

OPTIMIZER3 CIRCUIT BREAKER MONITORING

PROJECT GUIDE

CUSTOMER INFORMATION

Company Name:

Phone Number:

Contact Name:

Email Address:

CIRCUIT BREAKER MONITORING CAPABILITIES

Do you require monitoring of these functionalities?

	Yes	No	Notes
Breaker Timing	<input type="checkbox"/>	<input type="checkbox"/>	Opening (Trip) Time, Open & Close Travel Time, Arc & Fault Clearing Time, Open & Close Velocity.
SF6 Gas	<input type="checkbox"/>	<input type="checkbox"/>	
Pressure	<input type="checkbox"/>	<input type="checkbox"/>	Using the PSDP SF6 Pressure Sensor, gas Pressure is measured, and gas Density is calculated.
Density	<input type="checkbox"/>	<input type="checkbox"/>	Using the DSDP SF6 Density Sensor, gas Density is measured, and gas Pressure is calculated.
Moisture	<input type="checkbox"/>	<input type="checkbox"/>	Using the OM-DPS Dew Point Sensor, gas Moisture can be measured.
Interrupter Contact Life	<input type="checkbox"/>	<input type="checkbox"/>	Requires properly sized CT Pickup Coils (see below).
Tank Heater	<input type="checkbox"/>	<input type="checkbox"/>	Requires a UPSM-241 for each Tank Heater thermostat.
Cabinet Heater	<input type="checkbox"/>	<input type="checkbox"/>	Required an OM-ACCT for continuously running heaters and a UPSM-241 for each heater thermostat.
Mechanism Charging Motor	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-ACCT for AC-powered motors or an OM-DCCT for DC-powered motors.
Generic AC/DC Voltage	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-ACVT for 0-480VAC or an OM-DCVT for 0-150VDC.
Generic Pressure	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-PS-10B for 0-10 BAR ABS.
Generic Temperature	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-TS for -40oC to +120oC.
Fiber Optic Communication	<input type="checkbox"/>	<input type="checkbox"/>	OM3D-F has a Fiber Optic Ethernet port, OM3D does not.
Magnetic Mounting	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-MMK Magnet Mount Kit.

BREAKER INFORMATION

Project Location:

Voltage Rating: K Volts

Manufacturer:

Interrupting Current Rating: K Amps

Model Number:

Operating Mechanism

Does the breaker have a single mechanism for all three poles or does each pole have a separate mechanism?

Single Separate

If Separate, is it "Independent Pole Operated" (IPO) or Electrically-Ganged?

IPO Electrically-Ganged

Note: If the breaker is IPO, then one Optimizer per pole is needed. If the breaker is Electrically-Ganged, one Optimizer can be used on all 3 poles.

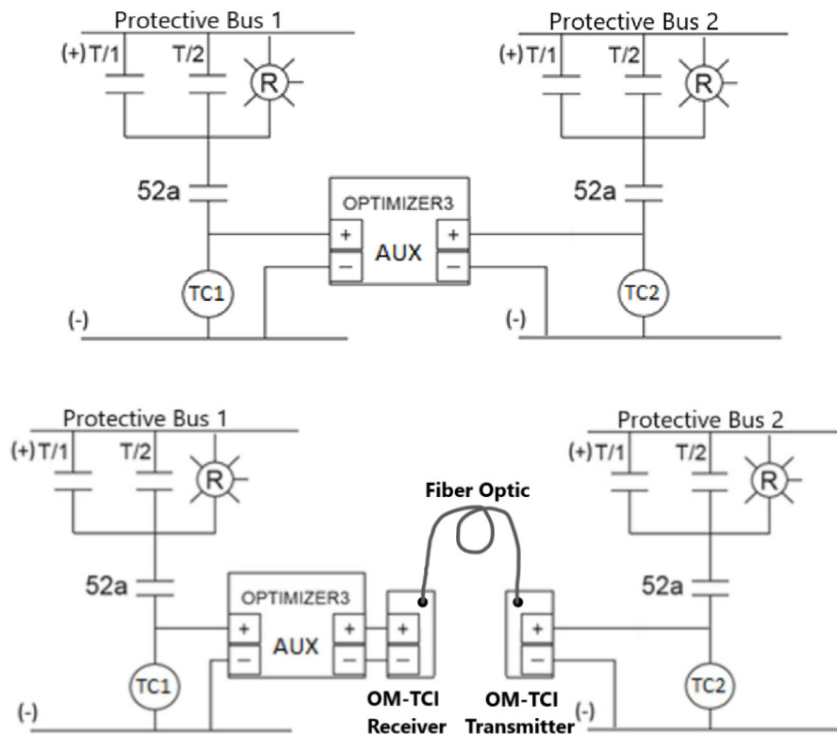
Trip Coils

Does the breaker mechanism have dual (redundant) trip coils (TC1, TC2)?

Yes No Note: If yes, the OM2 can NOT be used.

If yes, is there a requirement (such as NPCC Directory #4) preventing the trip circuits from being wired to the same device?

Yes No Note: If yes, the OM-TCI is needed.



Insulating Medium

Does the breaker use Oil, SF6 Gas or Vacuum as an insulating medium?

Oil SF6 Vacuum Vacuum with Dry Air

If SF6 Gas, do you want to monitor the SF6 Gas pressure?

Yes No

If SF6 Gas, do you want to monitor the SF6 Gas moisture?

Yes No

If SF6 Gas, do you want to monitor the SF6 Gas density?

Yes No

If Vacuum with Dry Air, do you want to monitor the air pressure?

Yes No

Gas Pressure Gauge

Does the breaker have a single gas pressure gauge for all three tanks, or does each tank have a gauge?

Single Gauge Three Gauges (one per tank)

Note: If there is a gas pressure gauge for each tank, then 3 pressure (PSDP) or density (DSDP) sensors will be needed, along with 3 sensor adaptors.

SF6 Gas Moisture

Is there a desire to monitor the SF6 gas moisture, in addition to pressure/density?

Yes No

Note: If yes, a 2-sensor adaptor will be needed for each pair of sensors.

Fill Port

What type of fill port does the breaker have, DN8, DN20, Malmquist, Swagelok or another type?

Fill Port Type: Supply a photo of the fill port(s).

Interrupter Contact Life

Do you want to monitor the interrupter contact life?

Yes No

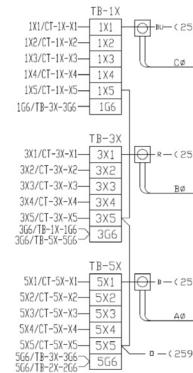
If yes, what is the maximum short-circuit fault current of the breaker or electrical system (whichever is less)?

Amps Max.

What is the bushing CT ratio of the current tap being used?

: 5

CT MFG.:	NARAYAN
X2-X3	100:5
X1-X2	200:5
X1-X3	300:5
X4-X5	400:5
X3-X4	500:5
X2-X4	600:5
X1-X4	800:5
X3-X5	900:5
X2-X5	1000:5
X1-X5	1200:5



Calculating the correct CT Pickup Coil Size for the Bushing CT Secondary Current

Example: Maximum Short-Circuit Current = 35,000 Amps, Bushing CT Ratio = 1200:5

Reduce 1200:5 CT Ratio to 240:1

35,000 Primary Amps divided by 240 = 145.8 Secondary Amps

Select the CT Pickup Coil with a Range that encompasses the calculated Secondary Amperage from the table below:

Part Number	CT-20	CT-30	CT-50	CT-100	CT-160	CT-250	CT-400	CT-800
Full Scale Rating (A)	20	30	50	100	160	250	400	800
Range (A)	1.4-20	2.1-30	3.5-50	7-100	11.2-160	17.5-250	28-400	56-800

Interrupter Tanks Heaters

Do the interrupter tanks have heaters, controlled by a thermostat?

Yes No

If yes, do you want to monitor the heaters?

Yes No

Note: If yes, a UPSM-241 is needed

Cabinet Heater Circuits

Do you want to monitor the cabinet heaters?

Yes No

Are any of the cabinet heaters controlled by a thermostat?

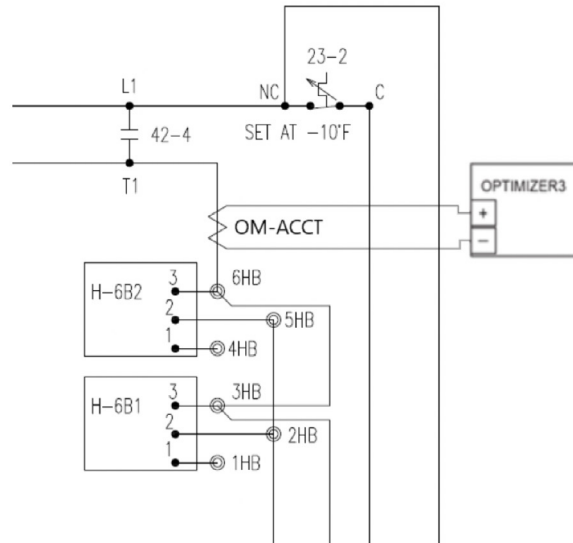
Yes No

How many of each?

With Thermostat

Without Thermostat

Note: A UPSM-241 is needed for each cabinet heater circuit with a thermostat. An OM-ACCT is needed for each cabinet heater circuit without thermostat.



Mechanism Charging Motor

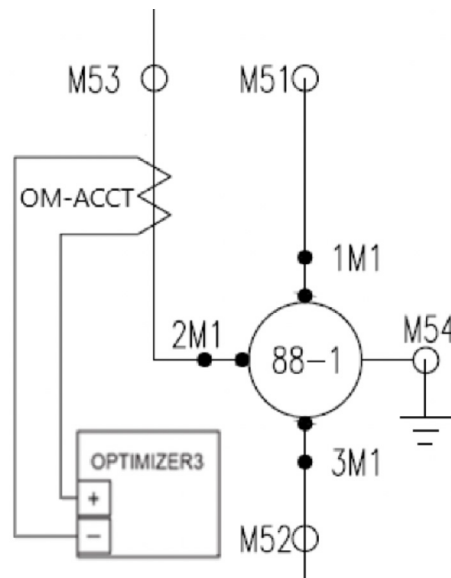
Do you want to monitor the mechanism charging motor?

Yes No

Is the mechanism charging motor powered by AC or DC?

AC DC

Note: An OM-ACCT is needed to monitor AC-powered motors. An OM-DCCT is needed to monitor DC-powered motors.



Generic AC / DC Voltage Monitoring

Do you want to monitor any generic AC or DC voltage?

Yes No

AC voltage 0-480VAC, use OM-ACVT

DC voltage 0-150VDC, use OM-DCVT

Generic Temperature Monitoring

Do you want to monitor any generic temperature?

Yes No

Temperature -40°C to +120°C, use OM-TS

Alarm Status & Monitoring Data

Do you plan to connect the Optimizer3 to your substation network to retrieve alarm status and monitoring data?

Yes No Note: IDNP3 is the only data retrieval protocol available.

If yes, do you prefer a copper Ethernet or fiber optic network connection?

Copper Ethernet (standard on OM3D) Fiber (optional, available on the OM3D-F)

Optimizer3 Mounting

Where will the Optimizer3 be mounted?

In the existing breaker control/mechanism cabinet In a new/separate enclosure

Magnetic Mounting

Do you want to magnetically-mount or screw-mount the OM3 to your cabinet or panel?

Magnetic Mount, use OM-MMK Screw-Mount



OPTIMIZER3 CIRCUIT BREAKER MONITORING

PROJECT GUIDE

FOR MEIDENSHA VACUUM BREAKERS

CUSTOMER INFORMATION

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Phone Number:

Contact Name:

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Generic Pressure	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-PS-10B for 0-10 BAR ABS.
Generic Temperature	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-TS for -40oC to +120oC.
Fiber Optic Communication	<input type="checkbox"/>	<input type="checkbox"/>	OM3D-F has a Fiber Optic Ethernet port, OM3D does not.
Magnetic Mounting	<input type="checkbox"/>	<input type="checkbox"/>	Requires an OM-MMK Magnet Mount Kit.

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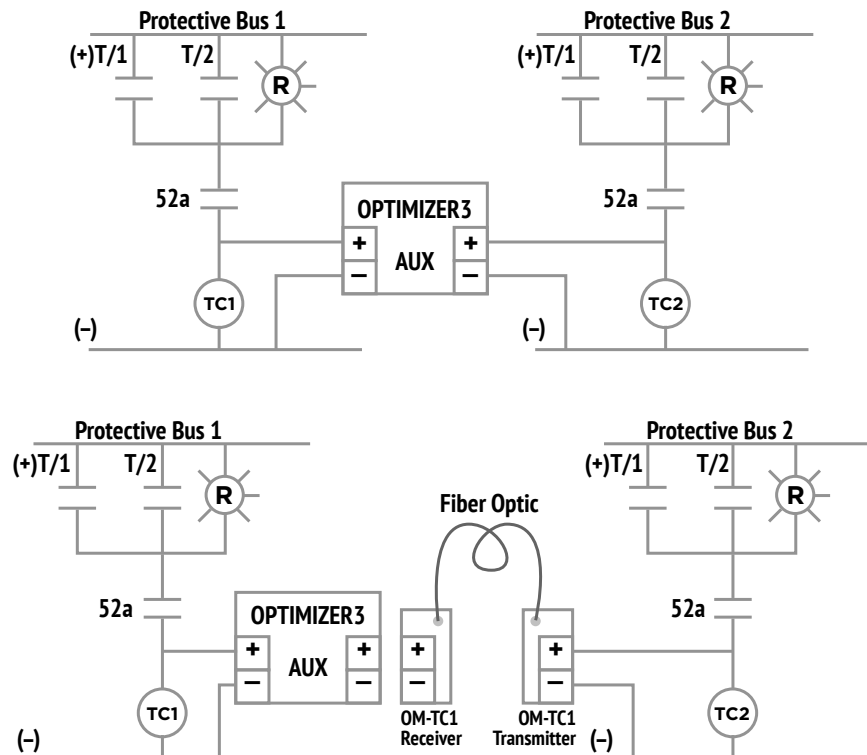
Trip Coils

Does the breaker mechanism have dual (redundant) trip coils (TC1, TC2)?

Yes No

If yes, is there a requirement (such as NPCC Directory #4) preventing the trip circuits from being wired to the same device?

Yes No Note: If yes, the OM-TC1 is needed.



Insulating Medium

Vacuum with Dry Air, do you want to monitor the air pressure?

Yes No

Gas Pressure Gauge

Does the breaker have a single pressure gauge for all three tanks, or does each tank have a gauge?

Single Gauge Three Gauges (one per tank)

Note: If there is a gas pressure gauge for each tank, then 3 pressure sensors will be needed.

Dry Air Gas Moisture

Is there a desire to monitor the dry air moisture?

Yes No

Note: If yes, a dewpoint sensor (DM-DPS) will be needed.

Interrupter Contact Life

Do you want to monitor the interrupter contact life?

Yes No

If yes, what is the maximum short-circuit fault current of the breaker or electrical system (whichever is less)?

Amps Max.

What is the bushing CT ratio of the current tap being used?

: 5

MEIDEN AMERICA SWITCHGEAR INC.

BUSHING CURRENT TRANSFORMERS RATIO TYPES

CUSTOMER P.O.	MFG. DATE	FREQUENCY
4500123211	2021	60Hz

LOCATION	PART NO.	NOM. PRIM. RATING	NOM. SEC. RATING	ANSI ACC. CLASS	T.R.F.	CT RATINGS	RATIO TYPE
T-2-3-4-5-6 X&Y	31-C0000B14	2000A	SA	C800	2.0	TABLE 3	MULTI

TABLE 1	CURRENT RATIO	50:5	100:5	150:5	200:5	250:5	300:5	400:5	450:5	500:5	600:5
600:5	SECONDARY TAPS	X2-X3	X1-X2	X1-X3	X4-X5	X3-X4	X2-X4	X1-X4	X3-X5	X2-X5	X1-X5

TABLE 2	CURRENT RATIO	100:5	200:5	300:5	400:5	500:5	600:5	800:5	900:5	1000:5	1200:5
1200:5	SECONDARY TAPS	X2-X3	X1-X2	X1-X3	X4-X5	X3-X4	X2-X4	X1-X4	X3-X5	X2-X5	X1-X5

TABLE 3	CURRENT RATIO	300:5	400:5	500:5	800:5	1100:5	1200:5	1500:5	1600:5	2000:5
2000:5	SECONDARY TAPS	X3-X4	X1-X2	X4-X5	X2-X3	X2-X4	X1-X3	X1-X4	X2-X5	X1-X5

TABLE 4	CURRENT RATIO	300:5	500:5	800:5	1000:5	1200:5	1500:5	2000:5	2200:5	2500:5	3000:5
3000:5	SECONDARY TAPS	X3-X4	X4-X5	X3-X5	X1-X2	X2-X3	X2-X4	X2-X5	X1-X3	X1-X4	X1-X5

TABLE 5	CURRENT RATIO									
	SECONDARY TAPS									

BCT LOCATION LEGEND

5X-5Y-5Z | 6Z-5Y-5X
 3X-3Y-3Z | 4Z-3Y-3X
 1X-1Y-1Z | 2Z-1Y-1X

OPERATING CURRENT RATING

MEIDEN AMERICA SWITCHGEAR, INC. GRAY COURT, SC
 MADE IN USA P/N: 31-N0001B01

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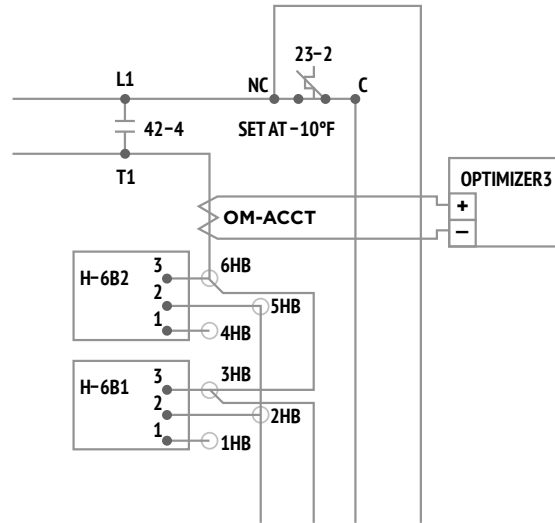
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Mechanism Charging Motor

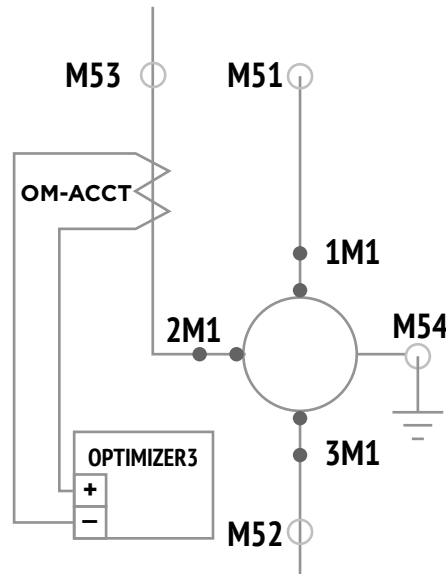
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Yes No

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Generic Temperature Monitoring

Do you want to monitor any generic temperature?

Yes No

Temperature -40°C to +120°C, use OM-TS

Alarm Status & Monitoring Data

Do you plan to connect the Optimizer3 to your substation network to retrieve alarm status and monitoring data?

Yes No Note: DNP3 and IEC-61850 are the only data retrieval protocols available.

If yes, do you prefer a copper Ethernet or fiber optic network connection?

Copper Ethernet (standard on OM3D) Fiber (optional, available on the OM3D-F)

Which data retrieval protocol is needed?

DNP3 IEC-61850 Note: If IEC-61850, the OM-PC-61850 Protocol Converter is needed.

Optimizer3 Mounting

Where will the Optimizer3 be mounted?

In the existing breaker control/mechanism cabinet In a new/separate enclosure

Magnetic Mounting

Do you want to magnetically-mount or screw-mount the Optimizer3 to your cabinet or panel?

Magnetic Mount, use OM-MMK Screw-Mount

