

NOTE: This preparation guide form requires information to be supplied by Purchaser. Those items preceded by ☐ check box are optional. Those items denoted _____ require quantity or data to be added.

GENERAL

The equipment outlined in this specification will consist of Siemens-Allis type R METAL ENCLOSED LOW VOLTAGE POWER CIRCUIT BREAKER SWITCHGEAR with drawout Low Voltage Power Circuit Breakers, compartments, bus work and miscellaneous equipment for this application. General construction features will be as described. The complete switchgear sections will be of coordinated design so that shipping groups are easily connected together in the field into a continuous line-up. Necessary standard connecting materials will be furnished.

Suitable solderless cable lugs will be provided for each of the customers feeder cables. Nameplates will be provided for each circuit breaker compartment.

CODES AND STANDARDS

The Siemens-Allis switchgear covered in this specification will be designed, manufactured, and tested in accordance with the latest revisions of the applicable standards of:

ANSI - American National Standards Institute
NEMA - National Electrical Manufacturers Association
ASTM - American Society for Testing and Materials
IEEE - Institute of Electrical and Electronics Engineers
NEC - National Electric Code
OSHA - Occupational Safety and Health Administration
UL - Underwriters Laboratories

SERVICE

The switchgear sections will be Siemens-Allis Type ☐ R, indoor, ☐ "SR", outdoor rated 600 volts. This equipment will operate on service voltage of _____ volts, ☐ 50, ☐ 60 hertz, 3-phase, ☐ 3, ☐ 4 wire.

FRAMEWORK AND COMPARTMENTATION

The framework of indoor low voltage switchgear is constructed of preformed steel channels, angles and side sheets bolted together and reinforced to form a rigid, self-supporting, compact assembly. Steel side sheets are attached to this framework. The side sheets are pre-wired. Horizontal barriers are provided to form the individual circuit breaker/metering cells.

The circuit breakers are barriered from the bus/cable compartment with the primary disconnect support assembly which completes the circuit breaker compartmentation. A hinged front door, secured with 1 or 2 rotary fastener, is provided for each cell.

The bus compartment includes the main horizontal bus, vertical bus connections from the main bus to the upper set of primary disconnects, and load side insulated "run-back" copper bus from the lower set of primary disconnects in each circuit breaker compartment. The cable lugs are accessible in the cable compartment without reaching over the main bus.

The switchgear is of totally metal-enclosed ventilated multiple unit construction. The front of the switchgear is comprised of individually enclosed circuit breaker, metering and auxiliary cells divided one from another by 14 gauge side sheets and

compartment barriers of 11 gauge steel. Each vertical unit consists of three or four circuit breaker and/or metering cells in a width of 22 or 30 inches. End units normally include provisions for future main bus extension and installation of additional units.

CIRCUIT BREAKERS

Circuit breakers will be Siemens-Allis low voltage power circuit breaker types RL, RLX or RLF. Interrupting ratings, as listed in the detailed specifications meet or exceed the industry's standard for type "RL" circuit breakers, as listed in ANSI C37.16-1973. Type "RLX" circuit breakers exceed this standard. Circuit breakers are 600-volt class, three pole, single throw, drawout mounted, electrically and mechanically trip free with stored energy operator. Each will have arc quenchers, main and arcing contact structure, a three phase solid state overcurrent trip device, trip actuator, three tripping transformers, contact position indicator (open-closed), stored energy mechanical indicator (charged-discharged), primary disconnecting devices, and a mechanical interlock to prevent making or breaking contact of the primary disconnects when the circuit breaker is closed.

OVERCURRENT TRIP DEVICE

Each low voltage power circuit breaker will be equipped with an integrally mounted Static Trip II overcurrent trip device providing any combination of continuously adjustable Long Time, Short Time, Instantaneous and Ground Fault protection.

BUS

The main bus runs horizontally in a vertical, edge to edge arrangement behind the vertical riser bus. Available ratings are 1600, 2000, 3200, 4000 and 5000 Amps.

Main bus (horizontal and vertical) can be optionally insulated.

WEATHERPROOF HOUSING (OPTIONAL)

Outdoor walk-in weatherproof construction will be provided. Front and rear doors will be gasketed and hinged. Front doors, located at each end, will include panic hardware, three-point latches and provision for padlocking, while rear doors will be bolted. An aisle approximately 42 inches deep and accessible from either of the front doors will be provided at the front of the switchgear line-up to facilitate inspection and testing of the circuit breakers and associated equipment while protected from the weather. One hand-operated crane, mounted above the switchgear aisle-way, will be provided to facilitate removal and handling of the circuit breaker elements. An 8" extension on both ends of the operating aisle eliminates the need for special enclosure design to accommodate doors on end units that have instrumentation and metering, and provides additional space for convenient circuit breaker handling.

The following equipment will be furnished within the outdoor weatherproof switchgear: light sockets for interior illumination of the aisle, convenience receptacles and space heaters in the switchgear to prevent condensation of moisture, a switch for all the space heaters, and a switch for the lamps.

The complete assembly will rest on a formed steel base built up from units provided under each vertical section and running perpendicular to the length of the switchgear. The underside of the enclosure and base structure will be undercoated with coal tar emulsion material.

DETAILED SPECIFICATIONS

This detailed specification will describe ____ group(s) of Siemens-Allis METAL-ENCLOSED LOW VOLTAGE POWER CIRCUIT BREAKER SWITCHGEAR, type ☐ R, ☐ SR, with type ☐ RL, ☐ RLX (extended ratings), ☐ RLF (Fused) Circuit Breakers. These assemblies will be equipped as follows:

1-Set ☐ 5000A, ☐ 4000A, ☐ 3200A, ☐ 2000A, ☐ 1600A, 3-Phase, 3 Wire,

☐ Copper Main bus, bolted and silver-plated at connection points

☐ Aluminum main bus, welded at connection points.

☐ 1-Neutral bus, ☐ Copper, ☐ Aluminum, ☐ 50%, ☐ 100%, of main bus rating (optional).

1-Ground bus, Copper.

☐ 1-Set of space heaters, one located in the main bus compartment, and one space heater per cell of each vertical unit.

☐ 1-Set thermostats as required for space heater control.

1-Set of nameplates as required.

☐ 1-Set of metal barriers between the incoming line bus and main bus.

1-Set of barriers between the main bus sections at the tie circuit breaker.

____ -Transition section(s), for connection to liquid-filled transformer.

____ -Bus connection(s) to dry-type transformer.

☐ 1-Transition section, for connection to Motor Control Center.

☐ Switchgear to be labeled per UL 1558, where component selection permits.

☐ Switchgear is to be designed per NEC service entrance requirements.

Circuit breaker, auxiliary and metering cells will be as specified below:

INCOMING METERING CELL NO. _____

This cell will contain:

____-Potential transformer(s), ____/120 volt ratio, dry type, complete with primary current limiting fuses and secondary fuses.

____-Current transformers, ____/5 ampere ratio (when no main breaker).

☐ 1-Control power transformer, dry type, ☐ 3, ☐ 5, ☐ 10 KVA, single phase, ____-120/240 volt ratio, complete with primary current limiting fuses and secondary fuses, to supply auxiliary power.

____-RQ 21 3-phase thermal overload relays for motor protection.

____-Auxiliary relays, multi-contact.

____-Auxiliary relays, single-contact.

____-Ground detection transformers, complete with primary current limiting fuses.

____-Auxiliary current transformers.

____-Voltage transducer(s).

____-Current transducer(s).

____-Capacitor trip device (one per breaker or auxiliary relay if

On the front of the panel will be:

____-Voltmeter(s), single-phase, indicating, 270° scale, switch-board class, 1% accuracy.

____-Voltmeter(s), single-phase, indicating, 180° scale, 2% accuracy.

____-Voltmeter transfer switches, 3-phase.

____-Ammeter(s), single-phase, indicating, 270° scale, switch-board class, 1% accuracy.

____-Ammeter(s), single-phase, indicating, 180° scale, 2% accuracy.

____-Ammeter transfer switches, 3-phase.

____-Wattmeter(s), 3-phase, indicating.

____-Power factor meter(s), indicating.

____-Varmeter(s), 3-phase, indicating.

____-Watthour meter(s), ____-element.

____-Watthour meter(s), ____-element, with demand attachment.

____-Overcurrent relay(s), device No. ____.

____-Undervoltage relay(s), device No. 27.

____-Overvoltage relay(s), Device No. 59.

____-Lockout relay(s), device No. 86.

☐ Current test block.

☐ Potential test block.

☐ 1-Set of three (3) ground detector lights indicating, with test pushbutton.

____-Circuit breaker control switch(es), Siemens-Allis type "210", complete with one red and one green indicating lights.

MAIN BREAKER CELL NO. _____

____-Type RL- ____ air circuit breaker, ☐ electrically, ☐ manually operated. Mounted on the circuit breaker will be:

☐ 1-Static Trip II solid state overcurrent trip device with Type ☐ TI(OT), ☐ TS(OT), ☐ TSI(OT), tripping characteristics.

☐ 1-Static Trip II solid state overcurrent trip device with Type ☐ TI(2T), ☐ TIG(3T), ☐ TS(2T), ☐ TSG(3T), ☐ TSI(2T), ☐ TSI(3T) tripping characteristics and indicating trip targets.

☐ 1-Set of three current limiting fuses with an interrupting rating of 200,000A symmetrical, plus blown fuse indication and a lock-out system to trip circuit breaker upon blowing of any fuse.

☐ 1-Undervoltage trip device, instantaneous.

☐ 1-Undervoltage trip device, time delay.

☐ 1-Shunt trip device.

☐ 1-Overcurrent bell alarm device.

☐ 1-Operation counter.

☐ 1-4 Stage auxiliary switch, mechanism operated. (MOC)

☐ 1-Shutter assembly, of grounded metal, to isolate primary disconnects upon withdrawal of circuit breaker element.

☐ Cable lugs, for connection of ____ cable/phase.

____-Current transformers, ____/5 ampere ratio.

☐ 1-8 Stage cell mounted auxiliary switch, mechanism operated.

Switchgear Division

Specifications

- ☐ 1-8 Stage cell mounted cell switch (TOC).
 - ☐ 1-Set insulated copper "run back" bus for connection of customer's cables to main circuit breaker line side primary disconnects.
 - ☐ 1-Set bus risers rated _____ A, _____ wire, for connection of bus duct to main breaker line side primary disconnects. "
 - ☐ 1-Key interlock for interlocking circuit breaker with primary switch.
 - ☐ Key interlock for interlocking main breaker with tie breaker.
- On the front of the panel will be:
- ☐ 1-Circuit breaker control switch, miniature rotary type, complete with one red and one green indicating lights.
 - ☐ 1-Ammeter, single-phase, indicating, 180° scale, 2% accuracy.
 - ☐ 1-Ammeter transfer switch, 3-phase.
 - ☐ 1-Current test block.

FEEDER BREAKER CELL NO. _____.

_____-Type RL- _____ air circuit breaker, ☐ electrically, ☐ manually operated. Mounted on the circuit breaker will be:

- ☐ 1-Static Trip II solid state overcurrent trip device with Type ☐ TI(OT), ☐ TS(OT), ☐ TSI(OT) tripping characteristics.
- ☐ 1-Static Trip II solid state overcurrent trip device with Type ☐ TI(2T), ☐ TIG(3T), ☐ TS(2T), ☐ TSG(3T), ☐ TSI(2T), ☐ TSIG(3T) tripping characteristics and indicating trip targets.
- ☐ 1-Set of three current limiting fuses with an interrupting rating of 200,000A symmetrical, plus blown fuse indication and a lock-out system to trip circuit breaker upon blowing of any fuse.
- ☐ 1-Undervoltage trip device, instantaneous.
- ☐ 1-Undervoltage trip device, time delay.
- ☐ 1-Shunt trip device.
- ☐ 1-Overcurrent bell alarm device.
- ☐ 1-Operation counter.
- ☐ 1-4 Stage auxiliary switch, mechanism operated (MOC)
- ☐ 1-Shutter assembly, of grounded metal, to isolate primary disconnects upon withdrawal of circuit breaker element.
- ☐ Cable lugs, for connection of _____ cable/phase.
- _____-Current transformers, _____/5 ampere ratio.
- ☐ 1-8 Stage cell mounted auxiliary switch, mechanism operated. (MOC)
- ☐ 1-8 Stage cell mounted cell switch (TOC).

- ☐ 1-Set insulated copper "run-back" bus for connection of customer's cables to feeder circuit breaker load side primary disconnects.

On the front of the panel will be:

- ☐ 1-Circuit breaker control switch, miniature rotary type, complete with one red and one green indicating lights.
- ☐ 1-Ammeter, single-phase, indicating, 180° scale, 2% accuracy.
- ☐ 1-Ammeter transfer switch, 3-phase.
- ☐ 1-Current test block.
- ☐ 1-Key interlock for interlocking circuit breaker with primary switch.
- ☐ 1-Key interlock for interlocking circuit breaker with main breaker.

TIE BREAKER CELL NO. _____.

_____-Type RL- _____ air circuit breaker, ☐ electrically, ☐ manually operated. Mounted on the circuit breaker will be:

- ☐ 1-Static Trip II solid state overcurrent trip device with Type ☐ TI(OT), ☐ TS(OT), ☐ TSI(OT) tripping characteristics.
 - ☐ 1-Static Trip II solid state overcurrent trip device with Type ☐ TI(2T), ☐ TIG(3T), ☐ TS(2T), ☐ TSG(3T), ☐ TSI(2T), ☐ TSIG(3T) tripping characteristics and indicating trip targets.
 - ☐ 1-Set of three current limiting fuses with an interrupting rating of 200,000A symmetrical, plus blown fuse indication and a lock-out system to trip circuit breaker upon blowing of any base.
 - ☐ 1-Undervoltage trip device, instantaneous.
 - ☐ 1-Undervoltage trip device, time delay.
 - ☐ 1-Shunt trip device.
 - ☐ 1-Overcurrent bell alarm device.
 - ☐ 1-Operation counter.
 - ☐ 1-4 Stage auxiliary switch, mechanism operated. (MOC)
 - ☐ 1-Shutter assembly, of grounded metal, to isolate primary disconnects upon withdrawal of circuit breaker element.
 - ☐ -Current transformers, _____/5 ampere ratio.
 - ☐ 1-8 Stage cell mounted auxiliary switch, mechanism operated. (MOC)
 - ☐ 1-8 Stage cell mounted cell switch (TOC).
 - ☐ 1-Key interlock for interlocking tie CB with both main CB's.
- On the front of the panel will be:
- ☐ 1-Circuit breaker control switch, miniature rotary type, complete with one red and one green indicating lights.
 - ☐ 1-Ammeter, single-phase, indicating, 180° scale, 2% accuracy.
 - ☐ 1-Ammeter transfer switch, 3-phase.
 - ☐ 1-Current test block.

FUTURE FEEDER CELL NO. _____.

- ☐ This cell will be equipped for the future addition of a _____ circuit breaker ☐ manually, ☐ electrically operated. (Specify Frame Size).

BLANK CELL NO. _____.

- ☐ This cell will be blank.

ACCESSORIES

- 1- Crank for manual operation of the circuit breaker drawout mechanism.
- 1- Lifting yoke for lifting circuit breaker elements.
- 1- Quart of touch-up paint.
- 1- Maintenance closing device for electricity operated circuit breakers.
- ☐ 1-Test plug, less cable, for drawout watt-hour meters and/or switchboard class relays.
- ☐ 1-Portable test set, type PTS-3, for testing of the solid state trip devices.
- ☐ 1-Overhead breaker lifting device. (Standard for outdoor switchgear.)