

Enclosed Safety Switches General Duty Safety Switches

Table 9: Fusible Safety Switch Short Circuit Current Rating

Fuse Class	UL Listed Short Circuit Rating
Plug	10 kA
H, K	10 kA
J, J, R	100 kA
T2	100 kA

1 Only applicable to 200-600 A except D325NT, D325NTR, D326NT and D326NTR.
2 Only applicable to D325NT, D325NTR, D326NT, D326NTR, T327N and T327NR.

Table 10: Non-Fusible Safety Switch Short Circuit Current Rating

Fuse Class or Circuit Breaker Type 1	UL Listed Short Circuit Rating
Any Brand Circuit Breaker	10 kA
H or J PowerPact Circuit Breaker	Up to 65 kA ²
H, K	10 kA
J, R	100 kA ³
T	100 kA ⁴

1 Ampere rating of fuse or circuit breaker not to exceed switch ampere ratings.
2 Only applicable to DU324 and DU324NRB. HD, JD = 25 kA maximum.
3 SCCR = 50 kA, applicable to DU222RB, DU322 and DU322RB.
4 Only applicable to DU323, DU323RB, DU325 and DU326.

Standards

- General duty safety switches are manufactured in accordance with these standards:
- UL 98, Standard for Enclosed and Dead Front Switches. UL Listed File E2875
 - NEMA Standards Publication KS1, Enclosed Switches
 - Federal Specifications WS-865c for Type NDS (Type 1) and Type LD (Type 3R)

Table 11: Terminal Lug Data 1

Ampere Rating	Conductors Per Phase	Wire Range Wire Bending Space Per NEC® Table 312.6 AWG/kmil	Lug Wire Range AWG/kmil
30 2	1	12-8 (Al) or 14-8 (Cu)	12-8 (Al) or 14-8 (Cu)
30	1	12-5 (Al) or 14-6 (Cu)	12-6 (Al) or 14-5 (Cu)
60	1	12-3 (Al) or 14-3 (Cu)	12-2 (Al) or 14-2 (Cu)
100	1	12-1 (Al) or 14-1 (Cu)	12-1/0 (Al) or 14-1/0 (Cu)
200	1	6-250 (Al/Cu)	6-300 (Al/Cu)
400	1 or 2	1/0-800 (Al/Cu) or 1/0-300 (Al/Cu)	(1) 1/0-800 (Al/Cu) or (2) 1/0-300 (Al/Cu)
400	2	1/0-250 (Al/Cu)	(1) 1/0-800 (Al/Cu) or (2) 1/0-250 (Al/Cu)
600	2	4-500 (Al/Cu)	4-600 (Al/Cu)
800	3	3/0-500 (Al/Cu)	3/0-500 (Al/Cu)

1 30-100 A switches suitable for 60°C (140°F) or 75°C (167°F) conductors. 200-800 A switches suitable for 75°C (167°F) conductors.
2 Light duty switches only.

Heavy Duty Enclosed Safety Switches General Information

Table 44: Terminal Lug Data 1

Rating (A)	Wires Per Phase and Neutral	Wire Range Wire Bending Space Per NEC Table 312.6 AWG/kmil	Lug Wire Range AWG/kmil	Optional 2 Versa-Crimp Compression Lug Field-Installed	Optional 3 Crimp Compression Lug Field-Installed
30	1	12-4 (Al) or 14-4 (Cu)	12-2 (Al) or 14-2 (Cu)	—	—
60	1	12-3 (Al) or 14-3 (Cu)	12-2 (Al) or 14-2 (Cu)	—	—
100	1	12-1 (Al) or 14-1 (Cu)	12-1/0 (Al) or 14-1/0 (Cu)	—	—
200	1	6-250 (Al/Cu)	6-300 (Al/Cu)	—	—
400	1 or 2	1/0-800 (Al/Cu) or 1/0-300 (Al/Cu)	(1) 1/0-800 (Al/Cu) or (2) 1/0-300 (Al/Cu)	—	—
600	2	4-500 (Al/Cu)	4-600 (Al/Cu)	—	—
800	3	3/0-500 (Al/Cu)	3/0-500 (Al/Cu)	—	—

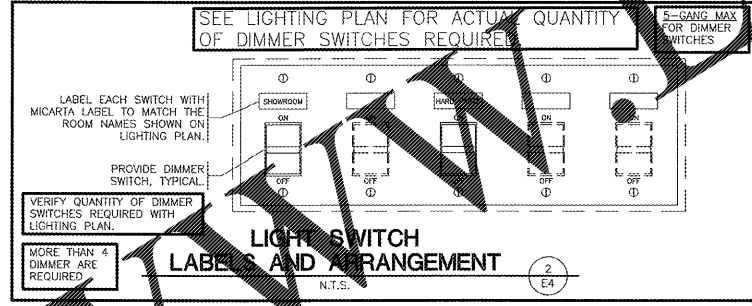
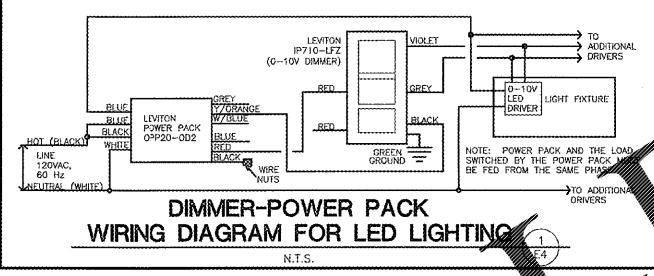
1 30-100 A switches suitable for 60°C (140°F) or 75°C (167°F) conductors. 200-800 A switches suitable for 75°C (167°F) conductors.
2 For Type 1 and 2 switches, use the following:
3 For Type 3R switches, use the following:
4 Order C10-11 and E10-11 from Thomas and Betts.
5 H20KFA and H20KFA-1212 — 1212 — 1212 (167°F) copper wire only. #6 AWG copper wire required for 60 A rating.
6 H100KFA and H100KFA-1212 — 1212 — 1212 (167°F) copper wire only. #3 AWG copper wire required for 100 A rating.
7 H225KJ and H225KJ-1212 — 1212 — 1212 (167°F) copper wire only. Lug wire range is #9 AWG - 250 kmil. Not UL Listed due to inadequate wire bending space (2.5 x (127 mm) on 1212 and 1.52 cm (152 mm) on the 0275 end.
8 Maximum wire bending space allows for (1) 250 kmil or (2) 300 kmil Al/Cu on Type 44X5 stainless steel and Type 12 switches.
9 For Type 1 and 2 switches, use the following:
10 For Type 3R switches, use the following:
11 For 100 and 1200 A compression lug kits, see Table 37 on page 34 for additional information.

GENERAL ELECTRICAL NOTES

- DRAWINGS ARE DIAGRAMMATIC & ARE NOT TO BE SCALED. SEE THE ARCHITECTURAL PLANS & FIELD VERIFY CONDITIONS FOR DIMENSIONS.
- ALL ELECTRICAL WORK SHALL COMPLY WITH THE EDITION OF NFPA 70-NATIONAL ELECTRIC CODE (NEC) AS NOTED ON THE CODE SUMMARY SHEET.
- ALL WIRING SHALL BE IN CONDUIT, EXCEPT THAT MC-CABLE MAY BE SUBSTITUTED ONLY AS FOLLOWS:
A. MC-CABLE (MAXIMUM CABLE LENGTH OF 10'-0") MAY BE INSTALLED ONLY FOR BRANCH CIRCUIT WIRING TO LIGHT FIXTURES.
B. MC-CABLE (MAXIMUM CABLE LENGTHS SHOWN ON DETAIL 2/E2) MAY BE INSTALLED ONLY ABOVE SLAB AND ONLY AT LOCATIONS INDICATED ON SHEET E2.
- FEEDER CONDUIT SHALL BE IMC OR RGS ABOVE GRADE & PVC BELOW GRADE WITH IMC OR RGS ELLS & RISERS. INTERIOR BRANCH CIRCUIT CONDUIT SHALL BE ELECTRICAL METALLIC TUBING. EXTERIOR BRANCH CIRCUIT CONDUIT SHALL BE PVC BELOW GRADE WITH IMC OR RIGID GALVANIZED STEEL CONDUIT CONTINUING ABOVE GRADE. (SPEC 26 05 33)
- COORDINATE ALL WORK WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATION DOES NOT MEAN "I WAS HERE FIRST."
- ALL WIRING IN FINISHED SPACES SHALL BE CONCEALED, UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING A COMPLETE & FUNCTIONAL SYSTEM IN ACCORDANCE WITH THE INTENT OF THE PLANS, WHETHER OR NOT EVERY ELEMENT THEREOF IS SPECIFICALLY CALLED OUT.
- COORDINATE ALL EQUIPMENT ROUGH-IN CONNECTION REQUIREMENTS.
- ALL OUTLET BOXES SHALL BE METALLIC. (SPEC 26 05 34)
- ALL CAULKING ON BUILDING PENETRATIONS SHALL BE ELASTOMERIC POLYURETHANE (NO EXCEPTIONS), EQUAL TO "YULKEM" 116. ANY CONTRACTOR WHO USES SILICONE OR ANY OTHER CAULKING WILL BE REQUIRED TO REMOVE & REPLACE WITH ELASTOMERIC POLYURETHANE.
- RECEPTABLES INSTALLED IN RESTROOMS SHALL BE GFCI TYPE OR SHALL BE PROTECTED BY A GFI DEVICE.
- ALL DEVICES SHALL BE IVORY & SHALL BE EQUAL TO THE FOLLOWING:
SINGLE POLE SWITCHES ---
THREE-WAY SWITCHES ---
DUPLX RECEPTACLE --- (SPEC 26 27 26)
GFCI DUPLX RECEPTACLE ---
ISO. GRD. RECEPTABLES ---
- USE DEVICE PLATES MANUFACTURED BY THE DEVICE MANUFACTURER. (SPEC 26 27 26)
- FEEDER & BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, STRANDED, 600V THHN/THWN INSULATION. EXCEPTION: WIRE SIZES #10 AWG & SMALLER SHALL BE SOLID. (SPEC 26 05 19)
- CONTRACTOR SHALL PROVIDE A TYPED CIRCUIT DIRECTORY FOR ALL PANELS. (SPEC 26 05 53)
- CONTRACTOR SHALL PROVIDE A ONE(1) YEAR WARRANTY ON ALL WORK PERFORMED.
- CONTRACTOR SHALL PROVIDE NEW WORKING LAMPS IN ALL LIGHT FIXTURES AT JOB COMPLETION.
- CONTRACTOR SHALL COORDINATE WITH & SHALL INCLUDE ALL FEES FOR THE SERVING "ELECTRIC UTILITY CO." TO PROVIDE ELECTRIC SERVICE AS SHOWN. CONTRACTOR SHALL ALSO INCLUDE ALL FEES FOR THE "SERVING PHONE COMPANY" TO INSTALL NO LESS THAN 10 PAIR CABLE TO BUILDING.
- CONTRACTOR SHALL ARRANGE FOR & INCLUDE ALL PERMITS & FEES FOR HIS SCOPE OF WORK.
- CONTROL WIRING BY HVAC CONTRACTOR. FINAL CONNECTIONS BY HVAC CONTRACTOR. SEE SHEET M1.
- APPROVED MANUFACTURERS:
A. PANELBOARDS, SAFETY SWITCHES, (DISCONNECTS):
--- "SQUARE D"
--- "G.E."
--- "SIEMENS"
--- "OUTLET-HAMMER"
(SPEC 26 24 03)
B. DEVICES:
--- "HUBBELL"
--- "LEVITON"
--- "PASS & SEYMOUR"
--- "HUBBELL"
(SPEC 26 27 26)
C. FLOOR BOXES:
--- "STEEL CITY"
--- "APPLETON"
--- "HUBBELL"
(SPEC 26 05 34)
- MULTIWIRE BRANCH CIRCUITS WITH A "SHARED NEUTRAL" ARE NOT ALLOWED FOR SINGLE PHASE CIRCUITS.

ELECTRICAL SYMBOL LEGEND & ABBREVIATIONS

- \$ SINGLE POLE SWITCH
- \$2 TWO POLE SWITCH
- \$3 THREE-WAY SWITCH
- \$MF MOTOR STARTING SWITCH WITH PILOT LIGHT
- \$x CLASS 1, DIVISION 1 HAZARDOUS LOCATION RATED SWITCH ASSEMBLY
- \$W WALL MOUNTED OCCUPANCY SENSOR EQUAL TO "LEVITON, ODS10-10"
- \$W2 WALL MOUNTED OCCUPANCY SENSOR EQUAL TO "LEVITON, OSSMD-MD"
- \$S FAN SPEED SWITCH (SUPPLIED BY HVAC CONTRACTOR / INSTALLED BY ELECTRICAL CONTRACTOR)
- \$0 0-10V LED DIMMER SWITCH, EQUAL TO "LEVITON, IP710-LF2". SEE DETAILS THIS SHEET (5-GANG MAX)
- \$P LEVITON POWER PACK OPP20-0D2
- ⊕ SINGLE RECEPTACLE
- ⊕ DUPLX RECEPTACLE
- ⊕ ISOLATED GROUND DUPLX RECEPTACLE (ORANGE IN COLOR COVERPLATE) SEE DETAIL 1/E3
- ⊕ QUADPLX RECEPTACLE (TWO DUPLX RECEPTABLES IN ONE 5-GANG MAX) SEE DETAIL 1/E4
- ⊕ EXISTING UNPOWERED DUPLX RECEPTACLE
- ⊕ ISOLATED GROUND QUADPLX RECEPTACLE (ORANGE IN COLOR COVERPLATE) SEE DETAIL 1/E4
- ⊕ QUADPLX RECEPTACLE (CIRCUIT TO BE WIRED WITH OCCUPANCY SENSOR) INSTALL A PERMANENT LABEL ON EACH OUTLET STATING "SENSOR CONTROLLED OUTLET". SEE DETAIL ON SHEET E2.
- AC ABOVE COUNTER GFCI (GROUND FAULT CIRCUIT INTERRUPTING) DUPLX RECEPTACLE
- W OTHER TYPE GFCI (GROUND FAULT CIRCUIT INTERRUPTING) DUPLX RECEPTACLE. SEE DETAIL ON SHEET E2 FOR WEATHER-PROOF PROTECTION WITH CORD AND PLUG IN USE
- TEL TELEPHONE POINT
- J JUNCTION BOX
- PC PHOTO CONTROL
- COMPUTER DATA OUTLET BOX
- TELEPHONE OUTLET BOX
- TELEPHONE OUTLET FLOOR BOX. SEE DETAIL 4/E2.
- 4" SQUARE STEEL BOX MOUNTED FLUSH ON FLOOR W/QUADPLX RECEPTACLE (SEE ABOVE RECEPTACLE DESCRIPTION). SEE DETAIL 4/E2 FOR INSTALLATION OF BOX.
- 4" SQUARE STEEL BOX MOUNTED FLUSH ON FLOOR W/QUADPLX ISOLATED GROUND RECEPTACLE (SEE ABOVE ISOLATED GROUND RECEPTACLE DESCRIPTION). SEE DETAIL 4/E2 FOR INSTALLATION OF BOX.
- 4" SQUARE STEEL BOX MOUNTED FLUSH ON FLOOR W/QUADPLX ISOLATED GROUND RECEPTACLE (SEE ABOVE ISOLATED GROUND RECEPTACLE DESCRIPTION). SEE DETAIL 4/E2 FOR INSTALLATION OF BOX. OUTLET COVER SHALL BE RED IN COLOR
- 2" x 4" RECTANGULAR STEEL BOX MOUNTED FLUSH ON FLOOR W/DUPLX RECEPTACLE (SEE ABOVE RECEPTACLE DESCRIPTION). SEE DETAIL 4/E2 FOR INSTALLATION OF BOX
- NEMA L5-30R - SPECIAL RECEPTACLE
- MOTOR
- xx/xx FUSED DISCONNECT (SAFETY) SWITCH W/ SWITCH AMPACITY / FUSE AMPACITY AS INDICATED
- ⊕ NON-FUSED DISCONNECT (SAFETY) SWITCH
- POWER OR LIGHTING PANEL W/PANEL DESIGNATION SHOWN ON PLAN (SIZES & MOUNTING INDICATED ON PLANS)
- 24 HOUR EGRESS & SECURITY LIGHT, WIRE DIRECT TO ELECTRIC PANEL AHEAD OF ANY LOCAL SWITCHES AND LIGHTING CONTROL PANEL
- WALL/CEILING MOUNTED COMBINATION "EXIT/EMERGENCY" SIGN W/SHADING INDICATING FACES
- EMERGENCY LIGHTING FIXTURE WITH BATTERY
- FEEDING PANEL AND CIRCUIT NUMBER(S)
- NOTE: EQUIPMENT GROUND CONDUCTOR NOT SHOWN
- CIRCUIT CONDUCTORS
- GROUNDING CONDUCTOR (OR NEUTRAL)
- MOTION DETECTOR - SEE EM SHEETS FOR MORE INFORMATION
- OCCUPANCY SENSOR EQUAL TO "LEVITON, OSC20-MAW" WITH POWER PACK
- AC LOCATED ABOVE COUNTER
- AFF ABOVE FINISHED FLOOR
- BCU BLOWER COIL UNIT
- CDU CONDENSING UNIT
- EF EXHAUST FAN
- EFU ELECTRIC FURNACE
- FURN GAS FURNACE
- AHU AIR HANDLER
- HP HEAT PUMP UNIT
- PP POWER PACK
- RTU PACKAGED ROOFTOP UNIT
- IMC INTERMEDIATE METALLIC TUBING
- LC LIGHTING CONTRACTOR
- M MOTOR STARTING
- R RED IN COLOR COVERPLATE
- MP MOTOR STARTING W/PILOT LIGHT
- NL NIGHT LIGHT
- PEC PHOTOELECTRIC CONTROL
- EMT ELECTRICAL METALLIC TUBING
- RGS RIGID GALVANIZED STEEL
- UPO UN-POWERED OUTLET
- TS TIME SWITCH
- W WALL OUTLET (48" AFF SEE MOUNTING HEIGHTS)
- WP WEATHERPROOF (ENCLOSURE)
- X EXPLOSION PROOF ASSEMBLY
- GFCI GRD./FAULT CIRCUIT INTERRUPT
- EMT ELECTRICAL METALLIC TUBING
- CM CEILING MOUNTED



SQUARE D Modifications For Factory Assembled Panelboards
Class 1640, 1670, 2110, 4620, 6650 / Refer to 2190CT9701, 1640CT0701, 1640CT0701, 4620CT0701

MAIN CIRCUIT BREAKER WITHOUT OVERLOAD TRIP (Automatic Reset Switch)
(Not UL Listed)
Shunt Trip Circuit Breakers
NOTE: For use in case switch and automatic reset case switch short circuit current ratings. See Circuit Breaker Ratings (CBR), page 7-4.1.
Spec Features
For information on the following features, please see the Supplemental and Observation Diagrams:
• Photocell monitoring (1)
• Circuit breaker (1) and (1)
• Knockout box (1)
• Knockout box - top, bottom, and sides (1)
• Non-ferrous material (1)
• Wound brass channel (1)
• Type 1 gasketed (1)
• Type 2 gasket hood (1)
• Type 3 stainless steel enclosure (1)
• Type 4X fiberglass enclosure (1)
• Stainless steel trim front (1)
• Padlockable lugs (1)
• Special locks (Corbin, Yale, Best) (1)
• Equal height boxes (1)
• Common lugs to cover two equal height boxes (1)
• Panelboard skirt-holes conduits leading a panelboard (1)
• Panelboard weasay—for terminating conduit in wireway enclosure (1)
• Keyed mechanical interlocking of two or more circuit breakers (I-Line and QMB) (1)
• Motor operators (I-Line only)
• Panelboard interiors and special fronts to fit existing boxes
A standard panelboard box has one trunk end and one with knockouts. Blank ends and knockouts in both ends are also available (1)

Table 9.144: NQ Standard Aluminum Mechanical Lugs—Main Lugs

Rated Amps	Wire Range	Terminal Size	Terminal Material
100A	1/0-250 Al or Cu	1/2"	Aluminum
150A	1/0-250 Al or Cu	3/8"	Aluminum
250A	1/0-250 Al or Cu	3/4"	Aluminum
400A	1/0-250 Al or Cu	1"	Aluminum
600A	1/0-250 Al or Cu	1 1/4"	Aluminum

Table 9.147: NF Standard Mechanical Lugs—Main Lugs

Rated Amps	Wire Range	Terminal Size	Terminal Material
100A	1/0-250 Al or Cu	1/2"	Steel
150A	1/0-250 Al or Cu	3/8"	Steel
250A	1/0-250 Al or Cu	3/4"	Steel
400A	1/0-250 Al or Cu	1"	Steel
600A	1/0-250 Al or Cu	1 1/4"	Steel

Table 9.148: NF Standard Mechanical Lugs—Main Circuit Breaker

Rated Amps	Wire Range	Terminal Size	Terminal Material
100A	1/0-250 Al or Cu	1/2"	Steel
150A	1/0-250 Al or Cu	3/8"	Steel
250A	1/0-250 Al or Cu	3/4"	Steel
400A	1/0-250 Al or Cu	1"	Steel
600A	1/0-250 Al or Cu	1 1/4"	Steel



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