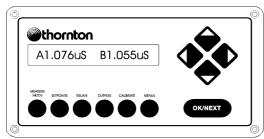# thornton

200CR Conductivity/Resistivity Instrument Initial Set-Up

200CR Front Panel

The keypad has 6 keys which access specific menus as follows:

measure - menus to change measurement modes.
setpoint - menus for programming setpoints.
relays - menus for programming relays.
outputs - menus for programming outputs.
calibrate - menus to perform calibration.
menus - all other menus (cell constants, security, averaging, compensation, etc.)

The control keys which are used to make changes within a menu are:

OK/Next is used to accept a selection and proceed to the next menu level.
Up arrow is used to scroll up through a list of options (& increase numbers).
Down arrow is used to scroll down through a list of options (& decrease numbers).
Left arrow is used to move the cursor to the left within a menu.
Right arrow is used to move the cursor to the right within a menu.

Each digit can be scrolled through the values:
. (decimal point), 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. The first digit of each number can also be set to neg.(-)

Following are the steps necessary to install a 200CR instrument and begin operation.

1. Instrument installation - (Chapter 2)
   The 200CR can be panel, pipe or wall mounted and a sealed IP65 rear cover is optional but is required for wall and pipe mounting. Drill holes in the rear cover as needed for conduit or cable grips.

2. Wiring - (Chapter 2)
   Make all necessary electrical connections to the instrument. The wiring procedure is outlined on the back of this sheet.

3. Instrument Calibration - (Chapter 8)
   This instrument is factory calibrated within specifications and does not require re-calibration. If Quality Assurance requirements call for verification, follow the procedures in the manual.

4. Connect sensors to patch cords.

5. <u>IMPORTANT</u>: Enter cell (sensor) constants for resistance and temperature for each channel.
   • Press **menus** key then use arrow keys until:

   Edit Sensor Cal

   • Press **OK/NEXT** key

   A Cell M=.10000_

   • Select (_A Cell, A Temp, B Cell, B Temp_) using up and down arrow keys
   • Shift cursor using the right arrow key to enter _M_, the multiplier.
   • Shift cursor using the right arrow key to enter the precise value of the cell constant found on the sensor.
   • Shift cursor back to the first field and repeat the above procedure for each of the other three constants.
   • Press the **OK/NEXT** key

   Save Changes?_Yes_

   • Press the **OK/NEXT** key

6. Select desired measurements for each sensor
   • Press **measure** key
   <u>Channel Primary (A,B) settings</u>:
   For resistivity, ohm-cm (Auto) - recommended.
   For conductivity, S/cm (Auto) - recommended.
   By selecting Auto, the instrument will automatically scale the sensor value to be read by the instrument.
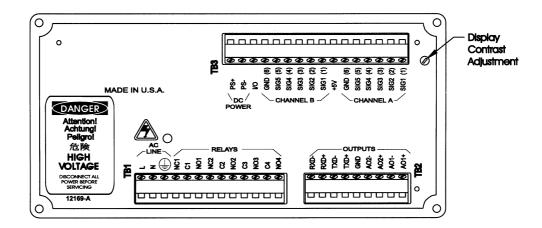   <u>Channel Secondary (a,b) settings</u>:
   Secondaries are usually temperatures (°F, °C)
   • Press the **OK/NEXT** key once all 4 measurement selections are made.

   Save Changes?_Yes_

   • Press the **OK/NEXT** key to save changes.

7. Program the analog outputs. (Chapter 7). Do not <u>calibrate</u> analog outputs.

For additional information refer to Manual 84295. For coverage of digital RS232/RS422 communications refer to Manual 84364.

200CR Back Panel

Warning: Make sure power to all wires is turned off before proceeding with the power installation. High voltage may be present on the input power wires and relay wires.

Terminal Block TB1
200CR models 6220 and 6222 have 2 relays
200CR model 6224 has 4 relays
The wiring sequence is shown in the table below.
Relays 3 and 4 are solid state, for AC only. Refer to Manual Chapter 2.

TB1 Label	Input Power & Relay Function
L	115V/230VAC Line
N	115V/230VAC Neutral
⏚	Earth Ground
NC1	Relay 1: Normally Closed
C1	Relay 1: Common
NO1	Relay 1: Normally Open
NC2	Relay 2: Normally Closed
C2	Relay 2: Common
NO2	Relay 2: Normally Open
C3	Relay 3: Common
NO3	Relay 3: Normally Open
C4	Relay 4: Common
NO4	Relay 4: Normally Open

Input Voltage
The input voltage is preset at the factory. To change the input voltage refer to Manual Chapter 2.

Output Connections
Connections for all outputs are made to terminal block TB2. The serial port can be configured as an RS-232 port or an RS-422 port. Analog outputs, if included, are powered. Do not connecto circuits that provide external power.

Output Connections continued

TB2 Label	RS232 Function	RS422 Function
RXD-	Receive Data	Receive Data -
RXD+	Not Used	Receive Data +
TXD-	Transmit Data	Transmit Data -
TXD+	Not Used	Transmit Data +
GND	Ground*	Not Used
AO2-	Analog Output 2 -	
AO2+	Analog Output 2 +	
AO1-	Analog Output 1 -	
AO1+	Analog Output 1 +	

*For RS232 only.
CAUTION: Do not connect analog output wiring shields to adjacent GND terminal. Connect them to AC-power earth ground terminal only.

Sensor Connections
Wire sensor patch cord leads as shown below.
Warning: Miswiring patch cords may damage sensors. Blue wire #7 is not used. Leave clear shrink tube in place over it.

TB3 Label	Wire Color	Sensor Connection
GND(6)	BLACK	
SIG5(5)	RED	
SIG4(4)	GREEN	Channel B Sensor Connections
SIG3(3)	WHITE	
SIG2(2)	CLEAR	
SIG1(1)	WHT/BLUE	
GND(6)	BLACK	
SIG5(5)	RED	
SIG4(4)	GREEN	Channel A Sensor Connections
SIG3(3)	WHITE	
SIG2(2)	CLEAR	
SIG1(1)	WHT/BLUE	