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Practice Section 101913 Rev A

191300/191301 Apparatus Case

Contents

Figure 1. 1913 Apparatus Case

1. Description and Application

1.1 The 191300 and 191301 Apparatus Case (figure 1) provides enclosed wall or desktop mounting for two Type 10 modules. The Model 191300 includes an integral power rectifier/regulator which provides a regulated –24 or –48Vdc to the modules from an ac source. The Model 191301 is identical to the 191300 but does not include the rectifier/regulator circuitry. Both models are equipped to accomodate external –22Vdc to -56Vdc input power.

1.2 The 191300/01 Apparatus Case consists of a mounting chassis, two 56-pin wire-wrapping connectors (*J1* and *J2*) for connection to the associated Type 10 modules, one 14-positiion (*TB1*) and one 6-position (*TB3*) barrier-type screw terminal strip, and metal cover. External connections to the 1913 are made to the screw-terminal side of *TB1*, and *TB3.* The units can be factory-wired if the modules to be used are specified at the time of ordering.

1.3 The 191300/01 is designed to be either placed on a desktop or mounted on a wall. Wall mounting is accomplished by means of screws inserted through four keyhole slots in its baseplate.

1.4 The 191300 Apparatus Case supplies –24 or –48 Vdc to its associated modules from nominal 26Vac input. The ac input to the 191300 can be supplied from a conventional 117 Vac outlet when an external wall mount transformer is used. Option switch *S1* on the 191300's printed circuit board selects either –24 or –48Vdc to be supplied to the modules installed in the case. When modules providing DX signaling or sealing current are used in the 191300, the –48Vdc option must be selected.

2. Installation

For the remaining parts of this document that apply equally to the 191300 and 191301 both units will be refered to collectively as the 1913.

Inspection

2.1 The 1913 Apparatus Case should be visually inspected upon arrival in order to find possible damage incurred during shipment. If damage is noted, a claim should immediately be filed with the carrier. If stored, the case should be visually inspected again prior to installation.

Cover Removal

2.2 To install the 1913 Case, the protective metal cover enclosing the modules must be removed. The cover is held in place by four #4/40 phillips head machine screws located on either side of the cover. Remove the four screws and lift the cover straight upward; replace it by an opposite motion. Store the cover in a location where it will not be bent or otherwise damaged.

Mounting

2.3 The 1913 Case is supplied with four rubber feet for desktop use. If wall mounting is required, remove the rubber feet to allow the case to be mounted flush against the wall. Four mounting screws (not supplied) of a type suitable for the material of the wall on which the case will be mounted are required.

> **Caution 1:** When the 1913 Case is used to house modules with mercury-wetted relays (e.g., 6001 and 6002 DX Signaling modules), the 1913 **must** be wall mounted and the modules kept in an upright position to ensure proper relay operation.
>
> **Caution 2:** When wall mounted, the 1913 Case must be oriented so that the modules' faceplates are not facing downward. Otherwise, the modules may work loose from their connectors.

Options

2.4 One option switch must be set before the 191300 Apparatus Case is placed in service. Switch *S1* selects the voltage output to the modules housed in the 191300 when ac input is used (*S1* is not in the circuit when dc input is used). To provide –24Vdc output, set *S1* to the *24V* position. To provide –48Vdc output, set *S1* to the *48V* position. Switch *S1* is located on the module side of the printed circuit board below connector *J2* (see figure 2). For optioning information on the modules housed in the 1913, please refer to their individual practices.
Note: *Make sure that power is* **off** *when setting* S1 *on the 191300.*

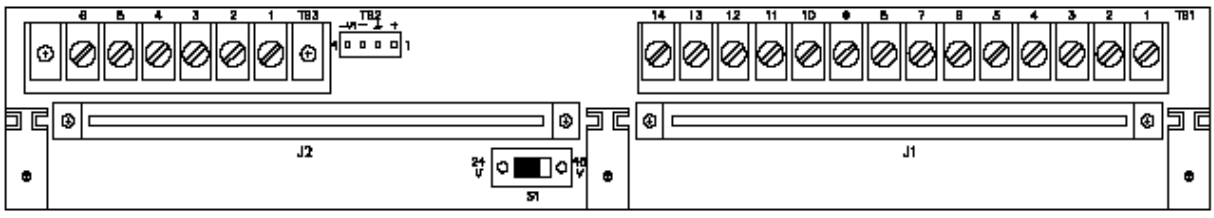


Figure 2. Option Switch and Terminal Block Locations

2.5 Before making any connections to the 1913, make sure that power is **off** and modules are **removed**. Modules should be put into place only **after** they are properly optioned and **after** wiring is completed.

2.6 Connections to be made to the 1913 depend upon the particular modules to be housed and powered. Refer to the practices of these modules to determine the leads that must be connected. Lead numbers referenced in the modules' practices are designated on the 56-pin module connectors of the 1913.

Note: ***Many Type 10 modules share common pin assignments. Thus, when the 1913 is wired for a particular module, other modules can, in many cases, be used interchangeably without changes to the 1913's original customer wiring. Be sure to check the practices before changing the wiring.***

2.7 All wiring associated with the 1913 Case is performed in four basic steps. First, any required connections between the two Type 10 modules (intermodule wiring) are made. Next, the connections to the facility are brought out to the pin side of terminal strips *TB1* and *TB3* (internal wiring). Next, external leads are connected to the screw-terminal side of *TB1* and *TB3* (external connections). Finally, the power connections are made. Refer to figure 2 and the wiring diagram (section 4 of this practice) while making installer connections to the 1913 as directed below.

Intermodule Wiring

2.8 Make all required intermodule connections by wire-wrapping jumpers between the 56-pin connectors *J1* and *J2*. Refer to the specific module practices to determine the leads that must be connected between the two modules, and install the jumpers as required.

Internal Wiring

2.9 Internal wiring consists of wire-wrapping jumpers between the 56-pin connectors of the Type 10 modules and terminal blocks *TB1* and *TB3*. Make these connections to the pin side of the terminal blocks (the screw terminal side is for termination of the external leads). The pins of both connectors are nondedicated except for positions *11* through *14* of terminal block *TB1*, which are reserved for external input power connections.

External Connections

2.10 Make external connections (except for power) to positions *1* through *10* of *TB1* and to positions *1* through *6* of *TB3*. If there are not enough terminals on *TB1* and *TB*3 to make all required connections, make the external connections by wire-wrapping directly to the 56-pin module connectors. Run all external cabling through the access hole in the side of the case.
Note: TB1 *and* TB3 *can be bypassed, if desired, by making external connections directly to the 56-pin module connectors.*

Power Connections

2.11 Make external power connections to positions *11* and *12* of *TB1* when using ac input (191300 only), or to positions *13* and *14* when using dc input. The 191300 requires nominal 26Vac input at 10VA maximum. When dc input is used, connect ground to *TB1* terminal *13* and negative battery (-24 or –48Vdc) to *TB1* terminal *14*. (if voltages other than –24 or –48Vdc are to be used, ensure that the positive lead is connected to *TB1-13* and the negative lead to *TB1-14.*)

2.12 Power is extended to the modules housed in the 1913 by connecting terminals *1* (ground) and *3* (-V) of *TB2* to the appropriate pins of *J1* and *J2* as directed in the modules' practices. For the 191300, when ac input is used, an unregulated dc power source is available at *TB2* terminal *4* for powering lamps or buzzers. This voltage is negative with respect to ground and is either -24 or -48Vdc, depending upon the setting of *S1*.

3.0 Circuit Description

This circuit description is intended to familiarize you with the 191300 Apparatus case for engineering and application purposes only. Attempts to troubleshoot the 191300 internally are not recommended. Troubleshooting procedures should be limited to those prescribed in section 6 of this practice. Please refer to the wiring diagram, section 4 of this practice, as an aid in following the circuit description.

3.1 *Power rectification/regulation* circuitry on the 191300 printed circuit board provides either –24 or –48Vdc to the modules from a nominal 26Vac input voltage.

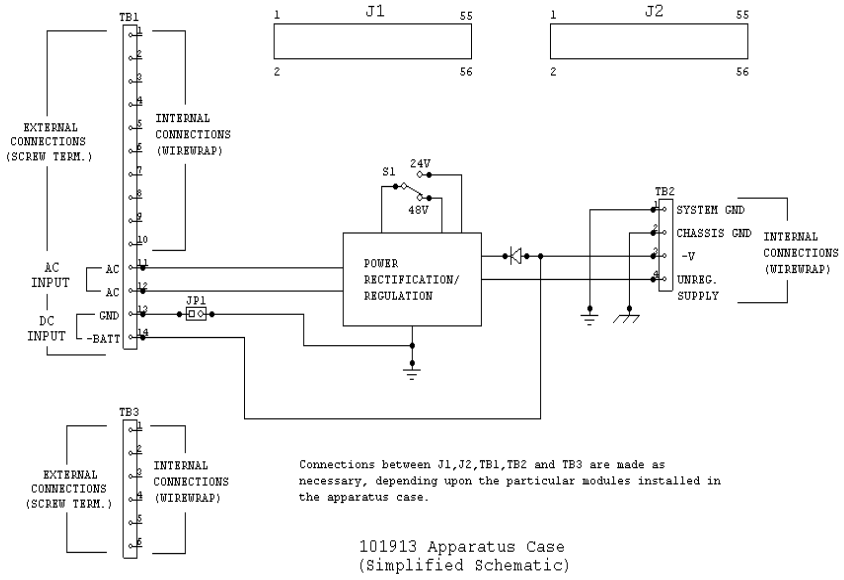
-24 Vdc Operation

3.2 With option switch *S1* set to the *24V* position, the 191300 uses a half-wave rectifier and a series voltage regulator to provide –24Vdc regulated supply voltage to the modules.

-48Vdc operation

3.3 When *S1* is set to the *48V* position, a capacitive voltage doubler is switched into the circuit, and the zener diode reference for the series voltage regulator is changed to provide –48Vdc regulated supply voltage to the modules.

4.0 Wiring Diagram



101913 Apparatus Case
(Simplified Schematic)

5.0 Specifications

Power input

ac (Model 191300): 26Vac, nominal (this can be supplied from commercial 117Vac when an external transformer is used. The transformer should supply 26Vac at 7.5VA.)

dc (Model 191300/01): -22 to –56 Vdc at 200ma maximum, filtered, ground referenced

Power output	Voltage (Model 191300): -22 to –26Vdc (no load output -29Vdc) or –44 to –52Vdc (no load output –56Vdc), switch selectable Ripple (Model 191300): 170mV peak-to-peak maximum (24V output) 140mVpeak-to-peak maximum (48V output) Current (Model 191300): 120mA maximum for both voltage ranges
Operating Environment	20° to 130° F (-7° to 54° C), humidity to 95% (no condensation
Dimensions	2.40 inches (6.10cm) high (Without Mounting Feet) 8.42 inches (21.39cm) deep 12.60 inches (32.00cm) wide
Weight	2 pounds 12 ounces (1.24kg) without modules

6. Testing and Troubleshooting

6.1 The Testing Guide checklist in this section may be used to assist in the installation, testing, or troubleshooting of the 1913 Apparatus Case. The checklist is intended as an aid in the localization of trouble within the 1913. If a case is suspected of being defective, a new one should be substituted and the test conducted again. If the substitute case operates correctly, the original case should be considered defective and returned to Accurate Electronics for repair or replacement. We strongly recommend that no internal (component-level) testing or repairs be attempted on the 1913 Apparatus case. Unauthorized testing or repairs may void the warranty.
Note: ***Warranty service does not include removal of permanent customer markings on Accurate Electronics' products, although an attempt will be made to do so. If a product must be marked*** **defective**, *we recommend that it be done on a piece of tape or on a removable stick-on label.*

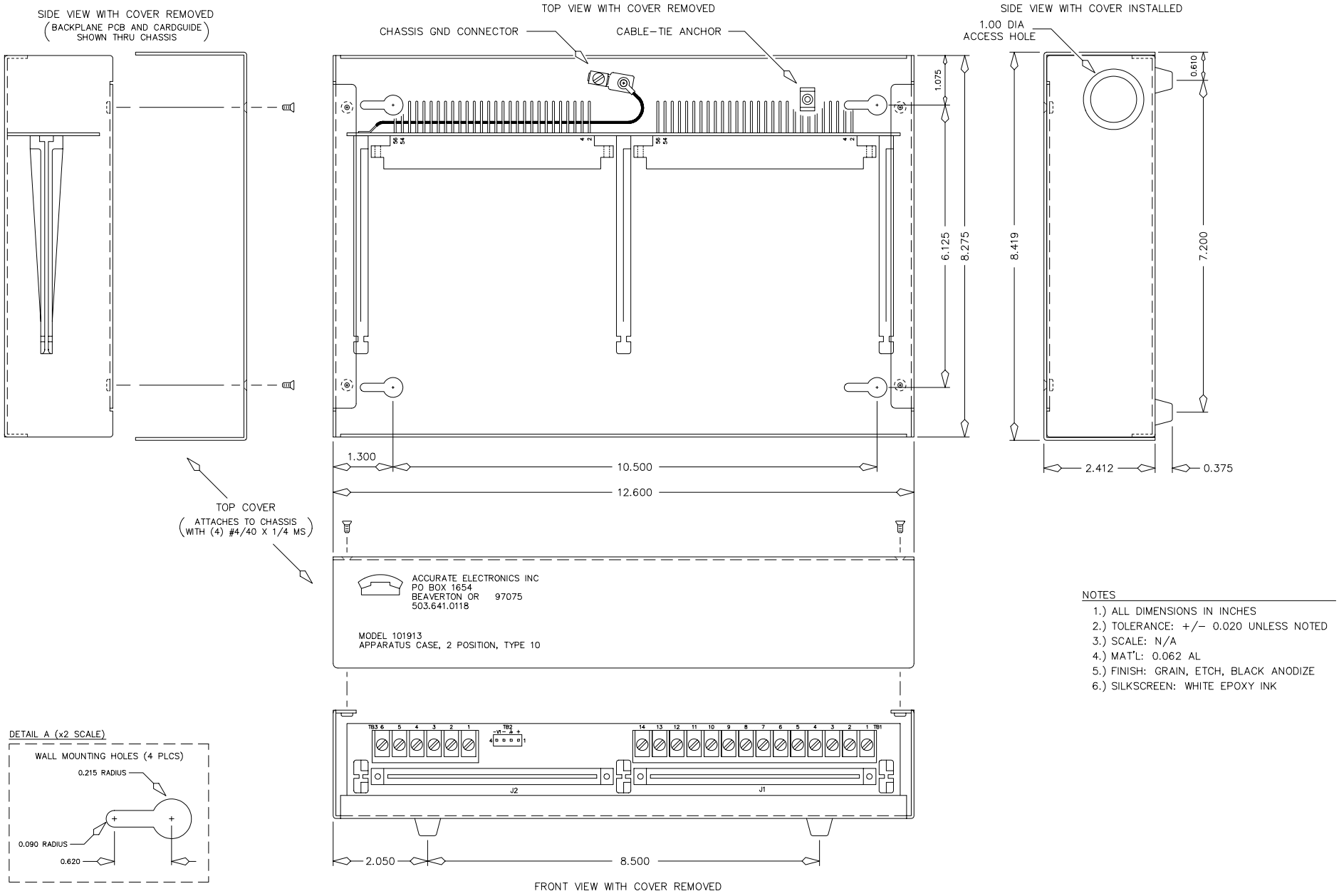
6.2 If a situation arises that is not covered in the Checklist, contact Accurate Electronics customer Service.

Repair and Return

6.3 Return the defective 1913 Apparatus Case, shipment prepaid to Accurate Electronics, Inc. (attn: repair and return). Accurate Electronics, Inc., 10850 SW 5th, Beaverton OR 97005. Enclose an explanation of the module's malfunction. Follow your company's standard procedure with regard to administrative paperwork. Accurate Electronics' will repair the case and ship it back to you. If the case is in warranty, no invoice will be issue

Test guide checklist

Test	Test procedure	Normal results	If normal conditions Are not met, verify:
Power to modules, -24 Vdc operation	Connect VOM set to 50Vdc scale across pins of *J1* and *J2* to which power and ground are connected. When using Type 10 modules, these are usually pins 35 (-BATT) and 17 (GROUND).	Measured voltage is –22 to –28Vdc .	Broken wires or connector pins . Switch *S1* properly set . Loose power connections to ac input terminals on *TB1* . Faulty transformer or external source .
Power to modules, -48Vdc operation	Connect VOM set to 100Vdc scale as instructed above.	Measured voltage is –42 to –56Vdc .	Same as above .
Note: *For testing and troubleshooting information on the modules used in the 1913 Apparatus case, refer to the practices on those modules. If trouble is encountered with modules mounted in the 1913 Apparatus Case, verify that switch* S1 *on the 1913 is in the correct position, that all connections are correct and secure, and that the modules are plugged completely into the correct positions.*			



NOTES

1.) ALL DIMENSIONS IN INCHES
2.) TOLERANCE: +/- 0.020 UNLESS NOTED
3.) SCALE: N/A
4.) MAT'L: 0.062 AL
5.) FINISH: GRAIN, ETCH, BLACK ANODIZE
6.) SILKSCREEN: WHITE EPOXY INK

Figure 3. 191300/01 Apparatus Case