95
Refl. temp.	20 °C

05-11-2018 11:56:25



Measurements

°C

Ar1	Max	56.8
	Min	28.0
	Average	38.2
Sp1		65.4

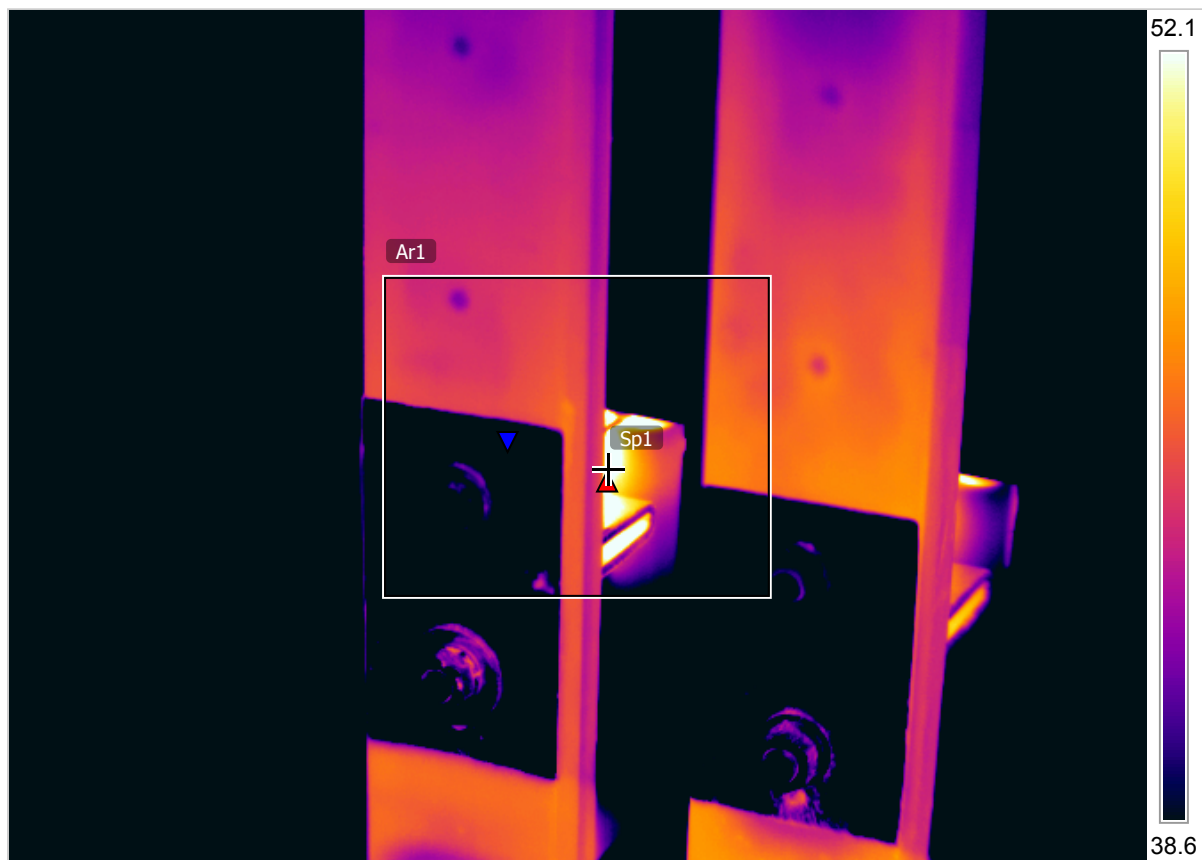
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE4 IC2 R PHASE

05-11-2018 11:56:51



IR_3932.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	60.3
	Min	27.3
	Average	39.7
Sp1		59.0

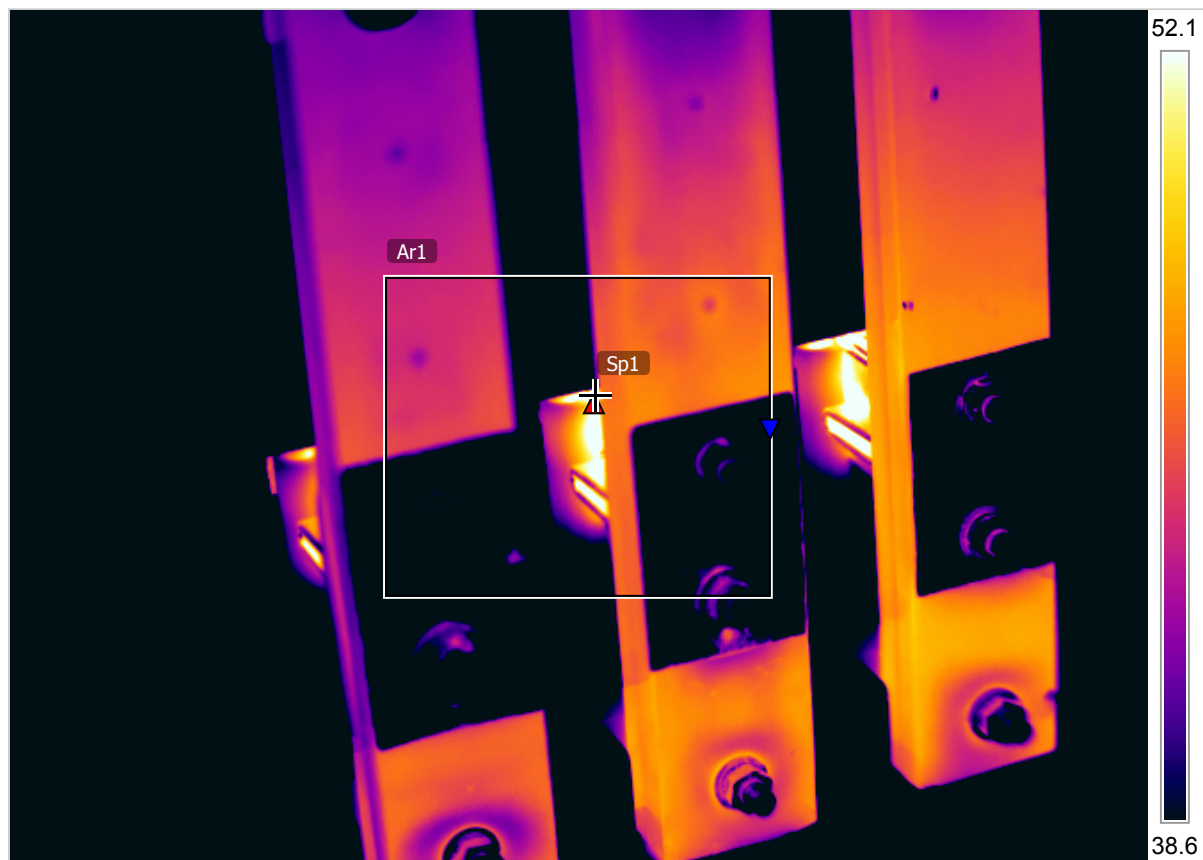
Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE4 IC2 B PHASE

05-11-2018 11:56:34



IR_3931.jpg

FLIR P660

404005199

Measurements

°C

Ar1	Max	64.2
	Min	28.1
	Average	39.3
Sp1		62.7

Parameters

Emissivity	0.95
Refl. temp.	20 °C

Note

POLE4 IC2 Y PHASE



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BHARAT HEAVY ELECTRICALS LIMITED

Transmission Business Engineering Management

Tower-A, 5th Floor | Advant Navis IT Business Park |

Plot No. 7, Sector-142, Expressway, NOIDA |

Distt. Gautam Buddha Nagar, U.P.-201305

Phone: +91 120 6748515 | Email: nishant.singh@bhel.in

Doc: VCMCC-Mod-AGR Rev 03

Dated 05-02-2020

Valve Cooling Motor Control Center (MCC) – Modifications Works at Agra Site Rev 03

Valve Cooling Motor Control Center (MCC) (415V ACDB with Beckhoff I/O units) were supplied through M/s Unilec Engineers Limited, Gurgaon. The panels were supplied for pole 1, pole 2 pole 3 and pole 4 of the project.

As per the feedback from site (Annexure 1), system is facing continuous hot spots and downtime due to unsuccessful operation caused due to overheating.

It was decided to take the MCCB OEM's suggestions for improving the system. Accordingly M/s C&S has visited the site and MOM was made at site based on the observations in the panels. As per the technical suggestions from M/s C&S, following modification shall be made in the Incomer 1 and Incomer 2 of the Valve Cooling MCC ACDB:

- Introduction of Bimetallic Sleeves in all the incomer cable and bus-bar interface.
- **Incomer 1:** Replacement of present draw-in/draw-out 630A MCCB module with fixed type module with motorised 800A MCCB modification of copper bus bar links.
- **Incomer 2:** Replacement of present draw-in/draw-out 630A MCCB module with fixed type module with motorised 800A MCCB modification of copper bus bar links.
- Though the upstream MCCB is 630A, the valve cooling MCCB of 800A (with variable percentage thermal settings) is suggested considering the de-rating due to heat generated because of continuous load and existing panel space constraint and hot spots generated due to bus bar orientation.
- Fixed type MCCB is more suited for the application as the load is continuous (of the order of 600+ Amps) and contact fingers may form unreliable connections which may cause overheating.
- As per requirement of Isolation, Isolator 4P 800A Isolator is introduced separately to provide physical isolation requirement during maintenance.
- The location of the isolator panels was decided jointly at site to be floor mounted on the space beside the main entrance door of MCC panel room. Indicative layout is also attached for ref.
- Interlocking between isolator and new fixed type MCCB shall be castle key type mechanical interlock.

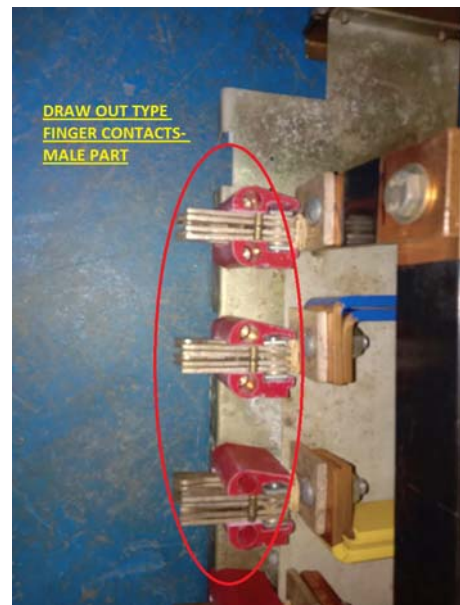
- The outage required per pole for doing the modification in MCC panels is 10 days provided all required material is supplied at site.
- Initially the modification will be carried out in one of the four poles. In the event of successful operation, the system shall be implemented in all the other three poles.

The above planned works will lead to improvement in Valve Cooling MCC system. The details modification related documents please refer GA and SLD of the planned modification.

Considering the above facts, kindly provide the go-ahead to start the work. This is for info and necessary action.

The photographs from the site and planned modification is as below:

- Draw out type contact fingers – Actual Site Photo:



- Planned Modification for Fixed type with 4P 800A Isolator(not shown in pic) as per GA/SLD:



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BHARAT HEAVY ELECTRICALS LIMITED

Transmission Business Engineering Management

Tower-A, 5th Floor | Advant Navis IT Business Park |

Plot No. 7, Sector-142, Expressway, NOIDA |

Distt. Gautam Buddha Nagar, U.P.-201305

Phone: +91 120 6748515 | Email: nishant.singh@bhel.in



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A

B

C

D

E

A

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C

D

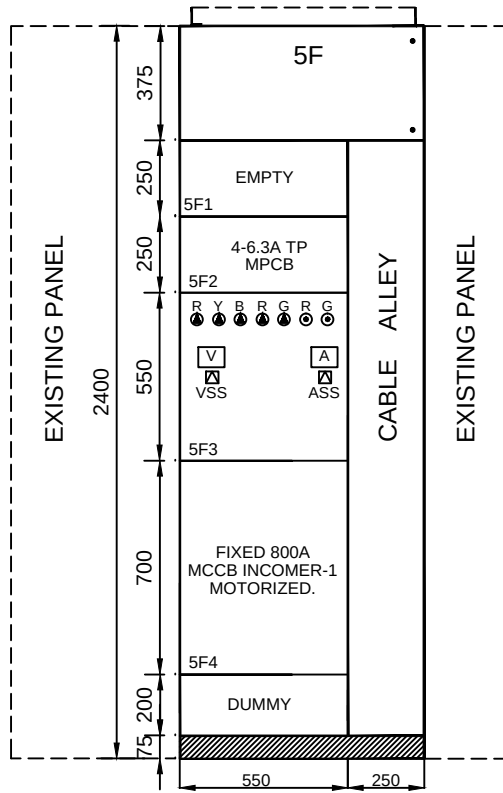
E

CONTR.	BHEL
PROJECT	± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT
	C&S ELECTRIC LTD. C-59 NOIDA PHASE-II,NOIDA-201305
Document Title:	GENERAL ARRANGEMENT DRAWING

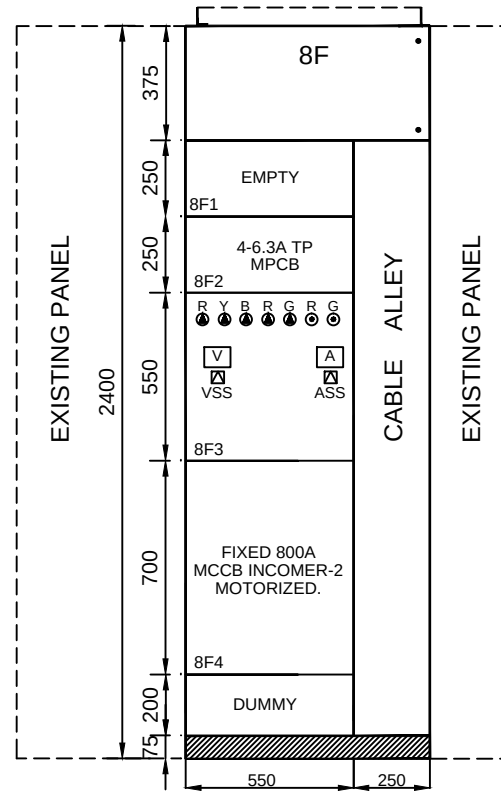
F	REV.	III -			IV -			DWG. No:				
		I - REVISED AS PER CLIENT REQUIREMENTS			II - REVISED AS PER CLIENT REQUIREMENTS			DWG. No:				
		Date	Name	PROJECT:- ± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT  C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDH NAGAR (U.P) FORMAT No. : QAF-04/04	Contr. BHEL			DRG. NO. J-673-101-01		REV. R2		
	Drawn	16.01.2020	TG VISHNU		Work 415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM							
	Checked	16.01.2020	D.GIRI		Details GENERAL ARRANGEMENT DRAWING							
Approved	16.01.2020	D.GIRI	P.O. NO.- 14P2000228, DT.-25.11.2019			SCALE: NTS	SHEET NO. NO. OF SHEET	1 2				

F

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FRONT VIEW



FRONT VIEW

NOTE:

- WHEREVER DOTTED LINE SHOWNED IN THE DIAGRAM,PARTICULAR COMPONENTS WERE NOT IN C&S SCOPE OF SUPPLY, EXCLUDING ISOLATOR IF IT IS REQUIRED..
- ADDITIONAL ISOLATOR(4P,800A) AT BOTTOM SIDE OF INCOMER MCCB IS NOT POSSIBLE IN PANEL AND IT IS NOT RECOMMENDED.IF(ISOLATOR) REQUIRED WE WILL PROVIDE SEPERATE BOX,SUITABLE FOR FLOOR MOUNTING FOR THE FOLLOWED DIMENSIONS 1000(H)x1000(W)x500(D)

REV.	III -			IV -			DRG. NO.		
	I - REVISED AS PER CLIENT REQUIREMENTS			II - REVISED AS PER CLIENT REQUIREMENTS			DRG. NO.		
	Date	Name	PROJECT:- ±800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT		C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDH NAGAR (U.P) FORMAT No. : QAF-04/04	Contr BHEL		DRG. NO. J-673-101-01	REV. R2
Drawn	16.01.2020	TG VISHNU				Work 415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM			
Checked	16.01.2020	D.GIRI				Details GENERAL ARRANGEMENT DRAWING			
Approved	16.01.2020	D. GIRI				PO NO- 14P2000228, DT.-25.11.2019		SCALE: NTS	
								SHEET NO.	2
								NO. OF SHEET	2

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A

B

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D

E

A

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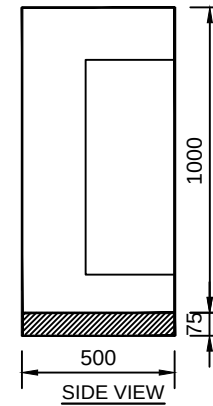
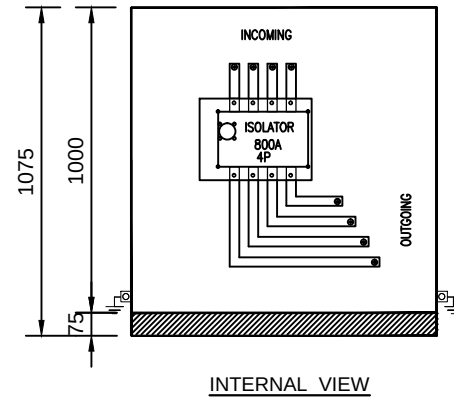
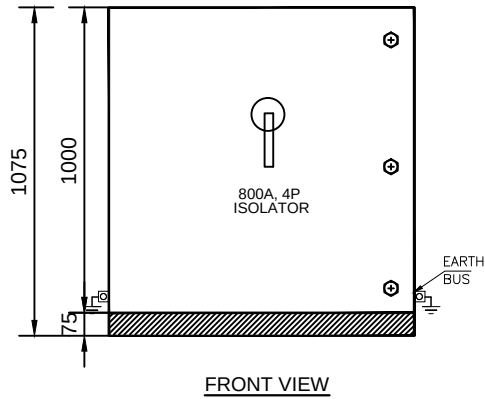
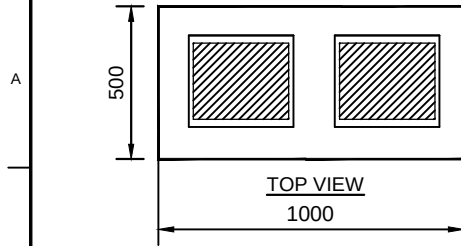
D

E

CONTR.	BHEL
PROJECT	± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT
	C&S ELECTRIC LTD. C-59 NOIDA PHASE-II,NOIDA-201305
Document Title:	GENERAL ARRANGEMENT DRAWING FOR ISOLATOR

F	REV.	III -			IV -			DWG. No:				
		I - REVISED AS PER CLIENT REQUIREMENTS			II - REVISED AS PER CLIENT REQUIREMENTS			DWG. No:				
		Date	Name	PROJECT:- ± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT		C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDH NAGAR (U.P) FORMAT No. : QAF-04/04	Contr. BHEL		DRG. NO. J-673-101-01		REV. R2	
	Drawn	03.02.2020	TG VISHNU				Work 415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM					
	Checked	03.02.2020	D.GIRI				Details GENERAL ARRANGEMENT DRAWING					
Approved	03.02.2020	D.GIRI	P.O. NO.- 14P2000228, DT.-25.11.2019				SCALE: NTS	SHEET NO. NO. OF SHEET	1 2			

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NOTE :

- 1) CASTLE KEY INTERLOCK WILL BE PROVIDED.

A) CONSTRUCTION:-

- | | |
|--|----------------------------|
| 1) SHEET THICKNESS: | : IN mm. UNLESS SPECIFIED. |
| a) LOAD BEARING MEMBER | : 2.0 mm CRCA |
| b) FRAMES, DOORS & COVERS | : 1.6 mm CRCA |
| c) GLAND PLATE (FOR SINGLE CORE CABLE) | : 4 mm NON-MAGNETIC MAT. |
| d) GLAND PLATES (FOR MULTI CORE CABLE) | : 3 mm HRSS |
| e) BASE FRAME | : 3MM CRCA |
| f) GASKET TYPE | : EPDM/NEOPRENE |
| g) DEGREE OF PROTECTION | : IP-54 |
| h) PANEL TYPE | : SINGLE FRONT, FIXED TYPE |
| i) CABLE ENTRY | : TOP ONLY |
| j) PAINT SHADE COMPLETE PANEL | : RAL 7032 |
| k) PAINT THICKNESS | : MINIMUM 50 MICRONS |
| l) BUS BAR | : COPPER 50X12mm |
| m) EARTH BUS BAR | : 25X6mm G.I |

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	Drawn	03.02.2020	TG VISHNU				Work	415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM				
	Checked	03.02.2020	D.GIRI				Details	GENERAL ARRANGEMENT DRAWING				
	Approved	03.02.2020	D. GIRI				PO NO-	14P2000228, DT.-25.11.2019		SCALE: NTS	SHEET NO.	2
											NO. OF SHEET	2

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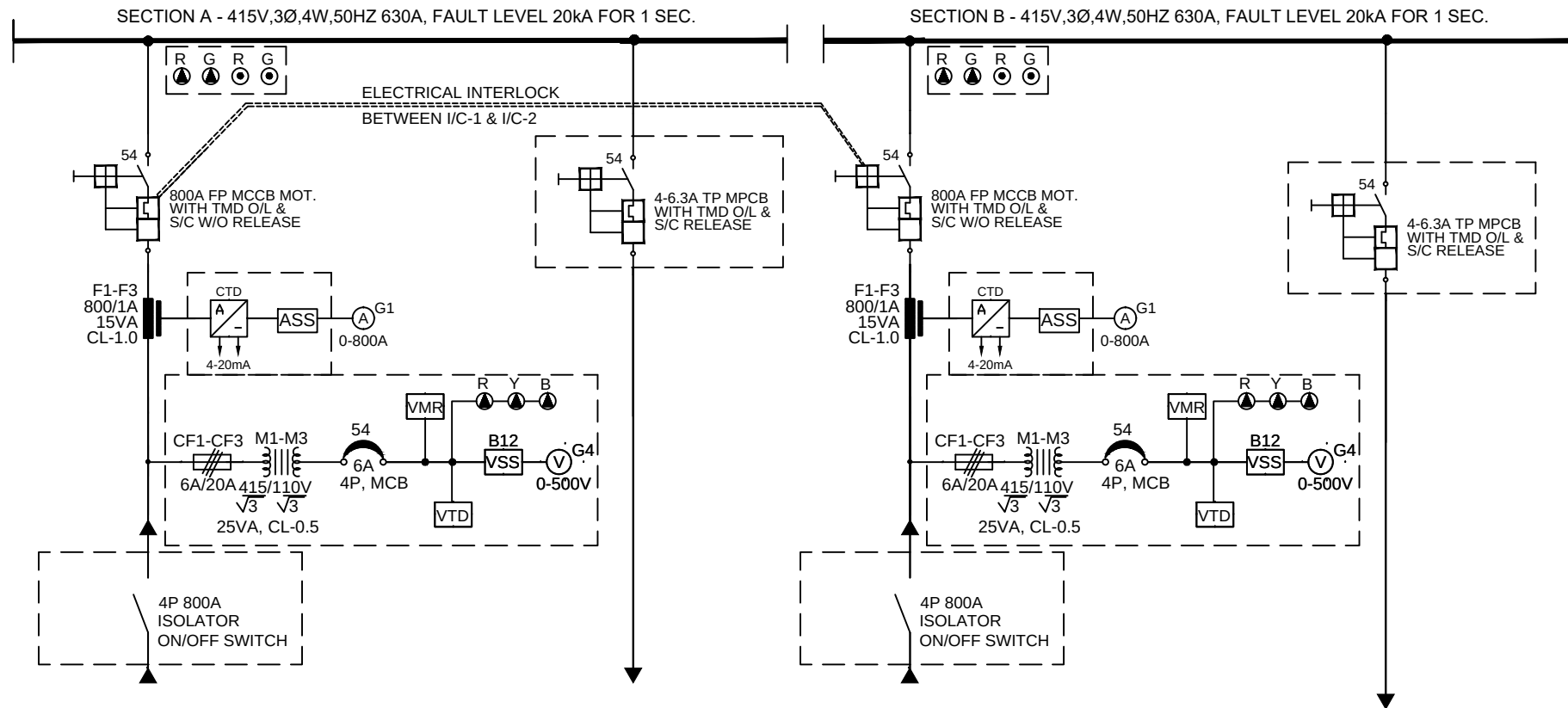
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CONTR.	BHEL
PROJECT	± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT
	C&S ELECTRIC LTD. C-59 NOIDA PHASE-II,NOIDA-201305
Document Title:	SINGLE LINE DRAWING

F	REV.		III -		IV -		DWG. No:					
			I - REVISED AS PER CLIENT REQUIREMENTS		II - REVISED AS PER CLIENT REQUIREMENTS		DWG. No:					
		Date	Name	PROJECT:- ± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT  C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDH NAGAR (U.P) FORMAT No. : QAF-04/04	Contr.			BHEL	DRG. NO. J-673-201-01		REV. R2	
	Drawn	16.01.2020	TG VISHNU		Work		415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM					
	Checked	16.01.2020	D.GIRI		Details		SINGLE LINE DRAWING					
	Approved	16.01.2020	D.GIRI		P.O. NO.-		14P2000228, DT.-25.11.2019		SCALE: NTS	SHEET NO.	1	
							NO. OF SHEET	2				

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MODULE LOCATION	5F2&5F3	5F1	8F4	8F1
FEEDER NO.	28	29	30	57
LOAD IN (AMPS)	800A	6A	800A	6A
CABLE SIZE SQ.MM	2RX1CX630 SQ.MM (XLPE/AL)	1RX4CX6 SQ.MM (PVC/AL)	2RX1CX630 SQ.MM (XLPE/AL)	-----
TYPE/RATING	MCCB	MPCB	MCCB	MPCB
DESCRIPTION	INCOMER-1 S3.AL.P1.LVS SUPPLY-A	REPLENISHMENT PUMP	INCOMER-2 S3.AL.P1.LVS SUPPLY-B	SPARE
TAG NO	-----	-----	-----	-----
SCHEME REF./ MODULE TYPE	FIXED TYPE	FIXED TYPE	FIXED TYPE	FIXED TYPE

REV.	III -			IV -			DRG. NO.				
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	Date	Name	PROJECT:- ±800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT		C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDDH NAGAR (U.P) FORMAT No. : QAF-04/04	Contr. BHEL		DRG. NO. J-673-201-01		REV. R2	
Drawn	16.01.2020	TG VISHNU				Work 415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM					
Checked	16.01.2020	D.GIRI				Details SINGLE LINE DIAGRAM					
Approved	16.01.2020	D. GIRI				PO NO- 14P2000228, DT.-25.11.2019					
								SCALE: NTS		SHEET NO. NO. OF SHEET	



C&S ELECTRIC LTD.
C-59, NOIDA PHASE II, NOIDA - 201305
DIST. GAUTAM BUDH NAGAR (U.P.)
FORMAT No. : QAF-04/04

Contr. BHEL
Work 415V MCC (MOTOR CONTROL CENTRE)
FOR VALVE COOLING SYSTEM
Details SINGLE LINE DIAGRAM
PO NO- 14P2000228, DT.-25.11.2019

DRG. NO.
J-673-201-01
REV.
R2
SCALE: NTS
SHEET NO.
NO. OF SHEET
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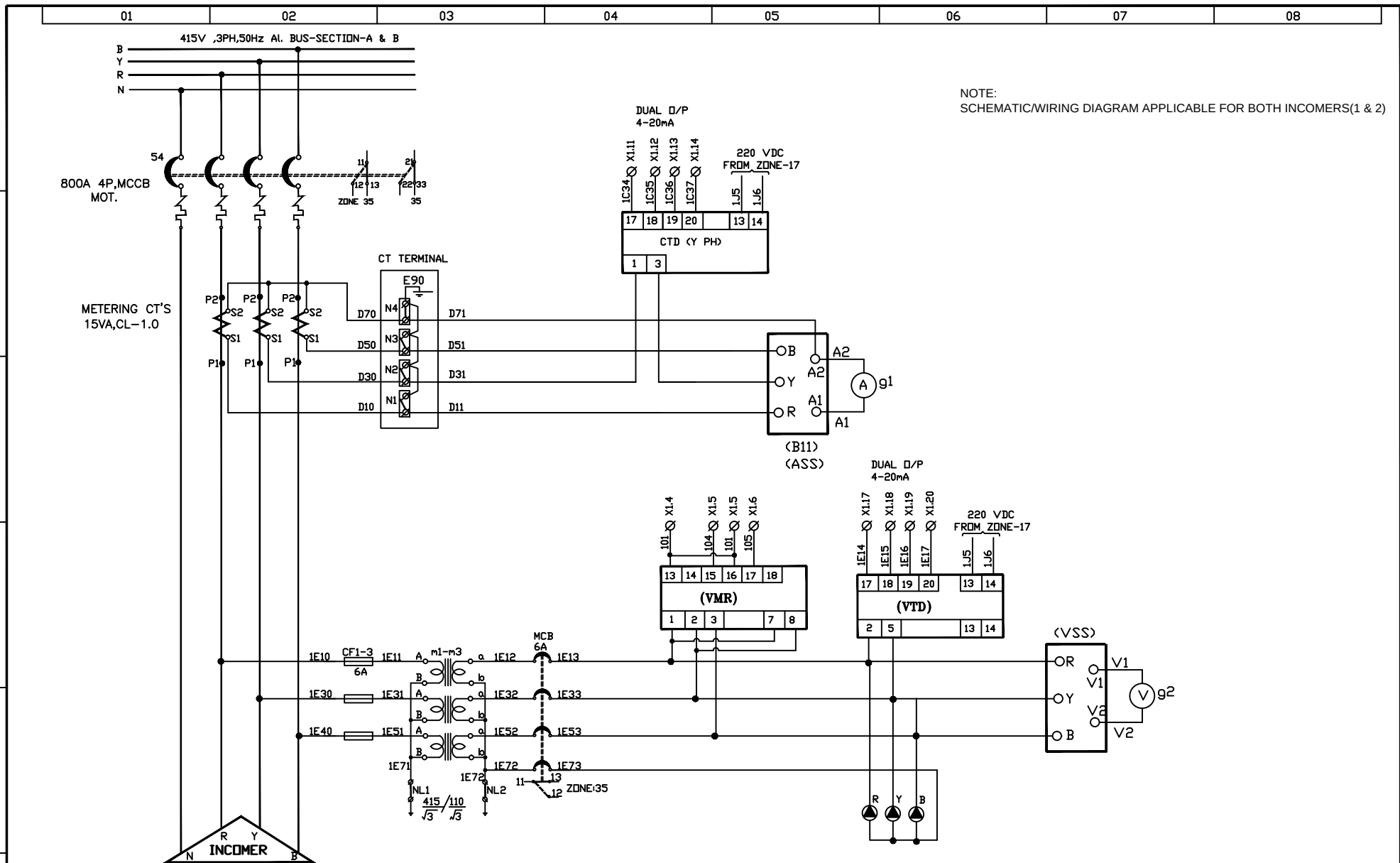
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CONTR.	BHEL
PROJECT	± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT
	C&S ELECTRIC LTD. C-59 NOIDA PHASE-II,NOIDA-201305
Document Title:	SCHEMATIC / WIRING DIAGRAM FOR INCOMERS-1 & 2

REV.	III -			IV -			DWG. No:			
	I - REVISED AS PER CLIENT REQUIREMENTS			II - REVISED AS PER CLIENT REQUIREMENTS			DWG. No:			
F		Date	Name	PROJECT:- ± 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT  C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDH NAGAR (U.P) FORMAT No. : QAF-04/04	Contr. BHEL			DRG. NO.		REV.
	Drawn	16.01.2020	TG VISHNU		Work 415V MCC (MOTOR CONTROL CENTRE) FOR VALVE COOLING SYSTEM			J-673-201-01	R2	
	Checked	16.01.2020	D.GIRI		Details SCHEMATIC / WIRING DIAGRAM					SCALE: NTS
	Approved	16.01.2020	D.GIRI		P.O. NO.- 14P2000228, DT.-25.11.2019			NO. OF SHEET	2	

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NOTE:
SCHEMATIC/WIRING DIAGRAM APPLICABLE FOR BOTH INCOMERS(1 & 2)

REV.	III -			IV -			DRG. NO.				
	I - REVISED AS PER CLIENT REQUIREMENTS			II - REVISED AS PER CLIENT REQUIREMENTS			DRG. NO.				
	Date	Name	PROJECT:- + 800KV,6000MW,HVDC MULTI-TERMINAL NER/ER-NR/WR INTERCONNECTOR-1 PROJECT		C&S ELECTRIC LTD. C-59, NOIDA PHASE II, NOIDA - 201305 DIST. GAUTAM BUDDH NAGAR (U.P) FORMAT No. : QAF-04/04	Client BHEL		DRG. NO. J-673-201-01		REV. R2	
Drawn	16.01.2020	TG VISHNU				Work INCOMER-1 & 2					
Checked	16.01.2020	D GIRI				Details SCHEMATIC / WIRING DIAGRAM					
Approved	16.01.2020	D GIRI				Order No. 14P2000228, DT.-25.11.2019		SCALE: NTS			
						SHEET NO.				02	
						NO. OF SHEET				02	

