WIRING DIAGRAMS

A Reference Resource for CENTERLINE® Motor Control Centers
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Wiring Class

Class I
Independent Units

Class I motor control centers (MCC) consist of mechanical groupings of combination starter units, feeder and other units, and electrical devices arranged in a convenient package.

Allen–Bradley furnishes drawings that include:

- Overall dimensions of the MCC, identification of units and their locations in the MCC, locations of incoming line terminals, mounting dimensions, and available conduit entrances.

- Standard diagrams for individual units consisting of drawings that identify electrical devices, indicate electrical connections, and indicate terminal numbering designations.

When a combination schematic and / or wiring diagram for a unit is supplied showing optional devices, Allen–Bradley provides information to indicate which devices are actually furnished.
Class II Interconnected Units

Class II motor control centers are the same as Class I but with the addition of fact furnished electrical interlocking and wiring between units, a specifically described in overall control system diagrams supplied by the purchaser. In addition to the drawings furnished for Class I MCCs, Allen–Bradley furnishes drawings that show factory interconnections within the MCC.

Class I–S & Class II–S Motor Control Centers Requiring Custom Drawings

Class I–S and Class II–S motor control centers are the same as Class I and Class II MCCs except that custom drawings are provided as specified by the customer rather than standard drawings. Examples are:

- special identifications for electrical devices
- special terminal numbering designations
- special drawing sizes.

These drawings give the same information as those for Class I and Class II motor control centers, plus show customer modifications.
Wiring Type

Type A Wiring – No Terminal Blocks

Type A wiring is available for Class I motor control centers. When Type A wiring is specified, components within the unit are wired directly to each other, and no terminal blocks are supplied for customer wiring. The customer must connect external control and load wiring directly to the electrical devices within the unit. See Photo 1 on page 6.

Type B Wiring – Terminal Blocks

Type B wiring is available for Class I and Class II motor control centers. NEMA/EEMAC defines Type B wiring as follows:

ICS 2-322.10 TYPES OF WIRING

.02 Type B

a. Type B user field load wiring for combination motor control units size 3 or smaller shall be designated as B–D or B–T, according to the following

B–D connects directly to the device terminals, which are located immediately adjacent, and readily accessible, to the vertical wireway

B–T connects directly to a load terminal block in, or adjacent to, the unit.

NEMA Standard 3–6–1985

b. Type B user field load wiring for combination motor control units larger than size 3, and for feeder tap units, shall connect directly to unit device terminals.

NEMA Standard 3–6–1985

c. Type B user field control wiring shall connect directly to unit terminal block(s) located in or adjacent to each combination motor control unit.

NEMA Standard 3–6–1985
CENTERLINE Motor Control Centers provide the following:

<table>
<thead>
<tr>
<th></th>
<th>Type B–T</th>
<th>Type B–D</th>
<th>Type B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power wired to terminal blocks (See Photo 2 on page 6)</td>
<td>Pull apart control Pull apart power</td>
<td>Pull apart control No power terminal blocks</td>
<td>N/A</td>
</tr>
<tr>
<td>Size 1, 2 (except 0.5 space factor)</td>
<td>Pull apart power</td>
<td>Pull apart control No power terminal blocks</td>
<td>N/A</td>
</tr>
<tr>
<td>Size 3</td>
<td>Pull apart control Non-pull apart power</td>
<td>Pull apart control No power terminal blocks</td>
<td>N/A</td>
</tr>
<tr>
<td>Size 4 and larger</td>
<td>N/A</td>
<td>N/A</td>
<td>Pull apart control No power terminal blocks</td>
</tr>
<tr>
<td>0.5 space factor units and Bul. 2400 units.</td>
<td>Pull apart control terminal blocks</td>
<td>No power terminal blocks</td>
<td></td>
</tr>
</tbody>
</table>

N/A = Not applicable, undefined by NEMA/EEMAC

**Type C Wiring – Master Terminal Compartment**

Type C wiring is available for Class II motor control centers. See Photo 4 on page 7.

Control wiring from each unit within an MCC section is wired from the unit’s terminal blocks to master terminal blocks contained in a separate unit mounted at the top or bottom of that section.

The customer connects the external control wires to the master terminal blocks. The customer connects the load wiring for size 3 or smaller to the master terminal blocks. The customer connects the load wiring for size 4 or larger to unit device terminals.
Photo 1. Type A Wiring

Photo 2. Type B–T Wiring
Photo 3. Type B–D Wiring

Photo 4. Type C Wiring
### Customer Wiring

The method that a customer uses to connect their external wiring differs depending upon whether or not terminal blocks are supplied:

<table>
<thead>
<tr>
<th>When control and/or power terminal blocks are supplied:</th>
<th>When no terminal blocks are supplied:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The customer’s external control and/or load wires are connected to those blocks that are located adjacent to the vertical wireway and are readily accessible.</td>
<td>The customer must connect the external control and load wires directly to the applicable electrical devices internal to the unit.</td>
</tr>
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</table>
Control Circuit Wiring and Devices

Control Circuit Wiring
For Bulletin 2100 units, the standard control circuit wiring is 16 AWG copper wire with Type MTW (TEW) insulation. 14 AWG (tinned) copper wire with Type MTW (TEW) insulation and 14 AWG (tinned) copper wire with Type SIS insulation are other available options (when specifications do not allow PVC insulation).

For Bulletin 2400 units, the standard control circuit wiring is 18 AWG copper wire with Type MTW (TEW) insulation. 16 AWG copper wire with Type MTW (TEW) insulation is also available as an option.

Terminal Blocks
Different terminal blocks will accept different wire quantities and sizes. The maximum wire sizes accepted are as follows:

<table>
<thead>
<tr>
<th>Pull–apart Terminal Blocks</th>
<th>Maximum Wires Per Pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>5–pole control</td>
<td>Two (2) 14 AWG wires or One (1) 12 AWG wire</td>
</tr>
<tr>
<td>3–pole power</td>
<td>One (1) 4 AWG wire</td>
</tr>
<tr>
<td>10–pole control (used on all 0.5 space factor units)</td>
<td>Two (2) 18 AWG wires or One (1) 16 AWG wire</td>
</tr>
</tbody>
</table>

Pilot Devices
There are several types of pilot devices supplied on our Bulletin 2100 and 2400 units. The maximum wire sizes accepted are as follows:

<table>
<thead>
<tr>
<th>Pilot Device</th>
<th>Maximum Wires Per Pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulletin 800T</td>
<td>Two (2) 14 AWG wires</td>
</tr>
<tr>
<td>Bulletin 800M (w/small terminals)</td>
<td>One (1) 14 AWG wire</td>
</tr>
<tr>
<td>Bulletin 800M (w/large terminals)</td>
<td>Two (2) 12 AWG wires</td>
</tr>
<tr>
<td>Bulletin 800E</td>
<td>Two (2) 14 AWG wires or One (1) 12 AWG wire</td>
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</table>

For further information on types of pilot devices supplied with each unit, see Publication 2100–3.0.
### Schematic Symbols

<table>
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<th>US/Canadian</th>
<th>International / British</th>
<th>German</th>
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<tr>
<td>Three-Pole Circuit Breaker</td>
<td><img src="image1" alt="Symbol" /></td>
<td><img src="image2" alt="Symbol" /></td>
<td><img src="image3" alt="Symbol" /></td>
</tr>
<tr>
<td>Three-Pole Disconnect Switch</td>
<td><img src="image4" alt="Symbol" /></td>
<td><img src="image5" alt="Symbol" /></td>
<td><img src="image6" alt="Symbol" /></td>
</tr>
<tr>
<td>Three-Pole Fusible Disconnect Switch</td>
<td><img src="image7" alt="Symbol" /></td>
<td><img src="image8" alt="Symbol" /></td>
<td><img src="image9" alt="Symbol" /></td>
</tr>
<tr>
<td>IEC Fusible Disconnect Switch</td>
<td><img src="image10" alt="Symbol" /></td>
<td><img src="image11" alt="Symbol" /></td>
<td><img src="image12" alt="Symbol" /></td>
</tr>
</tbody>
</table>

**Three-Pole Circuit Breaker**

An automatic device that under abnormal conditions will open a current–carrying circuit without damaging itself (unlike a fuse that must be replaced when it blows).

**Three-Pole Disconnect Switch**

Generally, an air–break switch, however, containing no fuses. A power circuit employing this type of switch must have some kind of circuit protection elsewhere.

**Three-Pole Fusible Disconnect Switch**

Generally, an air–break switch with a fusing unit in the blade. Used for opening and closing power circuits.

**IEC Fusible Disconnect Switch**

An application–rated version of an air–break switch with a fusing unit in the blade.
Node

Dark black nodes on a circuit schematic indicate that an electrical connection is made. It is a point of connection for two or more conductors in an electrical circuit.

Terminal Block (TB)

A device attached to the end of a wire or cable for convenience in making electrical connections.

Connector

A coupling device that provides an electrical and/or mechanical junction between two cables.

Coil

Part of a contactor, motor starter, or relay consisting of a number of turns of wire wound around an iron core. When voltage is applied, an electromagnetic field is set up in the coil causing the contacts of the contactor, starter, or relay to change state.

Surge Suppressor

This device is mounted directly across the coil terminals of contactors and starters with 120V or 240V AC coils. The purpose of the suppressor is to limit voltage transients for applications requiring interface with solid state components.
Contact –
Normally Open (N.O.)

Symbolized by N.O. designation applied to the contacts of a relay or starter when they are connected so that the circuitry will be broken when the relay or starter coil is not energized.

Contact –
Normally Closed (N.C.)

Symbolized by N.C. designation applied to the contacts of a starter or relay when they are connected so that the circuit will be completed when the relay or starter coil is not energized.

Overload Relay

A device that automatically disconnects the circuit whenever the current or temperature becomes excessive.

Overload Relay Contact (OL)

Relay contacts designed to open when its coil current rises above a predetermined value.
**Power Factor Correction Capacitor**

A device that stores electrical energy, blocks the flow of DC, and permits the flow of AC to a degree dependent upon the capacitance and the frequency. Used in an inductive (motor) circuit in order to increase the power factor by making the total current more nearly in phase with the applied voltage.

**SMC Reduced Voltage Motor Starter**

**SMC PLUS Interface Module**

**Fuse**

A protective device that melts and breaks the circuit when the current exceeds the rated value.

**Control Circuit Transformer**

An electrical device that by electromagnetic induction transforms electric energy from the power circuit to the control circuit at the same frequency but at a lower voltage.
Ground

A conductor that carries no current but serves to connect exposed metal surfaces to an earth ground to prevent hazards in case of breakdown between current–carrying parts and the exposed surfaces.

Push Button – Normally Closed

Switch where button must be depressed each time contacts are to be opened.

Push Button – Normally Open

Switch where button must be depressed each time contacts are to be closed.

Selector Switch – 2–Position

A two position switch that permits one conductor to be connected to another conductor.

Selector Switch – 3–Position

A multiposition switch that permits one or more conductors to be connected to any of several other conductors.
Toggle Switch – Normally Open

A two–position snap switch operated by a projecting lever to open or close circuits, contact is normally in the open position.

Toggle Switch – Normally Closed

A two–position snap switch operated by a projecting lever to open or close circuits, contact is normally in the closed position.

Timed Contact – Normally Open, Timed Open

The contact of a timer relay with an appreciable time interval between the de–energizing of the coil and the opening of its contact.

Timed Contact – Normally Closed, Timed Closed

The contact of a timer relay with an appreciable time interval between the de–energizing of the coil and the closing of its contact.

Timed Contact – Normally Open, Timed Closed

The contact of a timer relay with an appreciable time interval between the energizing of the coil and the closing of its contact.

Timed Contact – Normally Closed, Timed Open

The contact of a timer relay with an appreciable time interval between the energizing of the coil and the opening of its contact.
Potentiometer

An electromechanical device having a terminal on each end of the resistive element, and a third terminal connected to the wiper contact. The electrical input is divided as the contact moves over the element, thus making it possible to mechanically change the resistance.

Pilot Light

A light that indicates the state of a circuit.

Pilot Light – Push-To-Test

Similar to a regular pilot light but can be depressed to test if the bulb is functional.

Two Potential Transformers – Schematic Diagram

Three-phase configuration of instrument transformers, the primary windings of which are connected in parallel with the circuit whose voltage is to be measured or controlled.

Current Transformer

A transformer intended for measuring or control purposes and designed to have its primary winding connected in series with a circuit carrying the current to be measured or controlled.
Three–phase current transformer configuration used for inputs to digital metering system.

An electrical instrument used to measure electrical parameters, such as voltage, current, and power.

A machine that converts electric energy into mechanical energy to do work.
Wiring Diagrams

**Connection diagrams**
Allen–Bradley connection diagrams are that portion of the wiring diagram that shows an approximate physical layout of the components that make up the unit. This diagram gives the relative locations of the electrical devices and includes wire numbers for easy identification of how the components are wired together.

**Schematic diagrams**
Allen–Bradley schematic diagrams are the portion of the wiring diagram that shows an electrical representation of how the circuits operate. Both the power and control circuits are represented. The schematic diagram is often used by assemblers to wire the units and by maintenance electricians for installation and troubleshooting purposes.

**Wiring diagrams**
A schematic diagram together with a connection diagram make up an Allen–Bradley “customer specific” wiring diagram. See the following two pages for an example of a full wiring diagram (CS70024150 – Bul. 2113).

**Catalog number specific diagrams**
Beginning on page 22, you will find diagrams that are specific to Allen–Bradley catalog numbers. These diagrams are the schematic portions taken from the full wiring diagrams.
NOTES:

- REMOTE DEVICE
- THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.
NOTES:
1 REMOTE DEVICE
2 INTERNAL CB AUXILIARIES
SUPPLIED WITH UNMOUNTED CONNECTION BLOCKS.
NOTES:

1. REMOTE DEVICE

2. THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

---

REFERENCES

Revision: A 10/18/93

Dimensions: Apply before Surface Treatment

Dimensions or Inches: Tolerances Unless Otherwise Specified

2 Place Decimal: .02

3 Place Decimal: .005

Angles: 15

App. N/A Date N/A

---

ACAD

BUL 2106 SIZE 1-2 (2SF) Type A

---

CS70024115

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REMOTE DEVICE

THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

ON TYPE 'A' WIRING, JUMPER "J1" WILL BE ON DOOR MOUNTED PUSH BUTTONS.
NOTES:

REMOTE DEVICE

- AMPS NAMEPLATE RATIO
- AMPS EFFECTIVE RATIO WITH
- PRIMARY TURNS
- SECONDARY TURNS
- BE SURE TO CONNECT PER
- POLARITY MARKINGS.
- SECONDARY CONNECTIONS OF
- CURRENT TRANSFORMER MUST
- BE CONNECTED TO A LOAD OR
- SHORTED TOGETHER TO AVOID
- A HIGH VOLTAGE ACROSS
- SECONDARY LEADS.

REFERENCES

Bul. 2107  Size 1–2 (1.5SF)  Type B

ACAD
NOTES

1

REMOTE DEVICE

UNIT INSTALLATION

THE HANDLE EXTENDER KIT, 2100-NE1, MAY BE NECESSARY FOR ANY TOP UNIT OPERATING HANDLES THAT ARE HIGHER THAN 6-1/2 FEET OFF THE GROUND FOR COMPLIANCE WITH NEC.
CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.

ADDITIONAL CONTROL CIRCUIT OVERCURRENT PROTECTION MAY BE REQUIRED WHEN THE CONTROL CIRCUIT CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.

REFERENCES

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<th>Date 10/02/93</th>
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<table>
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<tr>
<th>CS70024135</th>
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NOTES:

1. REMOTE DEVICE

2. ADDITIONAL CONTROL CIRCUIT OVERCURRENT PROTECTION MAY BE REQUIRED WHEN THE CONTROL CIRCUIT CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.
NOTES:

1. REMOTE DEVICE

2. THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

X. THIS IS AN EXTERNAL CIRCUIT BREAKER AUXILIARY AND SHOULD NOT BE USED FOR BREAKER TRIP INDICATION.
NOTES:

1. REMOTE DEVICE

2. MOTOR WINDINGS

T1
T11
T12
T13
T2
T3

NEMA STANDARD MOTOR CONNECTIONS

<table>
<thead>
<tr>
<th>SPEED</th>
<th>UNINES</th>
<th>OPEN</th>
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<tr>
<td>LOW</td>
<td>L1, L2</td>
<td>L3</td>
</tr>
<tr>
<td>T1, T2</td>
<td>T3</td>
<td>T13</td>
</tr>
<tr>
<td>HIGH</td>
<td>T11, T12</td>
<td>T13</td>
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References

Bul. 2122E Size 1-2

Type B

ACAD

Dimensions Apply Before Surface Treatment

Dimensions in Inches

Tolerances Unless Otherwise Specified

Degrees Decimal

2 Place Decimal

3 Place Decimal

Angles * 15

References

Revision

Release

A 10/18/93

References

Dr, PPEN677B

Chkd. N/A

Angles * 15

References

Appd. N/A

References

Sheet 1

Of 1

Dwg. Size

CS70024136

Packaged Control Caddis
NOTES:

1. REMOTE DEVICE

2. MOTOR WINDINGS
   - T1: 1A
   - T2: 2
   - T3: 3
   - T4: 4
   - T5: 5
   - T6: 6

   CONSTANT TORQUE
   - L1: T1
   - L2: T2
   - L3: T3

   VARIABLE TORQUE
   - L4: T4
   - L5: T5
   - L6: T6

3. ADDITIONAL CONTROL CIRCUIT OVERCURRENT PROTECTION MAY BE REQUIRED WHEN THE CONTROL CIRCUIT CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.

MOTOR CONNECTIONS
- T1
- T2
- T3
- T4
- T5
- T6

REMOTE DEVICE
- T1
- T2
- T3
- T4
- T5
- T6

CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.
NOTES:

1. REMOTE DEVICE

2. T13 MOTOR WINDINGS

3. THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

References

BUL 2123E SIZE 3

TYPE A

ACAD

Dimensions Apply Before Surface Treatment

Dimensions in Inches Tolerances Unless Otherwise Specified

2 Place Decimal

3 Place Decimal

Angles * 15

Appd. N/A

Dwgt. Size

CS70024137

02

005

Dr. PPEN077B

Date 10/02/93

Chkd. N/A

Date N/A

2 Sheet 1 Of 1

D Packaged Control Caddys
NOTES:
1. REMOTE DEVICE
2. MOTOR WINDINGS
   - T1, T2, T3, T4, T5, T6
   - Constant Torque
   - Variable Torque

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<tr>
<th>SPEED</th>
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<tr>
<td>LOW</td>
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<td>T2, T3</td>
</tr>
<tr>
<td>HIGH</td>
<td>T6</td>
<td>T4, T5, T6</td>
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NEMA STANDARD MOTOR CONNECTIONS

- 1A2X 120V SEPARATE CONTROL
- "J1" STOP
- "J2" 120V SEPARATE CONTROL

ACAD

References

BUL 2123F  SIZE 3  TYPE B

ACAD

Dimensions: 10/02/93

Surface Plan

Drawing

1

Sheet

CS70024139
NOTES:

1. REMOTE DEVICE

2. MOTOR WINDINGS

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SYNOPSIS OF MOTOR CONNECTIONS

(TYPE "B" WIRING ONLY)

REVISION HISTORY

References

BUL. 2126E SIZE 1-2

TYPE A

ACAD
NOTES:

1. REMOTE DEVICE

2. SYNOPSIS OF MOTOR CONNECTIONS

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<td>T5</td>
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3. ADDITIONAL CONTROL CIRCUIT OVERCURRENT PROTECTION MAY BE REQUIRED WHEN THE CONTROL CIRCUIT CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.

References

BUL. 2126F SIZE 1-2

TYPE B

ACAD
NOTES:

1. REMOTE DEVICE

2. PLACE DECIMAL OTHERWISE SPECIFIED

3. PLACE DECIMAL .005

THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

SYNOPSIS OF MOTOR CONNECTIONS

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REFERENCES

ACAD

ALLEN-BRADLEY

PACKAGED CONTROL CADDS

CS70043574

Sheet 1 of 1

Dimensions Apply Before Surface Treatment

Angles 1°
NOTES:

1. REMOTE DEVICE

2. BULLETIN 150 SOLID STATE MOTOR CONTROLLER. REFER TO PUB. 150-811 FOR APPLICATION DATA.

3. THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER PRIMARY FUSING NOT REQUIRED.

4. FOR SET-UP OF SOFT STOP FEATURE, REFER TO PUB. 150-805.

References

BUL. 2154F  45–54 AMP

ACAD

TYPE B

WITH SOFT STOP FEATURE

Dr.PFEN577B  Date 10/02/93

Chkd. N/A  Date N/A

Appd. N/A  Date N/A
NOTES:
1 REMOTE DEVICE

2 BULLETIN 150 SOLID STATE MOTOR CONTROLLER. REFER TO PUBLICATION 150-811 FOR APPLICATION DATA.

3 THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

4 TDR TIME DELAY SETTING MUST EXCEED SMC PLUS STARTING TIME & MOTOR ACCELERATION TIME BY 2 TO 5 SECONDS.

5 FOR SET-UP OF SLOW SPEED WITH BRAKING FEATURE, REFER TO PUB. 150-810.

References
Revision Release
A 10/18/93

Dimensions
2 Place Decimal
3 Place Decimal

Angles ± 1°

ACAD

BUL 2155F 30-35 AMP TYPE B WITH SLOW SPEED WITH BRAKING FEATURE

Dimensions Apply Before Surface Treatment

Tolerances Unless Otherwise Specified

Dr. PP5777B Date 10/02/93

Chkd. N/A Date N/A

Appd. N/A Date N/A

CS70043577
NOTES:

1. REMOTE DEVICE

2. REFER TO BUL. 1333-5.2 FOR INTERNAL WIRING.

3. SPEED POT WIRING MUST BE TWISTED THREE CONDUCTOR SHIELDED WIRE, HAVING (2) TO (3) TWISTS PER INCH. IF THE POT IS REMOTELY MOUNTED THE WIRING MUST BE RUN IN SEPARATE STEEL CONDUIT TO ELIMINATE THE POSSIBILITY OF ELECTRICAL NOISE. THE SHIELD MUST BE GROUNDED AT THE CONTROLLER END ONLY.

DRIVE LEGEND

1. DRIVE TERMINAL BLOCKS

AC DRIVE

BUL. 1333 VARIABLE FREQUENCY

References

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Package Control Cads
NOTES:

REMOTE DEVICE

REFER TO BUL. 1336-5.0 FOR INTERNAL WIRING.

DRIVE LEGEND

TB1 TERMINAL BLOCKS

TB2 TERMINAL BLOCKS

TB3 TERMINAL BLOCKS

REFERENCES

Revision
A 10/18/93

Release

Dimensions Apply Before Surface Treatment

Dimensions in Inches Tolerances Unless Otherwise Specified

2 Place Decimal ±.02

3 Place Decimal ±.005

Refer. Book

Angles ± 15

BUL. 1336 ADJUSTABLE FREQUENCY AC MOTOR DRIVE W/ 115VAC LOGIC INTERFACE BOARD
NOTES:

1. REMOTE DEVICE
2. ADDITIONAL CONTROL CIRCUIT OVERCURRENT PROTECTION MAY BE REQUIRED WHEN THE CONTROL CIRCUIT
   CONDUCTORS EXTEND BEYOND THE ENCLOSURE. REFER TO NATIONAL ELECTRICAL CODE.

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Dimensions Apply Before Surface Treatment

Dimensions in Inches Tolerances Unless Otherwise Specified

2 Place Decimal

3 Place Decimal

Angles ± 15

Dr. PPEM5798

Chkd. N/A

Appd. N/A

Packaged Control Caddis
Customer's outgoing load cables
Volts, 3 Ph., Hz

Notes:

- Amps nameplate ratio
- Amps effective ratio with primary turns
- Secondary turns be sure to connect per polarity markings.
- Secondary connections of current transformer must be connected to a current and shorted together to avoid a high voltage across secondary leads.
- Customer is to mount and wire current transformers.

References

Bul. 2191F Outgoing Feeder Lug Compartment

Acad
NOTES:

1. Amps Nameplate Ratio
   Amps Effective Ratio with
   Primary Turns
   Secondary Turns
   Be sure to connect per
   polarity markings.
   Secondary connections of
current transformer must
be connected to a load or
shorted together to avoid
a high voltage across
secondary loads.
   Customer is to mount and
wire current transformers.
   On 6.9F incoming line
compartments, the current
transformers are factory
mounted and wired.

CUSTOMER’S
INCOMING LINE CABLES
VOLTS, 3 PH., HZ

1 CT

(H1) (K1)

11

CHK

GRD

- L1 - 0L1 - 0L2 - 0L3 - LUGS

HORIZONTAL BUS

References

Bul. 2191M Incoming Line Lug
Compartment

ACAD

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CS70024642

Packaged Control Cadis
USER'S INCOMING LINE CABLES

HORIZONTAL BUS

References

BUL. 2192M

ACAD

Dimensions Apply Before Surface Treatment

Dimensions in Inches

Tolerances Unless Otherwise Specified

2 Place Decimal +.02

3 Place Decimal +.005

Date 10/02/93

Dr. PPEN0778

Chkd. N/A

Appd. N/A

CS70024644

Packaged Control Caddis
TO HORIZONTAL BUS

L1

L2

L3

T1

T2

T3

USER'S OUTGOING LOAD CABLES

References

Revision

Dimensions Apply Before Surface Treatment

Tolerances Unless Otherwise Specified

2 Place Decimal

3 Place Decimal

D

Angles ± 15

Dimensions in Inches

T1 T2 T3

TO HORIZONTAL BUS

USER'S OUTGOING LOAD CABLES

CS70002993

1 Of 1

Sheet

ACAD

User's Outgoing Load Cables

Packaged Control Caddis
NOTES:

1. If the system neutral is grounded and phase to neutral loads are used, then the neutral current sensor must be used.

2. If the system neutral is grounded, but no phase to neutral loads are used, the neutral current sensor is not necessary.

3. Be sure to connect per polarity markings.

4. Secondary connections of current sensor must be connected to a load or shorted together to avoid a high voltage across secondary leads.

- Internal CB auxiliaries supplied with unmounted connection blocks.

ATTENTION

Line side power connected to bottom of switch.

De-energize power to switch before servicing.

Failure to de-energize power can result in severe injury or death.
NOTES:

1 OTHER SIDE OF EACH CIRCUIT IS ALSO CONNECTED TO PANEL NEUTRAL.

LIGHTING PANEL SUPPLIED WITH:

7 - 15A. - 1 POLE BREAKER(S)
6 - 30A. - 1 POLE BREAKER(S)
5 - 20A. - 1 POLE BREAKER(S)

REFER TO MANUFACTURERS INSTRUCTIONS FOR INSTALLATION AND TESTING.
INTERNAL CB AUXILIARIES
SUPPLIED WITH UNMOUNTED CONNECTION BLOCKS.

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References

Bul. 2197 37.5 kVA
NOTES:

1. REMOTE DEVICE

2. THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.
NOTES:

REMOTE DEVICE

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| Angles | 15              |

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Packaged Control Caddis

59
NOTES:

- REMOTE DEVICE

ATTENTION
DO NOT USE AUTOMATIC RESET MODE IN APPLICATIONS WHERE UNEXPECTED AUTOMATIC RESTART OF THE MOTOR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

References

BUL. 2406 18–24 AMP
TYPE B

ACAD

References | BUL. 2406 18–24 AMP
--- | ---
Revision | TYPE B
 Release | ACAD
 A 10/18/93 | CS70024108
 Dimensions | Dimensions Apply Before Surface Treatment
 Dimensions in Inches | Tolerances Unless Otherwise Specified
 2 Place Decimal | 2 Place Decimal
 +.02 | +.02
 3 Place Decimal | 3 Place Decimal
 +.005 | +.005
 Refer. Book | Dr. PPEN077B
 Angles * 15 | Date 10/02/93
 Appld. | Date N/A
 Chkd. | Date N/A
 Dwg. Size | Sheet 1 Of 1

ATTENTION
DO NOT USE AUTOMATIC RESET MODE IN APPLICATIONS WHERE UNEXPECTED AUTOMATIC RESTART OF THE MOTOR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.
ATTENTION
DO NOT USE AUTOMATIC RESET MODE IN APPLICATIONS WHERE UNEXPECTED AUTOMATIC RESTART OF THE MOTOR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1A
(SPARSE)

(TYPE "B" WIRING ONLY)

ATTENTION

REMOTE DEVICE

1A

(SPARSE)
NOTES:

1 REMOTE DEVICE

3 ATTENTION
DO NOT USE AUTOMATIC RESET MODE IN APPLICATIONS WHERE UNEXPECTED AUTOMATIC RESTART OF THE MOTOR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

REFERENCES

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PACKAGED CONTROL CARDS

CS70024110
NOTES:

- REMOTE DEVICE
  - THIS UNIT IS SUPPLIED WITH AN INTERNALLY PROTECTED TRANSFORMER. PRIMARY FUSING NOT REQUIRED.

ATTENTION
  - DO NOT USE AUTOMATIC RESET MODE IN APPLICATIONS WHERE UNEXPECTED AUTOMATIC RESTART OF THE MOTOR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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ATTENTION
  - DO NOT USE AUTOMATIC RESET MODE IN APPLICATIONS WHERE UNEXPECTED AUTOMATIC RESTART OF THE MOTOR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.
**NOTES:**

UNIT INSTALLATION

THE HANDLE EXTENDER KIT, 2100-NE1, MAY BE NECESSARY FOR ANY TOP UNIT OPERATING HANDLES THAT ARE HIGHER THAN 6-1/2 FEET OFF THE GROUND FOR COMPLIANCE WITH NEC

---

**References**

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**Bul. 2492F**

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**Diagram**

1. Diagram showing electrical connections with labels L1, L2, L3, T1, T2, T3,
2. User's outgoing load cables indicated,
3. Conversion from inches to feet is illustrated.

---

**Additional Notes**

- The handle extender kit, 2100-NE1, may be necessary for top unit operating handles that are higher than 6-1/2 feet off the ground for compliance with NEC.
AllenBradley, a Rockwell Automation Business, has been helping its customers improve productivity and quality for more than 90 years. We design, manufacture and support a broad range of automation products worldwide. They include logic processors, power and motion control devices, operator interfaces, sensors and a variety of software. Rockwell is one of the world's leading technology companies.

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