

**Series 21 - Programming Instruction Manual**  
**INDEX**

<i>Description</i>	<i>Page</i>
Programmable Features	2, 3, 4
Monitor Temperature Trends	5, 6
Memory Location Definitions	7
Operating Control Panel	8

## OPERATING INSTRUCTIONS for PROGRAMMABLE FEATURES

### REFERENCE "Operator Instruction Manual," pages 5 and 6 ALWAYS READ STEP 1 FIRST

1. **ACCESS CODE** is required for all programmable features.
  1. Transformer manufacturer maintains control of "CODE". Cimco supplies standard code. Customer may select code.
  2. Instructions for each programmable feature are described in Items 2, 3, 4, 5, or 6 on this page.
  3. Access will be turned on with the following steps.
    1. Press and hold button 10 until programmable selections are completed.
    2. Enter seven digit access code.
    3. A "beep" will indicate acceptance of "code".
  4. Continue to hold button 10 until changes are complete.
    1. Steps 2, 3, 4, 5, and 6 can be executed as single actions or
    2. Steps 2, 3, 4, 5, and 6 software selections can be completed with one ACCESS CODE input.
  5. Repeat ACCESS CODE procedures if Button 10 is released before all software selections are completed.
2. Change "**ON SET-POINTS**"
  1. Press and release button 11 to select set-point requiring change.
  2. Press button 6 once to increase "TEMPERATURE ON" one increment.
  3. Press button 7 once to decrease "TEMPERATURE ON" one increment.
3. Change "**DEAD-BAND**"
  1. **DEAD-BAND** is defined as the difference between set-point on and set-point off.
  2. Press and release button 11 to select dead-band requiring change.
  3. Press button 6 once to increase "**DEAD-BAND**" one increment.
  4. Press button 7 once to decrease "**DEAD-BAND**" one increment.
4. Turn **FAN EXERCISER** on
  1. Repeat ACCESS CODE procedures if Button 10 has been released.
  2. Press and release button 9 then
  3. Press and release button 1.
  4. Release button 10 to turn fan exerciser on.
  5. Clock starts in AUTO ON running mode.
  6. FANS OFF MODE status during fan exerciser "on-time";
    1. Clock continues to run during FANS OFF mode.
    2. Fan power is turned off during FANS OFF mode.
5. Select **FAN EXERCISER "on-time"**
  1. ENTER ACCESS CODE
  2. Select "on-time" with one of the following choices.
    1. Press and release button 3 for two hours or
    2. Press and release button 4 for one hour or
    3. Press and release button 5 for one minute or
    4. Press and release button 6 to add one minute or
    5. Press and release button 7 to subtract one minute.
  3. Release button 10 and the "on-time" is selected.  
(continued on next page)

**OPERATING INSTRUCTIONS for PROGRAMMABLE FEATURES  
(continued)**

**REFERENCE "Operator Instruction Manual," pages 5 and 6**

**ALWAYS READ STEP 1 FIRST**

6. Turn **FAN EXERCISER off**
  1. ENTER ACCESS CODE
  2. Press and hold button 10 then
  3. Press and release button 9 then
  4. Press and release button 2.
  5. Release button 10 to turn fan exerciser off.
7. **ACCESS CODE IS TURNED OFF when button 10 is released.**
8. See "Programming Instructions" document, pages 5 and 6, for RELAY ON elapsed time monitoring instructions.

**OPERATING INSTRUCTIONS for PROGRAMMABLE FEATURES  
(continued)**

**REFERENCE "Operator Instruction Manual," pages 5 and 6**

**ALWAYS READ STEP 1 FIRST**

**TABLE 2**

1. Operating status LED's indicate which set-point is available for change.
  1. For "on" set-points LED's do not blink.
  2. For "dead-band" LED's blink.
  3. Fourth set-point (optional) is associated with 100's decimal point.
  4. Fifth set-point (optional) is associated with 10's decimal point
2. Fans on set-point changes in five degree increments.
3. All set-points and dead-bands except fans on change in one degree increments.
4. Dead-band limits are fixed to help prevent mistakes.
  1. Fan relay dead-band maximum is 50 C.
  2. Fan relay dead-band minimum is 10 C.
  3. All other dead-band maximums are 10 C.
  4. All other dead-band minimums are 3 C.
5. Fan exerciser
  1. Minimum on time is one minute.
  2. Maximum on time is two hours.
  3. Off time is one week only.
6. Fourth set-point relay is optional.
7. Fifth set-point relay is optional.
8. Set-point monitoring "on" times are in 100's of hours.
  1. Not available for 4<sup>th</sup> set-point relay
  2. Not available for 5<sup>th</sup> set-point relay

**OPERATING INSTRUCTIONS for MONITORING TEMPERATURE TRENDS  
REFERENCE Drawing 10-21-96-A (Operator Instruction Manual, pages 5 and 6)  
and Drawing 10-21-96-B (Programming Instructions, page 2-4)**

**ALWAYS READ STEP 1 FIRST!**

1. **ACCESS CODE** is required for all programmable features.
  1. Transformer manufacturer maintains control of "CODE".
  2. Access will be turned on with the following steps.
    1. Press and hold button 10 until desired operations are completed. Enter access code again if required.
    2. Enter seven digit access code.
    3. A "beep" will indicate acceptance of "code".
    4. Follow instructions in items 2, 3, or 4 on this page.
  3. Continue to hold button 10 until all changes are completed.
    1. Start Step 2 and continue through Steps 3 and 4 or
    2. Perform Step 1 or Step 2 or Step 3
2. **Monitor** fans on elapsed time
  1. To **read**
    1. Press and release button 3.
    2. Display will indicate elapsed time in hundreds of hours.
    3. Press and release button 3 then continue to Step 3. 1. 2.
  2. To **erase or reset time** to zero
    1. Press and release button 3 then
    2. Press and release button 2.
    3. Display will indicate three zeroes.
3. **Monitor** alarm-on elapsed time
  1. To **read**
    1. Press and release button 4.
    2. Display will indicate elapsed time in hundreds of hours.
    3. Press and release button 4 then continue to Step 4. 1. 2.
  2. To **erase or reset time** to zero
    1. Press and hold button 10 then
    2. Press and release button 4 then
    3. Press and release button 2.
  3. Display will indicate three zeroes.
4. **Monitor** trip-on elapsed time
  1. To **read**
    1. Press and release button 5.
    2. Display will indicate elapsed time in hundreds of hours
  2. To **erase or reset time** to zero
    1. Press and hold button 5 then
    2. Press and release button 2 then
    3. Display will indicate three zeroes.
5. **ACCESS CODE IS TURNED OFF** when button 10 is released.

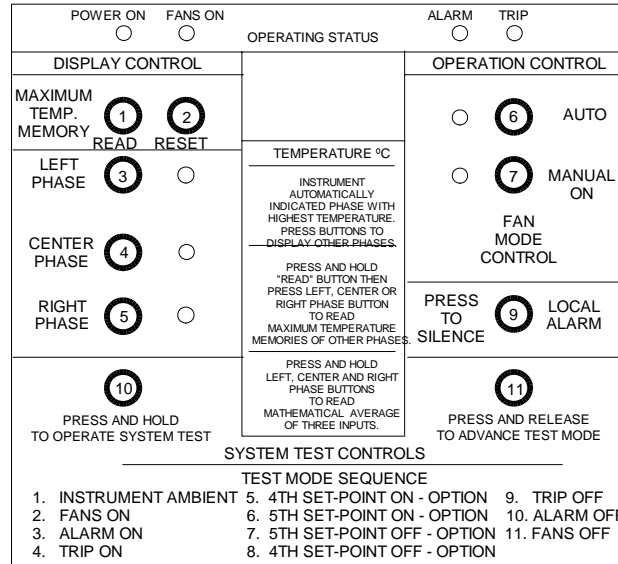
## **SPECIAL NOTES FOR TEMPERATURE TREND DATA**

1. Schedule fan motor maintenance.
2. Monitor fans on time.
3. Monitor alarm on time.
4. Monitor trip on time.
5. Data for estimating consumed life of transformer insulation.
6. Time is displayed in 100's of hours.
  1. Accuracy is plus 0 and minus 1 hour.
  2. Maximum reading is 25,000 hours.
  3. Automatic reset to zero after 25,000 hours.

## Memory Location Definitions for Series 21

<i>Signal Description</i>	<i>Definition</i>	<i>Address</i>
Unit Type	Always at address 0, will be a 1 for standard A21	00 H
Fan Mode	0 =Off, 1 = Manual, 2 = Auto	01 H
Board (Ambient) Temperature		02 H
Right Phase		03 H
Center Phase		04 H
Left Phase		05 H
Fans on time (100s of hours)		07 H
Alarm on time (100s of hours)		08 H
Trip on time (100s of hours)		09 H
Thermocouple Status	Bit 0 = Right, Bit 1 = Center, Bit 2 = Left 1 = Open	0A H
Right High		0B H
Center High		0C H
Left High		0D H
Fans Relay on Set-point		0F H
Fifth Relay on Set-point		10 H
Alarms Relay on Set-point		11 H
Trip Relay on Set-point		12 H
Fourth Relay on Set-point		13 H
Fans Relay off Set-point (dead-band)		14 H
Fifth Relay off Set-point (dead-band)		15 H
Alarms Relay off Set-point (dead-band)		16 H
Trip Relay off Set-point (dead-band)		17 H
Fourth Relay off Set-point (dead-band)		18 H
Relay Statuses	Bit 0 = Fans, Bit 1 = Alarm, Bit 2 = Trip, Bit 3 = Fourth, Bit 4 = Fifth 1 = Energized	19 H

**FIGURE 1**



**TABLE 1**

**STEP MODE**

1. INSTRUMENT AMBIENT
2. FANS ON
3. ALARM ON
4. TRIP ON
5. 4TH SET-POINT ON - OPTIONAL
6. 5TH SET-POINT ON - OPTIONAL
7. 5TH SET-POINT OFF - OPTIONAL
8. 4TH SET-POINT OFF - OPTIONAL
9. TRIP OFF
10. ALARM OFF
11. FAN OFF

**Key code**

- = Digital display
- = Display and control / buttons
- = LED's