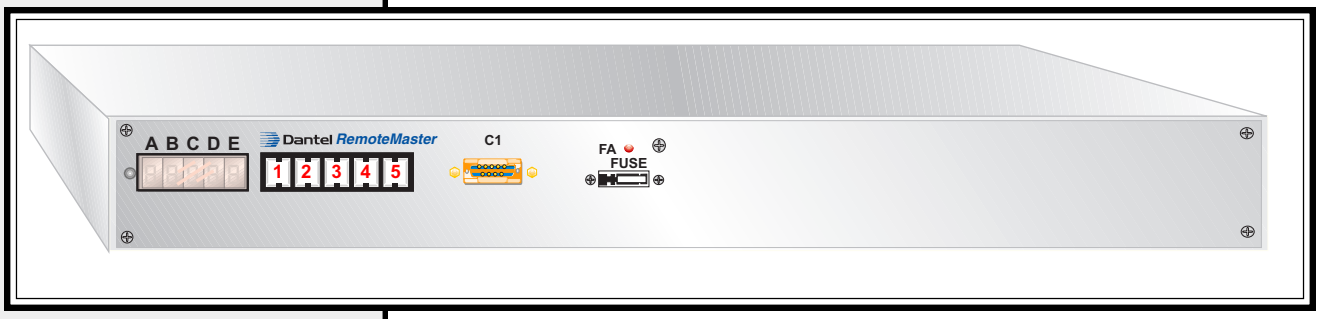
46132-41 REMOTEMASTER



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About this Practice:

This practice has been reissued to:

- Emphasize that RS-422 is designed for point-to-point communication and RS-485 is for multipoint communication.

Reissued Practices: Updated and new content can be identified by a banner in the right margin.

UPDATED

Issue date: August 2000

CAUTION

- Install or remove modules from the shelf only when the power is off. If you install a module in the shelf with the power on, the internal circuitry may suffer damage and the product warranty will be void.
- Remove and install circuit boards only in a static-safe environment (use antistatic wrist straps, smocks, footwear, etc.).
- Keep circuit boards in their antistatic bags when they are not in use.
- Do not ship or store circuit boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.
- For more complete information on electrostatic discharge safety precautions, refer to Bellcore™ Technical Reference # TR-NWT-000870.

ORDERING INFORMATION

NOTE: This section lists the different options available for this product. To order any of the available options, contact Dantel Inside Sales through our toll-free number, **1-800-432-6835.**

OPTION NUMBER	FEATURES
B15-46132-41	***RemoteMaster*; 64 discrete alarm inputs, 8 control outputs, 2 serial (TBOS) alarm interrogator ports, 2 RS-232/422/485 responder ports, 1 RS-232 configuration port**
A05-00826-00	**Wall-Mount Brackets**

GENERAL DESCRIPTION

The 46132-41 ***RemoteMaster*** is a master alarm system primarily intended for small sites. The ***RemoteMaster*** gathers alarm information from 64 ground-activated discrete alarm inputs. In addition, 8 on-board relays are available for use as controls and two serial ports interrogate TBOS equipment. All this alarm information is gathered and reported to two responder ports which send that information towards your Alarm Center.

A front panel LED display reports port status and alarm information. On-site configuration is quick and simple. The 46132-41 ***RemoteMaster*** differs from the other ***RemoteMasters***:

- Defaults to TABS protocol on its two responder ports
- Front panel configurable for TABS address (0-31)
- New backplane makes interconnection easier
- New power connections allow redundent power supplies

ABOUT THIS MANUAL

This manual is presented in two parts, ***Standard Installation*** and ***Custom Installation/Custom Configuration***.

Standard Installation

Use this section if your application requires a TABS responder and discrete alarm reporting only. The 46132-41 RemoteMaster is factory-configured for:

- TABS output
- 2400 baud, odd parity, 1 stop bit, 8 bit word length, RS-422
- Discrete alarm gathering only

All that remains is to mount the unit in the rack, wire the required alarms and responder ports and, from the front panel, set the TABS address.

GENERAL DESCRIPTION

Custom Installation and Custom Configuration

Use these sections if your application requires parameters other than the defaults shown above. These options could include:

- DCP, DCPF, or TBOS protocols on either of the two responder ports.
- Serial (TBOS) alarm polling
- RS-232 on responder ports
- Different baud rates

CIRCUIT DESCRIPTION

Fig.1 shows the functional schematic for the ***RemoteMaster.***

DISCRETE ALARM INPUTS

The ***RemoteMaster*** circuit board has 64 discrete alarm inputs that are optically isolated. Alarms 1-24 and 33-64 each have a single input that requires a ground to activate the alarm circuitry. Alarms 25-32 each have two inputs, one for negative battery (factory-wired) and one for ground.

TBOS ALARM INPUTS

NOTE:
Use RS-422 for point-to-point connections and RS-485 for multi-point connections.

NEW NOTE

Two TBOS interrogator ports poll TBOS equipment for alarm information. Each port polls up to 8 displays of information for a total of 16 displays on both ports. The data interface standard on each port is RS-422/485.

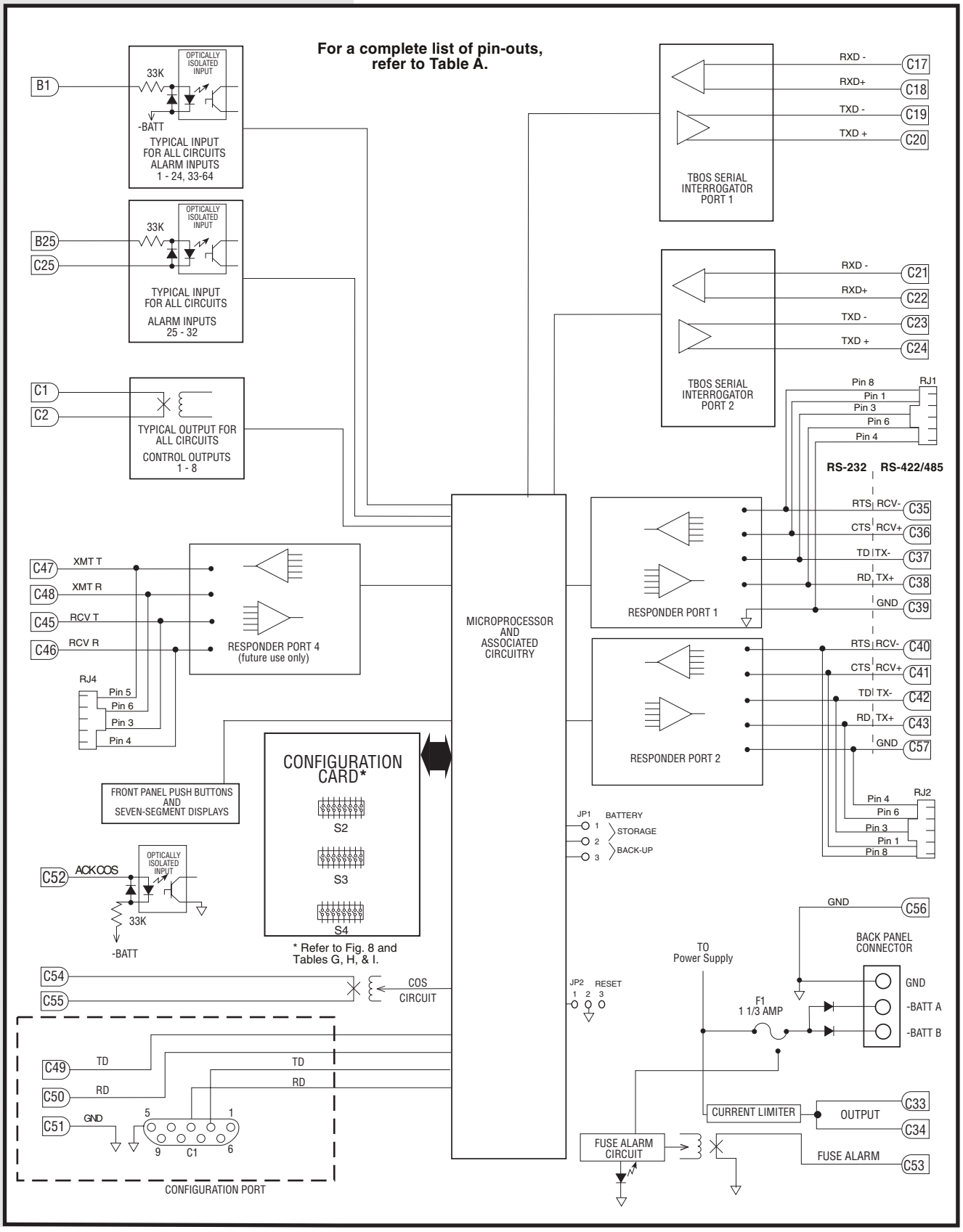
These ports are inactive by factory-default.

CONTROL OUTPUTS

The ***RemoteMaster*** circuit board has eight control outputs which each have two pins wired to normally open relay contacts.

CIRCUIT DESCRIPTION

FIG. 1 - FUNCTIONAL SCHEMATIC



NEW NOTE

NOTE:
Use RS-422 for point-to-point connections and RS-485 for multi-point connections.

RESPONDER PORTS

Responder ports send alarm information to alarm reporting equipment.

Ports 1 and 2 can be either an RS-422/485 (default) or RS-232 interface. The RS-422/485 receive input can be terminated with 182 ohms (switch option).

If RS-232 is used on ports 1 or 2, RTS/CTS handshaking can be used.

NOTE:
The 46132-41 RemoteMaster defaults to TABS protocol on its responder ports. Configuration of the TABS address can be performed from the front panel, eliminating the need to open the unit or supply an external terminal or computer.

Port 3 is not used.

Port 4 is not available for use at this time.

Both responder ports communicate with either DCP, DCPF, TBOS, or TABS protocol.

CONFIGURATION PORT

To program the ***RemoteMaster*** to operate with any protocols or options that differ from the factory default, an Ascii terminal can be connected to the RS-232 configuration port. The Ascii terminal connects to C1 on the front panel.

LOCAL ALARM AND ACKNOWLEDGEMENT

Wire external audible or visual devices, such as bells or lights, to the ***RemoteMaster*** for local alarm monitoring. When there is an alarm, a relay in the change-of-state (COS) circuit operates the device. If the alarm device is operating and another alarm occurs, the relay will pulse once.

Depending on how the ***RemoteMaster*** has been programmed, the relay returns to its non-alarm state either (1) when all the alarms clear or (2) when a timer expires after 15 minues. Manually reset the relay either by applying a ground at the ACK COS input (C52) or by pushing the front panel acknowledge button (button 4).

PUSH BUTTONS AND LED DISPLAY

On the front panel are five push buttons and five seven-segment LED displays. Using them, you can:

- Configure the TABS address of the responder ports
- Identify the configured TABS address
- Query alarms or failed TBOS displays
- Monitor activity on active TBOS and responder ports
- Reset the ***RemoteMaster's*** microprocessor
- Acknowledge alarms
- Identify alarm location

POWER

The ***RemoteMaster*** operates on -21 to -56VDC applied at a connector on the back panel. Power goes through fuse F1 (two amperes) to an on-board power supply. Power also goes to wire-wrap pins C33 and C34 on the backplane. These pins, which are limited to 15 mA of current, provide power to alarm inputs 25-32.

NOTE: *The 46132-41 RemoteMaster now provides redundent power hookups. Two separate external power supplies can be connected to the RemoteMaster unit. Either supply can power the unit should the other fail.*

WARNING:

When power is applied to the ***RemoteMaster***, negative battery voltage is present at pins C33 and C34 on the backplane. For safety, keep the plastic cover closed during normal operation.

If the fuse fails, the fuse alarm (FA) LED on the front panel lights. A relay also operates an external alarm.

STANDARD INSTALLATION

The 46132-41 is designed for those applications where the user desires a minimal setup time. In order to supply that, the 46132-41 RemoteMaster is factory configured to meet the following specifications:

- TABS output on the two responder ports
- 2400 baud, odd parity, 1 stop bit, 8 bit word length on both ports
- RS-422 on both ports
- 64 discrete alarms inputs (two serial TBOS ports can be enabled using an Ascii terminal or laptop, but are inactive by factory-default)

This section will describe those steps necessary to install the 46132-41 RemoteMaster if the defaults listed above apply.

SWITCHES AND STRAPS

All switches and straps have been factory set to provide the protocol, baud rate, and electrical interface described above. If any features are desired that differ from these, refer to the next section, ***Custom Installation***.

DEFAULT SWITCHES AND STRAPS	POSITION
JP1	1-2
JP2	2-3
S2	1-3,5,8 open (OFF)
S3	2,4,6,8 open (OFF)
S4	2,4,6,8 open (OFF)

EQUIPMENT MOUNTING

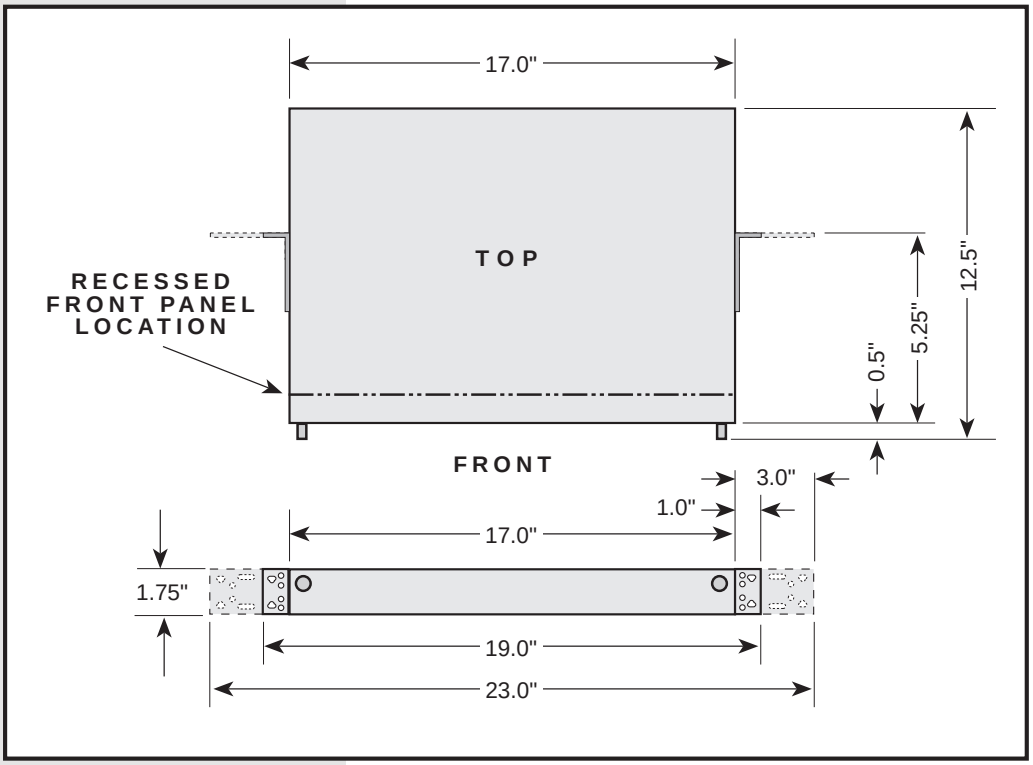
Brackets on the side of the shelf are installed for mounting the ***RemoteMaster*** in a 19-inch equipment rack. Refer to Fig. 2 for overall dimensions of the ***RemoteMaster***.

- For mounting in a 23-inch equipment rack, remove the brackets and reinstall them with the long sides extending out from the shelf.
- For wall mounting, replace the brackets with special wall mount brackets furnished as loose parts. The long side of each bracket mounts to the ***RemoteMaster***.

NOTE: *The wall-mount brackets are supplied only when specifically ordered. Refer to the* ***Ordering Information*** *section.*

CONTINUED . . .

FIG. 2 - DIMENSIONS

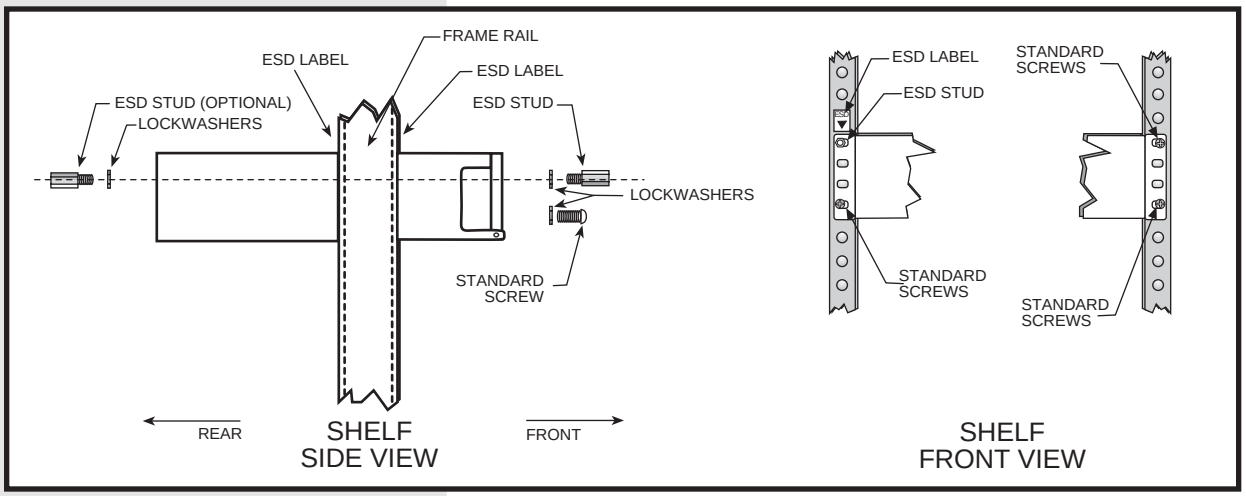


For wall mounting, attach the ***RemoteMaster*** where desired. Hardware is not supplied.

Refer to Fig. 3 for mounting the ***RemoteMaster*** in an equipment rack and follow the instructions below. Mounting hardware is supplied in a bag attached to the side of the shelf.

1. Facing the frame rail, place the ***RemoteMaster*** in the rack in the desired location. Fasten with three Phillips screws and lockwashers - two on the right side and one on the lower left side.
2. Install one ESD stud, with lockwasher, in the upper left corner.
3. Tighten the screws and ESD stud snugly. Make sure the stud is properly grounded to the frame rail.
4. Place an ESD label next to the ESD stud.
5. From the rear of the ***RemoteMaster***, install the other ESD stud and lockwasher into the frame next to the ***RemoteMaster***. Secure tightly, ensuring proper grounding of the ESD stud.
6. Place an ESD label next to the ESD stud.
7. End of equipment mounting.

FIG. 3 - MOUNTING THE *RemoteMaster*



WIRING

CAUTION: *To avoid possible damage to the unit, do not make any connections to the **RemoteMaster** if the power is connected and turned on.*

*When cabling to the **RemoteMaster**, leave sufficient slack in the cabling to permit the internal printed circuit board to slide out from the edge connector side (refer to Fig. 4). This allows replacement of the circuit board without having to rewire the connectors.*

When wiring the RemoteMaster, divide the wiring so about half of it comes out the right side of the unit and half of it extends out the left side of the unit.

BONDING AND GROUNDING CONDUCTOR AND CONNECTION REQUIREMENTS

To ensure positive connections, the following guidelines **shall be** adhered to:

1. All bonding and grounding conductors (wire, bus bars, or braided straps for example) **shall be** made of copper and of sufficiently low impedance to safely conduct any fault current.

   Aluminum **shall not** be used.

2. Conductors of dissimilar metals **shall not** be used in terminals or splicing connectors. Any flux, inhibitors, or compounds (where used) **shall be** suitable and **shall not** adversally affect the conductor, the installation, or the equipment.

CONTINUED . . .

3. All unplated connectors, braided straps, and bus bars **shall be** brought to a bright finish and coated with an antioxidant before crimp connections are made.

   Tinned, solder-plated, or silver-plated and other plated connection surfaces do not have to prepared this way, but they **shall be** clean and free of contaminants. Raceway fittings **shall be** tightened to provide a low-impedance path.

4. Multiple connectors **shall not** be secured by the same bolt assembly.

5. Any unplated connection surfaces used (if any) that are part of a grounding or bonding path **shall be** brought to a bright finish and coated with an antioxidant before being electrically connected.

6. All grounding and bonding conductors **shall be** connected by exothermic welding or compression type fittings to the greatest extent possible.

   Connector devices depending solely on solder **shall not** be used.

7. The following connector types **shall not** be used to terminate grounding or bonding connections:

   - ♦ Soldering lugs
   - ♦ Screwless (push-in)
   - ♦ Friction-fit

WIREWRAP CONNECTIONS

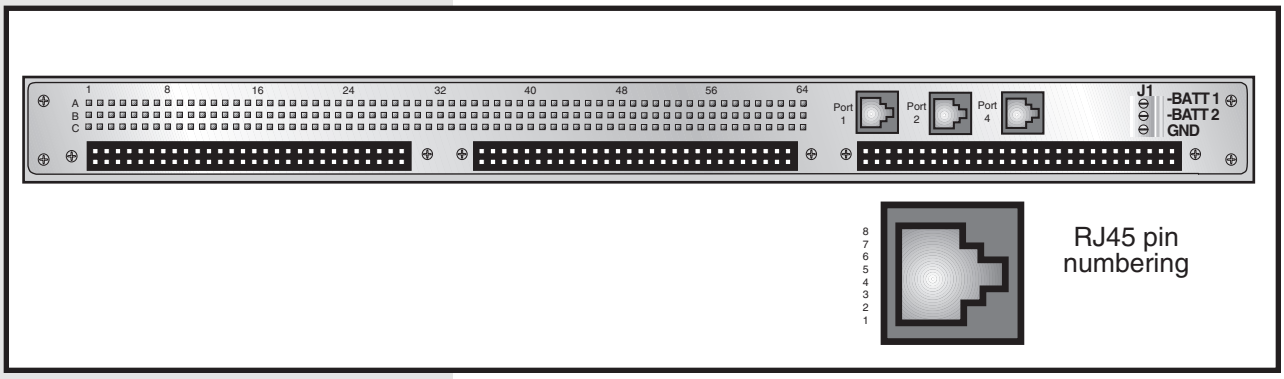
All connections to the 46132-41 RemoteMaster except power can be made using wirewrap pins located on the back of the unit. In addition, connection to the two digital responder ports can be made using the RJ45 connectors also located on the rear of the unit. Refer to Fig. 4 for the location of these pins and connectors and Table A for pin designations.

TABLE A - PIN DESIGNATIONS

ROW/PIN	DESIGNATION
ROW A	
A1 - A64	Signal return ground for discrete alarms 1 through 64
ROW B	
B1 - B64	Discrete alarm inputs 1 through 64
ROW C	
C1 - C16	Control point relays (C1-C2, C3-C4, C5-C6, and so on)
C17 - C20	Serial (TBOS) interrogator port #1
C21 - C24	Serial (TBOS) interrogator port #2
C25 - C32	-Battery input for discrete alarms 25 through 32 (factory wired)
C33 - C34	-Battery (fused)
C35 - C39	Responder Port #1
C40 - C43	Responder Port #2
C44 - C48	Responder Port #4 (not available at this time)
C49 - C51	Configuration Port (duplicates DB9 on front panel)
C52	ACK COS (acknowledges Change Of State relay)
C53	FUSE ALARM (provides a ground if front panel fuse blows)
C54 - C55	Change Of State (COS) relay
C56 - C57	GND
C58 - C64	unused
PORT 1	
Pin 1	Responder Port 1 CTS (RS-232) or RX+ (RS-422)
Pin 2	not used
Pin 3	Responder Port 1 TD (RS-232) or TX- (RS-422)
Pin 4	Responder Port 1 GND
Pin 5	Responder Port 1 GND
Pin 6	Responder Port 1 RD (RS-232) or TX+ (RS-422)
Pin 7	not used
Pin 8	Responder Port 1 RTS (RS-232) or RX- (RS-422)
PORT 2	
Pin 1	Responder Port 2 CTS (RS-232) or RX+ (RS-422)
Pin 2	not used
Pin 3	Responder Port 2 TD (RS-232) or TX- (RS-422)
Pin 4	Responder Port 2 GND
Pin 5	Responder Port 2 GND
Pin 6	Responder Port 2 RD (RS-232) or TX+ (RS-422)
Pin 7	not used
Pin 8	Responder Port 2 RTS (RS-232) or RX- (RS-422)

MORE DETAILS . . .

FIG. 4 - 46132-41 REMOTEMASTER BACKPLANE



1. DISCRETE ALARM INPUTS

Wire the discrete alarm inputs referring to Table B.

PINS	DESIGNATION
A1 through A64	Signal Ground Return (one per alarm input)
B1 through B64	Discrete Alarm Inputs 1 through 64
C25 through C32	-Battery Inputs for Alarms 25 through 32 (see note below)
C33, C34	-Battery Supply for C25 through C32 (see note below)

TABLE B - DISCRETE ALARM INPUTS

NOTE: *Alarm inputs 1-24 and 33-64 are ground-activated. Inputs 25-32 are differential intputs. This means they can be wired for either ground-input or -battery input. The 46132-41 is factory-strapped with -battery already wired to the negative side of inputs 25-32. If -battery inputs are desired, remove the factory wires on C25 through C32 (these now become the alarm inputs) and ground B25 through B32.*

2. Control Points

Wire the control point relays referring to Table C.

Table C - Control Point Relay Outputs

PINS	DESIGNATION
C1 and C2	Control Relay #1
C3 and C4	Control Relay #2
C5 and C6	Control Relay #3
C7 and C8	Control Relay #4
C9 and C10	Control Relay #5
C11 and C12	Control Relay #6
C13 and C14	Control Relay #7
C15 and C16	Control Relay #8

3. Serial (TBOS) Ports

If required, wire the TBOS inputs referring to Table D.

Table D - TBOS Input Ports

PIN	DESIGNATION
C17	TBOS Port 1 RX-
C18	TBOS Port 1 RX+
C19	TBOS Port 1 TX-
C20	TBOS Port 1 TX+
C21	TBOS Port 2 RX-
C22	TBOS Port 2 RX+
C23	TBOS Port 2 TX-
C24	TBOS Port 2 TX+

4. Responder Port 1

Wire Responder Port 1 referring to Table E.

Table E - Responder Port 1

RJ-1 PIN	WIREWRAP PIN	DESIGNATION
8	C35	RS-232 RTS or RS422/485 RX- (default)
1	C36	RS-232 CTS or RS422/485 RX+ (default)
3	C37	RS-232 TD or RS422/485 TX- (default)
6	C38	RS-232 RD or RS422/485 TX+ (default)
4	C39	RS-232 GND

CONTINUED . . .

5. Responder Port 2

Wire Responder Port 2 referring to Table F.

Table F - Responder Port 2

RJ-2 PIN	PIN	DESIGNATION
8	C40	RS-232 RTS or RS422/485 RX- (default)
1	C41	RS-232 CTS or RS422/485 RX+ (default)
3	C42	RS-232 TD or RS422/485 TX- (default)
6	C43	RS-232 RD or RS422/485 TX+ (default)
4	C57	RS-232 GND

6. Configuration Port

For this application -

- ♦ TABS output on one or two digital ports
- ♦ 2400 baud, odd parity, 1 stop bit, 8 bit word length on both ports
- ♦ RS-422 on both ports
- ♦ Only discrete alarm inputs

- the configuration port is not required. The next section, ***Custom Installation***, describes the use of the configuration port for those applications requiring parameters different from the ones shown above.

7. Miscellaneous Features

Wire, as needed, the extra features described in Table G.

Table G - Miscellaneous Features

PIN(S)	DESIGNATION
C52	Acknowledge COS Relay (apply a ground to acknowledge COS)
C53	Fuse Alarm (ground output when fuse blows)
C54 and C55	COS Relay (Change Of State)
C56	GND
C44-C48	Responder Port 4 (not available at this time)
C58-C64	Not Used

CONTINUED . . .

8. Wire Power

Note:

Connect chassis ground to the ground lug located on the side of the ***RemoteMaster***. Do not connect chassis ground to the power connector.

Chassis and signal grounds are isolated from each other.

Connect power to J1, located in the upper right corner of the backplane.

The 46132-41 RemoteMaster provides redundent power hook-ups. Two separate external power supplies can be connected to the RemoteMaster unit. Either supply can power the unit should the other fail.

Refer to Fig. 5. The power connector J1 is labeled as follows:

- **-Batt 1**

  Connect to power supply #1, -24 to -56 VDC.

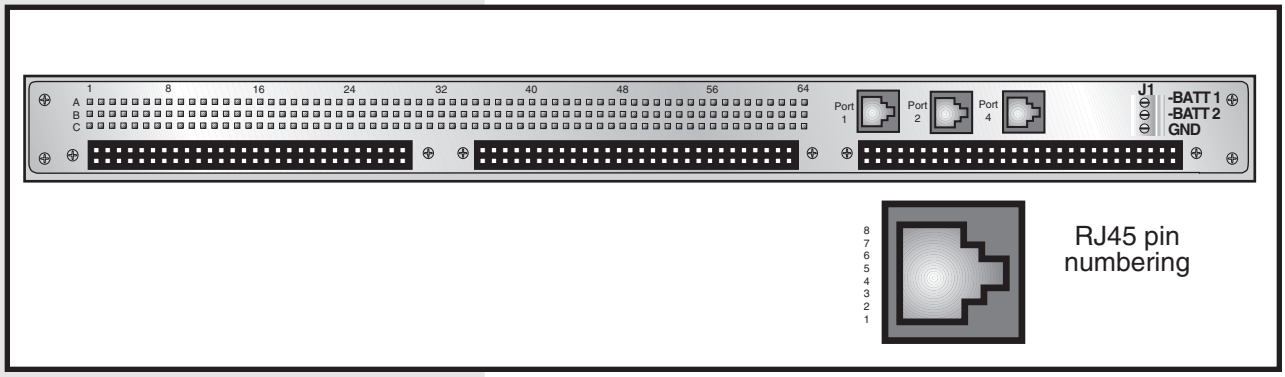
- **-Batt 2**

  Connect to power supply #2, -24 to -56 VDC.

- **GND**

  Connect to battery return.

Fig. 5 - 46132-41 RemoteMaster Backplane



TABS Address Selection

The 46132-41 RemoteMaster is factory-set for the following defaults:

- TABS output on one or two digital ports (starts with display 0)
- 2400 baud, odd parity, 1 stop bit, 8 bit word length on both ports
- RS-422 on both ports
- Only discrete alarm inputs

If these are the desired settings, all that remains after installation is to set the TABS address on the two responder ports. If parameters other than these are desired, refer to the next section, ***Custom Installation.***

SETTING THE TABS ADDRESS

Immediately following power-up, the following sequence of events takes place.

Power On Self Test

This is a self-diagnostic that the RemoteMaster performs on itself every time power is applied. This test takes approximately 3 seconds. After the POST, there are two possible situations:

- There is no configuration in memory. (Because it has never been configured, or because the memory has been cleared.)
- There is a configuration in memory.

NOTE: *If, during the POST, the configuration in memory is discovered to be corrupted, the memory will be cleared.*

No Configuration in Memory

If there is no configuration in memory, the front panel display will show **"Addr"**. This is a prompt for the user to enter the TABS address desired. The unit will not be polling its serial ports (they are inactive by default) or responding to any polls from the alarm master. The front panel switches do not function as normal, but rather as described in the following steps.

1. Press button 1 to change the display to **"0"** and increment the number up one each time it is pressed. Upon reaching **"31"**, the display wraps around to **"0"** again.

   Press button 2 to decrement the number down one each time it is pressed. Upon reaching **"0"**, the display wraps around to **"31"**.

2. Using buttons 1 and 2, select the desired TABS address. This address will apply to both responder ports 1 and 2.

NOTE: *There is no timeout for this step. An address must be selected before the RemoteMaster will do anything. After an address has been selected there will be a 30 second timeout, at which time the unit will begin normal operation.*

3. After selecting the desired address, press button 5 to apply that address to both TABS ports and place the RemoteMaster in normal operating mode. The front panel buttons will now operate as normal (refer to the ***Operation*** section), the responder ports will begin responding to polls from the alarm master, and the configuration port will be available for configuration modification.

NOTE: *Pressing button 5 will not do anything unless an address has been selected first.*

CONTINUED . . .

NOTE:

Press front panel buttons 1 and 2 at the same time during normal operation to display the configured TABS address of port 1 on the front panel display.

Pre-existing Configuration in Memory

If the 46132-41 RemoteMaster has been configured previously, there are two possibilities:

- At least one responder port has been configured for TABS.
- No responder ports are currently configured for TABS.

If at least one responder port has been configured for TABS, following the Power On Self Test the front panel will display the address of the first port configured for TABS. Press buttons 1 or 2 to change the address if desired. Press button 5 to select the address displayed and begin normal operation. There is a timeout of 30 seconds, at which time the unit will begin normal operation based on the configuration in memory.

If the responder ports have all been configured for protocol other than TABS, the unit will begin normal operation immediately after the Power On Self Test.

CUSTOM INSTALLATION

This section describes those steps necessary to install the ***RemoteMaster*** in those applications where parameters are desired other than the factory defaults. Factory defaults are:

- TABS output on one or two digital ports
- 2400 baud, odd parity, 1 stop bit, 8 bit word length on both ports
- RS-422 on both ports
- Only discrete alarm inputs

If the settings shown above are the desired settings, refer to the previous section, ***Standard Installation***.

If settings are desired that differ from the above, such as enabling the TBOS ports, different responder port protocols, baud rates, etc., this section includes:

- Switch and Strap Settings
- Equipment Mounting
- Wiring
- Configuration
- Troubleshooting.

SWITCH AND STRAP SETTINGS

Switches are provided for setting the electrical interface of the responder ports. These are located on a small subassembly located in the middle of the main board.

Remove the five screws on the front of the unit. Refer to Fig. 6. Pull out the printed circuit board to expose the switches and straps. Refer to Fig. 7 for the locations.

FIG. 6 - SCREWS SECURING MAIN BOARD

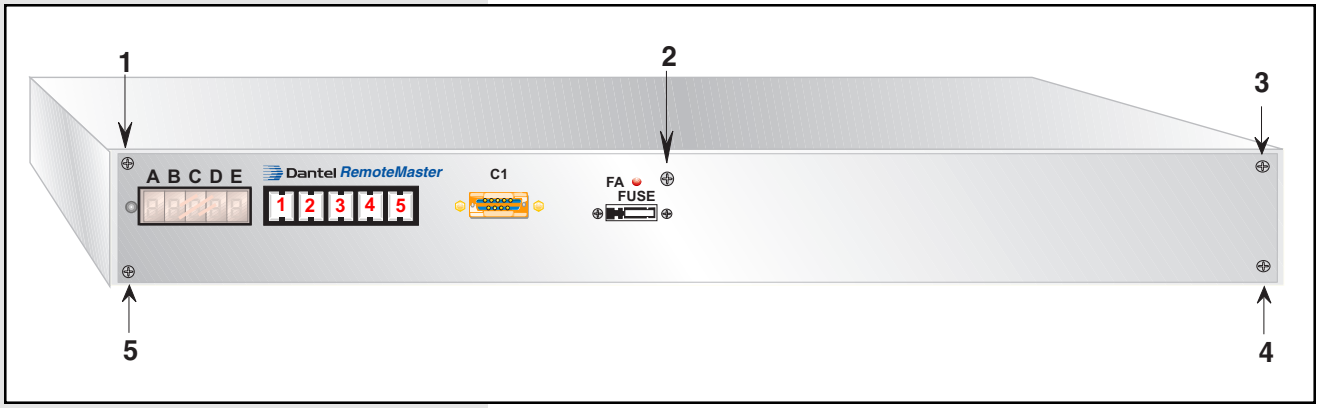
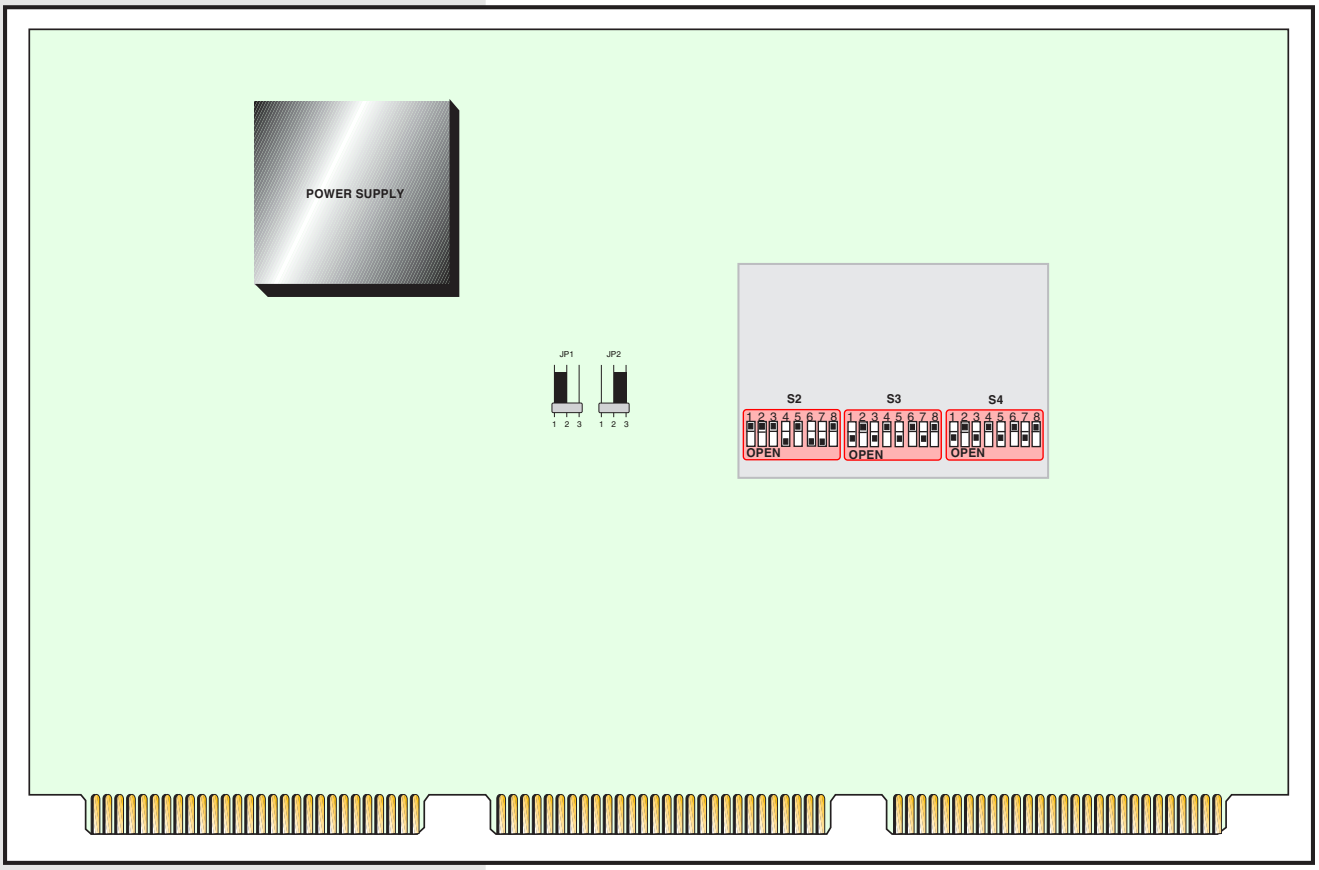


FIG. 7 - SWITCH AND STRAP LOCATIONS



1. TBOS PORTS

The TBOS receive ports are factory-terminated with 182 ohms and no switches are required.

NOTE:
Use RS-422 for point-to-point connections and RS-485 for multi-point connections.

NEW NOTE

CONTINUED . . .

2. Responder Port 1

Refer to Table H to set the switches and straps for Responder Port 1. The factory setting is RS-422 terminated.

Table H - Responder Port 1 Switch and Strap Settings

	Switch 2			Switch 3							
	S2-1	S2-3	S2-4	S3-1	S3-2	S3-3	S3-4	S3-5	S3-6	S3-7	S3-8
RS-232	OFF	OFF	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF
RS422/485											
Terminated	ON	ON	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Unterminated	OFF	ON	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON

ON = CLOSED
OFF = OPEN

3. Responder Port 2

Refer to Table I to set the switches and straps for Responder Port 2. The factory setting is RS-422 terminated.

Table I - Responder Port 2 Switch and Strap Settings

	Switch 2			Switch 4							
	S2-2	S2-5	S2-6	S4-1	S4-2	S4-3	S4-4	S4-5	S4-6	S4-7	S4-8
RS-232	OFF	OFF	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF
RS422/485											
Terminated	ON	ON	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Unterminated	OFF	ON	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON

ON = CLOSED
OFF = OPEN

4. Battery Back-up

Refer to Table J to set the on-board battery switches.

Table J - Battery Switches

BATTERY BACKUP	SWITCH
Enabled	S2-7 OFF (OPEN); S2-8 ON (CLOSED)
Disabled	S2-7 ON (CLOSED); S2-8 OFF (OPEN)

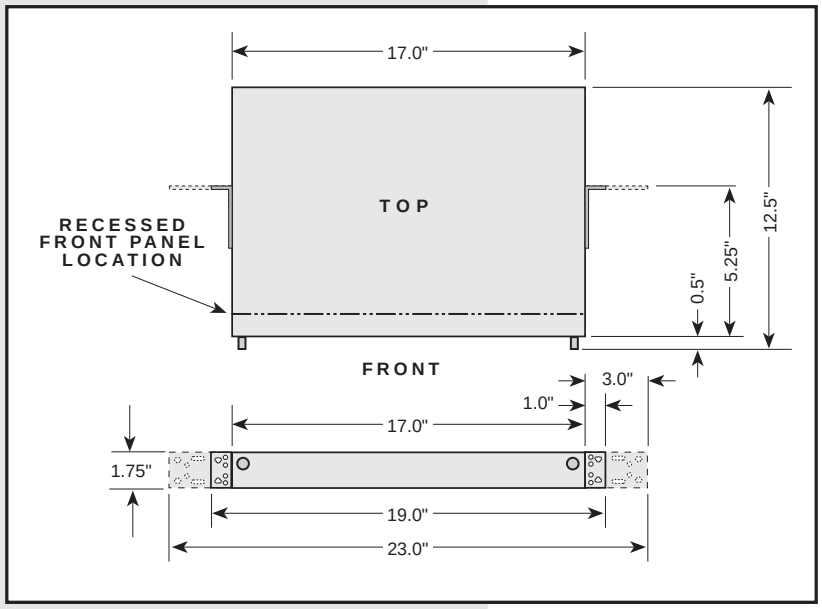
EQUIPMENT MOUNTING

Brackets on the side of the shelf are installed for mounting the ***RemoteMaster*** in a 19-inch equipment rack. Refer to Fig. 8 for overall dimensions of the ***RemoteMaster***.

- For mounting in a 23-inch equipment rack, remove the brackets and reinstall them with the long sides extending out from the shelf.
- For wall mounting, replace the brackets with special wall mount brackets furnished as loose parts. The long side of each bracket mounts to the ***RemoteMaster***.

NOTE: *The special brackets are supplied only when specifically ordered. Refer to the* ***Ordering Information*** *section.*

FIG. 8 - DIMENSIONS

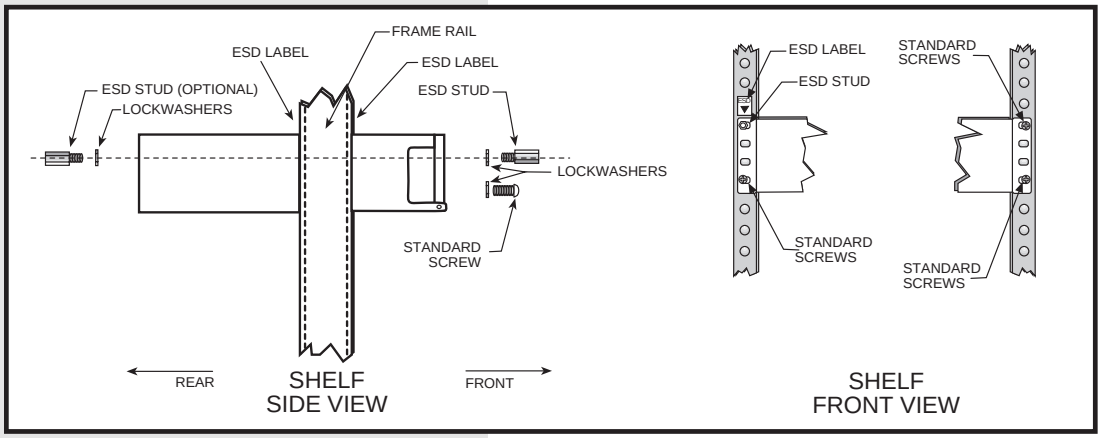


For wall mounting, attach the ***RemoteMaster*** where desired. Hardware is not supplied.

Refer to Fig. 9 for mounting the ***RemoteMaster*** in an equipment rack and follow the instructions below. Mounting hardware is supplied in a bag attached to the side of the shelf.

1. Facing the frame rail, place the ***RemoteMaster*** in the rack in the desired location. Fasten with three Phillips screws and lockwashers - two on the right side and one on the lower left side.
2. Install one ESD stud, with lockwasher, in the upper left corner.
3. Tighten the screws and ESD stud snugly. Make sure the stud is properly grounded to the frame rail.
4. Place an ESD label next to the ESD stud.
5. From the rear of the ***RemoteMaster***, install the other ESD stud and lockwasher into the frame next to the ***RemoteMaster***. Secure tightly, ensuring proper grounding of the ESD stud.
6. Place an ESD label next to the ESD stud.
7. End of equipment mounting.

FIG. 9 - MOUNTING THE *RemoteMaster*



WIRING

CAUTION: *To avoid possible damage to the unit, do not make any connections to the* ***RemoteMaster*** *if the power is connected and turned on.*

When wiring the RemoteMaster, divide the wiring so about half of it comes out the right side of the unit and half of it extends out the left side of the unit.

BONDING AND GROUNDING CONDUCTOR AND CONNECTION REQUIREMENTS

To ensure positive connections, the following guidelines **shall be** adhered to:

1. All bonding and grounding conductors (wire, bus bars, or braided straps for example) **shall be** made of copper and of sufficiently low impedance to safely conduct any fault current.

   Aluminum **shall not** be used.

2. Conductors of dissimilar metals **shall not** be used in terminals or splicing connectors. Any flux, inhibitors, or compounds (where used) **shall be** suitable and **shall not** adversally affect the conductor, the installation, or the equipment.

3. All unplated connectors, braided straps, and bus bars **shall be** brought to a bright finish and coated with an antioxidant before crimp connections are made.

   Tinned, solder-plated, or silver-plated and other plated connection surfaces do not have to prepared this way, but they **shall be** clean and free of contaminants. Raceway fittings **shall be** tightened to provide a low-impedance path.

CONTINUED . . .

4. Multiple connectors **shall not** be secured by the same bolt assembly.
5. Any unplated connection surfaces used (if any) that are part of a grounding or bonding path **shall be** brought to a bright finish and coated with an antioxidant before being electrically connected.
6. All grounding and bonding conductors **shall be** connected by exothermic welding or compression type fittings to the greatest extent possible.

   Connector devices depending solely on solder **shall not** be used.
7. The following connector types **shall not** be used to terminate grounding or bonding connections:

   - Soldering lugs
   - Screwless (push-in)
   - Friction-fit

WIREWRAP CONNECTIONS

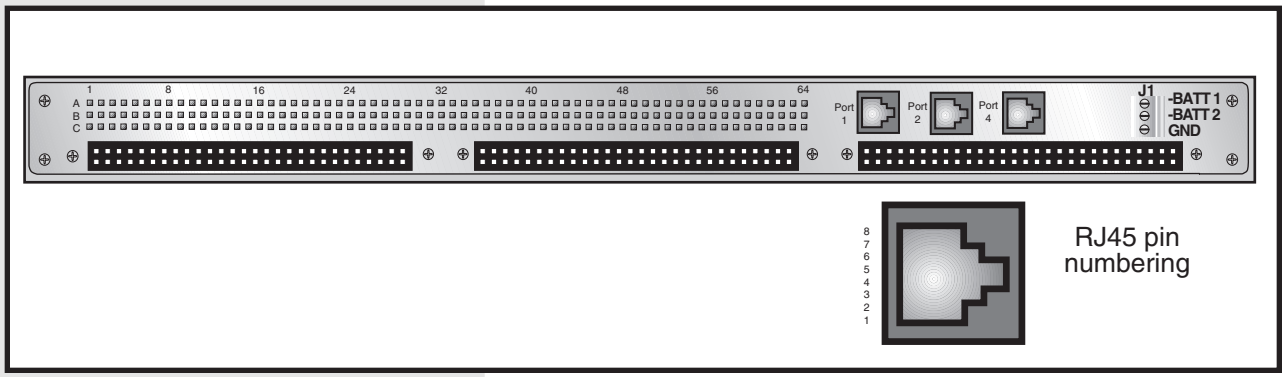
All connections to the 46132-41 RemoteMaster except power can be made using wirewrap pins located on the back of the unit. In addition, connection to the two digital responder ports can be made using the RJ45 connectors also located on the rear of the unit. Refer to Fig. 10 for the location of these pins and connectors and Table K for pin designations.

TABLE K - PIN DESIGNATIONS

ROW/PIN	DESIGNATION
ROW A	
A1 - A64	Signal return ground for discrete alarms 1 through 64
ROW B	
B1 - B64	Discrete alarm inputs 1 through 64
ROW C	
C1 - C16	Control point relays (C1-C2, C3-C4, C5-C6, and so on)
C17 - C20	Serial (TBOS) interrogator port #1
C21 - C24	Serial (TBOS) interrogator port #2
C25 - C32	-Battery input for discrete alarms 25 through 32 (factory wired)
C33 - C34	-Battery (fused)
C35 - C39	Responder Port #1
C40 - C43	Responder Port #2
C44 - C48	Responder Port #4 (not available at this time)
C49 - C51	Configuration Port (duplicates DB9 on front panel)
C52	ACK COS (acknowledges Change Of State relay)
C53	FUSE ALARM (provides a ground if front panel fuse blows)
C54 - C55	Change Of State (COS) relay
C56 - C57	GND
C58 - C64	unused
PORT 1	
Pin 1	Responder Port 1 CTS (RS-232) or RX+ (RS-422)
Pin 2	not used
Pin 3	Responder Port 1 TD (RS-232) or TX- (RS-422)
Pin 4	Responder Port 1 GND
Pin 5	Responder Port 1 GND
Pin 6	Responder Port 1 RD (RS-232) or TX+ (RS-422)
Pin 7	not used
Pin 8	Responder Port 1 RTS (RS-232) or RX- (RS-422)
PORT 2	
Pin 1	Responder Port 2 CTS (RS-232) or RX+ (RS-422)
Pin 2	not used
Pin 3	Responder Port 2 TD (RS-232) or TX- (RS-422)
Pin 4	Responder Port 2 GND
Pin 5	Responder Port 2 GND
Pin 6	Responder Port 2 RD (RS-232) or TX+ (RS-422)
Pin 7	not used
Pin 8	Responder Port 2 RTS (RS-232) or RX- (RS-422)

MORE DETAILS . . .

FIG. 10 - 46132-41 REMOTEMASTER BACKPLANE



1. DISCRETE ALARM INPUTS

Wire the discrete alarm inputs referring to Table L.

TABLE L - DISCRETE ALARM INPUTS

PINS	DESIGNATION
A1 through A64	Signal Ground Return (one per alarm input)
B1 through B64	Discrete Alarm Inputs 1 through 64
C25 through C32	-Battery Inputs for Alarms 25 through 32 (see note below)
C33, C34	-Battery Supply for C25 through C32 (see note below)

NOTE: *Alarm inputs 1-24 and 33-64 are ground-activated. Inputs 25-32 are differential intputs. This means they can be wired for either ground-input or -battery input. The 46132-41 is factory-strapped with -battery already wired to the negative side of inputs 25-32. If -battery inputs are desired, remove the factory wires on C25 through C32 (these now become the alarm inputs) and ground B25 through B32.*

2. Control Points

Wire the control point relays referring to Table M.

Table M - Control Point Relay Outputs

PINS	DESIGNATION
C1 and C2	Control Relay #1
C3 and C4	Control Relay #2
C5 and C6	Control Relay #3
C7 and C8	Control Relay #4
C9 and C10	Control Relay #5
C11 and C12	Control Relay #6
C13 and C14	Control Relay #7
C15 and C16	Control Relay #8

3. Serial (TBOS) Ports

If required, wire the TBOS inputs referring to Table N.

Table N - TBOS Input Ports

PIN	DESIGNATION
C17	TBOS Port 1 RX-
C18	TBOS Port 1 RX+
C19	TBOS Port 1 TX-
C20	TBOS Port 1 TX+
C21	TBOS Port 2 RX-
C22	TBOS Port 2 RX+
C23	TBOS Port 2 TX-
C24	TBOS Port 2 TX+

4. Responder Port 1

Wire Responder Port 1 referring to Table O.

Table O - Responder Port 1

PIN	DESIGNATION
C35	RS-232 RTS or RS422/485 RX- (default)
C36	RS-232 CTS or RS422/485 RX+ (default)
C37	RS-232 TD or RS422/485 TX- (default)
C38	RS-232 RD or RS422/485 TX+ (default)
C39	RS-232 GND

CONTINUED . . .

5. Responder Port 2

Wire Responder Port 2 referring to Table P.

Table P - Responder Port 2

PIN	DESIGNATION
C40	RS-232 RTS or RS422/485 RX- (default)
C41	RS-232 CTS or RS422/485 RX+ (default)
C42	RS-232 TD or RS422/485 TX- (default)
C43	RS-232 RD or RS422/485 TX+ (default)
C57	RS-232 GND

6. Miscellaneous Features

Wire, as needed, the extra features described in Table Q.

Table Q - Miscellaneous Features

PIN(S)	DESIGNATION
C52	Acknowledge COS Relay (apply a ground to acknowledge COS)
C53	Fuse Alarm (ground output when fuse blows)
C54 and C55	COS Relay (Change Of State)
C56	GND
C44-C48 C58-C64	Not Used

CONTINUED . . .

NOTE:

Connect chassis ground to the ground lug located on the side of the ***RemoteMaster***. Do not connect chassis ground to the power connector.

Chassis and signal grounds are isolated from each other.

8. WIRE POWER

Connect power to J1, located in the upper right corner of the backplane.

The 46132-41 RemoteMaster provides redundent power hook-ups. Two separate external power supplies can be connected to the RemoteMaster unit. Either supply can power the unit should the other fail.

Refer to Fig. 11. The power connector J1 is labeled as follows:

- **-Batt 1**

  Connect to power supply #1, -24 to -56 VDC.

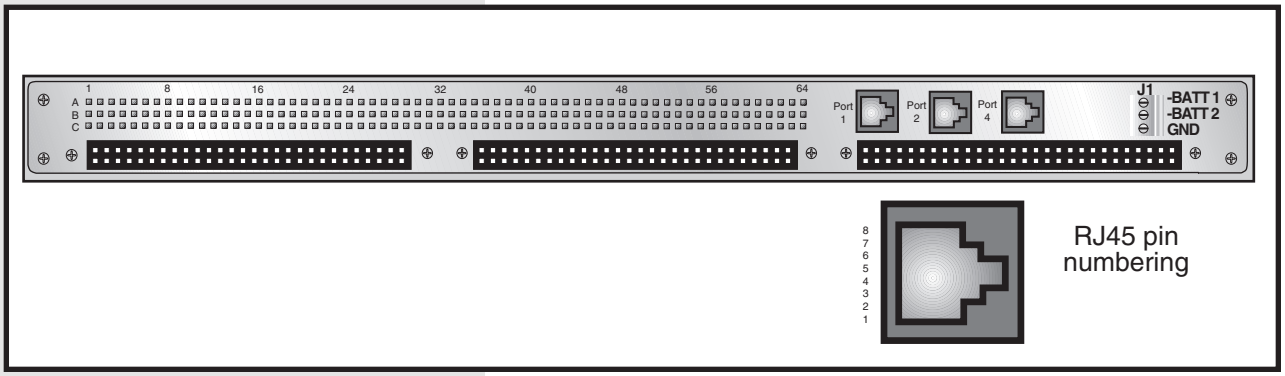
- **-Batt 2**

  Connect to power supply #2, -24 to -56 VDC.

- **GND**

  Connect to battery return (ground).

FIG. 11 - 46132-41 REMOTEMASTER BACKPLANE



CUSTOM CONFIGURATION

In most cases, the 46132-41 Remotemaster will require little, if any changes to the factory default settings. In those situations where parameters or features are desired that differ from the factory default, the ***RemoteMaster*** must be configured with an Ascii terminal before it will operate properly. The configuration is battery backed-up.

Immediately following power-up, the following sequence of events takes place.

Power On Self Test

This is a self-diagnostic that the RemoteMaster performs on itself every time power is applied. This test takes approximately 3 seconds. After the POST, there are two possible situations:

- There is no configuration in memory. (Because it has never been configured, or because the memory has been cleared.)
- There is a configuration in memory.

No Configuration in Memory

If there is no configuration in memory, the front panel display will show **"Addr"**. This is a prompt for the user to enter the TABS address desired. The unit will not be polling its serial ports (they are inactive by default) or responding to any polls from the alarm master. The front panel switches do not function as normal, but rather as described in the following steps.

1. Press button 1 to change the display to **"0"** and increment the number up one each time it is pressed. Upon reaching **"31"**, the display wraps around to **"0"** again.

   Press button 2 to decrement the number down one each time it is pressed. Upon reaching **"0"**, the display wraps around to **"31"**.

2. Using buttons 1 and 2, select the desired TABS address. This address will apply to both responder ports 1 and 2.

NOTE: *There is no timeout for this step. An address must be selected before the RemoteMaster will do anything.*

3. After selecting the desired address, press button 5 to apply that address to both TABS ports and place the RemoteMaster in normal operating mode. The front panel buttons will now operate as normal (refer to the ***Operation*** section), the responder ports will begin responding to polls from the alarm master, and the configuration port will be available for configuration modification.

NOTE: *Pressing button 5 will not do anything unless an address has been selected first.*

CONTINUED . . .

NOTE:

If port 1 has been configured for TABS protocol, press front panel buttons 1 and 2 at the same time during normal operation to display the configured TABS address of port 1 on the front panel display.

Pre-existing Configuration in Memory

If the 46132-41 RemoteMaster has been configured previously, there are two possibilities:

- At least one responder port has been configured for TABS.
- No responder ports are currently configured for TABS.

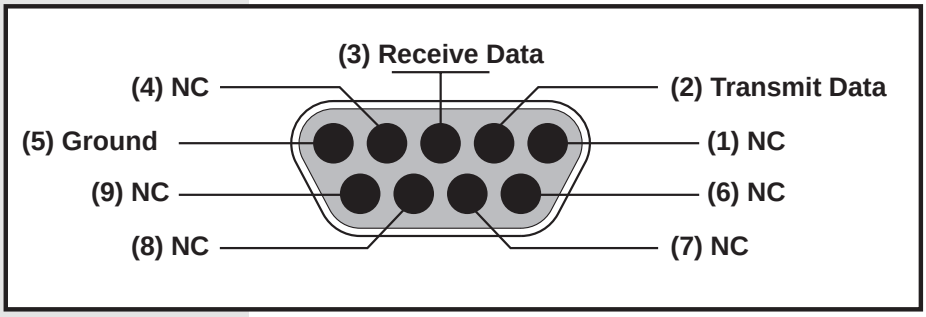
If at least one responder port has been configured for TABS, following the Power On Self Test the front panel will display the current TABS address. Press buttons 1 or 2 to change the address if desired. Pressing button 5 to select the address displayed and begin normal operation. There is a timeout of 30 seconds, at which time the unit will begin normal operation based on the configuration in memory.

If the responder ports have all been configured for protocol other than TABS, the unit will begin normal operation immediately after the Power On Self Test.

To use an Ascii terminal:

Connect an Ascii terminal or computer operating as an Ascii terminal to wire-wrap pins 53, 54 and 55 of connector P3 on the back panel (refer back to Table H) or connect it to C1 on the front panel. Refer to Fig. 12 for a drawing showing how connector C1 is wired. Set up the Ascii terminal or computer for 9600 baud, eight data bits and one stop bit.

FIG. 12 - DB9 CONNECTOR WIRING



To configure the *RemoteMaster* remotely:

Connect C1, or wire-wrap pins 53, 54, and 55 of P3 to your network. Before going to the remote site to configure the ***RemoteMaster***, apply power to the ***RemoteMaster***. Connect the Ascii terminal at the remote site.

CONFIGURATION USING A TERMINAL

1. Apply power to the ***RemoteMaster*** and the Ascii terminal or computer.
2. Press push button 5 on the front of the ***RemoteMaster.***

   The ***RemoteMaster***'s configuration appears on the terminal screen. The screen displays the current configurations of the eight interrogator (TBOS) and three responder ports, and the status of the expansion board.
3. Configure the interrogator ports, responder ports, COS relay, and COS timer as described below.

CONFIGURING THE INTERROGATOR PORTS

1. Type 1 at the configuration screen to display the interrogator (TBOS) port prompts.
2. SELECT PORT NUMBER - Type the port number to be configured. Valid entries are 1-2.

   For the following selections, type S or press ENTER to skip to the next selection, type F to save changes and exit the port configuration, or type Q to quit the port configuration without saving any changes.
3. SELECT BAUD RATE - Enter the desired baud rate. Valid entries are 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600.
4. SELECT PARITY - Set for odd. Type 2 if the parity is not set for odd.
5. SELECT STOP BITS - Set for 1. Type 1 if the stop bits are not set for 1.

NOTE:
Use RS-422 for point-to-point connections and RS-485 for multi-point connections.

6. SELECT MODE - Enter the desired interface. Type 1 for RS-422. Type 2 for RS-485.
7. SELECT DISPLAY ON/OFF INFO FOR DISPLAY # - Type 1 to disable the specified display; type 2 to enable the specified display. At display 8, changing the value, typing S or F, or pressing ENTER saves any changes and brings up the configuration screen.

NEW NOTE

NOTE: *If TBOS protocol is used on any of the responder ports, that port can only report 8 displays of alarm information. Enter the displays in the Interrogator Ports chart of the Configuration Worksheet (Table R). This will help configure the responder ports.*

8. End of procedure.

TABLE R - CONFIGURATION WORKSHEET

INTERROGATOR PORTS								
Port #	1st Display	2nd Display	3rd Display	4th Display	5th Display	6th Display	7th Display	8th Display
1	1	2	3	4	5	6	7	8
2	9	10	11	12	13	14	15	16
RESPONDER PORTS								
Port #	1st Display	2nd Display	3rd Display	4th Display	5th Display	6th Display	7th Display	8th Display
1								
2								

NOTES:

1. Mark the Interrogator Ports charts with the displays you will use.
2. Use the Interrogator Ports chart as a guide to fill out the Responder Ports chart.
   * Only fill in the responder ports that will use TBOS.
   * You can fill in the displays in any order, for example: 1, 2, Discretes, 6.
   * Only one display can have discrete alarms.

CONFIGURING THE RESPONDER PORTS

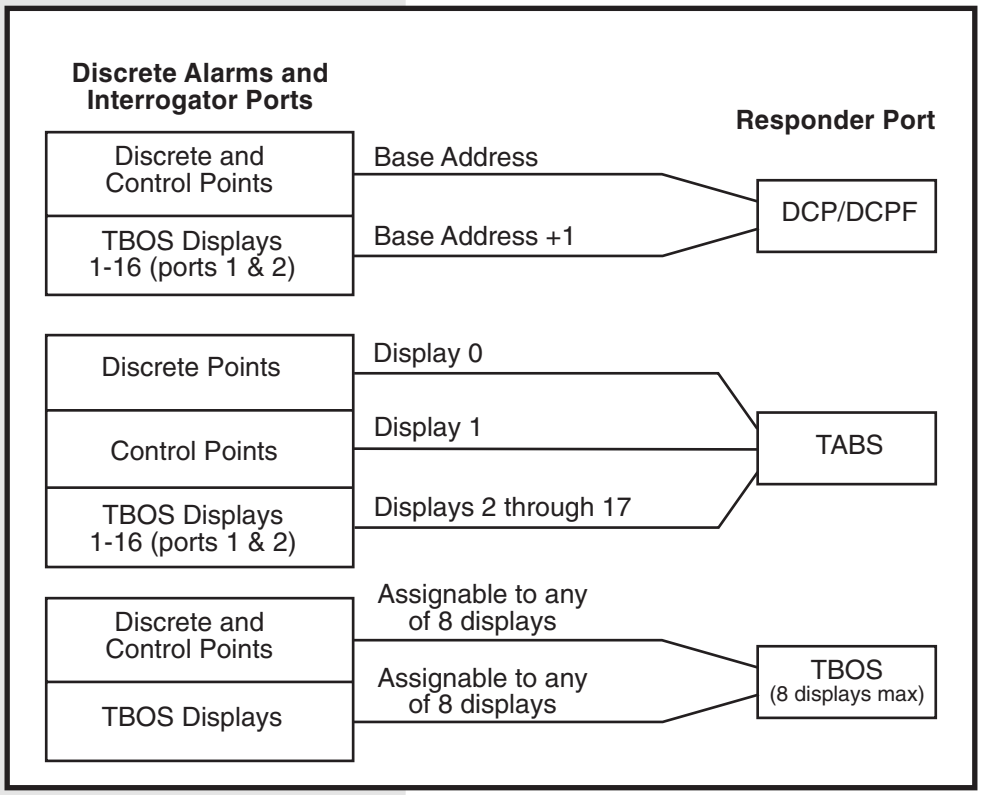
The ***RemoteMaster*** has two independently configurable responder ports: ports 1, 2, port 3 is not used, and port 4 is not available at this time.

Configure each responder port for DCP, DCPF, TBOS, or TABS protocol. The configuration steps for each protocol are listed separately below.

ALARM MAPPING

Refer to Fig. 13 for a representation of how the discrete and serial alarms are mapped to the responder ports. Note that the middle example, using TABS on the responder ports, is the default condition for the 46132-41 RemoteMaster.

FIG. 13 - ALARM MAPPING



STANDARD PROTOCOL PARAMETERS
DCPF
No parity 1 Stop Bit 8 Bit Word Length
DCP
No parity 1 Stop Bit 8 Bit Word Length
TBOS
Odd parity 1 Stop Bit 8 Bit Word Length
TABS
Odd parity 1 Stop Bit 8 Bit Word Length

Configuring a responder port for DCPF protocol

1. Type 2 at the configuration screen to display the responder port prompts.
2. SELECT PORT NUMBER - Type the port number to be configured. Valid entries are 1, 2, or 4 (port 4 is not used).

   For the following selections, type S or press ENTER to skip to the next selection, type F to save changes and exit the port configuration, or type Q to quit the port configuration without saving any changes.
3. SELECT PROTOCOL - Set for DCPF. Type 1 if the protocol is not set for DCPF.
4. SELECT BASE ADDRESS - Enter the base (first) address to which the port will respond. Valid entries are 1-253. Refer to Fig. 9. If a new address is entered, press the ENTER key.
5. SELECT BAUD RATE - Enter the desired baud rate. Valid entries are 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600. For port 4, the 202 modem port, the baud must be 1200.

CONTINUED . . .

6. SELECT PARITY - Set for none. Type 1 if the parity is not set for none.
7. SELECT STOP BITS - Set for 1. Type 1 if the number of stop bits is not set for 1.
8. SELECT RTS/CTS HANDSHAKE - Default is 1 (OFF). Typing 2 enables RTS/CTS handshaking. Changing the value, typing S or F, or pressing ENTER saves any changes and brings up the configuration screen. End of procedure.

Configuring a responder port for DCP protocol:

1. Type 2 at the configuration screen to display the responder port prompts.
2. SELECT PORT NUMBER - Type the port number to be configured. Valid entries are 1, 2, or 4 (port 4 is not used).

   For the following selections, type S or press ENTER to skip to the next selection, type F to save changes and exit the port configuration, or type Q to quit the port configuration without saving any changes.
3. SELECT PROTOCOL - Set for DCP. Type 2 if the protocol is not set for DCP.
4. SELECT BASE ADDRESS - Enter the base (first) address to which the port will respond. Valid entries are 1-253. Refer to Fig. 9. If a new address is entered, press the ENTER key.
5. SELECT BAUD RATE - Enter the desired baud rate. Valid entries are 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600. For port 4, the 202 modem port, the baud must be 1200.
6. SELECT PARITY - Set for none. Type 1 if the parity is not set for none.
7. SELECT STOP BITS - Set for 1. Type 1 if the number of stop bits is not set for 1.
8. SELECT RTS/CTS HANDSHAKE - Default is 1 (OFF). Typing 2 enables RTS/CTS handshaking. Changing the value, typing S or F, or pressing ENTER saves any changes and brings up the configuration screen. End of procedure.

NOTE: *With DCP protocol, certain address combinations result in reporting failures. The problem, a loss of synchronization in the addressing sequence, is inherent in DCP.*

Dantel recommends DCPF protocol because it maintains synchronization.

Configuring a responder port for TBOS protocol:

1. Type 2 from the configuration screen to display the responder port prompts.

CONTINUED . . .

2. SELECT PORT NUMBER - Type the port number to be configured. Valid entries are 1, 2, or 4 (port 4 is not used).

   For the following selections, type S or press ENTER to skip to the next selection, type F to save changes and exit the port configuration, or type Q to quit the port configuration without saving any changes.

3. SELECT PROTOCOL - Set for TBOS. Type 3 if the protocol is not set for TBOS.

4. SELECT BAUD RATE - Enter the desired baud rate. Valid entries are 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600.

5. SELECT PARITY - Set for odd. Type 2 if the parity is not set for odd.

6. SELECT STOP BITS - Set for 1. Type 1 if the stop bits are not set for 1.

7. SELECT DISPLAY MAPPING INFORMATION FOR TBOS DISPLAY # - Enter the type of alarm information the display will contain. Valid entries are 0 = Off, 1 - 64 = TBOS Displays, D = Discretes.

NOTE: *Refer to the Configuration Worksheet (Table R) at the end of this chapter to help configure the port.*

   Make an entry for each of the eight displays on the TBOS responder port. If a new value is entered, press the ENTER key.

8. SELECT RTS/CTS HANDSHAKE - Default is 1 (OFF). Typing 2 enables RTS/CTS handshaking.

   Changing the value, typing S or F, or pressing ENTER saves any changes and brings up the configuration screen.

Configuring a responder port for TABS protocol:

1. Type 2 from the configuration screen to display the responder port prompts.

2. SELECT PORT NUMBER - Type the port number to be configured. Valid entries are 1, 2, or 4 (port 4 is not used).

   For the following selections, type S or press ENTER to skip to the next selection, type F to save changes and exit the port configuration, or type Q to quit the port configuration without saving any changes.

3. SELECT PROTOCOL - Set for TABS. Type 4 if the protocol is not set for TABS.

4. SELECT ADDRESS - Enter the address. Valid entries are 0 - 31. If a new address is entered, press the ENTER key.

5. SELECT BAUD RATE - Enter the desired baud rate. Valid entries are 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600.

6. SELECT PARITY - Set for odd. Type 2 if the parity is not set for odd.

STANDARD PROTOCOL PARAMETERS
DCPF
No parity 1 Stop Bit 8 Bit Word Length
DCP
No parity 1 Stop Bit 8 Bit Word Length
TBOS
Odd parity 1 Stop Bit 8 Bit Word Length
TABS
Odd parity 1 Stop Bit 8 Bit Word Length

CONTINUED . . .

7. SELECT STOP BITS - Set for 1. Type 1 if the stop bits are not set for 1.
8. SELECT RTS/CTS HANDSHAKE - Default is 1 (OFF). Typing 2 enables RTS/CTS handshaking. Changing the value, typing S or F, or pressing ENTER saves any changes and brings up the configuration screen.
9. End of procedure.

CONFIGURING THE COS RELAY

Type 3 at the configuration screen to toggle the status of the COS (change of status) relay between LIVE and COS.

In the LIVE mode, the relay (pins C54 and C55) will close at the first alarm. If additional alarms occur, the relay will pulse once whenever there is a new alarm. The relay will open either when all the alarms clear or when the alarms are acknowledged. Acknowledge alarms either by applying a ground at the ACK COS input or by pressing button 4 on the front panel of the ***RemoteMaster***.

In the COS mode, the relay will close at the first alarm. If additional alarms occur, the relay will pulse once whenever there is a new alarm. The relay will open either when the COS timer expires in 15 minutes (if the COS timer is configured ON) or when the alarms are acknowledged. Acknowledge alarms either by applying a ground at the ACK COS input or by pressing button 4 on the front panel of the ***RemoteMaster***.

CONFIGURING THE COS TIMER

Type 4 at the configuration screen to toggle the status of the COS timer between ON and OFF. When the timer is ON, the COS relay will open after 15 minutes. The COS timer is available only when the relay is in the COS mode.

TROUBLESHOOTING

FUSES

There is a two-ampere fuse on the front panel of the ***RemoteMaster***. It protects power going to the ***RemoteMaster*** and to pins C33 and C34.

PORT ACTIVITY

Button 2 shows the activity of the interrogator and responder ports on the LED display. Press the button repeatedly to cycle through the ports sequentially to the port you want to monitor. The LED display shows the activity of the selected port. To return to the alarm mode, press button 1.

Interrogator Ports

The LED display shows the letter "P" on the first LED and the number of the interrogator port on the second LED. The fourth LED flashes the letter "t" when the port is transmitting data. The fifth LED flashes the letter "r" when the port is receiving data.

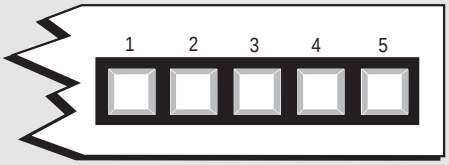
Responder Ports

The LED display shows the letter "r" on the first LED and the number of the responder port on the second LED.The fourth LED flashes the letter "t" when the port is transmitting data. The fifth LED flashes the letter "r" when the port is receiving data.

DEVICE FAILURES

The DCP and DCPF protocols support point 64 for displaying device failures and point 64 for displaying status line device failures of TBOS devices.

Immediately following power-up, the following sequence of events takes place.

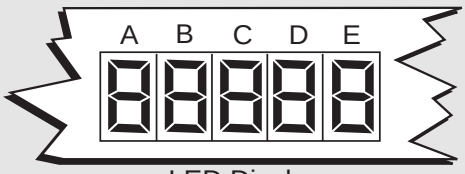


Push Buttons

Power On Self Test

This is a self-diagnostic that the RemoteMaster performs on itself every time power is applied. This test takes approximately 40 seconds. After the POST, there are two possible situations:

- There is no configuration in memory. (Because it has never been configured, or because the memory has been cleared.)
- There is a configuration in memory.



LED Display

No Configuration in Memory

If there is no configuration in memory, the front panel display will show **"Addr"**. This is a prompt for the user to enter the TABS address desired. The unit will not be polling its serial ports (they are inactive by default) or responding to any polls from the alarm master. The front panel switches do not function as normal, but rather as described in the following steps.

1. Press button 1 to change the display to **"0"** and increment the number up one each time it is pressed. Upon reaching **"31"**, the display wraps around to **"0"** again.

   Press button 2 to decrement the number down one each time it is pressed. Upon reaching **"0"**, the display wraps around to **"31"**.

2. Using buttons 1 and 2, select the desired TABS address. This address will apply to both responder ports 1 and 2.

NOTE: *There is no timeout for this step. An address must be selected and the RemoteMaster will not do anything until then.*

3. After selecting the desired address, press button 5 to apply that address to both TABS ports and place the RemoteMaster in normal operating mode. The front panel buttons will now operate as normal (refer to the ***Operation*** section), the responder ports will begin responding to polls from the alarm master, and the configuration port will be available for configuration modification.

NOTE: *Pressing button 5 will not do anything unless an address has been selected first.*

Pre-existing Configuration in Memory

If the 46132-41 RemoteMaster has been configured previously, there are two possibilities:

- At least one responder port has been configured for TABS.
- No responder ports are currently configured for TABS.

CONTINUED . . .

NOTE:

If port 1 has been configured for TABS protocol, press front panel buttons 1 and 2 at the same time during normal operation to display the configured TABS address of port 1 on the front panel display.

If at least one responder port has been configured for TABS, following the Power On Self Test the front panel will display the current TABS address. Press buttons 1 or 2 to change the address if desired. Pressing button 5 to select the address displayed and begin normal operation. There is a timeout of 30 seconds, at which time the unit will begin normal operation based on the configuration in memory.

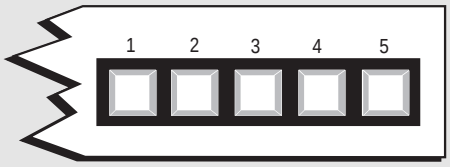
If the responder ports have all been configured for protocol other than TABS, the unit will begin normal operation immediately after the Power On Self Test.

FRONT PANEL PUSH BUTTONS

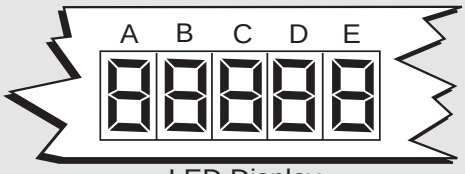
After the 46132-41 has gone through the steps above, the five push buttons on the front panel select the type of alarm information that appears on the LED display.

ALARM MODE

Alarm mode is the default mode. Normally the display is in this mode, but if it is not, press button 1 to enter the alarm mode. There are four possible readouts in the alarm mode:



Push Buttons



LED Display

Readout 1 - No alarms and no failed displays.

The LED display shows a rotating dash that moves from left to right.

Readout 2 - Alarms and no failed displays.

The LED display shows the letters “AL” and the number of alarms present.

Readout 3 - No alarms and failed displays.

The LED display shows the letters “Fd” and the number of failed displays.

Readout 4 - Alarms and failed displays.

The LED display toggles between the failed display statement and the alarm display statement.

ALARM LOCATION

Press button 3. The ***RemoteMaster*** scans all alarm points, stopping when an active alarm is reached. Read the display as follows:

1. **Pxyzz**

   where P = TBOS port
   x = TBOS port number (1-8)
   y = Display number within port
   zz = Point number within display

   -or-

2. **D zz**

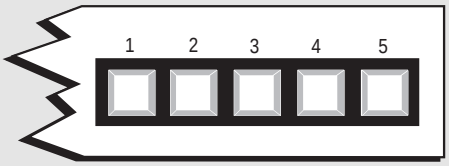
   where D = Discrete
   zz = Discrete number

If there are no more alarms, "LOC" appears on the display.

ALARM ACKNOWLEDGEMENT

Press button 4 to acknowledge alarms and reset the change-of-status (COS) relay to the non-alarm mode. "AuCLr" appears on the display.

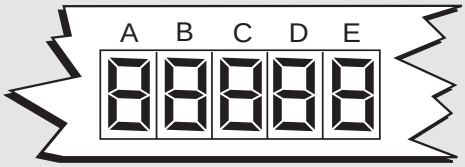
PORT ACTIVITY



Push Buttons

Button 2 shows the activity of the interrogator and responder ports on the LED display. Press the button repeatedly to cycle through the ports sequentially to the port you want to monitor. The LED display shows the activity of the selected port. To return to the alarm mode, press button 1.

Interrogator Ports



LED Display

The LED display shows the letter "P" on the first LED and the number of the interrogator port on the second LED. The fourth LED flashes the letter "t" when the port is transmitting data. The fifth LED flashes the letter "r" when the port is receiving data.

Responder Ports

The LED display shows the letter "r" on the first LED and the number of the responder port on the second LED. The fourth LED flashes the letter "t" when the port is transmitting data. The fifth LED flashes the letter "r" when the port is receiving data.

CONTINUED . . .

SYSTEM RESET

Press buttons 1, 3, and 5 simultaneously on the front panel for two seconds.

TABS ADDRESS RETRIEVAL

Press buttons 1 and 2 simultaneously on the front panel to display the configured TABS address for port 1. (Applicable only if port 1 is configured for TABS protocol.)

LED TEST

Press buttons 1 and 3 simultaneously. All "8"s appear on the LED display if all the segments are working.

CONTROL POINT OPERATION

Operate control points from a computer that has the appropriate protocol software.

If the protocol of the responder port is either DCP or DCPF, the commands to operate control points are the following:

- **DLON** (direct latch on)
- **DLOF** (direct latch off)
- **DMON** (direct momentary on)
- **SLON** (select latch on)
- **SLOF** (select latch off)
- **SMON** (select momentary on)
- **EXCC** (execute)

The EXCC command executes any of the select commands.

If the protocol of the responder port is either TBOS or TABS, the commands to operate the control points are OPR (operate), RLS (release), and MOM (momentary).

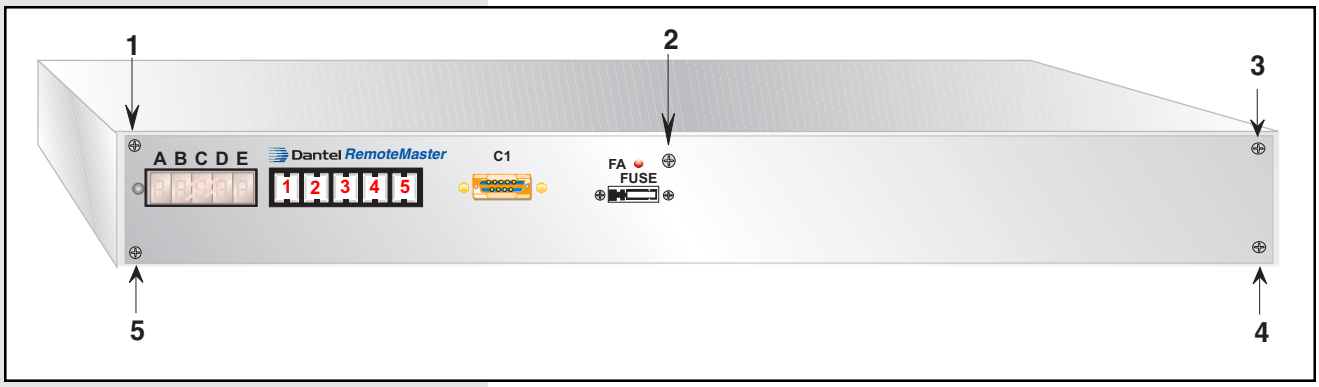
CIRCUIT BOARD REPLACEMENT

The wiring on the ***RemoteMaster*** does not have to be removed to replace the circuit cards inside the unit.

To Remove the RemoteMaster Main Board

1. Remove the plastic safety cover on the rear by unscrewing the two fastener screws. Set the cover aside.
2. Remove power to the RemoteMaster.
3. Remove the five screws indicated in Fig. 14 from the Front Panel (FP) and carefully allow the FP to hang below the RemoteMaster.

FIG. 14 - SCREWS SECURING FRONT PANEL



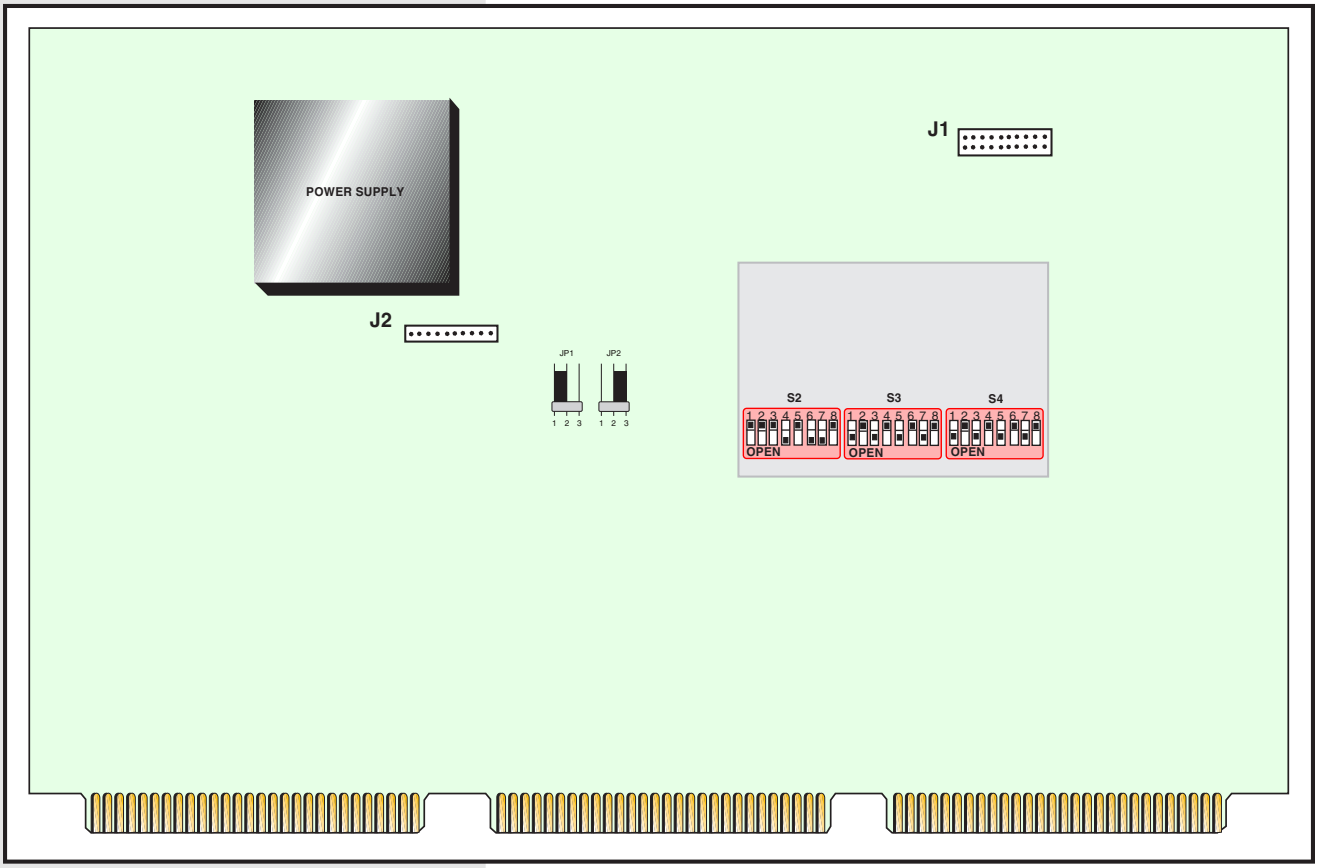
4. If necessary, disconnect the power connector. This is the white plastic connector with two wires - one red and one black.
5. Using the handle on the front edge of the Main Board (MB), carefully pull the MB out about four inches.
6. There are two cables connecting the FP to the MB. One is a flat grey ribbon cable; the other, a bundle of eight wires of various colors. Holding onto the FP to prevent it from falling, disconnect both of these cables where they plug into the MB. Set the FP aside.
7. The MB can now be completely removed.

To Replace the RemoteMaster Main Board

1. Insert the new Main Board (MB) into the RemoteMaster approximately half way. Take care to ensure that both edges of the MB go into the metal runners on the inside of the chassis.
2. Connect the Front Panel (FP) to the MB by plugging the grey ribbon cable into J1 and the bundle of eight wires into J2. Refer to Fig. 15.

IMPORTANT: *When viewed from the front of the RemoteMaster, the ribbon cable connecting the Front Panel to the Main Board has a red stripe down its left side. When reconnecting this cable to J1 on the Main Board, ensure that this cable does not get twisted and that the red stripe stays on the left side.*

FIG. 15 - LOCATION OF J1 AND J2 ON REMOTEMASTER MAIN BOARD



3. Continue pushing the MB into the chassis. When fully inserted and seated, the front edge of the MB is approximately 5/32 inches back from the bottom edge of the chassis.

4. Reconnect power and reinstall the plastic safety cover.

TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input Voltage	-21 to -56 VDC
Input Current, max. (±15%)	
@ -21 VDC	349 mA
@ -24 VDC	328 mA
@ -48 VDC	239 mA
@ -56 VDC	229 mA
Heat Dissipation, max. (±15%)	
@ -21 VDC	27.4 Btu/Hr
@ -24 VDC	29.4 Btu/Hr
@ -48 VDC	42.9 Btu/Hr
@ -56 VDC	47.9 Btu/Hr
Fuse	2 Amp., GMT Type
Auxillary Power Output	
Voltage	Equal to DC Input Voltage
Current	15 mA max.
-DC pins	C33, C34
GND pins	C56, C57
Serial Alarm Input Ports	
Number available	2
Max. TBOS Displays per Port	8 (512 points)
Protocol	TBOS
Interface	RS-422/485
Data Rate	300, 600, 1200, 2400, 4800, and 9600 baud
Discrete Alarm Inputs	
Number available	64
Input	Optical Coupler Isolated, 33K ohms in series
Signal Input	
Points 1-24	Ground Input
Points 25-32	Current Flow (both sides of optical coupler brought out)
Points 33-64	Ground Input

CONTINUED . . .

CONTINUED . . .

DESCRIPTION	VALUE
Responder Ports	
Number available	2
Protocols	DCP, DCPF, TBOS, TABS
Interfaces	RS-232, RS-422/485
Data Rates	300, 600, 1200, 2400, 4800, and 9600 baud
Configuration Port	
Communications	ASCII
Interface	RS-232
Data Rate	9600 baud
Change-of-State (COS) Relay	
Contact Type	Normally Open, Dry Contact
Contact Ratings	1A @ 24 VDC; 0.5A @ 125 VAC
Pins	P2-51, 52
Fuse Alarm Relay	
Contact Type	Normally Open, Dry Contact (one side tied to ground)
Contact Ratings	1A @ 24 VDC; 0.5A @ 125 VAC
Pins	P2-50
Control Output Relays	
Contact Type	8 Normally Open, Dry Contact
Contact Ratings	1A @ 24 VDC; 0.5A @ 125 VAC
Weight	5.8 pounds
Physical Dimensions	1.75"H x 17.0"W x 12.5"D
Operating Temperature Ranges	0° to 60° C.

WARRANTY

LIMITED WARRANTY

The Seller warrants that the standard hardware products sold will be free from defects in material and workmanship and perform to the Seller's applicable published specifications for a period of 18 months for hardware, and 3 months for software, from the date of the original invoice. The liability of the Seller hereunder shall be limited to replacing or repairing, at its option, any defective products which are returned F.O.B. to the Seller's plant, (or, at the Seller's option, refunding the purchase price of such products). In no case are products to be returned without first obtaining permission and a customer return authorization number from the Seller. In no event shall the Seller be liable for any consequential or incidental damages.

Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect, unauthorized repair or installation are not covered by warranty. The Seller shall make the final determination as to the existence and cause of any alleged defect. No warranty is made with respect to custom equipment or products produced to the Buyer's specifications except as specifically stated in writing by the Seller in the contract for such custom equipment.

This warranty is the only warranty made by the Seller with respect to the goods delivered hereunder, and may be modified or amended only by a written instrument signed by a duly authorized officer of the Seller and accepted by the Buyer.

Warranty and remedies on products not manufactured by the Seller are in accordance with warranty of the respective manufacturer. THE SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE AFORESAID OBLIGATIONS IS HEREBY DISCLAIMED BY THE SELLER.

IN CASE OF DIFFICULTY

If you experience difficulty with this equipment, check the following, as appropriate:

1. **Switch settings**
2. **Signal levels**
3. **Software configuration**
4. **Connections between Dantel's equipment and your equipment.**

If there is still a problem, substitute equipment that is known to be good. For additional assistance, call Dantel's Technical Field Service Department weekdays, 6 A.M. to 5 P.M. pacific time:

1-800-4DANTEL (1-800-432-6835).

If a thorough checkout shows a piece of equipment has malfunctioned, you may return it to the factory. For repairs and emergency replacements, obtain a Return Material Authorization (RMA) number from the Customer Service Representative at **1-800-4DANTEL** (1-800-432-6835).

To ensure expedient processing of your order, provide a purchase order number and shipping and billing information when requesting an RMA number. Also, when the units are returned to Dantel, include a description of the failure symptoms for each unit returned. Send defective equipment to:

Dantel, Inc. • 2991 North Argyle Avenue • Fresno, California 93727-1388