

Series 21 - Features and Options**INDEX**

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SERIES 21 OPTIONAL FEATURES

1. CHOICE OF TEMPERATURE SENSORS
 1. TYPE E THERMOCOUPLE
 1. LOW MAGNETIC MATERIALS
 2. PASSES IMPULSE TEST WITH INSTRUMENT ENERGIZED
 2. 100 OHM RTD (NOT RECOMMENDED)
 1. HIGHLY SUCEPTABLE TO ELECTRICAL AND MAGNETIC FIELD INTERFERENCE
2. NUMBER OF WINDING TEMPERATURE SENSORS
 1. ONE SENSOR FOR LOWER COSTS OR
 2. THREE SENSORS
3. FOURTH SET-POINT RELAY - FORM C
 1. NOT FAIL-SAFE
 2. OPERATES WITH CURRENT HIGHEST TEMPERATURE OR
 3. WITH TRIP RELAY.
 4. STATUS LIGHT IS 100's DECIMAL POINT
4. FIFTH SET-POINT RELAY - FORM C
 1. FAIL-SAFE
 2. CAN OPERATE WITH ALARM SET-POINTS OR
 3. CAN OPERATE WITH FANS SET-POINTS OR
 4. WITH CURRENT HIGHEST TEMPERATURE
 5. STATUS LIGHT IS 10's DECIMAL POINT
5. COMMUNICATIONS - SEE PAGES 4 AND 5
6. POWER INPUT
 1. 85-264VAC @ 47-440Hz OR
 2. 110-270DC

OPTIONAL RELAY INSTRUCTIONS

1. GENERAL INFORMATION FOR OPTIONAL RELAYS
 1. FOURTH AND FIFTH SET-POINT RELAYS HAVE FORM C CONTACTS.
 2. CONTACT SPECIFICATIONS ARE IN "FIELD INSTALLATION" DOCUMENT, PAGE 2.
 3. TEMPERATURE ON SET-POINTS ARE PROGRAMMABLE.
 4. TEMPERATURE OFF SET-POINTS ARE PROGRAMMABLE.
 5. PROGRAMMING INSTRUCTIONS ARE IN "PROGRAMMING INSTRUCTIONS" DOCUMENT.
2. FOURTH SET-POINT RELAY
 1. SPECIFICATION IDENTIFICATION IS "A".
 2. THREE TERMINAL BLOCK CONNECTIONS ARE LOCATED ON THE BACK, TOP, LEFT SIDE OF THE INSTRUMENT.
 3. RELAY IS NOT FAIL-SAFE.
 4. RECOMMENDED APPLICATIONS ARE
 1. SECOND TRIP RELAY.
3. FIFTH SET-POINT RELAY
 1. SPECIFICATION IDENTIFICATION IS "B".
 2. THREE TERMINAL BLOCK CONNECTIONS ARE LOCATED ON THE BACK, MIDDLE, RIGHT SIDE OF THE INSTRUMENT.
 3. RELAY IS FAIL-SAFE.
 4. RECOMMENDED APPLICATIONS ARE
 1. FANS ON RELAY OR
 2. INDEPENDENT RELAY OPERATION ABOVE 50 DEGREES C OR
 3. STATUS RELAY ASSOCIATED WITH ONE OR MORE OF THE FOLLOWING CONDITIONS:
 1. LOSS OF POWER TO INSTRUMENT
 2. MICRO-CONTROLLER FAILURE
 3. INSTRUMENT FAILURE
4. FOURTH AND FIFTH SET-POINT RELAYS
 1. ORDERS OPTION A AND B ON THE SAME INSTRUMENT.

SERIES 21 STANDARD PROGRAMMABLE FEATURES (REQUIRES ACCESS CODE)

REFERENCE "ACCESS CODE" DOCUMENT

1. ACCESS CODE PROTECTS FEATURES FROM UNAUTHORIZED CHANGES.
2. ACCESS CODE IS CONTROLLED BY TRANSFORMER MANUFACTURER AND DEFINED BY CIMCO AS 6777621
3. CHANGE ALL "ON" SET-POINTS
4. CHANGE ALL DEAD-BANDS (MOVE OFF SET-POINTS UP AND DOWN)
5. FAN EXERCISER
 1. TURN FAN EXERCISER ON AND OFF (ASSOCIATES WITH 1's DECIMAL POINT ON DIGITAL DISPLAY)
 2. SELECT TIMES FROM ONE MINUTE TO TWO HOURS
6. MONITOR TEMPERATURE TRENDS AND RELAY "ON" TIME
 1. UP TO 25,500 HOURS WITH RESET OR AUTOMATIC ROLL-OVER
 2. FANS ON
 3. ALARM ON
 4. TRIP ON
 5. OPTIONAL 4TH AND 5TH SET-POINT RELAYS DO NOT OPERATE IN THIS FEATURE.

SERIES 21 OPTIONAL COMMUNICATION FEATURES

1. CURRENT LOOPS
 1. MAXIMUM TEMPERATURE OR
 2. ALL THREE TEMPERATURES
 3. FULL SCALE (0-250 DEGREES C)
 4. 0-1, 0-10, 0-20, AND 4-20 milli-amp
2. REMOTE MONITORING USING RS-485 - REFERENCE DRAWING 10-21-96-H (pages 8 and 9)
 1. CIMCO INSTRUMENTS TO REMOTE COMPUTER (DOS)
 1. SOFTWARE SUPPLIED BY CIMCO
 2. UP TO 250 INSTRUMENTS
 2. RS-485 UP TO 4,000 FEET - TWO WIRE TWISTED PAIR
3. CONVERTER - RS-485 TO RS-232C (REQUIRED FOR CONNECTION TO MOST COMPUTERS)
4. REMOTE MONITORING USING RS-232C - REFERENCE PAGES 8 AND 9
 1. ONE CIMCO INSTRUMENT WITH SOFTWARE FOR REMOTE COMPUTER (DOS)
 2. UP TO 200 FEET - FOUR WIRE TWISTED

OPTIONAL CURRENT LOOP INSTRUCTIONS

1. GENERAL INFORMATION FOR OPTIONAL CURRENT LOOPS
 1. CURRENT LOOP SIGNALS ARE LINEAR FROM ZERO TO 250 DEGREES C.
 2. CURRENT LOOP SIGNALS ARE INTENDED FOR LOW IMPEDANCE LOADS.
 3. CIMCO'S STANDARD CURRENT LOOP CALIBRATION IS WITH 100 OHM LOAD.
 4. CALIBRATION WITH DIFFERENT LOADS IS AVAILABLE UPON REQUEST.
 5. FIELD CALIBRATION IS NORMALLY AVAILABLE WITH REMOTE MONITOR NOT SUPPLIED BY CIMCO.
 6. IF ONE CURRENT LOOP IS SPECIFIED, THE OUTPUT SIGNAL IS PROPORTIONAL WITH THE HIGHEST CURRENT OPERATING TEMPERATURE.
 7. IF THREE CURRENT LOOPS ARE SPECIFIED, THE THREE CURRENT LOOP OUTPUT SIGNALS ARE PROPORTIONAL WITH THE THREE INPUT TEMPERATURES.

2. ONE CURRENT LOOP
 1. SIGNAL IS PROPORTIONAL WITH CURRENT HIGHEST OPERATING TEMPERATURE.
 2. OUTPUT CONNECTION IS A TWO POINT TERMINAL BLOCK ON THE BACK, LOWER LEFT SIDE OF THE INSTRUMENT.
 3. CONNECTION CABLE AND REMOTE METER ARE NOT INCLUDED.
 4. FOR ONE 0-1 milli-amp CURRENT LOOP; SPECIFICATION IDENTIFICATION IS "D".
 5. FOR ONE 0-10 milli-amp CURRENT LOOP; SPECIFICATION IDENTIFICATION IS "E".
 6. FOR ONE 0-20 milli-amp CURRENT LOOP; SPECIFICATION IDENTIFICATION IS "F".
 7. FOR ONE 4-20 milli-amp CURRENT LOOP; SPECIFICATION IDENTIFICATION IS "G".
 1. ZERO DEGREES C IS EQUAL TO 4 MILLI-AMPS.
 2. 250 DEGREES C IS EQUAL TO 20 MILLI-AMPS.

3. THREE CURRENT LOOPS
 1. THE THREE OUTPUT SIGNALS ARE PROPORTIONAL WITH THE THREE INPUT TEMPERATURES.
 2. OUTPUT CONNECTIONS ARE THREE SETS OF TWO POINT TERMINAL BLOCKS ON THE BACK, LOWER LEFT SIDE OF THE INSTRUMENT.
 3. CONNECTION CABLES AND REMOTE METERS ARE NOT INCLUDED.
 4. FOR THREE 0-1 milli-amp CURRENT LOOPS; SPECIFICATION IDENTIFICATION IS "H".
 5. FOR THREE 0-10 milli-amp CURRENT LOOPS; SPECIFICATION IDENTIFICATION IS "I".
 6. FOR THREE 0-20 milli-amp CURRENT LOOPS; SPECIFICATION IDENTIFICATION IS "J".
 7. FOR THREE 4-20 milli-amp CURRENT LOOPS; SPECIFICATION IDENTIFICATION IS "K".
 1. ZERO DEGREES C IS EQUAL TO 4 MILLI-AMPS.
 2. 250 DEGREES C IS EQUAL TO 20 MILLI-AMPS.

4. FORMULA FOR CURRENT LOOP IS AS FOLLOWS
CURRENT LOOP = (PRESENT DISPLAY TEMPERATURE X 16) + 4
250

OPTIONAL COMPUTER COMMUNICATIONS INSTRUCTIONS

1. GENERAL INFORMATION
 1. RS-232 SIGNALS ARE LIMITED IN LENGTH TO 200 FEET.
 2. RS-485 IS LIMITED IN LENGTH TO 4000 FEET WITH TWISTED PAIR WIRES AND NO SHIELDING. SHIELDING REDUCES SIGNAL STRENGTH OVER LONG LENGTHS.
 3. RS-485 SIGNALS WITH SHIELDING AND TWISTED PAIR WIRES ARE GENERALLY LIMITED IN LENGTH TO 2000 FEET.
 4. MOST COMPUTERS ARE DESIGNED TO ACCEPT RS-232 SIGNAL AND CAN NOT ACCEPT RS-485 WITHOUT A NEW PRINTED CIRCUIT BOARD OR A CONVERTER.

2. RS-232C SIGNAL -- MODEL A21 TO REMOTE COMPUTER
 1. SPECIFICATION IDENTIFICATION IS "T".
 2. SPECIFICATION "T" MODIFIES MODEL A21 WITH RS-232C TERMINAL BLOCK CONNECTION.
 3. CONNECTION CABLE BETWEEN MODEL A21 AND COMPUTER LOCATIONS IS NOT INCLUDED.
 4. CONNECTION CABLE MUST BE THREE WIRE PLUS SHIELDING.
 5. CABLE TO RS-232 ADAPTER PLUG IS NOT INCLUDED.
 6. INCLUDES SOFTWARE.
 7. OPERATING INSTRUCTIONS ARE INCLUDED WITH THE SOFTWARE DISK.
 8. COMPUTER DISPLAY IS SHOWN ON CIMCO DRAWING 10-21-96-H (pages 9 and 10).

3. CIMCO's RS-485 "CONVERTER PACKAGE"
 1. INCLUDES AN RS-485 TO RS-232 CONVERTER AND CONNECTION CABLES
 2. THIS CONVERTER CONNECTS BETWEEN THE COMPUTER KEY-BOARD AND THE COMPUTER. THEREFORE, NO EXTERNAL POWER IS REQUIRED TO OPERATE THE CONVERTER.
 3. RS-485 "CONVERTER PACKAGE" NOT INCLUDED UNLESS REQUESTED.

REMOTE COMPUTER DISPLAY FOR MONITORING SERIES 21 INSTRUMENTS

INSTRUMENT MONITOR PROGRAM FOR CIMCO ELECTRONICS, VERSION 1.1
USING SERIAL COMMUNICATIONS PORTS. COM 1
INSTRUMENT ADDRESS: 0
INSTRUMENT TYPE: SERIES 21/22

	CURRENT TEMP.	MAX. TEMP IN MEMORY	OPEN SENSOR
LEFT PHASE:	<u>0</u>	<u>0</u>	<u>NO</u>
CENTER PHASE:	<u>0</u>	<u>0</u>	<u>NO</u>
RIGHT PHASE:	<u>0</u>	<u>0</u>	<u>NO</u>
AMBIENT:	<u>0</u>		

	FANS	ALARM	TRIP	FOURTH	FIFTH
RELAY STATUS:	<u>OFF</u>	<u>OFF</u>	<u>OFF</u>	<u>OFF</u>	<u>OFF</u>
ON SET-POINT:	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
OFF SET-POINT:	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL RUN TIME:	<u>0</u>	<u>0</u>	<u>0</u>		

FAN MODE: blank

COMMUNICATIONS STATE: NOT REPLYING

ERRORS ENCOUNTERED: 1 ERRORS

LAST MESSAGE: REMOTE SENT BACK BAD FORMAT ON MESSAGE

ACTION MENU:

1. CHANGE CURRENT ADDRESS SETTING
2. QUIT THE PROGRAM (PRESS ESC)

REMOTE COMPUTER DISPLAY FOR MONITORING SERIES 21 INSTRUMENTS NOTES

1. DISPLAY ON PREVIOUS PAGE IS CONDITION WITHOUT CIMCO's INSTRUMENT CONNECTED TO REMOTE COMPUTER
 1. VERIFIES ACCEPTANCE OF CIMCO's OPERATING SOFTWARE BY REMOTE COMPUTER.
 2. NO INPUT FROM REMOTE CIMCO INSTRUMENT.
 3. FOLLOWING ITEMS ARE IN SEQUENCE OF SCREEN FROM TOP TO BOTTOM.
2. REMOTE COMPUTER OPERATOR MUST SELECT:
 1. COM PORT. CHOICES ARE COM 1, 2, 3 OR 4.
 2. INSTRUMENT ADDRESS FOR CIMCO INSTRUMENT AT TRANSFORMER LOCATION.
3. TEMPERATURE AND SENSOR MONITORING FEATURES ARE:
 1. CURRENT OPERATING TEMPERATURE OF EACH PHASE.
 1. ZERO IS NORMAL START-UP WHEN
 2. INSTRUMENT IS NOT CONNECTED TO REMOTE COMPUTER.
 2. CURRENT MAXIMUM TEMPERATURE OF EACH PHASE
 1. IN LOCAL INSTRUMENT MEMORY
 2. ZERO IS NORMAL START-UP WITHOUT INSTRUMENT CONNECTION.
 3. CONDITION OF TEMPERATURE SENSOR.
 1. NO; INDICATES SENSOR IS NOT OPEN. NOT OPEN IS NORMAL OPERATION.
 2. YES; INDICATES SENSOR IS OPEN.
 1. SENSOR IS NOT CONNECTED OR
 2. SENSOR IS DEFECTIVE.
4. RELAY MONITORING; MONITORS UP TO FIVE RELAYS (FOURTH AND FIFTH ARE OPTIONAL)
 1. RELAY STATUS; OFF IS DISPLAY WHEN INSTRUMENT IS NOT CONNECTED
 1. ON; INDICATES RELAYS HAVE BEEN TURNED ON DUE TO SET-POINT ACTION.
 2. OFF; INDICATES RELAYS HAVE BEEN TURNED OFF DUE TO SET-POINT ACTION.
 2. ON SET-POINT; DISPLAYS THE PROGRAMMED ON TEMPERATURE FOR THE RELAY.
 3. OFF SET-POINT; DISPLAYS THE PROGRAMMED OFF TEMPERATURE FOR THE RELAY.
 4. TOTAL RUN TIME; DISPLAYS THE TOTAL TIME THE RELAYS HAVE BEEN TURNED ON.
 1. MAXIMUM RUN TIME IS 25,500 HOURS
 2. INSTRUMENT PROGRAM RESETS TO ZERO AFTER 25,500 HOURS
 3. NOT AVAILABLE FOR FOURTH AND FIFTH SET-POINTS
 5. FAN MODE:
 1. BLANK; INDICATES INSTRUMENT IS NOT CONNECTED
 2. AUTO, ON, or OFF INDICATES SELECTION BY INSTRUMENT OPERATOR.
5. COMPLETE INSTRUCTIONS ARE INCLUDED WITH THE SOFTWARE DISK.

FIELD CONNECTIONS FOR POWER INPUTS TO SERIES 21 INSTRUMENTS

AC/DC INPUT POWER CAPABLE ONLY!!!!

1. INPUT POWER MUST BE CONNECTED TO TERMINALS H1 AND H4.
2. CONNECTION VOLTAGE CAN BE 85-264VAC AT 47-440 Hz OR 110-270 DC
3. THE POWER SUPPLY CONNECTED TO THE INSTRUMENT SHOULD BE DIFFERENT FROM THE TRANSFORMER MANAGED BY THE TRIP RELAY ON THE INSTRUMENT.
4. IF THE INSTRUCTIONS IN ITEM 3 (ABOVE) ARE NOT FOLLOWED, UNEXPECTED OR ABNORMAL TRIP OPERATIONS MAY OCCUR.
5. THIS WARNING APPLIES TO ALL DEVICES WITH TRIP RELAYS CONNECTED AS DESCRIBED IN ITEM 3 (ABOVE).
6. BE ESPECIALLY CAREFUL IF THE TRANSFORMER MONITORED BY THE SERIES 21 INSTRUMENT IS THE ONLY SOURCE OF POWER.