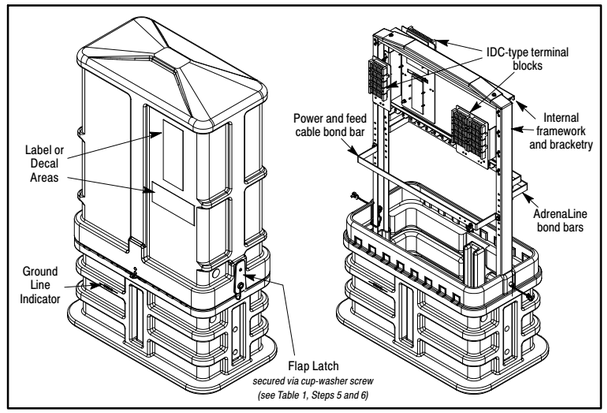


Figure 1. Dome on and Dome off Views of CMPH-75 Enclosure, Express-Powered ADI Configuration

- Installation Instructions -

AdrenaLine™ Distribution Interface (ADI)

CMPH-75 Series with Express-Powered Block Configurations

1. GENERAL

1.1 Document Purpose. This document provides installation instructions for the CMPH-75 express powered versions of the AdrenaLine™ Distribution Interface (ADI) for the Charles Multi-Purpose Housing (CMPH™) enclosure. The ADI brackets inside the CMPH-75 supports up to 25, single-line, express-powered AdrenaLine units, which can be mounted and connected inside the CMPH-75. Express-powered AdrenaLine models, which are ordered separately, require a dedicated pair to power each signal-carrying pair. See Figure 1 for a typical CMPH-75 express-powered ADI enclosure. See Table 5 for ordering and option information, or call Charles Industries (see Part 2) to request more information.

- NOTE -

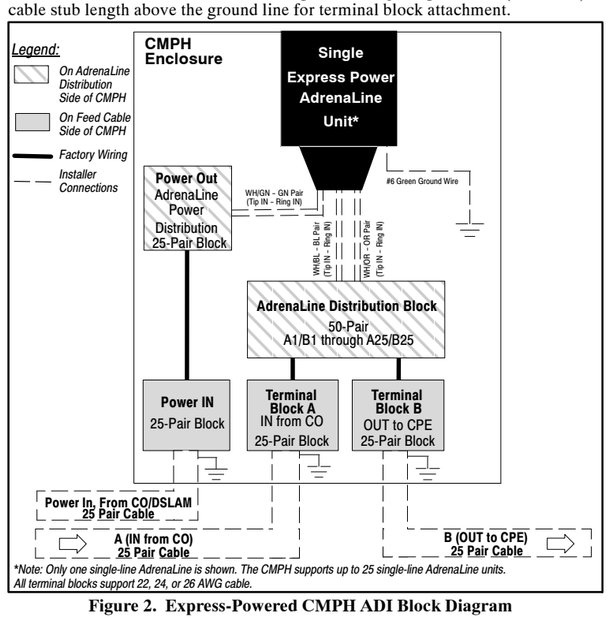
Hereafter the AdrenaLine Distribution Interface may be referred to as the "ADI" and the CMPH-75 Charles Multi-Purpose Housing may be referred to as the "CMPH" or "enclosure."

1.2 Document Status. Whenever this document is updated, the reason will be stated in this paragraph.

1.3 Product Purpose and Description. The CMPH ADI provides an easy way to mount up to 25, single-line, express-powered AdrenaLine units in one protective, outside plant (OSP), above-ground CMPH enclosure. The CMPH design offers easy installation, superior structural strength, 360° technician access, generous internal equipment and cable storage capacity, and protection against corrosion, floods, fire, weather, dirt, insects, intrusion, dents and impact. The CMPH contains a base, a dome, and internal ADI framework and terminal blocks for the AdrenaLine units. The base has corrugated or ribbed walls, internal, dual-purpose, molded-in, channel grooves (which accept most metallic stakes as well as the vertical channels of the internal framework), an open top, and an open bottom. The open base bottom allows easy replacement installations and easy underground cable access. The top piece of the CMPH is the dome, designed to overlap the base for bell-jar-type flood protection. Inside the CMPH, terminal blocks and a sturdy frame with bars and brackets allow up to 25 AdrenaLine units to be mounted, grounded, and easily terminated.

1.4 Product Mounting Type and Location. The CMPH is an above-grade enclosure, the base of which is typically installed in a trench or hole in the ground up to the base's ground line indicator. The ribbed or corrugated base walls provide excellent stability in most soil types. The dome mounts on the base and protects all equipment mounted inside the CMPH. Stake mounting is obtainable via molded channel grooves, which are located at the center of each interior side wall. These grooves accept most new and existing enclosures' mounting stakes. Once the CMPH is installed in the ground, then separately-ordered single-line AdrenaLine units are mounted on brackets inside the enclosure and are easily spliced into and terminated at factory-mounted terminal blocks.

1.5 AdrenaLine Application Considerations. The AdrenaLine CMPH enclosures can be installed in existing brownfield applications or new greenfield applications. For either application, Charles recommends using three 25-pair cable stubs. The power cable stub should be labelled "PWR Cable," and the feed cable stubs should be labelled "A (IN from CO)," and "B (OUT to CPE)." Brownfield applications typically consist of a cable branch or stub-in configuration, requiring four feet (minimum) of cable stub length above the ground line for terminal block attachment.



**Note: Only one single-line AdrenaLine is shown. The CMPH supports up to 25 single-line AdrenaLine units. All terminal blocks support 22, 24, or 26 AWG cable.*

Figure 2. Express-Powered CMPH ADI Block Diagram

2. CUSTOMER TECHNICAL SERVICE

If technical assistance or customer service is required, contact Charles Industries by calling or using one of the following options:

847-806-8500 (Tech. Service local) 847-806-6300 (Customer Service)
800-607-8500 (Tech. Service toll-free) 847-806-6653 (Customer Service FAX)
847-806-8556 (Tech. Service FAX) mktserv@charlesindustries.com (email)
techserv@charlesindustries.com (email) www.charlesindustries.com (website)

3. INSTALLATION

See Table 1 to perform a new CMPH enclosure installation (without AdrenaLine units). See Table 4 to install express-powered AdrenaLine units inside the CMPH. Table 3 describes a new CMPH installation with stakes. For replacement or rehabilitation application instructions, call Charles for more details.

⚠ - CABLE DAMAGE WARNING - ⚠

Be careful not to damage any buried cables or service wires while digging either to expose cables or to prepare a hole or trench, or while driving stakes.

- GROUNDING WARNING -

Always follow local codes and company practices for performing proper cable and site bonding and grounding. Perform all bonding and grounding prior to other electrical or communications connections.

- BODILY HARM WARNINGS -

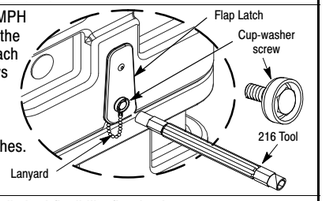
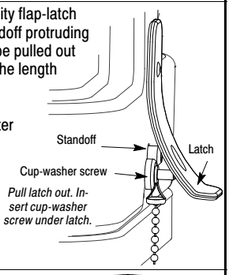
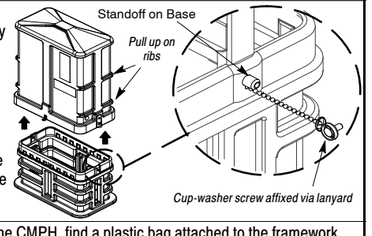
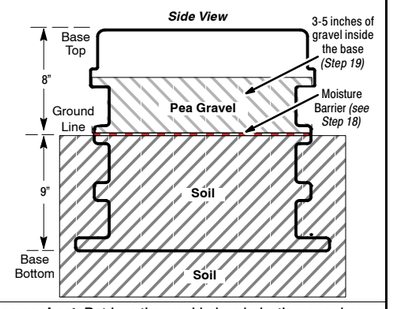
The corrugated metal or armor that may be present in cables is very sharp at the cut or exposed edges. Extreme caution should be taken to prevent personal injury. Protective work gloves are recommended when handling armored cable.

Cable cleaning solvents may contain hazardous materials or harmful ingredients. Always read and follow the manufacturer's precautions, warnings, and instructions when working with cleaning solvents or products.

- NOTE -

Never grasp or use the flap-latches as handles to lift the dome off the base; latch breakage and possible enclosure intrusion could result.

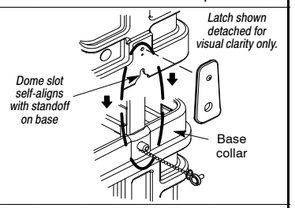
Table 1. Installing a New CMPH Enclosure

Step #	Instruction
1. □	**Obtain tools, materials and equipment.** Gather the following equipment to perform the CMPH installation. □ 216 tool or can wrench □ Trenching, digging and site cleanup equipment & tools □ Charles CMPH model □ Cable grounding materials and tools □ Scissors, knife or snips □ Cable opening and management equipment □ Level □ Clean, dry, pea gravel *(3/8"-5/8" diameter)* □ Measuring tape □ Conduit and conduit caps *(optional)* □ Soil tamping tool(s) □ Wrenches or socket set □ Soil for backfill □ Insulated work gloves *(optional, to handle metallic stakes)*
2. □	**Prepare trench.** ***Do not damage any buried cables or wires while digging.*** Dig and prepare the cable trench, per company practice.
3. □	**Place cables (or conduit or innerduct) in trench.** Follow company practice to lay or place the cables, innerduct, or conduit. See Step 12 for proper cable length.
4. □	**Unpack and inspect equipment.** Without damaging the CMPH exterior, remove the CMPH from its packaging. Inspect the unit upon delivery; if damaged in transit, report the damage to the shipping company.
5. □	**Unlock the CMPH.** Unlock the CMPH using a 216 tool or can wrench at the two cup-washer screws (one at each side of the CMPH); turn the screws counterclockwise until they freely hang from their lanyard. When locked, the cup-washer screws prevent movement of the flap-latches. 
6. □	**Disengage the flap-latches.** Each limited-flexibility flap-latch contains a hole in it which accepts the round standoff protruding from the side of the base collar. Each latch must be pulled out or away from base side wall just enough to clear the length of the protruding standoff. Maintain the flexed for pulled-out latch position by temporarily inserting the cup-washer screw or an item of similar diameter or thickness under each latch (between the latch and the side wall). Do not pry or flex the latches too far, only enough to clear the standoff. ***Never grasp or use the flap-latches as handles to lift the dome off the base; latch breakage and possible enclosure intrusion could result.*** 
7. □	**Remove the dome.** While the flap-latches are properly disengaged from the base standoffs, grasp the ribs at each side of the dome and lift up to remove the dome from the base. The cup-washer screws remain attached to the base via the lanyard (or chain). Set aside the dome for later use. 
8. □	**Find bag of parts.** Inside the CMPH, find a plastic bag attached to the framework containing this document, a test probe, and a red bag labelled "moisture barrier." Read this document, and put the probe and red bag in a safe place for later use.
9. □	**Determine base installation location.** To determine exactly where to place the base in the trench, use the base itself as a positioning template by placing it up over the top of the conduit, innerduct, or cables *(route the cables through the base)* and lowering the base to the ground. Analyze the site and place the base at its proposed final orientation and horizontal positioning in the trench or hole. Mark this proposed final spot by removing a shallow layer of top soil from around the outside perimeter of the base about 2-4 inches wider than the base. Remove the base and set it aside.
10. □	**Dig a hole for the base.** ***Caution: Avoid damaging buried cables, wires ,innerduct, conduit or ground equipment whenever digging.*** At and within the marked perimeter boundary, dig *straight* down to a depth of 9 inches. Do not dig too deep.
11. □	**Optional – Stake mountings only.** For stake mounting applications, continue with the steps in Table 3.
12. □	**Verify sufficient cable length at the base hole.** The cable must be long enough to allow future connection to the terminal blocks in the CMPH after it is installed. Verify a minimum of 4 feet of cable extends *above the ground line* at the center of the base hole. Per company practice, make any required cable or hole adjustments to allow sufficient cable slack or length for wire termination, and optionally cut the cable.
13. □	**Put base in hole and route cables through base.** Route the cables or conduit up through the bottom of the base, then put the base in the prepared hole or trench.
14. □	**Verify proper base depth.** Before backfilling, verify the base is at the proper depth, approximately 9 inches deep. Rest the base on solid or well-tamped soil when measuring this distance. Verify the base ground line indicator is at the same level as the final-grade ground line. Remove, add, or tamp more soil as necessary.
15. □	**Level the base.** Verify the level (or plumb) of the base. Check the level at either the top surface of the base, or against one of the interior vertical channels of the metal frame. Check the level in both dimensions; front to back, and side to side. Make any needed base-bottom soil adjustments to get a good or true level or plumb line.
16. □	**Prepare earth ground.** ***Always follow local codes and company practice when preparing earth ground and when grounding cables or equipment.*** If an earth ground is not present at the CMPH site and local code or practice requires an earth ground, prepare one now. Attach earth ground to the CMPH's ground lug using a ground wire of proper gauge, per company practice.
17. □	**Backfill and tamp outside the base.** With the base in place, backfill the trench or hole outside of the base. While backfilling, tamp the soil and check the base level once or twice. Continue to add and tamp the soil until it is at the base ground-line. **Backfill soil and tamp inside the base.** First plug, cap, or cover all channel, conduit, or innerduct openings. Then per company practice, backfill soil *inside* the base, tamping soil periodically, to the ground line mark. This adds stability and helps inhibit any company-approved gravel (Step 19) from falling or slipping under the base sides when it is added. 
18. □	**Place the red-plastic bag or sheet.** Retrieve the provided, red-plastic, vapor-barrier bag previously set aside, cut it open on all but one long edge to make one large plastic sheet, (seal any holes with duct tape), and place it into the base on top of the soil fill. Completely cover the soil. Fit the bag around and encircle the cables, conduit, or innerduct, spread it outward from the center, and press all sheet edges downward where they make contact with the base walls. Alternately, cut a hole or "X" in the center of the sheet, drop the sheet down over the centered cables or conduit group, bring it all the way down to the tamped soil or fill, fit the sheet's inner hole edges snugly around the cables or conduit, and spread it out as underlined above. When installed properly, this sheet acts as a vapor barrier and aids moisture run-off into the soil. ***Failure to use the plastic moisture-barrier bag on top of the soil significantly increases the risk of condensation inside the enclosure.***
19. □	**Add gravel inside the base.** Pour 3-5 vertical inches of company-approved gravel (gravel minimizes condensation and drains well) into the base (about to the top base rib, or 1" below any innerduct or conduit opening) on top of the soil. Use 5/8" (or less) diameter pea gravel, or clean, dry, non-porous, gravel rock only (cut stone retains more moisture). Five 18-pound bags work well. Spread out and level the gravel.
20. □	**End of base installation – determine next procedure.** If AdrenaLine units will now be installed, go to Table 4. If AdrenaLine units will NOT be installed at this time, continue with Step 21 to close the CMPH enclosure. PLEASE KEEP THIS DOCUMENT INSIDE THE CMPH FOR THE NEXT CREW.

Closing the CMPH

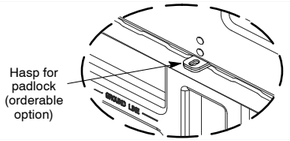
21. ☐ **Re-check cable management.** Verify all equipment and cabling is organized and will not contact the interior walls of the dome when installed (keep items at least 1" from the vertical plane of the base collar). This assures safe and smooth dome placement.

22. ☐ **Install dome.** Locate the dome and lift it up and over the interior framework and equipment. Lower the dome until it overlaps and self-latches to the base. Verify the standoffs protrude through the holes in the latches (self-latch feature).



23. ☐ **Lock the CMPH.** Lock the CMPH by re-inserting and turning the cup-washer screws clockwise into the threaded holes provided for them in the standoffs. Tighten the cup-washer screws with a 216 tool or can wrench (as shown in Step 5).

24. ☐ **(Optional) Padlock the CMPH.** For models equipped with an optional hasp, the CMPH also can be locked by inserting a padlock through the holes in the hasp provided at the front of the enclosure.



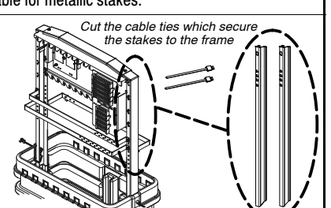
25. ☐ **End of CMPH placement. Clean up site.** If no more equipment or cable work will be performed at this time, clean up the site, fill and tamp any trenches, replace any removed sod, restore the landscape to it's original condition, pick up all equipment, and optionally leave this document inside the CMPH for future reference.

Table 2. Physical Specifications

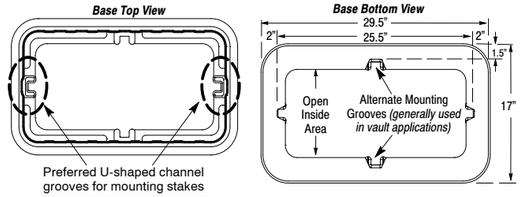
Feature	U.S.	Metric
Height, overall	47 in.	119.4 cm
Height, base only, incl. collar	17 in.	43.2 cm
Height, dome only	33 in.	83.8 cm
Height, internal framework	30 in.	76.2 cm
Height, base bottom to ground line	9 in.	22.9
Depth, base (at wider footprint)	17 in.	43.2 cm
Depth, dome	14.5 in.	36.8 cm
Width, base (at wider footprint)	29.5 in.	75 cm
Width, dome	27 in.	68.6 cm
Weight, dome	22 lbs.	10 Kg
Weight, base, including bracketry	31 lbs.	14.1 Kg
Weight, two 30" stakes	5 lbs.	2.2 Kg
Weight, two 36" stakes	6 lbs.	2.7 Kg
Weight, two 42" stakes	7 lbs.	3.2 Kg

NOTE: All dimensions and weights are approximate.

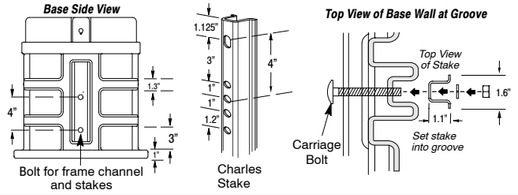
Table 3. Installing the CMPH with New Charles Stakes

Step #	Instructions
Charles offers some CMPH models which include two mounting stakes (either 30", 36", or 42" long). All stakes have identical hole patterns. This table describes how to install these models.	
1. ☐	**Prepare the CMPH, trench, and cable.** Perform Steps 1-10 of Table 1 to open the enclosure and prepare the hole or trench and the cables or conduit. Verify the base installation site is ready and suitable for metallic stakes.
2. ☐	**Remove stakes from CMPH framework.** Two mounting stakes are packed with the CMPH and attached to the frame with cable ties. Detach the stakes from the frame and remove the packing used for shipping purposes. 

3. ☐ **Determine which grooves to use for stakes.** The base contains a molded-in dual-purpose groove at the center of each wall to accept the U-shaped mounting stakes (as well as the U-shaped vertical channels of the frame). Per local company practice and site conditions, select two wall grooves that are appropriate for stake attachment purposes (the grooves on the narrow walls are typically used).



4. ☐ **Attach stakes to grooves in base.** Set the base on the ground or a raised surface to access the grooves through the base bottom. On the inside of the base, remove the nuts and washers from the bolts (which are 4" apart) that secure the frame channels in place. On the mounting stake, the distance between the first and third hole down from the top of the stake is 4". Insert the top of the stake into the base, rotate the stake so it will fit properly into the base groove (so the perimeter contours match), align the stake holes with the bolts in the base, and set the stake in place in the groove. Attach the lock washers and nuts that were removed to secure both the mounting stake and frame channel in place. Repeat for the other stake.

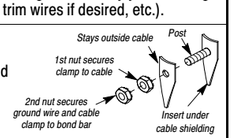


5. ☐ **Verify hole or trench accommodates stake length.** Lift the base and attempt to place it back in place in the trench or hole. If the trench is deep enough to accommodate the length of stake protruding from the bottom of the base, skip the rest of this step. If the hole or trench is not deep enough to accept the stakes, and the weight of the base is not enough to drive the stakes the length needed to allow the base to rest at its proper depth, then once again use the base as a template to mark the exact stake locations in the ground where more soil must be removed. Remove the base from the hole, and at the stake-hole indentations, dig down just enough to accommodate the length of the stake.

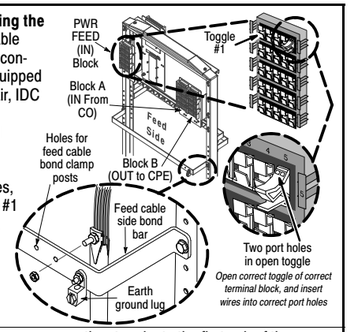
6. ☐ **Set base in place, bring cables into base.** When the hole is deep enough for the stakes, again lift the base by its walls or ribs and set it back into the hole, being sure to enclose or encompass within the base all cables, innerduct, conduit or equipment present at the site and intended for storage inside the enclosure.

7. ☐ **Finish the installation.** Perform Steps 14 through 25 in Table 1 to finish the installation. Be sure to backfill and firmly tamp soil *into the stake holes* when backfilling.

Table 4. Cable Termination and AdrenaLine Installation

Step #	Instructions
1. ☐	**Open the CMPH enclosure.** Open the CMPH, per Steps 5-7 of Table 1.
2. ☐	**Verify the CMPH enclosure is grounded.** Per company practice and local codes, verify earth ground is connected to the CMPH earth ground lug on the bond bar.
	Preparing the Feed and Power Cables
3. ☐	**Verify feed and power cable length.** Verify enough cable slack was left and is available for routing and connection to the CMPH's terminal blocks (4 feet min.).
4. ☐	**Prepare feed and power cables.** Per company practice, perform all cable preparation work (measure and cut cables to length [if still needed], measure, cut, and remove proper lengths of cable sheathing and shielding, remove any yarn, bindings or wrappings, group or identify correct pairs, and trim wires if desired, etc.).
5. ☐	**Install cable bond clamps.** Using company approved methods and materials, install a cable bond clamp to each power and feed cable's shield at the sheath cut line. Next, attach the cable *(via the clamp)* to the feed-side single bond bar *(see Step 7 figure),* to ground and secure the cable(s). 
6. ☐	**Secure cables (optional).** Route the cables up toward the two, 25-pair, feed-side, terminal blocks and secure in place with cable ties.

7. ☐ **Understanding and identifying the terminal blocks.** The feed cable side of the CMPH ADI (which contains only one bond bar) is equipped with 3 Tyco Dat@Term, 25-pair, IDC terminal blocks: one labelled *PWR FEED (IN)*, one labelled *A (IN from CO)*, and one labelled *B (OUT to CPE)*. Each block contains 25 toggles, one for each wire pair. Toggle #1 is the block's top left position. To open the toggle to access the two wire ports, squeeze the toggle's two front tabs together and pull the toggle.

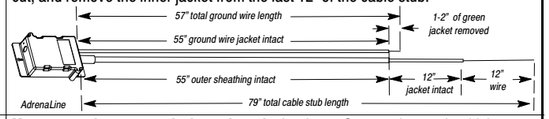


8. ☐ **Terminate power pairs.** Per company practice, terminate the first pair of the power cable at Toggle #1 in the *PWR FEED (IN)* block. Insert the tip wire all the way into the open toggle's left port and the ring wire all the way into the right port, then push up and back to close the toggle. Repeat and continue until all desired power pairs in the power cable are terminated.

9. ☐ **Terminate feed pairs.** Per company practice, terminate the first pair of the *IN From CO* feed cable at Toggle #1 in the *A (IN From CO)* terminal block. Insert the tip wire all the way into the open toggle's left port and the ring wire all the way into the right port, then push up and back to close the toggle, per company practice. Repeat and continue until all desired *IN From CO* pairs are terminated. Last, perform the same procedure to the *OUT to CPE* cable at the *B (OUT to CPE)* terminal block.

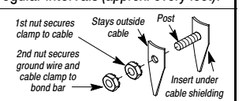
Preparing the AdrenaLine Units

10. ☐ **Prepare and open AdrenaLine cable stub.** Use the tools and methods of choice, per company practice, in this step. Blunt-cut the entire AdrenaLine cable stub to a 79" length. Mark the cable stub 24" up from the blunt-cut end. Score, cut, and remove the outer cable sheathing and metallic shielding from the last 24" of the stub. Next, mark the newly-exposed inner jacket 12" up from the stub end. Score, cut, and remove the inner jacket from the last 12" of the cable stub.

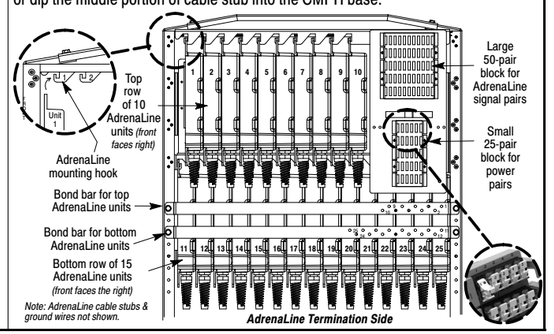


11. ☐ **Measure and cut ground wire to length.** As shown Step 10, locate the thick, green, ground wire that exits the bottom of the AdrenaLine unit alongside (but not part of) the cable stub. Measure and make a mark 57" down the wire from the bottom of the AdrenaLine unit, and cut off the surplus wire length. Next, strip off approximately 1-2" of the ground wire's green outer jacket, to expose the bare wire. The green ground wire should be 1-2" longer than the cable stub's sheathing cut. Tape or tie the ground wire to the cable stub at regular intervals *(approx. every foot)*.

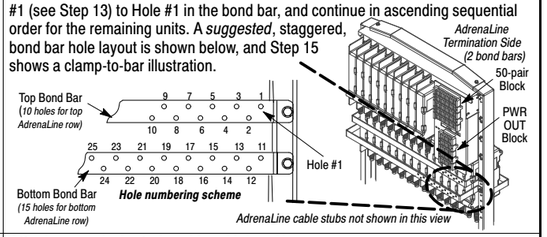
12. ☐ **Install bond clamp to stub.** Per company practice, install an approved bond clamp to the AdrenaLine cable shield at the cable sheath cut-line *(see Step 15),* then tape the seam.



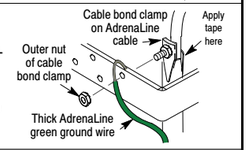
13. ☐ **Mount AdrenaLine unit(s).** Mount the first AdrenaLine unit from the hook provided for it on the top mounting bracket (left-most hook on top mounting bar). Orient each unit the same direction, so that the unit front faces right (when viewing the side with the two bond bars). To facilitate cable management, before hanging the unit, loop or dip the middle portion of cable stub into the CMPH base.



14. ☐ **Attach AdrenaLine cable bond clamp to bond bar.** Per instructions below or company practice, attach the AdrenaLine cable bond clamp to the bond bar by inserting the clamp's threaded post through a hole in the bond bar, then loosely affixing the clamp kit's second hex nut to the clamp's post. Use the top bond bar to bond the top row of AdrenaLines, and the bottom bond bar to bond the bottom AdrenaLine row. Connect the cable stub of the AdrenaLine unit mounted on Hook #1 (see Step 13) to Hole #1 in the bond bar, and continue in ascending sequential order for the remaining units. A *suggested*, staggered, bond bar hole layout is shown below, and Step 15 shows a clamp-to-bar illustration.



15. ☐ **Attach ground wire to bond bar.** Make a U-shaped bend in the 1-2" length of stripped ground wire. Hang the U-bend from the threaded post of the cable bond clamp, slipping it between the bond bar and the loosened outer hex nut of the cable bond clamp. Hold the wire in place, then tighten the outer hex nut.



16. ☐ **Identifying the terminal blocks.** AdrenaLine cables terminate on the *AdrenaLine Distribution Side* of the CMPH ADI which has 2 bond bars and 2 Tyco Dat@Term, IDC, terminal blocks (see figures in Steps 13 and 14): one 25-pair block labelled PWR OUT and one 50-pair block. The AdrenaLine cable signal wires terminate at the large 50-pair terminal block, and the power wires terminate at the 25-pair block.

Terminate AdrenaLine wires. Terminate the AdrenaLine white/blue pair at the 50-pair block's Toggle A of Position 1 (top left toggle). Open the toggle, insert the tip wire all the way into the toggle's left port, insert the ring wire all the way into the right port, then close the toggle, per company practice. Repeat for the white/orange pair at the next toggle to the right, Toggle B of Position 1. For the white/green pair of the first AdrenaLine cable, terminate the wires in the first toggle of the 25-pair PWR OUT block per the chart at the right.

AdrenaLine Cable Stub		50-Pair Terminal Block
Wire Color	Designation	Port / Hole
White/Blue	CO side, Tip	A/left hole
Blue	CO side, Ring	A/right hole
White/Orange	CPE side, Tip	B/left hole
Orange	CPE side, Ring	B/right hole
AdrenaLine Cable Stub		**25-Pair PWR Out Block**
Wire Color	**Designation**	**Port / Hole**
White/Green	Ground	Left hole
Green	-48VDC Power	Right hole

17. ☐ **Mount & terminate all AdrenaLine units.** Repeat Steps 10-16 for all units placed in service at this time. If desired, perform additional cable or wire management with cable ties or D-clips near the terminal blocks. Label all cables and units, if desired.

18. ☐ **Test connections, then close up CMPH.** Align, lock on and use the provided test clip on each toggle to test the connections. Perform Table 1's steps 21-25 to close the CMPH.

Table 5. Model Number Ordering Information and Options

Model #	Description
CMPH-750ENH	Charles Multi-Purpose Housing with internal, sturdy, ADI brackets and a set of high-speed IDC terminal blocks that serve up to 25, single-line, express-powered, AdrenaLine units. All self-locking units come with a polyethylene base and (overlapping) dome, a security hasp (accepts customer-supplied padlock), internal metallic framework to mount equipment and cables, ground/bond bars, and a kit bag which contains a plastic moisture-barrier sheet, documentation, and a single-pair test clip (probe) with 4" leads. Express power terminal block configuration: *Feed* side has three, 25-pair, terminal blocks; *AdrenaLine* side has one 25-pair plus one 50-pair terminal block.
CMPH-751ENH	Same as above but with two included 30" metallic stakes.
CMPH-752ENH	Same as above but with two included 36" metallic stakes.
CMPH-753ENH	Same as above but with two included 42" metallic stakes.
CMPH-750EFH	Same as above but with flame retardant material and NO metallic stakes.
CMPH-751EFH	Same as above but with two included 30" metallic stakes.
CMPH-752EFH	Same as above but with two included 36" metallic stakes.
CMPH-753EFH	Same as above but with two included 42" metallic stakes.
Ordering Options for the CMPH	
CTA-01E	AdrenaLine ™ single-line unit, express powered, with 30' cable stub, for triple play applications.
CRE-01E	Same as above, but for reach-extended applications.
CTA-01E-S	Replaces CTA-01E model as of June, 2007 (new housing material).
CRE-01E-S	Replaces CRE-01E model as of June, 2007 (new housing material).

Line powered ADI versions are also available, as well as models without factory-installed terminal blocks. Contact Charles for details.