

PARRISH FAMILY VINEYARDS

DRAWING #

2017044.1-.7

2017044.DE

2017044.SE

2017044.SP

2017044.CE

SUBMITTAL PACKAGE

BILL OF MATERIALS

CUT-SHEETS

DRAWINGS

**PREPARED BY:
THE PANEL SHOP**

| Customer | Job Reference | Bill of Materials | Job # | Date |
|----------|---------------------------|------------------------|----------|----------------|
| CLOACINA | PARRISH FAMILY VINEYARDS | | 2017044 | 03.01.17 |
| Qty | Part # | Description | Dwg. Key | Manufacturer |
| 1 | N412483616SS3PTC | N4 SS ENCLOSURE | ENC | WIEGMANN |
| 1 | NP4836C | PANEL | ENC | WIEGMANN |
| 1 | HFWN5P4836C | INNER SWING | ENC | WIEGMANN |
| 1 | HFWADM124C | ADJUST RAILS | ENC | WIEGMANN |
| 1 | N412MFKSS | MOUNTING TABS | ENC | WIEGMANN |
| 1 | WADSTOPK | DOOR STOP | ENC | WIEGMANN |
| 1 | WAPPL0810 | DOCUMENT POUCH/ 3M VHB | ENC | WIEGMANN |
| 1 | 2D3UL | CIRCUIT BREAKER | CB1 | ALTECH |
| 1 | IQ2000(VXS)(486)(SS)(N4X) | 2K BTUH A/C | A/C | ICEQUBE |
| 1 | 9080LBA363101 | FEEDER BLOCK | PDB1 | SQUARE D |
| 1 | 9080LB33 | FEEDER COVER | PDB1 | SQUARE D |
| 1 | KU340N | 40A DISC | DSC1 | ALTECH |
| 1 | L300AD11-ST | SHAFT | DSC1 | ALTECH |
| 1 | LK10 Y/R UL | HANDLE | DSC1 | ALTECH |
| 1 | 9080LBA362104 | DIST BLOCK | PDB2 | SQUARE D |
| 1 | 9080LB23 | DIST COVER | PDB2 | SQUARE D |
| 1 | C269 | PHASE/VOLTAGE MONITOR | PM1 | TIMEMARK |
| 1 | RH1B-ULC-AC120V | CONTROL RELAY | PMR | IDEC |
| 1 | SH1B-05 | RELAY BASE | PMR | IDEC |
| 1 | SDR-480-24 | 480W/24VDC PS | PS1 | MEANWELL |
| 3 | 3D15UL | CIRCUIT BREAKER | CB2-CB4 | ALTECH |
| 3 | LC1D09G7 | CONTACTOR | MC1-MC3 | SQUARE D |
| 3 | LRD06 | OVERLOAD RELAY | OL1-OL3 | SQUARE D |
| 3 | XB5AJ33 | 3 POS. SELECTOR | SS1-SS3 | SQUARE D |
| 1 | 3D15UL | CIRCUIT BREAKER | CB5 | ALTECH |
| 1 | LC1D09G7 | CONTACTOR | MC4 | SQUARE D |
| 1 | LRD10 | OVERLOAD RELAY | OL4 | SQUARE D |
| 1 | XB5AJ33 | 3 POS. SELECTOR | SS5 | SQUARE D |
| 1 | 3D15UL | CIRCUIT BREAKER | CB6 | ALTECH |
| 1 | LC1D09G7 | CONTACTOR | MC5 | SQUARE D |
| 1 | LADN20 | AUX CONTACT | MC5 | SQUARE D |
| 1 | LRD12 | OVERLOAD RELAY | OL5 | SQUARE D |
| 1 | XB5AJ33 | 3 POS. SELECTOR | SS6 | SQUARE D |
| 1 | 1D3UR | CIRCUIT BREAKER | CB10 | ALTECH |
| 1 | 2D5UL | CIRCUIT BREAKER | CB7 | ALTECH |
| 1 | FS22000 | 2KVA XF 480-120 | XFMR | ACME |
| 1 | 1D12UR | CIRCUIT BREAKER | CB8 | ALTECH |
| 1 | SDU-850 | 450W/750VA UPS | UPS | SOLA |
| 1 | XB5AJ33 | 3 POS. SELECTOR | SS4 | SQUARE D |
| 1 | RH1B-ULC-AC120V | CONTROL RELAY | CR104 | IDEC |
| 1 | SH1B-05 | RELAY BASE | CR104 | IDEC |
| 1 | ACS200-AA-F | CURRENT SWITCH | CS1 | AUTOMATION |
| 1 | 1D3UR | CIRCUIT BREAKER | CB9 | ALTECH |
| 1 | XB5AJ33 | 3 POS. SELECTOR | SS7 | SQUARE D |
| 1 | RH1B-ULC-AC120V | CONTROL RELAY | PWR | IDEC |
| 1 | SH1B-05 | RELAY BASE | PWR | IDEC |
| 1 | 1D3UR | CIRCUIT BREAKER | CB11 | ALTECH |
| 8 | RSL1PVFU | CONTROL RELAY | 1-IPRO-8 | SQUARE D |
| 1 | 2080-LC50-24QWB | 24 I/O PLC | PLC1.0 | ALLEN BRADLEY |
| 1 | 2080-IF4 | 4 CH AI | PLC1.1 | ALLEN BRADLEY |
| 1 | 2080-IF2 | 2CH AI | PLC1.2 | ALLEN BRADLEY |
| 1 | 9080MH82 | ANGLE BRKT | TB | SQUARE D |
| 20 | XBUT4BK | BLACK 30A, 26-10awg | TB | EATON |
| 6 | XBUT4WH | WHITE 30A, 26-10awg | TB | EATON |
| 10 | XBUT4GN | GREEN 30A, 26-10awg | TB | EATON |
| 15 | XBUT4RD | RED 30A, 26-10awg | TB | EATON |
| 11 | XBMUCTM6 | 10-STRIP MARKER | TB | EATON |
| 17 | XBACUT10 | END PLATES | TB | EATON |
| 21 | XBAES35C | END CLAMPS | TB | EATON |
| 3 | XBANS3575P | DIN RAIL | MISC | EATON |
| 42 | G1.5X3LG6 | RACEWAY | MISC | PANDUIT |
| 42 | C1.5LG6 | COVER | MISC | PANDUIT |
| 1 | KA25U | 14-1/0 GROUND LUG | GND | THOMAS & BETTS |
| 1 | PK4GTA | TPS GROUND BAR | GND | SQUARE D |
| 3 | PK7GTA | CUST GROUND BAR | GND | SQUARE D |

N412 - 3PTC ULTIMATE SERIES ENCLOSURES NEMA 4 SINGLE DOOR WALL MOUNT



N4122416083PTC

Industry Standards

UL 508 Listed, Types 4 & 12
CSA Certified, Types 4 & 12
NEMA/EEMAC Type 4, 12 & 13

Wall mounting brackets required to maintain UL/CSA external mounting requirements.

UL File E64791

CSA File LL66078

FEATURES-SPECIFICATIONS

Applications

Hubbell Wiegmann N4123PTC ULTIMATE Series Enclosures are designed to house and protect electrical and electronic components from harsh, dirty environments. For use in installations where dirt, dust, oil, water, or other contaminants are present. Streamlined styling, flush latching, and attractive durable finish complement any high tech electronic equipment.

Construction

- Bodies and doors fabricated from 14 gauge steel.
- Continuously welded seams ground smooth, less holes or knockouts.

- Body stiffeners are included in larger enclosures for added rigidity.
- Doors are interchangeable and easily removable.
- Grounding studs are welded to door and body assuring a positive ground.
- Print pocket is provided.
- Doors are sealed with poured-in-place gasket**
- Mounting holes in rear of enclosure.
- Collar studs for mounting optional back panel.
- With 3pt Keylocking/padlocking Combo Handle

Finish

- ANSI 61 gray polyester powder inside and out
- Optional back panels are white polyester powder
- Optional "G" panels have a conductive finish (See page I5)

Accessories

- Optional N412MFK mounting foot kit must be ordered separately
- Back panels (see reference tables)
- Window door (reference tables)
- See pages J1-J22.

| N412-3PTC ULTIMATE SERIES ENCLOSURES NEMA 4 SINGLE DOOR WALL-MOUNT | | | | | | |
|--|-----------------------|--------------------------------|----------------------------|----------|-----------------------|-----------------------|
| CATALOG NUMBER | BODY/DOOR STEEL GAUGE | ENCLOSURE SIZE H X W X D | BACK PANEL CATALOG NUMBER* | | DOOR & BOX STIFFENERS | BACK PANEL SIZE A & B |
| | | | WHITE | "G" | | |
| N4121212063PTC | 14/14 | 12.00x12.00x6.00 (305x305x152) | NP1212C | NP1212CG | No | 10.2x10.2 (259x259) |
| N4121612063PTC | 14/14 | 16.00x12.00x6.00 (406x305x152) | NP1612C | NP1612CG | No | 14.2x10.2 (361x259) |
| N4121616063PTC | 14/14 | 16.00x16.00x6.00 (406x406x152) | NP1616C | NP1616CG | No | 14.2x14.2 (361x361) |
| N4121620063PTC | 14/14 | 16.00x20.00x6.00 (406x508x152) | NP1620C | NP1620CG | No | 14.2x18.2 (361x462) |
| N4122016063PTC | 14/14 | 20.00x16.00x6.00 (508x406x152) | NP2016C | NP2016CG | No | 18.2x14.2 (462x361) |
| N4122020063PTC | 14/14 | 20.00x20.00x6.00 (508x508x152) | NP2020C | NP2020CG | No | 18.2x18.2 (462x462) |
| N4122416063PTC | 14/14 | 24.00x16.00x6.00 (610x406x152) | NP2416C | NP2416CG | No | 22.2x14.2 (564x361) |
| N4122420063PTC | 14/14 | 24.00x20.00x6.00 (610x508x152) | NP2420C | NP2420CG | No | 22.2x18.2 (564x462) |
| N4122424063PTC | 14/14 | 24.00x24.00x6.00 (610x610x152) | NP2424C | NP2424CG | No | 22.2x22.2 (564x564) |
| N4121612083PTC | 14/14 | 16.00x12.00x8.00 (406x305x203) | NP1612C | NP1612CG | No | 14.2x10.2 (361x259) |
| N4121616083PTC | 14/14 | 16.00x16.00x8.00 (406x406x203) | NP1616C | NP1616CG | No | 14.2x14.2 (361x361) |
| N4121620083PTC | 14/14 | 16.00x20.00x8.00 (406x508x203) | NP1620C | NP1620CG | No | 14.2x18.2 (361x462) |
| N4122016083PTC | 14/14 | 20.00x16.00x8.00 (508x406x203) | NP2016C | NP2016CG | No | 18.2x14.2 (462x361) |
| N4122020083PTC | 14/14 | 20.00x20.00x8.00 (508x508x203) | NP2020C | NP2020CG | No | 18.2x18.2 (462x462) |
| N4122024083PTC | 14/14 | 20.00x24.00x8.00 (508x610x203) | NP2024C | NP2024CG | No | 18.2x22.2 (462x564) |
| N4122416083PTC | 14/14 | 24.00x16.00x8.00 (406x305x203) | NP2416C | NP2416CG | No | 22.2x14.2 (564x361) |
| N4122420083PTC | 14/14 | 24.00x20.00x8.00 (610x508x203) | NP2420C | NP2420CG | No | 22.2x18.2 (564x462) |
| N4122424083PTC | 14/14 | 24.00x24.00x8.00 (610x610x203) | NP2424C | NP2424CG | No | 22.2x22.2 (564x564) |
| N4122430083PTC | 14/14 | 24.00x30.00x8.00 (610x762x203) | NP2430C | NP2430CG | No | 22.2x28.2 (564x716) |

*Back panels must be ordered separately.

**Enclosures are supplied with closed cell neoprene gasket (not foam-in-place).

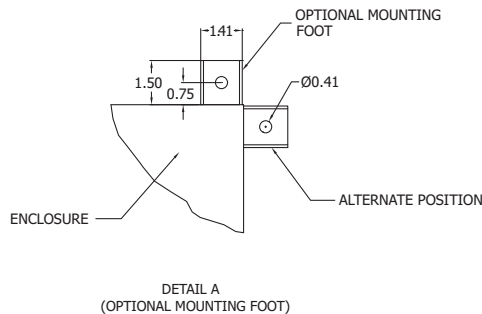
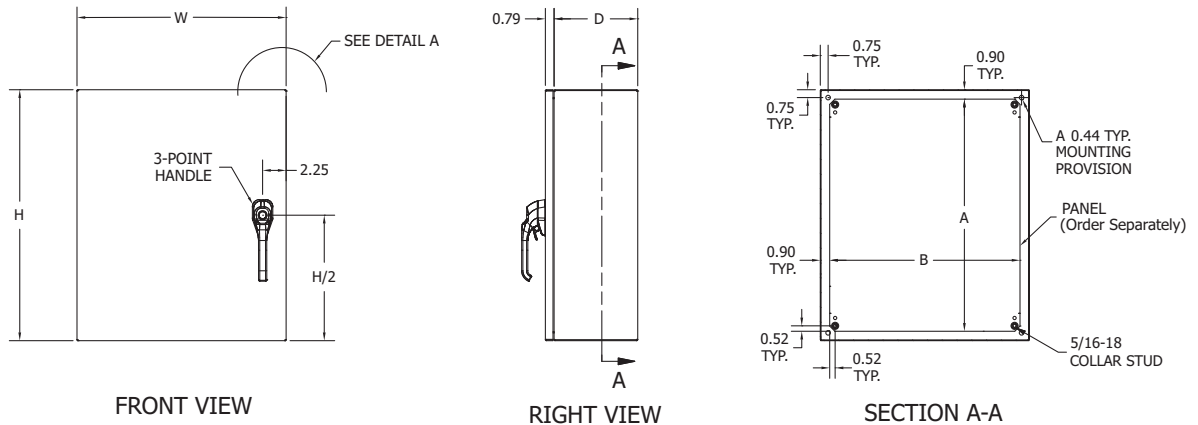
N412 - 3PTC ULTIMATE SERIES ENCLOSURES NEMA 4 SINGLE DOOR WALL MOUNT

D15

| N412-3PTC ULTIMATE SERIES ENCLOSURES NEMA 4 SINGLE DOOR WALL-MOUNT CONT'D. | | | | | | |
|--|-----------------------|----------------------------------|----------------------------|----------|-----------------------|-----------------------|
| CATALOG NUMBER | BODY/DOOR STEEL GAUGE | ENCLOSURE SIZE H X W X D | BACK PANEL CATALOG NUMBER* | | DOOR & BOX STIFFENERS | BACK PANEL SIZE A & B |
| | | | WHITE | "G" | | |
| N4123020083PTC | 14/14 | 30.00x20.00x8.00 (762x508x203) | NP3020C | NP3020CG | No | 28.2x18.2 (716x464) |
| N4123024083PTC | 14/14 | 30.00x24.00x8.00 (762x610x203) | NP3024C | NP3024CG | No | 28.2x22.2 (716x564) |
| N4123030083PTC | 14/14 | 30.00x30.00x8.00 (762x762x203) | NP3030C | NP3030CG | No | 28.2x28.2 (716x716) |
| N4123624083PTC | 14/14 | 36.00x24.00x8.00 (914x610x203) | NP3624C | NP3624CG | No | 34.2x22.2 (869x564) |
| N4123630083PTC | 14/14 | 36.00x30.00x8.00 (914x508x305) | NP3630C | NP3630CG | No | 34.2x28.2 (869x716) |
| N4123636083PTC | 14/14 | 36.00x36.00x8.00 (914x914x203) | NP3636C | NP3636CG | No | 34.2x34.2 (869x869) |
| N4122020123PTC | 14/14 | 20.00x20.00x12.00 (508x508x305) | NP2020C | NP2020CG | No | 18.2x18.2 (462x462) |
| N4122420123PTC | 14/14 | 24.00x20.00x12.00 (610x508x305) | NP2420C | NP2420CG | No | 22.2x18.2 (564x462) |
| N4122424123PTC | 14/14 | 24.00x24.00x12.00 (610x610x305) | NP2424C | NP2424CG | No | 22.2x22.2 (564x564) |
| N4123024123PTC | 14/14 | 30.00x24.00x12.00 (762x610x305) | NP3024C | NP3024CG | No | 28.2x22.2 (716x564) |
| N4123030123PTC | 14/14 | 30.00x30.00x12.00 (762x762x305) | NP3030C | NP3030CG | No | 28.2x28.2 (716x716) |
| N4123624123PTC | 14/14 | 36.00x24.00x12.00 (914x610x305) | NP3624C | NP3624CG | No | 34.2x22.2 (869x564) |
| N4123630123PTC | 14/14 | 36.00x30.00x12.00 (914x762x305) | NP3630C | NP3630CG | No | 34.2x28.2 (869x716) |
| N4123636123PTC | 14/14 | 36.00x36.00x12.00 (914x914x305) | NP3636C | NP3636CG | No | 34.2x34.2 (869x869) |
| N4124024123PTC | 14/14 | 40.00x24.00x12.00 (1016x610x305) | NP4024C | NP4024CG | No | 38.2x22.2 (970x564) |
| N4124236123PTC | 14/14 | 42.00x36.00x12.00 (1067x914x305) | NP4236C | NP4236CG | No | 40.2x34.2 (1021x869) |
| N4124824123PTC** | 14/14 | 48.00x24.00x12.00 (1219x610x305) | NP4824C | NP4824CG | No | 46.2x22.2 (1173x564) |
| N4124836123PTC** | 14/14 | 48.00x36.00x12.00 (1219x914x305) | NP4836C | NP4836CG | No | 46.2x34.2 (1173x869) |
| N4126036123PTC** | 14/14 | 60.00x36.00x12.00 (1524x914x305) | NP6036C | NP6036CG | No | 58.2x34.2 (1478x869) |
| N4122424163PTC** | 14/14 | 24.00x24.00x16.00 (610x610x406) | NP2424C | NP2424CG | No | 22.2x22.2 (564x564) |
| N4123630163PTC** | 14/14 | 36.00x30.00x16.00 (914x762x406) | NP3630C | NP3630CG | No | 34.2x28.2 (869x716) |
| N4124836163PTC** | 14/14 | 48.00x36.00x16.00 (1219x914x406) | NP4836C | NP4836CG | No | 46.2x34.2 (1173x869) |
| N4122424203PTC** | 14/14 | 24.00x24.00x20.00 (610x610x508) | NP2424C | NP2424CG | No | 22.2x22.2 (564x564) |
| N4123024203PTC** | 14/14 | 30.00x24.00x20.00 (762x610x508) | NP3024C | NP3024CG | No | 28.2x22.2 (716x564) |
| N4123630203PTC** | 14/14 | 36.00x30.00x20.00 (914x762x508) | NP3630C | NP3630CG | No | 34.2x28.2 (869x716) |

*Back panels must be ordered separately.

**Enclosures are supplied with closed cell neoprene gasket (not foam-in-place).



Notes:

1. Large Print Pocket (8 X 10) is furnished if H=20.00" or more and W=20.00" or more. Otherwise, small (6 X 6) print pocket is provided.
2. Two Hinges provided when H<36.00".
Three Hinges provided when H=36.00" or greater.
Four Hinges provided when H=48.00" or greater.



FEATURES-SPECIFICATIONS

SWING OUT PANEL

Swing panels are designed to mount internal equipment directly behind the main enclosure door. Maximum swing is 107 degrees. Convenient access to sub enclosure is provided via 1/4 turn pull-tab. On solid doors, the clearance from the swing panel face to the interior door face is 1-1/4", and 1" on window doors (when the door is closed). The kit includes the swing panel, brackets and hardware necessary for a tub flange install. Swing out panels meet Type 1 with enclosure door open.

Finish: White Polyester Powder.

Note: Swing out panel can also be mounted on front-to-back adjustable depth mounting kits, or rear panel studs (adjustable mounting kits must be purchased separately).

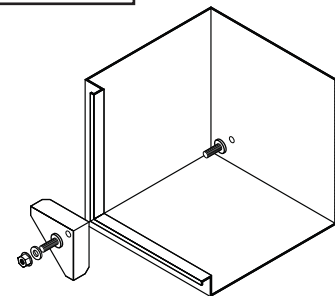
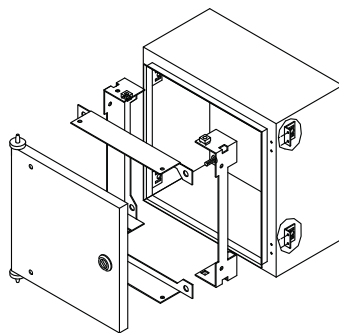
PANEL CONVERSION KIT

These kits allow you to utilize standard NEMA "NP" (non Ultimate panels) within Ultimate enclosures. Simply bolt the conversion brackets over the top of existing studs, then install the Ultimate sub panel. Kit includes four adapter plates and hardware for mounting Ultimate sub panels.

Finish: White Polyester Powder.

| PANEL CONVERSION KIT | |
|----------------------|----------------------------|
| CATALOG NUMBER | FOR ENCLOSURE SIZE |
| HFWCNP4C | Anything 30H X 30W or less |

| SWING OUT PANEL | |
|-----------------|--------------------|
| CATALOG NUMBER | FOR ENCLOSURE SIZE |
| HFWNSP1212C | 12 X 12 (H X W) |
| HFWNSP1612C | 16 X 12 (H X W) |
| HFWNSP1616C | 16 X 16 (H X W) |
| HFWNSP2016C | 20 X 16 (H X W) |
| HFWNSP2416C | 24 X 16 (H X W) |
| HFWNSP1620C | 16 X 20 (H X W) |
| HFWNSP2020C | 20 X 20 (H X W) |
| HFWNSP2420C | 24 X 20 (H X W) |
| HFWNSP3020C | 30 X 20 (H X W) |
| HFWNSP2024C | 20 X 24 (H X W) |
| HFWNSP2424C | 24 X 24 (H X W) |
| HFWNSP3024C | 30 X 24 (H X W) |
| HFWNSP3624C | 36 X 24 (H X W) |
| HFWNSP3030C | 30 X 30 (H X W) |
| HFWNSP3630C | 36 X 30 (H X W) |
| HFWNSP3636C | 36 X 36 (H X W) |



****Time Saver Note:** Tired of all the extensive labor when removing the competitions' swing panel to adjust the multi-depth brackets, then re-installing the swing panel? How many times have you had to adjust because of different depth instruments? Wiegmann has solved the problem! Simply use the hole access area on the swing panel, loosen the screws and adjust your swing panel. Once the correct dimension is reached, simply tighten the screw and your ready to go!



FEATURES-SPECIFICATIONS

ADJUSTABLE DEPTH MOUNTING KIT

Adjustable depth mounting kits allow customers to slide various accessories from front to back. They fit all Wiegmann Ultimate Series depths.

If an adjustable depth is required, then these kits must be purchased when using the following: swing out panels, DIN rails, rack angles, mounting channels and grid straps.

Kit includes slide mechanisms and hardware to mount. Use two kits when enclosure has 6 collar studs for mounting panel.

Finish: White Polyester Powder

Note: Dead front panel CANNOT be mounted on adjustable mounting kit.

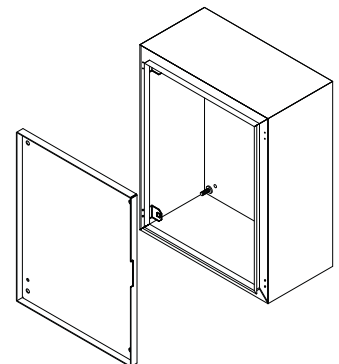
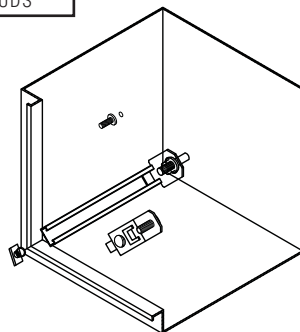
DEAD FRONT KIT

Looking for a fixed sub mounting surface but need it installed directly behind the door, then this is the kit for you. The clearance from the Dead panel face to the interior door face is 1-5/16" on solid doors, and 1-1/16" on window doors. Dead Front Kits are secured via four pan head screws. Kit includes mounting brackets, grounding hardware, and a carbon steel panel finished with white Polyester Powder paint. Dead Fronts meet Type 1 with enclosure door open.

Note: Dead Front kits CANNOT be mounted on adjustable mounting kits.

| ADJUSTABLE DEPTH MOUNTING KIT | |
|-------------------------------|--|
| CATALOG NUMBER | FOR ENCLOSURE SIZE |
| HFWADM64C | 6" depth or less W/4 collar studs |
| HFWADM84C | 8" depth or less W/4 COLLAR STUDS |
| HFWADM82C | 8" depth or less W/2 ADDITIONAL STUDS |
| HFWADM104C | 10" depth or less W/4 COLLAR STUDS |
| HFWADM102C | 10" depth or less W/2 ADDITIONAL STUDS |
| HFWADM124C | 12" depth or less W/4 COLLAR STUDS |
| HFWADM122C | 12" depth or less W/2 ADDITIONAL STUDS |

| DEAD FRONT KIT | |
|----------------|--------------------|
| CATALOG NUMBER | FOR ENCLOSURE SIZE |
| HFWDF1212C | 12 X 12 (H X W) |
| HFWDF1612C | 16 X 12 (H X W) |
| HFWDF2016C | 20 X 16 (H X W) |
| HFWDF2020C | 20 X 20 (H X W) |
| HFWDF2420C | 24 X 20 (H X W) |
| HFWDF2424C | 24 X 24 (H X W) |
| HFWDF3024C | 30 X 24 (H X W) |





Mounting Feet



WAGSE



WAVE

FEATURES-SPECIFICATIONS

MOUNTING FEET

- Mounting foot kit N412MFK contains four steel external mounting feet
- Mounting foot kit N412MFKSS contains four stainless steel external mounting feet
- Sealing washers are provided with each kit to maintain NEMA 4 or 12 rating after installation
- The N412MFK has a plated finish

| MOUNTING FEET | |
|----------------|-------------------------------------|
| CATALOG NUMBER | DESCRIPTION |
| N412MFK | For N412 steel enclosures |
| N412MFKSS | For N412 stainless steel enclosures |

TOUCH-UP PAINT

- Wiegmann touch-up paint is used to repair existing finishes on enclosures and panels
- Furnished in 12 oz. spray cans

| TOUCH-UP PAINT | |
|----------------|---------------------------|
| CATALOG NUMBER | DESCRIPTION |
| WAGSE | ANSI 61 gray satin enamel |
| WAVE | White enamel |



WAPPL0606
Print Pocket



WADSTOPK
Door Stop Kit



WACSHELF12
Folding Shelf

FEATURES-SPECIFICATIONS

PRINT POCKET

- Plastic print pockets can be placed anywhere within enclosure via 2-way adhesive tape flanges
- White in color

| PRINT POCKET | |
|----------------|-------------|
| CATALOG NUMBER | DESCRIPTION |
| WAPPL0606 | 6x6 |
| WAPPL0810 | 8x10 |

DOOR STOP KIT

- Designed for use on most standard Wiegmann Type 4 and 12 enclosures to secure the door in the open position
- Door stop can be mounted at the top or bottom of the door opening after drilling two small holes in the body of the enclosure and two small holes in the door. The angle of the door is easily adjusted and the stop arm slides neatly out of the way when the door is closed
- All parts are plated

| DOOR STOP KIT | |
|----------------|---------------|
| CATALOG NUMBER | DESCRIPTION |
| WADSTOPK | Door stop kit |

FOLDING SHELF

- Designed to be used to support and test equipment that is used to install and maintain electrical components in an enclosure
- The shelf can be installed on the inside or outside surface of the Wiegmann enclosures
- When not in use, the shelf folds down and projects only one inch
- All parts are made of heavy gauge steel
- ANSI-61 gray polyester powder paint finish

| FOLDING SHELF | |
|----------------|-----------------------|
| CATALOG NUMBER | DESCRIPTION |
| WACSHELF12 | 12.00x12.00 (305x305) |
| WACSHELF18 | 18.00x18.00 (457x457) |

Power Distribution Blocks

Class 9080—Type LB

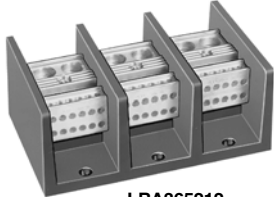


www.SquareD.com

For the most up-to-date information



LBC165212



LBA365212



LBA361104

Standard Power Distribution Blocks

| Lug Wire Range ▲ | | Aluminum ■ | | | | | | Dim. Type |
|------------------|------------------|------------|---------|------------|----------|------------|----------|-----------|
| Main | Branch | One Pole | | Two Pole | | Three Pole | | |
| | | Type ★ | Price | Type ★ | Price | Type ★ | Price | |
| (1) #14-2/0 | (1) #14-2/0 | LBA162101 | \$ 6.90 | LBA262101 | \$ 14.70 | LBA362101 | \$ 17.10 | 2 |
| (1) #6-350 kcmil | (1) #6-350 kcmil | LBA163101 | 35.60 | LBA263101 | 54.00 | LBA363101 | 71.00 | 3 |
| (1) #4-600 kcmil | (1) #4-600 kcmil | LBA164101 | 63.00 | N/A | ... | LBA364101 | 122.00 | 4 |
| (2) #4-350 kcmil | (2) #4-350 kcmil | LBA165202 | 65.00 | LBA265202 | 98.00 | LBA365202 | 126.00 | 5 |
| (2) #4-500 kcmil | (2) #4-500 kcmil | LBA1652021 | 90.00 | LBA2652021 | 137.00 | LBA3652021 | 162.00 | 5 |
| (1) #14-2/0 | (4) #14-4 | LBA162104 | 20.30 | LBA262104 | 30.50 | LBA362104 | 45.60 | 2 |
| (1) #14-2/0 | (6) #14-4 | N/A | ... | N/A | ... | LBA362106 | 87.00 | ...▼ |
| (1) #6-400 kcmil | (4) #14-2 | LBA163104 | 37.20 | LBA263104 | 56.00 | LBA363104 | 75.00 | 3 |
| (1) #6-400 kcmil | (6) #14-2 | LBA163106 | 39.30 | LBA263106 | 59.00 | LBA363106 | 81.00 | 3 |
| (1) #6-400 kcmil | (8) #14-2 | LBA164108 | 51.00 | LBA264108 | 77.00 | LBA364108 | 107.00 | 4 |
| (1) #4-500 kcmil | (6) #14-2/0 | LBA165106 | 84.00 | LBA265106 | 126.00 | LBA365106 | 155.00 | 5 |
| (1) #4-500 kcmil | (12) #14-2 | LBA165112 | 89.00 | LBA265112 | 134.00 | LBA365112 | 174.00 | 5 |
| (2) #14-2/0 | (6) #14-4 | LBA163206 | 39.80 | LBA263206 | 60.00 | LBA363206 | 81.00 | 3 |
| (2) #4-500 kcmil | (8) #14-2/0 | LBA165208 | 84.00 | LBA265208 | 126.00 | LBA365208 | 167.00 | 5 |
| (2) #4-500 kcmil | (12) #14-4 | LBA165212 | 90.00 | LBA265212 | 137.00 | LBA365212 | 174.00 | 5 |

Miniature Power Distribution Blocks

| Lug Wire Range ▲ | | Aluminum ■ | | | | | | Dim. Type |
|------------------|------------|------------|---------|-----------|---------|------------|----------|-----------|
| Main | Branch | One Pole | | Two Pole | | Three Pole | | |
| | | Type ★ | Price | Type ★ | Price | Type ★ | Price | |
| (1) #14-2 | (1) #14-2 | LBA161101 | \$ 8.90 | N/A | ... | LBA361101 | \$ 15.60 | 1 |
| (1) #14-2 | (4) #18-10 | LBA161104 | 17.60 | LBA261104 | \$20.40 | LBA361104 | 38.70 | 1 |

Copper Power Distribution Blocks

| Lug Wire Range ▲ | | Copper | | | | | | Dim. Type |
|------------------|------------------|-----------|----------|-----------|----------|------------|----------|-----------|
| Main | Branch | One Pole | | Two Pole | | Three Pole | | |
| | | Type ★ | Price | Type ★ | Price | Type ★ | Price | |
| (1) #18-1/0 | (1) #18-1/0 | LBC162101 | \$ 66.00 | N/A | ... | LBC362101 | \$134.00 | 2 |
| (1) #6-250 kcmil | (1) #6-250 kcmil | LBC163101 | 83.00 | N/A | ... | LBC363101 | 155.00 | 3 |
| (1) #14-2/0 | (4) #14-4 | LBC162104 | 66.00 | LBC262104 | \$ 98.00 | LBC362104 | 165.00 | 2 |
| (1) #4-500 kcmil | (6) #14-2 | LBC163106 | 102.00 | LBC263106 | 152.00 | LBC363106 | 236.00 | 3 |
| (2) #14-2/0 | (6) #14-4 | LBC163206 | 89.00 | LBC263206 | 134.00 | LBC363206 | 179.00 | 3 |
| (2) #4-500 kcmil | (8) #14-2/0 | LBC165208 | 198.00 | N/A | ... | LBC365208 | 395.00 | 5 |
| (2) #4-500 kcmil | (12) #14-2 | LBC165212 | 189.00 | N/A | ... | LBC365212 | 378.00 | 5 |

- ▲ Lugs suitable for use with 75°C conductors. (#) indicates number of conductors.
- Aluminum blocks will accept either Al or Cu conductors.
- ◆ Cu blocks will accept copper conductors only.
- ★ CE Marked.
- ▼ Refer to catalog for dimensions.

Clear Plastic Covers (0.045 in. thick)

Note: There are no covers for miniature blocks.

| For LBA Type | Type | Price ▲ | Dim. A | Dim. B |
|--------------------|------|---------|--------|--------|
| LBA162... LBC162 | LB21 | \$ 7.50 | 1.062 | 2.750 |
| LBA262... LBC262 | LB22 | 9.00 | 1.875 | 2.750 |
| LBA362... LBC362 □ | LB23 | 10.50 | 2.688 | 2.750 |
| LBA163... LBC163 | LB31 | 8.30 | 1.782 | 3.813 |
| LBA263... LBC263 | LB32 | 9.80 | 3.313 | 3.813 |
| LBA363... LBC363 | LB33 | 11.30 | 4.844 | 3.813 |
| LBA164... | LB41 | 9.00 | 2.125 | 4.563 |
| LBA264... | LB42 | 10.50 | 4.000 | 4.563 |
| LBA364... | LB43 | 12.00 | 5.875 | 4.563 |
| LBA165... LBC165 | LB51 | 9.80 | 2.719 | 5.313 |
| LBA265... LBC265 | LB52 | 11.30 | 5.656 | 5.313 |
| LBA365... LBC365 | LB53 | 12.80 | 8.375 | 5.313 |

- ▲ Above covers must be ordered in multiples of 5 covers.
- Above covers are supplied with two self tapping screws per cover.
- Will not work on a 9080LBA362106 block.

Application Data

UL component recognized (File E60616 CCN XCFR2).
 CSA certified (File LR70361).
 Voltage Rating—Class B & C—600 V
 Blocks are rated based on NEC Table 310-16 using 75°C wire.

Aluminum blocks are tin plated high conductive aluminum.

Copper blocks are tin plated high conductive copper.

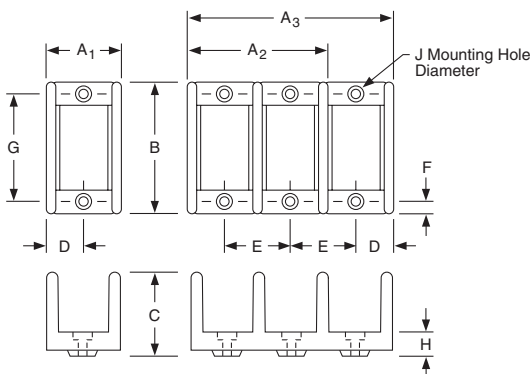
Housing material:

- Miniature Blocks are made from high impact thermoplastic rated at 125°C. max. & -40°C. min.
- Full Size Blocks are made from general purpose phenolic rated at 150°C. max. & -40°C. min.

All blocks have a flammability rating of UL 94V-0.

For additional information, reference Catalog # 9080CT9603.

Dimensions



Dimensions (Inches)

| Type | A1 | A2 | A3 | B | C | D | E | F | G | H | J |
|------|------|------|------|------|------|------|------|-----|------|-----|------|
| 1 | .76 | 1.40 | 2.03 | 2.29 | 1.62 | .38 | .64 | .19 | 1.93 | .32 | .201 |
| 2 | 1.13 | 1.94 | 2.75 | 2.88 | 1.78 | .56 | .81 | .31 | 2.25 | .24 | .205 |
| 3 | 1.94 | 3.47 | 5.00 | 4.00 | 2.61 | .97 | 1.53 | .31 | 3.38 | .40 | .203 |
| 4 | 2.28 | 4.16 | 6.04 | 4.75 | 2.92 | 1.14 | 1.88 | .31 | 4.13 | .51 | .20 |
| 5 | 3.17 | 5.88 | 8.54 | 5.50 | 3.12 | 1.58 | 2.69 | .38 | 4.75 | .50 | .265 |

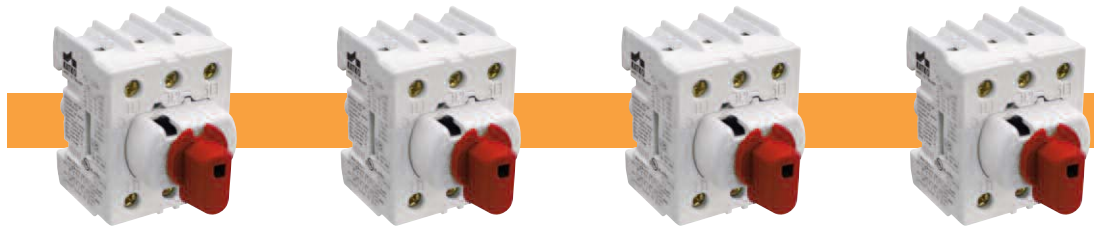
CP1

Discount Schedule

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 6/16/04

Extended/Direct Handle Motor Disconnect Switch

The KU/VKA...N series can be used with extended and direct handles (see page 8-9 for details).



| Catalog Number | KU316N | KU325N | KU340N | KU363N |
|-------------------------|---------------------|---------------------|---------------------|---------------------|
| No. of Poles | 3 (4 pole - KU416N) | 3 (4 pole - KU425N) | 3 (4 pole - KU440N) | 3 (4 pole - KU463N) |
| General Purpose Current | 16A | 25A | 40A | 60A |
| Maximum Voltage | 600V AC | 600V AC | 600V AC | 600V AC |
| Motor FLA @ 480V AC | 14A | 17.5A | 28A | 34A |
| Motor FLA @ 600V AC | 9A | 11A | 18A | 27A |

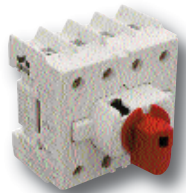
| Horsepower Rating /HP | 1 Phase | | 3 Phase | | 1 Phase | | 3 Phase | | 1 Phase | | 3 Phase | |
|-----------------------|-------------|-----|---------|-----|---------|-----|---------|----|---------|----|---------|----|
| | 110-120V AC | 3/4 | 1 1/2 | 1 | 2 | 2 | 3 | 3 | 5 | 3 | 5 | 10 |
| 200V AC | 2 | 3 | 2 | 5 | 3 | 7.5 | 5 | 10 | 5 | 10 | 20 | |
| 208V AC | 2 | 3 | 2 | 5 | 3 | 7.5 | 5 | 10 | 5 | 10 | 20 | |
| 220-240V AC | 2 | 3 | 3 | 7.5 | 5 | 10 | 5 | 10 | 7.5 | 10 | 20 | |
| 265V AC | 2 | 3 | 3 | 7.5 | 5 | 10 | 5 | 10 | 5 | 10 | 20 | |
| 277V AC | 2 | 3 | 3 | 7.5 | 5 | 10 | 5 | 10 | 7.5 | 10 | 20 | |
| 380-415V AC | 3 | 7.5 | 5 | 10 | 7.5 | 15 | 10 | 20 | 15 | 25 | 50 | |
| 440-480V AC | 5 | 10 | 7.5 | 15 | 10 | 20 | 15 | 25 | 15 | 25 | 50 | |
| 550-600V AC | 3 | 7.5 | 5 | 10 | 7.5 | 15 | 15 | 25 | 15 | 25 | 50 | |

| Short Circuit Withstand Rating at 600 V with Max. Fuse Size/Class: | 10kA | 10kA | 10kA | 10kA |
|--|------|------|------|-------------------|
| K5 | 50A | 50A | 50A | 60A |
| RK5 | 50A | 50A | 50A | 60A (80A@480V AC) |
| RK1 | 80A | 80A | 80A | 100A |
| J | 80A | 80A | 80A | 100A |

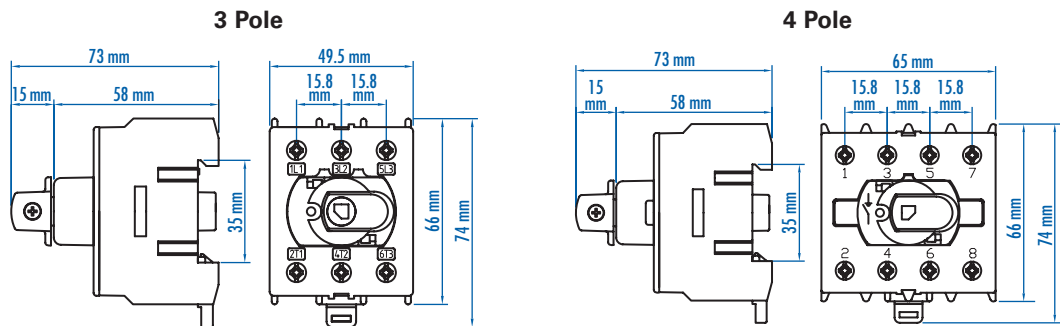
| Terminal Size Acceptability (Cu Conductors only, 75°C) | 14-8AWG | 14-8AWG | 14-8AWG | 12-4AWG |
|--|------------|------------|------------|------------|
| Terminal Torque | 16 lb. in. | 16 lb. in. | 16 lb. in. | 16 lb. in. |

Dimensions

(to convert to inches multiply by 0.03937)



4 Pole



| Weight | 0.19Kg (0.419lb.) (3 pole) 0.23Kg (0.507lb.) (4 pole) | 0.172Kg (0.379lb.) (3 pole) 0.215Kg (0.474lb.) (4 pole) | 0.172Kg (0.379lb.) (3 pole) 0.215Kg (0.474lb.) (4 pole) | 0.200Kg (0.441lb.) (3 pole) 0.245Kg (0.540lb.) (4 pole) |
|--------|--|--|--|--|
|--------|--|--|--|--|

Suitable Accessories

Extended Handle Version/ Door Interlock Mechanism

| Shaft | L(1,2,3)00AD11-ST | L(1,2,3)00AD11-ST | L(1,2,3)00AD11-ST | L(1,2,3)00AD11-ST |
|------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Handles | LK10 (Y/R) UL, LK11 (Y/R) U | LK10 (Y/R) UL, LK11 (Y/R) U | LK10 (Y/R) UL, LK11 (Y/R) U | LK10 (Y/R) UL, LK11 (Y/R) U |
| Auxiliary Switch | KU1.V, KU2.V | KU1.V, KU2.V | KU1.V, KU2.V | KU1.V, KU2.V |
| Fuse Holder | — | — | KV 10x38, KV 10x38 CC | — |

Direct Handle Version

| | | | | |
|--------------------|----------------------|----------------------|----------------------|----------------------|
| Handle for 3 Pole | K/KU3P (Y/R) | K/KU3P (Y/R) | K/KU3P (Y/R) | K/KU3P (Y/R) |
| Handle for 4 Pole | K/KU4P (Y/R) | K/KU4P (Y/R) | K/KU4P (Y/R) | K/KU4P (Y/R) |
| Door Mounting Kits | OKA/KU LK10 x; OKA x | OKA/KU LK10 x; OKA x | OKA/KU LK10 x; OKA x | OKA/KU LK10 x; OKA x |

Extended Handle Accessories

DOOR INTERLOCK HANDLES with 3 padlock locations*

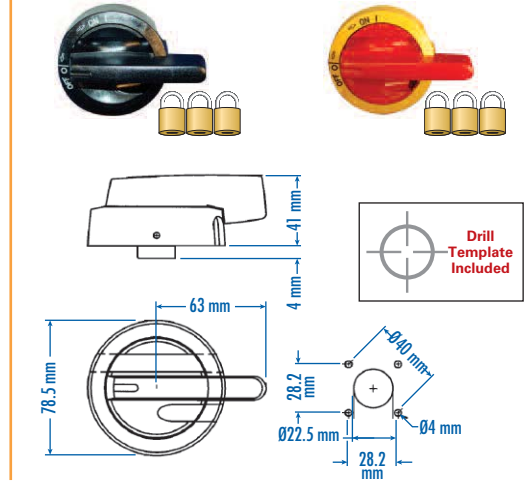
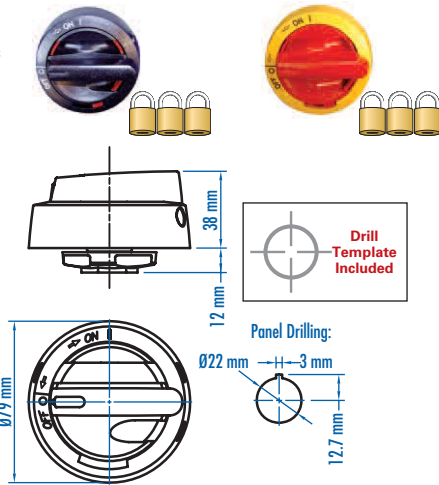
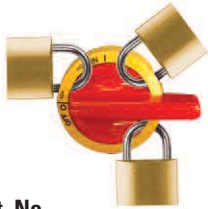


LK10 (Y/R) UL:

- Single hole mounting (22.5mm)
- Defeatable (built-in mechanism)

LK11 (Y/R) U:

- Retention mechanism (only rotates 90° from off to on, keeps handle in off position while cabinet door is open)
- Defeatable (looses NEMA rating)



Cat. No.

LK10 UL

LK10 Y/R UL

LK11 U

LK11 Y/R U

Environmental Rating

NEMA Type 4X, IP66

NEMA Type 4X, IP66

NEMA Type 4X, IP67

NEMA Type 4X, IP67

Color

Black

Yellow/Red

Black

Yellow/Red

DOOR INTERLOCK SHAFT

The steel shaft ensures reliable operation even in the toughest conditions.

Cat. No.

L100AD11-ST

L200AD11-ST

L300AD11-ST

Length (L)

100mm

200mm

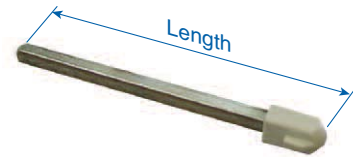
300mm

Material

Steel

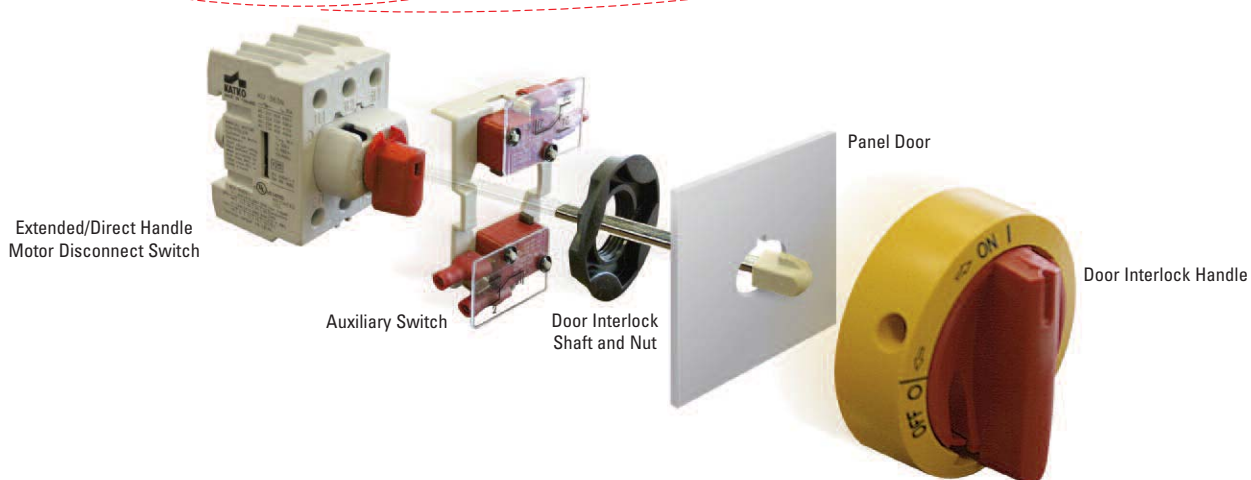
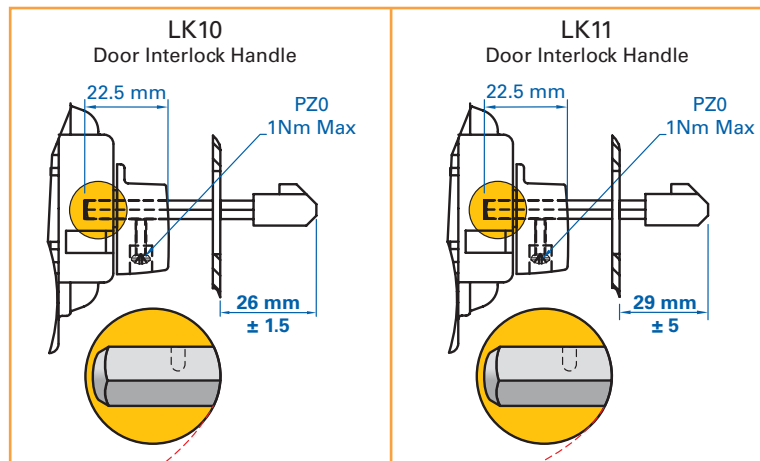
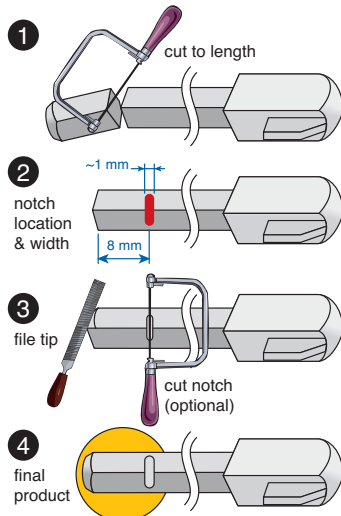
Steel

Steel



SHAFT CUTTING RECOMMENDATIONS

SHAFT LENGTH GUIDELINE



*1/4" padlocks not included.

Dimensions (to convert to inches multiply by 0.03937)

MODEL 269

Over & Under 3-Phase Monitor



- Monitors for High Voltage, Low Voltage, Phase Loss & Phase Reversal
- 4 Voltage Ranges
- Automatic Reset
- 5 Year Unconditional Warranty



DESCRIPTION

The Model 269 Over & Under 3-Phase Monitor continuously monitors 3-phase lines for high voltage, low voltage, phase loss or phase reversal. This device features a solid-state voltage and phase angle sensing circuit, which drives a SPDT output relay.

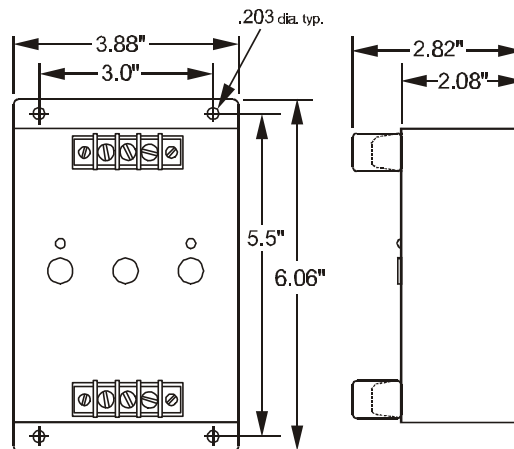
The Model 269 is independent of the system load, and may be used on any horsepower motor. When phase sequence is correct, and the voltage remains between the upper and lower trip points, the output relay remains energized. When a fault condition is sensed, the output relay drops out.

The Model 269 does not require a neutral connection, and can be used on Wye or Delta systems. Each of the four voltage versions can be adjusted over a wide range. An adjustable trip delay (1-10 seconds) prevents nuisance tripping. OVER and UNDER voltage failure indicators aid in calibration and system troubleshooting.

SPECIFICATIONS

| Model | A269 | B269 | C269 | EX269 |
|-------------------------------------|---|--------------------------|--------------------------|--------------------------|
| Nominal AC Voltage (phase to phase) | 120VAC | 208/240VAC | 480VAC | 380VAC |
| Adj Range - Upper - Lower | 110 - 145V 80 - 115V | 210 - 280V 170 - 240V | 400 - 540V 380 - 460V | 350 - 450V 300 - 400V |
| Frequency | 60 Hz | | | 50 Hz |
| Power Consumption | 1.5W | 3W | 6W | 6W |
| Transient Protection | 2500VRMS for 10 msec | | | |
| Repeat Accuracy | ± 0.1% of set point (fixed conditions) | | | |
| Response Time | Adjustable from 1-10 seconds ±5% | | | |
| Reset Time | 0.25 seconds | | | |
| Reset Type | Automatic | | | |
| Dead Band | Approximately 2% | | | |
| Output Contacts | SPDT 10A at 240VAC resistive | | | |
| Expected Relay Life | Mech: 10 million operations Elec: 100,000 operations at rated load | | | |
| Operating Temp | - 40° to +130° F | | | |
| Humidity Tolerance | 0-97% w/o condensation | | | |
| Enclosure Material | ABS Plastic | | | |
| Mounting | Surface | | | |
| Weight | 9 oz. | | | |
| Agency Approval | UL Listed & CSA Certified | | | |

DIMENSIONS



TIME MARK
CORPORATION

RH Series Compact Power Relays

Key features

- SPDT through 4PDT, 10A contacts
- Compact power type relays
- Miniature power relays with a large capacity
- 10A contact capacity
- Compact size saves space



Part Number Selection

| Contact | Model | Part Number | | Coil Voltage Code (Standard Stock in bold) |
|---|---|-------------------|--------------|---|
| | | Blade Terminal | PCB Terminal | |
|  SPDT | Standard | RH1B-U □ | RH1V2-U □ | |
| | With Indicator | RH1B-UL □ | — | |
| | With Check Button | RH1B-UC □ | — | |
| | With Indicator and Check Button | RH1B-ULC □ | — | |
| | Top Bracket Mounting | RH1B-UT □ | — | |
| | With Diode (DC coil only) | RH1B-UD □ | RH1V2-UD □ | DC6V, DC12V, DC24V , DC48V, DC110V |
| | With Indicator and Diode (DC coil only) | RH1B-ULD □ | — | DC12V, DC24V , DC48V, DC110V |
|  DPDT | Standard | RH2B-U □ | RH2V2-U □ | |
| | With Indicator | RH2B-UL □ | RH2V2-UL □ | |
| | With Check Button | RH2B-UC □ | — | |
| | With Indicator and Check Button | RH2B-ULC □ | — | |
| | Top Bracket Mounting | RH2B-UT □ | — | |
| | With Diode (DC coil only) | RH2B-UD □ | RH2V2-UD □ | DC6V, DC12V, DC24V , DC48V, DC100-110V |
| | With Indicator and Diode (DC coil only) | RH2B-ULD □ | RH2V2-ULD □ | DC6V, DC12V, DC24V , DC48V, DC100-110V |
|  3PDT | Standard | RH3B-U □ | RH3V2-U □ | |
| | With Indicator | RH3B-UL □ | RH3V2-UL □ | |
| | With Check Button | RH3B-UC □ | — | |
| | With Indicator and Check Button | RH3B-ULC □ | — | |
| | Top Bracket Mounting | RH3B-UT □ | — | |
| | With Diode (DC coil only) | RH3B-UD □ | — | DC6V, DC12V, DC24V, DC48V, DC110V |
| | With Indicator and Diode (DC coil only) | RH3B-ULD □ | — | DC6V, DC12V, DC24V, DC48V, DC110V |
|  4PDT | Standard | RH4B-U □ | RH4V2-U □ | |
| | With Indicator | RH4B-UL □ | RH4V2-UL □ | |
| | With Check Button | RH4B-UC □ | — | |
| | With Indicator and Check Button | RH4B-ULC □ | — | |
| | Top Bracket Mounting | RH4B-UT □ | — | |
| | With Diode (DC coil only) | RH4B-UD □ | RH4V2-UD □ | AC6V, AC12V, AC24V , AC110V, AC120V , AC220V, AC240V DC6V, DC12V, DC24V , DC48V, DC110V |
| | With Indicator and Diode (DC coil only) | RH4B-ULD □ | — | DC6V, DC12V, DC24V, DC48V, DC110V |



PCB terminal relays are designed to mount directly to a circuit board without any socket.

Ordering Information

When ordering, specify the Part No. and coil voltage code:

(example) **RH3B-U** **AC120V**
 Part No. Coil Voltage Code

Switches & Pilot Lights

Signaling Lights

Relays & Sockets

Timers





Contactors


Terminal Blocks

Circuit Breakers




Sockets (for Blade Terminal Models)


| Relays | Standard DIN Rail Mount ¹ | Finger-safe DIN Rail Mount ¹ | Through Panel Mount | PCB Mount |
|--------|--------------------------------------|---|---------------------|-----------|
| RH1B | SH1B-05 | SH1B-05C | SH1B-51 | SH1B-62 |
| RH2B | SH2B-05 | SH2B-05C | SH2B-51 | SH2B-62 |
| RH3B | SH3B-05 | SH3B-05C | SH3B-51 | SH3B-62 |
| RH4B | SH4B-05 | SH4B-05C | SH4B-51 | SH4B-62 |

 1. DIN Rail mount socket comes with two horseshoe clips. Do not use unless you plan to insert pullover wire spring. Replacement horseshoe clip part number is Y778-011.

Hold Down Springs & Clips

| Appearance | Item | Relay | For DIN Mount Socket | For Through Panel & PCB Mount Socket |
|---|--------------------------|------------------------|------------------------|--------------------------------------|
|  | Pullover Wire Spring | RH1B | SY2S-02F1 ² | SY4S-51F1 |
| | | RH2B | SY4S-02F1 ² | |
| | | RH3B | SH3B-05F1 ² | |
| | | RH4B | SH4B-02F1 ² | |
|  | Leaf Spring (side latch) | RH1B, RH2B, RH3B, RH4B | SFA-202 ³ | SFA-302 ³ |
|  | Leaf Spring (top latch) | RH1B, RH2B, RH3B, RH4B | SFA-101 ³ | SFA-301 ³ |

 2. Must use horseshoe clip when mounting in DIN mount socket. Replacement horseshoe clip part number is Y778-011.
3. Two required per relay.

AC Coil Ratings

| Voltage (V) | Rated Current (mA) ±15% at 20°C | | | | | | | | Coil Resistance (Ω) ±10% at 20°C | | | | Operation Characteristics (against rated values at 20°C) | | |
|----------------|---------------------------------|----------|------|------|---------|---------|------|------|----------------------------------|--------|--------|-------|--|----------------|-----------------|
| | AC 50Hz | | | | AC 60Hz | | | | SPDT | DPDT | 3PDT | 4PDT | Max. Continuous Applied Voltage | Pickup Voltage | Dropout Voltage |
| | SPDT | DPDT | 3PDT | 4PDT | SPDT | DPDT | 3PDT | 4PDT | | | | | | | |
| 6 | 170 | 240 | 330 | 387 | 150 | 200 | 280 | 330 | 330 | 9.4 | 6.4 | 5.4 | | | |
| 12 | 86 | 121 | 165 | 196 | 75 | 100 | 140 | 165 | 165 | 39.3 | 25.3 | 21.2 | | | |
| 24 | 42 | 60.5 | 81 | 98 | 37 | 50 | 70 | 83 | 83 | 153 | 103 | 84.5 | | | |
| 110 | 9.6 | — | 18.1 | 21.6 | 8.4 | — | 15.5 | 18.2 | 18.2 | — | 2,200 | 1,800 | | | |
| 110-120 | — | 9.4-10.8 | — | — | — | 8.0-9.2 | — | — | — | — | — | — | | | |
| 120 | 8.6 | — | 16.4 | 19.5 | 7.5 | — | 14.2 | 16.5 | 16.5 | — | 10,800 | 7,360 | | | |
| 220 | 4.7 | — | 8.8 | 10.7 | 4.1 | — | 7.7 | 9.1 | 9.1 | — | 10,800 | 7,360 | | | |
| 220-240 | — | 4.7-5.4 | — | — | — | 4.0-4.6 | — | — | — | 18,820 | — | — | | | |
| 240 | 4.9 | — | 8.2 | 9.8 | 4.3 | — | 7.1 | 8.3 | 8.3 | — | 12,100 | 9,120 | | | |

DC Coil Ratings

| Voltage (V) | Rated Current (mA) ±15% at 20°C | | | | Coil Resistance (Ω) ±10% at 20°C | | | | Operation Characteristics (against rated values at 20°C) | | |
|-------------|---------------------------------|---------|------|------|----------------------------------|--------|-------|-------|--|----------------|-----------------|
| | SPDT | DPDT | 3PDT | 4PDT | SPDT | DPDT | 3PDT | 4PDT | Max. Continuous Applied Voltage | Pickup Voltage | Dropout Voltage |
| 6 | 128 | 150 | 240 | 250 | 47 | 40 | 25 | 24 | 110% | 80% maximum | 10% minimum |
| 12 | 64 | 75 | 120 | 125 | 188 | 160 | 100 | 96 | | | |
| 24 | 32 | 36.9 | 60 | 62 | 750 | 650 | 400 | 388 | | | |
| 48 | 18 | 18.5 | 30 | 31 | 2,660 | 2,600 | 1,600 | 1,550 | | | |
| 100-110 | — | 8.2-9.0 | — | — | — | 12,250 | — | — | | | |
| 110 | 8 | — | 12.8 | 15 | 13,800 | — | 8,600 | 7,340 | | | |

 Standard coil voltages are in **BOLD**.



■ Features :

- High efficiency 94% and low power dissipation
- 150% peak load capability
- Built-in active PFC function, PF>0.94
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- Can be installed on DIN rail TS-35/7.5 or 15
- UL 508(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 years warranty



SPECIFICATION

| MODEL | | SDR-480-24 | SDR-480-48 |
|--------------------------------------|--|--|------------|
| OUTPUT | DC VOLTAGE | 24V | 48V |
| | RATED CURRENT | 20A | 10A |
| | CURRENT RANGE | 0 ~ 20A | 0 ~ 10A |
| | RATED POWER | 480W | 480W |
| | PEAK CURRENT | 30A | 15A |
| | PEAK POWER <small>Note.6</small> | 720W (3sec.) | |
| | RIPPLE & NOISE (max.) <small>Note.2</small> | 100mVp-p | 120mVp-p |
| | VOLTAGE ADJ. RANGE | 24 ~ 28V | 48 ~ 55V |
| | VOLTAGE TOLERANCE <small>Note.3</small> | ± 1.2% | ± 1.0% |
| | LINE REGULATION | ± 0.5% | ± 0.5% |
| | LOAD REGULATION | ± 1.0% | ± 1.0% |
| | SETUP, RISE TIME | 1500ms, 150ms/230VAC 3000ms, 150ms/115VAC at full load | |
| HOLD UP TIME (Typ.) | 14ms/230VAC at full load | | |
| INPUT | VOLTAGE RANGE <small>Note.7</small> | 90 ~ 264VAC 127 ~ 370VDC | |
| | FREQUENCY RANGE | 47 ~ 63Hz | |
| | POWER FACTOR (Typ.) | 0.94/230VAC 0.99/115VAC at full load | |
| | EFFICIENCY (Typ.) | 94% | |
| | AC CURRENT (Typ.) | 5A/115VAC 2.5A/230VAC | |
| | INRUSH CURRENT (Typ.) | 40A/115VAC 80A/230VAC | |
| | LEAKAGE CURRENT | <0.8mA / 240VAC | |
| PROTECTION | OVERLOAD | Normally works within 110 ~ 150% rated output power for more than 3 seconds and then shut down o/p voltage with auto-recovery >150% rated power, constant current limiting with auto-recovery within 2 seconds and may cause to shut down if over 2 seconds | |
| | OVER VOLTAGE | 29 ~ 33V | 56 ~ 65V |
| | OVER TEMPERATURE | 105°C ± 5°C (TSW : detect on heatsink of power switch) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down | |
| FUNCTION | DC OK REALY CONTACT RATINGS (max.) | 60Vdc/0.3A, 30Vdc/1A, 30Vac/0.5A resistive load | |
| ENVIRONMENT | WORKING TEMP. <small>Note.5</small> | -25 ~ +70°C (Refer to "Derating Curve") | |
| | WORKING HUMIDITY | 20 ~ 95% RH non-condensing | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH | |
| | TEMP. COEFFICIENT | ± 0.03%/°C (0 ~ 50°C) | |
| | VIBRATION | Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6 | |
| SAFETY & EMC <small>(Note 4)</small> | SAFETY STANDARDS | UL508, TUV EN60950-1 approved | |
| | WITHSTAND VOLTAGE | I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC O/P-DC OK:0.5KVAC | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25°C / 70% RH | |
| | EMC EMISSION | Compliance to EN55011, EN55022 (CISPR22), EN61204-3 Class B, EN61000-3-2,-3 | |
| | EMC IMMUNITY | Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN61000-6-2 (EN50082-2), EN61204-3, heavy industry level, criteria A, SEMI F47, GL approved | |
| OTHERS | MTBF | 112.9K hrs min. MIL-HDBK-217F (25°C) | |
| | DIMENSION | 85.5*125.2*128.5mm (W*H*D) | |
| | PACKING | 1.6Kg; 8pcs/13.8Kg/0.9CUFT | |
| NOTE | <ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 5. Installation clearances : 40mm on top, 20mm on the bottom, 5mm on the left and right side are recommended when loaded permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended. 6. 3 seconds peak power max. and the average output power should not exceed the rate power. 7. Derating may be needed under low input voltage. Please check the derating curve for more details. | | |

UL - Series D-Trip Characteristic

Application Examples:

High inrush motors, transformers, power supplies, heaters and reactive loads. Relatively long thermal trip delay and very high magnetic trip point.

Altech Corp.[®]

UL489



One Pole



Standard Pack: 12

Weight:
0.3-32A:
1.74kg (3.83lb.)
40-63A:
1.98kg (4.37lb.)

| Rated Current | Type/ Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A | 1D03UL | 277V AC |
| 0.5A | 1D05UL | 277V AC |
| 1.0A | 1D1UL | 277V AC |
| 1.6A | 1D1.6UL | 277V AC |
| 2.0A | 1D2UL | 277V AC |
| 3.0A | 1D3UL | 277V AC |
| 4.0A | 1D4UL | 277V AC |
| 5.0A | 1D5UL | 277V AC |
| 6.0A | 1D6UL | 277V AC |
| 8.0A | 1D8UL | 277V AC |
| 10A | 1D10UL | 277V AC |
| 12A | 1D12UL | 277V AC |
| 13A | 1D13UL | 277V AC |
| 15A | 1D15UL | 277V AC |
| 16A | 1D16UL | 277V AC |
| 20A | 1D20UL | 277V AC |
| 25A | 1D25UL | 277V AC |
| 30A | 1D30UL | 277V AC |
| 32A | 1D32UL | 277V AC |
| 40A | 1D40UL | 240V AC |
| 50A | 1D50UL | 240V AC |
| 60A | 1D60UL | 240V AC |
| 63A | 1D63UL | 240V AC |

Three Pole



Standard Pack: 4

Weight:
0.3-32A:
1.74kg (3.83lb.)
40-63A:
1.98kg (4.37lb.)

| Rated Current | Type/ Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A | 3D03UL | 480Y/277V AC |
| 0.5A | 3D05UL | 480Y/277V AC |
| 1.0A | 3D1UL | 480Y/277V AC |
| 1.6A | 3D1.6UL | 480Y/277V AC |
| 2.0A | 3D2UL | 480Y/277V AC |
| 3.0A | 3D3UL | 480Y/277V AC |
| 4.0A | 3D4UL | 480Y/277V AC |
| 5.0A | 3D5UL | 480Y/277V AC |
| 6.0A | 3D6UL | 480Y/277V AC |
| 8.0A | 3D8UL | 480Y/277V AC |
| 10A | 3D10UL | 480Y/277V AC |
| 12A | 3D12UL | 480Y/277V AC |
| 13A | 3D13UL | 480Y/277V AC |
| 15A | 3D15UL | 480Y/277V AC |
| 16A | 3D16UL | 480Y/277V AC |
| 20A | 3D20UL | 480Y/277V AC |
| 25A | 3D25UL | 480Y/277V AC |
| 30A | 3D30UL | 480Y/277V AC |
| 32A | 3D32UL | 480Y/277V AC |
| 40A | 3D40UL | 240V AC |
| 50A | 3D50UL | 240V AC |
| 60A | 3D60UL | 240V AC |
| 63A | 3D63UL | 240V AC |

Two Pole



Standard Pack: 6

Weight:
0.3-32A:
1.74kg (3.83lb.)
40-63A:
1.98kg (4.37lb.)

| Rated Current | Type/ Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A | 2D03UL | 480Y/277V AC |
| 0.5A | 2D05UL | 480Y/277V AC |
| 1.0A | 2D1UL | 480Y/277V AC |
| 1.6A | 2D1.6UL | 480Y/277V AC |
| 2.0A | 2D2UL | 480Y/277V AC |
| 3.0A | 2D3UL | 480Y/277V AC |
| 4.0A | 2D4UL | 480Y/277V AC |
| 5.0A | 2D5UL | 480Y/277V AC |
| 6.0A | 2D6UL | 480Y/277V AC |
| 8.0A | 2D8UL | 480Y/277V AC |
| 10A | 2D10UL | 480Y/277V AC |
| 12A | 2D12UL | 480Y/277V AC |
| 13A | 2D13UL | 480Y/277V AC |
| 15A | 2D15UL | 480Y/277V AC |
| 16A | 2D16UL | 480Y/277V AC |
| 20A | 2D20UL | 480Y/277V AC |
| 25A | 2D25UL | 480Y/277V AC |
| 30A | 2D30UL | 480Y/277V AC |
| 32A | 2D32UL | 480Y/277V AC |
| 40A | 2D40UL | 240V AC |
| 50A | 2D50UL | 240V AC |
| 60A | 2D60UL | 240V AC |
| 63A | 2D63UL | 240V AC |

Add-on Neutral Pole



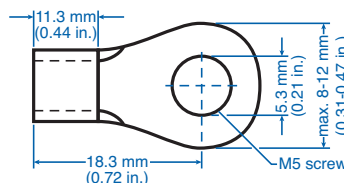
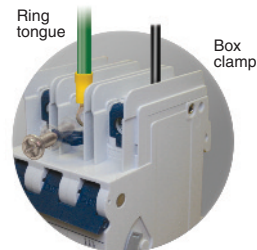
| Rated Current | Type/ Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3-32A | N32UL | 480/277V AC |
| 40-63A | N63UL | 240V AC |

Standard Pack: 6

Weight:
0.99kg (2.18 lb.)

Standard Dual Connection Terminal

- Box clamp terminals
Top: 18-3 AWG;
Bottom: 18-2 AWG
(Line/Load reversible)
- Ring tongue terminals



* May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.

UR-Series - UL1077 Recognized Supplementary Protector - 1 pole D-Trip



One Pole



Standard Pack: 12

Weight:

0.3A - 32A

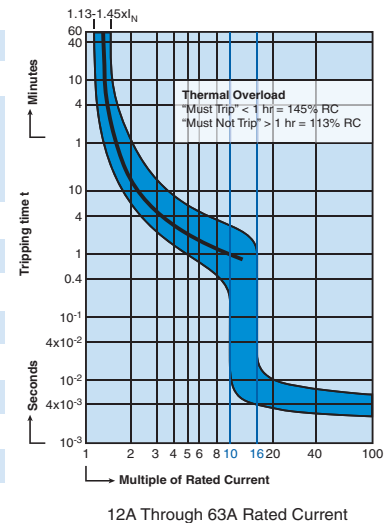
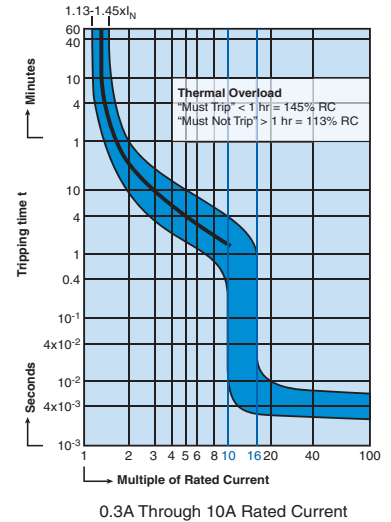
1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

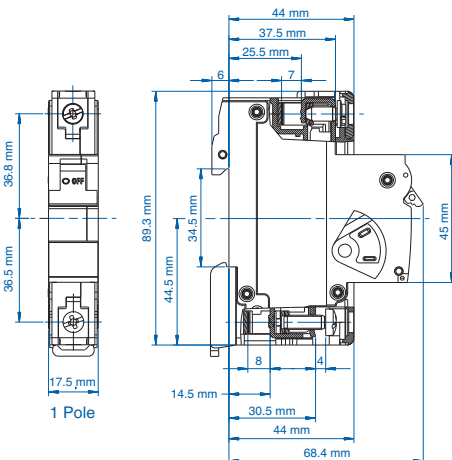
| Rated Current | Type/ Cat. No. | Rated Voltage |
|---------------|----------------|---------------|
| 0.5A | 1D05UR | 277V AC |
| 1.0A | 1D1UR | 277V AC |
| 2.0A | 1D2UR | 277V AC |
| 3.0A | 1D3UR | 277V AC |
| 4.0A | 1D4UR | 277V AC |
| 5.0A | 1D5UR | 277V AC |
| 6.0A | 1D6UR | 277V AC |
| 8.0A | 1D8UR | 277V AC |
| 10A | 1D10UR | 277V AC |
| 12A | 1D12UR | 277V AC |
| 13A | 1D13UR | 277V AC |
| 15A | 1D15UR | 277V AC |
| 16A | 1D16UR | 277V AC |
| 20A | 1D20UR | 277V AC |
| 25A | 1D25UR | 277V AC |
| 30A | 1D30UR | 277V AC |
| 32A | 1D32UR | 277V AC |
| 40A | 1D40UR | 277V AC |
| 50A | 1D50UR | 277V AC |
| 60A | 1D60UR | 277V AC |
| 63A* | 1D63UR | 277V AC |

*63A is not UL Recognized.



UR - Series

| | |
|--|---|
| Voltage Rating | 0.5-60A / 277V AC |
| Short Circuit Withstand Rating | 0.5 - 10A (RC): 10 kA with no back-up fuse 8 - 63A (RC): 10 kA with UL-listed Class J back-up fuse; 5 kA with no back-up fuse |
| Calibration Temperature | 30°C (86°F) |
| Ambient Temperature | -25°C to +55°C (-13°F to 131°F) |
| Storage Temperature | -40°C to +70°C (-40°F to 158°F) |
| Terminal Torque (min/max) | 2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in.) |
| Electrical Life | 6000 switching cycles ON/ OFF |
| Mechanical Life | 10000 switching cycles ON/ OFF |
| Vibration Resistance | > 15g according to DIN EN 60069-2-59 during a load with $1.05 \times I_N$ |
| Resistance to mechanical shocks | 25g @ 11ms |



"D" Magnetic Trip Parameters

Rated current 0.5A to 63A.

1. Hold for a minimum of 100ms at surge of 10 times rated current.
2. Trip in under 100ms at 16 times rated current.

Short Circuit Withstand Ratings for R-Series Supplementary Protector

| Trip Curve | Amp Range | Backup Protection | |
|------------|-----------|-----------------------------------|--------------------------------|
| | | UL-Listed Class J Fuse up to 10kA | No Backup Fuse Required up to: |
| All | 0.5 - 10A | 70A | 10kA |
| All | 12 - 60A | 4xRC* | 5kA |

*up to nearest rated current

Table 18.1: 3- or 4-Pole Screw Terminal Connections

| Maximum Horsepower Ratings | | | | | | Maximum Current Utilization Categories | | No of Poles | | Instantaneous Auxiliary Contacts | | Catalog Number ▲ | \$ Price | | | | | |
|----------------------------|----------|-------------|----------|----------|----------|--|-----------------------|-------------|------|----------------------------------|------|------------------|-----------|----------|---------|-------------|--------|--------|
| Single Phase | | Three Phase | | | | Inductive AC3 Amperes | Resistive AC1 Amperes | N.O. | N.C. | N.O. | N.C. | | AC Coils | DC Coils | | | | |
| 115 V hp | 230 V hp | 200 V hp | 230 V hp | 460 V hp | 575 V hp | | | | | | | | | | | | | |
| 0.5 | 1 | 2 | 2 | 5 | 7.5 | 9 | 20 | 3 | 0 | 1 | 1 | LC1D09 ◆◆◆ | 94.00 | 119.00 | | | | |
| — | — | — | — | — | — | — | | 4 | | | | 2 | LC1DT20 ◆ | 94.00 | 119.00 | | | |
| — | — | — | — | — | — | — | | 2 | | | | 2 | LC1D098 ◆ | 94.00 | 119.00 | | | |
| 1 | 2 | 3 | 3 | 7.5 | 10 | 12 | 25 | 3 | 0 | 1 | 1 | LC1D12 ◆◆◆ | 119.00 | 149.00 | | | | |
| — | — | — | — | — | — | — | | 4 | | | | 2 | LC1DT25 ◆ | 119.00 | 149.00 | | | |
| — | — | — | — | — | — | — | | 2 | | | | 2 | LC1D128 ◆ | 119.00 | 149.00 | | | |
| 1 | 3 | 5 | 5 | 10 | 15 | 18 | 32 | 3 | 0 | 1 | 1 | LC1D18 ◆★ | 136.00 | 160.00 | | | | |
| — | — | — | — | — | — | — | | 4 | | | | 2 | LC1DT32 ◆ | 149.00 | 183.00 | | | |
| — | — | — | — | — | — | — | | 2 | | | | 2 | LC1D188 ◆ | 149.00 | 183.00 | | | |
| 2 | 3 | 7.5 | 7.5 | 15 | 20 | 25 | 40 | 3 | 0 | 1 | 1 | LC1D25 ◆★ | 151.00 | 181.00 | | | | |
| — | — | — | — | — | — | — | | 4 | | | | 2 | LC1DT40 ◆ | 193.00 | 240.00 | | | |
| — | — | — | — | — | — | — | | 2 | | | | 2 | LC1D258 ◆ | 193.00 | 240.00 | | | |
| 2 | 5 | 10 | 10 | 20 | 30 | 32 | 50 | 3 | 0 | 1 | 1 | LC1D32 ◆★ | 172.00 | 213.00 | | | | |
| 3 | 5 | 10 | 10 | 30 | 30 | 40 | | 3 | | | | 1 | 1 | LC1D40A | 218.00 | 275.00 | | |
| — | — | — | — | — | — | — | | 4 | | | | 0 | 0 | 0 | 0 | LC1DT60A | 296.00 | 353.00 |
| 3 | 7.5 | 15 | 15 | 40 | 40 | 50 | 60 | 3 | 0 | 1 | 1 | LC1D50A | 234.00 | 291.00 | | | | |
| 5 | 10 | 20 | 20 | 40 | 50 | 65 | | 3 | | | | 0 | 1 | 1 | LC1D65A | 322.00 | 379.00 | |
| — | — | — | — | — | — | — | | 4 | | | | 0 | 0 | 0 | 0 | LC1DT80A | 446.00 | 503.00 |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 80 | 80 | 3 | 0 | 1 | 1 | LC1D80 | 363.00 | 420.00 | | | | |
| — | — | — | — | — | — | — | | 4 | | | | 0 | 0 | 0 | 0 | LC1D80004 ■ | 489.00 | 524.00 |
| — | — | — | — | — | — | — | | 2 | | | | 2 | 0 | 0 | 0 | LC1D80008 ■ | 489.00 | 524.00 |
| — | — | 30 | 40 | 75 | 100 | 115 | 125 | 3 | 0 | 1 | 1 | LC1D115 | 479.00 | 479.00 | | | | |
| — | — | 40 | 50 | 100 | 125 | 150 | | 3 | | | | 0 | 1 | 1 | LC1D150 | 696.00 | 696.00 | |
| — | — | — | — | — | — | — | | 4 | | | | 0 | 0 | 0 | 0 | LC1D115004 | 630.00 | 630.00 |

- ▲ Complete catalog number with coil voltage code from table on page 18-6; example, LC1D09G7.
- For DC version of these devices replace the 'C' with 'P' (ex. LC1D80004** becomes LP1D80004**). This applies only to 80A 4 pole devices.
- ◆ On LC1D09 - LC1D65A and LC1DT20 through LC1DT80A, for ring tongue versions add '6' to the catalog number prior to adding the voltage code (ex. LC1D09G7 becomes LC1D096G7 and LC1D50AG7 becomes LC1D50A6G7). No price adder for this modification.
- ★ On LC1D09 - LC1D65A, for spring terminals versions add '3' to the catalog number prior to adding the voltage code (ex. LC1D12G7 becomes LC1D123G7 and LC1D40AG7 becomes LC1D40A3G7 - Note that 40A to 65A spring terminals are only on the control terminations and not on power terminations). No price adder for this modification.
- ▼ On LC1D09 and LC1D12 only, for slip-on connector versions add "9" to the catalog number prior to adding the voltage code (ex. LC1D09G7 becomes LC1D099G7). No price adder for this modification.

Table 18.2: TeSys D Overload Relays — Ambient Compensated, Bi-Metallic Direct Mount

| Current Setting Range Amperes | For Direct Mounting to LC1... | Class 10 with Single Phase Sensitivity | Class 10 without Single Phase Sensitivity | Class 20 with Single Phase Sensitivity | Class 20 without Single Phase Sensitivity | \$ Price |
|-------------------------------|-------------------------------|--|---|--|---|----------|
| 0.10-0.16 | D09-D32 | LRD01 | LR3D01 | — | — | 60.00 |
| 0.16-0.25 | | LRD02 | LR3D02 | — | — | |
| 0.25-0.40 | | LRD03 | LR3D03 | — | — | |
| 0.40-0.63 | | LRD04 | LR3D04 | — | — | |
| 0.63-1 | | LRD05 | LR3D05 | — | — | |
| 1-1.6 | | LRD06 | LR3D06 | — | — | |
| 1.6-2.5 | | LRD07 | LR3D07 | — | — | |
| 2.5-4 | | LRD08 | LR3D08 | LRD1508 | LR3D1508A1 | |
| 4-6 | | LRD10 | LR3D10 | LRD1510 | LR3D1510A1 | |
| 5.5-8 | | D09-D32 | LRD12 | LR3D12 | LRD1512 | |
| 7-10 | D09-D32 | LRD14 | LR3D14 | LRD1514 | LR3D1514A1 | |
| 9-13 | D12-D32 | LRD16 | LR3D16 | LRD1516 | LR3D1516A1 | |
| 12-18 | D18-D32 | LRD21 | LR3D21 | LRD1521 | LR3D1521A1 | |
| 16-24 | D25-D32 | LRD22 | LR3D22 | — | — | |
| 17-25 | D25-D32 | — | — | LRD1522 | LR3D1522A1 | |
| 23-32 | D25-D32 | LRD32 | LR3D32 | — | — | 73.00 |
| 23-28 | D25-D32 | — | — | LRD1530 | LR3D1530A1 | |
| 25-32 | D25-D32 | — | — | LRD1532 | LR3D1532A1 | |
| 30-38 | D32 | LRD35 | LR3D35 | — | — | |
| 9-13 | D40A-D65A Δ | LRD313 | LR3D313 | LRD313L | — | 107.00 |
| 12-18 | D40A-D65A Δ | LRD318 | LR3D318 | LRD318L | — | |
| 16-25 | D40A-D65A Δ | LRD325 | LR3D325 | LRD325L | — | |
| 23-32 | D40A-D65A Δ | LRD332 | LR3D332 | LRD332L | — | |
| 30-40 | D40A-D65A Δ | LRD340 | LR3D340 | LRD340L | — | |
| 37-50 | D40A-D65A Δ | LRD350 | LR3D350 | LRD350L | — | |
| 48-65 | D40A-D65A Δ | LRD365 | LR3D365 | LRD365L | — | 107.00 |
| 17-25 | D40-D80 □ | LRD3322 | LR3D3322 | LR2D3522 | LR3D3522 | |
| 23-32 | D40-D80 □ | LRD3353 | LR3D3353 | LR2D3553 | LR3D3553 | |
| 30-40 | D40-D80 □ | LRD3355 | LR3D3355 | LR2D3555 | LR3D3555 | |
| 37-50 | D50-D80 □ | LRD3357 | LR3D3357 | LR2D3557 | LR3D3557 | |
| 48-65 | D50-D80 □ | LRD3359 | LR3D3359 | LR2D3559 | LR3D3559 | |
| 55-70 | D65-D80 | LRD3361 | LR3D3361 | LR2D3561 | LR3D3561 | 127.00 |
| 63-80 | D65-D80 | LRD3363 | LR3D3363 | LR2D3563 | LR3D3563 | |
| 80-104 | D80 | LRD3365 | — | — | — | |
| 80-104 | D115-D150 | LRD4365 | — | — | — | |
| 95-120 | D115-D150 | LRD4367 | — | — | — | 362.00 |
| 110-140 | D150 | LRD4369 | — | — | — | |

- Δ Overload relays with Everlink termination - direct mount to D40A to D65A only.
- Direct mount to old D2 style D40 to D65 (no Everlink terminations) and to D80 only.

TeSys D contactor accessories pages 18-8 to 18-11
 TeSys D overload relay accessories page 18-16
 TeSys D replacement coils pages 18-17 to 18-19
 Dimensions pages 18-40 to 18-46
 TeSys T pages 16-91

18 IEC CONTACTORS AND STARTERS



LC1D09



LC1D093



LC1D40A



LC1D115



LRD22



LRD3



E164862
CCN NLDX



LR43364
Class 3211 04





XB5AS9445



XB5AT42



XB5AS542

Table 19.113: Non-Illuminated Emergency Stop and Emergency Off Mushroom Head Push Buttons, Ø 40 mm (Red) (screw clamp terminal connections)

| Shape of Head | Type of Push | Type of Contact | | Catalog Number (Components) | \$ Price |
|---------------|---------------------------------------|-----------------|------|---------------------------------|----------|
| | | N.O. | N.C. | | |
| | Trigger action push-pull▲ | 1 | 1 | XB5AT845 (ZB5AZ105 + ZB5AT84) | 101.00 |
| | Trigger action turn-to-release▲ | 1 | 1 | XB5AS8445 (ZB5AZ105 + ZB5AS844) | 165.00 |
| | | — | 2 | XB5AS8444 (ZB5AZ104 + ZB5AS844) | |
| | Trigger action Key release (No. 455)▲ | 1 | 1 | XB5AS9445 (ZB5AZ105+ ZB5AS944) | 165.00 |
| | Push-pull | — | 1 | XB5AT42 (ZB5AZ102 + ZB5AT4) | 68.00 |
| | Turn-to-release | — | 1 | XB5AS542 (ZB5AZ102 + ZB5AS54) | 110.00 |
| | Key release (No. 455) | — | 1 | XB5AS142 (ZB5AZ102 + ZB5AS14) | 147.00 |

▲ Trigger action mushroom heads are tamper proof in that a change of contact state is not possible by teasing or floating the operator. For emergency stop applications, always use a trigger action push button (per EN/IEC 13850).

Table 19.114: Non-Illuminated Selector Switches and Key Switches (screw clamp terminal connections) ■



XB5AD33



XB5AJ33



XB5AG33

| Shape of Head | Type of Operator | Type of Contact | | Number and Type of Positions | Catalog Number (Components) | \$ Price |
|-----------------------|-----------------------------|-----------------|------|------------------------------|-----------------------------|----------|
| | | N.O. | N.C. | | | |
| | Standard lever, black | 1 | — | 2-maintained | XB5AD21 (ZB5AZ101 + ZB5AD2) | 51.00 |
| | | 1 | 1 | 2-maintained | XB5AD25 (ZB5AZ105 + ZB5AD2) | 68.00 |
| | | 2 | — | 3-maintained | XB5AD33 (ZB5AZ103 + ZB5AD3) | 68.00 |
| 3-momentary to center | XB5AD53 (ZB5AZ103 + ZB5AD5) | | | 75.00 | | |
| | Extended lever, black | 1 | — | 2-maintained | XB5AJ21 (ZB5AZ101 + ZB5AJ2) | 51.00 |
| | | 2 | — | 3-maintained | XB5AJ33 (ZB5AZ103 + ZB5AJ3) | 68.00 |
| | | | | 3-momentary to center | XB5AJ53 (ZB5AZ103 + ZB5AJ5) | 75.00 |
| | Key (No. 455) | 1 | — | 2-maintained | XB5AG21 (ZB5AZ101 + ZB5AG2) | 123.00 |
| | | | | 2-momentary to left | XB5AG41 (ZB5AZ101 + ZB5AG4) | 123.00 |
| | | | | 2-momentary to left | XB5AG61 (ZB5AZ101 + ZB5AG6) | 123.00 |
| | | 2 | — | 3-maintained | XB5AG03 (ZB5AZ103 + ZB5AG0) | 141.00 |
| | | | | 3-maintained | XB5AG33 (ZB5AZ103 + ZB5AG3) | 141.00 |

■ See 19-49 for contact configurations.

Note: The symbol indicates key withdrawal position(s)

Legends..... pages 19-58 to 19-60



Front Mounted
Auxiliary Blocks
(shown on TeSys D
contactor)

Table 18.15: Standard, instantaneous auxiliary contact blocks

| Snap-On Mounting | Number of Contacts | Composition | | Catalog Number ▲ | \$ Price |
|---|---|-------------|------|------------------|----------|
| | | N.O. | N.C. | | |
| To front of LC●DT20–D258 (4P), LC●D09–D150▲ or To right side of LC●F | 4 ▲ | 2 | 2 | LADN22 ■ | 41.50 |
| | | 1 | 3 | LADN13 ■ | 41.50 |
| | | 4 | 0 | LADN40 ■ | 41.50 |
| | | 0 | 4 | LADN04 ■ | 41.50 |
| | | 3 | 1 | LADN31 ■ | 41.50 |
| | | 2 ◆ | 2 ◆ | LADC22 ◆◆ | 41.50 |
| | 2 | 1 | 1 | LADN11 ■ | 20.70 |
| | | 2 | 0 | LADN20 ■ | 20.70 |
| | | 0 | 2 | LADN02 ■ | 20.70 |
| | To front of LC●D80 and D115 or To left side of LC●F | 1 | 1 | 0 | LADN10 ★ |
| 0 | | | 1 | LADN01 ★ | 13.10 |
| To side of LC●D09 to D150 only (not for use on TeSys F) | 2 | 1 | 1 | LAD8N11 ▼ | 20.70 |
| | | 2 | 0 | LAD8N20 ▼ | 20.70 |

- ▲ For low consumption coils (LC1D09 to D32 only), only one front-mounted two-contact block allowed. No side-mounted contact blocks allowed.
- For spring terminal versions of these blocks, add a "3" to the end of the catalog number. (Ex. LADN223). No price adder for this modification.
- ◆ Including 1 N.O. + 1 N.C. make before break overlapping contacts.
- ★ This block cannot be added to the LC1D 09 to D32 contactors; a maximum of 2 blocks can be mounted on the LC1D40A to LC1/LP1D80 contactors only.
- ▼ 1 block may be added to the left side of the LC1D 09 to D32, AC coils only; 1 block may be added to each side of the LC1D 40A to D80 contactors, AC coils only. Cannot be installed on TeSys D contactors with DC coils.

Table 18.16: Instantaneous blocks with dust-tight auxiliary contacts (IP54)
NEMA 12

| Snap-On Mounting | Standard Contacts | | Dusttight Contacts | | Catalog Number | \$ Price |
|--|-------------------|------|--------------------|------|----------------|----------|
| | N.O. | N.C. | N.O. | N.C. | | |
| To front of LP●D40–D80, LC●DT20–D258 (4P), LC●D09 to D80 or To right side of LC●F | — | — | 2 | — | LA1DX20 | 65.00 |
| | 2 | — | 2 | — | LA1DZ40 | 82.00 |
| | 1 | 1 | 2 | — | LA1DZ31 | 82.00 |
| | — | — | 2 | — | LA1DY20Δ | 77.00 |

Δ Device supplied with 4 ground terminal points.

Table 18.17: Pneumatic time delay contact blocks

| Snap-On Mounting | Time Delay Contacts | | Type | Range of Time Delay | Catalog Number ◇ | \$ Price |
|--|---------------------|------|-----------------------------------|---------------------|------------------|----------|
| | N.O. | N.C. | | | | |
| To front of LP●D40–D80, LC●DT20–D258 (4P), LC●D09 to D150 or To right side of LC●F | 1 | 1 | On energization (on delay) | 0.1 to 3 s□ | LADT0 | 131.00 |
| | | | | 0.1 to 30 s | LADT2 | 131.00 |
| | | | | 10 to 180 s | LADT4 | 131.00 |
| | | | | 1 to 30 s★ | LADS2 | 131.00 |
| | 1 | 1 | On de-energization (off-delay) | 0.1 to 3 s□ | LADR0 | 131.00 |
| | | | | 0.1 to 30 s | LADR2 | 131.00 |
| | | | | 10 to 180 s | LADR4 | 131.00 |

- Scale range is expanded between 0.1 and 0.6 seconds on the dial for more accurate settings at the lower end of the range.
- ◇ For spring terminal versions of these blocks, add a "3" to the end of the catalog number. (Ex. LADT23). No price adder for this modification.
- ★ With switching time of 40 ms ± 15 ms between the opening of the N.C. contact to the closing of the N.O. contact.

Table 18.18: Mechanical latch blocks with manual or electrical unlatch
(TeSys D only)

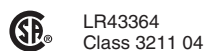
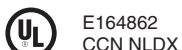
| Front snap-on mounting onto | Application | Catalog number to be completed by the code corresponding to the coil voltage | \$ Price |
|-----------------------------|--|--|----------|
| LC●D09 to D65A | For silent operation and energy conservation | LAD6K10▽● | 77.00 |
| LC1 D80 to D150 LP1 D80 | For silent operation and energy conservation | LA6DK20▽● | 77.00 |

- ▽ Does not include internal coil clearing contact.
- Complete catalog number by adding coil voltage code. For example: LAD6K10F.

Table 18.19: Coil Voltage Codes for LA6DK mechanical latch blocks

| Volts | 12 | 24 | 32/36 | 42/48 | 60/72 | 100 | 110/127 | 200/208 | 220/240 | 380/415 | 440/480 | 500/600 |
|----------|----|----|-------|-------|-------|-----|---------|---------|---------|---------|---------|---------|
| AC or DC | J | B | C | E | EN | K | F | L | M | Q | R | S |

TeSys D contactors pages 18-4, 18-6
 TeSys D overload relay accessories page 18-16
 TeSys D replacement coils pages 18-18 to 18-19
 Dimensions pages 18-40 to 18-46



FINGER/GUARD® Industrial Control Transformers

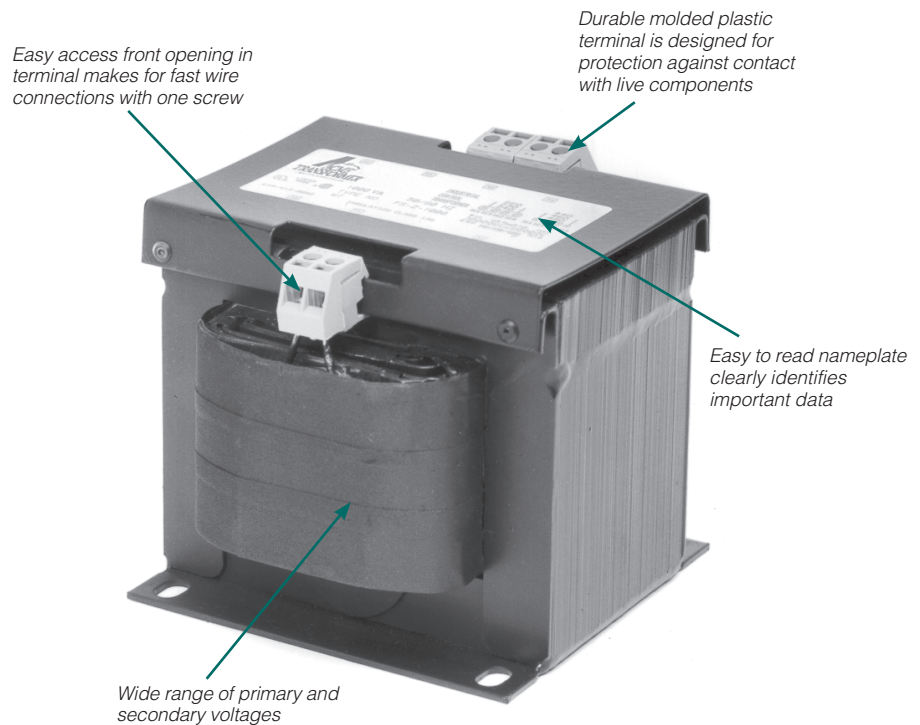
The Acme FINGER/GUARD® line of Touch-Protected Industrial Control Transformers offers the most advanced and versatile design concepts available to the marketplace today.

They are designed to meet Acme's rigid standards for mechanical durability as well as surpass Agency and Industry electrical standards. The FINGER/GUARD® line is designed for all control applications and features integrally installed, durable molded plastic terminations designed to protect against contact with live components. No slip-on plastic covers to be broken, lost or misplaced.

All FINGER/GUARD® products use copper windings, high-permeability silicon steel cores and 130 degree C (Class B) insulation. All FINGER/GUARD® products meet or exceed ANSI, IEC and NEMA standards. They are third party witness tested and are UL Listed (File E79947), CSA Certified (File 7357) and CE Marked (to EN60742)... ON ALL SIZES. The product is suitable for both 50 and 60 Hertz applications and is available in sizes ranging from 50 VA to 3000 VA.

FEATURES

- Constructed with high quality silicon steel lamination to minimize core losses and increase efficiency.
- Designs incorporate precision wound coils for improved regulation.
- Copper windings on all groups.
- 50 VA through 3000 VA sizes, 50/60 Hz.
- 130°C (Class B) Insulation 80°C temperature rise.
- Voltage regulation exceeds NEMA requirements.
- UL Listed, CSA Certified and CE Marked.
- Attractive finish, nameplate, and design features enhance the end product.
- Ten-year limited warranty.
- Smaller, lighter weight design.



CE Marking (Conformité Européene)

The CE Marking, standing for Conformité Européene, is a European Mark of conformity indicating that a product or system to which it is applied, complies with European law (Directives) regulating a necessary level of protection in Europe with respect to safety, health, environmental and consumer protection; however, it is not intended as a guarantee of quality for the consumer. The CE Marking must be applied to products being placed on the European market. The CE Marking does allow a product to be moved freely within the internal market of the European Union.

The Directives that apply to Control or Power Distribution Transformers are:

- Low Voltage Directive, 73/23/EEC effective January 1, 1997
- Electromagnetic Compatibility (EMC) Directive, 89/336/EEC effective January 1, 1996

The stringent testing required to obtain a third party certification mark in many cases is significantly more rigid than domestic requirements. This ensures that not only the Acme FINGER/GUARD® product, but all of our CE Marked products are designed to meet a higher level of safety standards than non-CE Marked products.

All Acme transformers are manufactured in a facility certified by Underwriters Laboratories to ISO-9001.



SELECTION CHARTS

GROUP A



120 X 240 PRIMARY VOLTS—24 SECONDARY VOLTS—50/60 Hz

| CATALOG NO. | VA RATING | EUROPEAN* RATING | APPROX. DIMENSIONS INCHES (CM.) | | | | | | APPROX. SHIP WEIGHT LBS. (Kg.) |
|---|-----------|------------------|---------------------------------|-------------|-------------|-------------|------------|-----------------------|--------------------------------|
| | | | A | B | C | D | E | F | |
| FS150 | | | | | | | | | |
| FS175 | | | | | | | | | |
| FS1100 | | | | | | | | | |
| FS1150 | | | | | | | | | |
| FS1250 | | | | | | | | | |
| FS1350 | | | | | | | | | |
| FS1500 | | | | | | | | | |
| FS1750 | | | | | | | | | |
| Reference Group IC (CE01): CE Series Industrial Control Transformers 50-750 VA See Pg 72 | | | | | | | | | |
| FS11000 | 1000 | 870 | 4.76 (12.1) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 2.86 (7.3) | .31 x .50 (0.8 x 1.3) | 26 (11.8) |

GROUP B

240 X 480, 230 X 460, 220 X 440 PRIMARY VOLTS—120/115/110 SECONDARY VOLTS—50/60 Hz

| CATALOG NO. | VA RATING | EUROPEAN* RATING | APPROX. DIMENSIONS INCHES (CM.) | | | | | | APPROX. SHIP WEIGHT LBS. (Kg.) |
|--|-----------|------------------|---------------------------------|-------------|-------------|-------------|-------------|-----------------------|--------------------------------|
| | | | A | B | C | D | E | F | |
| FS250 | | | | | | | | | |
| FS275 | | | | | | | | | |
| FS2100 | | | | | | | | | |
| FS2150 | | | | | | | | | |
| FS2250 | | | | | | | | | |
| FS2300 | | | | | | | | | |
| FS2350 | | | | | | | | | |
| FS2500 | | | | | | | | | |
| FS2750 | | | | | | | | | |
| Reference Group VIC (CE06): CE Series Industrial Control Transformers 50-750 VA See Pg 73 | | | | | | | | | |
| FS21000 | 1000 | 870 | 4.76 (12.1) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 2.86 (7.3) | .31 x .50 (0.8 x 1.3) | 26 (11.8) |
| FS21500 | 1500 | 1290 | 6.01 (15.3) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 4.13 (10.5) | .31 x .50 (0.8 x 1.3) | 38 (17.2) |
| FS22000 | 2000 | 1680 | 6.51 (16.5) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 4.63 (11.8) | .31 x .50 (0.8 x 1.3) | 44 (20.0) |
| FS23000 | 3000 | 2465 | 7.44 (18.9) | 7.50 (19.1) | 6.68 (17.0) | 6.50 (16.5) | 6.47 (16.4) | .41 x .81 (1.0 x 2.1) | 60 (27.2) |

GROUP C


240/416/480/600; 230/400/460/575; 220/380/440/550; 208/500 PRIMARY VOLTS
99/120/130; 95/115/125; 91/110/120; 85/100/110 SECONDARY VOLTS—50/60 Hz

| CATALOG NO. | VA RATING | EUROPEAN* RATING | APPROX. DIMENSIONS INCHES (CM.) | | | | | | APPROX. SHIP WEIGHT LBS. (Kg.) |
|-------------|-----------|------------------|---------------------------------|--------------|-------------|-------------|-------------|-----------------------|--------------------------------|
| | | | A | B | C | D | E | F | |
| FS350 | 50 | 50 | 2.59 (6.6) | 3.75 (9.5) | 3.64 (9.2) | 3.13 (8.0) | 1.70 (4.3) | .22 x .50 (0.6 x 1.3) | 5 (2.3) |
| FS3150 | 150 | 150 | 3.31 (8.4) | 4.50 (11.4) | 4.15 (10.5) | 3.75 (9.5) | 2.18 (5.5) | .22 x .50 (0.6 x 1.3) | 8 (3.6) |
| FS3250 | 250 | 250 | 3.61 (9.2) | 4.88 (12.4) | 4.46 (11.3) | 4.06 (10.3) | 2.33 (5.9) | .22 x .50 (0.6 x 1.3) | 11 (5.0) |
| FS3350 | 350 | 345 | 4.69 (11.9) | 4.88 (12.4) | 4.46 (11.3) | 4.06 (10.3) | 3.48 (8.8) | .22 x .50 (0.6 x 1.3) | 17 (7.7) |
| FS3500 | 500 | 490 | 4.39 (11.2) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 2.48 (6.3) | .31 x .50 (0.8 x 1.3) | 22 (10.0) |
| FS3750 | 750 | 720 | 5.18 (13.2) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 3.31 (8.4) | .31 x .50 (0.8 x 1.3) | 30 (13.6) |
| FS31000 | 1000 | 870 | 6.18 (15.7) | 6.75 (17.1) | 6.03 (15.3) | 5.75 (14.6) | 4.30 (10.9) | .31 x .50 (0.8 x 1.3) | 39 (17.7) |
| FS31500 | 1500 | 1290 | 6.26 (15.9) | 7.50 (19.1) | 6.68 (17.0) | 6.50 (16.5) | 5.26 (13.4) | .41 x .81 (1.0 x 2.1) | 51 (23.1) |
| FS32000 | 2000 | 1680 | 7.76 (19.7) | 7.50 (19.1) | 7.70 (19.6) | 6.50 (16.5) | 6.75 (17.1) | .41 x .81 (1.0 x 2.1) | 66 (29.9) |
| FS33000 | 3000 | 2465 | 8.88 (22.6) | 11.92 (30.3) | 8.83 (22.4) | 6.75 (17.1) | 5.75 (14.6) | .41 x .81 (1.0 x 2.1) | 70 (31.8) |


SDU Series, DIN Rail AC UPS

The SDU DIN Rail UPS combines an industry leading compact design with a wide operation temperature range and unique installation options. The SDU series provides economical protection from damaging impulses and power interruptions. These units include easy to wire screw terminations for critical devices needing battery back up such as computer based control systems.

Features

- Lightweight, compact industrial design
- Wide operation temperature range (0-50°C)
- Cold start capability
- Phone/dataline surge protection
- Software and cable included for easy installation
- Simulated sinewave output
- RS232 Communication Port
- USB Communication Port (optional)
- Form C Dry Contact Relay (optional)
- Panel/Wall mounting brackets (optional)
- Remote turn-on and shut-off capabilities 
- Limited two-year warranty

Approvals

- 120V models are UL1778  recognized for industrial applications without derating.
 - No derating required in UL508 applications.
- 230V models are CE marked.



Applications

- Programmable Logic Controllers
- Factory Automation
- Robotics
- Conveying Equipment
- Computer-based Control Systems

Related Products

- Portable MCR Power Conditioners
- STV Surge Protective Devices
- SDN DIN Rail Power Supplies
- STFV Plus Active Tracking® Filters

Selection Table

| Capacity (VA/W) | Catalog Number | Volts, Frequency In/Out | Typical Back-up Time (minutes)* | Input/Output Connections | Approx. Ship Weight – lbs (kg) |
|-----------------|----------------|-------------------------|---------------------------------|--|--------------------------------|
| 500/300 | SDU 500 | 120 Vac, 50/60 Hz | 4 | IP20 touch proof, screw terminals. Wire range: 10 ~ 24 AWG. | 10.7 (4.7) |
| 850/510 | SDU 850 | | 2 | | 11.4 (5.0) |
| 500/300 | SDU 500-5 | 230 Vac, 50/60 Hz | 4 | | 11.5 (5.2) |
| 850/510 | SDU 850-5 | | 2 | | 11.9 (5.4) |

* At full load.

SDU Accessories

| Catalog Number | Description | Approx. Ship Weight – lbs (kg) |
|----------------|--|--------------------------------|
| RELAYCARD-SDU | Dry contact I/O relay box, IP20 touch proof screw terminals, wire size range 12~22 AWG (IEC 2.5mm); N.O./N.C. form "C" contact. Relay contact signal for "On Battery", "Low Battery" and "UPS Shutdown". | 1.0 (0.45) |
| UPSMON-USB | RS232 to USB adapter cable | 1.0 (0.45) |
| SDU-PMBRK | Mounting brackets to secure UPS to wall, back of panel or enclosure. | 1.0 (0.45) |

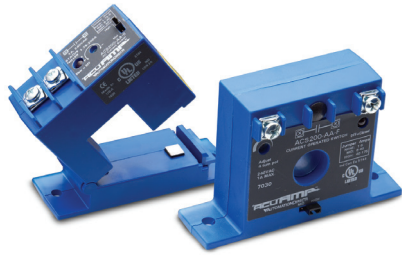
Specifications

| Catalog Number | SDU 500 | SDU 850 | SDU 500-5 | SDU 850-5 |
|---------------------------------|---|------------|--|------------|
| Capacity (VA/Watts) | 500/300 | 850/510 | 500/300 | 850/510 |
| Load Power Factor | 0.6 | | | |
| Dimensions – inches (mm) | | | | |
| Unit (H x W x D) | 4.88 x 11.1 x 4.55 (124 x 281 x 116) | | | |
| Weight – lbs (kg) | 10.7 (4.7) | 11.4 (5.0) | 11.5 (5.2) | 11.9 (5.4) |
| Input Parameters | | | | |
| Voltage | 120 V (+10%, -20%) | | 230 V (+/- 20%) | |
| Frequency | 50 +/- 5 Hz or 60 Hz +/- 6 Hz (auto sensing) | | | |
| Output AC Parameters | | | | |
| Voltage (Battery Mode) | Step sinewave | | | |
| | +/- 5% | | | |
| Frequency (On Battery) | 50 or 60 Hz | | | |
| | +/- 0.3 Hz | | | |
| Overload Protection | UPS automatic shutdown if overload exceeds 105% of nominal at 20 seconds, 120% at 10 seconds, 130% at 3 seconds | | | |
| Short Circuit | UPS output cut off immediately | | | |
| Battery Parameters | | | | |
| Battery Type | Sealed, non-spillable, maintenance-free lead acid batteries | | | |
| Transfer Time | 4 - 6 ms typical | | | |
| Back-up Time* (minutes) | 4.5/18 | 2.5/10 | 4.5/18 | 2.5/10 |
| Recharge Time | 8 hours to 90% capacity after full discharge | | | |
| Environmental | | | | |
| Operating Temperature | 32°F to 122°F (0°C to 50°C) | | | |
| Storage Temperature | 5°F to 140°F (-15°C to 60°C) | | | |
| Relative Humidity | 1% to 95%, non-condensing | | | |
| Ambient Operation | 1-95% humidity non-condensing, 0-50°C up to 5,000 ft. (1500m) | | | |
| Audible Noise | < 40dBA (1 meter from surface) | | | |
| Standards | | | | |
| Safety | UL 1778 Recognized components for industrial applications in accordance with UL508 without derating. CAN/CSA C22.2 No 107.1-01. Overvoltage Category 3, pollution degree 3. FCC Part 15, Subpart B, Class A | | CE Marked; LVD: EN62040-1-1; EMC: EN50091-2, EN61000-3-2, EN61000-3-3, IEC60801-2, IEC60801-3, IEC60801-4, IEC61000-2-2. | |
| Elevation | 5000 ft. without derating | | | |
| Shock & Vibration | According to the International Safe Transit Association standard ISTA 2A. | | | |
| Mounting | To be mounted on DIN TS35/7.5 or TS35/15 rail system. Chassis mounting permissible via optional brackets. Unit handles normal shock and vibration of industrial use and transportation without coming off rail. | | | |

* At full load/half load.



ACS200 Series AC Current Switches



Applications

Electronic Proof of Flow

- Current operated switch eliminates the need for multiple pipe or duct penetrations, lowering installed costs.
- Solid-state technology more reliable than electromechanical pressure or flow switches

Conveyors

- Detect jams and overloads; useful when interlocking multiple conveyor sections

Lighting, Heating Circuits

- Detect ON/OFF status, easier to install and less expensive than photocell or temperature sensor alternatives

Features

- Five-year warranty
- N.O. or N.C. outputs
1A @ 240VAC or 0.15 A @ 30VDC.
- Status LED provides visual indication of setpoint trip and contact action.
- Self-powered operation cuts installation time and operating costs.
- Potentiometer-adjustable trip points speed start-up and allow for tailored operation.
- Choose fixed-core or split-core enclosure style. Split-core allows easy installation on existing systems; fixed-core offers more compact package for OEM or new installations.
- Built-in feet with optional 35mm DIN rail adapter available.

ACS200 series current operated switches provide the same dependable status indication as the ACS150 series, but with added resolution. A choice of three jumper-selectable input ranges allows the ACS200 to be tailored to an application and provides more precision in setpoint adjustment. Self-powered, isolated solid-state relay outputs and multiple input ranges are standard features.

Agency Approvals



| ACS200 AC Current Operated Switches | | | | |
|-------------------------------------|--|---------|---------|---------|
| Part Number | Description | Pcs/Pkg | Wt (lb) | Price |
| ACS200-AA-F | N.O. AC adjustable current switch, fixed core, AC output | 1 | 0.40 | \$68.50 |
| ACS200-AA-S | N.O. AC adjustable current switch, split core, AC output | 1 | 0.40 | \$79.50 |
| ACS200-CA-F | N.C. AC adjustable current switch, fixed core, AC output | 1 | 0.40 | \$68.50 |
| ACS200-CA-S | N.C. AC adjustable current switch, split core, AC output | 1 | 0.40 | \$79.50 |
| ACS200-AD-F | N.O. AC adjustable current switch, fixed core, DC output | 1 | 0.40 | \$68.50 |
| ACS200-AD-S | N.O. AC adjustable current switch, split core, DC output | 1 | 0.40 | \$79.50 |
| ACS200-CD-F | N.C. AC adjustable current switch, fixed core, DC output | 1 | 0.40 | \$68.50 |
| ACS200-CD-S | N.C. AC adjustable current switch, split core, DC output | 1 | 0.40 | \$79.50 |
| Accessories | | | | |
| DRA-2 | DIN rail adapters, 1.69"x0.39"x0.75" (43x10x19mm) | 2 | 0.40 | \$3.50 |

| Maximum Input Ranges | | | | |
|----------------------|--------------------|------------------|------------------------------|------------------------------|
| Range Jumper | Range - Fixed Core | Range Split Core | Maximum Input Amps 6 Sec max | Maximum Input Amps 1 Sec max |
| NONE | 1 to 6A | 1.75 to 6A | 400 | 600 |
| MID | 6 to 40A | 6 to 40A | 500 | 800 |
| HIGH | 40 to 175A | 40 to 200A | 800 | 1200 |

| ACS200 Minimum Load | |
|---------------------|--------------------------------|
| Part Number | Minimum Load Operating Current |
| ACS200-AA-F | 20mA |
| ACS200-AA-S | 20mA |
| ACS200-CA-F | 20mA |
| ACS200-CA-S | 20mA |
| ACS200-AD-F | 1mA |
| ACS200-AD-S | 1mA |
| ACS200-CD-F | 1mA |
| ACS200-CD-S | 1mA |

| ACS200 Series Specifications | |
|-------------------------------------|---|
| Power Supply | None - Self-powered |
| Output | Isolated solid-state switch |
| Output Rating | N.O. or N.C. AC: 1A @ 240VAC N.O. or N.C. DC: 0.15A @ 30VDC |
| Response Time | 40 - 120ms |
| Off State Leakage | < 10µA |
| Input Ranges | Jumper selectable: Fixed core: 1 to 6A, 6 to 40A, 40 to 175A Split core: 1.75 to 6A, 6 to 40A, 40 to 200A |
| Setpoint (Trip Point) Adjust | 4-turn potentiometer |
| Hysteresis | low: 0.15 A; mid: 0.3 A; high: 0.9 A |
| Overload (1 second duration) | low: 600A; mid: 800A; high: 1,200A |
| Isolation Voltage | UL listed to 1,270VAC. Tested to 5,000VAC (1 minute max) |
| Frequency Range | 6 to 100Hz |
| Case | UL 94V-0 flammability rated |
| Environmental | Operating Temperature: -58 to 149°F [-50 to 65°C] Relative Humidity: 0-95% RH, Non-condensing Pollution Degree 2 Altitude to 2000 meters |
| Agency Approvals* | UL/cUL (E222847), CE |

* To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com



Main

| | |
|--|----------------------------------|
| Commercial Status | Commercialised |
| Range of product | Zelio Relay |
| Series name | Interface relay |
| Product or component type | Plug-in relay |
| Device short name | RSL |
| Contacts type and composition | 1 C/O |
| Contacts operation | Standard |
| Control circuit voltage | 60 V DC |
| [Ithe] conventional enclosed thermal current | 6 Aat -40...131 °F (-40...55 °C) |
| Status LED | With |
| Shape of pin | Flat (PCB type) |
| Sale per indivisible quantity | 10 |

Complementary

| | |
|--|---|
| Fixing mode | Plastic compression spring |
| Average resistance | 20500 Ohm (DC)at 23 °C +/- 10 % |
| [Ui] rated insulation voltage | 277 V conforming to cUL 250 V conforming to EN/IEC |
| [Uimp] rated impulse withstand voltage | 6 kV conforming to IEC |
| Contacts material | Silver alloy (AgSnO2) |
| [Ie] rated operational current | 6 A 1 C/O (AC-1/DC-1) conforming to IEC/UL |
| Minimum switching current | 100 mA |
| Maximum switching voltage | 277 V |
| Switching voltage | 12 V |
| Maximum switching capacity | 150 W 1500 VA |
| Minimum switching capacity | 120 mW |
| Operating rate | <= 360 cycles/hour under load <= 72000 cycles/hour no-load |
| Mechanical durability | <= 10000000 cycles |
| Electrical durability | 60000 cyclesfor resistive load (6 Aat 250 V, AC-1) |
| Operating time | 5 ms |
| Reset time | 20 ms |
| Marking | CE |
| Protection category | RT III |
| Operating position | Any position |
| Height | 3.09 in (78.6 mm) |
| Width | 0.24 in (6.2 mm) |
| Depth | 3.74 in (95 mm) |
| Terminals description ISO n°1 | (11-12-14)OC (A1-A2)CO |

The information provided in this documentation contains general descriptions and/or technical characteristics of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

| | |
|------------------------------|--|
| Product weight | 0.06 lb(US) (0.029 kg) |
| Load current | 6 Aat 250 V ACfor 0.5 mm mounting distance |
| Average consumption in W | 0.17 W DC |
| Drop-out voltage threshold | >= 0.05 Uc |
| Contact terminal arrangement | Separate |
| Connections - terminals | Screw connectors (1 x 0.2...1 x 2.5 mm ² / AWG 24...AWG 14) solid cable without cable end Screw connectors (1 x 0.2...1 x 2.5 mm ² / AWG 24...AWG 14) flexible cable with cable end |
| Tightening torque | <= 4.42 lbf.in (0.5 N.m) (M2.5) |

Environment

| | |
|---------------------------------------|--|
| Input voltage | 110 V AC/DC (input voltage limit: 88...126.5 V) |
| Dielectric strength | 4000 V AC (between coil and contact) 1000 V AC (between contacts) |
| Standards | EN/IEC 61810-1 UL 508 CSA C22.2 No 14 |
| Product certifications | CSA GOST UL |
| Ambient air temperature for storage | -40...185 °F (-40...85 °C) |
| Vibration resistance | 5 gn +/- 1 mm (f = 10...150 Hz) 10 cycles in operation conforming to EN/IEC 60068-2-6 10 gn +/- 1 mm (f = 10...150 Hz) 10 cycles not operating conforming to EN/IEC 60068-2-6 |
| IP degree of protection | IP40 conforming to EN/IEC 60529 |
| Shock resistance | 5 gn for11 ms not operating conforming to EN/IEC 60068-2-27 10 gn for11 ms in operation conforming to EN/IEC 60068-2-27 |
| Ambient air temperature for operation | -40...158 °F (-40...70 °C) |

Ordering and shipping details

| | |
|-----------------------|---|
| Category | 21127 - ZELIO ICE CUBE RELAYS |
| Discount Schedule | CP2 |
| GTIN | 00785901834748 |
| Nbr. of units in pkg. | 10 |
| Package weight(Lbs) | 0.07 |
| Product availability | Stock - Normally stocked in distribution facility |
| Returnability | Y |
| Country of origin | CN |

Offer Sustainability

| | |
|-------------------------------|--|
| Sustainable offer status | Not Green Premium product |
| RoHS (date code: YYWW) | Compliant - since 1417 - Schneider Electric declaration of conformity |
| REACH | Reference contains SVHC above the threshold - go to CaP for more details |
| Product environmental profile | Available Download Product Environmental Profile |

Contractual warranty

| | |
|--------|-----------|
| Period | 18 months |
|--------|-----------|



Product Selection

Micro850 Controllers, 24...48 point



| Line Power | Inputs | Outputs | Cat. No. |
|------------|--------------|--------------------|-----------------|
| 120V AC | (14) 120V AC | (10) Relay | 2080-LC50-24AWB |
| 24V DC | (14) 24V DC | (10) 24V DC Source | 2080-LC50-24QBB |
| 24V DC | (14) 24V DC | (10) 24V DC Sink | 2080-LC50-24QVB |
| 24V DC | (14) 24V DC | (10) Relay | 2080-LC50-24QWB |
| 120V AC | (28) 120V AC | (20) Relay | 2080-LC50-48AWB |
| 24V DC | (28) 24V DC | (20) 24V DC Source | 2080-LC50-48QBB |
| 24V DC | (28) 24V DC | (20) 24V DC Sink | 2080-LC50-48QVB |
| 24V DC | (28) 24V DC | (20) Relay | 2080-LC50-48QWB |

Plug-in Modules ¹

| Description | Cat. No. |
|---|-----------------|
| 4-channel V/I Analog Input Unipolar 0...20 mA, 0...10V, 12bits (non-isolated) | 2080-IF4 |
| 2-channel V/I Analog Input Unipolar 0...20 mA, 0...10V, 12bits (non-isolated) | 2080-IF2 |
| 2-channel V/I Analog Output Unipolar 0...20 mA, 0...10V, 12 bits | 2080-OF2 |
| RS232/485 Isolated Serial Port | 2080-SERIALISOL |
| 6-channel - Trim Pot Analog Input | 2080-TRIMPOT6 |
| Project, Data Log, Recipe Backup and High Accuracy RTC ¹ | 2080-MEMBAK-RTC |
| 2-channel RTD (non-isolated) | 2080-RTD2 |
| 2-channel Thermocouple (non-isolated) | 2080-TC2 |
| 4-point, 12/24V DC Sink/Source input | 2080-IQ4 |
| 8-point, Combo, 12/24V DC Sink/Source input 12/24V DC Source output | 2080-IQ40B4 |
| 4-point, 12/24V DC Source output | 2080-OB4 |
| 4-point, 12/24V DC Sink output | 2080-OV4 |
| High speed counter | 2080-MOT-HSC |
| 20-node DeviceNet scanner | 2080-DNET20 |

Expansion I/O Modules



| Type | Description | Cat. No. |
|--------------------|---|-------------------|
| Discrete | 8-point, 120V AC input | 2085-IA8 |
| | 8-point, 240V AC input | 2085-IM8 |
| | 8-point, 120/240V AC Triac Output | 2085-OA8 |
| | 16-point, 12/24V DC Sink/Source Input | 2085-IQ16 |
| | 32-point, 12/24V DC Sink/Source Input | 2085-IQ32T |
| | 16-point, 12/24V DC Sink Transistor Output | 2085-OV16 |
| | 16-point, 12/24V DC Source Transistor Output | 2085-OB16 |
| | 8-point, AC/DC Relay Output | 2085-OW8 |
| | 16-point, AC/DC Relay Output | 2085-OW16 |
| Analog | 4-channel, 14-bit isolated voltage/ current input | 2085-IF4 |
| | 8-channel, 14-bit isolated voltage/ current input | 2085-IF8 |
| | 4-channel, 12-bit isolated voltage/ current output | 2085-OF4 |
| Specialty | 4-channel, 16-bit RTD and TC isolated input module | 2085-IRT4 |
| Terminator | 2085 bus terminator | 2085-ECR |
| Accessories | | |
| | Description | Cat. No. |
| | 120/240V AC to 24V DC Power Supply for Micro800 | 2080-PS120-240VAC |

¹ All plug-in modules are for use with the Micro820, Micro830 and Micro850 controllers, except cat. no. 2080-MEMBAK-RTC, which is for use with Micro830 and Micro850 controllers only.



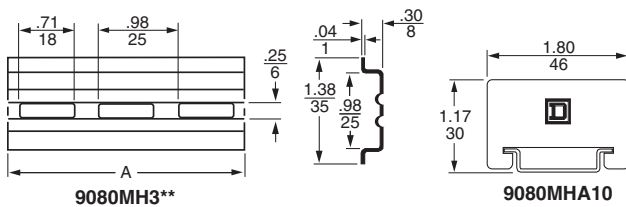
Table 24.16: DIN 3 Track – Various Lengths

| Description | Length m (in.) | Class 9080 Type | \$ Price ea. | Std. ▲ Pack | | |
|-------------------------------------|------------------------------|-----------------|--------------|-------------|------|----|
| Galvanized steel, no mounting holes | 0.08 (3) | MH203 | 3.20 | 10 | | |
| | 0.10 (4) | MH204 | 3.60 | | | |
| | 0.13 (5) | MH205 | 4.10 | | | |
| | 0.15 (6) | MH206 | 4.70 | | | |
| | 0.18 (7) | MH207 | 5.10 | | | |
| | 0.20 (8) | MH208 | 5.60 | | | |
| | 0.23 (9) | MH209 | 6.20 | | | |
| | 0.25 (10) | MH210 | 6.80 | | | |
| | 0.28 (11) | MH211 | 7.20 | | | |
| | 0.30 (12) | MH212 | 7.80 | | | |
| | 0.33 (13) | MH213 | 8.30 | | | |
| | 0.36 (14) | MH214 | 8.70 | | | |
| | 0.38 (15) | MH215 | 9.30 | | | |
| | 0.41 (16) | MH216 | 9.80 | | | |
| | 0.42 (17) | MH217 | 10.20 | | | |
| | 0.46 (18) | MH218 | 10.80 | | | |
| | 0.50 (19.68) | MH220 | 11.60 | | | |
| | 1 (39.37) | MH239 | 19.70 | | | |
| | 2 (78.74) | MH279 | 29.60 | | | |
| | Galvanized steel, prepunched | 0.08 (3) | MH303 | | 3.50 | 10 |
| | | 0.10 (4) | MH304 | | 3.90 | |
| | | 0.13 (5 in.) | MH305 | | 4.70 | |
| 0.15 (6) | | MH306 | 5.10 | | | |
| 0.18 (7) | | MH307 | 5.70 | | | |
| 0.20 (8) | | MH308 | 6.20 | | | |
| 0.23 (9) | | MH309 | 6.90 | | | |
| 0.25 (10) | | MH310 | 7.40 | | | |
| 0.28 (11) | | MH311 | 8.10 | | | |
| 0.30 (12) | | MH312 | 8.60 | | | |
| 0.33 (13) | | MH313 | 9.20 | | | |
| 0.36 (14) | | MH314 | 9.60 | | | |
| 0.38 (15) | | MH315 | 10.20 | | | |
| 0.41 (16) | | MH316 | 10.80 | | | |
| 0.42 (17) | | MH317 | 11.60 | | | |
| 0.46 (18) | | MH318 | 12.00 | | | |
| 0.50 (19.68) | | MH320 | 13.10 | | | |
| 1 (39.37) | | MH339 | 23.00 | | | |
| 2 (78.74) | | MH379 | 32.70 | | | |
| High rise track | Aluminum | 1 (39.37) | MH439 | 27.90 | 2 | |

Symmetrical rail 35 x 7.5 mm (1.38 in. x 0.295 in.) in compliance with EN 50022 standard (DIN 46277-3).

▲ Orders must specify the standard package quantity (Std. Pack) or multiples of that quantity.

Dimensions



| Angle bracket kit | Catalog Number | \$ Price ea. | Std. ▲ Pack |
|---|----------------|--------------|-------------|
| For mounting 9080GH or MH track to a panel at 45° angle. Includes 2 brackets and hardware for mounting the track to the brackets. | 9080MH82 | 7.20 | 1 |

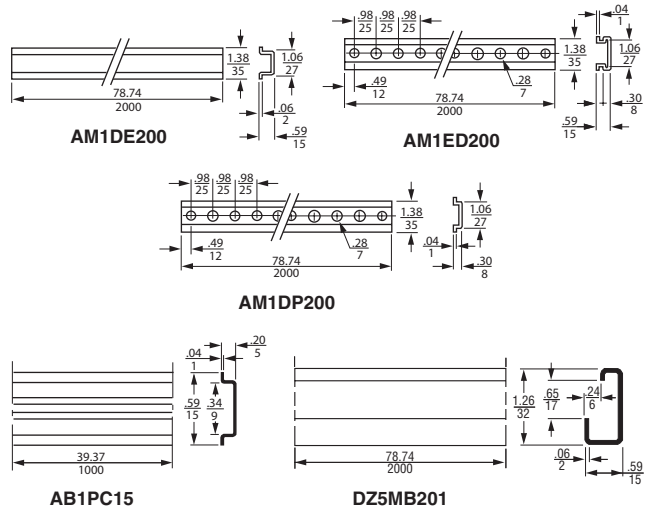
| End Clamps | Catalog Number | \$ Price ea. | Std. ▲ Pack |
|---|----------------|--------------|-------------|
| Plastic end clamp for 35 mm DIN 3 track, 8 mm (0.31 in.) wide | AB1AB8P35 | 1.50 | 100 |
| Metal end clamp for 35 mm DIN 3 track, 8 mm (0.31 in.) wide | AB1AB8M35 | 2.40 | 100 |
| Polycarbonate end clamp for 35 mm DIN 3 track, 8 mm (0.31 in.) wide | 9080MHA10 | 2.40 | 50 |

■ Not RoHS Compliant

Table 24.17: Mounting Track 1 or 2 meter length

| Description | Length m (in.) | Catalog Number | \$ Price ea. | Std. ▲ Pack |
|--|----------------|----------------|--------------|-------------|
| DIN 3 | | | | |
| 15 mm depth, 1 mm steel, zinc chromated | 2 (78.74) | AM1ED200 | 14.70 | 10 |
| 15 mm depth, 1.5 mm steel, zinc chromated | 2 (78.74) | AM1DE200 | 21.80 | 10 |
| 7.5 mm depth, 1 mm steel, zinc chromated EN 50022 & NF C63-015 | 2 (78.74) | AM1DP200 | 7.80 | 10 |
| DIN 1 | | | | |
| Asymmetrical 32 mm track EN 50035 & NF C63-018 | 2 (78.74) | DZ5MB201 | 23.20 | 10 |
| DIN 2 | | | | |
| Symmetrical 15 mm track EN 50045 | 1 (39.37) | AB1PC15 | 7.50 | 10 |

Dimensions



| End Clamps | Catalog Number | \$ Price ea. | Std. ▲ Pack |
|---|----------------|--------------|-------------|
| Plastic end clamp for 32 mm DIN 1 track, 7.5 mm (0.30 in.) wide | AB1AB7P32 | 2.60 | 100 |
| Metal end clamp for 32 mm DIN 1 track, 7.5 mm (0.30 in.) wide | AB1AB10M32 | 2.60 | 100 |
| Plastic end clamp for 15 mm DIN 2 track, 7.5 mm (0.30 in.) wide | AB1AB715 | 1.50 | 100 |
| Plastic end clamp for 35 mm DIN 3 track, 8 mm (0.31 in.) wide | AB1AB8R35 | 1.50 | 100 |

RoHS Compliant

8.1

Terminal Blocks, Fuse Blocks and Fuse Holders

IEC—XB Series

Product Selection

XBUT4



Screw Connection Single Level—Through-Feed

| Terminal Width | Maximum Wire Size | IEC 60 947-7-1 in V/A/AWG | EN 50 019 ^① in V/A/AWG | UL-cUL Ratings in V/A/AWG | Color | Standard Pack | Catalog Number |
|----------------|----------------------------|---------------------------|-----------------------------------|---------------------------|--------|---------------|-----------------|
| 5.2 mm | 12 AWG/2.5 mm ² | 800/32/26–12 | 750/22/28/26–12 | 600/20/26–12 | Gray | 50 | XBUT25 |
| | | | | | Blue | 50 | XBUT25BU |
| 6.2 mm | 10 AWG/4 mm ² | 800/41/26–10 | 750/30/38/26–10 | 600/30/26–10 | Gray | 50 | XBUT4 |
| | | | | | Blue | 50 | XBUT4BU |
| | | | | | Orange | 50 | XBUT4OR |
| | | | | | Yellow | 50 | XBUT4YE |
| | | | | | Red | 50 | XBUT4RD |
| | | | | | White | 50 | XBUT4WH |
| 8.2 mm | 8 AWG/6 mm ² | 800/57/24–8 | 750/40/50/24–8 | 600/50/24–8 | Gray | 50 | XBUT6 |
| | | | | | Blue | 50 | XBUT6BU |
| 10.2 mm | 6 AWG/10 mm ² | 1000/76/20–6 | 750/54/69/20–6 | 600/65/20–6 | Gray | 50 | XBUT10 |
| | | | | | Blue | 50 | XBUT10BU |
| | | | | | Orange | 50 | XBUT10OR |
| | | | | | Yellow | 50 | XBUT10YE |
| 12 mm | 4 AWG/16 mm ² | 1000/101/17–4 | — | 600/85/16–4 | Gray | 50 | XBUT16 |
| | | | | | Blue | 50 | XBUT16BU |
| 16 mm | 0 AWG/35 mm ² | 1000/150/15–0 | — | 600/150/14–1/0 | Gray | 50 | XBUT35 |
| | | | | | Blue | 50 | XBUT35BU |

Note

^① EU type—examination certificate number: KEMA 05ATEX2158 U.

Accessories

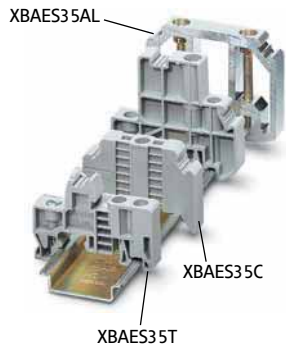
Screw Connection Single Level—Through-Feed

| Description | Color | Number of Positions | Standard Pack | XBUT25 Catalog Number | XBUT4 Catalog Number | XBUT6 Catalog Number | XBUT10 Catalog Number | XBUT16 Catalog Number | XBUT35 Catalog Number |
|---|-------|---------------------|---------------|-----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|
| End cover | Gray | — | 10 | XBACUT10 | XBACUT10 | XBACUT10 | XBACUT10 | XBACUT16 | ① |
| Partition plate | Gray | — | 10 | XBATUT10 | XBATUT10 | XBATUT10 | XBATUT10 | — | — |
| Plug-in bridge— for cross connections in the bridge shaft | Red | 2 | 10 | XBAFBS25 | XBAFBS26 | XBAFBS28 | XBAFBS210 | XBAFBS212 | XBAFBS216 |
| | | 3 | 10 | XBAFBS35 | XBAFBS36 | — | — | — | — |
| | | 5 | 10 | XBAFBS55 | XBAFBS56 | — | — | — | — |
| | | 10 | 10 | XBAFBS105 | XBAFBS106 | — | — | — | — |
| | | 50 | 10 | XBAFBS505 | XBAFBS506 | — | — | — | — |
| Test adapter | — | — | 10 | XBATSPA14 | XBATSPA14 | XBATSPA14 | — | — | — |
| 2.3 mm diameter test plug | — | — | — | XBATSMPS- ① | XBATSMPS- ① | — | — | — | — |
| Modular test plug | — | — | 10 | XBATSPS5 | XBATSPS6 | XBATSPS8 | — | — | — |
| Blank marker strip (strip of 10) | White | — | 10 | XBMZB5 ② | XBMZB6 ② | XBMZB8 ② | XBMZB10 ② | XBMZB12 ② | XBMZB15 ② |

Notes① For ordering information, see **Page V7-T8-105**.② For information on Printed Marking Tag Options, see **Page V7-T8-98**.For additional accessories, see **Page V7-T8-90**.

End Stops

Product Selection



Snap-On End Stop (15 mm)

| Standard Pack | Catalog Number |
|---------------|-----------------|
| 50 | XBAES15N |

Snap-On End Stop (35 mm)

| Standard Pack | Catalog Number |
|---------------|-----------------|
| 50 | XBAES35N |

Snap-on end stops for 35 mm and 15 mm DIN rails can be fitted with blank marker strips and adjustable terminal strip markers, parking facility for bridges and testing accessories.

Universal End Stop (15 mm)

| Standard Pack | Catalog Number |
|---------------|-----------------|
| 50 | XBAES15C |

Universal End Stop (35 mm)

| Standard Pack | Catalog Number |
|---------------|-----------------|
| 50 | XBAES35T |
| 50 | XBAES35C |

Screwed on, labeling with blank marker strips and terminal strip markers.

Aluminum End

| Standard Pack | Catalog Number |
|---------------|------------------|
| 10 | XBAES35AL |

Snaps on, for end support of 50–240 mm terminal blocks, labeling with XBMZB10.

Cross-Reference of Terminal Blocks Marking, End Stops

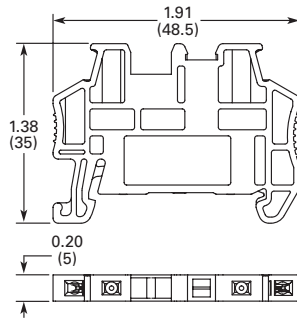
| Catalog Number | XBMKLM2 | XBMGLMA | XBMUBE |
|-----------------|---------|---------|--------|
| XBAES35N | X | — | — |
| XBAES35T | — | X | X |

Dimensions

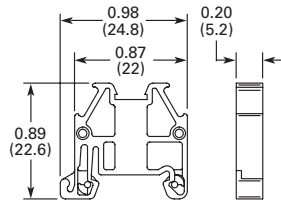
Approximate Dimensions in Inches (mm)

Snap-On End Stop

XBAES35N

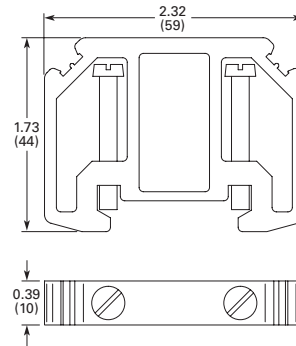


XBAES15N



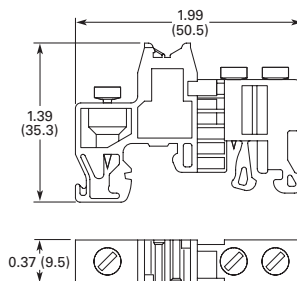
Aluminum End Stop

XBAES35AL

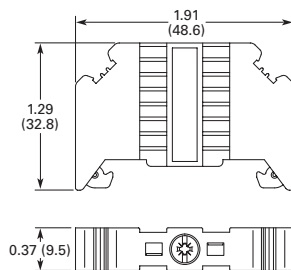


Universal End Stop

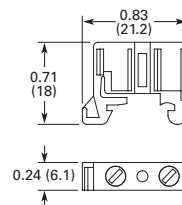
XBAES35T



XBAES35C



XBAES15C



8.1

Terminal Blocks, Fuse Blocks and Fuse Holders

IEC—XB Series

DIN Rails

Product Selection



Perforated and unperforated DIN rails in accordance with E 60715.

Features

- High dimensional accuracy
- Restricted tolerances
- Double surface tempering, galvanized and chromated
- All 2m in length
- Customization available

35 x 7.5 mm x 2m

| Standard Pack | Catalog Number |
|----------------|-------------------|
| Slotted | |
| 25 | XBANS3575P |
| Solid | |
| 25 | XBANS3575U |

35 x 15 mm x 2m

| Standard Pack | Catalog Number |
|----------------|-------------------|
| Slotted | |
| 25 | XBANS3515P |
| Solid | |
| 25 | XBANS3515U |

15 x 5.5 mm x 2m

| Standard Pack | Catalog Number |
|---------------|-----------------|
| 25 | XBANS15P |

Aluminum DIN Rails (Perforated)

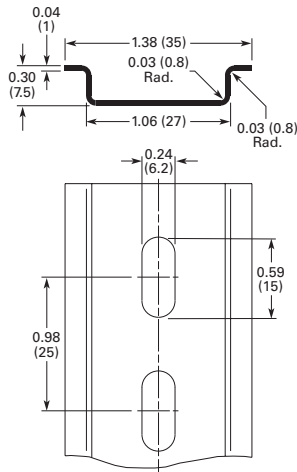
| Standard Pack | Catalog Number |
|------------------|--------------------|
| 35/7.5/2m | |
| 25 | XBANS3575PL |
| 35/5.8/2m | |
| 6 | XBANS35PL |

8

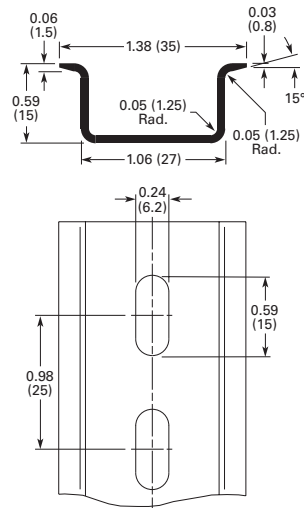
Dimensions

Approximate Dimensions in Inches (mm)

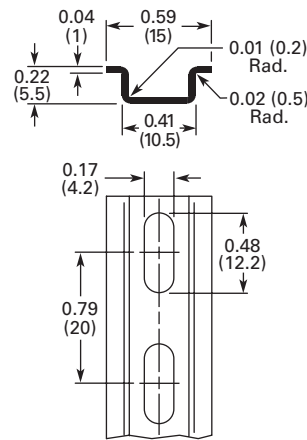
35 x 7.5 mm DIN Rail



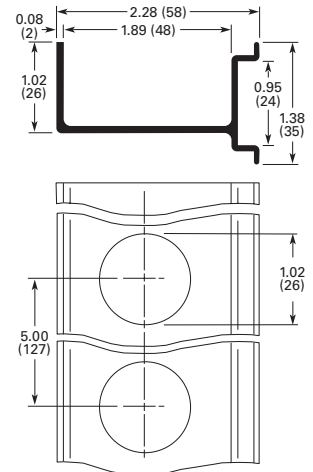
35 x 15 mm DIN Rail



15 x 5.5 mm x 2m DIN Rail

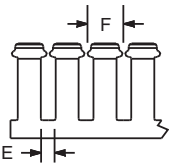
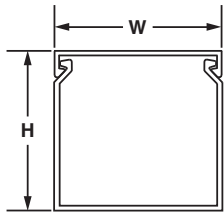
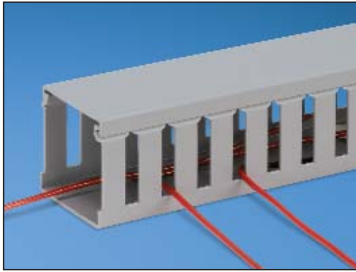


XBANS35PL Raised Rail

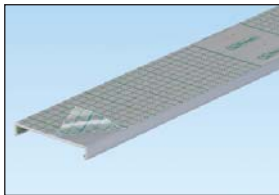


Panduct® Type G Wide Slot Wiring Duct

- Wide slot/finger design provides greater sidewall rigidity and can be used with a wide range of wire bundle sizes
- Material: Lead-free PVC
- UL recognized continuous use temperature: 122°F (50°C)
- UL 94 flammability rating of V-0
- Conforms with NFPA 79-2007 section 13.3.1 requirement for flame retardant material
- Provided with mounting holes
- Base and cover length is 6 feet



| | E | F |
|--------------------------|-------------|--------------|
| For .5" duct height: | 0.37" [9.4] | 0.80" [20.3] |
| 0.75" to 2" duct height: | 0.31" [7.9] | 0.80" [20.3] |
| 3" to 4" duct height: | 0.31" [7.9] | 1.00" [25.4] |
| 5" duct height: | 0.38" [9.4] | 1.33" [33.8] |



To order cover with protective film add "-F" to part number. 6" cover not available with film.

| Base Part Number | Duct Size (W x H)* | | Slot Width | | Cover Part Number | Std. Pkg. Qty. | Base Ctn. Qty. | Cover Ctn. Qty. |
|------------------|--------------------|---------------|------------|-----|-------------------|----------------|----------------|-----------------|
| | In. | mm | In. | mm | | | | |
| G.5X.5LG6 | 0.69 x 0.60 | 17.5 x 15.2 | 0.38 | 9.7 | C.5LG6 | 6 | 120 | 120 |
| G.5X1LG6 | 0.69 x 1.06 | 17.5 x 26.9 | 0.31 | 7.9 | C.5LG6 | 6 | 120 | 120 |
| G.5X2LG6 | 0.69 x 2.03 | 17.5 x 51.6 | 0.31 | 7.9 | C.5LG6 | 6 | 120 | 120 |
| G.75X.75LG6 | 0.93 x 0.82 | 23.6 x 20.8 | 0.31 | 7.9 | C.75LG6 | 6 | 120 | 120 |
| G.75X1LG6 | 0.93 x 1.06 | 23.6 x 26.9 | 0.31 | 7.9 | C.75LG6 | 6 | 120 | 120 |
| G.75X1.5LG6 | 0.93 x 1.57 | 23.6 x 39.9 | 0.31 | 7.9 | C.75LG6 | 6 | 120 | 120 |
| G.75X2LG6 | 0.93 x 2.03 | 23.6 x 51.7 | 0.31 | 7.9 | C.75LG6 | 6 | 120 | 120 |
| G1X1LG6 | 1.26 x 1.12 | 32.0 x 28.4 | 0.31 | 7.9 | C1LG6 | 6 | 120 | 120 |
| G1X1.5LG6 | 1.26 x 1.62 | 32.0 x 41.1 | 0.31 | 7.9 | C1LG6 | 6 | 120 | 120 |
| G1X2LG6 | 1.26 x 2.12 | 32.0 x 53.8 | 0.31 | 7.9 | C1LG6 | 6 | 120 | 120 |
| G1X3LG6 | 1.26 x 3.12 | 32.0 x 79.2 | 0.31 | 7.9 | C1LG6 | 6 | 120 | 120 |
| G1X4LG6 | 1.26 x 4.10 | 32.0 x 104.1 | 0.31 | 7.9 | C1LG6 | 6 | 60 | 120 |
| G1.5X1LG6 | 1.75 x 1.12 | 44.5 x 28.4 | 0.31 | 7.9 | C1.5LG6 | 6 | 120 | 120 |
| G1.5X1.5LG6 | 1.75 x 1.62 | 44.5 x 41.1 | 0.31 | 7.9 | C1.5LG6 | 6 | 120 | 120 |
| G1.5X2LG6 | 1.75 x 2.12 | 44.5 x 53.8 | 0.31 | 7.9 | C1.5LG6 | 6 | 120 | 120 |
| G1.5X3LG6 | 1.75 x 3.12 | 44.5 x 79.2 | 0.31 | 7.9 | C1.5LG6 | 6 | 120 | 120 |
| G1.5X4LG6 | 1.75 x 4.10 | 44.5 x 104.1 | 0.31 | 7.9 | C1.5LG6 | 6 | 60 | 120 |
| G2X1LG6 | 2.25 x 1.12 | 57.2 x 28.4 | 0.31 | 7.9 | C2LG6 | 6 | 120 | 120 |
| G2X1.5LG6 | 2.25 x 1.62 | 57.2 x 41.1 | 0.31 | 7.9 | C2LG6 | 6 | 120 | 120 |
| G2X2LG6 | 2.25 x 2.12 | 57.2 x 53.8 | 0.31 | 7.9 | C2LG6 | 6 | 120 | 120 |
| G2X3LG6 | 2.25 x 3.12 | 57.2 x 79.2 | 0.31 | 7.9 | C2LG6 | 6 | 60 | 120 |
| G2X4LG6 | 2.25 x 4.10 | 57.2 x 104.1 | 0.31 | 7.9 | C2LG6 | 6 | 60 | 120 |
| G2X5LG6 | 2.25 x 5.10 | 57.2 x 129.5 | 0.38 | 9.7 | C2LG6 | 6 | 60 | 120 |
| G2.5X3LG6 | 2.75 x 3.12 | 69.9 x 79.2 | 0.31 | 7.9 | C2.5LG6 | 6 | 120 | 120 |
| G3X1LG6 | 3.25 x 1.12 | 82.6 x 28.4 | 0.31 | 7.9 | C3LG6 | 6 | 120 | 120 |
| G3X2LG6 | 3.25 x 2.12 | 82.6 x 53.8 | 0.31 | 7.9 | C3LG6 | 6 | 120 | 120 |
| G3X3LG6 | 3.25 x 3.12 | 82.6 x 79.2 | 0.31 | 7.9 | C3LG6 | 6 | 60 | 120 |
| G3X4LG6 | 3.25 x 4.10 | 82.6 x 104.1 | 0.31 | 7.9 | C3LG6 | 6 | 60 | 120 |
| G3X5LG6 | 3.25 x 5.10 | 82.6 x 129.5 | 0.38 | 9.7 | C3LG6 | 6 | 60 | 120 |
| G4X1.5LG6 | 4.25 x 1.62 | 108.0 x 41.1 | 0.31 | 7.9 | C4LG6 | 6 | 120 | 120 |
| G4X2LG6 | 4.25 x 2.12 | 108.0 x 53.8 | 0.31 | 7.9 | C4LG6 | 6 | 60 | 120 |
| G4X3LG6 | 4.25 x 3.12 | 108.0 x 79.2 | 0.31 | 7.9 | C4LG6 | 6 | 60 | 120 |
| G4X4LG6 | 4.25 x 4.10 | 108.0 x 104.1 | 0.31 | 7.9 | C4LG6 | 6 | 60 | 120 |
| G4X5LG6 | 4.25 x 5.10 | 108.0 x 129.5 | 0.38 | 9.7 | C4LG6 | 6 | 60 | 120 |
| G6X4LG6 | 6.25 x 4.15 | 158.8 x 105.4 | 0.31 | 7.9 | C6LG6 | 6 | 60 | 120 |

Part number shown for LG (Light Gray). For other color availability see color selection guide, page C1.48. Base and cover sold separately.

**"H" dimension includes duct and cover.

A.
System
Overview

B1.
Cable Ties

B2.
Cable
Accessories

B3.
Stainless
Steel Ties

C1.
Wiring
Duct

C2.
Surface
Raceway

C3.
Abrasion
Protection

C4.
Cable
Management

D1.
Terminals

D2.
Power
Connectors

D3.
Grounding
Connectors

E1.
Labeling
Systems

E2.
Labels






E3.
Pre-Printed
& Write-On
Markers

E4.
Permanent
Identification

E5.
Lockout/
Tagout
& Safety
Solutions

F.
Index

Panduit Wiring Duct Approvals and Compliances

| Agency Mark | Agency | Requirement | Classification/Performance | Wiring Duct Types/Products |
|--|---|---|---|---|
|  | Underwriters Laboratories, Inc. File No. E147128 | UL 1565 | Material Flame Class V-0 Continuous-use temperature up to 50°C (122°F) | All wiring duct types and covers |
|  | | UL 1565 CSA C22.2 No. 18.5-03 | Material Flame Class V-0 Continuous-use temperature up to 50°C (122°F) | Type H, HS, HN, and DRD |
| | Underwriters Laboratories, Inc. | UL 508 section 15 | An insulating barrier material shall comply with the minimum material properties indicated in Table 15.1 | PVC divider walls |
| | | UL 508 sections 34 and 181 | Qualifies as a metal barrier with required thickness as indicated in Table 6.1 | SD*EMI metal barrier |
|  | Canadian Standards Association File No. 016446 | CSA C22.2 No. 18.5-02 | Material Flame Class V-0 Continuous-use temperature up to 50°C (122°F) | All wiring duct types and covers (except H, HS, and HN) |
|  | Conformity European | Low Voltage Directive 2006/95/EC | <ul style="list-style-type: none"> CDS (cable ducting system for impact 2 J) Minimum storage, transport, installation, and application temperature: -5°C (23°F) Maximum application temperature: 60°C (140°F) Non-flame propagating Without electrical continuity Cover removable without a tool | H, HS, G, F, D, MC, FS, NNC, NE, DRD, and TNC |
| | | EN 50085-1 EN 50085-2-3 | | |
| | DIN German Institute for Standardization | DIN 43659 | <ul style="list-style-type: none"> Specifies dimensions for slotted trunkings used in electrical switch-gear assemblies and that conform to DIN VDE 060 Part 506 Channel mounting hole pattern, slot dimensions, pitch, and location Distance from first to last like-size mounting hole Minimum overall product length | MC, NNC, and TNC |
| | | DIN 5510-2 DIN 54837 | Burning Class: S4 Smoke Class: SR2 Dripping Class: ST2 | TNC |
| | AFNOR French Association of Normalization | NF F 16-101 NF F 16-102 | Type NNC Wiring Duct Classification = F3/14 Type TNC Wiring Duct Classification = F1/14 | NNC and TNC |
| | UNIFER Italian Railway Standards | EN ISO 11925-2 | Pass 30-second flame application | TNC |
| | FRA – Federal Railroad Administration | 49 CFR Part 238 | Surface Flammability: < 35 Smoke Density D _s (1.5) < 100 D _s (4.0) < 200 | TNC |
| | NFPA – National Fire Protection Association | NFPA130 | | |
| | National Fire Protection Agency | NFPA 79-2012, Section 13.3.1 IEC 60332-1 | Non-metallic duct shall be permitted (inside enclosures) only when they are made with a flame-retardant material; flame-retardant material is defined in the standard by the IEC 60332-1 test method | All wiring duct types and covers (except FL) |
| | | NFPA 79-2012, Section 13.5.2 | Panduit publishes a maximum percentage wire fill for common wire types equal to 50% of the interior cross-sectional area of the wiring duct | All wiring duct types and covers |
| | | NFPA 79-2012, section 13.1.6.9 | Panduit bend radius control accessories can be mounted at right angles and T junctions created using wiring duct in order to maintain cable bend radius control | Corner strip with 1" bend radius control |
|  | European Union | European Directive 2002/95/EC | Meets the requirements on the Restriction of Hazardous Substances and is free of the six substances listed in the directive | All wiring duct products |

For more information

Visit us at www.panduit.com

Contact Customer Service by email: cs@panduit.com

or by phone: 800.777.3300

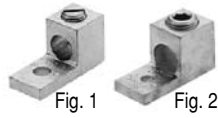
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11/2013



UNIVERSAL TERMINAL Type KA-U



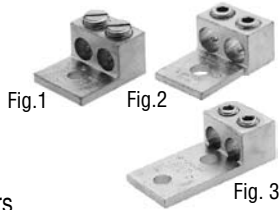
(1 Conductor)

For Aluminum and Copper Conductors

These dual-rated one conductor lugs are constructed from high strength aluminum alloy and electro tin-plated to provide low contact resistance.

| Catalog Number | Conductor Range | Figure Number |
|----------------|--------------------|---------------|
| KA6U | 14 - 6 str. | 1 |
| KA2U | 14 - 2 str. | 1 |
| KA25U | 14 - 1/0 str. | 1 |
| KA26U | 6 - 2/0 str. | 1 |
| KA29U | 6 str. - 250 kcmil | 2 |
| KA30U | 6 str. - 300 kcmil | 2 |
| KA31U | 6 str. - 350 kcmil | 2 |
| KA34U | 4 str. - 500 kcmil | 2 |
| KA36U | 2 str. - 600 kcmil | 2 |
| KA40U | 300 - 800 kcmil | 2 |
| KA44U | 500 - 1000 kcmil | 2 |

UNIVERSAL TERMINAL Type K2A-U



(2 Conductors)

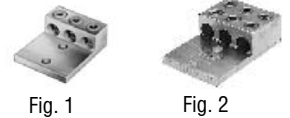
For Aluminum and Copper Conductors

Compact, wide-range, tin-plated aluminum terminal for use with two copper or aluminum cables.

| Catalog Number | Conductor Range | Stud Hole Size | Stud Hole Spacing | Figure Number |
|----------------|-------------------------|----------------|-------------------|---------------|
| K2A25U | Two: 14 - 1/0 str. | 1/4 | — | 1 |
| K2A26U | Two: 14 - 2/0 str. | 1/4 | — | 1 |
| K2A29U | Two: 6 str. - 250 kcmil | 3/8 | — | 2 |
| K2A31U | Two: 4 str. - 350 kcmil | 1/2 | — | 2 |
| K2A36U | Two: 2 str. - 600 kcmil | 1/2 | — | 2 |
| K2A40U | Two: 300 - 800 kcmil | 5/8 | — | 2 |
| K2A44U | Two: 500 - 1000 kcmil | 5/8 | — | 2 |
| K2A31U-2N* | Two: 6 str. - 350 kcmil | 1/2 | 1-3/4 | 3 |
| K2A36U-2N* | Two: 2 str. - 600 kcmil | 1/2 | 1-3/4 | 3 |
| K2A40U-2N* | Two: 300 - 800 kcmil | 1/2 | 1-3/4 | 3 |
| K2A44U-2N* | Two: 500 - 1000 kcmil | 1/2 | 1-3/4 | 3 |

*Tongue holes drilled per NEMA standards.

UNIVERSAL TERMINAL Types K3A-U, KK3A-U



(3 Conductor)

For Aluminum & Copper Conductors

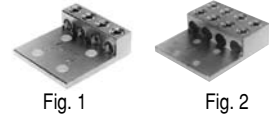
Dual-rated three conductor lugs are constructed from high strength aluminum alloy and electro tin-plated to provide low contact resistance.

| Catalog Number | Conductor Range | Stud Hole Size | Figure Number |
|----------------|---------------------------|----------------|---------------|
| K3A2U-2* | Three: 14 - 2 str. | 5/16 | 1 |
| K3A25U-2* | Three: 14 - 1/0 str. | 3/8 | 1 |
| K3A26U-2N | Three: 14 - 2/0 str. | 1/2 | 1 |
| K3A27U-2N | Three: 6 - 3/0 str. | 1/2 | 1 |
| K3A29U-2N | Three: 6 str. - 250 kcmil | 1/2 | 1 |
| K3A31U-2N | Three: 6 str. - 350 kcmil | 1/2 | 1 |
| K3A36U-2N | Three: 2 str. - 600 kcmil | 1/2 | 1 |
| KK3A36U-2N | Three: 2 str. - 600 kcmil | 1/2 | 2 |
| KK3A40U-2N | Three: 300 - 800 kcmil | 1/2 | 2 |
| KK3A44U-2N | Three: 500 - 1000 kcmil | 1/2 | 2 |

* Slotted screw

*N" indicates NEMA Standard holes

UNIVERSAL TERMINAL Type K4A-U



(4 Conductor)

For Aluminum and Copper Conductors

These dual-rated four conductor lugs are constructed from high strength aluminum alloy and electro tin-plated to provide low contact resistance.

| Catalog Number | Conductor Range | Stud Hole Size | Figure Number |
|----------------|--------------------------|----------------|---------------|
| K4A29U-4N | Four: 6 str. - 250 kcmil | 1/2 | 1 |
| K4A31U-4N | Four: 6 str. - 350 kcmil | 1/2 | 1 |
| KK4A36U-4N | Four: 2 str. - 600 kcmil | 1/2 | 2 |
| KK4A40U-4N | Four: 300 - 800 kcmil | 1/2 | 2 |

*N" indicates NEMA Standard holes

LAY-IN QIKLUG™ Type BGBL

* UL Listed 90°C, 600 V



The Lay-In QIKLUG, type BGBL is manufactured from high strength 6061-T6 aluminum, and is ideally suited for grounding and bonding applications accommodating both copper and aluminum conductor sizes 14 AWG to 250 kcmil.

| Catalog Number | Conductor Range | Hex Size |
|----------------|--------------------|----------|
| BGBL-4 | 14 - 4 str. | SLOT |
| BGBL-1/0 | 14 - 1/0 str. | SLOT |
| BGBL-250 | 6 str. - 250 kcmil | 7/32 |

PK4GTA

LOAD CENTER EQUIPMENT GROUND BAR ASSY



by Schneider Electric

List Price \$10.80 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

Technical Characteristics

| | |
|----------------------|-----------------|
| Application | Load Centers |
| Circuit Breaker Type | PK |
| Marketing Trade Name | QO and Homeline |

Shipping and Ordering

| | |
|-------------------|---|
| Category | 00102 - Load Centers, Accessories, Type QO |
| Discount Schedule | DE3A |
| GTIN | 00785901026365 |
| Package Quantity | 10 |
| Weight | 0.05 lbs. |
| Availability Code | Stock Item: This item is normally stocked in our distribution facility. |
| Returnability | Y |
| Country of Origin | US |

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

PK7GTA

LOAD CENTER EQUIPMENT GROUND BAR ASSY



by Schneider Electric

List Price \$11.70 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

Technical Characteristics

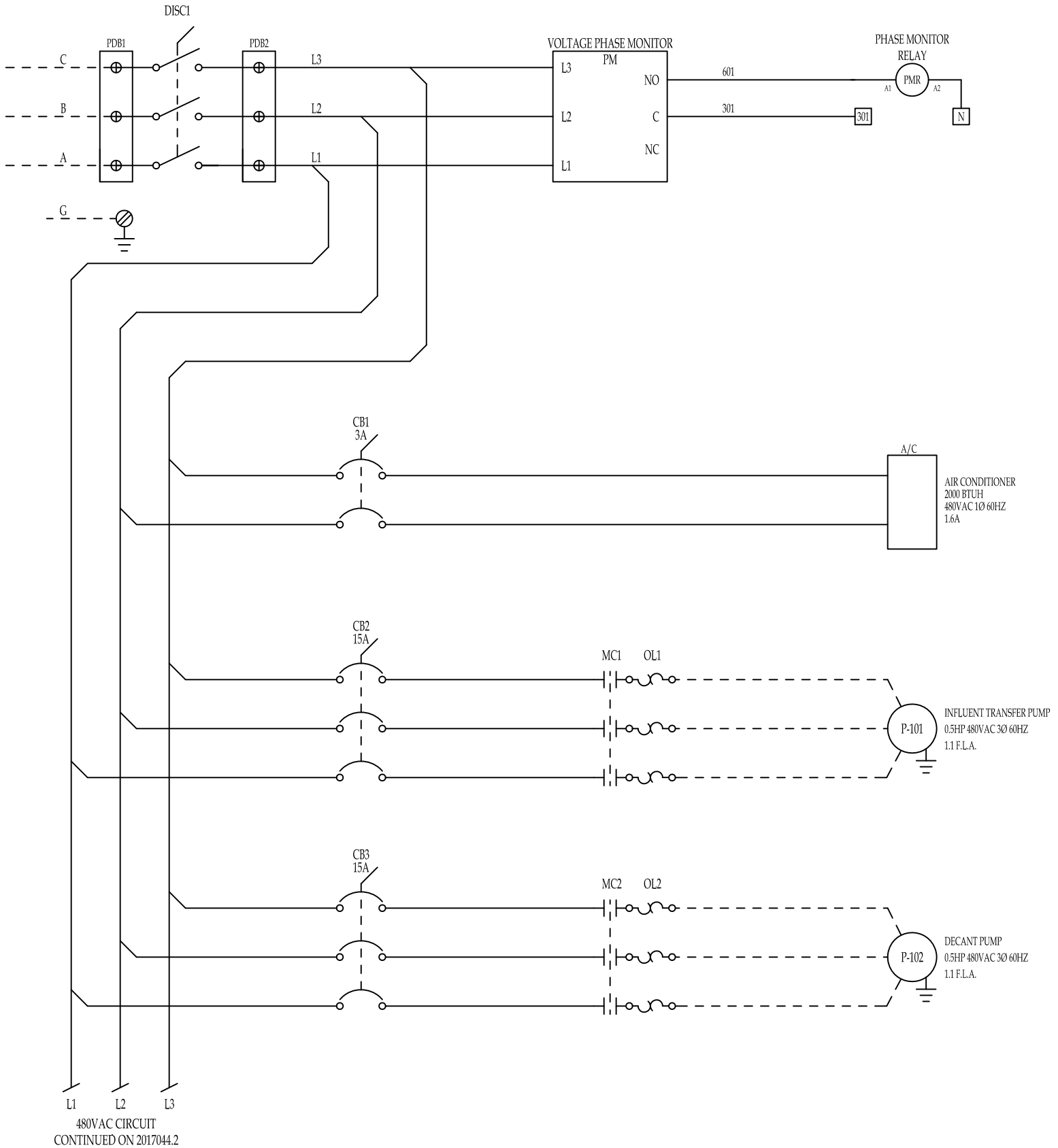
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|----------------------|-----------------|
| Application | Load Centers |
| Circuit Breaker Type | PK |
| Marketing Trade Name | QO and Homeline |

Shipping and Ordering

| | |
|-------------------|---|
| Category | 00102 - Load Centers, Accessories, Type QO |
| Discount Schedule | DE3A |
| GTIN | 00785901026372 |
| Package Quantity | 1 |
| Weight | 0.08 lbs. |
| Availability Code | Stock Item: This item is normally stocked in our distribution facility. |
| Returnability | Y |
| Country of Origin | US |

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

SUPPLY VOLTAGE
480 VAC, 3Ø 60Hz
40 AMP MINIMUM SERVICE REQUIRED



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12971 ARROYO ST.
Phone: 818.837.1494

UL 508A Listed
SAN FERNANDO, CA.



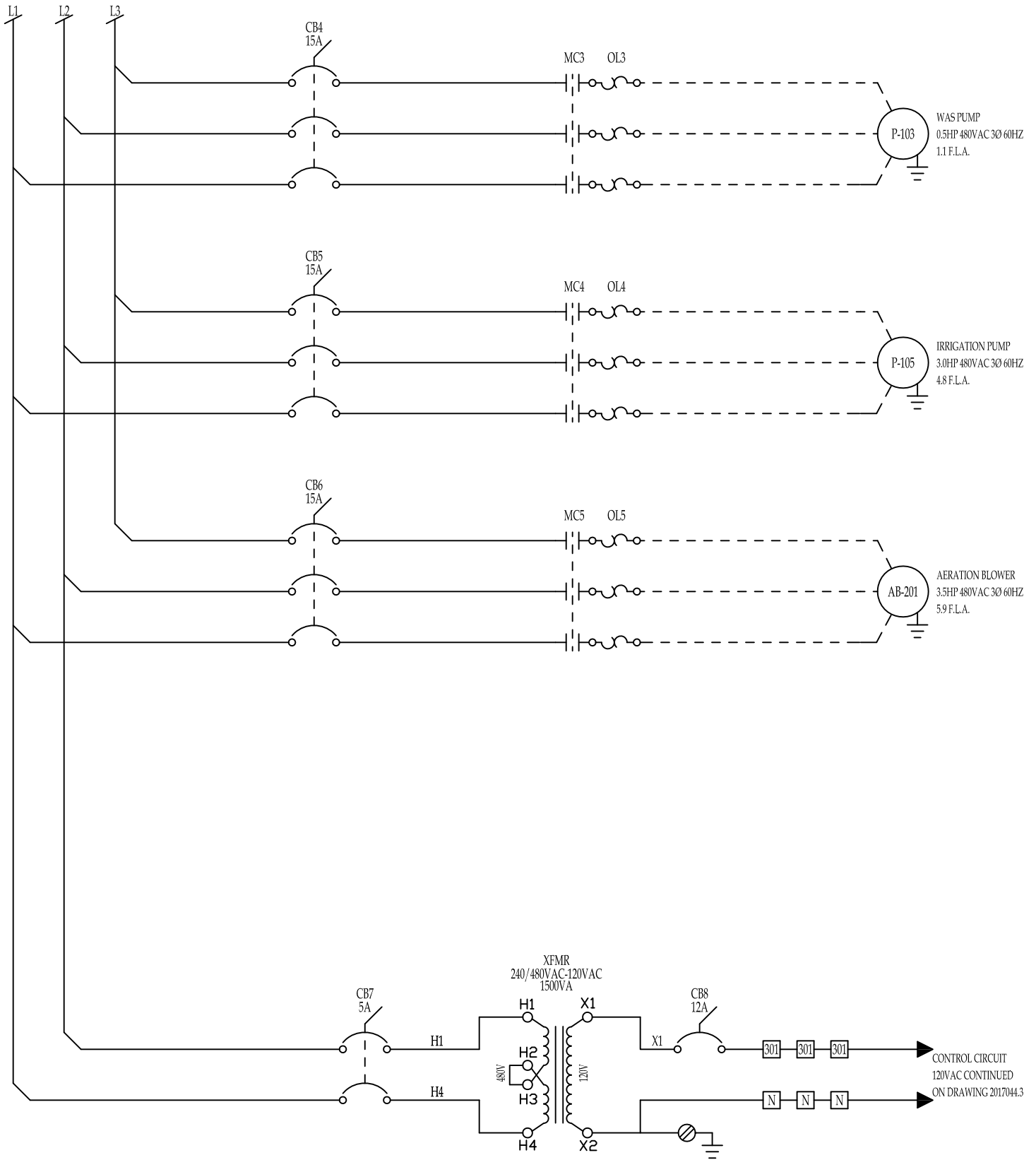
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| | | | | |
|-----------------------------------|----------------|-------------------------|-------------|--------------------------|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | | ▲ |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | | ▲ |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.1 | | ▲ |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | | ▲ |
| APPROVED: XXXXXXX | DATE: 00.00.00 | DESCRIPTION: ELECTRICAL | SCALE: NONE | SHEET SIZE: 8.5" x 11.0" |

Approved as Noted Do not
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480VAC CIRCUIT
CONTINUED FROM 2017044.1



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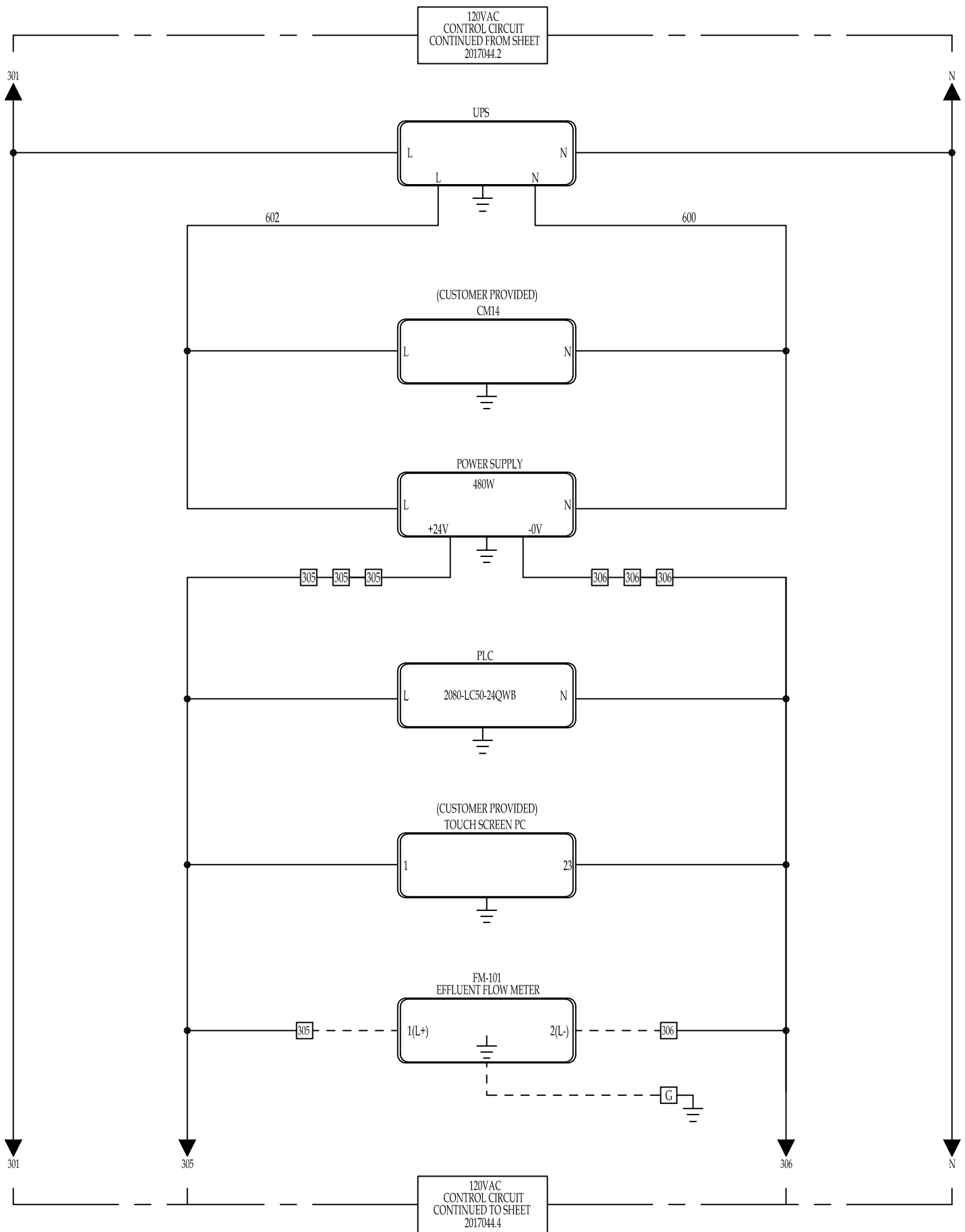


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| | | | | |
|-----------------------------------|----------------|-------------------------|-------------|--------------------------|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | | ▲ |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | | ▲ |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.2 | | ▲ |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | | ▲ |
| APPROVED: XXXXXXX | DATE: 00.00.00 | DESCRIPTION: ELECTRICAL | SCALE: NONE | SHEET SIZE: 8.5" x 11.0" |

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PROJECT: PARRISH FAMILY VINEYARDS

DRAWN: W.KREGO DATE: 03.02.17

DESIGNER: S.CORBETT DATE: 02.07.17

ENGINEER: M.NUNES DATE: 02.09.17

APPROVED: XXXXXXXX DATE: 00.00.00

CUSTOMER: CLOACINA

DRAWING NO.

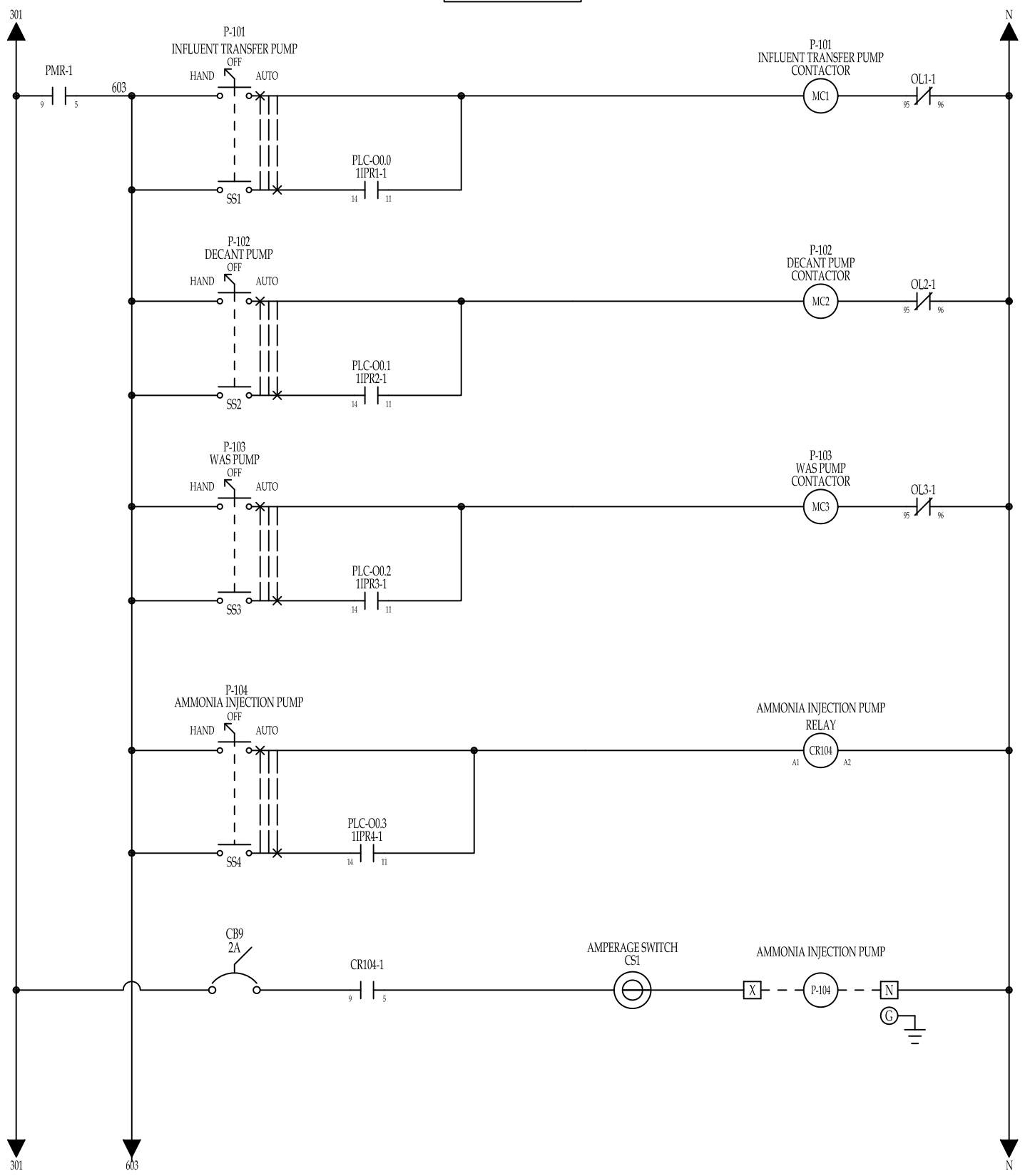
2017044.3

DESCRIPTION: ELECTRICAL SCALE: NONE SHEET SIZE: 8.5" x 11.0"

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| △ |
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120VAC
CONTROL CIRCUIT
CONTINUED FROM SHEET
2017044.3



120VAC
CONTROL CIRCUIT
CONTINUED TO SHEET
2017044.5

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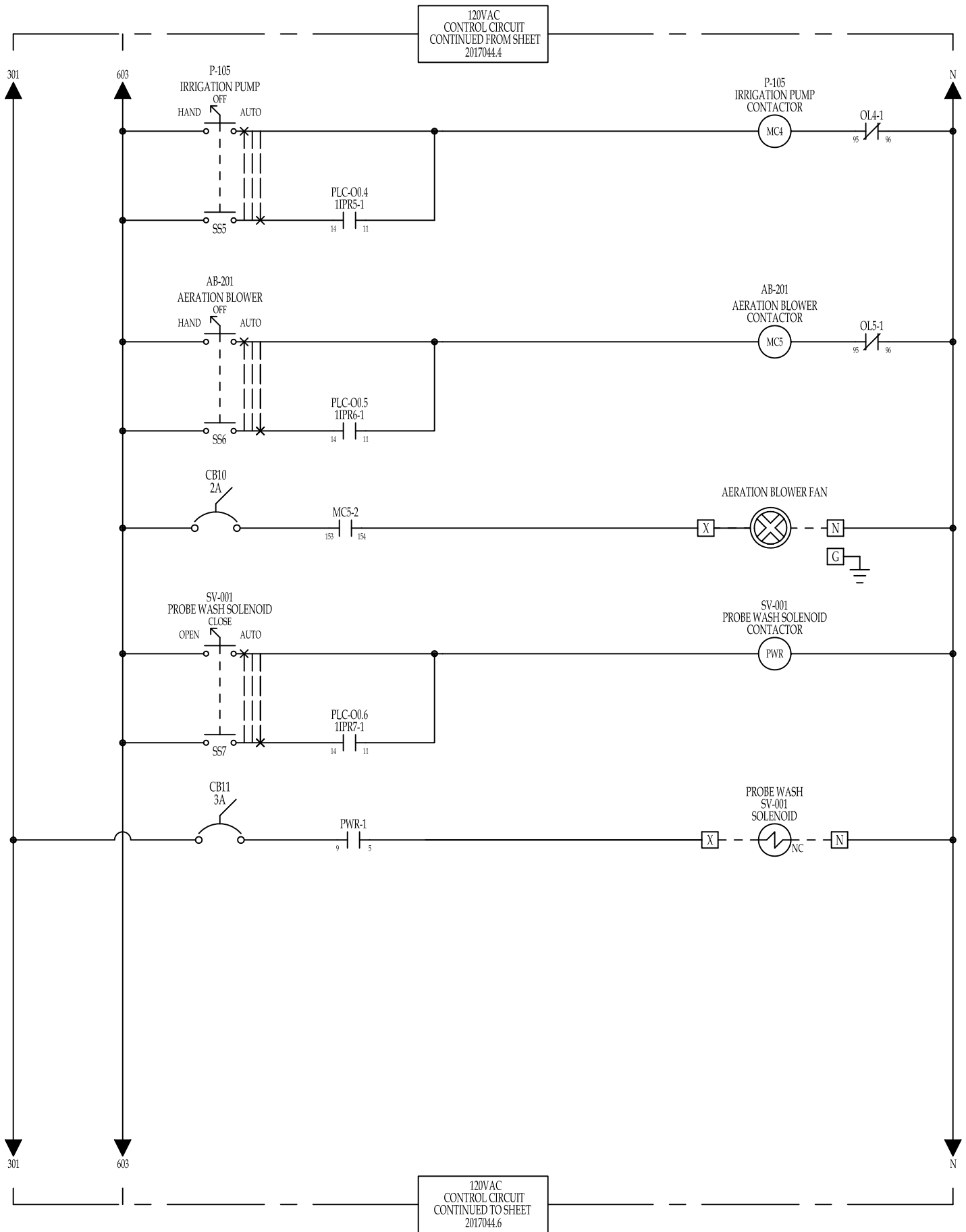


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| | | |
|-----------------------------------|----------------|--------------------------|
| PROJECT: PARRISH FAMILY VINEYARDS | | |
| DRAWN: W.KREGO | DATE: 03.02.17 | CUSTOMER: CLOACINA |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | DRAWING NO. |
| ENGINEER: M.NUNES | DATE: 02.09.17 | 2017044.4 |
| APPROVED: XXXXXXX | DATE: 00.00.00 | DESCRIPTION: ELECTRICAL |
| | | SCALE: NONE |
| | | SHEET SIZE: 8.5" x 11.0" |

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120VAC
CONTROL CIRCUIT
CONTINUED FROM SHEET
2017044.4

120VAC
CONTROL CIRCUIT
CONTINUED TO SHEET
2017044.6

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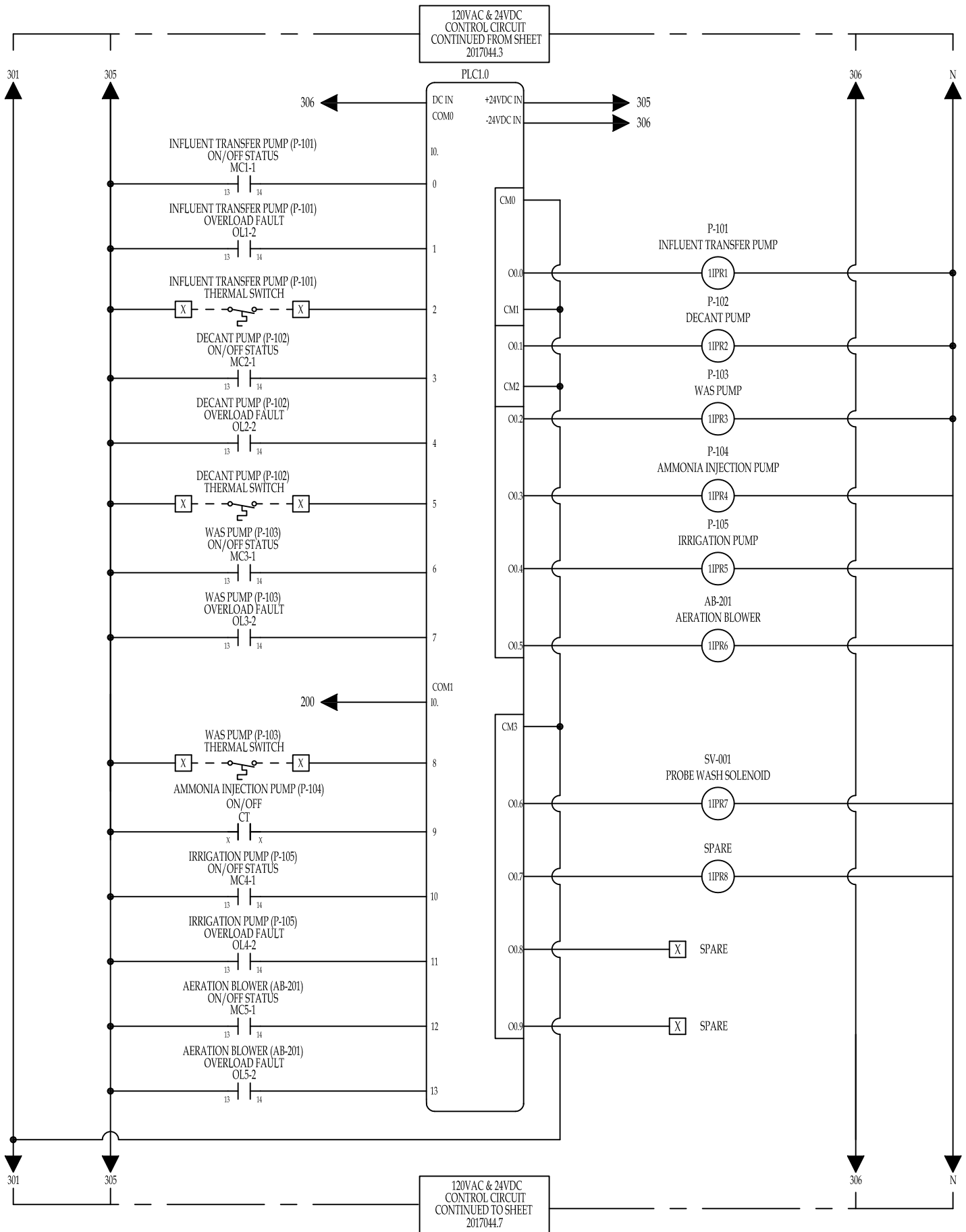
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| | | | |
|-----------------------------------|----------------|--------------------------|--|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.5 | |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | |
| APPROVED: XXXXXXX | DATE: 00.00.00 | DESCRIPTION: ELECTRICAL | SCALE: NONE |
| | | SHEET SIZE: 8.5" x 11.0" | Approved as Noted (Do not release for fabrication) |

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PROJECT: PARRISH FAMILY VINEYARDS

DRAWN: W.KREGO DATE: 03.02.17

DESIGNER: S.CORBETT DATE: 02.07.17

ENGINEER: M.NUNES DATE: 02.09.17

APPROVED: XXXXXX DATE: 00.00.00

CUSTOMER: CLOACINA

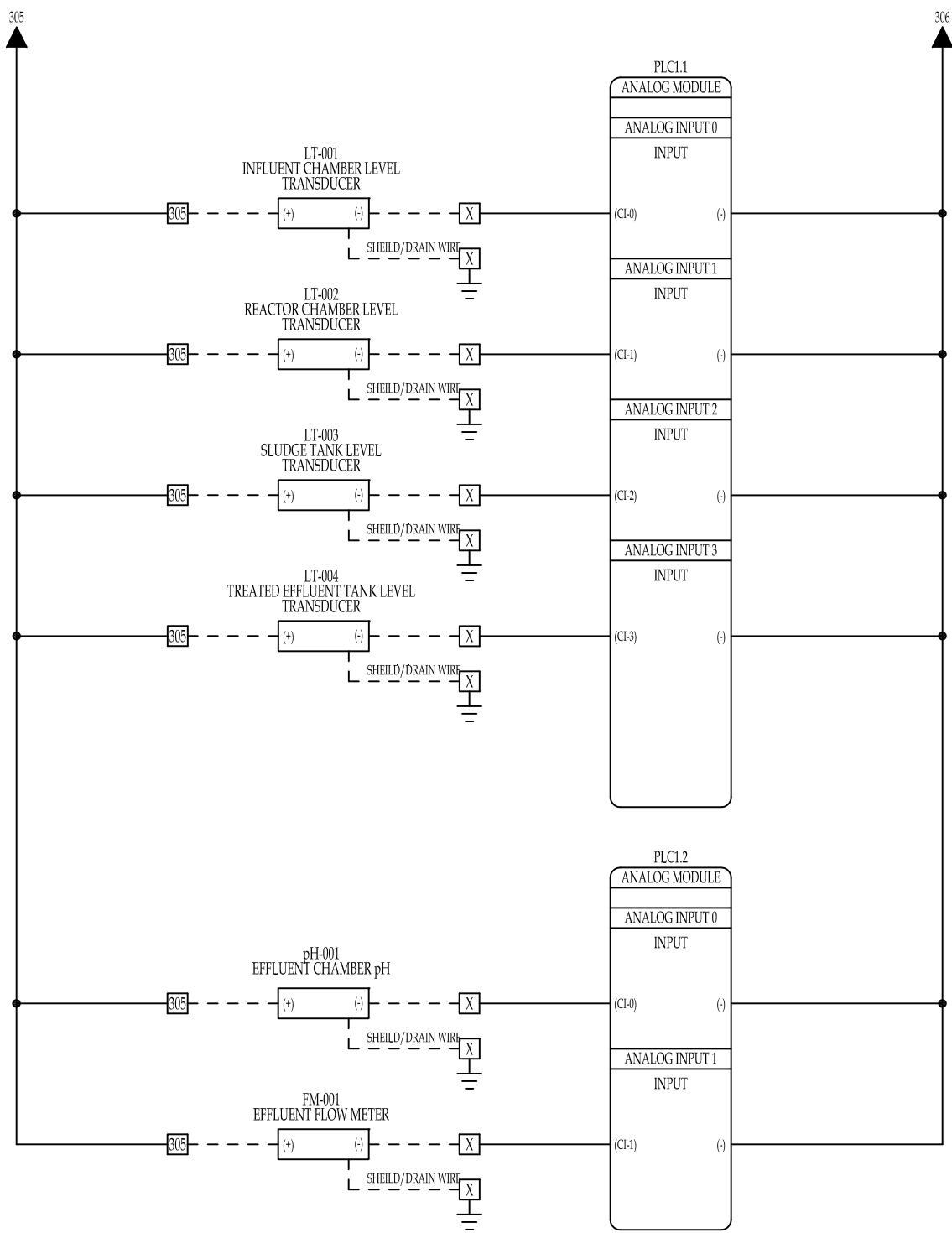
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2017044.6

DESCRIPTION: ELECTRICAL SCALE: NONE SHEET SIZE: 8.5" x 11.0"

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24VDC
CONTROL CIRCUIT
CONTINUED FROM SHEET
2017044.6



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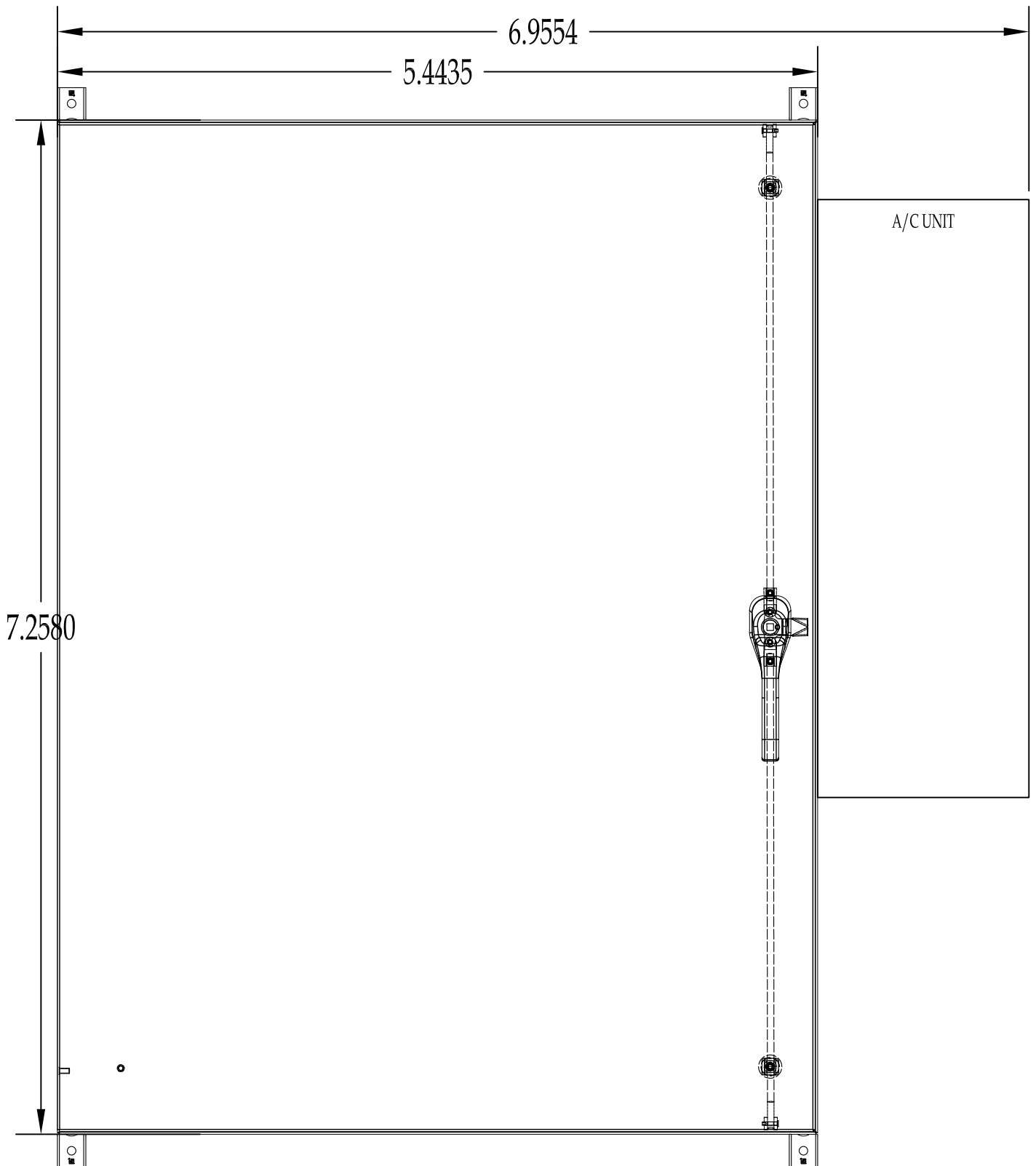


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| | | | | |
|-----------------------------------|----------------|-------------------------|-------------|--------------------------|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | | ▲ |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | | ▲ |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.7 | | ▲ |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | | ▲ |
| APPROVED: XXXXXXXX | DATE: 00.00.00 | DESCRIPTION: ELECTRICAL | SCALE: NONE | SHEET SIZE: 8.5" x 11.0" |

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EXTERIOR VIEW

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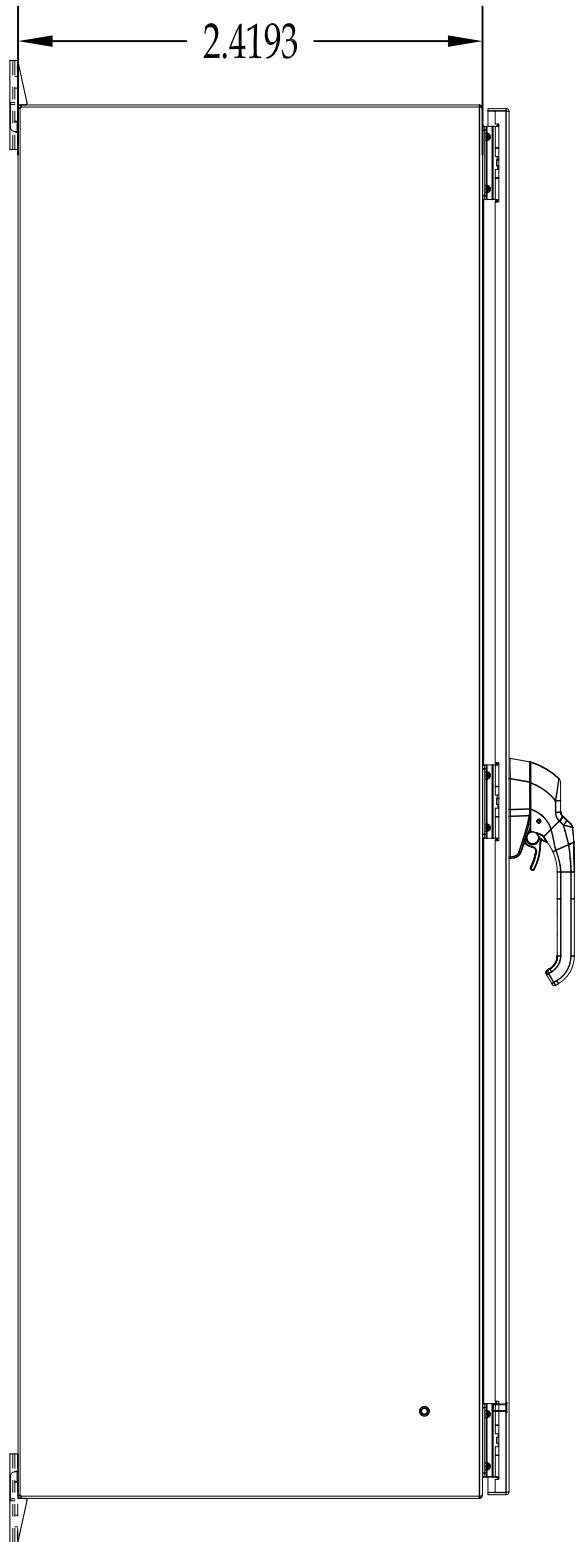


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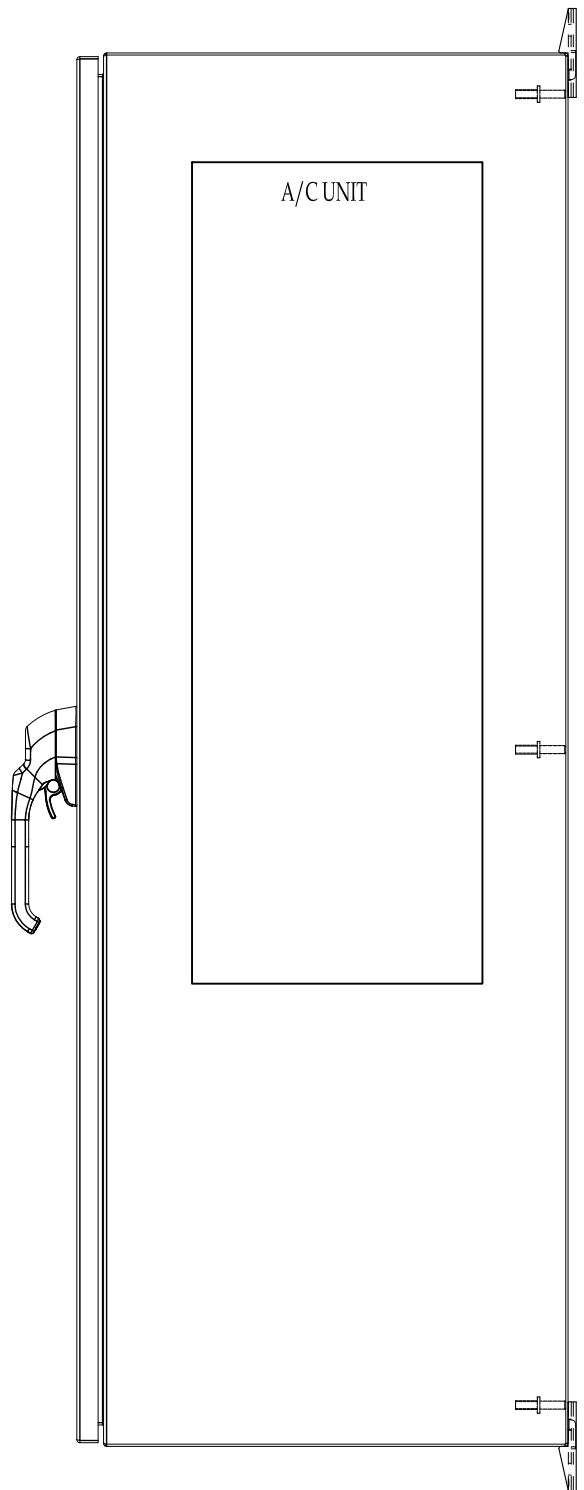
| | | | | |
|-----------------------------------|----------------|-----------------------------|-------------|--------------------------|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | | △ |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | | △ |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.DE | | △ |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | | △ |
| APPROVED: XXXXXXX | DATE: 00.00.00 | DESCRIPTION: DOOR ELEVATION | SCALE: NONE | SHEET SIZE: 8.5" x 11.0" |

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LEFT SIDE



RIGHT SIDE

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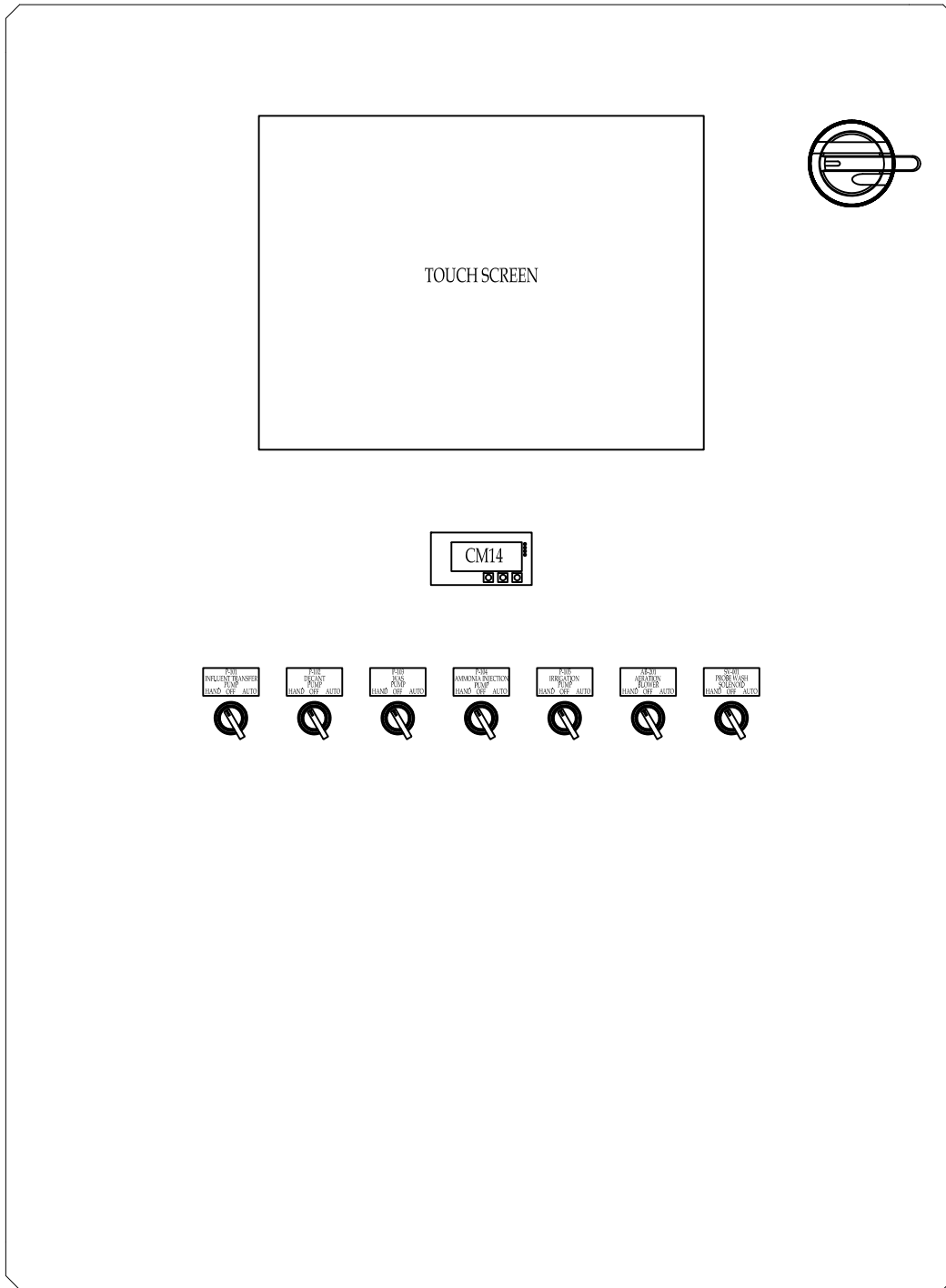
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| | | | | |
|-----------------------------------|----------------|-----------------------------|-------------|--|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | | ▲ |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | | ▲ |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.SE | | ▲ |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | | ▲ |
| APPROVED: XXXXXX | DATE: 00.00.00 | DESCRIPTION: SIDE ELEVATION | SCALE: NONE | SHEET SIZE: 8.5" x 11.0" |
| | | | | Approved as Noted Do not Release for Fabrication |



INTERIOR DOOR

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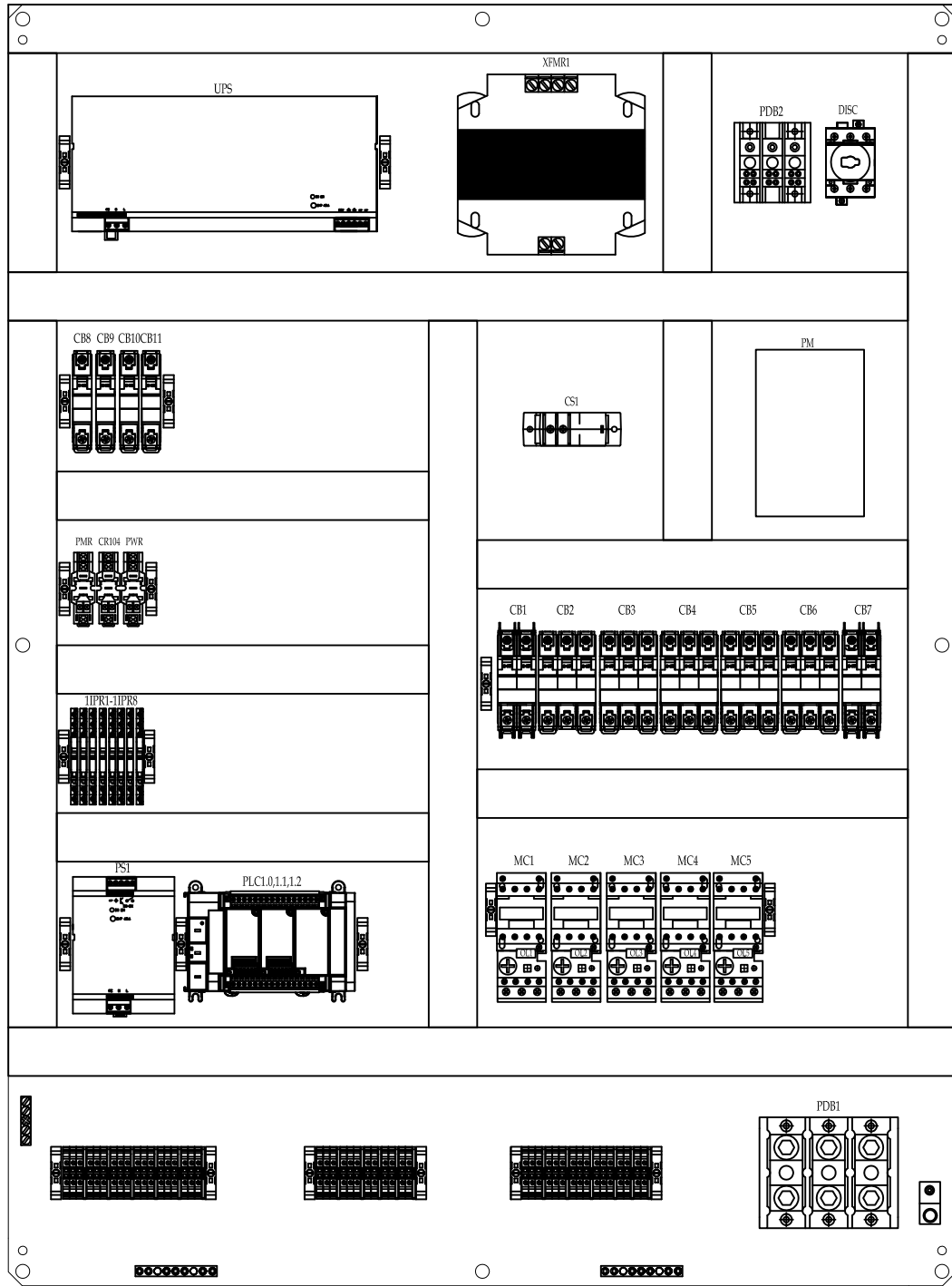
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| | | | | |
|---|----------------|------------------------------------|-------------|--------------------------|
| PROJECT: PARRISH FAMILY VINEYARDS | | CUSTOMER: CLOACINA | | △ |
| DRAWN: W.KREGO | DATE: 03.02.17 | DRAWING NO. | | △ |
| DESIGNER: S.CORBETT | DATE: 02.07.17 | 2017044.SP | | △ |
| ENGINEER: M.NUNES | DATE: 02.09.17 | | | △ |
| APPROVED: XXXXXX | DATE: 00.00.00 | DESCRIPTION: SWING PANEL ELEVATION | SCALE: NONE | SHEET SIZE: 8.5" x 11.0" |
| <small>Approved as Noted Do not Release for Fabrication</small> | | | | |

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PROJECT: PARRISH FAMILY VINEYARDS

DRAWN: W.KREGO DATE: 03.02.17

DESIGNER: S.CORBETT DATE: 02.07.17

ENGINEER: M.NUNES DATE: 02.09.17

APPROVED: XXXXXXXX DATE: 00.00.00

CUSTOMER: CLOACINA

DRAWING NO.
2017044.CE

DESCRIPTION: COMPONENT ELEVATION SCALE: NONE SHEET SIZE: 8.5" x 11.0"



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PC 8717

Industrial Panel PC

User Manual

*PC8717: 17" Industrial Touch Panel PC with
Core i3-2330E 2.2GHz Processor*

Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications.

It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Packing List

Accessories (as ticked) included in this package are:

- AC power cable
- Driver & manual CD disc
- Other. _____ (please specify)

Safety Precautions

Follow the messages below to avoid your systems from damage:

- ◆ Avoid your system from static electricity on all occasions.
- ◆ Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- ◆ Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1 Getting Started

1.1 Specifications

| | |
|----------------------------------|--|
| Model No. Specs | PC 8717 |
| System | |
| Processor | Support Core i3-2330E 2.2GHz processor |
| System Chipset | Intel QM67 PCH |
| System Memory | 2 x SO-DIMM(204pins) up to 16GB DDRIII 1066/1333MHz FSB |
| Storage | 2 x 2.5" SATA HDD space |
| External I/O Port | Onboard 2 x DB9 RS-232 (COM1.2) 1 x DVI-I 1 x HDMI 2 x RJ45 GbE LAN 4 x USB 2.0 1 x Mic-in, Line-Out 1 x DC Power 3 Pin terminal block connector 1 x 2 Pin remote power switch connector 2 x LED indication ----- By cable 1 x RS-232 COM4 1 x RS-422/485 default RS-485 COM3 1 x CF slot 1 x Rocker switch for power on/off 1 x 8 Pin terminal block 3 in/out/VCC/Ground for option |
| Expansion Slots | 1 x PCIe x16 or 1 x PCI slot, default 1 x PCIe x16 |
| OS support | Windows XP embedded, Windows embedded standard 7, Windows 7 Pro for embedded |
| LCD | |
| Display Type | 17" |
| Max. Resolution | 1280X1024 |
| Max. Color | 16.7M |
| Luminance (cd/m2) | 350 |
| View Angle | 170:160 |
| Backlight Lifetime | 50,000 hrs |

| Touch Screen | |
|-----------------------|-------------------------------|
| Type | Resistive Touch |
| Light Transmission | 80% |
| Power Supply | |
| Power Input | DC 9~32V |
| Mechanical | |
| Construction | Steel black |
| IP Rating | Front Panel IP65 |
| Mounting | Panel mount |
| Dimensions (WxHxD) | 17.28" x 13.7" x 4.69" |
| Environmental | |
| Operating Temperature | 0~50 ° C |
| Storage Temperature | -20~60 ° C |
| Storage Humidity | 10~90% @40 ° C non-condensing |
| Certificate | CE/FCC Class A |

1.2 Dimensions

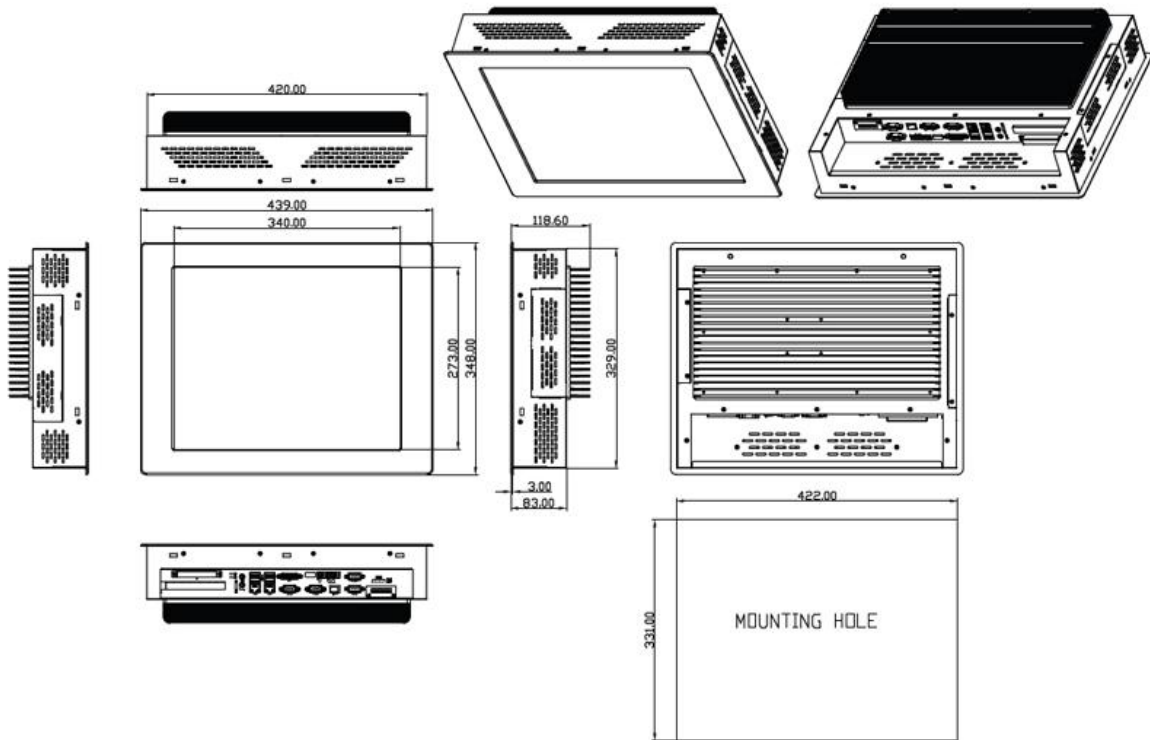


Figure 1.1 : Dimensions of PC 8717

1.3 Brief Description of PC 8717

The PC8717 is the fanless and high performance panel-mount industrial panel PC with 17" TFT LCD. It powered by QM67 chipset and support Core i3-2310M 2.1GHz Processor. The panel PC has a rich variety of functions and peripherals. It comes with 2 x 2.5-inch hard disk drive and 1 x CF space for data storage , support DDR3 memory up to 16G, support rich i/O, wide range 9~32V DC input, and also provide 1 x PCIe x 16 slot, it can ensure simplified connectivity to a variety of external peripheral devices. The OS supports windows XP embedded, Windows embedded standard 7. The unit deal for a wide range of applications including digital surveillance, data/image acquisition, factory automation and industrial applications.



Figure 1.2: Overview of PC 8717

Chapter 2 Hardware Installation

2.1 Mainboard Specifications

Introduction



Figure 2.1: Mainboard Overview

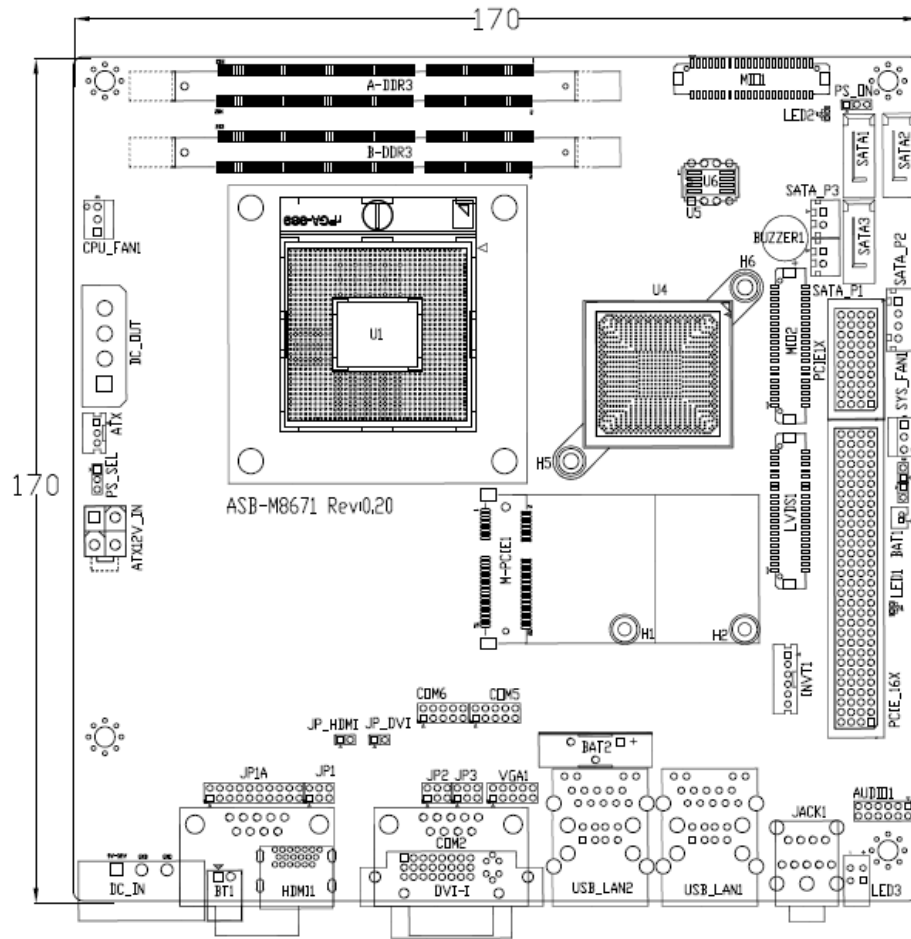


Figure 2.2: Mainboard Dimensions

IPC -M8671 is a Mini-ITX industrial motherboard developed on the basis of Intel QM67, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 6-COM ports and one Mini PCIE configuration. To satisfy the special needs of high-end customers, ADotec designed 120Pin PCIe x16 and 40Pin PCIe x1 expansion interface. The product is widely used in various sectors of industrial control.

2.1 Specifications

| Specifications | |
|-----------------------|---|
| Board Size | 170mm x 170mm |
| CPU Support | Support Socket G2,2nd Gen Intel Core i3/i5/i7 Processor |
| Chipset | Intel QM67 |
| Memory Support | 2 x SO-DIMM (204pins), up to 8GB DDRIII 800/1066MHz FSB |
| Graphics | Intel HD Grapics 2000/3000 |
| Super I/O | Winbond W83627UHG |
| BIOS | AMIBIOS |

| | |
|------------------------------------|--|
| Storage | 4 x SATA Connector 1 x CFAST Slot (option) |
| Ethernet | 2 x PCIe Gbe LAN by Intel 82574L |
| USB | 4 x USB 2.0 stack ports for external 3 x USB 2.0 box Pin header for MIO1 4 x USB 2.0 box Pin header for MIO2 1 x USB 2.0 internal for mini PCIe |
| Serial | 1 x RS232/422/485 port, DB9 connector for external (COM1) pin 9 w/5V/12V/Ring select 1 x RS232 port, DB9 connector for external (COM2) pin 9 w/5V/12V/Ring select 1 x RS232 header for internal (COM5) 1 x RS232 header for internal (COM6), pin 9 w/5V/12V select I/O Card TB-522: 1 x 422/485 select header for internal MIO1 (COM3) 1 x RS232 header for internal MIO1 (COM4) |
| Digital I/O | 8-bit digital I/O by Pin header by MIO2 4-bit digital Input 4-bit digital Output |
| Battery | Support CR2477 Li battery by 2-pin header Support CR2032 Li battery (option) |
| Audio | Support Audio via Realtek ALC662 HD audio codec Support Line-out, MIC by JACK1 Support Line-in, Line-out, MIC by 2x6-pin header |
| Keyboard /Mouse | PS2 K/B and Mouse by MIO2 1 x PS/2 keyboard 1 x PS/2 mouse |
| Expansion Bus | 1 x PCI-express x16 extend by 4x30 pin socket 2 x PCI-express x1 extend by 4x10 pin socket 1 x mini-PCI-express slot 1 x CRT 2x5 Pin Header |
| Power Management | 1 x 3-pin power input connector (Wide range DC+9V~32V) 1 x ATX Power Input (2x2Pin and 3Pin, option) DC5V/12V output by 1x4 pin Connectors |
| Switches and LED Indicators | Power on/off switch by TB-522 or TB-523 Reset switch by MIO2 Power LED status by MIO2 |

| | |
|-------------------|--|
| | HDD LED status by MIO2 |
| External I/O port | 2 x COM Ports (COM1/COM2) 4 x USB 2.0 Ports (stack) 2 x RJ45 GbE LAN Ports 1 x DVI-I Port 1 x HDMI Port 1 x Audio Ports (Mic, Line out) |
| Watchdog Timer | Software programmable 1 – 255 second by Super I/O |
| Temperature | Operating: -20°C to 70°C Storage: -40°C to 85°C |
| Humidity | 10% - 90%, non-condensing, operating |
| Power Consumption | 12V/3.80A (Intel i5-2430M 2.4GHz Processor with 4GB DDR3) |
| EMI/EMS | Meet CE/FCC class A |

2.2 Jumpers Setting and Connectors

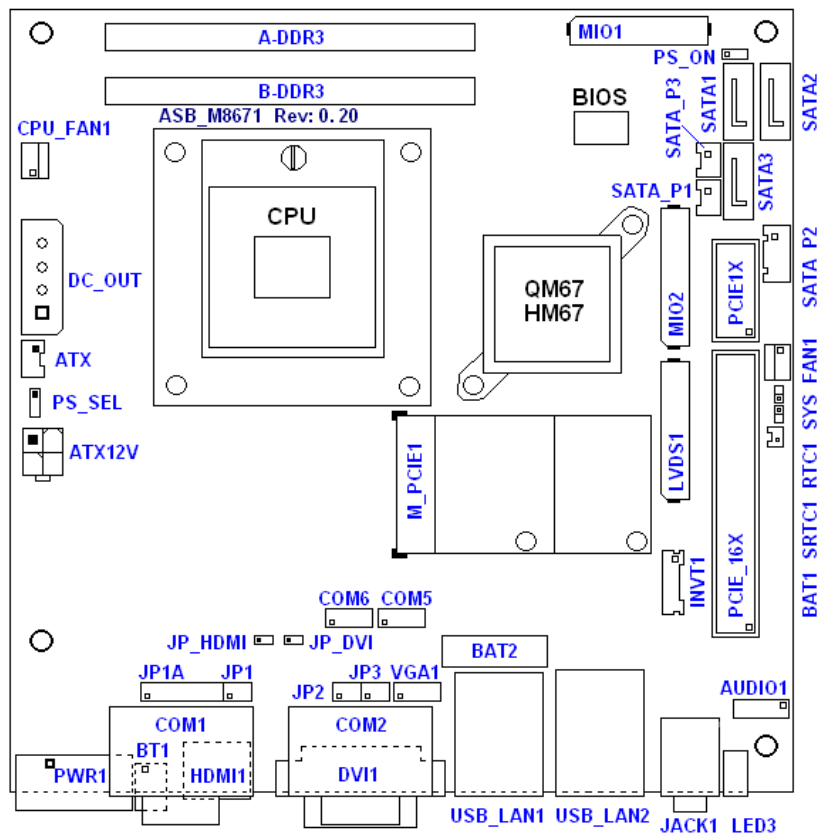


Figure 2.3: Jumpers and Connectors Location-TOP

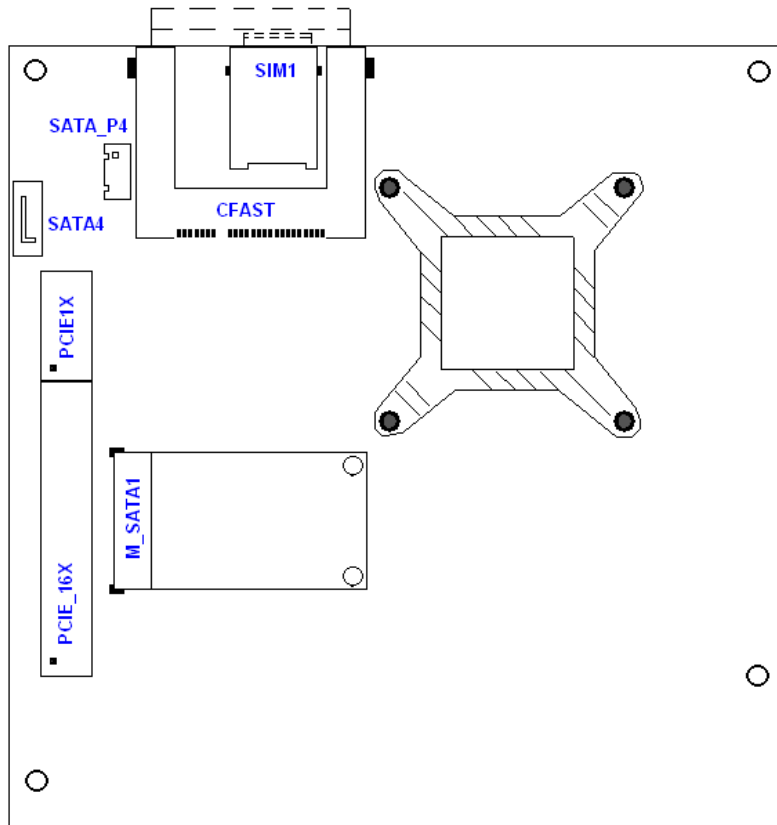


Figure 2.4: Jumpers and Connectors Location-Bottom

1. RTC1/SRTC1:

(2.0mm Pitch 1X2 Pin Header) CMOS clear jumper, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

| RTC1/SRTC1 | CMOS |
|---|------------------|
| Open or (RTC1Pin1-SRTC1 Pin close) | NORMAL (Default) |
| Close 1-2 | Clear CMOS |



Procedures of CMOS clear:

- a) Turn off the system and unplug the power cord from the power outlet.
- b) To clear the CMOS settings, use the jumper cap to close pins 1 and 2 for about 3 seconds then reinstall the jumper clip back to pins open.
- c) Power on the system again.
- d) When entering the POST screen, press the key to enter CMOS Setup Utility to load optimal defaults.
- e) After the above operations, save changes and exit BIOS Setup.

2. BAT1 :

(1.25mm Pitch 1X2 box Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

| Pin# | Signal Name |
|------|-------------|
| Pin1 | VBAT |
| Pin2 | Ground |

3. PS_SEL:

(2.0mm Pitch 1X3 Pin Header),ATX Power and AT Power jumper setting.

| PS_SEL | Mode |
|------------------|----------------------------|
| Close 1-2 | ATX Power (Default) |
| Close 2-3 | AT Power |

4. PS_ON:

(2.0mm Pitch 1X3 Pin Header),ATX Power and Auto Power on jumper setting.

| PS_ON | Mode |
|------------------|--------------------------------|
| Close 1-2 | Auto Power on (Default) |
| Close 2-3 | ATX Power |

5. DCIN:

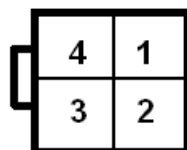
(5.08mm Pitch 1x3 Pin Connector),DC9V ~ DC32V System power input connector.



| Pin# | Power Input |
|------|-------------|
| Pin1 | DC+9V~32V |
| Pin2 | Ground |
| Pin3 | FG |

6. ATX12V_IN (ATX Power option):

(2x2 Pin Connector),DC12V System power **input** connector.



| Pin# | Power input |
|------|-------------|
| Pin1 | Ground |
| Pin2 | Ground |
| Pin3 | DC+12V |
| Pin4 | DC+12V |

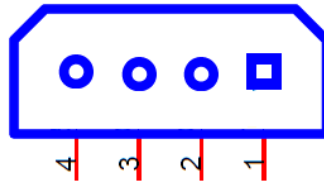
7. ATX (ATX Power option):

(2.0mm Pitch 1X3 box Pin Header), connect PSON and 5VSB and Ground signal, support ATX Power model. **Reserved.**

| Pin# | Signal Name |
|------|-------------|
| Pin1 | ATX PSON |
| Pin2 | ATX Ground |
| Pin3 | ATX 5VSB |

8. DC_OUT:

(2x2 Pin Connector), DC12V and DC5V System power **output** connector.



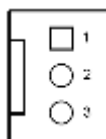
| Pin# | Power output |
|------|--------------|
| Pin1 | DC+12V |
| Pin2 | Ground |
| Pin3 | Ground |
| Pin4 | DC+5V |

9. U1:

(Socket G2), installing the 2nd GEN intel Core i3/i5/i7 CPU Socket.

10. CPU_FAN1/SYS_FAN1:

(2.54mm Pitch 1x3 Pin Header), Fan connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.



| Pin# | Signal Name |
|------|-------------|
|------|-------------|

| | |
|---|--------------------|
| 1 | Ground |
| 2 | VCC |
| 3 | Rotation detection |



Note:

Output power of cooling fan must be limited under 5W.

11. A-DDR3/B-DDR3:

(SO-DIMM 204Pin socket), DDRIII memory socket, the socket is located at the Top of the board and supports 204Pin 1.5V DDRIII 1066/1333MHz FSB SO-DIMM memory module up to 16GB.

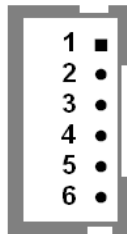
12. VGA1:

(CRT 2.0mm Pitch 2X5 Pin Header), Video Graphic Array Port, Provide 2x5Pin cable to VGA Port.

| Signal Name | Pin# | Pin# | Signal Name |
|-------------|------|------|-------------|
| CRT_RED | 1 | 2 | Ground |
| CRT_GREEN | 3 | 4 | Ground |
| CRT_BLUE | 5 | 6 | Ground |
| CRT_H_SYNC | 7 | 8 | CRT_DDCDATA |
| CRT_V_SYNC | 9 | 10 | CRT_DDCCLK |

13. INVT1:

(2.0mm Pitch 1x6 box Pin Header), Backlight control connector for LVDS1.



| Pin# | Signal Name |
|------|-------------|
| 1 | +DC12V |
| 2 | +DC12V |
| 3 | Ground |
| 4 | Ground |
| 5 | BKLT_EN |
| 6 | BKLT_CTRL |



Note:

Pin6 is backlight control signal, support DC or PWM mode, mode select at BIOS CMOS menu.

14. LVDS1:

(1.25mm Pitch 2x20 Connector), For 18/24-bit LVDS output connector, Fully supported by Intel QM67 chipset, the interface features dual channel 18/24-bit output.

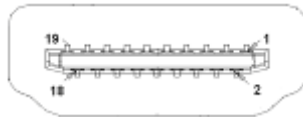
| Signal Name | Pin# | Pin# | Signal Name |
|---------------|------|------|--------------|
| VDD5 | 2 | 1 | VDD5 |
| Ground | 4 | 3 | Ground |
| VDD33 | 6 | 5 | VDD33 |
| LB_D0_N | 8 | 7 | LA_D0_N |
| LB_D0_P | 10 | 9 | LA_D0_P |
| Ground | 12 | 11 | Ground |
| LB_D1_N | 14 | 13 | LA_D1_N |
| LA_D1_P | 16 | 15 | LA_D1_P |
| Ground | 18 | 17 | Ground |
| LB_D2_N | 20 | 19 | LA_D2_N |
| LB_D2_P | 22 | 21 | LA_D2_P |
| Ground | 24 | 23 | Ground |
| LB_CLK_N | 26 | 25 | LA_CLK_N |
| LB_CLK_P | 28 | 27 | LA_CLK_P |
| Ground | 30 | 29 | Ground |
| LVDS_DDC_DATA | 32 | 31 | LVDS_DOC_CLK |
| Ground | 34 | 33 | Ground |
| LB_D3_N | 36 | 35 | LA_D3_N |
| LB_D3_P | 38 | 37 | LA_D3_P |
| NC | 40 | 39 | NC |

15. JP_HDMI:

(2.0mm Pitch 1x2 Pin Header), Reserved.

16. HDMI1:

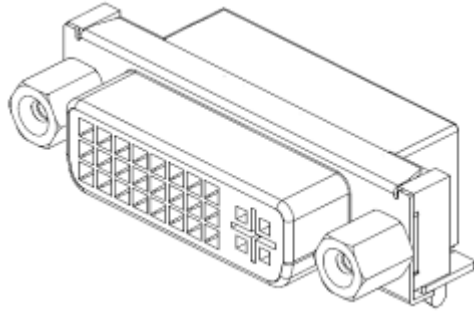
(HDMI 19P Connector), High Definition Multimedia Interface connector.

**17. JP_DVI:**

(2.0mm Pitch 1x2 Pin Header), Reserved.

18. DVI-I:

(DVI-I Connector), Digital Visual Interface-Integrated connector.



19. BT1:

POWER on/off Button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

20. JP1:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM1 port.

| JP1 Pin# | Function |
|------------------|---|
| Close 1-2 | COM1 RI (Ring Indicator) (default) |
| Close 3-4 | COM1 Pin9=+5V (option) |
| Close 5-6 | COM1 Pin9=+12V (option) |

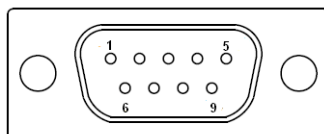
21. JP1A:

(2.0mm Pitch 2x10 Pin Header), COM1 jumper setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

| Function | JP1A Pin# |
|------------------------|--|
| RS232 (Default) | Close: Pin1-3, Pin2-4, Pin7-9, Pin8-10, Pin13-14 |
| RS422 (option) | Close: Pin3-5, Pin6-8, Pin9-11, Pin10-12, Pin17-18 |
| RS485 (option) | Close: Pin3-5, Pin6-8, Pin9-11, Pin10-12, Pin15-16, Pin19-20 |

22. COM1:

(Type **DB9**), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices.



| RS232 (Default): | |
|-------------------------|---------------------------------------|
| Pin# | Signal Name |
| 1 | DCD# (Data Carrier Detect) |
| 2 | RXD (Received Data) |
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | Ground |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | JP1 select Setting (RI/5V/12V) |

| RS422 (option): | |
|------------------------|-------------|
| Pin# | Signal Name |
| 1 | 422_R- |
| 2 | 422_R+ |
| 3 | 422_T- |
| 4 | 422_T+ |
| 5 | Ground |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |

| RS485 (option): | |
|------------------------|-------------|
| Pin# | Signal Name |
| 1 | NC |
| 2 | NC |
| 3 | 485- |
| 4 | 485+ |
| 5 | Ground |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |

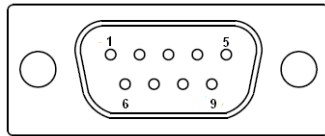
23. JP2:

(2.0mm Pitch 2x3 Pin Header), COM2 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM2 port.

| JP1 Pin# | Function |
|------------------|---|
| Close 1-2 | COM2 RI (Ring Indicator) (default) |
| Close 3-4 | COM2 Pin9=+5V (option) |
| Close 5-6 | COM2 Pin9=+12V (option) |

24. COM2:

(Type **DB9**),Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices.



| Pin# | Signal Name |
|------|---------------------------------------|
| 1 | DCD# (Data Carrier Detect) |
| 2 | RXD (Received Data) |
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | Ground |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | JP2 select Setting (RI/5V/12V) |

25. COM5:

(2.0mm Pitch 2X5 Pin Header),COM5 Port, standard RS232 ports are provided. They can be used directly via COM cable connection.

| Signal Name | Pin# | Pin# | Signal Name |
|-------------|------|------|-------------|
| DCD | 1 | 2 | RXD |
| TXD | 3 | 4 | DTR |
| Ground | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |
| RI | 9 | 10 | NC |

26. JP3:

(2.0mm Pitch 1x3 Pin Header) COM6 setting jumper, pin 1~3 are used to select signal out of pin 9 of COM6 port.

| JP3 Pin# | Function |
|----------|----------|
|----------|----------|

| | | |
|-----------|---|----------|
| Close 1-2 | COM6 RI (Ring Indicator) (default) | |
| Close 3-4 | COM6 Pin9=+5V | (option) |
| Close 5-6 | COM6 Pin9=+12V | (option) |

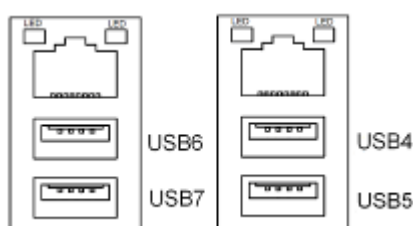
27. COM6:

(2.0mm Pitch 2x5 Pin Header), COM6 Port, standard RS232 ports are provided. They can be used directly via COM cable connection. COM6 port is controlled by pins No.1~3 of JP3,select output Signal 5V or 12v, For details, please refer to description of **JP3**.

| Signal Name | Pin# | Pin# | Signal Name |
|--|------|------|-------------|
| DCD | 1 | 2 | RXD |
| TXD | 3 | 4 | DTR |
| Ground | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |
| JP3select Setting (RI/5V/12V) | 9 | 10 | NC |

28. USB_LAN1/USB_LAN2:

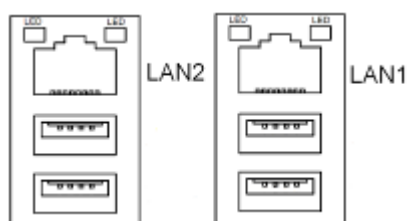
USB4/USB5/USB6/USB7 : (Double stack USB type A), Rear USB connector, it provides up to 4 USB2.0 ports, speed up to 480Mb/s.



Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.

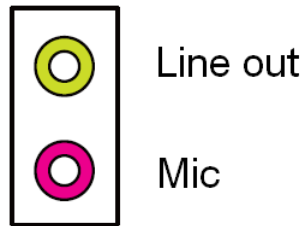
If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

LAN1/LAN2: (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M RJ-45 Ethernet ports are provided. Used Realtek RTL8111D chipset, LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.



29. JACK1:

(Diameter 3.5mm Double stack Jack), HD Audio port, An onboard Realtek ALC662 codec is used to provide high quality audio I/O ports. Line Out can be connected to a headphone or amplifier, MIC is the port for microphone input audio.



30. AUDIO1:

(2.0mm Pitch 2X6 Pin Header), Front Audio, An onboard Realtek ALC662 codec is used to provide high-quality audio I/O ports. Line Out can be connected to a headphone or amplifier. Line In is used for the connection of external audio source via a Line in cable. MIC is the port for microphone input audio.

| Signal Name | Pin# | Pin# | Signal Name |
|-------------|------|------|-------------|
| SPK_OUTL_P | 1 | 2 | SPK_OUTR_P |
| SPK_OUTL_N | 3 | 4 | SPK_OUTR_N |
| FRONT_JD | 5 | 6 | LINE1_JD |
| LINE_IN_L | 7 | 8 | LINE-IN-R |
| MIC2_IN_L | 9 | 10 | MIC2-IN-R |
| Ground_AUD | 11 | 12 | MIC2_JD |

31. LED3:

LED STATUS. Green LED for Motherboard Standby Power Good status, Yellow LED for HDD status.

32. LED2:

LED STATUS. Green LED for Motherboard Standby Power Good status.

33. LED1:

LED STATUS. Green LED for Motherboard Power status,

34. PCIE_16X (option):

(4x30 Pin), Riser Card expansion connector. Can expand support one PCIeX16 or two PCIeX8 Signal.

ASB-M8671T : PCIE_16X connector in the top.

ASB-M8671B : PCIE_16X connector in the Bottom.

35. PCIE1X (option):

(4x10 Pin),Riser Card expansion connector.Can expand support two PCIe Signal.

ASB-M8671T : PCIE1X connector in the top.

ASB-M8671B : PCIE1X connector in the Bottom.

| MODEL | PC1E16X / PCIE1X |
|------------|------------------|
| ASB-M8671T | Top |
| ASB-M8671B | Bottom |

36. M-PCIE1:

(Socket 52Pin),mini PCIe socket, it is located at the top, it supports mini PCIe devices with USB2.0, SMBUS and PCIe signal. MPCle card size is 30x30mm or 30x50.95mm.

37. H1/H2:

MPCIE1 SCREW HOLES, H1 for mini PCIE card (30mmx30mm) assemble. H2 for mini PCIE card (30mmx50.95mm) assemble.

38. BUZZER1:

Onboard buzzer.

39. MIO1:

(DF13-40P Connector),For expand output connector, It provides two RS232 ports or one RS485 port, three USB ports, one power led, one power button, via a dedicated cable connected to **TB-522 MIO1or TB-523 MIO1.**

| Function | Signal Name | Pin# | Pin# | Signal Name | Function |
|------------------------------|---------------|------|------|-------------|----------|
| COM3 RS422 or RS485 | 485+ / 422TX+ | 2 | 1 | 422RX+ | COM3 |
| | 485- / 422TX- | 4 | 3 | 422RX- | |
| | 3P3V_S0 | 6 | 5 | Ground | |
| | WAN_LED | 8 | 7 | NC | |
| | 5V_S5 | 10 | 9 | 5V_S5 | |
| COM4 | RXD4 | 12 | 11 | DCD4- | COM4 |
| | DTR4- | 14 | 13 | TXD4 | |
| | DSR4- | 16 | 15 | Ground | |
| | CTS4- | 18 | 17 | RTS4- | |
| | 5V_S5 | 20 | 19 | RI4- | |
| USB10 | 5V_USB_1011 | 22 | 21 | 5V_S5 | USB9 |
| | USB10_N | 24 | 23 | USB9_N | |
| | USB10_P | 26 | 25 | USB9_P | |

| | | | | | |
|--------|----------|----|----|-------------|-------|
| | Ground | 28 | 27 | Ground | USB11 |
| | Ground | 30 | 29 | Ground | |
| Power | 3P3V_S0 | 32 | 31 | 5V_USB_1011 | |
| LED | PWR_LED- | 34 | 33 | USB11_N | |
| Power | MIO_PSON | 36 | 35 | USB11_P | |
| Button | Ground | 38 | 37 | Ground | |
| | NC | 40 | 39 | NC | |

40. MIO2:

(DF13-40P Connector),Front panel connector.

| Function | Signal Name | Pin# | Pin# | Signal Name | Function |
|-----------|-------------|------|------|-------------|----------|
| P_LED+ | PWR-LED | 2 | 1 | HDD_LED | H_LED+ |
| P_LED- | Ground | 4 | 3 | USB01_OC- | |
| PSON+ | MIO_PSON- | 6 | 5 | USB23_OC- | |
| PSON- | Ground | 8 | 7 | RESET | RESET+ |
| BUZZER- | BUZZER- | 10 | 9 | BUZZER+ | BUZZER+ |
| GPIO_OUT1 | PCH_GPIO68 | 12 | 11 | PCH_GPIO12 | GPIO_IN1 |
| GPIO_OUT2 | PCH_GPIO69 | 14 | 13 | PCH_GPIO15 | GPIO_IN2 |
| GPIO_OUT3 | PCH_GPIO70 | 16 | 15 | PCH_GPIO58 | GPIO_IN3 |
| GPIO_OUT4 | PCH_GPIO71 | 18 | 17 | PCH_GPIO75 | GPIO_IN4 |
| PS2_Mouse | 5V_S5_USB | 20 | 19 | Ground | PS2_K/B |
| | PS2_MSDATA | 22 | 21 | PS2_KBDATA | |
| | PS2_MSCLK | 24 | 23 | PS2_KBCLK | |
| USB3 | 5V_S5_USB | 26 | 25 | 5V_S5_USB | USB2 |
| | USB3_N | 28 | 27 | USB2_N | |
| | USB3_P | 30 | 29 | USB2_P | |
| | Ground | 32 | 31 | Ground | |
| USB1 | 5V_S5_USB | 34 | 33 | 5V_S5_USB | USB0 |
| | USB1_N | 36 | 35 | USB0_N | |
| | USB1_P | 38 | 37 | USB0_P | |
| | Ground | 40 | 39 | Ground | |

Pin1- Ground: **HDD LED**, They are used to connect hard disk activity LED. The LED blinks when the hard disk is reading or writing data.

Pin2- Pin4: **POWER LED**, They are used to connect power LED. When the system is powered on or under S0/S1 state, the LED is normally on, when the system is under S4/S5 state, the LED is off.

Pin3: **USB01 OC-**, "USB01_OC-" Signal.

Pin5: **USB23 OC-**, "USB23_OC-" Signal.

Pin7- Ground: **RESET Button**, They are used to connect reset button. The two pins are disconnected under normal condition. You may short them temporarily to realize system reset.

Pin6- Pin8: **POWER on/off Button**, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

Pin9- Pin10: **BUZZER**, They are used to connect an external buzzer.

Pin11~Pin18: **GPIO IN/GPIO OUT**, General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Pin19~Pin24: **PS2 KB/MS**, PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard and mouse via a dedicated cable for direct used.

Pin25~40: **USB0/USB1/USB2/USB3**, Front USB connector, it provides 4 USB ports via a dedicated USB cable, speed up to 480Mb/s.



Note:

When connecting LEDs and buzzer and GPIO and USB, pay special attention to the signal polarity. Make sure that the connector pins have a one-to-one correspondence with chassis wiring, or it may cause boot up failure.

41. **SATA_P1/SATA_P3:**

(2.5mm Pitch 1x2 box Pin Header), Two onboard 5V output connectors are reserved to provide power for SATA devices.

| Pin# | Signal Name |
|------|-------------|
| 1 | +DC5V |
| 2 | Ground |



Note:

Output current of the connector must not be above 1A.

42. **SATA_P2/SATA_P4:**

(2.5mm Pitch 1x4 box Pin Header), Two onboard 5V and 12V output connectors are reserved to provide power for SATA devices.

| Pin# | Signal Name |
|------|-------------|
| 1 | +DC5V |
| 2 | Ground |
| 3 | Ground |
| 4 | +DC12V |



Note:

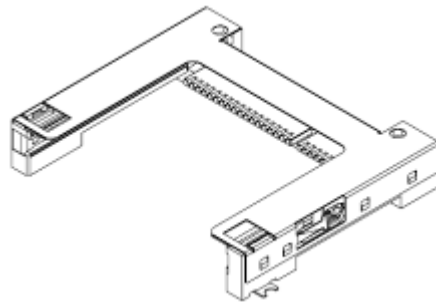
Output current of the connector must not be above 1A.

43. SATA1/SATA2/SATA3/SATA4:

(SATA 7P), SATA Connectors, Four SATA connectors are provided, SATA1 and SATA2 transfer speed up to 6.0Gb/s, SATA3 and SATA4 transfer speed up to 3.0Gb/s, RAID controller supporting RAID 0/1/5/10.

44. CFAST (option):

(CFAST Card socket), it is located at the bottom of the board and serves as an insert interface for CFAST card.



45. SIM (option):

(SIM Socket 7Pin), Support SIM Card devices.

46. M_SATA1:

(50.95mmx30mm Socket 52Pin), mSATA socket, it is located at the top, it supports mini PCI-e devices with LPC bus, **B2 mSATA bus** for flash disk signal.

47. H3/H4:

M_SATA1 SCREW HOLES,

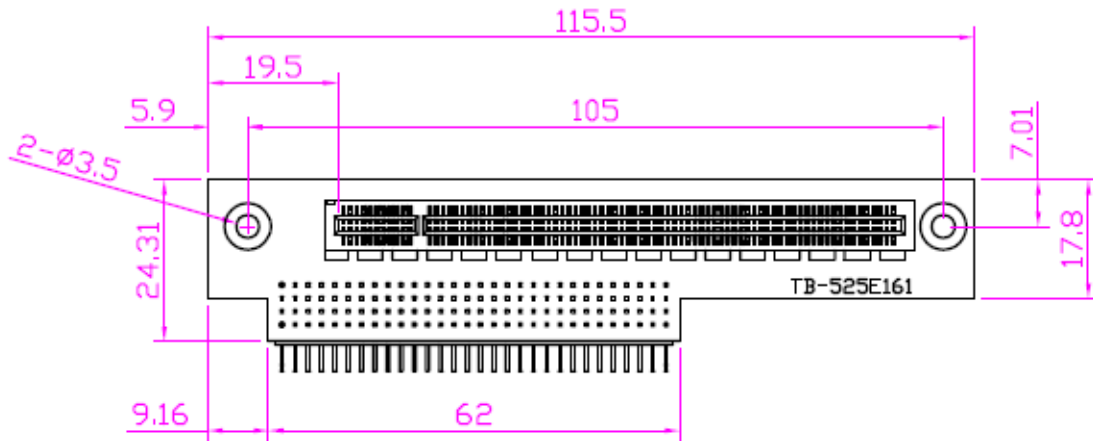
H3 and H4 for mini MSATA card (50.95mmx30mm Socket 52 Pin) assemble.

48. CPU SCREW HOLES:

CPU FAN SCREW HOLES, Four screw holes for fixed CPU Cooler assemble.

49. TB-525E161:

TB-525E161 connect to ASB-M8671T PCIE_16X connector, PCIE_16X is located at the top,It provides one PCIE X16 slot.



3.1 Operations after POST Screen

After CMOS discharge or BIOS flashing operation, press [Delete] key to enter CMOS Setup.



After optimizing and exiting CMOS Setup, the POST screen displayed for the first time is as follows and includes basic information on BIOS, CPU, memory, and storage devices.

3.2 BIOS SETUP UTILITY

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.



| | | |
|--|---------------------|-----------------------|
| BIOS Information | | Choose the system |
| BIOS Vendor | American Megatrends | Default language |
| Core Version | 4.6.4.0 | |
| Compliance | UEFI 2.1 | |
| Project Version | M8671V01 X64 | |
| Build Date and Time | 05/21/2012 16:15:28 | |
| System Language | [English] | |
| System Date | [Sun 07/10/2012] | →←: Select Screen |
| System Time | [00:00:08] | ↑↓ : Select Item |
| Access Level | Administrator | Enter: Select |
| | | +/- : Change Opt. F1 |
| | | : General Help F2: |
| | | Previous Values |
| | | F3:Optimized Defaults |
| | | F4:Save and Exit |
| | | ESC Exit |
| Version 2.10.1208. Copyright (C) 2010 American Megatrends , Inc. | | |

3.3 System Overview

Main Settings

| Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc. | | | | | |
|--|---------------------|---------|------|----------|-------------------|
| Main | Advanced | Chipset | Boot | Security | Save & Exit |
| BIOS Information | | | | | Choose the system |
| BIOS Vendor | American Megatrends | | | | Default language |
| Core Version | 4.6.4.0 | | | | |
| Compliance | UEFI 2.1 | | | | |
| Project Version | M8671V01 X64 | | | | |
| Build Date and Time | 05/21/2012 16:15:28 | | | | |
| System Language | [English] | | | | |

| | | |
|--|------------------|-----------------------|
| System Date | [Sun 07/10/2012] | →←: Select Screen |
| System Time | [00:00:08] | ↑↓ : Select Item |
| Access Level | Administrator | Enter: Select |
| | | +/- : Charge Opt. F1 |
| | | : General Help F2: |
| | | Previous Values |
| | | F3:Optimized Defaults |
| | | F4:Save and Exit |
| | | ESC Exit |
| Version 2.10.1208. Copyright (C) 2010 American Megatrends , Inc. | | |

System Time:

Set the system time, the time format is:

Hour : 0 to 23
Minute : 0 to 59
Second : 0 to 59

System Date:

Set the system date, the date format is:

Day: Note that the „Day“ automatically changes when you set the date.

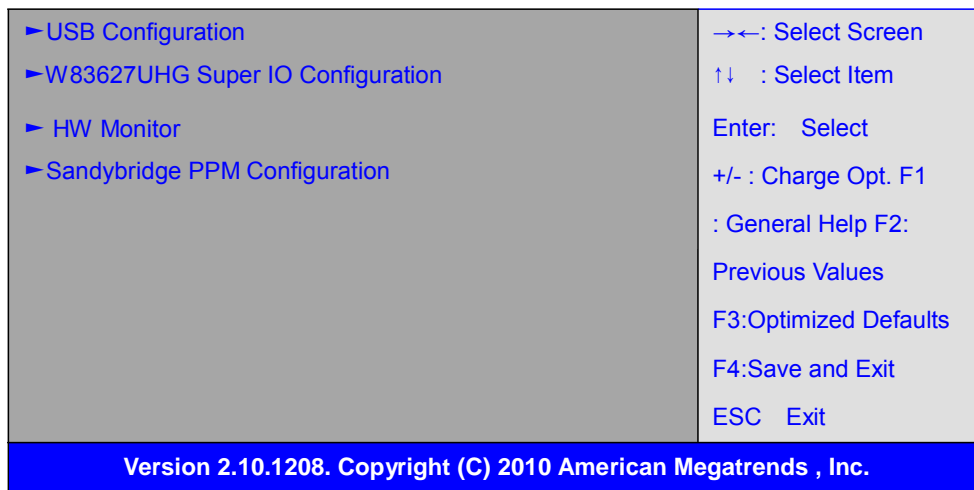
Month: 01 to 12

Date: 01 to 31

Year: 1998 to 2099

3.4 Advanced Settings

| Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc. | | | | | |
|--|--------------------------|------------|------|----------|------------------------|
| Main | Advanced | Chipset | Boot | Security | Save & Exit |
| | Legacy OpROM Support | | | | Enable or Disable Boot |
| | Launch Storage OpROM | [Disabled] | | | Option for Legacy |
| | Launch Storage OpROM | [Enabled] | | | Network Devices. |
| | ▶ PCI Subsystem Settings | | | | |
| | ▶ ACPI Settings | | | | |
| | ▶ CPU Configuration | | | | |
| | ▶ SATA Configuration | | | | |
| | ▶ Thermal Configuration | | | | |
| | ▶ PCH-FW Configuration | | | | |



3.4.1 PCI Subsystem Settings

PCI Bus Driver Versio V2.03.00

PCI ROM Priority:

[EFI Compatible ROM]

[Legacy ROM]

PCI Common Settings:

PCI Latency Timer:

[32 PCI Bus Clocks]

[64 PCI Bus Clocks]

[96 PCI Bus Clocks]

[128 PCI Bus Clocks]

[160 PCI Bus Clocks]

[192 PCI Bus Clocks]

[224 PCI Bus Clocks]

[248 PCI Bus Clocks]

VGA Palette Snoop:

[Disabled]

[Enabled]

PERR# Generation:

[Disabled]

[Enabled]

SERR# Generation:

[Disabled]

[Enabled]

PCI Express Device Settings:

Relaxed Ordering:

[Disabled]

[Enabled]

Extended Tag:

[Disabled]

[Enabled]

No Snoop:

[Enabled]

[Disabled]

Maximum Payload:

[Auto]

[128 Bytes]

[256 Bytes]

[512 Bytes]

[1024 Bytes]

[2048 Bytes]

[4096 Bytes]

Maximum Read Request:

[Auto]

[128 Bytes]

[256 Bytes]

[512 Bytes]

[1024 Bytes]

[2048 Bytes]

[4096 Bytes]

PCI Express Link Settings:

ASPM Support:

[Disabled]

[Enabled]

WARNING:Enabling ASPM may cause some
PCI-E devices to fail

Extended Synch:

[Disabled]

[Enabled]

3.4.2 ACPI Settings

Enable ACPI Auto Configuration:

[Disabled]

[Enabled]

Enable Hibernation:

[Enabled]

[Disabled]

ACPI Sleep State:

[S3 (Suspend to RAM)]

[Suspend Disabled]

[S3 (Suspend to RAM)]

Lock Legacy Resources:

[Disabled]

[Enabled]

3.4.3 CPU Configuration

Socket 0 CPU Information:

Intel(R) Core(TM) i5-2430M CPU @2.40GHz

CPU Signature 206a7

Microcode Patch 25

Max CPU Speed 2400 MHz

Min CPU Speed 800 Mhz

Processor Cores 2

Intel HT Technology Supported

Intel VT-x Technology Supported

L1 Data Cache 32 KB x 2

L1 Code Cache 32 KB x 2

L2 Cache 256 KB x 2

L3 Cache 3072 KB

CPU Speed 2400 MHz

64-bit Supported

Hyper-Threading:

[Enabled]

[Disabled]

Active Processor Cores

[All]

[1]

Limit CPUID Maximum:

[Disabled]

[Enabled]

Execute Disable Bit:

[Enabled]

[Disabled]
Hardware Prefetcher
[Enabled]
[Disabled]

Adjacent Cache Line Prefetch
[Enabled]
[Disabled]

Intel Virtualization Technology
[Enabled]
[Disabled]

3.4.4 SATA Configuration

SATA Controller(S):
[Enabled]
[Disabled]

SATA Mode Selection:
[IDE]
[AHCI]
[RAID]

SATA Test Mode:
[Disabled]
[Enabled]

Serial ATA Port 0 Empty
 Software Preserve Unknown

Serial ATA Port 1 Empty
 Software Preserve Unknown

Serial ATA Port 2 Empty
 Software Preserve Unknown

Serial ATA Port 3 Empty
 Software Preserve Unknown

Serial ATA Port 4 Empty
 Software Preserve Unknown

| | |
|-------------------|---------|
| Serial ATA Port 5 | Empty |
| Software Preserve | Unknown |

3.4.5 Thermal Configuration

Platform Thermal Configuration

3.4.6 PCH-FW Configuration

| | |
|----------------------------------|-------------------|
| ME FW Version | 0.0.0.0 |
| ME Firmware Mode | |
| ME Firmware Type | Full Sku Firmware |
| ME Firmware SKU | Unidentified |
| ME Firmware Update Configuration | |
| ME FW Image Re-Flash | [Disabled] |
| | [Enabled] |

3.4.7 USB Configuration

USB Configuration

USB Devices:

1 keyboard, 2 Hubs

Legacy USB Support:

[Enabled]

[Disabled]

EHCI Hand-off:

[Disabled]

[Enabled]

Port 60/64 Emulation

[Enabled]

[Disabled]

USB hardware delays and time-outs:

USB transfer time-out:

[20 sec]

[10 sec]

[5 sec]

[1 sec]

Device reset time-out:

[20 sec]

[10 sec]

[30 sec]
[40 sec]
Device power-up delay
[Auto]
[Manual]

3.4.8 W83627UHG Super IO Configuration

W83627UHG Super IO Configuration
Super IO Chip Winbond W83627UHG
COM1 Configuration
COM2 Configuration
COM3 Configuration
COM4 Configuration
COM5 Configuration
COM6 Configuration

3.4.9 HW Monitor

PC Health Status

System temperature : +48 C
CPU temperature : +52
CPU Fan Speed : 6000 RPM
VCORE : +1.145V
+12V : +11.685 V
+3.3V : +3.280 V
+1.5V : +1.520 V
5VSB : +5.010 V
VBAT : +3.136 V

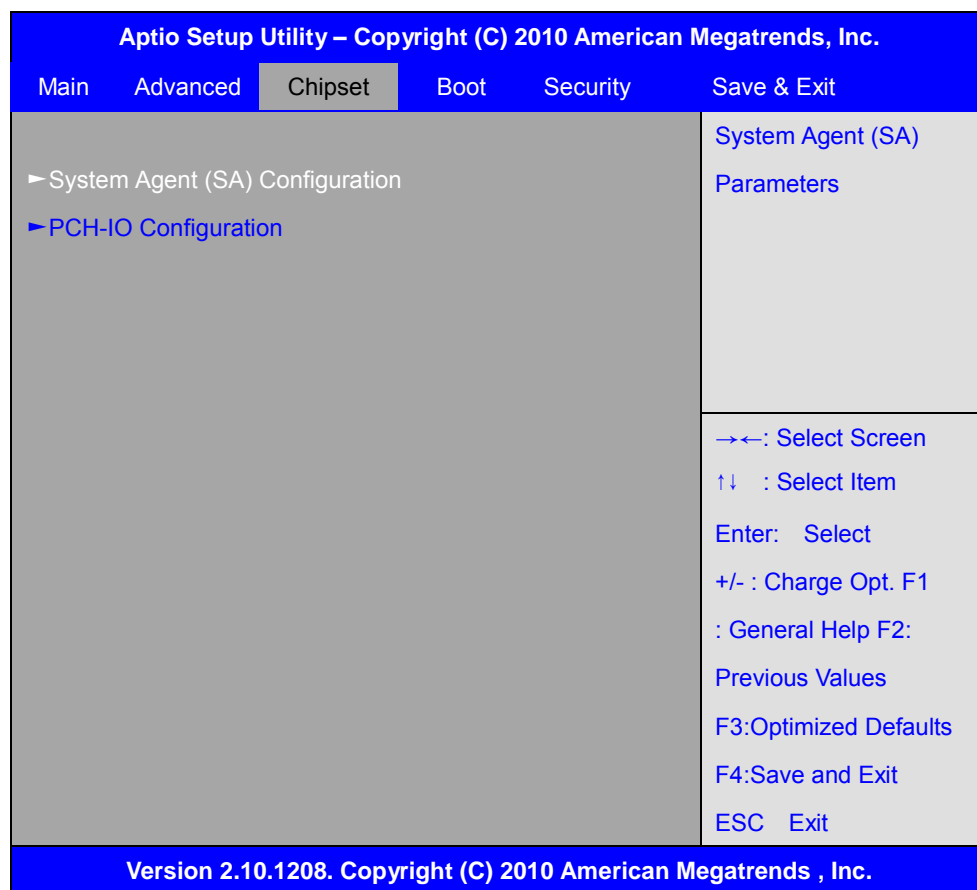
3.4.10 Sandybridge PPM Configuration

Sandybridge PPM Configuration

EIST
[Enabled]
[Disabled]
Turbo Mode
[Enabled]
[Disabled]
CPU C3 Report
[Enabled]
[Disabled]

| | |
|----------------------------|-------------------------|
| CPU C6 report | [Enabled] [Disabled] |
| CPU C7 report | [Enabled] [Disabled] |
| Long duration power limit | 0 |
| Long duration maintained | 28 |
| Short duration power limit | 0 |
| TCC active offset | 0 |

3.5 Chipset Settings



- 3.5.1 ► **System Agent (SA) Configuration**
 ► **PCH-IO Configuration**

System Agent (SA) Configuration

System Agent RC Version 1.2.1.0

| | |
|-----------------------------|--|
| VT-d Capability | Unsupported |
| CHAP Device (B0:D7:F0) | [Enabled] [Disabled] |
| Thermal Device (B0:D4:F0) | [Disabled] [Enabled] |
| Enable NB CRID | [Disabled] [Enabled] |
| ▶ Graphics Configuration | |
| IGFX VBIOS Version | 2120 |
| IGFX Frequency | 650 MHz |
| Graphics Turbo IMON Current | 31 |
| Primary Display | [Auto] [IGFX] [PEG] [PCI] |
| Internal Graphics | [Auto] [Disabled] [Enabled] |
| GTT Size | [2MB] [1MB] |
| Aperture Size | [256MB] [128MB] [512MB] |
| DVMT Pre-allocated | [64MB] [0MB] [32MB] [96MB] [128MB] [160MB] [192MB] [224MB] [256MB] |

| | | |
|---------------------------|-----------------|--------|
| | [288MB] | |
| | [320MB] | |
| | [352MB] | |
| | [384MB] | |
| | [416MB] | |
| | [448MB] | |
| | [480MB] | |
| | [512MB] | |
| Dvmt Total Gfx Mem | | |
| | [256MB] | |
| | [128MB] | |
| | [MAX] | |
| GFX Low Power Mode | | |
| | [Enabled] | |
| | [Disabled] | |
| LCD Control: | | |
| Primary IGFX Boot Display | | |
| | [VBIOS Default] | |
| | [CRT] | |
| | [DVI] | |
| | [LVDS] | |
| | HDMI] | |
| LCD Panel Type | | |
| | [1024 X 768 | LVDS1] |
| | [640 X 480 | LVDS] |
| | [800 X 600 | LVDS] |
| | [1280 X 1024 | LVDS] |
| | [1400X1050(RB) | LVDS1] |
| | [1400X1050 | LVDS2] |
| | [1600 X 1200 | LVDS] |
| | [1366 X 768 | LVDS] |
| | [1680 X 1050 | LVDS] |
| | [1920 X 1200 | LVDS] |
| | [1440 X 900 | LVDS] |
| | [1600 X 900 | LVDS] |
| | [1024 X 768 | LVDS2] |
| | [1280 X 800 | LVDS] |
| | [1920 X 1080 | LVDS] |
| | [2048 X 1536 | LVDS] |

SDVD-LFP Panel Type

[VBIOS Default]
[1024 x 768 SDVO-LFP]
[1080 x1024 SDVO-LFP]
[1400 x 1050 SDVO-LFP]
[1600 x 1200 SDVO-LFP]

Panel Scaling

[Auto]
[Off]
[Force Scaling]

Backlight Control

[PWM Inverted]
[PWM Normal]
[GMBus Inverted]
[GMBus Normal]

BIA

[Auto]
[Disabled]
[Level 1]
[Level 2]
[Level 3]
[Level 4]
[Level 5]

Spread Spectrum clock chip

[Off]
[Hardware]
[Software]

TV1 Standard

[VBIOS Default]
[NTSC_M]
[NTSC_M_J]
[NTSC_433]
[PAL_B]
[PAL_G]
[PAL_D]
[PAL_H]
[PAL_I]
[PAL_M]
[PAL_N]
[SECAM_L]

]

TV2 Standard

[SECAM_B]
[SECAM_D]
[SECAM_G]
[SECAM_H]
[SECAM_K]
[HDTV_STD_SMPTE_240M_1080i59]
[HDTV_STD_SMPTE_240M_1080i60]
[HDTV_STD_SMPTE_295M_1080i50]
[HDTV_STD_SMPTE_295M_1080p50]
[HDTV_STD_SMPTE_296M_720p50]
[HDTV_STD_SMPTE_296M_720p60]
[HDTV_STD_CEAEIA_7702A_480p60]

[HDTV_STD_CEAEIA_7702A_480i60]

[VBIOS Default]

[NTSC_M]
[NTSC_M_J]
[NTSC_433]
[PAL_B]
[PAL_G]
[PAL_D]
[PAL_H]
[PAL_I]
[PAL_M]
[PAL_N]
[SECAM_L]
[SECAM_B]
[SECAM_D]
[SECAM_G]
[SECAM_H]
[SECAM_K]
[HDTV_STD_SMPTE_240M_1080i59]
[HDTV_STD_SMPTE_240M_1080i60]
[HDTV_STD_SMPTE_295M_1080i50]
[HDTV_STD_SMPTE_295M_1080p50]
[HDTV_STD_SMPTE_296M_720p50]
[HDTV_STD_SMPTE_296M_720p60]
[HDTV_STD_CEAEIA_7702A_480p60]

]

[HDTV_STD_CEAEIA_7702A_480i60]

| | |
|-------------------------|--|
| ALS Support | [Disabled] [Enabled] |
| Active LFP | [Int-LVDS] [No-LVDS] [SDVO LVDS] [eDP Port-A] [eDP Port-D] |
| Panel Color Depth | [18 Bit] [24 Bit] |
| ▶ DMI Configuration | |
| ▶ NB PCIe Configuration | |
| PEG0 | [Not Present] |
| PEG0 – Gen X | [Auto] [Gen1] [Gen2] |
| PEG1 | [Not Present] |
| PEG1 – Gen X | [Auto] [Gen1] [Gen2] |
| PEG2 | [Not Present] |
| PEG2 – Gen X | [Auto] [Gen1] [Gen2] |
| PEG3 | [Not Present] |
| PEG3 – Gen X | [Auto] [Gen1] [Gen2] |
| Always Enable PEG | [Disabled] [Enabled] |
| PEG ASPM | [Disabled] |

[Auto]
[ASPM LOs]
[ASPM L1]
[ASPM LOsL1]

ASPM LOs

[Root Port Only]
[Endpoint Port Only]
[Both Root and Endpoint Ports]

De-emphasis Control

[-3.5 dB]
[-6 dB]

► Memory Configuration

Memory RC Version 1.2.10
Memory Frequency 1333 Mhz
Total Memory 2048 MB (DDR3)
DIMM#0 2048 MB (DDR3)
DIMM#1 Not Present
DIMM#2 Not Present
DIMM#3 Not Present
CAS Latency (tCL) 9
Minimum delay time
 CAS to RAS (tRPmin) 9
 Row Precharge (tRPmin) 9
 Active to Precharge (tRPmin) 24

DIMM profile

[Default DIMM profile]
[XMP profile 1]
[XMP profile 2]

Memory Profile

[Auto]
[1067]
[1333]
[1600]
[1867]
[2133]

ECC Support

[Enabled]

| | |
|---|--|
| | [Disabled] |
| Max TOLUD | [Dynamic] [1GB] [1.25GB] [1.5GB] [1.75GB] [2GB] [2.25GB] [2.5GB] [2.75GB] [3GB] [3.25GB] |
| NMode Support | [Auto] [1N Mode] [2N Mode] |
| Memory Scrambler | [Enabled] [Disabled] |
| RMT Crosser Support Memory Scrambler | [Disabled] [Enabled] |
| MRC Fast Boot | [Enabled] [Disabled] |
| Force Cold Reset | [Enabled] [Disabled] |
| Scrambler Seed Generation off | [Disabled] [Enabled] |
| Memory Remap | [Enabled] [Disabled] |
| Channel A DIMM Control | [Enabled Both DIMMS] [Disabled DIMM0] [Disabled DIMM1] [Disabled Both DIMMS] |

| | |
|----------------------------------|-------------------------|
| ▶ Memory Thermal Configuration | |
| Memory Thermal Management | [Enabled] [Disabled] |
| PECI Injected Temperature | [Disabled] [Enabled] |
| EXTTS# via TS-on-Board | [Disabled] [Enabled] |
| EXTTS# via TS-on-DIMM | [Disabled] [Enabled] |
| Virtual Temperature Sensor (VTS) | [Disabled] [Enabled] |
| ▶ GT-Power Management Control | |
| GT Info | GT2 (0X116) |
| RC6 (Render Standby) | [Enabled] [Disabled] |
| GT overClocking Support | [Disabled] [Enabled] |

3.6 Boot Settings

| Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc. | | | | | |
|--|----------|-----------------------|------|----------------------|-----------------------|
| Main | Advanced | Chipset | Boot | Security | Save & Exit |
| Boot Configuration | | | | Number of seconds to | |
| Setup Prompt Timeout | | 1 | | | Wait for setup |
| Bootup Numlock State | | [On] | | | Activation key. |
| Quiet Boot | | [Disabled] | | | 65535(0xFFFF)means |
| Fast Boot | | [Enabled] | | | Indefinite waiting. |
| Skip VGA | | [Disabled] | | | |
| Skip USB | | [Disabled] | | | |
| Skip PS2 | | [Disabled] | | | |
| CSM16 Module Version | | 07.68 | | | |
| Gatea20 Active | | [Upon Request] | | | |
| Option ROM Messages | | [Force BIOS] | | | |
| Interrupt 19 Capture | | [Enabled] | | | →←: Select Screen |
| CSM Support | | [Enabled] | | | ↑↓ : Select Item |
| Boot Option Priorities | | | | | Enter: Select |
| Boot Option #1 | | [SATA PM: Hitachi...] | | | +/- : Change Opt. F1 |
| Hard Drive BBS Priorities | | | | | : General Help F2: |
| | | | | | Previous Values |
| | | | | | F3:Optimized Defaults |
| | | | | | F4:Save and Exit |
| | | | | | ESC Exit |

Setup Prompt Timeout [1]

Bootup Numlock State

[On]

[off]

Quiet Boot

[Enabled]

[Disabled]

CSM16 Module Verison 07.64

Gatea20 Active

Option ROM Messages [Upon Request]
 [Always]

Interrupt 19 Capture [Force BIOS]
 [Keep Current]

[Disabled]
 [Enabled]

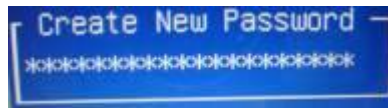
Boot Override
 SATA PM: ST9320423AS

 Launch EFI Shell from filesystem device

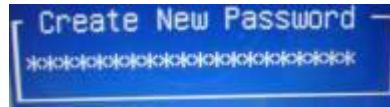
3.7 Security Settings

| Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc. | | | | | |
|---|----------|---------|------|--|-------------|
| Main | Advanced | Chipset | Boot | Security | Save & Exit |
| Password Description If ONLY the Administrator's password is set, Then this only limits access to Setup and is Only asked for when entering Setup. If ONLY the User's password is set, then this Is a power on password and must be entered to Is a power on password and must be entered to Boot or enter Setup. In Setup the User will Have Administrator rights. The password length must be 3 to 20 Characters long. | | | | Set Administrator Password | |
| Administrator Password User Password | | | | →←: Select Screen ↑↓ : Select Item Enter: Select +/- : Change Opt. F1 : General Help F2: Previous Values F3:Optimized Defaults F4:Save and Exit ESC Exit | |
| Version 2.10.1208. Copyright (C) 2010 American Megatrends , Inc. | | | | | |

3.7.1 Administrator Password



3.7.2 User Password



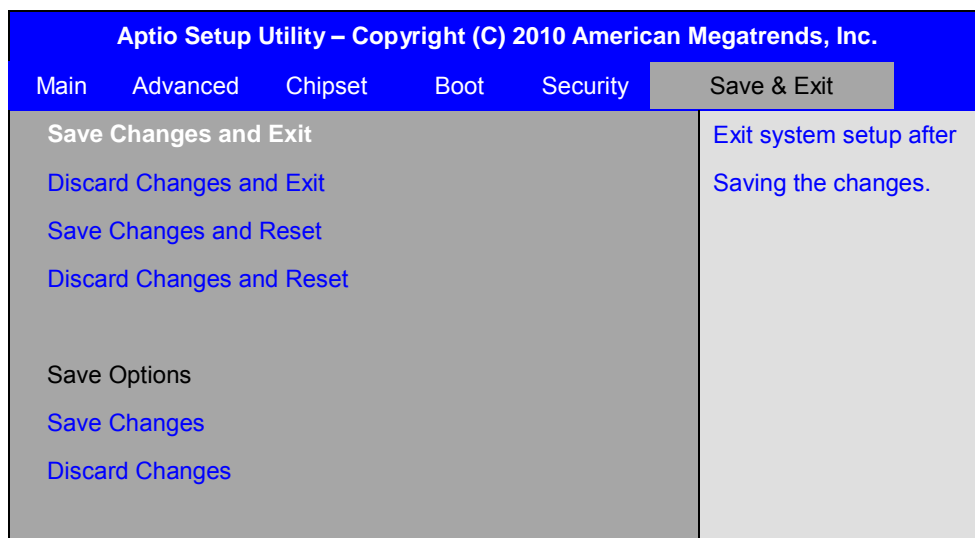
Type the password with up to 20 characters and then press <Enter> key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press <Enter> key. You may press <Esc> key to abandon password entry operation.

To clear the password, just press <Enter> key when password input window pops up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.

3.8 Save & Exit Settings



| | |
|--|-----------------------|
| Restore Defaults | →←: Select Screen |
| Save user Defaults | ↑↓ : Select Item |
| Restore user Defaults | Enter: Select |
| Boot Override | +/- : Charge Opt. F1 |
| SATA PM:*** ... | : General Help F2: |
| Launch EFI Shell from filesystem device | Previous Values |
| | F3:Optimized Defaults |
| | F4:Save and Exit |
| | ESC Exit |
| Version 2.10.1208. Copyright (C) 2010 American Megatrends , Inc. | |

Save Changes and Exit

Save & Exit Setup save Configuration and exit ?

[Yes]

[No]

Discard Changes and Ext

Exit Without Saving Quit without saving?

[Yes]

[No]

Save Changes and Reset

Save & reset Save Configuration and reset?

[Yes]

[No]

Discard Changes and Reset

Reset Without Saving Reset without saving?

[Yes]

[No]

Save Changes

Save Setup Values Save configuration?

[Yes]

[No]

Discard Changes

Load Previous Values Load Previous Values?

[Yes]

[No]

Restore Defaults

Load Optimized Defaults Load optimized Defaults?

[Yes]

[No]

Save user Defaults

Save Values as User Defaults Save configuration?

[Yes]

[No]

Restore user Defaults

Restore User Defaults Restore User Defaults?

[Yes]

[No]

Launch EFI Shell from filesystem device

WARNING Not Found

[ok]

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows XP. The software and drivers are included with the motherboard. The contents include **Intel QM67 Chipset Driver, Intel (R) VGA Chipset Driver, Intel (R) Network Adapter, Realtek ALC662 Audio Codec Driver, Microsoft .NET Framework 3.5 Service, Touch Panel Driver.**

Installation instructions are given below.

Important Note:

After installing your Windows operating system (Windows XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.



4.1 Intel Chipset Driver

To install the Intel chipset driver, please follow the steps below.

Step 1. Access Industrial Panel PC. Select **Intel QM67 Chipset Driver**.



Step 2. Click **Next** to setup program.



Step 3. Read the license agreement. Click **Yes** to accept the terms of the license agreement.



Step 4. Click **Next** to continue.



Step 5. Click Next.



Step 6. Select Yes, I want to restart this computer now. Click **Finish** then remove any installation media from the drives.



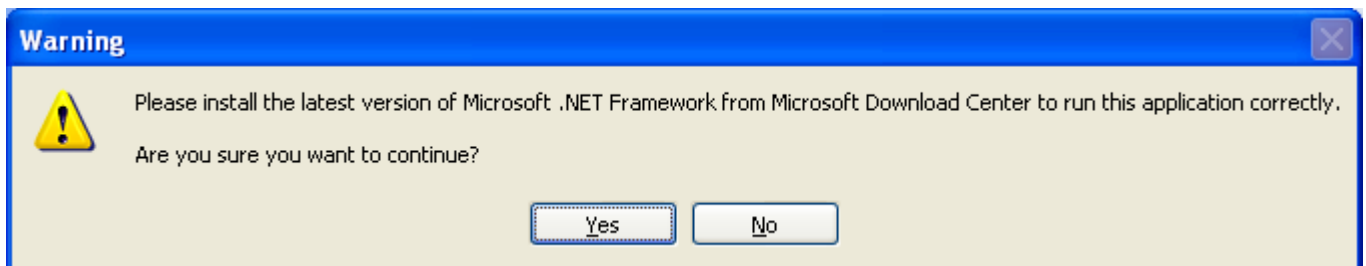
4.2 Intel (R) VGA Chipset Driver

To install the VGA drivers, follow the steps below to proceed with the installation.

Step 1. Select **Intel(R) VGA Chipset Driver**.



Step 2. Click **Yes** to continue.



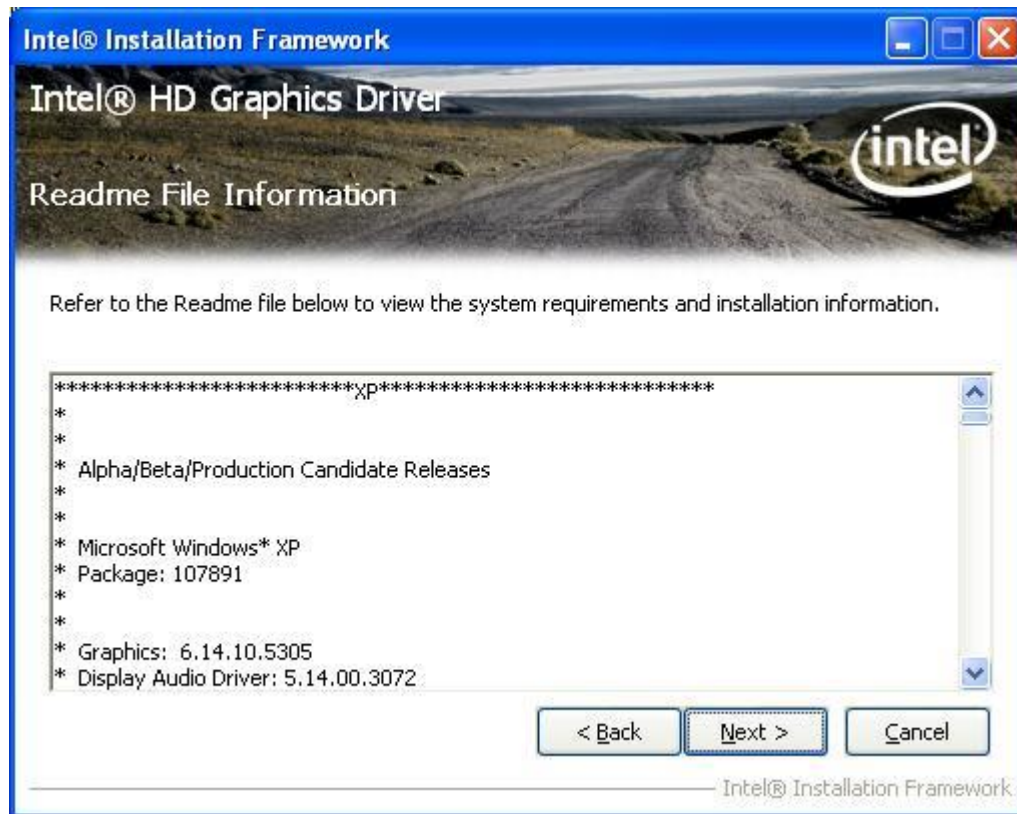
Step 3. Click **Next** to continue setup program.



Step 4. Read the license agreement. Click **Yes** to accept the license agreement.



Step 5. Click Next.



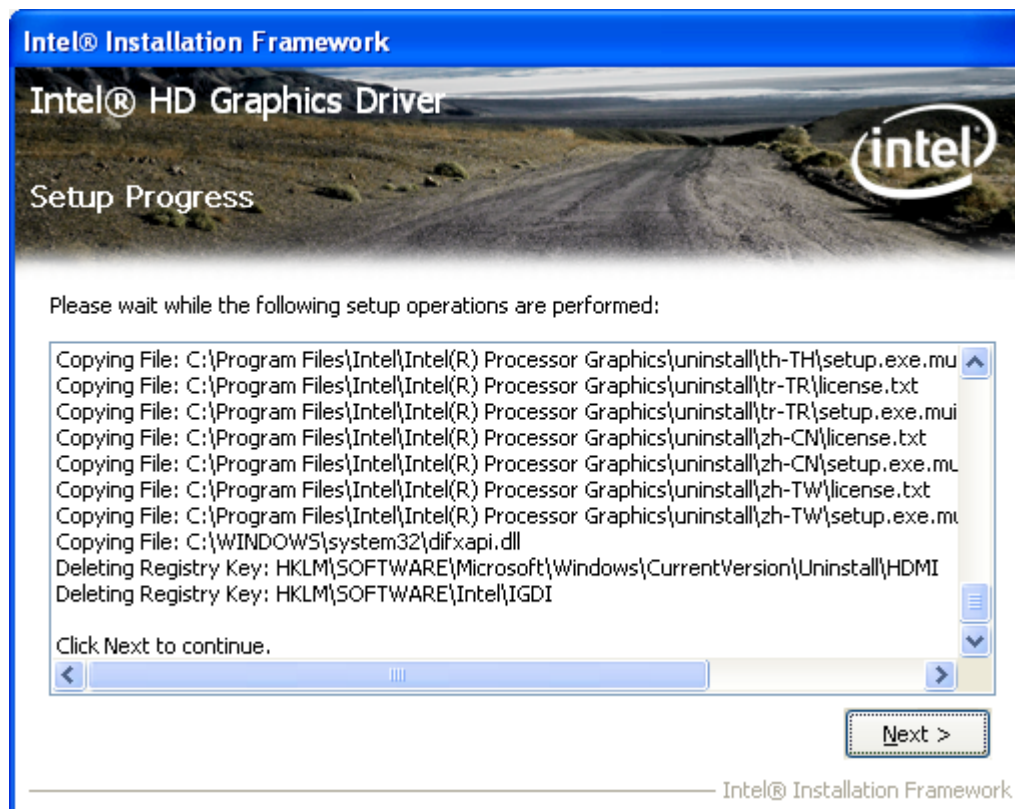
Step 6. Click Continue Anyway.



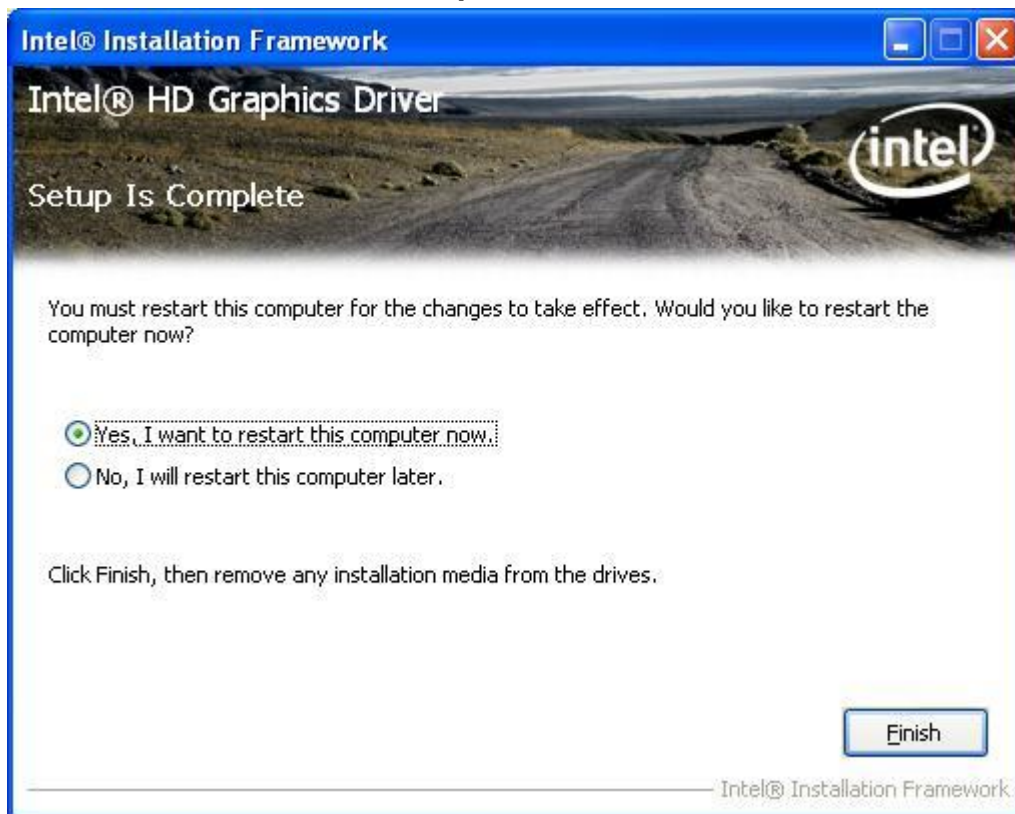
Step 7. Click Continue Anyway.



Step 8. Click Next.



Step 9. Select **Yes, I want to restart this computer now.** Click **Finish.**



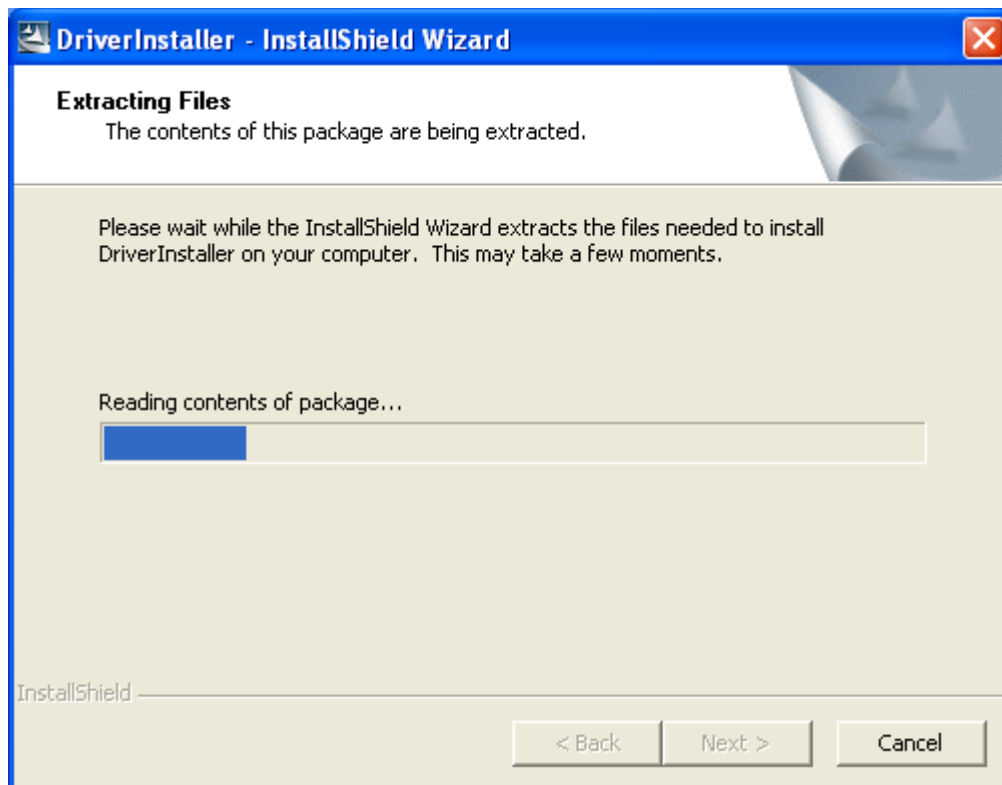
4.3 Intel(R) Network Adapter Driver

To install the Intel 82574L Network adapter Driver, please follow the steps below.

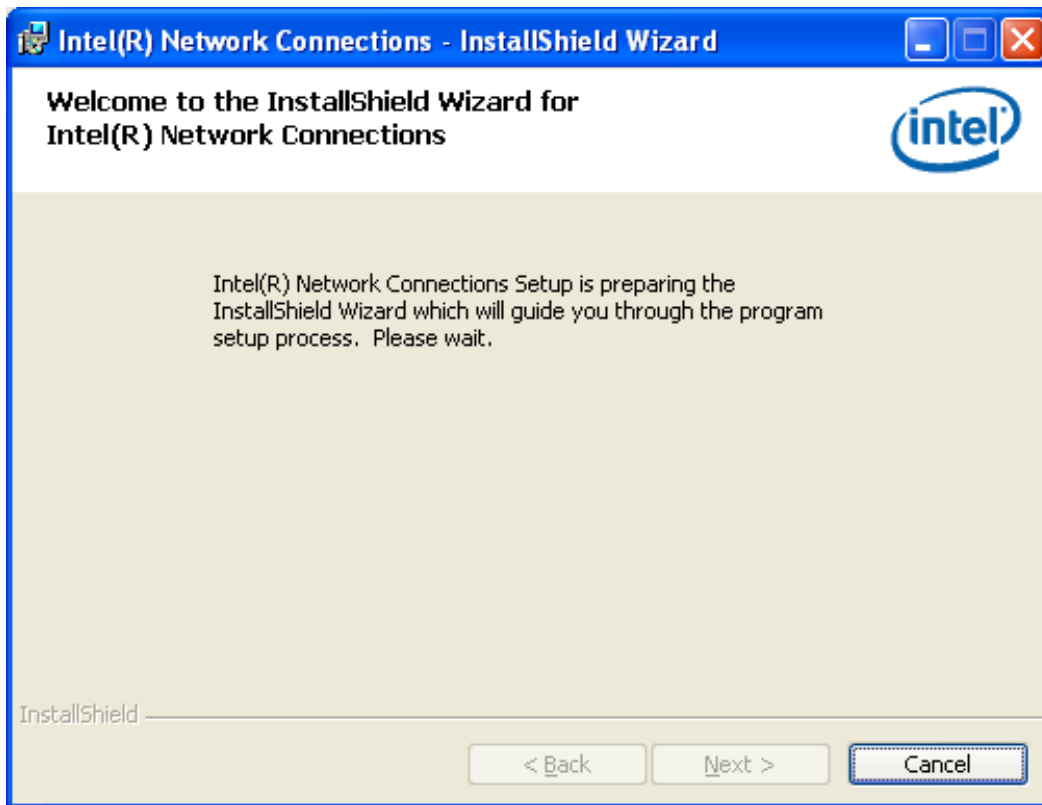
Step 1. Select **Intel(R) Network Adapter**.



Step 1. Wait for extracting the files then click **Next** to continue.



Step 2. Click **Next**.

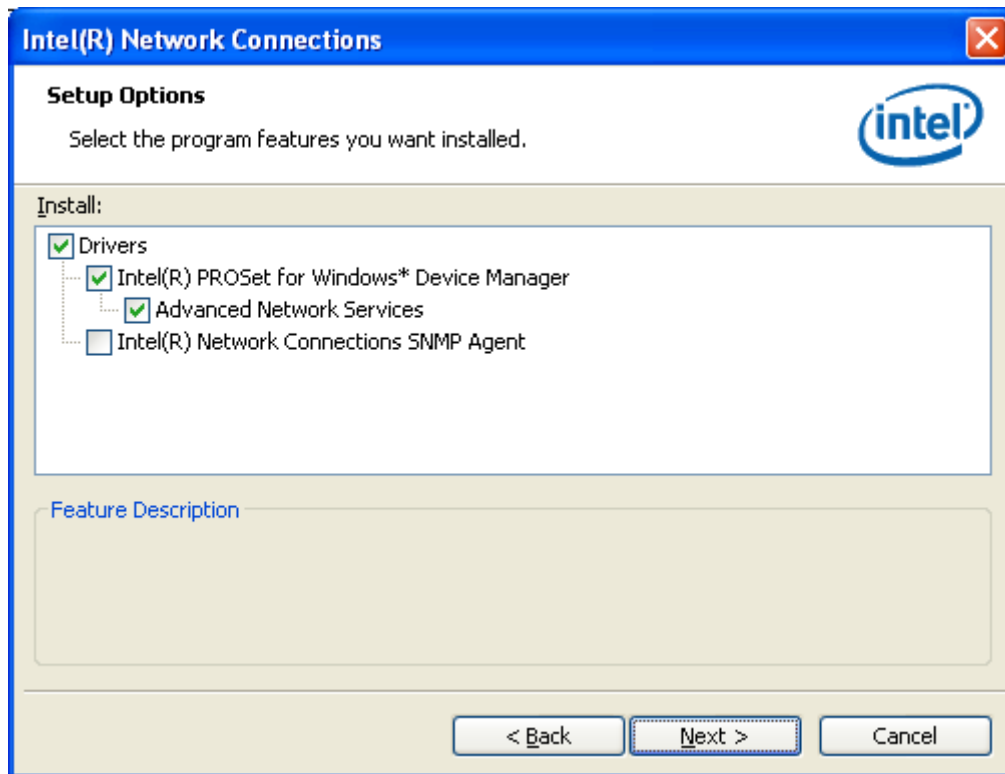


Step 3. Read the license agreement. Select **I accept the terms in the license agreement** then click **Next** to continue.

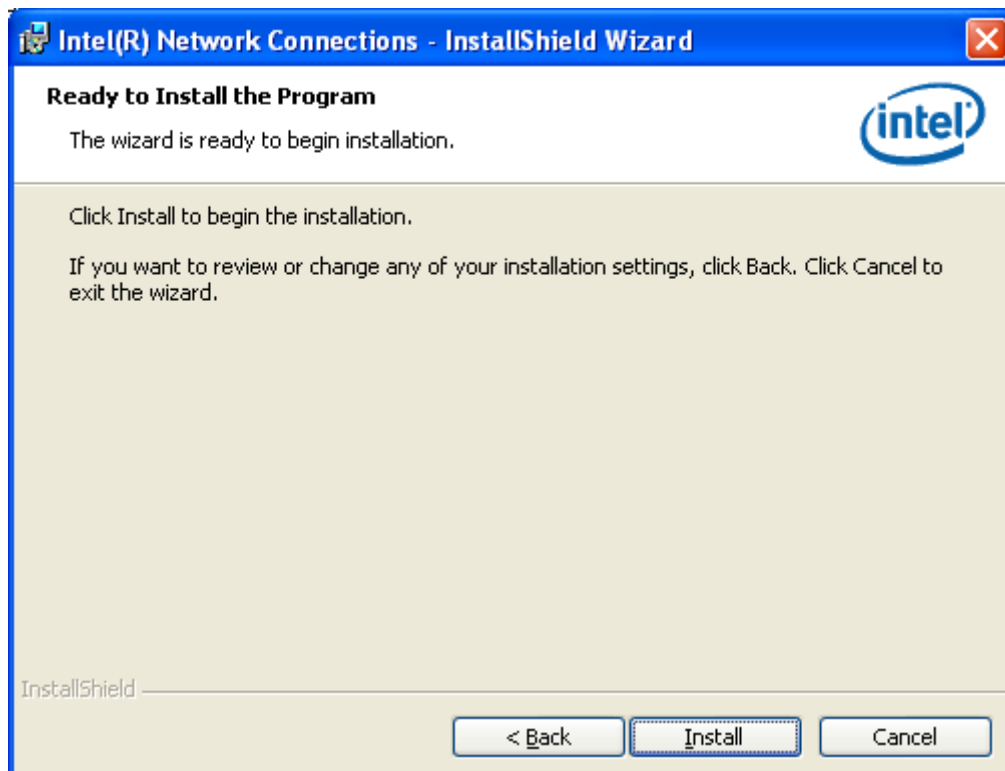


Step 4. Select **Drivers, Intel(R) PROSet for Windows* Device Manager, Advanced Network**

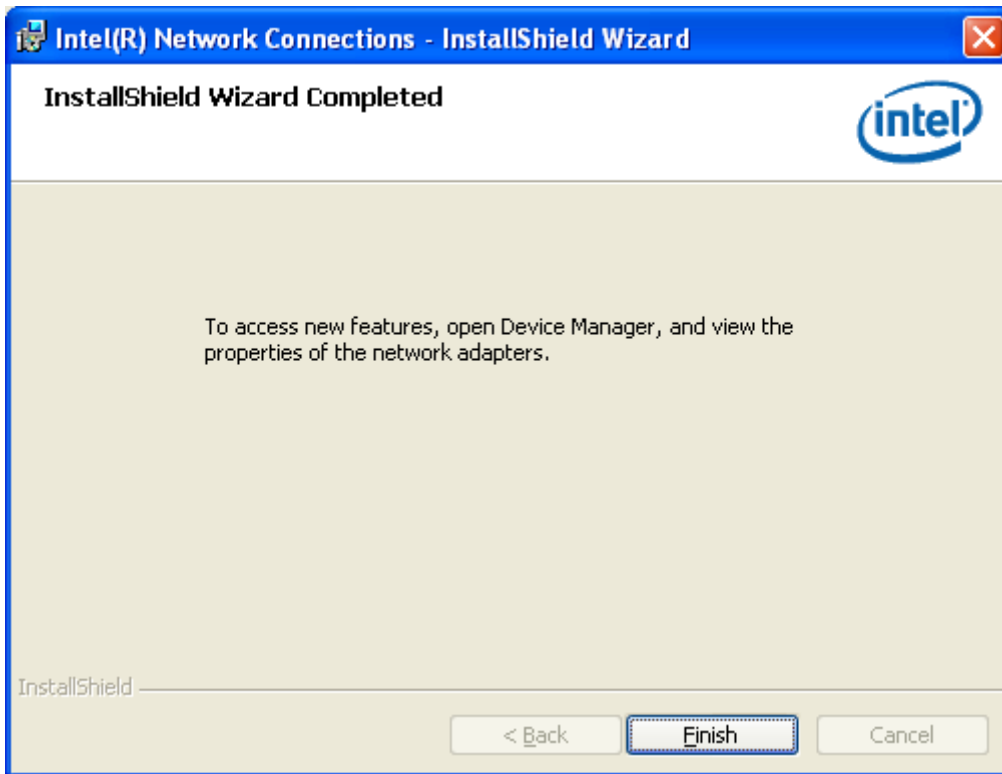
Services. Click **Next** to continue.



Step 5. Click **Install** to begin the installation.



Step 6. Click **Finish** to complete the installation.



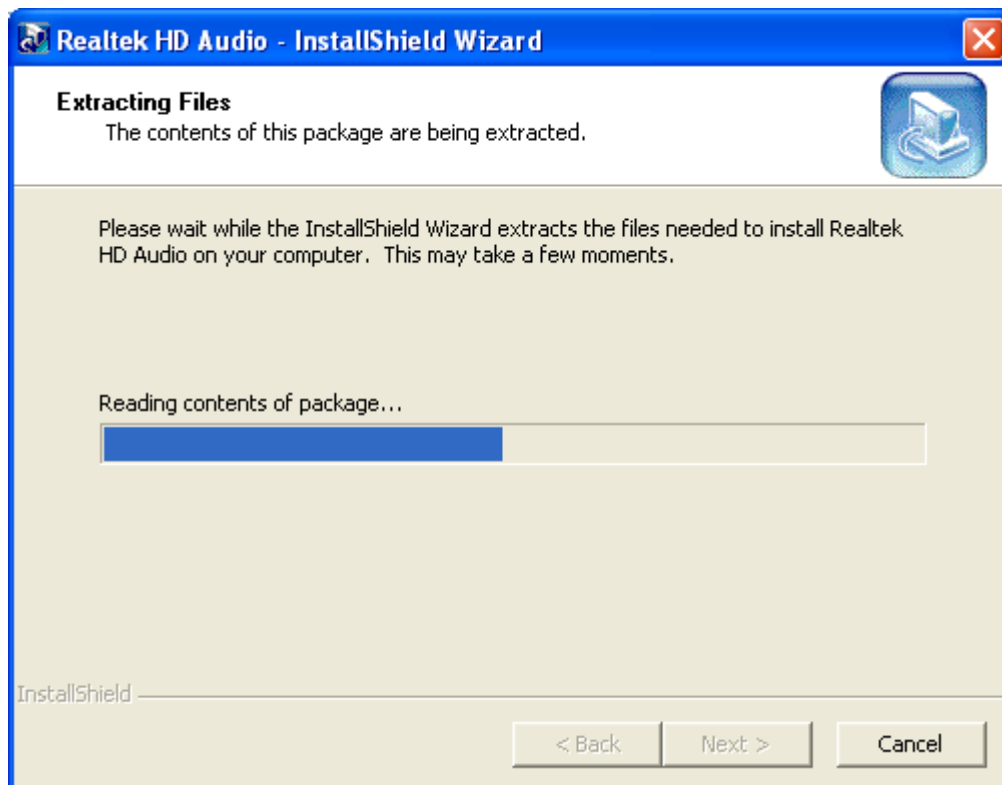
4.4 Realtek HD Audio Driver Installation

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.

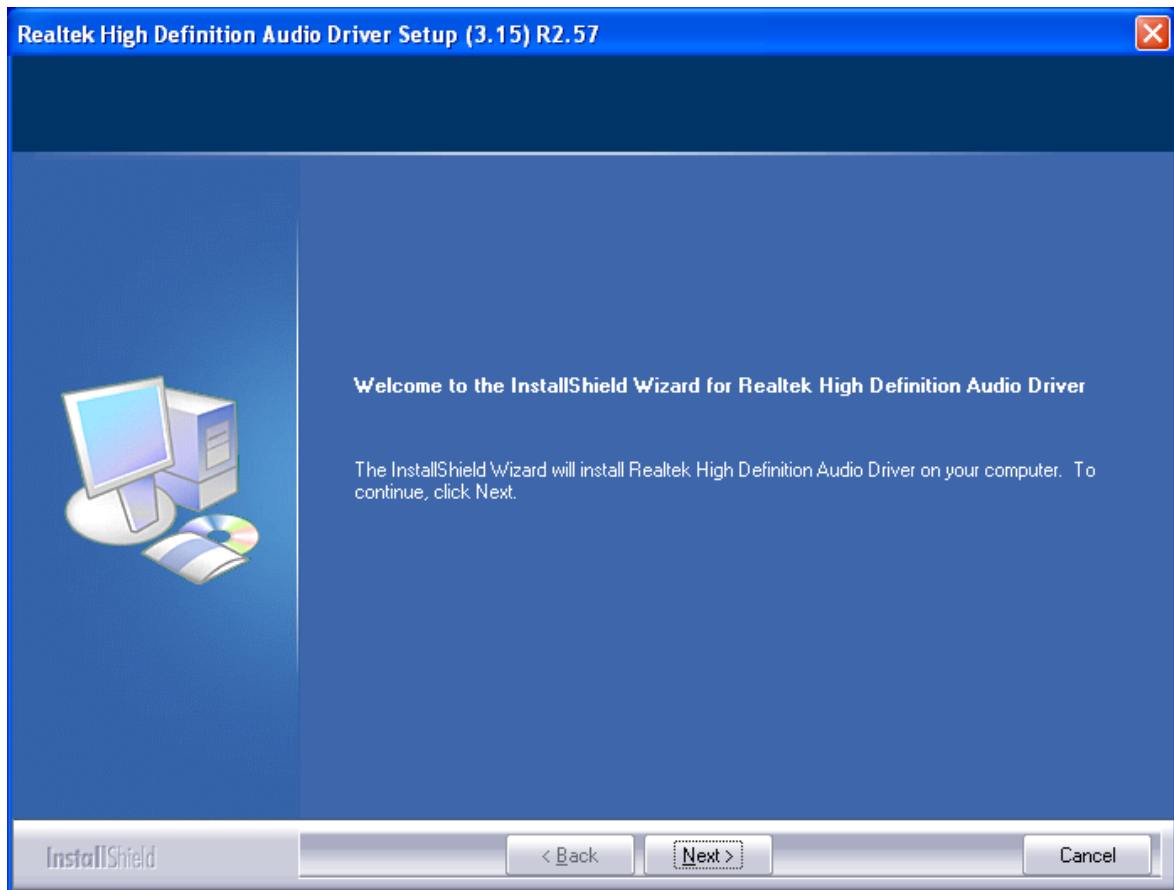
Step 1. Select **Realtek ALC662 HD Audio Codec Driver** from the list.



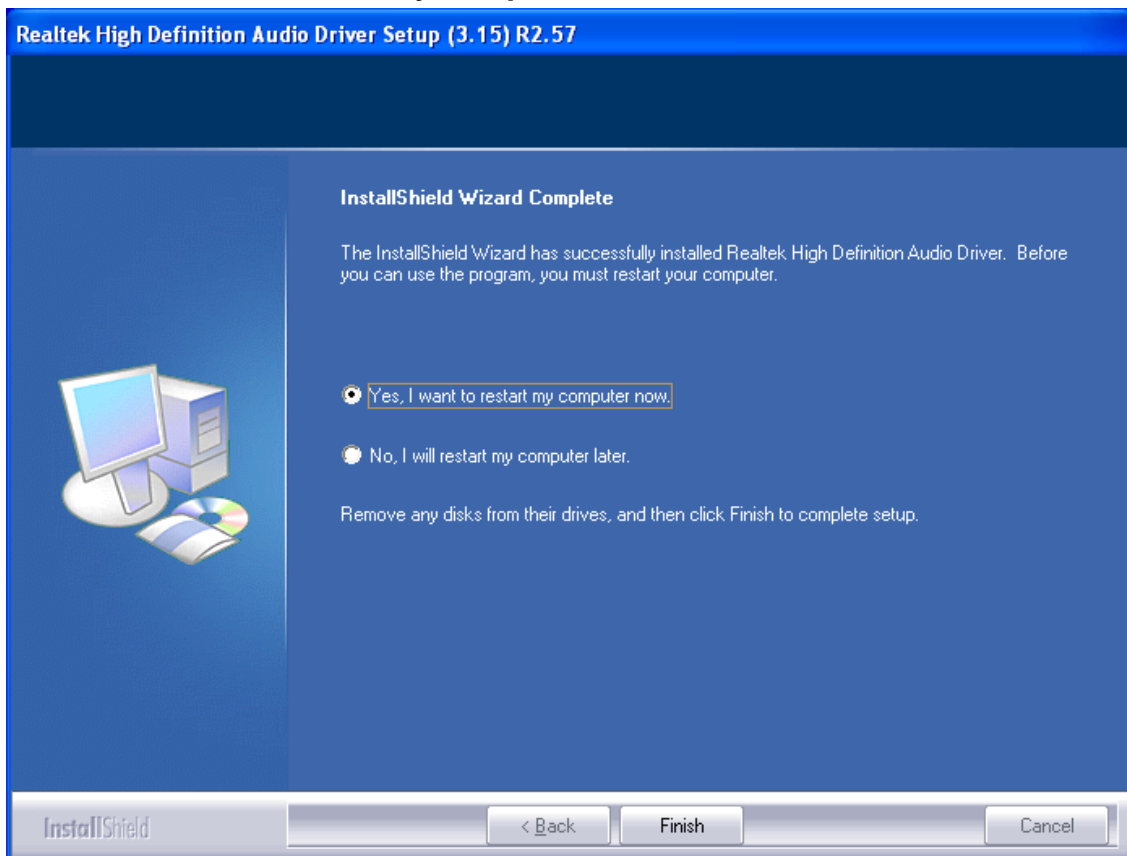
Step 2. Wait for extracting the files then click **Next** to continue.



Step 3. Click **Next** to continue the installation.



Step 4. Select **Yes, I want to restart my computer now.** then click **Finish.**



4.5 Microsoft .NET Framework 3.5 Service

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.

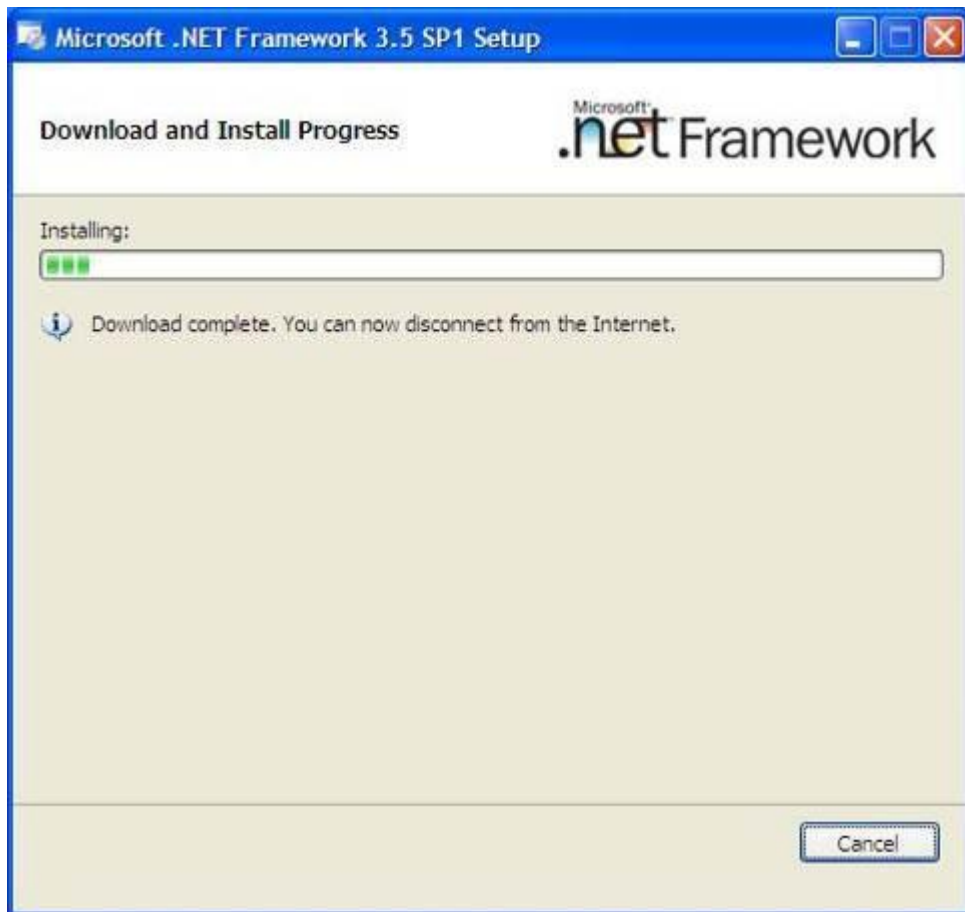
Step 1. Select Microsoft .NET Framework 3.5 Service.



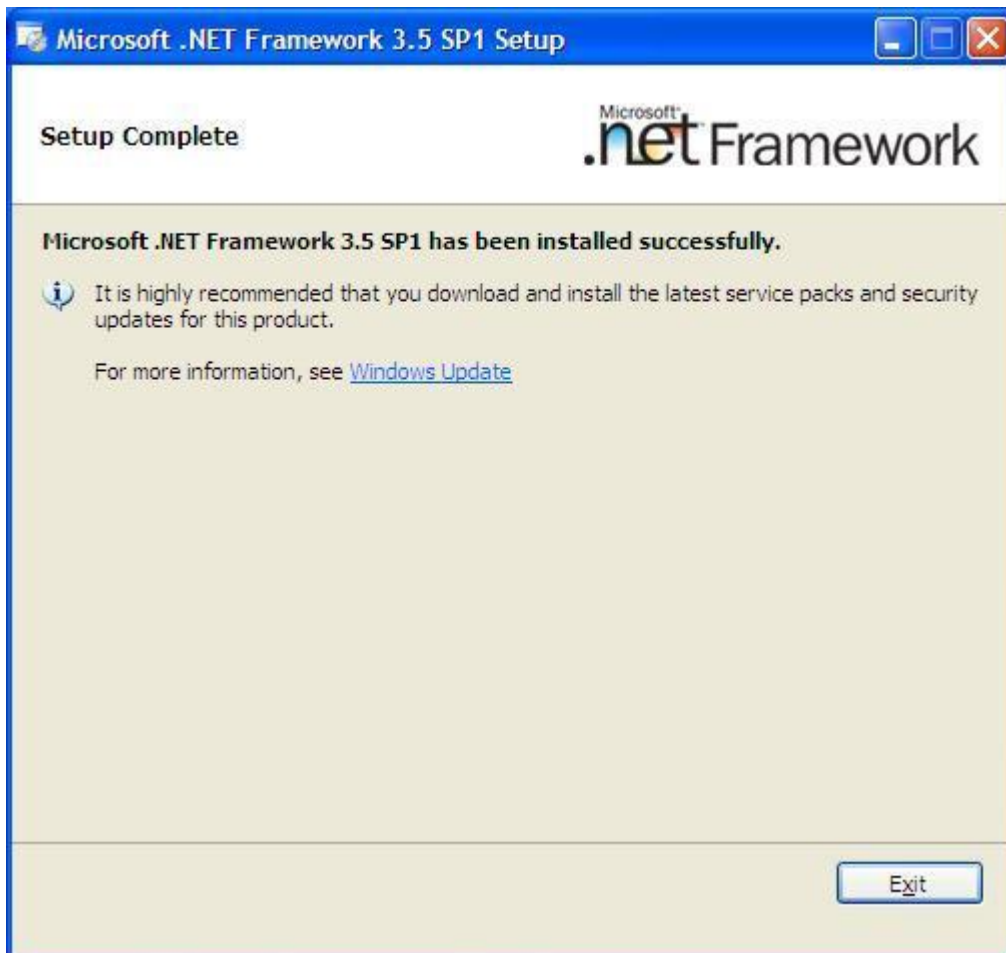
Step 2. Select I have read and ACCEPT the terms of the License Agreement. Click Install.



Step 2. Wait for installation.



Step 3. Click **Exit** to complete the installation.



Chapter 5 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your PenMount 6000 Controller Board to work with different operating systems.

NOTE: PenMount USB drivers support up to 15 USB controllers.

5.1 Introduction to Touch Screen Controller Board

PenMount 6300 USB control board is a touch screen control board designed for USB interface and specific for 4, 5, 8-wire touch screens. It is designed with USB interface features with multiple devices supporting function. PenMount 6300 control board using PenMount 6000 controller that has been designed for those who may like an all-in-one solution with 10-bit A/D converter built-in to make the total printed circuit board denser, circuit diagram also designed for 12-bit ADC for optional. There are two connectors on this board, one connector is for 4, 5, 8-wire touch screen cable (optional), and another is for 4-pin USB A type cable (optional).



Figure 5.1: Bird's Eye View of Control Board

5.2 Windows 2000/XP/2003/Vista Universal Driver Installation for PenMount 6000 Series

Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

5.2.1 Installing Software

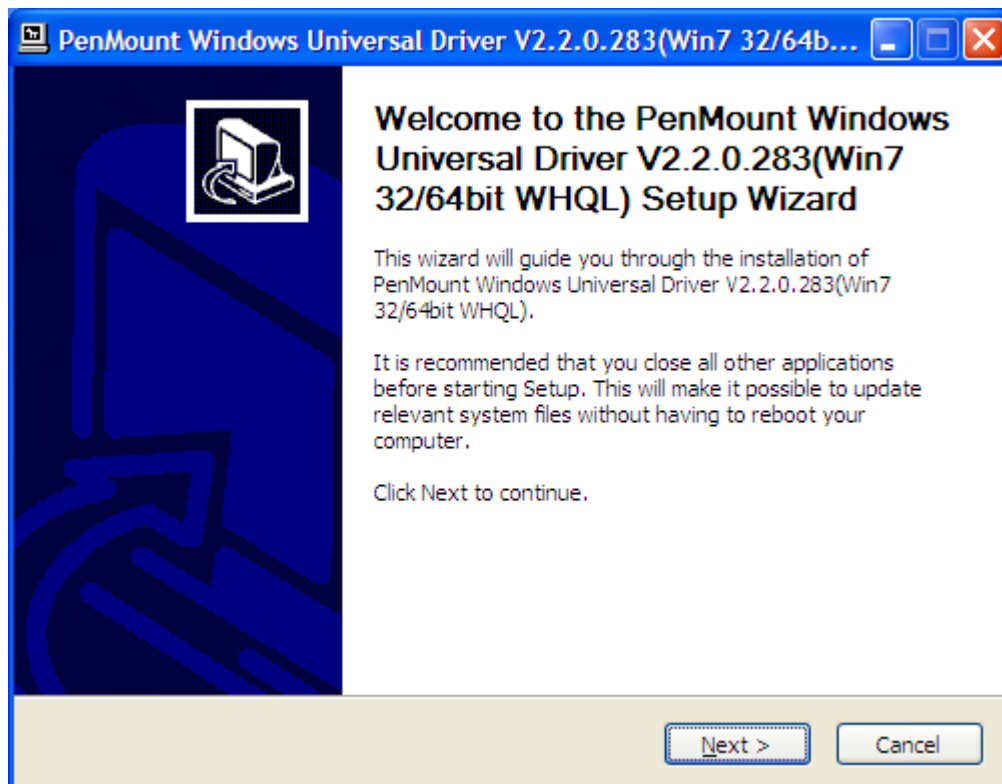
If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows 2000/XP driver.

Step 1. Please make sure your PenMount 6000 device had plugged in advance. If your device uses RS232 interface, please plugged in before the machine is turned on. When the system first detects the controller board, a screen appears that shows “Unknown Device”. Do not use this hardware wizard. Press Cancel.

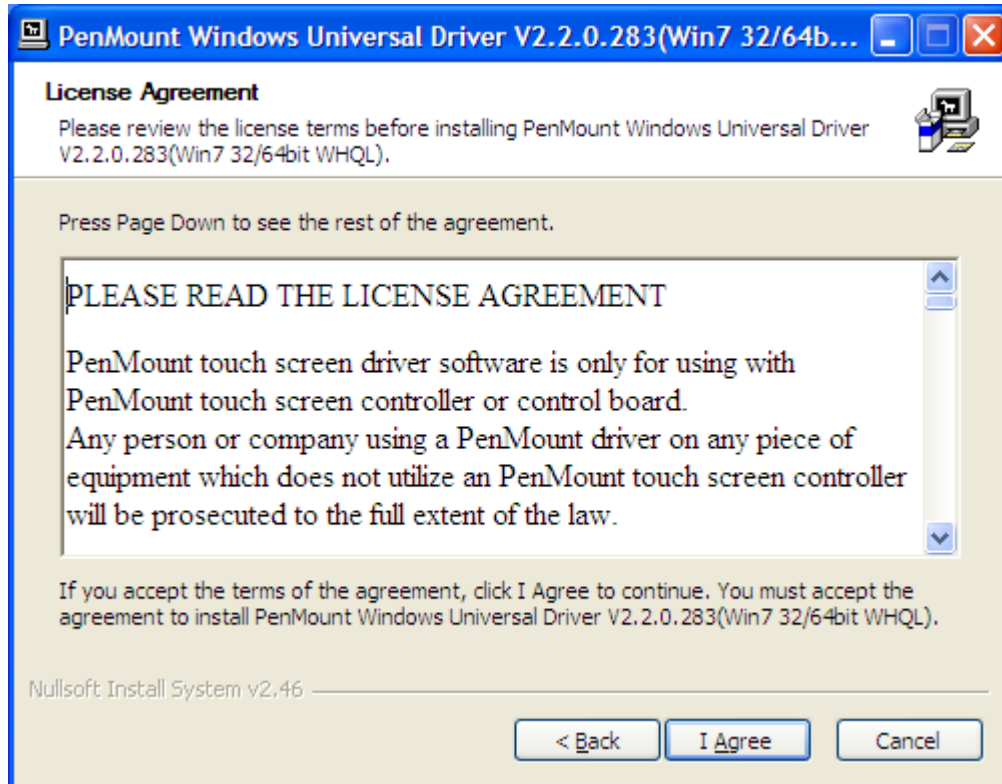
Step 2. Insert the Aplex product CD install **setup.exe**. the screen below would appear. Se touch panel driver



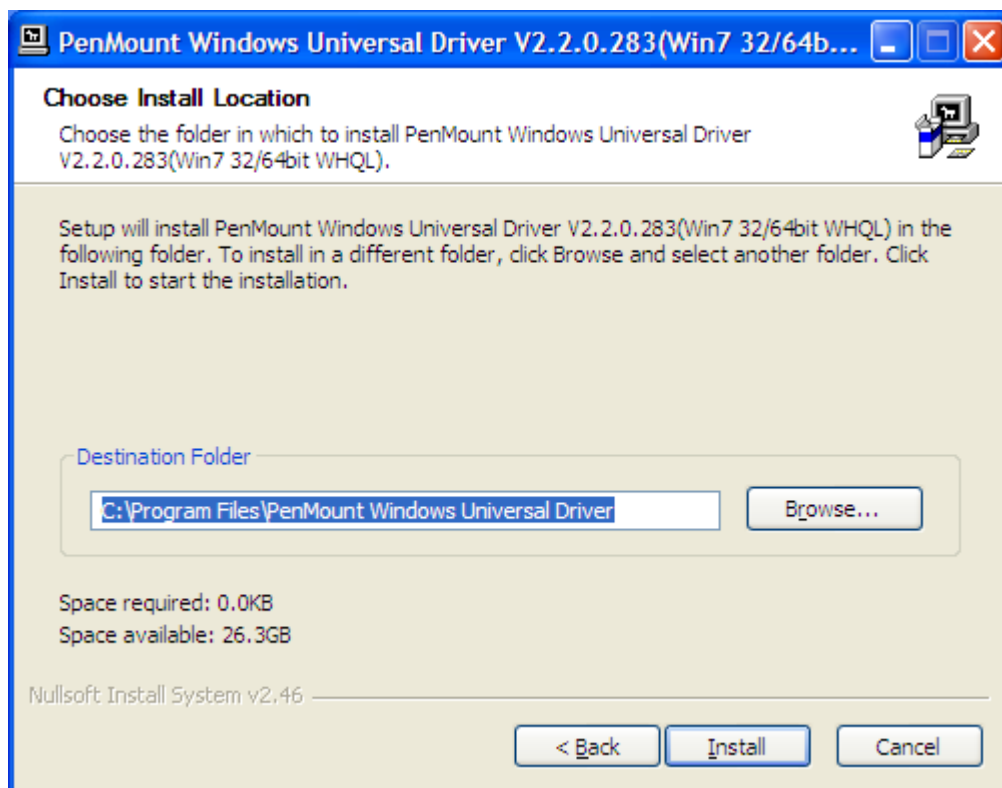
Step 3. Click **Next** to continue.



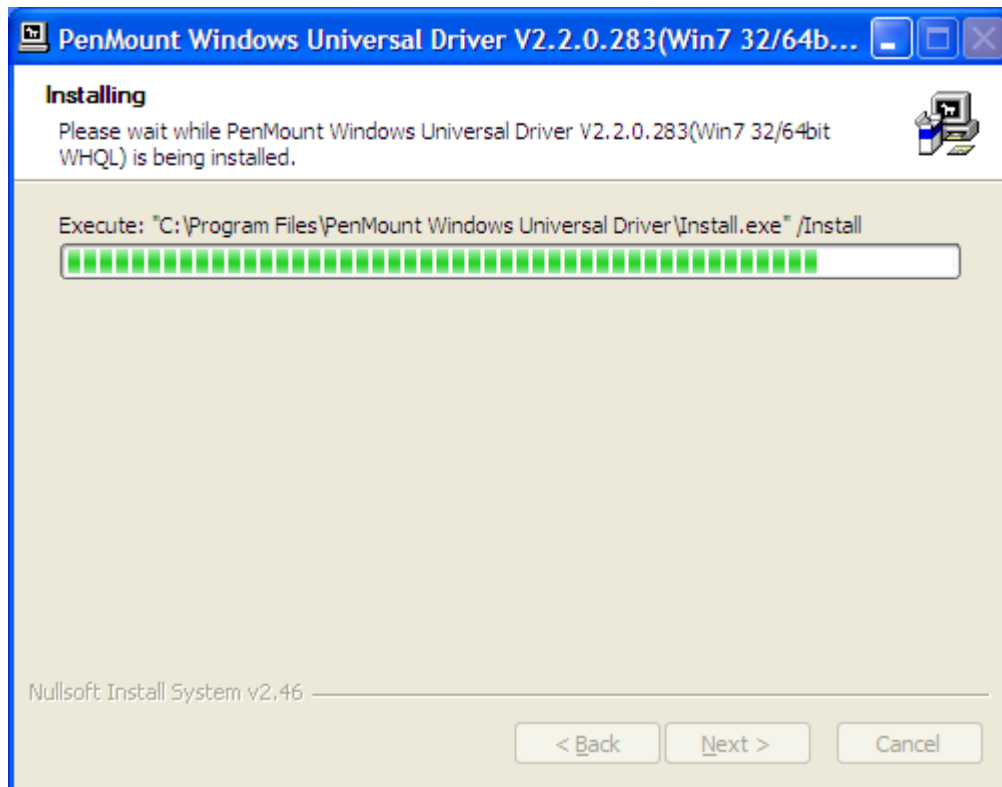
Step 4. Read the license Agreement. Click **I agree** to agree the license agreement.



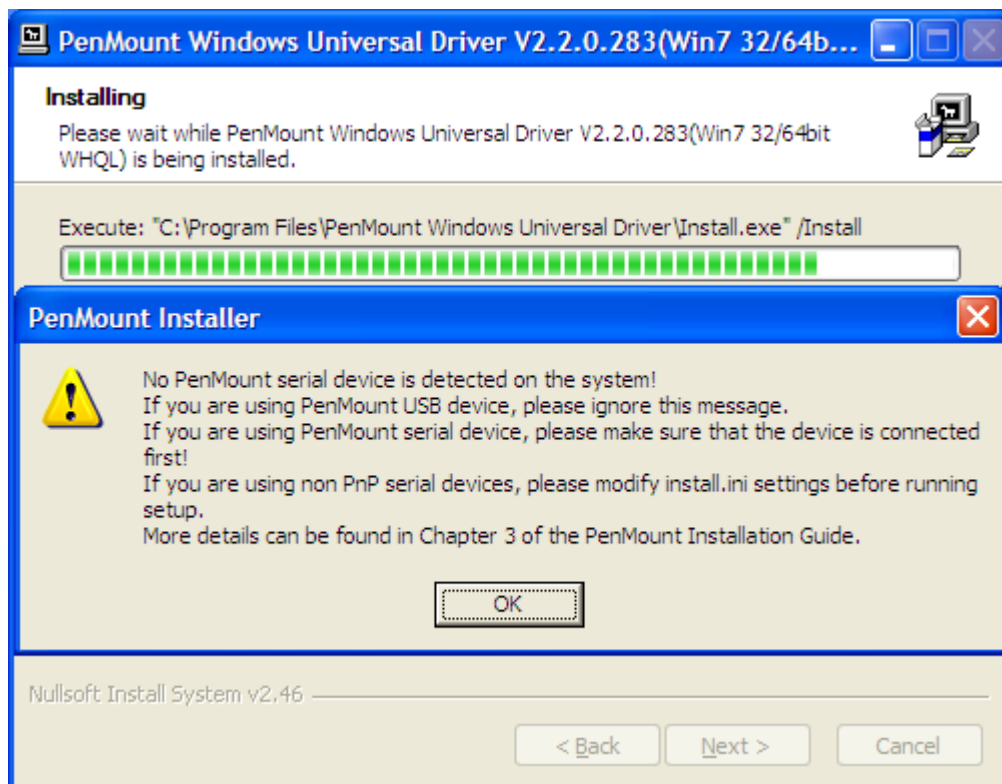
Step 5. Choose the folder in which to install PenMount Windows Universal Driver. Click **Install** to start the installation.



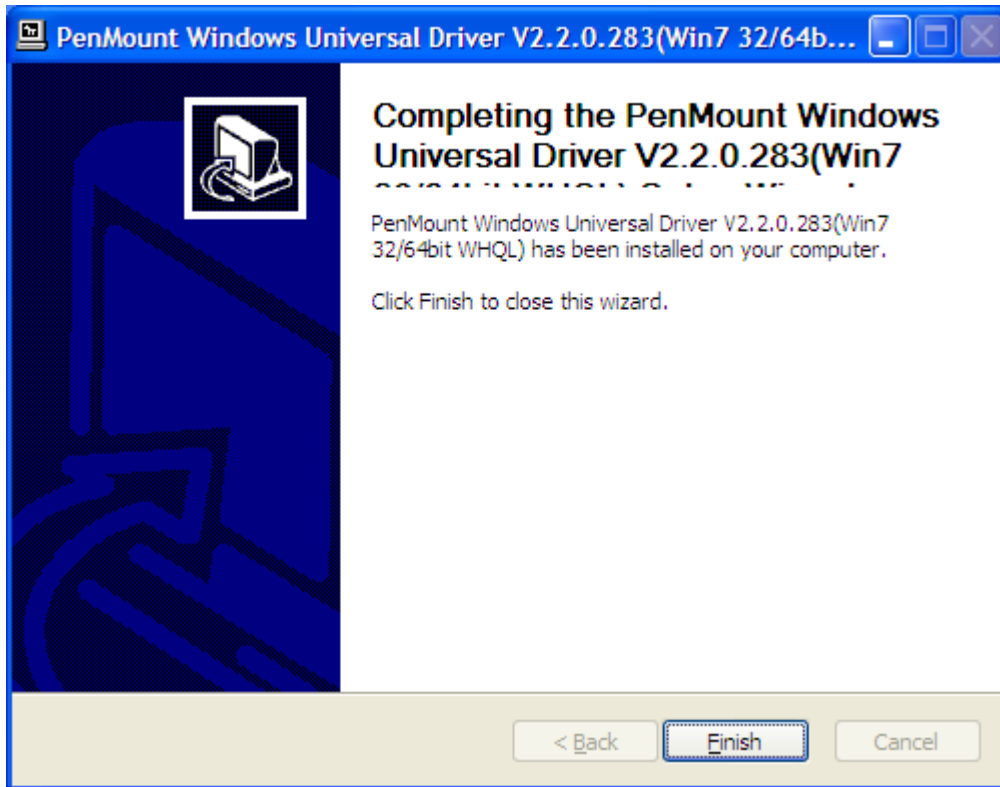
Step 6. Wait for installation. Then click **Next** to continue.



Step 7. Click **OK**.



Step 8. Click **Finish** to complete installation.



5.2.2 Software Functions

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

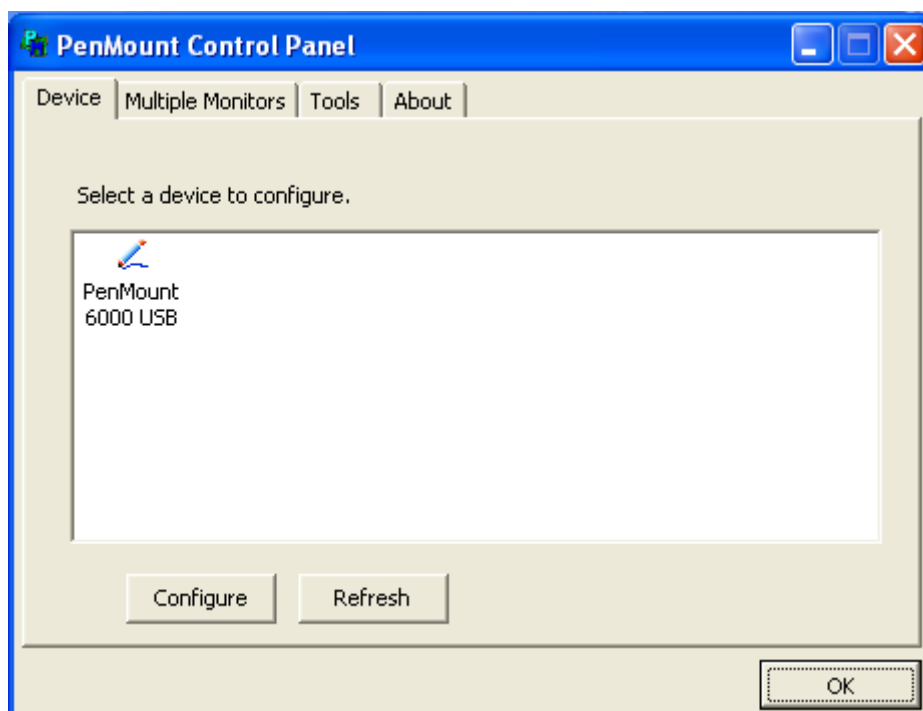
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, select a device to “Calibrate.”

PenMount Control Panel

The functions of the PenMount Control Panel are **Device**, **Multiple Monitors**, **Tools** and **About**, which are explained in the following sections.

Device

In this window, you can find out that how many devices are detected on your system.



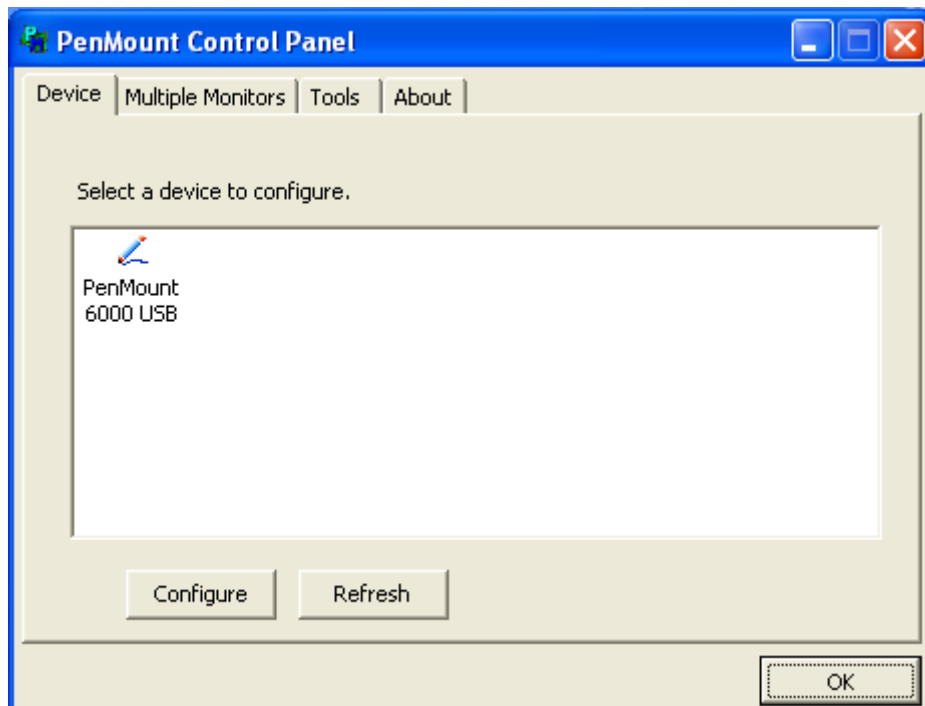
Calibrate

This function offers two ways to calibrate your touch screen. „Standard Calibration“ adjusts most touch screens. „Advanced Calibration“ adjusts aging touch screens.

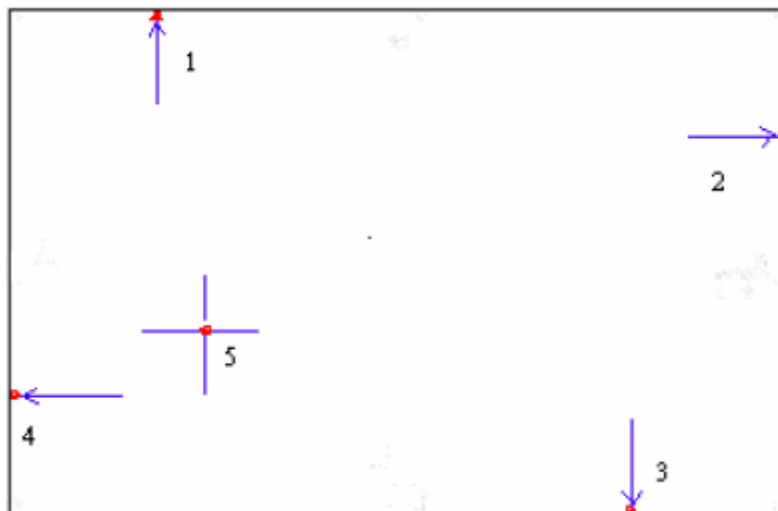
| | |
|----------------------|--|
| Standard Calibration | Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’. |
|----------------------|--|

| | |
|----------------------|--|
| Advanced Calibration | Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC'. |
| Command Calibration | Command call calibration function. Use command mode call calibration function, this can uses Standard, 4, 9, 16 or 25 points to calibrate E.g. Please run ms-dos prompt or command prompt c:\Program Files\PenMount Universa Driver\Dmcctrl.exe -calibration 0 (Standard Calibration) Dmcctrl.exe - calibration (\$) 0= Standard Calibration 4=Advanced Calibration 4 9=Advanced Calibration 9 16=Advanced Calibration 16 25=Advanced Calibration 25 |

Step 1. Please select a device then click **Configure**. You can also double click the device too.

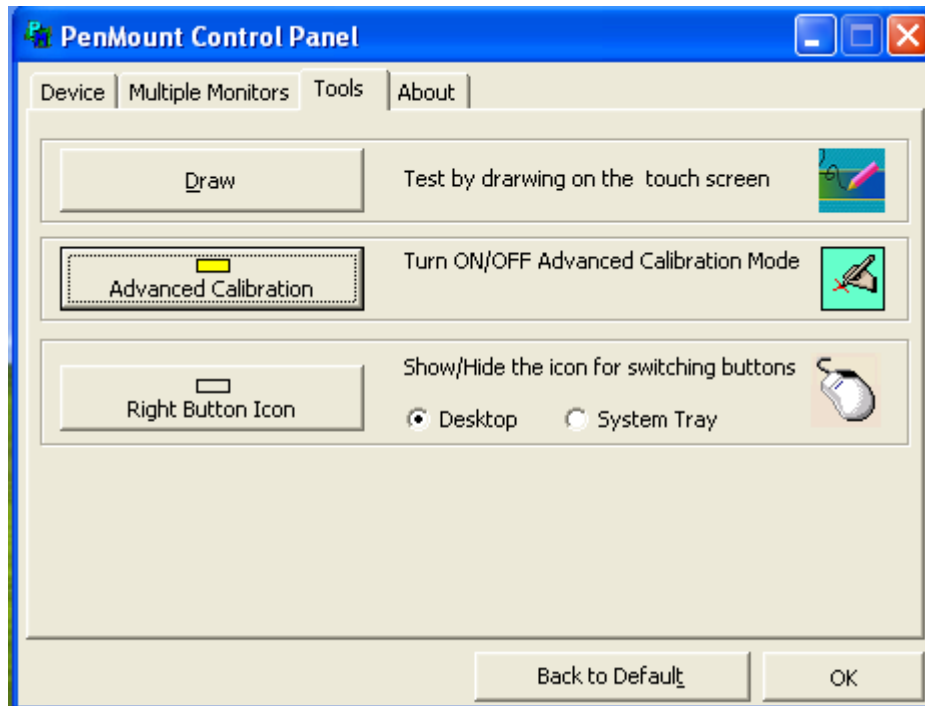


Step 2. Click **Standard Calibration** to start calibration procedure



NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

Step 3. Come back to PenMount Control Panel and select **Tools** then Click **Advanced Calibration**.



Step 4. Select **Device** to calibrate, then you can start to do “Advanced Calibration”.



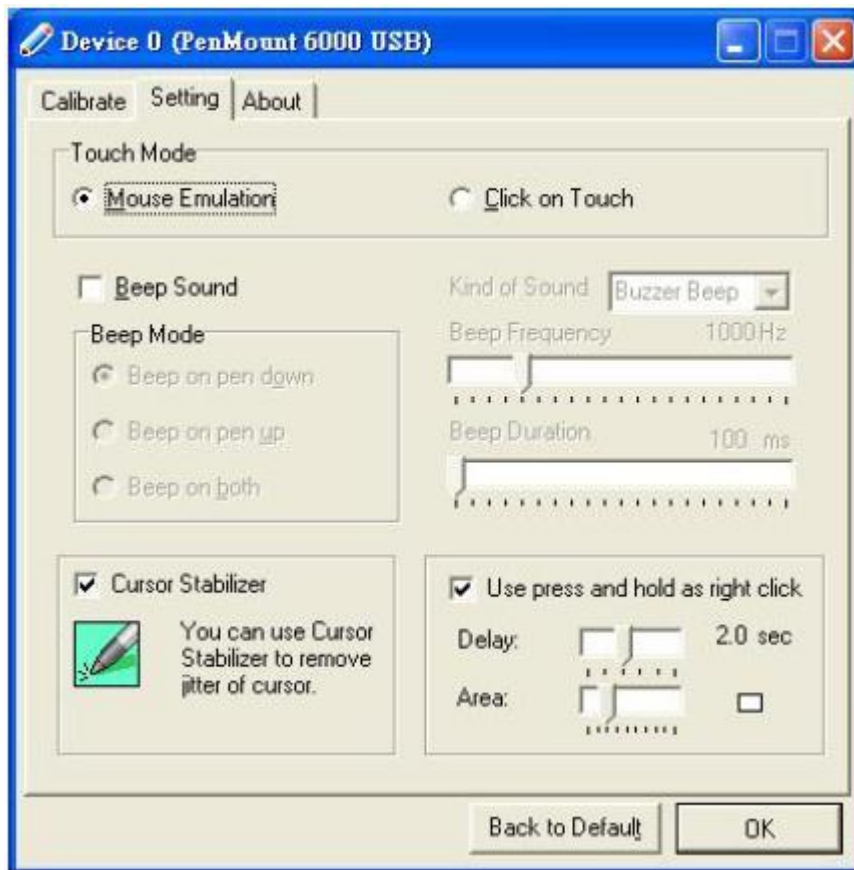
NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



| | |
|-------------------------|--|
| Plot Calibration Data | Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration. |
| Turn off EEPROM storage | The function disable for calibration data to write in Controller. The default setting is Enable |

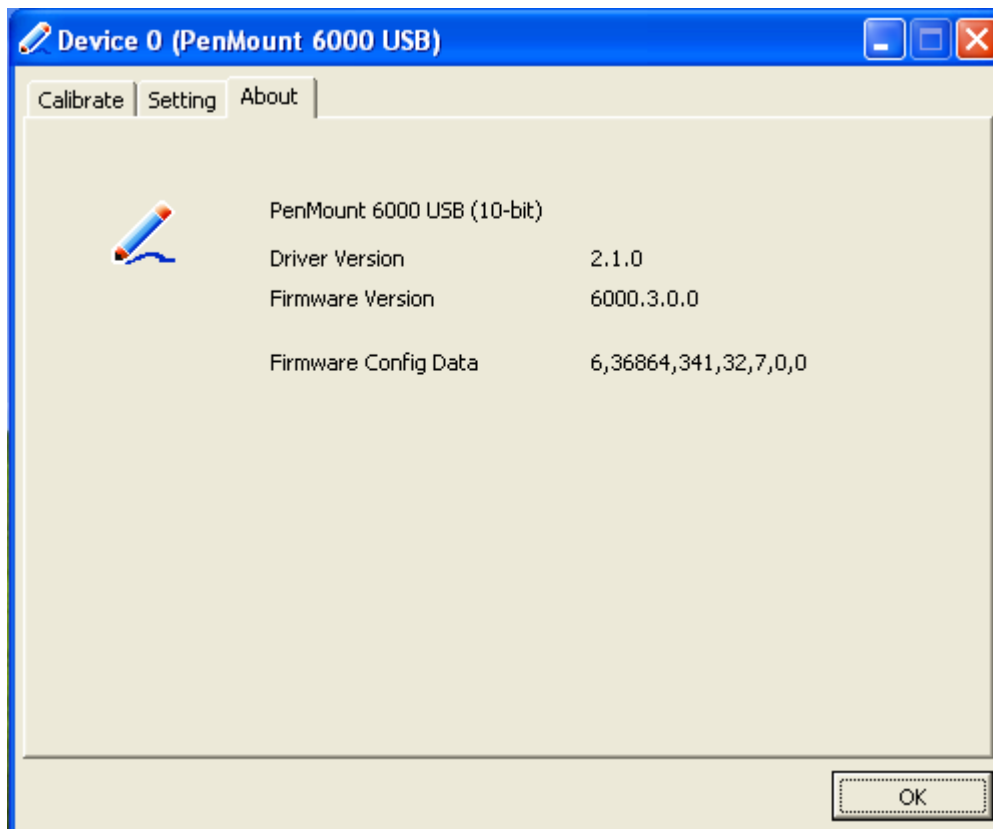
Setting

| | |
|-----------------------------------|---|
| Touch Mode | <p>This mode enables and disables the mouse's ability to drag on-screen icons—useful for configuring POS terminals.</p> <p>Mouse Emulation – Select this mode and the mouse functions as normal and allows dragging of icons.</p> <p>Click on Touch – Select this mode and the mouse only provides a click function, and dragging is disabled</p> |
| Beep Sound | <p>Enable Beep Sound – turns beep function on and off</p> <p>Beep on Pen Down – beep occurs when pen comes down</p> <p>Beep on Pen Up – beep occurs when pen is lifted up</p> <p>Beep on both – beep occurs when comes down and lifted up</p> <p>Beep Frequency – modifies sound frequency</p> <p>Beep Duration – modifies sound duration</p> |
| Cursor Stabilizer | Enable the function support to prevent cursor shake. |
| Use press and hold as right click | You can set the time out and area for you need |



About

This panel displays information about the PenMount controller and driver version.



Multiple Monitors

Multiple Monitors supports two to six touchscreen displays for one system. PenMount drivers for Windows 2000, XP 32/64bit, and 2003 support **Multiple Monitors**. This function supports from two to six touchscreen displays for one system. Each monitor requires its own PenMount touchscreen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the RS-232 interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors supports the following modes:

Windows Extends Monitor Function
Matrox DualHead Multi-Screen Function
nVidia nView Function

NOTE: The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

Requirements

Before using the **Multiple Monitors** function you need the following:

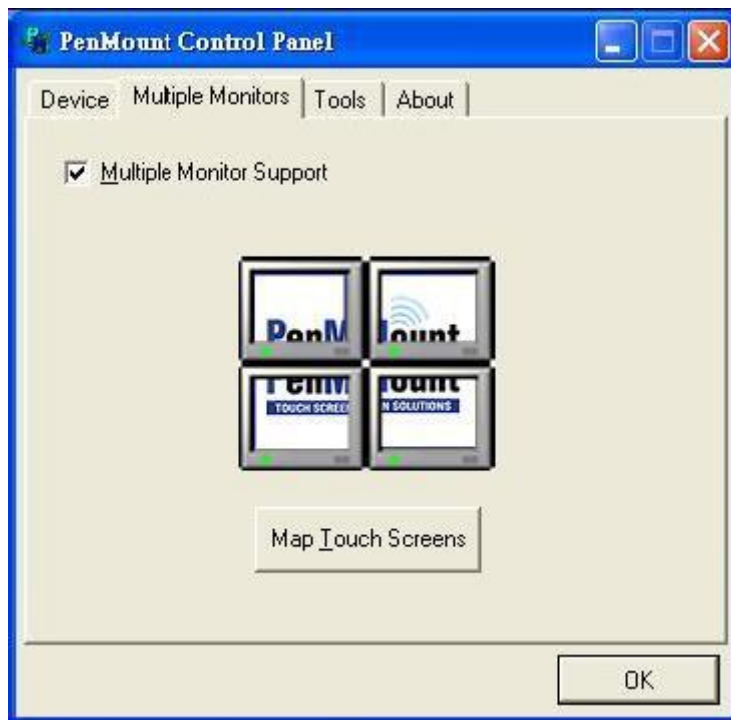
- * A display card that supports multiple monitors such as the Matrox, nVidia, ATI, etc.
- * (Two or more display cards supported by Windows are also ok.)
- * Two or more touchscreens
- * Two or more Serial Ports or USB ports.
- * Two or more PenMount 6000 control boards such as 6200x, 6202x, 6300 or 6500.
- * The PenMount Windows Universal Driver (for 2000/XP/2003/VISTA/7).

Before using **Multiple Monitors** you must have two or more monitors that are in **extension mode**. For display cards that support multiple monitors, we suggest you consider Matrox, nVidia, or ATI cards and inquire about operation and usability issues.

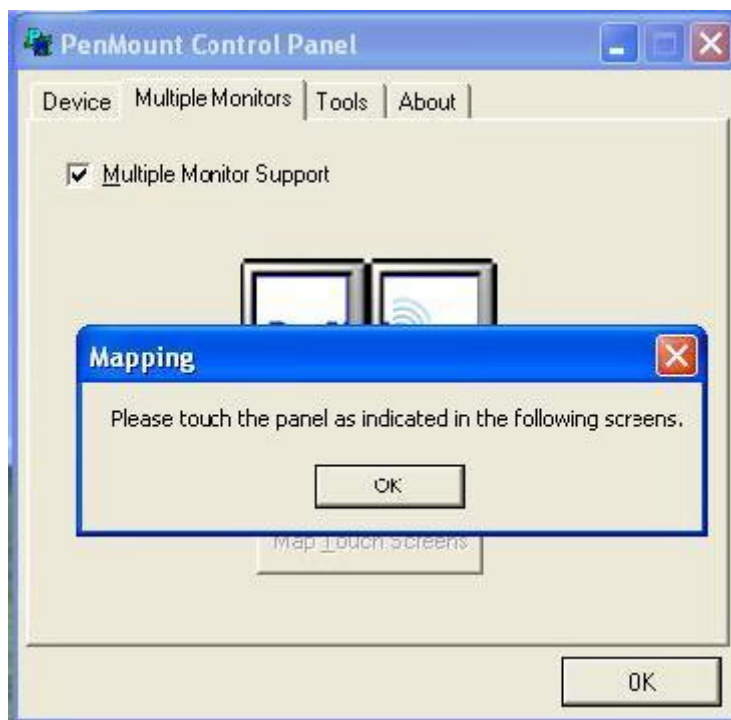
Note: Before you can use multiple monitors you need to map each monitor.

Enable the multiple display function as follows:

Step 1. In PenMount **Control Panel**, under **Multiple Monitors** tag, check the “**Multiple Monitor Support**” box. Then click “**Map Touchscreens**” to assign touch controllers to displays.



Step 2. When the mapping screen message appears, click **OK**.



Step 3. Touch each screen as it displays **Please touch this monitor. Press 'S' to skip**
Following this sequence and touching each screen is called **mapping the touch screens**.



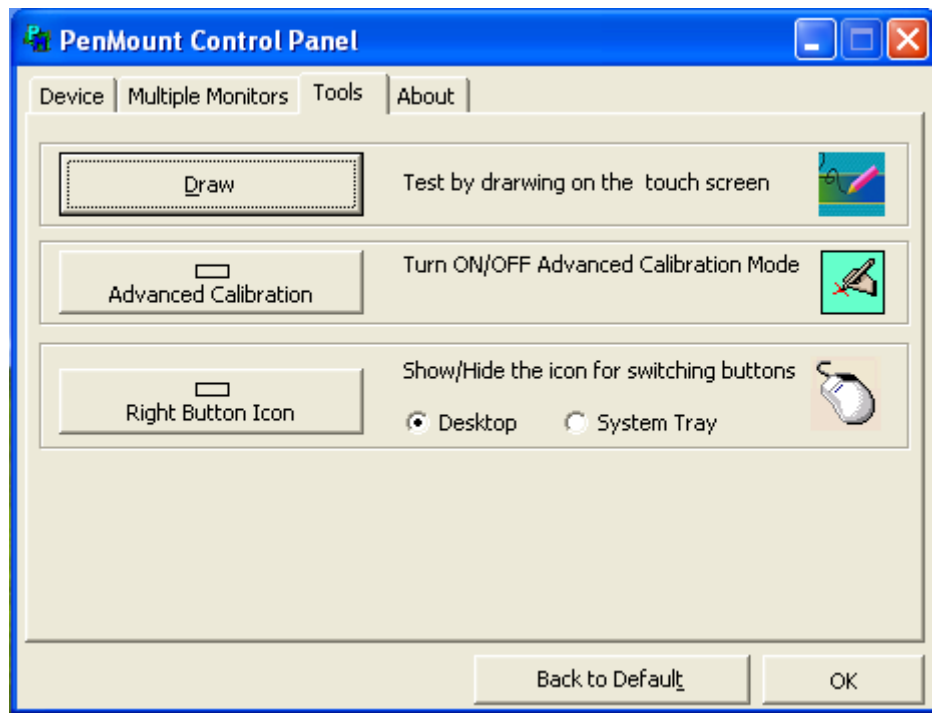
Step 4. After the setting procedure is finished, maybe you need to calibrate for each panel and controller.

NOTES:

1. If you used a single VGA output for multiple monitors, please do not use the **Multiple Monitors** function. Just follow the regular procedure for calibration on each of your desktop monitors.
2. The Rotating function is disabled if you use the Multiple Monitors function.
3. If you change the resolution of display or screen address, you have to redo **Map Touch Screens** so the system understands where the displays are.
4. If you more monitor mapping one touch screen, **Please press 'S' to skip mapping step.**

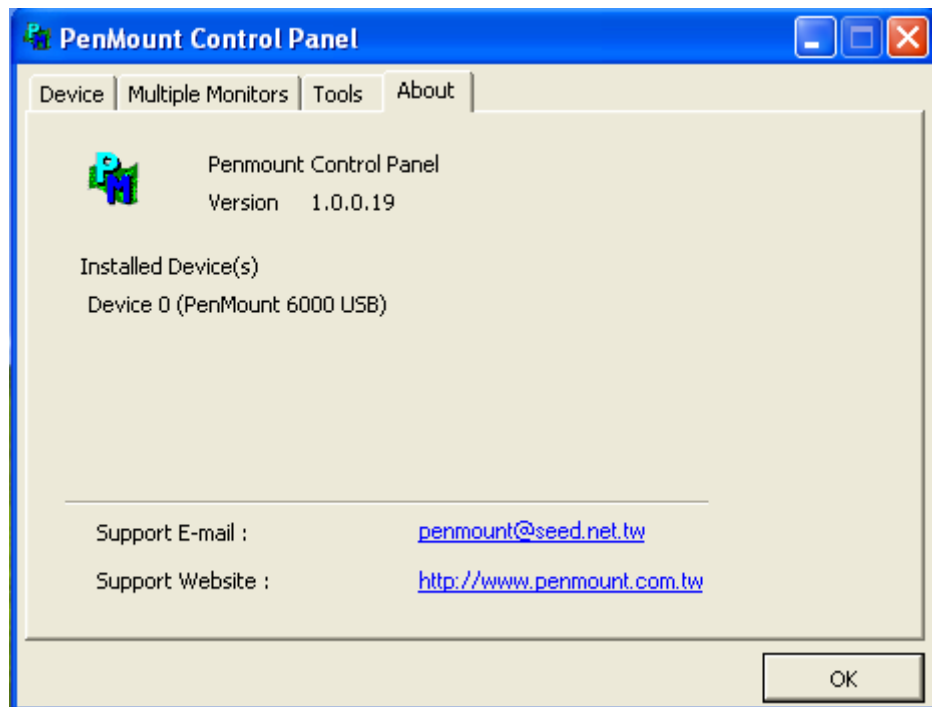
Tools

| | |
|----------------------|--|
| Draw | Tests or demonstrates the PenMount touch screen operation. |
| Advanced Calibration | Enable Advanced Calibration function |
| Right Button Icon | Enable right button function. The icon can show on Desktop or System Tray (menu bar). |



About

You can see how many devices of PenMount controller that are plugged to your system




PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 2000/XP system when you turn on PenMount Monitor in PenMount Utilities.



PenMount Monitor has the following function



| | |
|---------------|--|
| Control Panel | Open Control Panel Windows |
| Beep | Setting Beep function for each device |
| Right Button | When you select this function, a mouse icon appears in the right-bottom of the screen.  Click this icon to switch between Right and Left Button functions. |
| Exit | Exits the PenMount Monitor function. |

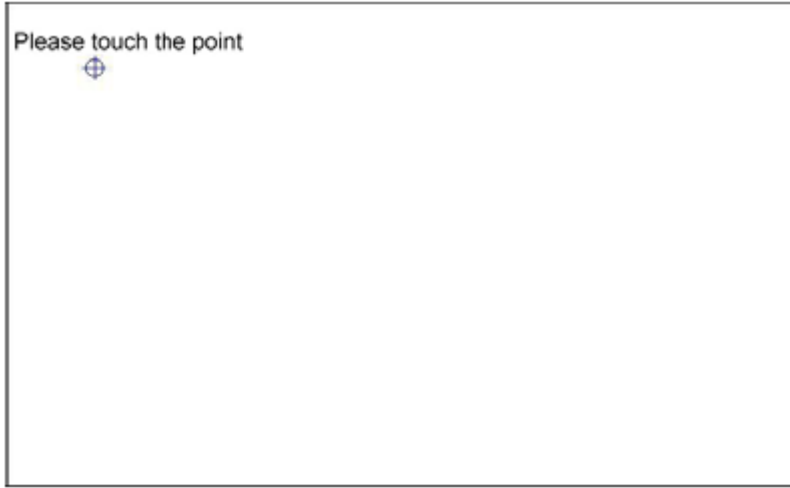
PenMount Rotating Functions

The PenMount driver for Windows 2000/XP supports several display rotating software packages. Windows Me/2000/XP support display rotating software packages such as:

- Portrait's Pivot Screen Rotation Software
- ATI Display Driver Rotate Function
- nVidia Display Driver Rotate Function
- SMI Display Driver Rotate Function
- Intel 845G/GE Display Driver Rotate Function

Configuring the Rotate Function

1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



NOTE: The Rotate function is disabled if you use Monitor Mapping

PC 5815

15" Industrial Panel PC
Haswell Core i CPU
Ultra Slim Aluminum Front Bezel



Features

- IP65 rated aluminum front bezel
- 15 inch 1024 x 768 industrial monitor
- Resistive type touch screen, option for projected capacitive touch
- 4th generation Haswell Core i CPU
- 2 full size PCIe mini card expansion
- Support IPMI 2.0 compliant remote intelligent solution
- Dual LAN, 6 USB, 5 COM, VGA & HDMI video port
- -10°C to 50°C wide range working temperature
- 90~264V AC power input, option for DC power input



Specifications

| | | | |
|---------------|---|----------------|--|
| Material | : IP65 rated aluminum front bezel Sheet metal rear cover | Connectors | : 5 x COM, 1 for RS422/485, 4 for RS-232 4 x USB 2.0 2 x USB 3.0 1 x HDMI 1 x VGA 2 x RJ45 GbE LAN 1 x AC/DC power plug 1 x AT / ATX Switch 1 x Clear CMOS |
| LCD Panel | : Size: 15" Max. Resolution: 1024 x 768 Brightness: 400 cd/m ² Contrast Ratio: 700:1 Viewing Angle (H/V): 160'(H)/ 140'(V) Pixel Pitch (mm): 0.29 x 0.29 Colors: 16.2M MTBF: 50,000 hrs | Expansion Slot | : 1 x full size PCIe mini Card 1 x full size PCIe mini card colay mSATA |
| Touch Screen | : Resistive type touch screen monitor Option for projected capacitive multi-touch screen monitor | Power Supply | : 90~264V AC, 50/60Hz power input Option for 24V DC, 50/60Hz power input |
| System | : CPU: 4th generation Haswell Core i3 Dual-Core i3-4330 3.5GHz / 4th generation Haswell Core i5 Quad-Core i5- 4570S 3.6GHz / Pentium dual Core G3220 3.00GHz Chipset: H81 Memory: 2 x 204-pin DDR3 SO-DIMM (Max. 16GB) 1 x 2.5" HDD/SDD drive bay | Weight | : 12.4lb |
| Drive Bay | : VESA (100*100mm) mounting | Dimension | : 14.90"(W) x 11.93"(H) x 1.70"(D) |
| Mounting Type | : Option for arm, stand, wall / panel / rack mounting kit | Environmental | : Temperature Operating: -10°C to 50°C (14°F to 122°F) Storage: -20°C to 60°C (-4°F to 140°F) |
| | | Certification | : Relative humidity: 10~95%, non-condensing CE & FCC |

PC 5815

15" Industrial Panel PC
Haswell Core i CPU
Ultra Slim Aluminum Front Bezel

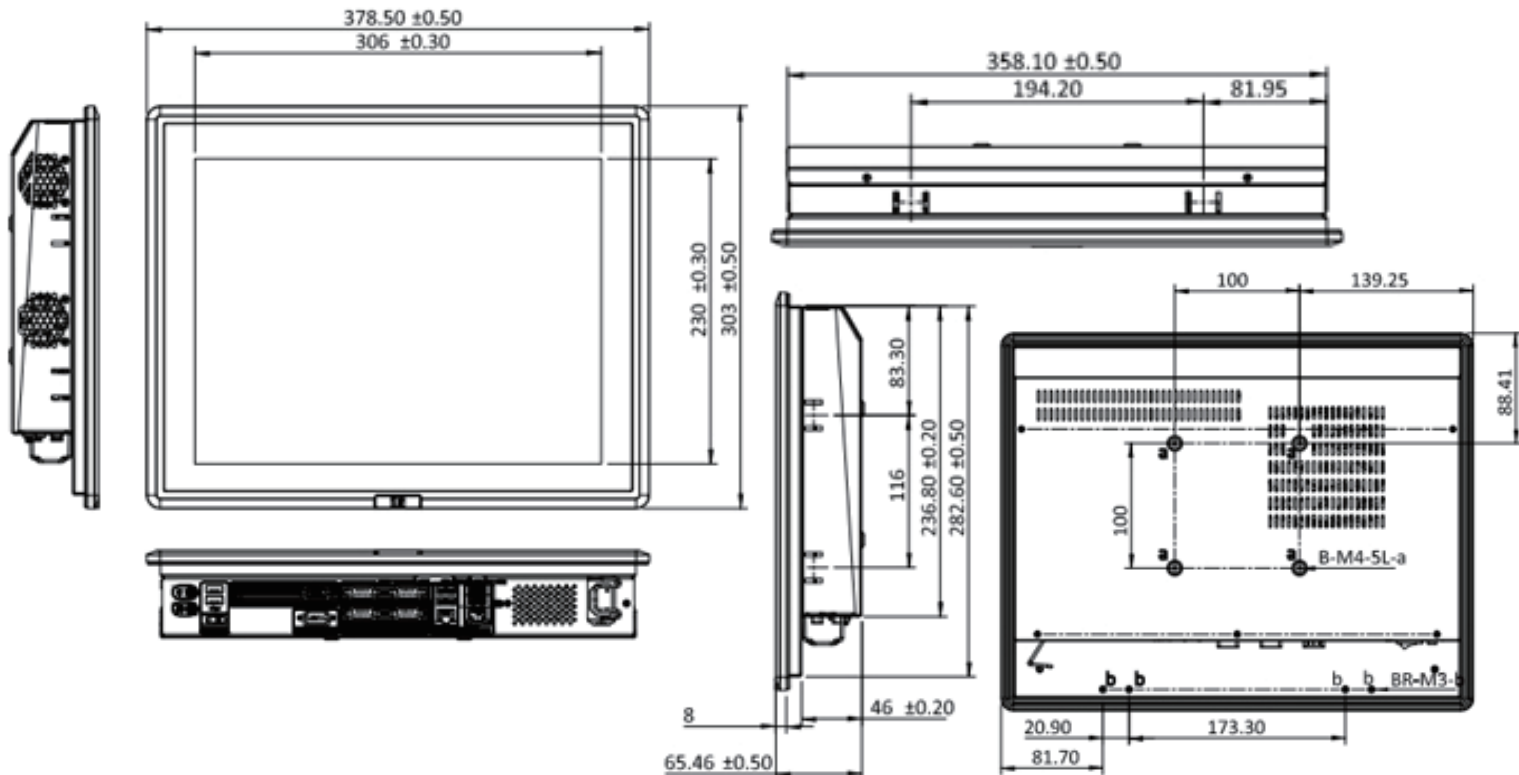
Ordering Guide

15 inch 1024 x 768 industrial Panel PC with projected capacitive multi-touch screen, 4th generation Haswell Core i CPU, On board 4GB DDR3 SODIMM memory, IP65 rated ultra slim aluminum front bezel, VGA & HDMI video port.

Detailed Views



Dimensions



Liquiline CM14

Measurement: Transmitter liquid analysis
Version: Single channel, panel housing
48x96mm
Basic model
Application: pH/ORP, conductivity, DO
digital sensors, Memosens-protocol
Softkeys; alphanumeric display
Alarm-LED, IP54+IP20
2 current outputs, 2 setpoints
simple to use and to maintain
:: Use of precalibrated sensors

CM14-AAM

71124735

SPK: CIA



Basic model

Liquiline CM14

Approval:

AA Non-hazardous area

Sensor Input:

M Digital, Memosens pH, ORP (glass)

>>Service:

>>Additional Approval:

>>Marking:

Total price