MA-4006, MD-4006 and MU-4006 Mounting Assemblies

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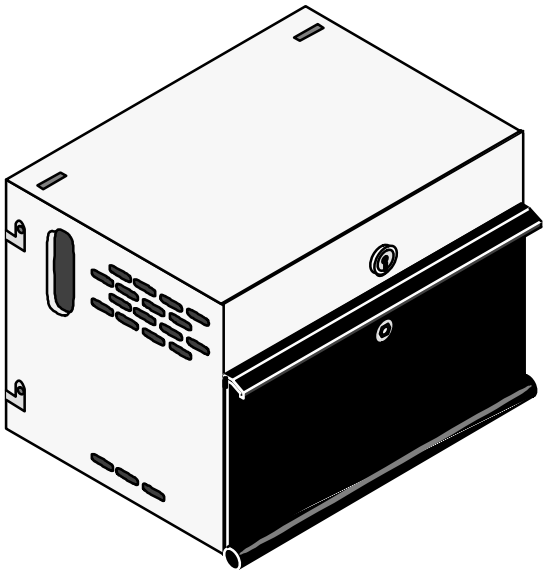

Figure 1. M( )–4006 Mounting Assembly (shown with optional security key lock)

1. GENERAL

1.1 Document Purpose

This practice provides general, installation and testing information for the Charles Industries MA–4006, MD–4006 and MU–4006 Mounting Assemblies (hereafter referred to as M( )–4006). The M( )–4006 is depicted in Figure 1.

1.2 Document Status

This document is reprinted to include a general editorial update.

1.3 Equipment Function

The M( )–4006 Mounting Assemblies are a family of 6-circuit analog, digital, or universal connectorized mounting assemblies for “400-type” modules. Each model in the family provides 8 mounting slots (positions), 6 of which are allocated for transmission modules. Slots 7 and 8 are dedicated for ringing and/or power supply plug-in units. All assembly models provide per-circuit fusing as part of the mounting assembly, via seven ¼-amp GMT fuses. The units are intended for indoor use at a customer’s premises.

1.4 Equipment Features

Common features of the M( )–4006 Mounting Assemblies include:

- Accepts 400-type plug-in modules
- Wall or horizontal surface mount
- Front unit access; side cable access
- Smoked, flame retardant, swing down front cover for easy plug-in access
- Detachable slide-off top cover for fuse access and cable access
- Detachable wall-mount backplate with hardware
- Equipped with 7 ¼-amp GMT fuses plus 2 spares
- 50-pin connectorized cable interface to facility and customer interface
- Common locking mechanism retains both covers; special hex tool provided
- Additional security available with optional key lock assembly (order separately)
- Static wrist strap jack
- Circuit ID card and pouch

1.5 Equipment Models

The M( )–4006 family consists of the MA–4006 (analog), MD–4006 (digital), and MU–4006 (universal) mounting assemblies. These assemblies differ only in the input/output connectorization on the “Customer Interface” side of the unit. See Table 1 and Figure 3.

1.5.1. MA–4006 Mounting Assembly (Analog)

The MA–4006 Mounting Assembly is used to house only analog (DCTE, NCTE) transmission plug-ins. The 50-pin male P1 connector provides the network side connections, while the 50-pin male P3 connector provides the customer interface.

1.5.2. MD–4006 Mounting Assembly (Digital)

The MD–4006 Mounting Assembly is used to house digital transmission plug-ins, such as DS1 Maintenance Connectors (NIU’s or “Smart Jacks”) or HDSL HTU–R units. The 50-pin male P1 connector provides all network side connections for the 6 circuits, while the 50-pin male P2 connector provides the customer interface in an RJ48H configuration.

1.5.3. MU–4006 Mounting Assembly (Universal)

The MU–4006 is a universally-wired mounting, capable of housing either analog (e.g. DCTE, NCTE) or digital transmission modules. Digital and analog modules, however, should not be mixed in a given installation. This assembly provides a total of three male 50-pin connectors for transmission lead input/output. P1 is dedicated for connection to the network side I/O. P2 and P3 are provided for the customer side lead connections. When the MU–4006 is used for analog services, the customer side P3 connector is used. When the MU–4006 is used for digital services, connector P2 contains all customer side connections in an RJ48H configuration.

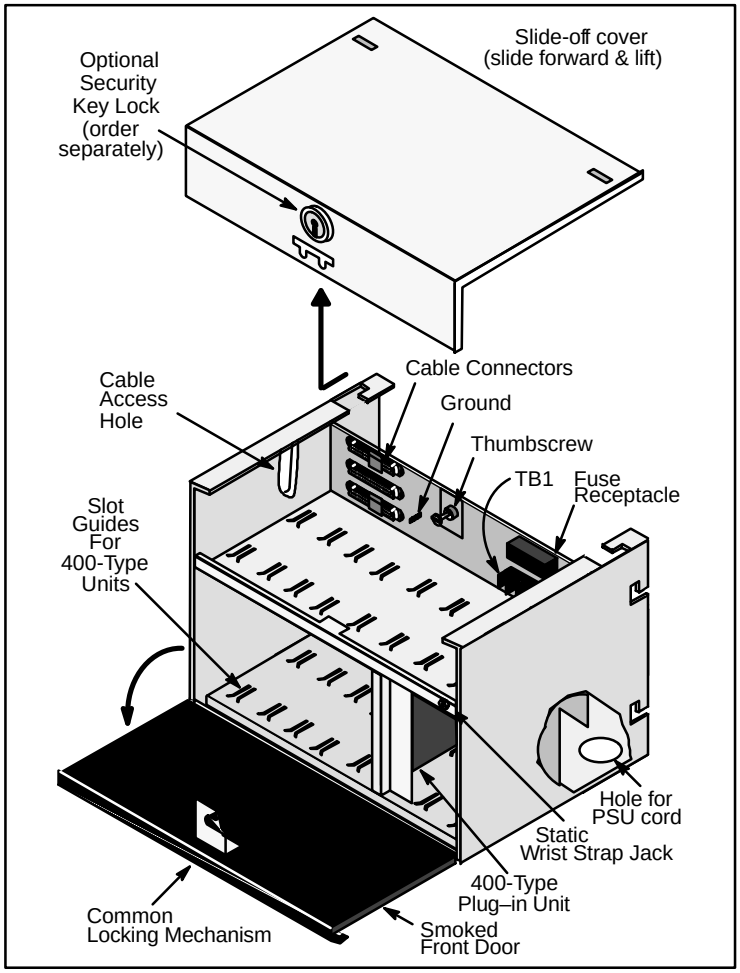

Figure 2. M( )–4006 in the Open Position, Backplate Removed

Table 1. P1, P2 and P3 Connector Functions

Model #	Connector	Connector Function for Circuits 1–6
MA–4006	P1 P3	Network interface (analog) Customer interface (analog)
MD–4006	P1 P2	Network interface (digital) Customer interface (digital)
MU–4006	P1 P2 P3	Customer interface (digital) Network interface (analog or digital) Customer interface (analog)

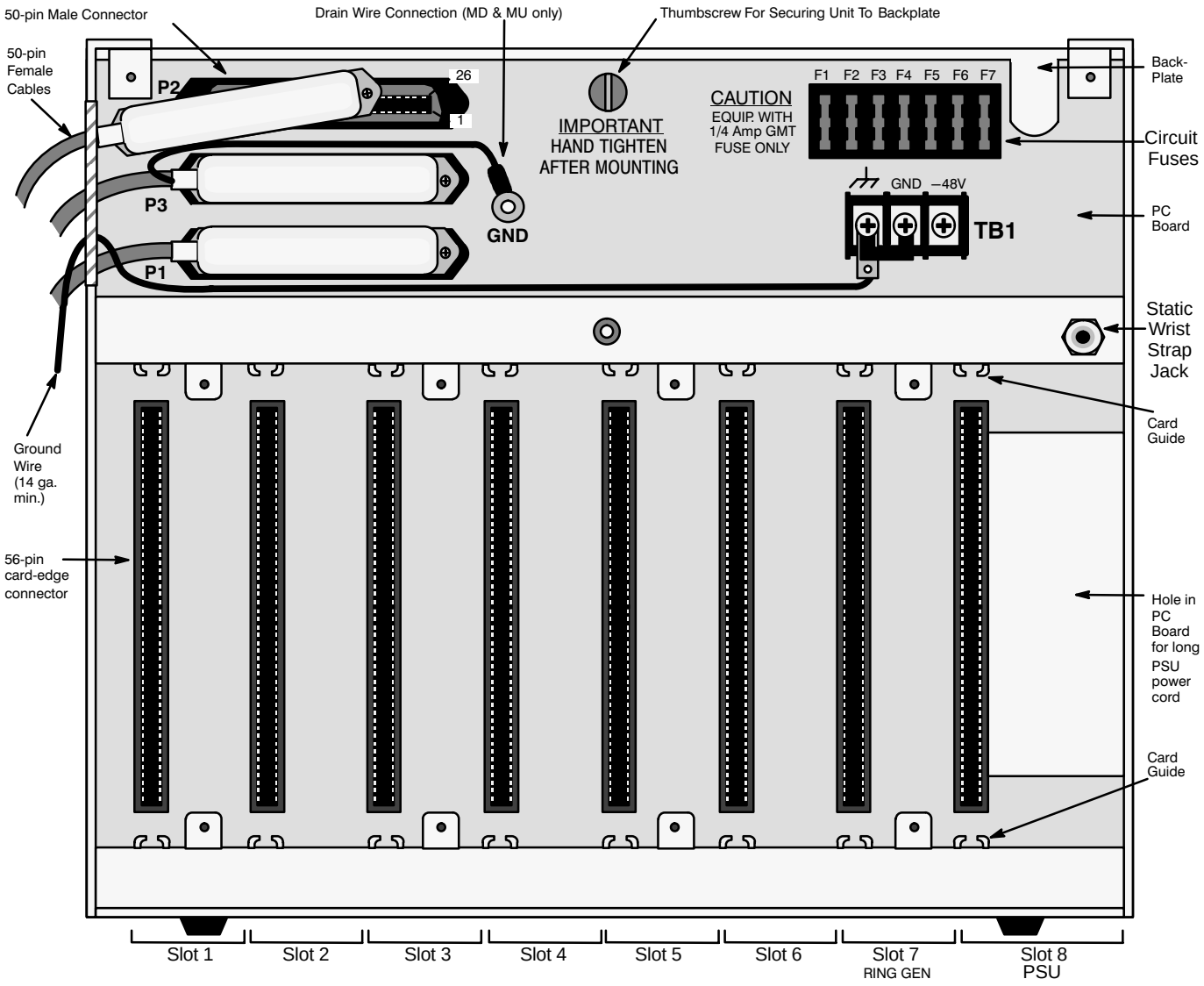

Figure 3. Front View of M( )–4006 Showing Cabling, Cover and Door Removed

2. INSPECTION

2.1 Inspect for Damages

Inspect the equipment thoroughly upon delivery. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company.

2.2 Equipment Identification

Charles Industries' equipment is identified by a model and issue number imprinted on the front panel or located elsewhere on the equipment. Each time a major engineering design change is made on the equipment, the issue number is advanced by 1 and imprinted on subsequent units manufactured. Therefore, be sure to include both the model number and its issue number when making inquiries about the equipment.

3. DESIGN

The M( )–4006 consists of the parts listed below, which are explained in more detail in the paragraphs that follow:

- Lower chassis (houses the plug-in units)
- Upper chassis (houses fuses and cabling)
- Front door (for plug-in unit access and security)
- Top cover (for cable and fuse access)
- Wall-mount backplate

3.1 Lower Chassis, Slots 1–6

The lower chassis of the M( )–4006 contains 8 slots (positions) for plug-in units. Slots 1 through 6 accommodate up to six 400-type transmission modules that conform to the wiring plan (see Table 2 through Figure 4).

Table 2. P1 Connector Wiring Diagram

Shelf Slot	Card-Edge Connector Pin #		Ribbon Connector P1 Pin #	Circuit #
1	41	→	26 T/TT	CKT 1
	47	→	01 R/TR	
	07	→	27 T1/RT	
	13	→	02 R1/RR	
2	41	→	28 T/TT	CKT 2
	47	→	03 R/TR	
	07	→	29 T1/RT	
	13	→	04 R1/RR	
3	41	→	30 T/TT	CKT 3
	47	→	05 R/TR	
	07	→	31 T1/RT	
	13	→	06 R1/RR	
4	41	→	32 T/TT	CKT 4
	47	→	07 R/TR	
	07	→	33 T1/RT	
	13	→	08 R1/RR	
5	41	→	34 T/TT	CKT 5
	47	→	09 R/TR	
	07	→	35 T1/RT	
	13	→	10 R1/RR	
6	41	→	36 T/TT	CKT 6
	47	→	11 R/TR	
	07	→	37 T1/RT	
	13	→	12 R1/RR	
	GND	→	50	
	GND	→	25	
Cable Facility Interface MU–4006, MA–4006, and MD–4006 all applications				

Table 3. P2 Connector Wiring Diagram

Shelf Slot	Card-Edge Connector Pin #		Ribbon Connector P2 Pin # (RJ48H)	Circuit #
1	55	→	39	CKT 1
	49	→	14	
	05	→	26	
	15	→	1	
2	55	→	40	CKT 2
	49	→	15	
	05	→	27	
	15	→	2	
3	55	→	41	CKT 3
	49	→	16	
	05	→	28	
	15	→	3	
4	55	→	42	CKT 4
	49	→	17	
	05	→	29	
	15	→	4	
5	55	→	43	CKT 5
	49	→	18	
	05	→	30	
	15	→	5	
6	55	→	44	CKT 6
	49	→	19	
	05	→	31	
	15	→	6	
	GND	→	50	
	GND	→	25	
Customer Side Interface MU–4006 AND MD–4006 Digital (T1) Applications				

Table 4. P3 Connector Wiring Diagram

Shelf Slot	Card-Edge Connector Pin #		Ribbon Connector P3 Pin #	Circuit #
1	55	→	26 T/DTT	CKT 1
	49	→	01 R/DTR	
	05	→	27 T1/DRT	
	15	→	02 R1/DRR	
	39, 23	→	28 E/TK5	
	37, 19	→	03 SG/MLG	
	36, 21	→	29 M/TK5	
	34, 01	→	04 SB/MLB	
2	55	→	30 T/DTT	CKT 2
	49	→	05 R/DTR	
	05	→	31 T1/DRT	
	15	→	06 R1/DRR	
	39, 23	→	32 E/TK5	
	37, 19	→	07 SG/MLG	
	36, 21	→	33 M/TK5	
	34, 01	→	08 SB/MLB	
3	55	→	34 T/DTT	CKT 3
	49	→	09 R/DTR	
	05	→	35 T1/DRT	
	15	→	10 R1/DRR	
	39, 23	→	36 E/TK5	
	37, 19	→	11 SG/MLG	
	36, 21	→	37 M/TK5	
	34, 01	→	12 SB/MLB	
4	55	→	38 T/DTT	CKT 4
	49	→	13 R/DTR	
	05	→	39 T1/DRT	
	15	→	14 R1/DRR	
	39, 23	→	40 E/TK5	
	37, 19	→	15 SG/MLG	
	36, 21	→	41 M/TK5	
	34, 01	→	16 SB/MLB	

Shelf Slot	Card-Edge Connector Pin #		Ribbon Connector P3 Pin #	Circuit #
5	55	→	42 T/DTT	CKT 5
	49	→	17 R/DTR	
	05	→	43 T1/DRT	
	15	→	18 R1/DRR	
	39, 23	→	44 E/TK5	
	37, 19	→	19 SG/MLG	
	36, 21	→	45 M/TK5	
	34, 01	→	20 SB/MLB	
6	55	→	46 T/DTT	CKT 6
	49	→	21 R/DTR	
	05	→	47 T1/DRT	
	15	→	22 R1/DRR	
	39, 23	→	48 E/TK5	
	37, 19	→	23 SG/MLG	
	36, 21	→	49 M/TK5	
	34, 01	→	24 SB/MLB	
	N/C	→	50	
	N/C	→	25	
Customer Side Interface MU–4006 AND MA–4006 Analog (NCTE, DCTE) Applications				

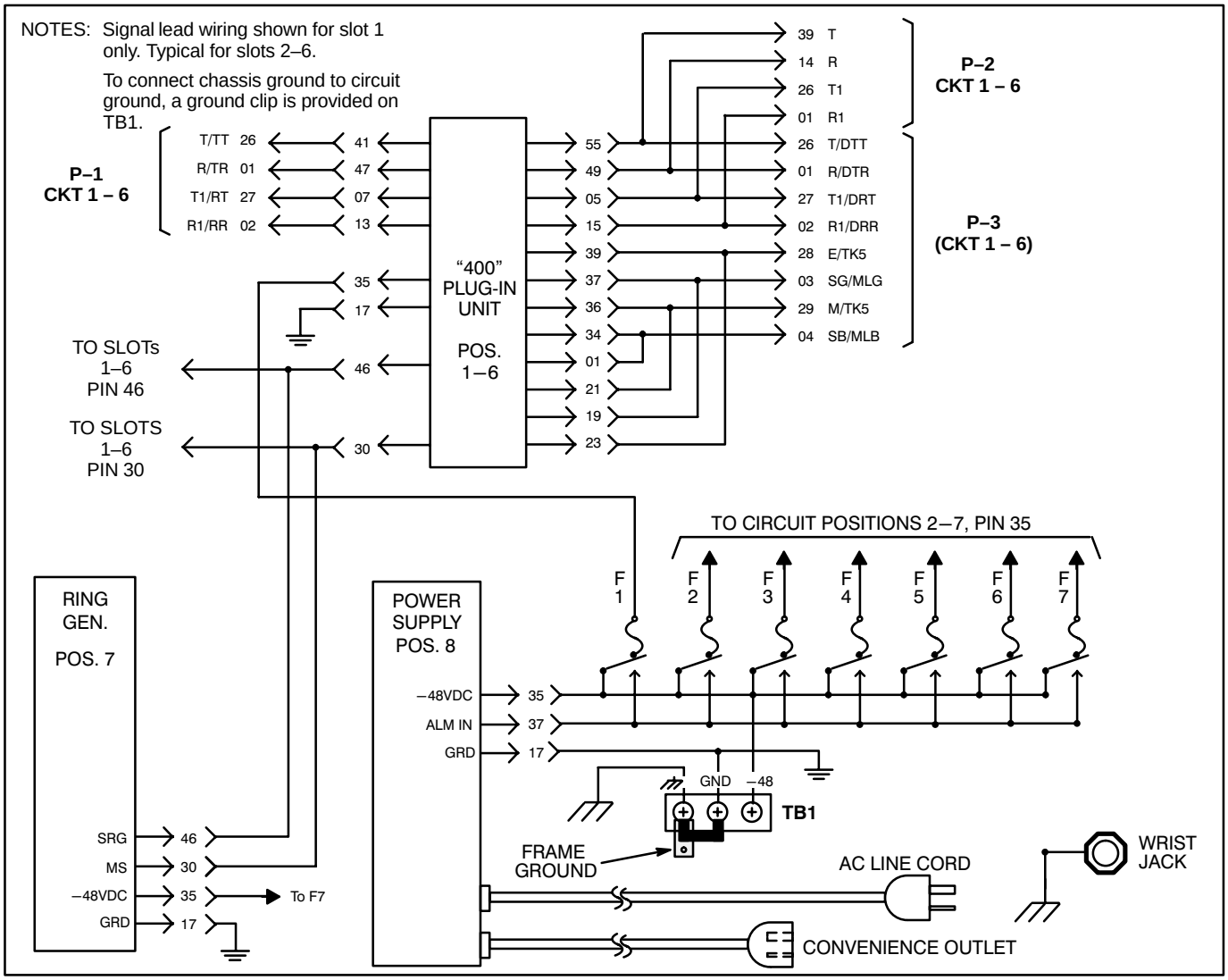

Figure 4. M ( )–4006 Mounting Assembly Wiring Diagram

3.2 Lower Chassis, Slot 7 (Ring Generator)

Slot 7 in the lower chassis of the mounting assembly is reserved for a Ring Generator Unit (RGU). If ringing is required, equip this position with Charles Industries 8505–40 10-watt, 20 Hz plug-in RGU.

3.3 Lower Chassis, Slot 8 (Power Supply)

Slot 8 in the lower chassis of the mounting assembly is reserved for a Power Supply Unit (PSU). If the plug-in modules are to be locally powered, equip this position with a Charles Industries 8548–11 48VDC, 1.5-amp PSU or 8548–13 48VDC, 2.5-amp PSU.

3.4 Upper Chassis, Cable Connectors

The upper chassis contains either two or three 50-pin male cable connectors, depending on the specific M()4006 mounting assembly, as shown in Table 5.

Table 5. Assembly Cable Connectors

Assembly Model #	P1 Facility	P2 Customer Digital	P2 Customer Analog
MA4006	X		X
MD4006	X	X	
MU4006	X	X	X

3.4.1. P1 – Network Connection

All network connections are made via the 50-pin male P1 connector located in the upper chassis of the assembly (see Figure 3).

Note: Transmit and receive pairs are combined in the same cable. To avoid possible crosstalk in digital service applications, it is recommended that cable lengths for the network connector P1, be limited to 100 feet between the M( )–4006 and the building entrance terminal.

3.4.2. P2 and P3 – Customer Connections

All customer connections are made via the 50-pin male connectors P2 (digital) and P3 (analog) located in the upper chassis of the assembly.

3.5 Upper Chassis, Fuse Receptacle

A fuse receptacle in the upper chassis can contain up to 7 fuses. The M( )–4006 mounting assemblies come equipped with 7 ¼-amp GMT fuses (installed in fuse positions F1 through F7) and 2 spares. Replace blown fuses with only ¼-amp GMT fuses, such as the Charles Industries part number 97–000205, which is a kit of 12 fuses.

3.6 Upper Chassis, TB1

The upper chassis also contains a 3-position terminal strip (TB1). Circuit ground and chassis ground are tied together at this location with a factory-installed jumper clip. This block also provides a wire lug for grounding the chassis.

3.7 Wrist Strap Jack

Located between the upper and lower chassis is a jack for a static wrist strap.

3.8 Front Door

A smoke-colored, plastic, flame retardant, swing-down door covers the lower chassis and contains a locking mechanism that secures both the front door and the top cover, to prevent tampering. This lock is a tamper-resistant pin-in-socket hex screw that is opened with a hex (KS19192) tool. A Charles Industries L-shaped hex wrench (part # 07–002047–0) is provided with the M( )–4006. An optional hex wrench with handle is also available (part # 07–002046–0).

3.9 Top Cover

A metal detachable (slide-off) top cover conceals and protects the fuses and cabling in the upper chassis of the M( )–4006. This cover can be ordered with an optional security lock kit, for additional security. (The Charles Industries part # 07–001666–A is a security lock kit with a barrel-type lock and two keys. This security key lock secures both the front door and the top cover.)

3.10 Backplate

The M( )–4006 comes equipped with a metal wall-mount backplate and mounting hardware. The backplate contains 4 posts, 2 on each side flange, upon which the assembly is mounted. Secure the backplate to a wood backboard or studs. See Figure 5.

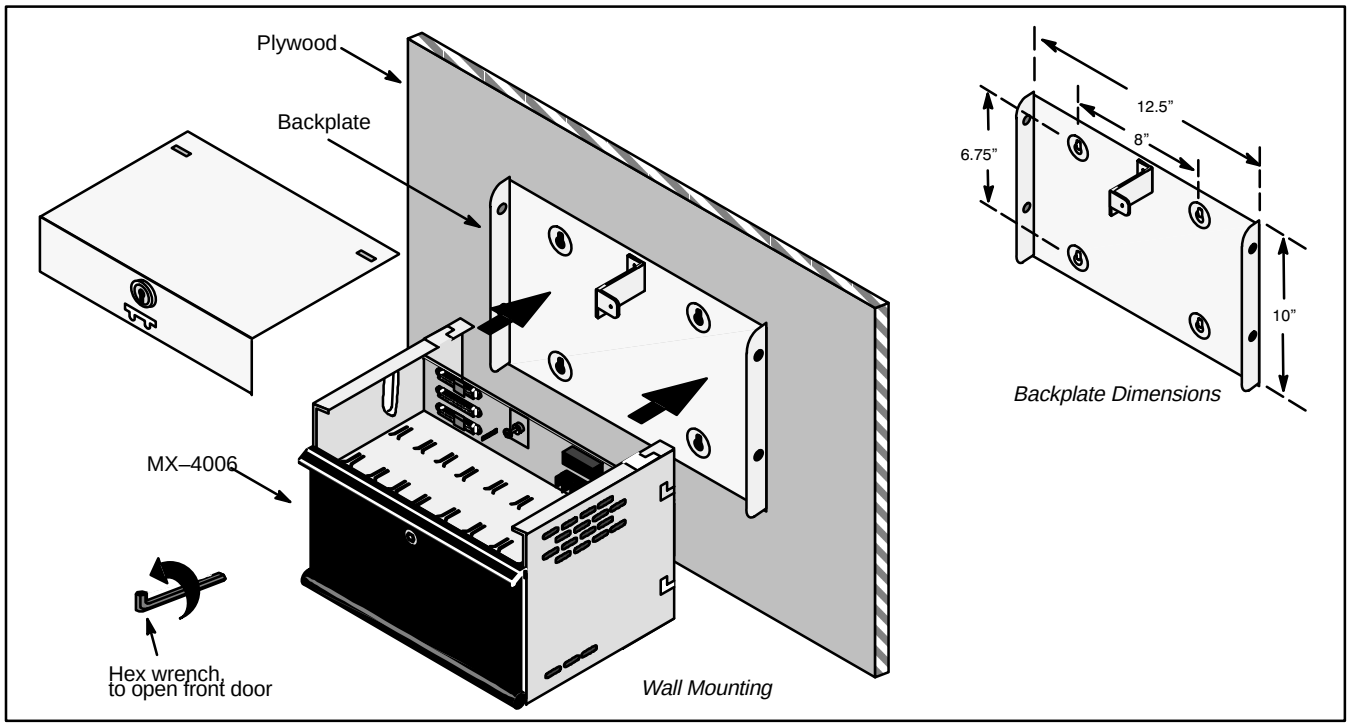

Figure 5. Wall-mounting the M( )–4006

4. INSTALLATION

The following procedure is suggested for easy wall-installation of the M( )–4006 after the unit has been removed from its packaging and the mounting location on the wall is known. Also see Figure 5.

Step	Action
1.	**Open Assembly.** Using the L-shaped hex tool provided, loosen the tamper-proof locking screw, drop down the front door, and slide off the top cover by pulling forward on it.
2.	**Remove Backplate.** Remove the backplate from the mounting assembly by loosening the thumbscrew in the upper chassis, then push down and then back on the backplate.
3.	**Mount Backplate.** Using the backplate as a template, mark the desired mounting locations. Drill pilot holes and attach the backplate to the backboard with the four #10 X 3/4" PHS wood screws provided. See Figure 5 for the backplate and drill hole dimensions.
4.	**Mount Assembly To Backplate.** Align the slots in the rear of the mounting assembly with the corresponding posts on the mounting bracket; push assembly back as far as it will go, then carefully press down on the assembly, until it is properly seated. Further secure the assembly to the backplate with the 'thumb screw' located at the rear top center of the mounting assembly. Refer to Figure 2, Figure 3, and Figure 5.
5.	**Wire Circuit Frame Ground.** Refer to Figure 3. Install a 14-gauge ground wire to the frame ground lug on TB1. Run this wire to a local earth ground at the site.
6.	**Install Power Supply (If Required).** Unpack power supply and uncoil the AC input cord and accessory outlet cord. Insert both cords through the PCB opening in the back of slot 8 marked PSU (Figure 3). Route the longer cord down through the opening in the bottom of the assembly (Figure 2). Route the (shorter) accessory cord up over the top of the card slots, then plug in the PSU. Install ring generator in position 7, marked RING GEN, if required.
7.	**Install Cabling.** Install one end of the I/O cable assemblies to the P1, P2, and P3 connectors located at the top of the assembly, as shown in Figure 3. Route the cables through the access hole on the left side of the assembly. If shielded cable with a drain wire is used for the P1 or P2 connections, connect this wire to the screw terminal as shown in Figure 3.

Step	Action
8.	**Install Plug-In Units.** The transmission plug-in units can be installed in their appropriate positions at this time.
9.	**Secure Assembly.** Before closing the mounting assembly, testing can be done at this time. After testing, secure the mounting assembly by installing the top cover by placing it on top of the mounting assembly and sliding it backwards until firmly secured. Then close and lock the front door with the appropriate hex wrench. Finally, if so equipped, lock the assembly with the optional security lock key.

5. TESTING

Before testing, insure that a ¼-amp GMT fuse is equipped in each of the 7 fuse holders. Insert the AC line cord into a suitable 120Vac, 3-wire outlet. The green LED on the installed power supply should be on. A blown fuse will be indicated by the red illuminated LED (EXT ALM) on the power supply.

All testing of modules installed in the mounting assemblies should be done in accordance with the applicable module Practice.

6. TECHNICAL ASSISTANCE

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

847–806–8500
847–806–8556 (FAX)
800–607–8500
techserv@charlesindustries.com (e-mail)

7. WARRANTY & CUSTOMER SERVICE

7.1 Warranty

Charles Industries, Ltd. offers an industry-leading, 5-year warranty on products manufactured by Charles Industries. 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.

Charles Industries, Ltd.
5600 Apollo Drive
Rolling Meadows, Illinois 60008–4049
847–806–6300 (Main Office)
847–806–6231 (FAX)

7.2 Field Repairs (In-Warranty Units)

Field repairs involving the replacement of components within a unit are not recommended and may void the warranty and compatibility with any applicable regulatory or agency requirements. If a unit needs repair, contact Charles Industries, Ltd. for replacement or repair instructions, or follow the *Repair Service Procedure* below.

7.3 Advanced Replacement Service (In-Warranty Units)

Charles Industries, Ltd. offers an "advanced replacement" service if a replacement unit is required as soon as possible. With this service, the unit will be shipped in the fastest manner consistent with the urgency of the situation. In most cases, there are no charges for in-warranty repairs, except for the transportation charges of the unit and for a testing and handling charge for units returned with no trouble found. Upon receipt of the advanced replacement unit, return the out-of-service unit in the carton in which the replacement was shipped, using the preaddressed shipping label provided. Call your customer service representative at the telephone number above for more details.

7.4 Standard Repair and Replacement Service (Both In-Warranty and Out-Of-Warranty Units)

Charles Industries, Ltd. offers a standard repair or exchange service for units either in- or out-of-warranty. With this service, units may be shipped to Charles Industries for either repair and quality testing or exchanged for a replacement unit, as determined by Charles Industries. Follow the *Repair Service Procedure* below to return units and to secure a repair or replacement. A handling charge applies for equipment returned with no trouble found. To obtain more details of this service and a schedule of prices, contact the CI Service Center at 217–932–5288 (FAX 217–932–2943).

Repair Service Procedure

1. Prepare, complete, and enclose a purchase order in the box with the equipment to be returned.

2. Include the following information:

   – Company name and address
   – Contact name and phone number
   – Inventory of equipment being shipped
   – Particulars as to the nature of the failure
   – Return shipping address

3. Ship the equipment, purchase order, and above-listed information, transportation prepaid, to the service center address shown below.

   CI Service Center
   503 N.E. 15th St., P.O. Box 339
   Casey, IL 62420–2054

4. Most repaired or replaced units will be returned within 30 or 45 days, depending on the product type and availability of repair parts. Repaired units are warranted for either 90 days from the date of repair or for the remaining unexpired portion of the original warranty, whichever is longer.

8. SPECIFICATIONS

The physical characteristics of the M( )–4006 Mounting Assemblies are as follows:

Table 6. Physical Specifications

Feature	U.S.	Metric
Height	10 inches	25.4 centimeters
Width	12.5 inches	31.75 centimeters
Depth	8.5 inches	21.6 centimeters
Weight	6 pounds	2.72 kilograms
Temperature	32 to 120° F	0 to 49° C
Humidity	To 95% (no condensation)	