130 Family of Seismic Recorders

Cable Drawings

Refraction Technology™
REF TEK

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2. For the REF TEK 130 Data Acquisition System (130) product use rt_130.

<table>
<thead>
<tr>
<th>DAS</th>
<th>&lt;listname&gt;</th>
<th>example</th>
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<tr>
<td>130</td>
<td>rt_130</td>
<td>subscribe rt_130 tom smith</td>
</tr>
<tr>
<td>130_ANSS</td>
<td>rt_130_anss</td>
<td>subscribe rt_130_anss john doe</td>
</tr>
<tr>
<td>130_SM</td>
<td>rt_130_sm</td>
<td>subscribe rt_130_sm mike smith</td>
</tr>
</tbody>
</table>

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Revision History:

<table>
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<tr>
<th>Rev</th>
<th>Date</th>
<th>Reason for change</th>
<th>Affected Pages</th>
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<tr>
<td>0.1</td>
<td>7/05/03</td>
<td>Initial release</td>
<td>All</td>
</tr>
<tr>
<td>B</td>
<td>8/4/03</td>
<td>Created separate book</td>
<td>All</td>
</tr>
<tr>
<td>C</td>
<td>9/2/03</td>
<td>Added 130-8874 series sensor cables</td>
<td>Section 1-2</td>
</tr>
<tr>
<td></td>
<td>9/9/03</td>
<td>Added ANSS Internal cables drawings</td>
<td>Section 1-3</td>
</tr>
<tr>
<td></td>
<td>10/21/05</td>
<td>Added GPS extender cable option</td>
<td>Section 1-1</td>
</tr>
<tr>
<td>D</td>
<td>2/9/06</td>
<td>Added 130-8206 Ruggedized Palm cable</td>
<td>Page 1-29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Figure 1-25</td>
<td></td>
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Section 1
130-01 Internal Cables

1.1 130-01 Internal Cables

Refer to the table below for the internal cable assemblies for the 130 DAS family.

<table>
<thead>
<tr>
<th>Cable</th>
<th>Description</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>130-8005</td>
<td>Internal Disk Interconnect cable</td>
<td>CPU to Well Board</td>
</tr>
<tr>
<td>130-8006</td>
<td>Internal Status cable</td>
<td>CPU to Well Board</td>
</tr>
</tbody>
</table>
1.2 130 Family External Cables

REF TEK does not normally supply the channel input connector cable assemblies; but the PT07A1419S mating half of the standard connector can be supplied together with the cable pinout data. The user can then fabricate a cable to meet local requirements.

Refer to the table below for optional DAS typical connector assembly details and cable diagrams of the more frequently used cables.

<table>
<thead>
<tr>
<th>Cable</th>
<th>Description</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>130-8004</td>
<td>130 (Y-Cable) to Serial (DCE) and Ethernet RJ45 cable</td>
<td>Ethernet connects to hub or network connection. Serial connects to (DCE) equipment.</td>
</tr>
<tr>
<td></td>
<td>25-pin - Serial (DCE)</td>
<td></td>
</tr>
<tr>
<td>130-8004A</td>
<td>130 (Y-Cable) to Serial (DCE) and Ethernet RJ45 cable</td>
<td>Ethernet connects to hub or network connection. Serial connects to (DCE) equipment.</td>
</tr>
<tr>
<td></td>
<td>9-pin - Serial (DCE)</td>
<td></td>
</tr>
<tr>
<td>130-8004B</td>
<td>130 (Y-Cable) to Serial (DCE) and Ethernet RJ45 cable</td>
<td>Ethernet connects to hub or network connection. Serial connects to (DCE) equipment (w/ trigger).</td>
</tr>
<tr>
<td></td>
<td>25-pin - Serial (DCE) with trigger</td>
<td></td>
</tr>
<tr>
<td>130-8004C</td>
<td>130 (Y-Cable) to Serial (DCE) and Ethernet RJ45 cable</td>
<td>Ethernet connects to hub or network connection. Serial connects to (DCE) equipment (w/ trigger).</td>
</tr>
<tr>
<td></td>
<td>9-pin - Serial (DCE) with trigger</td>
<td></td>
</tr>
<tr>
<td>130-8004D</td>
<td>Ethernet/PC</td>
<td></td>
</tr>
<tr>
<td>130-8014</td>
<td>130 (Y-Cable) to Serial (DTE) and Ethernet RJ45 cable</td>
<td>Ethernet connects to hub or network connection. Serial connects to DTE equipment</td>
</tr>
<tr>
<td>130-8015</td>
<td>GPS to DAS cable</td>
<td>Connects to DAS-GPS</td>
</tr>
<tr>
<td>130-8018</td>
<td>DAS Command and Control Port to PC cable</td>
<td>Connects to PC serial port</td>
</tr>
<tr>
<td>130-8019</td>
<td>Ethernet cable</td>
<td>Connects to hub or network</td>
</tr>
<tr>
<td>130-8023</td>
<td>Ethernet Crossover</td>
<td>Connect directly to PC or laptop ethernet port</td>
</tr>
<tr>
<td>130-8024</td>
<td>130 (Y-Cable) to Serial (DCE) and Ethernet RJ45 cable - Ethernet and Black Box Modem</td>
<td>Ethernet connects to hub or network connection. Serial connects to (DCE) equipment</td>
</tr>
<tr>
<td>130-8025</td>
<td>PDA cable</td>
<td>130 to PDA</td>
</tr>
<tr>
<td>130-8026</td>
<td>DAS Net to Freewave (DB-9)</td>
<td>Connects to Freewave</td>
</tr>
<tr>
<td>130-8039</td>
<td>12V Power cable for DAS</td>
<td>12V Supply</td>
</tr>
<tr>
<td>130-8039A</td>
<td>12V Power cable for 130-SM</td>
<td>12V Supply</td>
</tr>
<tr>
<td>130-8075</td>
<td>12V Power cable for DAS and 130-ED</td>
<td>12V supply</td>
</tr>
<tr>
<td>130-8080</td>
<td>Extender to extender cable</td>
<td>130-GPS</td>
</tr>
<tr>
<td>130-8103</td>
<td>PDA CLIE™ cable</td>
<td>130 to CLIE PDA</td>
</tr>
<tr>
<td>130-8137</td>
<td>130-SM modem cable</td>
<td>Phone line</td>
</tr>
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<td>130-8154</td>
<td>130-Modem cable</td>
<td>130 to 130-Modem cable</td>
</tr>
<tr>
<td>130-8206</td>
<td>Ruggedized PDA cable</td>
<td>130 to Ruggedized Palm</td>
</tr>
<tr>
<td>130-8811</td>
<td>Splitter box to S-13 Sensor</td>
<td>130 to 3 S-13 Sensors</td>
</tr>
<tr>
<td>Cable</td>
<td>Optional Sensor Cables</td>
<td>Connection</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>130-8830</td>
<td>CMG-5T Seismometer cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8841</td>
<td>131A Sensor cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8850</td>
<td>KS-2000 Sensor cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8871</td>
<td>STS-2 Seismometer cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8874</td>
<td>CMG/PUBB Sensor cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8874A</td>
<td>CMG-40 w/ +12V and -12V Output</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8874B</td>
<td>CMG/PUBB Sensor cable for CMG-3T</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8885</td>
<td>S13J Sensor cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8892</td>
<td>L-4C-3D Seismometer cable</td>
<td>130 DAS channel connector</td>
</tr>
<tr>
<td>130-8895</td>
<td>FBA11 Accelerometer cable</td>
<td>130 DAS channel connector</td>
</tr>
</tbody>
</table>
**Figure 1 - 3  130-8004 - Ethernet/Modem**
Figure 1 - 5 130-8004B - Ethernet Modem with trigger
Figure 1 - 6  130-8004C - Ethernet/Modem with Trigger
Figure 1 - 7 130-8004D Ethernet/PC
Figure 1 - 9 130-8015 - External GPS Interconnect

130 Family External Cables
130-TR-006-D

Figure 1 - 9 130-8015 - External GPS Interconnect

NOTE:
AND PLACE UNDER CLEAR SHRINK TUBING
OF CABLE WITH A BRAIDED Braid Label
LABEL PART NUMBER AND DESCRIPTION

NOTE:
REAR VIEW

Plot 6319-8P

BELDEN CABLE #9933

SEE TABLE BELOW

KEY C - TE2Q SHEET ID AND PIN ON BOTH ENDS OF CABLE
KEY B - CHANNELED CONNECTORS IN CABLE STYLE
KEY A - CHANNELED SEALING OF CONNECTORS Tmax Tape

DESCRIPTION

Part # Length of Cable

-2 6.0/3.0 Feet
-3 6.0/3.0 Feet
-30 15.0/9.0 Feet
-60 10.0/6.0 Feet
-100 30.0/10.0 Feet

Part # Length of Cable

NOTE:
CUT OFF THE BRAD SHIELD BUT NOT THE
Figure 1 - 10  130-8018 - PC command and control
Refer to 130 Family of Cables 130-TR-006-D

Figure 1 - 11 130-8019 - Ethernet Hub Straight

Assembly: ONE HUMAN WILL BE USED FOR THIS.

Cut Cables exactly in half. Only

and with connectors on BOTH ENDS.

* Cable is supplied 5.5 in LENGTH.

AND PLACE UNDER CLEAR SHrink TUBING

LABEL PART NUMBER AND DESCRIPTION.

Supplied w/ cable

CONNECTION TO ETHERNET

REV C - CHANGED ETHERNET CABLE

REV B - ADDED DESCRIPTION OF M18 TO TITLE OF DGO

Cable due to different MANUFACTURERS

REV A - REMOVED COLOR DESCRIPTION FROM SUPPLIED
Figure 1 - 12 130-8023 - Ethernet Crossover

ASSEMBLY:
ONE HALF WILL BE USED FOR THIS
CUT CABLE EXACTLY IN HALF, ONLY
AND WITH CONNECTORS ON BOTH ENDS.
- CABLE IS SUPPLIED 25 IN LENGTH

LABELING NOTE:
AND PLACE UNDER CLEAR SHRINK TUBING
OF CABLE WITH A RINGER ID. PRO LABEL
LABEL PART NUMBER AND DESCRIPTION

PART
S-1064-195

CABLE & CARRIER ETHERNET

SUPPLIED W/ CABLE

TO ETHERNET
Figure 1 - 13 130-8024 - Ethernet/Modem Black Box
Figure 1 - 15 130-8026 - NET to Freewave Radio
Figure 1 - 16 130-8039 - Ext Power supply assy.

ATTACH PLUG CONNECTOR IN ITS PLACE.
CUT OFF EXISTING CONNECTOR, AND
Figure 1 - 17 130-8039A 130-SM Power

Assembly Note:

BY CUSTOMER
TERMINATION TO BE DONE
PREVENT SHORTING.
COVER END OF CABLE TO
DO NOT STRIP THIS END.

BELDEN CABLE #8489 6'

ATTACH PRO CONNNECTION IN ITS PLACE.
CUT OF EXISTING CONNECTOR AND
ADD A CHANGED CABLE LENGTH.
THE LENGTH OF CABLE.

AND PLACE UNDER CLEAR SHRINK TUBING.

OF CABLE WITH A BRADY #16 RED LABEL

LABEL PART NUMBER AND DESCRIPTION

LAST NUMBERS(1) ARE THE SHAPE IN THE

- 16-14GA INSULATED

- BLACK SHRINK TUBING

- RED SHRINK TUBING

- 3/8" DIA. HOLE

- 5/16" DIA. HOLE

BELDEN CABLE #8489

- BLACK TO-46A-(SP)

PLACE SHRINK TUBING OVER TERMINAL

RED TO SOLENOID POST AT TERMINAL

16-14GA INSULATED

NOTICE : AS REQUIRED

- SHRINK TUBING FOR LABELING

RED TO SOLENOID POST AT TERMINAL

10 PIN & INSULATED POST"
**Figure 1 - 20 RT547 CLEA' board**

<table>
<thead>
<tr>
<th>Part 3/15/04</th>
<th>Sheet 1 of 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>B</td>
</tr>
<tr>
<td>REV.</td>
<td>RT 547 A ASSEMBLY</td>
</tr>
<tr>
<td>TITLE</td>
<td>REFRACTION TECHNOLOGY INC</td>
</tr>
</tbody>
</table>

**Connector J1:**

**FOR MOUNTING INSTRUCTIONS OF**

**TO DRAWING 72-8330 OR 130-8103**

**TIME OF CABLE ASSEMBLY:**

**REMEMBER CONNECTOR J1 CAN BE MOUNTED AT**

FROM PIN 10 OF J1 TO PAD K.

AT PIN 7 AND PIN 8 OF J1 JUMPER ACROSS PIN 2 AND PIN 3.

**CUT TRACES IN LOCATION INSTALL A 0 OHM RESISTOR**

DO NOT INSTALL RS OR IC U. AT 47.

**FOR RS VERSION:**

**INSTALL ALL PARTS AS SHOWN.**

**SOLDER SIDE VIEW**

**ACTUAL SIZE**

**COMPONENT SIDE VIEW**

**2X SIZE**
Figure 1 - 21  130-8108 - External Power Cable
### Figure 1 - 23 130-8137 130-SM Modem

#### Labeling Note:
Properly align the connector wire labels to match the connector positions on the cable. Leave the other end of the cable unlabeled unless it is necessary for identification.

#### Rear View:
279-3739 Radio Shack or Equivalent Cable

#### Diagram:
- **Rear View**:
  - Connector:
    - P/N: 130-8137
    - Modem Cable
  - Phone Line:
    - P/N: 130-SM
  - 12" length
Figure 1 - 25 130-8260 Ruggedized Palm cable

NOTE:

REQUIRED
AS IS NO MODIFICATIONS
LEAVE THIS CONNECTOR

PT6412-105(XX)

SHRINK TUBING

Attach connector PT6412-105 to cut-off
As close to DS connector as possible.
Cut end of DS-MEZ1000-COM-S cable.
1.3 Seismometer Cables

Figure 1 - 26 130-8830 - CMG-5T Seismometer Cable
Figure 1 - 27 130-8841 - 131A to DAS channel accelerometer

13A TO DAS CHANNEL ACCELEROMETER CABLE

REFLECTION TECHNOLOGY INC

CLAMP SCREW. THE LENGTH OF CABLES DIFFERS.
ATTACH RING LUG TO CONNECTOR WITH BACKSHELL CABLE.
LET DOWN WIRE. SELECTER TO DRAW WIRE AND RING LUG.
FOR SHIELD CONNECTION USE A PIECE OF 22GA BLACK CABLE.
LABEL PART NUMBER AND DESCRIPTION.

13A ACCELEROMETER

BELDEN CABLE #9506

AS REQUIRED

130-8841
Figure 1 - 28  130-8850 KS-2000 Sensor cable
Figure 1 - 29 130-8871 - STS-2 Seismometer

Remote Connector

10 STS-2

M33420-12A
M85049-11A-16A AND
M30103-28P W/MS38514-19P(SR)

To DAS Chan.

AS REQUIRED

REVIEWED & CHANGED RECEIVE 3/6/99
DAYS 10/3/99
EFFECTIVE 3/6/99

Figure 2, 29 130-8871 - STS-2 Seismometer

Ref TEC 130
STS-2 Seismometer Cable
Refractive Technology Inc.

The length of cable:
Part number on the boom indicates
last number(s) after dash in the

Remote Connector.

10 STS-2

M33420-12A
M85049-11A-16A AND
M30103-28P W/MS38514-19P(SR)

To DAS Chan.

AS REQUIRED

REVIEWED & CHANGED RECEIVE 3/6/99
DAYS 10/3/99
EFFECTIVE 3/6/99

Figure 2, 29 130-8871 - STS-2 Seismometer

Ref TEC 130
STS-2 Seismometer Cable
Refractive Technology Inc.

The length of cable:
Part number on the boom indicates
last number(s) after dash in the
Figure 1 - 31 130-8874 - Sensor CMG/PUBB to 130

Ref Tek 130
Cable, sensor CMG/PUBB to 130
Refractory Technology Inc.

NOT:
- To pins R and T
- Jumper from pin S
- Single point to ground the cable shield
- CAT-5 cable with RG-58 or RG-59
- Belden cable #9508
- PTO6S16-25(SR)
- PTO6S14-19P(SR)
- As required

Legend:
- A - Connect O.C. to shield, then to 130
- B - Connect O.C. to shield, then to 130
- C - Connect sensor cable to 130
- D - Connect sensor cable to 130
- E - Connect O.C. to shield, then to 130
- N/C - Center pin to shield and ground
- W - White
- GR - Gray
- LN - Green
- RB - Red
- Blk - Black
- YL - Yellow
- Wh - White
- Bk - Black
- Br - Brown
- GRN - Green
Figure 1 - 32  130-8874A - Sensor CMG-40 to 130 with +12

Seismometer Cables
Figure 1 - 33  130-8874A - CMG-40 to 130 (Sheet 2 of 3)
Figure 1 - 34 130-8874A - CMG-40 to 130 (Sheet 3 of 3)

Reconnection Technology Inc.

With PPO connections shown, connect the CMG-40 to the 130-TR-006-D.

130 Family of Cables 130-TR-006-D
Figure 1 - 35 130-8874B - PUBB to 130 for CMG-3T
THE LENGTH OF CABLES AND PART NUMBER ON THE BADG Indicating LAST NUMBER(S) AFTER DASH IN THE CABLE, S-13J SENSOR TO 130

Belden cable #9990

3-pin K connector, 120 Ohm, BC - W1633 D Z0170GK 32-0120

Figure 1 - 36 130-8885 - S-13J Sensor to 130

Family of Cables 130-TR-006-D
Figure 1 - 37 130-8892 - DAS to L-4C-3D Seismometer

Seismometer Cables

Label note:
- Part number and description of cable used.
- Label with a braze label and label and seal under clear shrink tubing.

Part number of cable:
- 130-8892

Label number:
- 106C-10P(SR)

Belden cable #8334

130 DAS channel

AS REQUIRED

REV A - CHANGED PIN OUTS, K TO N, E TO T
REV B - CHANGED PIN 1 TO 0, CHANGED CABLE EXIT RESISTORS
REV C - CHANGED PIN 1 TO 0, CHANGED CABLE EXIT RESISTORS

SPECIFICATIONS:
- Part number:
  - 130-8892

CABLE:
- Belden cable #8334

TERMINATION:
- 130 DAS channel

AS REQUIRED

REV A - CHANGED PIN OUTS, K TO N, E TO T
REV B - CHANGED PIN 1 TO 0, CHANGED CABLE EXIT RESISTORS
REV C - CHANGED PIN 1 TO 0, CHANGED CABLE EXIT RESISTORS

SPECIFICATIONS: