Charles® Smart Coil™ POTS/ADSL Line Conditioners
- Installation Guide -

1. GENERAL

1.1 Document Purpose

This document provides installation information for the Charles Industries' Smart Coil™ series of POTS/ADSL Line Conditioners. Figure 1 shows a typical single-line Smart Coil, Figure 2 shows a typical empty 6-position Kwik Kase and a populated 6-position Kwik Kase Smart Coil model, and Figure 3 shows a sealed multi-line Smart Coil case. For a specific model number in the series or to request more detailed information or literature, call Charles Industries (see Part 3) or visit our website at *www.charlesindustries.com*.

1.2 Product Purpose and Description

Smart Coils provide the line conditioning benefit of a common load coil for POTS traffic while allowing a DSL signal to pass through, with the added benefit of having the same footprint and form factor as the load coils they replace. With Smart Coil, a loop that was providing either POTS or DSL exclusively can instead handle both services on a single copper pair, allowing ADSL to reach its full distance.

1.3 Product Mounting

The product mounting depends upon the application, number of lines to be conditioned, and the specific Smart Coil ordered. Smart Coils come in quantities from one to 900 pairs. Smart Coils are typically installed outdoors, either on a pole or in a pedestal or manhole, direct-buried, or strand-mount in aerial applications. Buried applications include single or multiple-mounting Smart Coils within pedestals, direct buried near pedestals, and in manholes and handholes.

1.3.1 Single Smart Coils

Single Smart Coils (Figure 1) can be installed in buried applications such as handholes, manholes, or pedestals.

1.3.2 Smart Coils in Kwik Kases

Single Smart coils can be conveniently and neatly installed in terminals and pedestals with the compact Kwik Kase tube. Single Smart Coils are installed in these 6-position (Figure 2), 12-position, 18-position, and 25-position Kwik Kases typically in buried applications such as handholes, manholes, or pedestals. The Kwik Kase tube's flexible ABS plastic material and the open slot at the front allows easy insertion of single Smart Coils. Always insert Smart Coils in the middle of the tube's slot and orient each Smart Coil so the wire end points or faces down. A rectangular slotted groove

at the rear of the Kase accepts and holds the square head of the two provided mounting bolts (#10-32, 1" long). *Before* inserting smart coils into the Kwik Kase, verify the two mounting bolts are in their proper and final position, so they will be aligned with the selected mounting holes in the pedestal or manhole backboard.

1.3.3 Smart Coils in Multi-line Sealed Cases

Charles 770-type Smart Coil Cases (Figure 3) are the most convenient way to deploy large pair-count applications (25 to 600 pairs) of Smart Coils in the outside plant. Each case houses Smart Coils designed to be used in series with a given cable pair, reducing the capacitive effect of a given length of cable. Rugged, weathertight, polyethylene cases provide superior environmental protection in harsh outside plant conditions. The encapsulated coils inside each case are protected from moisture, heat, dirt and impact. Sealed Smart Coil cases can be installed in buried applications, such as direct buried (Figure 6), handholes, manholes, or pedestals, in aerial or strand applications (Figure 4), or mounted on poles (Figure 5).

- WARNINGS & CAUTIONS -

Do not damage any buried cables or wires while digging to prepare a hole/trench or to expose cables.

Do not excessively loop, bend or kink cables, to avoid cable damage.

Always follow all local codes, safety practices, and company practices whenever grounding or installing equipment.

Perform all bonding and grounding prior to any electrical and communications connections.

- SAFETY PRECAUTIONS -

☐ **Never install telephone equipment during a lightning storm.**

☐ **Never install telephone equipment in wet locations unless specifically designed for wet locations.**

☐ **Never touch uninsulated telephone wires or terminals unless the line has been disconnected at the network interface.**

☐ **Use caution when installing or modifying telephone lines.**

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2. INSTALLATION

Follow the safety precautions and warnings herein. Use Table 2 to install the Smart Coil™ OSP POTS/ADSL line conditioners.
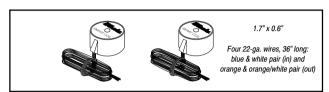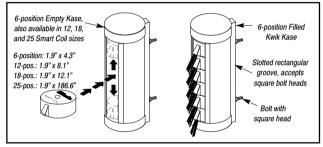

Figure 1. Typical Single Smart Coils

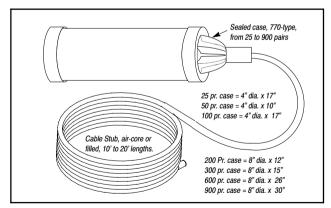**Figure 2. Typical 6-Position Smart Coil Kwik Kase**

Figure 3. Typical Sealed Case Smart Coil

- INSPECTION NOTE -

Inspect the unit for damage prior to installation. If the equipment was damaged in transit, immediately report the extent of the damage per local company practices and procedures.
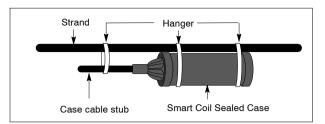

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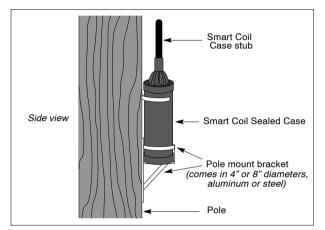**Figure 4. Strand Mounting a Sealed Smart Coil Case**
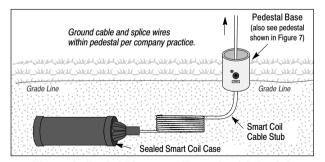

Figure 5. Pole Mounting a Sealed Smart Coil Case

Figure 6. Buried Placement Example with Buried Cable and Above-Grade Pedestal

Pair Number	Ring	Tip
1 (typically IN)	Blue	White
2 (typically OUT)	Orange	Orange/White

Table 1. Cable-Pair Wire Colors *(See Step 7 of Table 2)*

Position square-head bolts in place in the rectangular groove inside the Kwik Kase, align bolt shafts with mounting holes or slots in the pedestal backboard, and secure bolts to backboard wtih nuts.
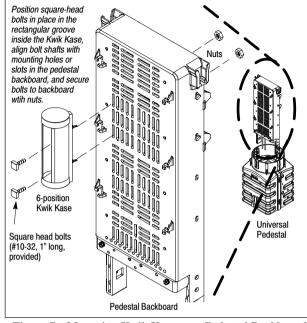

Figure 7. Mounting Kwik Kase on a Pedestal Backboard

3. PRODUCT SUPPORT

3.1 Technical Assistance. If technical assistance is required, contact Charles Industries' Technical Services Center at:

847-806-8500 847-806-8556 (FAX)
800-607-8500 t*echserv@charlesindustries.com (email)*
http://www.charlesindustries.com/main/te_smart_coil.html

3.2 Warranty & Customer Service. Charles Industries, Ltd. offers 5-year warranty on this Smart Coil product. Contact your local Sales Representative at the address or telephone numbers below for warranty details. The warranty provisions are subject to change without notice. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract. For customer service, contact Charles Industries at:

Charles Industries, Ltd.
5600 Apollo Drive
Rolling Meadows, IL 60008-4049

847-806-6300 (Cust. Service)
847-806-6231 (FAX)
mktserv@charlesindustries.com

Installing the Smart Coil ™
1. ☐ **Selecting specific product.** Order Smart Coils per company practice. Call Charles Industries to order Smart Coil products.
2. ☐ **Obtain tools and equipment.** Tools needed to install Smart Coils are the same as those used to install load coils.
3. ☐ **Prepare the site.** Prepare the installation site, per the application, and per company practice and product type selected.
4. ☐ **Preform bonding and grounding.** Always follow local codes and company practices when grounding equipment. Either prepare a company-approved earth ground at the installation site or verify one already exists. Prepare a cable sheath ground for cables that contain a cable sheath and bond the cable sheath to an approved ground per company practice and local codes.
5. ☐ **Mount the Smart Coil.** Mount or place the Smart Coil at the desired installation location. *Manhole/pedestal.* If mounting in hand/manholes or pedestals (Figure 7), attach Smart Coils firmly and per company practice at the selected mounting location, using mounting brackets or Kwik Kases as needed. Kwik Kases have a slotted rectangular groove and mounting hardware, for easy attachment to backboards or brackets provided within pedestals, handholes, or manholes. *Aerial or strand mounting.* Mount or place the Smart Coil at the desired aerial installation location (Figure 4). Use hangers of sufficient type and quantity to hang the Smart Coil case from the strand, per company practice. *Pole mounting.* Mount or place the Smart Coil at the desired location on the pole (Figure 5). Use pole mount brackets of sufficient type and quantity to hold the Smart Coil on the pole, per company practice. Call Charles Industries to inquire about or buy pole mount brackets offered by Charles Industries. *Direct Buried.* Sealed cases can be direct buried (see Figure 6).
6. ☐ **Prepare wires and cables.** Open and prepare cables and wires per company practice, including the existing plant cables and the Smart Coils to be installed. Cut the Smart Coil cable stub or the single coil wires to a company-approved length, organize or tie up the proper wires/bundles to maintain proper pair organization (allow no loose pairs), and prepare the pair wires for splicing.
7. ☐ **Splice wires.** Splice all wires per Table 1 and company practice. Wire color does not matter: either colored wire pair on a Smart Coil can be spliced to either colored pair on the line being spliced regardless of direction (towards the CO or towards the customer). *However, the blue/white pair is typically IN from CO and the orange/orange-white pair is OUT to Customer or subscriber.*
8. ☐ **Label all connections and pairs.** Label all wire pairs and connections, per company practice.
9. ☐ **Perform housekeeping/organization.** Good housekeeping is important before, during, and after splicing. Verify all pairs are properly spliced, dressed, grouped and secured: no loose wires.
10. ☐ **Test.** Test/verify connections for proper operation and make any corrections, changes or adjustments, per local company practice.

Table 2. Installing Smart Coil

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