# 76-ATC300-00

Replacement for the Eaton ATC300 and 300+ Controllers Operation Manual Version 1.0.0.7 Automatic Transfer Switch Operation

## WARNING!

ATS controls can have dangerous, and possibly lethal voltages present. The controller should only be serviced by a qualified technician.

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The 76-ATC300 is a drop-in replacement for the Eaton ATC300/300+. The on-board LCD was changed from a 2x16 character display to a larger 4x20 character display. This greatly reduces setup time and provides more information on a single screen to the operator. The human machine interface (HMI) has been completely redesigned from the OEM and uses a modified version of the Flight Systems ATS1500 firmware.

## Features

- Voltage ranges from 120VAC to 600VAC; 50 or 60Hz operation
- Voltage and frequency settings compatible with the ATC300+
- In-phase and phase rotation monitoring
- CNT2, CNT3, and BRKR switch type operation modes
- Utility to generator operation
- Source 1 and Source 2 time delays compatible with the ATC300+
- 16 programmable exercise cycles
- Increased display size (4x20)
- Programmable inputs and outputs
- Modbus communications
- Setup Assist menu for expedited setup
- Replaced Unit Status LED with Fault LED



## **Device Setup**

It is suggested to use the Setup Assist menu to do the initial setup of the replacement control. Since the OEM controllers were mainly pre-configured at the time of ordering, this section will go over how to derive setup parameters based on the catalog number of the transfer switch assembly. It is possible to manually configure the controller, however, it is not recommended.

## Setup Assist

From the main menu, press SET, enter the default password '0000' and select NEXT. Use the navigation keys to select Setup Assist and press next. Once in the Setup Assist menu, press next to modify the parameters. Use the down button to select the parameter and the right arrow to modify the value. Press SAVE to commit these settings to memory. Below is an example of an Eaton ATS catalog number and its configuration.

**NOTE:** The 76-ATC300-00 can replace either style OEM controller (ATC300 and ATC300+), however, the original controller style (ATC300/300+) must be entered into the controller. The ATC300+ has additional I/O from the ATC300 that, if left unconnected, can result in improper operation.

| 2400/6/<br>BRKR | 8Hz | AT            | C-300+ |
|-----------------|-----|---------------|--------|
| 3 Phas          | 8   |               |        |
| Back            | 3   | $\rightarrow$ | Next   |

| E:1.                        | N                          |                       | Transfer Switch                          |
|-----------------------------|----------------------------|-----------------------|--|
| GO #:<br>Cat #:<br>Style #: | KOAA08865<br>Atv3nBc30800X | (SU                   | ltem: 1<br>CS #: 091351<br>Piece: 2 of 2 |
| Volts:<br>Poles:            | 480<br>3                   | Amps: 800<br>Phase: 3 | Hertz: 50/60<br>Wire: 3/4                |
| A                           | SSEMBLED IN ME             | XICO WITH U.S. CO     | IMPONENTS                                |
| J11073                      | 0195                       |                       | 8165A18H02                               |

Example Eaton Transfer Switch Catalog Number ATV3NBC30800XSU

Example Transfer Switch Data Sticker

AT: Transition Type (Automatic/Open Transition)

V: Orientation (Vertical) **NOTE: H** and V orientations will **always** be configured for the **BRKR** switch type **3:** Logic (ATC300 Controller)

**NB:** Mechanism (In this example, NB represents a molded case (breaker or switch) with a current rating of 800-1000 Amps

**C:** Mount (In this example, C represents a configuration with a molded case breaker (MCB) on the Normal source and a molded case switch (MCS) on the Emergency source)

3: Number of Poles (3 Poles) Three Phase

0800: Current Rating (800 Amps)

X: Voltage Configuration (X represents a 480V, 60Hz configuration)

**S:** Enclosure Type (NEMA 1)

U: UL 1008 Listed

| EATON ATS CATALOG NUMBER DESIGNATIONS  |                                |                |                       |  |               |                   |                  |               |                      |
|--|--------------------------------|----------------|-----------------------|--|---------------|-------------------|------------------|---------------|----------------------|
| Туре   | Orientation                    | Logic          | Mechanism             | Mount  | Poles         | Amperes<br>(XXXX) | Voltage          | Enclosure     | Listing              |
| AT: Automatic (Open Transition)  | C: Contactor<br>(CNT2/CNT3)    | 3: ATC-<br>300 | C2: CNT2              | Contactor (CNT2/CNT3)                                    | 2: Two-Pole   |                   | A: 120V, 60Hz    | D: NEMA<br>4X | R: UL<br>Recognized  |
| BI: Bypass Isolation (Open<br>Transition)  | H: Horizontal<br><b>(BRKR)</b> |                | C3: CNT3              | C: Fixed mount, 100% rated circuit breaker (normal side) | 3: Three-Pole |                   | B: 208V, 60Hz    | J: NEMA<br>12 | U: UL 1008<br>Listed |
| CB: Bypass Isolation (Closed<br>Transition)                                      | V: Vertical<br><b>(BRKR)</b>   |                | C5: CNT3              | E: Dual Drawout  | 4: Four-Pole  |                   | E: 600V, 60Hz    | K: Open       | X: No Listing        |
| CT: Automatic (Closed<br>Transition)   |                                |                | F5: <b>CNT3</b>       | X: Fixed Mount   |               |                   | G: 220V, 50/60Hz | S: NEMA 1     |                      |
| NT: Non-Automatic (Open<br>Transition)   |                                |                | G5: CNT3              | X: On BI and CB, Drawout<br>ATS, fixed bypass            |               |                   | H: 380V, 50Hz    | R: NEMA<br>3R |                      |
|  |                                |                |                       |  |               |                   | K: 600V, 50Hz    | L: NEMA 4     |                      |
| Closed Transition (Inphase<br>On)  |                                |                | Molded Case<br>(BRKR) | Molded Case (BRKR)                                       |               |                   | M: 230V, 50Hz    |               |                      |
|  |                                |                | FD                    | A: FM, N (MCS), E (MCS)                                  |               |                   | N: 401V, 50Hz    |               |                      |
|  |                                |                | KD                    | B: FM, N (MCB), E (MCB)                                  |               |                   | O: 415V, 50Hz    |               |                      |
|  |                                |                | LD                    | C: FM, N (MCB), E (MCS)                                  |               |                   | W: 240V, 60Hz    |               |                      |
| Shaded cells indicate<br>parameters critical to transfer<br>switch configuration |                                |                | MD                    | D: FM, N (MCS), E (MCB)                                  |               |                   | X: 480V, 60Hz    |               |                      |
| <b></b>  |                                |                | NB                    |  |               |                   | Z: 365V, 50Hz    |               |                      |

**Description of Transfer Switch Types** 

CNT2 - 2 Position Contactor (No Time Delay Neutral/TDN Setting)

**CNT3 -** 3 Position Contactor (Time Delay Neutral)

BRKR - Molded Case Breaker/Switch (Motor Drive)

**NOTE:** It may be helpful to highlight/mark the parameters in the table above to match the transfer switch data sticker.

# Set Menu Navigation

## Set Time/Date

| Sot Time 12:00   | Set Date<br>Tue 01/03/00                                     | Clock Ahead 1 Hour<br>2nd Sun of Mar   |                                 |
|--|--|--|---------------------------------|
| Rack $\land$ > Saue  | Back $\diamond$ Save   | Back $\diamond$ > Saue   |                                 |
| Set Exerciser  | incenter in a month in                                       | and and and the state of the second |                                 |
| Exerciser Event 1<br>Disable   | Exerciser Event 1<br>Unloaded                                | Exerciser Event 1<br>Daily   |                                 |
| Back 🤉 Next  | Back 🏦 🛛 Next  | Back 🏦 🛛 Next  |                                 |
| Exerciser Event 1<br>Repeat Rate 00  | Exerciser Event 1<br>Duration <u>0</u> 0:00                  | Exerciser Event 1<br>Start Date <u>0</u> 0/00/00   |                                 |
| Back 🤉 Next  | Back 🏦 💙 Next  | Back 🏦 💙 Next  |                                 |
| Exerciser Event 1<br>Start Time <u>0</u> 0:00                                |  |  |                                 |
| Back 🏩 👌 Save  |  |  |                                 |
| Set S1 Time Delays   |  |  |                                 |
| Set S1 Time Delays<br>En9ine Start   | En9ine Start<br><u>0</u> 0:03                                |  |                                 |
| 🍹 🚖 🔀 Back   | Back 🏠 🗦 Save  |  |                                 |
| Set S1 Time Delays<br>Engine Cooldown  | Engine Cool Down<br><u>0</u> 0:05                            |  |                                 |
| 🍹 🛧 🔀 Back   | Back 🏠 🗦 Save  |  |                                 |
| Set S1 Time Delays<br>Xfer Pref>Stby   | Xfer Pref>Stby<br>0 <u>0</u> :03                             |  |                                 |
| 🍹 🛧 🔀 Back   | Back 🏠 👌 Save  |  |                                 |
| Set S1 Time Delays<br>Xfer Off>Stby  | Xfer Off>Stby<br>0 <u>0</u> :02                              |  |                                 |
| 🍹 🛧 🔀 Back   | Back 🏠 🗦 Save  |  |                                 |
| Set S1 Time Delays<br>Fail to Acquire Pref                                   | Fail to Acquire Pref<br>Enable                               | Fail to Acquire Pref<br>01:00  |                                 |
| 🍹 🏦 > Back   | Back 🏦 👌 Save  | Back î > Save  |                                 |
| Set S1 Time Delays<br>Control Mode Time<br>Loads to Control: 1<br>\$ \$ Deck | S1 Time Delays<br>Load Control Mode<br>Time<br>Back î > Save | S1 Time Delays<br>Loads to Control: 1<br>Back 🏠 🚿 Save   |                                 |
| Set S1 Time Delays<br>Time-Based Control                                     | Time-Based Control<br>Load Control 1                         | Load 1 Disc N>E<br><u>0</u> 0:03   | Load 1 Rec E>N<br><u>0</u> 0:03 |
| 🐺 🏦 🔀 Back   | 🍹 🚖 🗦 Back   | Back 🏠 🖒 Next  | Back 🏦 🔀 Save                   |

## Set S2 Time Delays

| Set S2 Time Delays<br>En9ine Start   | Engine Start<br><u>0</u> 0:03                                |  |                         |
|--|--|--|-------------------------|
| 🐺 🏦 🔀 Back   | Back 🏠 🔀 Save  |  |                         |
| Set S2 Time Delays<br>Engine Cool Down                                       | Engine Cool Down<br><u>0</u> 0:05                            |  |                         |
| 🍹 🏦 🔀 Back   | Back 🏦 👌 Save  |  |                         |
| Set S2 Time Delays<br>Xfer Stby>Pref   | Xfer Stby>Pref<br>01:00                                      |  |                         |
| 🍹 🏦 🔀 Back   | Back 🏠 💙 Save  |  |                         |
| Set S2 Time Delays<br>Xfer Off>Pref  | Xfer Off>Pref<br>00:02                                       |  |                         |
| 🍹 🔹 🗦 Back   | Back 🏠 🔀 Save  |  |                         |
| Set S2 Time Delays<br>Fail to Acquire Stby                                   | Fail to Acquire Stby<br>Enable                               | Fail to Acquire Stby<br>01:00                          |                         |
| 🐺 🏦 🗦 Back   | Back 🏠 🗦 Save  | Back 🏠 🔀 Save  |                         |
| Set S2 Time Delays<br>Control Mode Time<br>Loads to Control: 1<br>‡ ‡ > Back | S2 Time Delays<br>Load Control Mode<br>Time<br>Back î > Save | S2 Time Delays<br>Loads to Control: 1<br>Back î > Save |                         |
| Set S2 Time Delays<br>Time-Based Control                                     | Time-Based Control<br>Load Control 1                         | Load 1 Disc E>N<br>Q0:03                               | Load 1 Rec N>E<br>20:03 |
| 🍹 🏦 🔀 Back   | 🍹 🟦 🔀 Back   | Back 🏦 🔿 Next  | Back 🏦 💙 Save           |
| Set Sources  |  |  |                         |

| Phase Rot.at.ion   | Disable Rotation             | BAC Rotation                        | ABC Rotation      |
|--------------------|------------------------------|-------------------------------------|-------------------|
| ∓ ≜ > Back         | z _ t Save Back              | z _                                 | The the save Back |
| In Phase Monitor   | Disable                      | Enable                              |                   |
| 🍹 🏦 > Back         | 🍹 🏦 Save Back                | 🐺 🏦 Save Back                       |                   |
| In Phase Angle     | 10 Degrees                   |                                     |                   |
| 🍹 🚖 🗦 Back         | 🐺 🟦 Save Back                |                                     |                   |
| In Phase Xfer Fail | In Phase Xfer Fail<br>Enable | In Phase Xfer Fail<br><u>0</u> 1:00 |                   |
| 🍹 🛧 👌 Back         | Back 🏠 🗦 Save                | Back 🏠 🖒 Save                       |                   |

# Set Menu Navigation (cont.)

## Set Sources (cont.)

| Volt Differential        | 5 Percent                  |                               |
|--------------------------|----------------------------|-------------------------------|
| 🐺 🏦 🔀 Back               | 🏅 🛔 Save Back              |                               |
| Freq Differential 1.0 Hz |                            |                               |
| 🍹 🛔 > Back               | 🍹 🟦 Save Back              |                               |
| Preferred Source         | Preferred Source<br>Normal | Preferred Source<br>Emergency |
| 🍹 🚖 🖒 Back               | 🍹 🔹 Save Back              | 🍹 🚖 Save Back                 |

## Applicable for both Normal and Emergency Source

| Normal Source                            | Emergency Source   |               |
|--|--|---------------|
| 🍹 🛧 > Back                               | 🍹 🏦 🔿 Back   |               |
| Number of Phases                         | 3 Phase  | Sin9le Phase  |
| 🍹 🚖 🔀 Back                               | 🍹 🏦 Save Back  | 🐺 🟦 Save Back |
| Volta9e                                  | Set Voltage<br>240 VAC                                     |               |
| 🚛 🛧 👌 Back                               | Back 🏠 🖒 Save  |               |
| Frequency                                | Set Frequency<br>60 Hz                                     |               |
| 🐺 🏦 🔀 Back                               | Back 🤉 🔻 Save  |               |
| Under Voltage<br>Pickup                  | Pickup<br>90 % of Nominal<br>85-100%                       |               |
| Under Voltage<br>Dropout<br>\$ \$ > Back | Dropout<br>90 % of Pickup<br>75-98%<br>\$ 1 Save Back      |               |
| Over Voltage<br>Pickup<br>‡ 1 > Back     | Pickup<br>95 % of Dropout<br>95-100%<br>\$ 1 Save Back     |               |
| Over Volta9e<br>Dropout<br>∓ _ ★ > Back  | Dropout<br>115 % of Nominal<br>106-135%<br>\$ \$ Save Back |               |

# Set Menu Navigation (cont.)

## Set Sources (cont.)

| Volta9e Debounce<br>‡ ‡ > Back                   | Debounce Time<br>5 Seconds<br>0.1-9.9 Seconds<br>\$ 1 Save Back   |  |
|--|---|--|
| Volta9e Unbalance<br>Enable/Disable<br>¥ \$ Back | Volta9e Unbalance<br>Disable<br>\$ \$ Save Back                   | Volta9e Unbalance<br>Enable<br>‡ 1 Save Back |
| Voltage Unbalance<br>Pickup<br>‡ ‡ > Back        | Pickup<br>10 %<br>3-18%<br>\$ \$ Save Back                        |  |
| Volta9e Unbalance<br>Dropout<br>‡ ‡ > Back       | Dropout<br>20 %<br>5-20%<br>\$ \$ Save Back                       |  |
| Under Frequency<br>Pickup<br>‡ ‡ > Back          | Pickup<br>90 % of Nominal<br>80-95%<br>≆ ≇ Save Back              |  |
| Under Frequency<br>Dropout<br>\$ \$ Back         | Dropout<br>99 % of Pickup<br>95-99%<br>\$ \$ Save Back            |  |
| Over Frequency<br>Pickup<br>‡ ‡ > Back           | Pickup<br>110 % of Nominal<br>105-120%<br>\$ \$ Save Back         |  |
| Over Frequency<br>Dropout<br>\$ \$ Back          | Dropout<br>101 % of Pickup<br>101-115% Nominal<br>\$ \$ Save Back |  |
| Freq Debounce<br>\$ \$ > Back                    | Debounce Time<br>3 Seconds<br>0.1-15.0 Seconds<br>\$ \$ Save Back |  |

## Set Inputs/Outputs

| Main Board I/O | Main Board I/O<br>Inputs | Main Board I/O<br>Input 1 | Main Board I/O            |
|----------------|--------------------------|---------------------------|---------------------------|
| 🍹 🏦 🔀 Back     | 🖡 🏦 🔀 Back               | ‡     ‡     ≻   Back      | LOCK UUt<br>T 1 Save Back |

| Ы.   | m.         |       | r 20 | М.,   | m          | T T    | 20   |
|------|------------|-------|------|-------|------------|--------|------|
| l'id | TLI DA     | aru . | L/ U | l'Ici | ILLI DAS   | aru 14 | . n  |
|      | Inpu       | t 2   |      |       | Input      | 5 2    |      |
|      |            |       |      | R     | emote      | Test   |      |
| ÷    | .#.<br>.#. | >     | Back | Ŧ     | .#.<br>.#. | Save   | Back |

# Set Menu Navigation (cont.)

## Set Inputs/Outputs (cont.)

| Main Board I/O | Main Board I/O<br>Outputs |   | I/O Main Board I/O<br>Output 1 |         | I/O           | Main Board I/O<br>Output 1 |             |   |
|----------------|---------------------------|---|--------------------------------|---------|---------------|----------------------------|-------------|---|
| 🍹 🏦 🔀 Back     | т .<br>т .                | > | Back                           | \$      |               | >                          | Back        | Load Control 1<br>∓ ± Save Back                               |
|                |                           |   |                                | Ma<br>¥ | in Bo<br>Outr | ard 1<br>ut 2<br>>         | I/O<br>Back | Main Board I/O<br>Output 2<br>Audible Alarm<br>\$ 1 Save Back |

#### Set System

| DRNR                |  |   | 3KC   |  |   | MGNM   |   |
|---------------------|--|---|---|--|---|--|---|
| * 2                 | Save                                     | Back  | へ<br>金  | Save   | Back  | А<br>#   | Save  |
| Switch Type<br>CNT3 |  |   |   |  |   |  |   |
| * <u>^</u>          | Save                                     |   |   |  |   |  |   |
|                     | k <u>a</u><br>Switch Type<br>CNT3<br>k a | k <u>a</u> Save<br>Switch Tape<br>CNT3<br>k <u>a</u> Save | k <u>save</u> Back<br>Switch Type<br>CNT3<br>k i Save | k <u>save</u> Back <u>s</u><br>Switch Type<br>CNT3<br>k <u>s</u> ave | k ☆ Save Back ☆ Save<br>Switch Type<br>CNT3<br>k ☆ Save | k <u>save</u> Back <u>save</u> Back<br>Switch Type<br>CNT3<br>k <u>s</u> ave | k <u>Save</u> Back <u>Save</u> Back <u></u><br>Switch Type<br>CNT3<br>k <u>Save</u> |

#### Set Passwords

| Se | etup P.    | asswo | ord  | 01d<br>New | Pass<br>Pass | word<br>word | 8021<br>6020 |
|----|------------|-------|------|------------|--------------|--------------|--------------|
| ÞÞ |            | >     | Back | Back       | Â            | >            | Save         |
| Te | est Pa     | SSWOP | -9   | 01d<br>New | Pass<br>Pass | word<br>word | 8021<br>6020 |
| ÷. | .4.<br>.4. | >     | Back | Back       | â            | >            | Save         |

## Calibration

| Calibrate<br>L-L Voltage<br>Source N<br>\$ \$ > Back | Calibrate<br>L1-L2 Source N<br>\$ \$ > Back  | L1-L2 VAC 240<br>Calibrate 240<br>Back î 🟅 Save  |
|--|--|--|
|  | Calibrate<br>L2-L3 Source N<br>\$ \$ > Back  | L2-L3 VAC 240<br>Calibrate 240<br>Back î 🟅 Save  |
|  | Calibrate<br>L3-L1 Source N<br>\$ \$ Back  | L3-L1 VAC 240<br>Calibrate 240<br>Back î 🟅 Save  |
|  |  |  |
| Calibrate<br>L-L Voltage<br>Source E<br>\$ \$ > Back | Calibrate<br>L1-L2 Source E<br>\$ \$ Back  | L1-L2 VAC 240<br>Calibrate 240<br>Back î 🐺 Save  |
| Calibrate<br>L-L Voltage<br>Source E<br>\$ \$ > Back | Calibrate<br>L1-L2 Source E<br># A > Back<br>Calibrate<br>L2-L3 Source E<br># A > Back | L1-L2 VAC 240<br>Calibrate 240<br>Back A T Save<br>L2-L3 VAC 240<br>Calibrate 240<br>Back A T Save |

## Setup Assist

The Setup Assist menu enables the operator to quickly and easily modify critical transfer switch parameters on a single menu screen. Press Next, Use the down arrow to change the parameter and the right arrow to change the value.

| 2400/60Hz | ATC-300+ | 2400/60Hz | ATC-300+ |
|-----------|----------|-----------|----------|
| BRKR      |          | BRKR      |          |
| 3 Phase   |          | 3 Phase   |          |
| Back      | Next     | Back 🌷    | > Next   |

## **Factory Default**

Press the right arrow button to apply factory default settings

| Fa | actory | Defau] | lt.  |
|----|--------|--------|------|
| Ŧ  |        | >      | Back |

# **Display Settings**

## Main Menu

Use the left 2 buttons to navigate through the main menu. The main display will cycle through 6 screens to display various parameters and alternate functions.

## **Down Button**

| ŝ    | iystem | Read: | 9    |
|------|--------|-------|------|
| SRC1 | 240    | SRC2  | 240  |
|      | View   | Set   | Test |

# Displays current status, active time delay, and faults

| S1<br>60Hz | - АВ<br>24АО | BC<br>24AU | AC<br>2400 |
|------------|--------------|------------|------------|
| Disa       | ole          | Lamp       |            |
| #          | 2            | Test       | Main       |

### **Displays Normal L-L**

| S2    | AB   | BC   | AC   |
|-------|------|------|------|
| 60Hz  | 240U | 240U | 240U |
| Disak | ole  |      |      |
| w.    |      |      | Main |

### Displays Emergency L-L

| Tue | Time/0<br>12:00 | 3ate<br>01/03/00 |
|-----|-----------------|------------------|
| Ŧ   | ÷               | Mair             |

## Displays date and time



#### Displays source settings

| Prog | ram T | ran  | sit | ion  |
|------|-------|------|-----|------|
| Dis  | able  | Rot. | ati | on   |
| In-  | Phase | Di   | sab | le   |
| *    | *     |      |     | Main |

Displays system settings

## View Button



Displays exercise setup



### Displays S1 delays

|   | S2 De        | lays |      |
|---|--------------|------|------|
| Ŧ | .de.<br>.de. | >    | Main |

## Displays S2 delays

Sources

## Displays source setup



# System 🌫 🚖 > Main

Displays system setup

## **Test Button**



Initiates a Sync Test



## Initiates an Unloaded Test

>

Main

\*

7

#### Lamp Test

Press the down arrow to access main display screen 2. Press button 3, LAMP TEST to temporarily illuminate all LEDs and characters on the display.

## **Contrast Adjustment**

Press and hold VIEW for 2 seconds until all the keypad indicators illuminate.

| XXXF1 | ightXSystemsXXX |
|-------|-----------------|
| XXXF1 | ightXSystemsXXX |
| XXXF1 | ightXSystemsXXX |
| XXXF1 | i9htXSystemsXXX |

Use the 2 left buttons to adjust the screen contrast. Press Back to exit the contrast adjustment.

The 76-ATC300-00 supports up to 16 exercise cycles. Each exercise cycle is entered as an event. When the control board is initially powered on it first searches all saved events to determine if they have already passed. All expired events are automatically updated to their next valid cycle and saved in EEPROM. Each exercise event has several parameters that must be set correctly to function properly. Even if an event is disabled and left to expire it will be updated to its next valid exercise time upon enabling the cycle.

## Example Exercise Setup:

| Exerciser Event 1 | Exerciser Event 1           | Exerciser Event 1 | Exerciser Event 1 |  |
|-------------------|-----------------------------|-------------------|-------------------|--|
| Enable            | Loaded                      | Weekly            | Repeat Rate 01    |  |
| Back 🏠 🛛 Next     | Back 🏠 🛛 Next               | Back 🏦 🛛 Next     | Back 🏠 🛛 Next     |  |
| Exerciser Event 1 | Exerciser Event 1           | Exerciser Event 1 |                   |  |
| Duration @0:15    | Start Date <u>0</u> 1/03/24 | Start Time 10:00  |                   |  |
| Back 🏩 > Next     | Back 🏩 > Next               | Back 🏩 > Save     |                   |  |

The above exercise cycle would begin Wednesday January 3, 2024 @ 10:00. It would run a loaded exercise cycle for 15 minutes before transferring to normal, executing all transition delays in addition to the 15 minutes exercise cycle. With a repeat rate of one it would wait 1 week before exercising again on Wednesday January 10, 2024. If the rep[eat rate was set to 2, it would wait 2 weeks.

If the unit was powered down due to a malfunction or removed from service, then put back into service on March 18, 2024 it would immediately update the exercise event to March 20, 2024. Providing the exercise event was set to enabled.

If the exercise interval was set for Monthly with a repeat rate of 1, the exercise event would cycle once per month. With the interval set for daily and the repeat rate at 4, it would exercise every 4 days.

# Load Control

The 76-ATC300-00 control supports up to 2 different load control outputs. Each load control output has a programmable disconnect and reconnect time for both source 1 and source 2 independently. This is different compared to the OEM controller which only supported 1 Pretransfer output and does not have configurable disconnect and reconnect time delays. The factory default configuration assigns Output 1 to Load Control 1, however, this output is fully configurable for different functions; See I/O page.

If the load control disconnect delay is set longer than the transfer delay, the controller will respect whichever delay is longer. It is good practice to keep the longest pre-transfer delay shorter than the transfer delay.



### Transfer time delay is set longer than the load control delays.

#### One or more load control delays are set longer than the transfer time delay.



### Sequence of Operation for BRKR (Breaker/Switch Motor Driven)

- 1. Preferred source fails.
- 2. Engine start delay expires and remote start contacts close.
- 3. Standby power is available.
- 4. Preferred to standby time delay expires.
- 5. K2 relay energizes. Motor drive transfers to neutral position.
- 6. Off to standby time delay expires.
- 7. K2 relay energizes. Motor drive transfers to standby position.
- 8. Load control reconnect timers expire and load control contacts close.
- 9. Preferred source returns.
- 10. Standby to off time delay expires.
- 11. Load control disconnects.
- 12. K1 relay energizes. Motor drive transfers to off position.
- 13. Off to preferred time delay expires.
- 14. K1 relay energizes. Motor drive transfers to preferred position.
- 15. Load control reconnect timers expire and load control contacts close.
- 16. Cool down timer expires and the generator shuts down.

#### In BRKR operation mode, the in-phase monitor is disabled.

#### Sequence of Operation for CNT2 (2 Position Contactor)

- 1. Preferred source fails.
- 2. Engine start delay expires and remote start contacts close.
- 3. Standby power is available.
- 4. Preferred to standby time delay expires.
- 5. K2 relay energizes. Contactor transfers to standby position.
- 6. Load control reconnect timers expire and load control contacts close.
- 7. Preferred source returns.
- 8. Standby to preferred time delay expires.
- 9. Load control disconnects.
- 10. In-phase monitor is activated, if enabled.
- 11. K1 relay energizes. Contactor transfers to preferred position.
- 12. Load control reconnect timers expire and load control contacts close.
- 13. Cool down timer expires and the generator shuts down.

#### In CNT2 operation mode, any time delays configured for the neutral position will be ignored.

# Switch Types (cont.)

### Sequence of Operation for CNT3 (3 Position Contactor)

- 1. Preferred source fails.
- 2. Engine start delay expires and remote start contacts close.
- 3. Standby power is available.
- 4. Preferred to standby time delay expires.
- 5. K2 relay energizes. Contactor transfers to neutral position.
- 6. Off to standby time delay expires.
- 7. K4 relay energizes. Contactor transfers to standby position.
- 8. Load control reconnect timers expire and load control contacts close.
- 9. Preferred source returns.
- 10. Standby to off time delay expires.
- 11. Load control disconnects.
- 12. K1 relay energizes. Contactor transfers to off position.
- 13. Off to preferred time delay expires.
- 14. K3 relay energizes. Contactor transfers to preferred position.
- 15. Load control reconnect timers expire and load control contacts close.
- 16. Cool down timer expires and the generator shuts down.

### **Relay Functions per Switch Type**

|          | CNT2           | BRKR           | CNT3, 3KC,<br>MGNM |
|----------|----------------|----------------|--------------------|
| K1 Relay | Close Source 1 | Close Source 1 | Open Source 2      |
| K2 Relay | Close Source 2 | Close Source 2 | Open Source 1      |
| K3 Relay | N/A            | N/A            | Close Source 1     |
| K4 Relay | N/A            | N/A            | Close Source 2     |

## I/O Options Programmable Inputs and Outputs

While the 76-ATC300-00 does come factory configured with I/O identical to the OEM controller, they can be reconfigured to better suit any application. There are 5 inputs and 2 outputs that can be reconfigured on the controller. See below for I/O factory defaults and additional I/O functionality.

#### Factory Default Inputs

Input 1 – Lockout Input 2 – Remote Test (Go to S2) Input 3 – Monitor Mode Input 4 – Inhibit Transfer (Emer. Inhibit) Input 5 – Manual Re-Transfer

#### Input Functions

Bypass Contactor Disabled Forced to OFF Inhibit Transfer Lockout Manual Re-Transfer Monitor Mode Remote End Time Delay Remote Common Alarm Remote Test Service Disconnect

#### **Output Functions**

Audible Alarm Aux Switch Fault Aux Switch Open Contactor in Off Contactor in Preferred Contactor in Source E Contactor in Source N Contactor in Standby Exerciser Active Fail to Acquire Preferred Fail to Acquire Standby Fail to Transfer Fail to Open Source 1 Fail to Close Source 1 Fail to Open Source 2 Fail to Close Source 2 In-Phase Monitor Fail to Transfer

#### **Factory Default Outputs**

Output 1 – Load Control 1 Output 2 – Audible Alarm

#### **Output Functions (cont.)**

Load Control Active Load Control 1-2 Non-Emergency Transfer Not in Auto Mode **Peak Shave Active** Preferred Source Available Service Disconnect **Emergency Rotation Error Emergency Loss of Phase Emergency Over Frequency Emergency Over Voltage Emergency Start Emergency Under Frequency Emergency Under Voltage Emergency Unbalanced** Normal Rotation Error Normal Loss of Phase Normal Over Frequency Normal Over Voltage Normal Start Normal Under Frequency Normal Under Voltage Normal Unbalanced Normal Standby Available Test Mode Active

## Calibration

Should the controller require calibration, the calibration function can be accessed from the main menu > **SET** > **CALIBRATION**. Proper calibration will require taking a physical measurement from line to line. See page 10 for the calibration menu screens.

| System   | Ready    | L1-L2 VAC 235 | System   | Ready    |
|----------|----------|---------------|----------|----------|
| SRC1 235 | SRC2 0   | Back 🏩 🦁 Save | SRC1 240 | SRC2 0   |
| ∓ View   | Set Test |               | ∓ View   | Set Test |

The current reading is displayed on top and the adjusted reading can be entered below. Enter the corrected reading for each of the relevant measurements. Press **SAVE** and return to the main menu.

Factory defaults can be set by navigating to the Set Factory Defaults entry in the **SET** menu. Applying factory defaults will overwrite all previous parameters and clear all exercise cycles, load control configurations for source 1 and source 2, revert I/O settings, and calibration settings returned to default.

Preferred Source - Normal Switch Type – BRKR In-Phase – Disabled S1 / S2 Control Mode - Time S1 / S2 Loads to Control - 1 Sync Differential Voltage - 5% Sync Differential Frequency - 2Hz Sync Angle – 10 degrees S1 / S2 Nominal Voltage - 240 S1 / S2 Nominal Frequency - 60 S1 / S2 Phases - Single Phase Set Password - 0000 Test Password - 0000 S1 / S2 Engine Start – 3 Seconds S1 / S2 Engine Cool Down - 5 Seconds Standby to Preferred - 60 Seconds Preferred to Standby – 3 Seconds Off to Preferred – 2 Seconds Off to Standby – 2 Seconds Over Voltage Dropout - 115% of Nominal Over Voltage Pickup - 95% of Dropout Under Voltage Pickup – 90% of Nominal Under Voltage Dropout – 90% of Pickup Over Frequency Dropout - 101% of Pickup Over Frequency Pickup – 110% of Nominal Under Frequency Dropout – 99% of Pickup Under Frequency Pickup – 90% of Nominal S1 / S2 Unbalance - Disabled S1 / S2 Unbalance Dropout – 20% S1 / S2 Unbalance Pickup – 10% Rotation Expected – Disabled S1 / S2 Fail to Acquire - Disabled (60 Seconds) Fail to Sync – 60 Seconds Fail to Sync Fallback - Enabled Input 1 – Lockout Input 2 – Remote Test Output 1 – Load Control 1 Output 2 - Audible Alarm

## Supported Registers v1.0.0.0

Registers with strikethrough are not supported on the 76-ATC300-00 Hardware

| 40001     System Overview     RO     40063     Normal Cool Down Delay     RW       40003     Source H-Line-Neutral-12-L0     RO     40065     Standby to Preferred Delay     RW       40004     Source H-Line-Neutral-12-L0     RO     40066     Preferred Delay     RW       40006     Source H-Line-Neutral-12-L0     RO     40067     Off to Standby Delay     RW       40006     Source H-Line-Neutral-12-L0     RO     40068     Off to Preferred Delay     RW       40006     Source N Line-Line L1-12     RO     40069     Fail to Acquire Standby     RW       40009     Source N Line-Line L1-12     RO     40071     Fail to Acquire Standby     RW       40011     Source N Line-Line L1-12     RO     40073     RESERVED     40013       40011     Source E Line-Line L1-12     RO     40076     Active Time Delay     RO       40013     Source E Line-Line L1-2     RO     40076     Active Time Delay Preset     RO       40014     Source E Frequency     RO     40076     Active Time Delay Preset     RO <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th></t<>  |             |   |    |       |                                     |    |
|---|-------------|---|----|-------|-------------------------------------|----|
| 40002     Source N-Line-Heutral-L2-IØ     RO     40064     Emergency Cool Down Delay     RW       40003     Source N-Line-Heutral-L2-IØ     RO     40065     Standby to Preferred to Standby Delay     RW       40005     Source - H-Line-Heutral-L3-IØ     RO     40066     Off to Standby Delay     RW       40007     Source - Line-Heutral-L3-LØ     RO     40067     Off to Standby Delay     RW       40008     Source N Line-Line L1-L2     RO     40071     Fail to Acquire Preferred     RW       40009     Source N Line-Line L1-L2     RO     40072     Fail to Synchronize     RW       40011     Source N Line-Line L1-L2     RO     40073     RESERVED        40012     Source E Line-Line L1-L1     RO     40076     Active Time Delay     RO       40013     Source E Line-Line L1-L1     RO     40076     Active Time Delay Reset     RO       40014     Source E Frequency     RO     40076     Active Time Delay Preset     RO       40016     Gurrent-L4     RO     40078     Normal Under Voltage Probut     RW  | 40001       | System Overview                               | RO | 40063 | Normal Cool Down Delay              | RW |
| 40003     Seuree N-Line-Neutral-L3-L0     RO     40066     Standty Deferred Delay     RW       40006     Source E-Line-Neutral-L3-L0     RO     40066     Preferred to Standty Delay     RW       40006     Source E-Line-Neutral-L3-L0     RO     40067     Oft to Standty Delay     RW       40007     Source E-Line-Neutral-L3-L0     RO     40069     Fail to Acquire Preferred Delay     RW       40008     Source N Line-Line L1-L2     RO     40071     Fail to Acquire Preferred     RW       40009     Source N Line-Line L1-L3     RO     40071     Fail to Synchronize     RW       40010     Source N Line-Line L3-L1     RO     40072     Fail to Synchronize     RW       40011     Source E Line-Line L1-L3     RO     40070     Active Time Delay     RO       40012     Source E Line-Line L1-L3     RO     40076     Active Time Delay     RO       40014     Source E Frequency     RO     40076     Active Time Delay Preset     RO       40015     Source E Frequency     RO     400707     Active Time Delay Preset     RO  | 40002       | Source N Line-Neutral L1-L0                   | RO | 40064 | Emergency Cool Down Delay           | RW |
| 40004     Source N-Line-Neutral-L3-L0     RO     40067     Off to Standby Delay     RW       40005     Source E-Line-Neutral-L3-L0     RO     40067     Off to Standby Delay     RW       40007     Source N Line-Neutral-L3-L0     RO     40068     Off to Preferred Delay     RW       40008     Source N Line-Line L1-L2     RO     40070     Fail to Acquire Standby     RW       40001     Source N Line-Line L3-L1     RO     40071     Fail to Synchronize     RW       40010     Source E Line-Line L3-L1     RO     40073     RESERVED        40011     Source E Line-Line L3-L3     RO     40074     RESERVED        40013     Source E Line-Line L3-L1     RO     40076     Active Time Delay Remaining     RO       40014     Source E Frequency     RO     40076     Active Time Delay Remaining     RO       40015     Source E Frequency     RO     40076     Normal Under Voltage Probuput     RW       40016     Gurrent-L3     RO     40070     Normal Under Voltage Probuput     RW       <  | 40003       | Source N Line-Neutral L2-L0                   | RO | 40065 | Standby to Preferred Delay          | RW |
| 40005     Source E-Line-Neutral-L2-L0     RO     40067     Off to Standby Delay     RW       40006     Source E-Line-Neutral-L2-L0     RO     40068     Off to Preferred Delay     RW       40007     Source N Line-Line L1-L2     RO     40070     Fail to Acquire Standby     RW       40008     Source N Line-Line L1-L1     RO     40071     Fail to Synchronize     RW       40010     Source N Line-Line L1-L1     RO     40072     Fail to Synchronize     RW       40011     Source E Line-Line L1-L1     RO     40073     RESERVED     The Addition of the Additio | 40004       | Source N Line-Neutral L3-L0                   | RO | 40066 | Preferred to Standby Delay          | RW |
| 40006     Seurce E-Line-Neutral-12-L9     RO     40068     Off to Preferred Delay     RW       40007     Seurce N Line-Line L1-12     RO     40069     Fail to Acquite Preferred     RW       40008     Source N Line-Line L1-12     RO     40071     Fail to Acquite Preferred     RW       40010     Source N Line-Line L1-12     RO     40071     Fail to Synchronize     RW       40011     Source E Line-Line L1-12     RO     40073     RESERVED        40012     Source E Line-Line L1-12     RO     40074     RESERVED        40013     Source E Line-Line L3-L1     RO     40076     Active Time Delay Remaining     RO       40015     Source E Frequency     RO     40076     Active Time Delay Remaining     RO       40016     Gurrent-L3     RO     40078     Normal Over Voltage Dropout     RW       40018     Gurrent-L3     RO     40081     Normal Under Voltage Dropout     RW       40020-40038     RESERVED     40082     Normal Under Voltage Dropout     RW       40024     Synchr  | 40005       | Source E Line-Neutral L1-L0                   | RO | 40067 | Off to Standby Delay                | RW |
| 40007     Source E-Line-Neutral-32-L0     RO     40069     Fail to Acquire Preferred     RW       40008     Source N Line-Line L1-L2     RO     40071     Fail to Acquire Preferred     RW       40010     Source N Line-Line L3-L1     RO     40071     Fail to Synchronize     RW       40011     Source E Line-Line L3-L1     RO     40073     RESERVED     RESERVED       40013     Source E Line-Line L3-L1     RO     40076     Active Time Delay     RO       40014     Source E Line-Line L3-L1     RO     40076     Active Time Delay Remaining     RO       40015     Source E Line-Guency     RO     40076     Active Time Delay Remaining     RO       40016     Gurrent-L4     RO     40078     Normal Over Voltage Pickup     RW       40017     Gurrent-L3     RO     40078     Normal Under Voltage Pickup     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Pickup     RW       40020     RESERVED     40081     Normal Under Voltage Pickup     RW       4004   | 40006       | Source E Line-Neutral L2-L0                   | RO | 40068 | Off to Preferred Delay              | RW |
| 40008     Source N Line-Line L1-L2     RO     40070     Fail to Acquire Standby     RW       40009     Source N Line-Line L1-L3     RO     40071     Fail to Synchronize     RW       40010     Source N Line-Line L3-L1     RO     40072     Fail to Synchronize     RW       40011     Source E Line-Line L1-L2     RO     40073     RESERVED        40012     Source E Line-Line L3-L3     RO     40074     RESERVED     RO       40013     Source E Frequency     RO     40076     Active Time Delay Remaining     RO       40016     Gurrent-L4     RO     40078     Normal Over Voltage Dropout     RW       40017     Gurrent-L3     RO     40078     Normal Under Voltage Dropout     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Dropout     RW       40020-00308     RESERVED     40081     Normal Unbalance Enabled     RW       40040     Password     WO     40084     Normal Unbalance Voltage Dropout     RW       40042     Synchronous Volt  | 40007       | Source E Line-Neutral L3-L0                   | RO | 40069 | Fail to Acquire Preferred           | RW |
| 40009     Source N Line-Line L2-L3     RO     40071     Fail to Sync Enabled     RW       40010     Source N Line-Line L1-L2     RO     40072     Failt o Sync Enabled     RW       40011     Source E Line-Line L1-L2     RO     40073     RESERVED     RO       40012     Source E Line-Line L3-L1     RO     40076     Active Time Delay Remaining     RO       40014     Source F Frequency     RO     40076     Active Time Delay Remaining     RO       40015     Source F Frequency     RO     40076     Normal Over Voltage Dropout     RW       40016     Gurrent-L3     RO     40078     Normal Over Voltage Dropout     RW       40018     Gurrent-L3     RO     40081     Normal Under Voltage Dropout     RW       40020-40038     RESERVED     40082     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40082     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Drifterntial     RW     40082     Normal Unbalance Voltage Dropout     RW       40042<   | 40008       | Source N Line-Line L1-L2                      | RO | 40070 | Fail to Acquire Standby             | RW |
| 40010     Source N Line-Line 13-L1     RO     40072     Fail to Sync Enabled     RW       40011     Source E Line-Line L1-L2     RO     40073     RESERVED        40013     Source E Line-Line L3-L1     RO     40076     Active Time Delay Remaining     RO       40014     Source N Frequency     RO     40076     Active Time Delay Remaining     RO       40016     Gurrent-L2     RO     40078     Normal Over Voltage Dropout     RW       40017     Gurrent-L2     RO     40079     Normal Over Voltage Pickup     RW       40019     Closed Transition In-Phase Delta     RO     40080     Normal Under Voltage Pickup     RW       40020-40038     RESERVED     40082     Normal Unbalance Voltage Pickup     RW       40020-40038     Closed-Programmed Transition Norride Mode     RW     40083     Normal Unbalance Voltage Pickup     RW       40041     Synchronous Voltage Phase Angle     RO     40085     Normal Voltage Dropout     RW       40043     Synchronous Frequency Differential     RW     40086     Emeregency Over Voltage Pickup   | 40009       | Source N Line-Line L2-L3                      | RO | 40071 | Fail to Synchronize                 | RW |
| 40011     Source E Line-Line L1-L2     RO     40073     RESERVED       40012     Source E Line-Line L2-L3     RO     40074     RESERVED       40013     Source E Line-Line L3-L1     RO     40075     Active Time Delay     RO       40014     Source N Frequency     RO     40076     Active Time Delay Remaining     RO       40015     Source E Frequency     RO     40077     Active Time Delay Preset     RO       40016     Current-L4     RO     40078     Normal Over Voltage Dropout     RW       40017     Current-L2     RO     40080     Normal Under Voltage Dropout     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Unbalance Voltage Dropout     RW       40020-00038     RESERVED     40082     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40084     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Differential     RW     40085     Normal Unbalance Voltage Dropout     RW       40043     Synchronous Voltage Drigenti  | 40010       | Source N Line-Line L3-L1                      | RO | 40072 | Fail to Sync Enabled                | RW |
| 40012     Source E Line-Line L2-L3     RO     40074     RESERVED       40013     Source K Line-Line L3-L1     RO     40075     Active Time Delay     RO       40014     Source K Frequency     RO     40076     Active Time Delay Remaining     RO       40015     Source F Frequency     RO     40077     Active Time Delay Preset     RO       40016     Gurrent-L2     RO     40079     Normal Over Voltage Dropout     RW       40019     Closed Transition In-Phase Delta     RO     40080     Normal Under Voltage Dropout     RW       40020-40038     RESERVED     40082     Normal Unbalance Voltage Dropout     RW       40039     Closed-Programmed Transition Override Mode     RW     40083     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40084     Normal Voltage Dropout     RW       40041     Synchronous Voltage Differential     RW     40085     Normal Voltage Dropout     RW       40043     Synchronous Voltage Differential     RW     40086     Emergency UneV Voltage Dropout     RW  | 40011       | Source E Line-Line L1-L2                      | RO | 40073 | RESERVED                            |    |
| 40013     Source E Line-Line L3-L1     RO     40075     Active Time Delay Remaining     RO       40014     Source F Frequency     RO     40076     Active Time Delay Remaining     RO       40015     Source E Frequency     RO     40077     Active Time Delay Remaining     RO       40016     Gurrent-L4     RO     40078     Normal Over Voltage Procut     RW       40017     Gurrent-L3     RO     40080     Normal Under Voltage Procup     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Procup     RW       40020-40038     RESERVED     40082     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40084     Normal Unbalance Voltage Procup     RW       40041     Synchronous Voltage Differential     RW     40085     Normal Voltage Dropout     RW       40043     Synchronous Voltage Differential     RW     40086     Emergency Over Voltage Dropout     RW       40045     Phase Rotation Actual     RO     40087     Emergency Under Voltage Dropout     RW <td>40012</td> <td>Source E Line-Line L2-L3</td> <td>RO</td> <td>40074</td> <td>RESERVED</td> <td></td>  | 40012       | Source E Line-Line L2-L3                      | RO | 40074 | RESERVED                            |    |
| 40014     Source N Frequency     RO     40076     Active Time Delay Remaining     RO       40015     Source E Frequency     RO     40077     Active Time Delay Preset     RO       40016     Gurrent-L3     RO     40078     Normal Over Voltage Dropout     RW       40017     Gurrent-L3     RO     40079     Normal Over Voltage Prickup     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Prickup     RW       40020-40038     RESERVED     40082     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40083     Normal Voltage Dropout     RW       40041     Synchronous Voltage Dreage Angle     RO     40085     Normal Voltage Dropout     RW       40042     Synchronous Voltage Differential     RW     400867     Emergency Over Voltage Dropout     RW       40043     Synchronous Voltage Drope     RW     40088     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Actual     RO     40089     Emergency Under Voltage Dropout     RW  | 40013       | Source E Line-Line L3-L1                      | RO | 40075 | Active Time Delay                   | RO |
| 40015     Source E Frequency     RO     40077     Active Time Delay Preset     RO       40016     Gurrent-L1     RO     40078     Normal Over Voltage Dropout     RW       40017     Gurrent-L2     RO     40078     Normal Over Voltage Dropout     RW       40018     Gurrent-L3     RO     40080     Normal Under Voltage Dropout     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Dropout     RW       40020-40038     RESERVED     40082     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40085     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Differential     RW     40085     Normal Voltage Dropout     RW       40043     Synchronous Frequency Differential     RW     40086     Emergency Over Voltage Dropout     RW       40045     Phase Rotation Actual     RO     40089     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Actual     RO     40089     Emergency Unbalance Enabled     RW <  | 40014       | Source N Frequency                            | RO | 40076 | Active Time Delay Remaining         | RO |
| 40016     Gurrent L4     RO     40078     Normal Over Voltage Dropout     RW       40017     Gurrent L2     RO     40079     Normal Over Voltage Pickup     RW       40018     Gurrent L3     RO     40080     Normal Under Voltage Pickup     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Unbalance Enabled     RW       40020-40038     RESERVED     40082     Normal Unbalance Forbout     RW       40040     Password     WO     40084     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Phase Angle     RO     40085     Normal Unbalance Voltage Dropout     RW       40042     Synchronous Voltage Differential     RW     40086     Emergency Over Voltage Dropout     RW       40043     Synchronous Frequency Differential     RW     40088     Emergency Under Voltage Dropout     RW       40045     Phase Rotation Actual     RO     40088     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Expected     RW     40090     Emergency Unbalance Voltage Dropout   | 40015       | Source E Frequency                            | RO | 40077 | Active Time Delay Preset            | RO |
| 40017     Current-L2     RO     40079     Normal Over Voltage Pickup     RW       40018     Current-L3     RO     40080     Normal Under Voltage Pickup     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Unbalance Pickup     RW       40020-40038     RESERVED     40082     Normal Unbalance Enabled     RW       40040     Password     WO     40083     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Phase Angle     RO     40085     Normal Unbalance Voltage Pickup     RW       40042     Synchronous Voltage Differential     RW     40086     Emergency Over Voltage Pickup     RW       40043     Synchronous Frequency Differential     RW     40086     Emergency Under Voltage Pickup     RW       40045     Phase Rotation Actual     RO     40089     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Expected     RW     40091     Emergency Unbalance Voltage Pickup     RW       40049     Nominal Normal Voltage     RW     40092     Emergency Unbalance Volta  | 40016       | Current L1                                    | RO | 40078 | Normal Over Voltage Dropout         | RW |
| 40018     Current-L3     RO     40080     Normal Under Voltage Pickup     RW       40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Dropout     RW       40020-40038     RESERVED     40082     Normal Unbalance Enabled     RW       40039     Closed-Programmed Transition Override Mode     RW     40082     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40085     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Differential     RW     40086     Emergency Over Voltage Dropout     RW       40042     Synchronous Frequency Differential     RW     40087     Emergency Over Voltage Pickup     RW       40045     Phase Rotation Actual     RO     40088     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Expected     RW     40090     Emergency Unbalance Voltage Dropout     RW       40048     Norminal Normal Voltage     RW     40091     Emergency Unbalance Voltage Dropout     RW       400409     Nominal Normal Voltage     RW     40092 </td <td>40017</td> <td>Current L2</td> <td>RO</td> <td>40079</td> <td>Normal Over Voltage Pickup</td> <td>RW</td>  | 40017       | Current L2                                    | RO | 40079 | Normal Over Voltage Pickup          | RW |
| 40019     Closed Transition In-Phase Delta     RO     40081     Normal Under Voltage Dropout     RW       40020-40038     RESERVED     40082     Normal Unbalance Enabled     RW       40039     Closed-Programmed Transition Override Mode     RW     40083     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40084     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Phase Angle     RO     40085     Normal Unbalance Voltage Dropout     RW       40042     Synchronous Voltage Differential     RW     40086     Emergency Over Voltage Dropout     RW       40043     Synchronous Frequency Differential     RW     40087     Emergency Over Voltage Dropout     RW       40046     Phase Rotation Actual     RO     40089     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Expected     RW     40090     Emergency Unbalance Enabled     RW       40047     Nominal Normal Voltage     RW     40092     Emergency Unbalance Voltage Dropout     RW       40047     Nominal Emergency Frequency     RW <td>40018</td> <td>Current L3</td> <td>RO</td> <td>40080</td> <td>Normal Under Voltage Pickup</td> <td>RW</td>  | 40018       | Current L3                                    | RO | 40080 | Normal Under Voltage Pickup         | RW |
| 40020-40038     RESERVED     40082     Normal Unbalance Enabled     RW       40039     Closed-Programmed Transition Override Mode     RW     40083     Normal Unbalance Voltage Dropout     RW       40040     Password     WO     40084     Normal Unbalance Voltage Dropout     RW       40041     Synchronous Voltage Phase Angle     RO     40085     Normal Voltage Debounce     RW       40042     Synchronous Voltage Differential     RW     40086     Emergency Over Voltage Dropout     RW       40043     Synchronous Frequency Differential     RW     40087     Emergency Under Voltage Dropout     RW       40044     Service Entrance Type     RW     40088     Emergency Under Voltage Dropout     RW       40045     Phase Rotation Actual     RO     40089     Emergency Under Voltage Dropout     RW       40046     Phase Rotation Expected     RW     40090     Emergency Unbalance Voltage Dropout     RW       40048     Nominal Normal Frequency     RW     40092     Emergency Voltage Debounce     RW       40049     Nominal Normal Frequency     RW     400   | 40019       | Closed Transition In-Phase Delta              | RO | 40081 | Normal Under Voltage Dropout        | RW |
| 40039Closed-Programmed Transition Override ModeRW40083Normal Unbalance Voltage DropoutRW40040PasswordWO40084Normal Unbalance Voltage PickupRW40041Synchronous Voltage Phase AngleRO40085Normal Voltage DebounceRW40042Synchronous Voltage DifferentialRW40086Emergency Over Voltage DropoutRW40043Synchronous Frequency DifferentialRW40087Emergency Over Voltage PickupRW40044Service Entrance TypeRW40088Emergency Under Voltage DropoutRW40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40048Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40049Nominal Normal VoltageRW40092Emergency Unbalance Voltage DropoutRW40050Nominal Emergency FrequencyRW40093Emergency Voltage DebounceRW40051Normal Number of PhasesRW40095Normal Over Frequency DropoutRW40053Rated AmpsRW40096Normal Under Frequency DropoutRW40054MosesRSENVED40096Normal Under Frequency DropoutRW40053Rated AmpsRW40096Normal Under Frequency DropoutRW40054MosesPasswordWO40109Emergency Under Freq  | 40020-40038 | RESERVED                                      |    | 40082 | Normal Unbalance Enabled            | RW |
| 40040PasswordWO40084Normal Unbalance Voltage PickupRW40041Synchronous Voltage Phase AngleRO40085Normal Voltage DebounceRW40042Synchronous Voltage DifferentialRW40086Emergency Over Voltage DropoutRW40043Synchronous Frequency DifferentialRW40087Emergency Over Voltage PickupRW40044Service Entrance TypeRW40088Emergency Under Voltage DropoutRW40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage DropoutRW40050Nominal Emergency VoltageRW40092Emergency Unbalance Voltage PickupRW40050Nominal Emergency VrequencyRW40093Emergency Voltage DebounceRW40050Nominal Normal VoltageRW40094Normal Over Frequency DropoutRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Under Frequency DropoutRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40098   | 40039       | Closed-Programmed Transition Override Mode    | RW | 40083 | Normal Unbalance Voltage Dropout    | RW |
| 40041Synchronous Voltage Phase AngleRO40085Normal Voltage DebounceRW40042Synchronous Voltage DifferentialRW40086Emergency Over Voltage DropoutRW40043Synchronous Frequency DifferentialRW40087Emergency Over Voltage PickupRW40044Service Entrance TypeRW40088Emergency Under Voltage PickupRW40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage DropoutRW40049Nominal Normal FrequencyRW40092Emergency Unbalance Voltage DropoutRW40050Nominal Normal FrequencyRW40093Emergency Unbalance Voltage DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency DropoutRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency DropoutRW4005440056RESERVED40098Normal Frequency DropoutRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Voer Frequency DropoutRW40059Normal Engine Start Delay   | 40040       | Password                                      | WO | 40084 | Normal Unbalance Voltage Pickup     | RW |
| 40042Synchronous Voltage DifferentialRW40086Emergency Over Voltage DropoutRW40043Synchronous Frequency DifferentialRW40087Emergency Over Voltage PickupRW40044Service Entrance TypeRW40088Emergency Under Voltage PickupRW40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Normal VoltageRW40092Emergency Unbalance Voltage DropoutRW40049Nominal Normal FrequencyRW40093Emergency Unbalance Voltage DropoutRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency DropoutRW40052Emergency Number of PhasesRW40097Normal Under Frequency DropoutRW40053Rated AmpsRW40098Normal Under Frequency DropoutRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Under Frequency DropoutRW40059Normal Engine Start DelayRW40102Emergency Under Frequency DropoutRW40060Emergency Engine Start Delay </td <td>40041</td> <td>Synchronous Voltage Phase Angle</td> <td>RO</td> <td>40085</td> <td>Normal Voltage Debounce</td> <td>RW</td>   | 40041       | Synchronous Voltage Phase Angle               | RO | 40085 | Normal Voltage Debounce             | RW |
| 40043Synchronous Frequency DifferentialRW40087Emergency Over Voltage PickupRW40044Service Entrance TypeRW40088Emergency Under Voltage PickupRW40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Under Voltage DropoutRW40047Nominal Normal VoltageRW40091Emergency Unbalance EnabledRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage DropoutRW40049Nominal Normal FrequencyRW40093Emergency Unbalance Voltage PickupRW40050Nominal Normal FrequencyRW40093Emergency Voltage DebounceRW40051Normal Normal FrequencyRW40095Normal Over Frequency DropoutRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency DropoutRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency DropoutRW40059Normal Engine Start DelayRW40101Emergency Under Frequency PickupRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency DropoutRW  | 40042       | Synchronous Voltage Differential              | RW | 40086 | Emergency Over Voltage Dropout      | RW |
| 40044Service Entrance TypeRW40088Emergency Under Voltage PickupRW40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage PickupRW40049Nominal Normal FrequencyRW40093Emergency Unbalance Voltage PickupRW40050Nominal Emergency FrequencyRW40093Emergency Voltage DebounceRW40051Normal Number of PhasesRW40095Normal Over Frequency DropoutRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency DropoutRW40056RESERVED40098Normal Frequency DropoutRW40057Transition Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40103Emergency Under Frequency DropoutRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40043       | Synchronous Frequency Differential            | RW | 40087 | Emergency Over Voltage Pickup       | RW |
| 40045Phase Rotation ActualRO40089Emergency Under Voltage DropoutRW40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage DropoutRW40049Nominal Normal FrequencyRW40093Emergency Unbalance Voltage DebounceRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency DropoutRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency DropoutRW40054-40056RESERVED40098Normal Frequency DropoutRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40044       | Service Entrance Type                         | RW | 40088 | Emergency Under Voltage Pickup      | RW |
| 40046Phase Rotation ExpectedRW40090Emergency Unbalance EnabledRW40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage PickupRW40049Nominal Normal FrequencyRW40093Emergency Voltage DebounceRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency DropoutRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency DropoutRW40054-40056RESERVED40098Normal Frequency DropoutRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40061Normal Ext Start DelayRW40103Emergency Under Frequency Dropout TimeRW   | 40045       | Phase Rotation Actual                         | RO | 40089 | Emergency Under Voltage Dropout     | RW |
| 40047Nominal Normal VoltageRW40091Emergency Unbalance Voltage DropoutRW40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage PickupRW40049Nominal Normal FrequencyRW40093Emergency Voltage DebounceRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency PickupRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency PickupRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency DropoutRW40060Emergency Engine Start DelayRW40101Emergency Under Frequency DropoutRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW  | 40046       | Phase Rotation Expected                       | RW | 40090 | Emergency Unbalance Enabled         | RW |
| 40048Nominal Emergency VoltageRW40092Emergency Unbalance Voltage PickupRW40049Nominal Normal FrequencyRW40093Emergency Voltage DebounceRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency PickupRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency PickupRW40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency PickupRW40058PasswordWO40100Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW  | 40047       | Nominal Normal Voltage                        | RW | 40091 | Emergency Unbalance Voltage Dropout | RW |
| 40049Nominal Normal FrequencyRW40093Emergency Voltage DebounceRW40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency PickupRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency PickupRW40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency DropoutRW40060Emergency Engine Start DelayRW40101Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40048       | Nominal Emergency Voltage                     | RW | 40092 | Emergency Unbalance Voltage Pickup  | RW |
| 40050Nominal Emergency FrequencyRW40094Normal Over Frequency DropoutRW40051Normal Number of PhasesRW40095Normal Over Frequency PickupRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency DropoutRW40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Under Frequency DropoutRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40049       | Nominal Normal Frequency                      | RW | 40093 | Emergency Voltage Debounce          | RW |
| 40051Normal Number of PhasesRW40095Normal Over Frequency PickupRW40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency PickupRW40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency PickupRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency Dropout TimeRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW8W40103Emergency Frequency Dropout TimeRW  | 40050       | Nominal Emergency Frequency                   | RW | 40094 | Normal Over Frequency Dropout       | RW |
| 40052Emergency Number of PhasesRW40096Normal Under Frequency DropoutRW40053Rated AmpsRW40097Normal Under Frequency PickupRW40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency PickupRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40051       | Normal Number of Phases                       | RW | 40095 | Normal Over Frequency Pickup        | RW |
| 40053Rated AmpsRW40097Normal Under Frequency PickupRW40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency PickupRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40052       | Emergency Number of Phases                    | RW | 40096 | Normal Under Frequency Dropout      | RW |
| 40054-40056RESERVED40098Normal Frequency Dropout TimeRW40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency PickupRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW  | 40053       | Rated Amps                                    | RW | 40097 | Normal Under Frequency Pickup       | RW |
| 40057Transition Mode Mode of Operation Auto/ManualRW40099Emergency Over Frequency DropoutRW40058PasswordWO40100Emergency Over Frequency PickupRW40059Normal Engine Start DelayRW40101Emergency Under Frequency DropoutRW40060Emergency Engine Start DelayRW40102Emergency Under Frequency PickupRW40061Normal Ext Start DelayRW40103Emergency Frequency Dropout TimeRW40062Emergency Ext Start DelayRW40103Emergency Frequency Dropout TimeRW   | 40054-40056 | RESERVED                                      |    | 40098 | Normal Frequency Dropout Time       | RW |
| 40058     Password     WO     40100     Emergency Over Frequency Pickup     RW       40059     Normal Engine Start Delay     RW     40101     Emergency Under Frequency Dropout     RW       40060     Emergency Engine Start Delay     RW     40102     Emergency Under Frequency Pickup     RW       40061     Normal Ext Start Delay     RW     40103     Emergency Frequency Dropout Time     RW       40062     Emergency Ext Start Delay     RW     40103     Emergency Frequency Dropout Time     RW   | 40057       | Transition Mode Mode of Operation Auto/Manual | RW | 40099 | Emergency Over Frequency Dropout    | RW |
| 40059     Normal Engine Start Delay     RW     40101     Emergency Under Frequency Dropout     RW       40060     Emergency Engine Start Delay     RW     40102     Emergency Under Frequency Dropout     RW       40061     Normal Ext Start Delay     RW     40103     Emergency Frequency Dropout Time     RW       40062     Emergency Ext Start Delay     RW     40103     Emergency Frequency Dropout Time     RW   | 40058       | Password                                      | WO | 40100 | Emergency Over Frequency Pickup     | RW |
| 40060 Emergency Engine Start Delay RW 40102 Emergency Under Frequency Pickup RW   40061 Normal Ext Start Delay RW 40103 Emergency Frequency Dropout Time RW   40062 Emergency Ext Start Delay RW 8W 8W 8W 8W  | 40059       | Normal Engine Start Delav                     | RW | 40101 | Emergency Under Frequency Dropout   | RW |
| 40061 Normal Ext Start Delay RW 40103 Emergency Frequency Dropout Time RW   40062 Emergency Ext Start Delay RW  | 40060       | Emergency Engine Start Delay                  | RW | 40102 | Emergency Under Frequency Pickup    | RW |
| 40062 Emergency Ext Start Delay RW  | 40061       | Normal Ext Start Delav                        | RW | 40103 | Emergency Frequency Dropout Time    | RW |
|   | 40062       | Emergency Ext Start Delay                     | RW |       |                                     |    |

#### Version 1.0.0.1 Changed single phase sensing to A-B in test sources. Changed single phase display to A-B in main menu. Version 1.0.0.2 Changed frequency capture to respect new hardware changes. Version 1.0.0.3 Disabled Inhibit Transfer functions and set for ATC 300 by default. Added menu in Setup Assist to switch between the ATC 300 and 300+ setup. Version 1.0.0.4 Bug Fix - Repeat Rate in Set Exercise protected from 0. Version 1.0.0.5 Bug Fix – If standby source is lost, the controller will now override the retransfer time delay. Bug Fix – S1 and S2 time delay before transfer protected from rollover at 59 instead of 23. Adjusted calibration defaults to correct false readings. Added option to disable Lockout on startup by holding the view button until confirmation. Factory Defaults now prompt the user to enable Lockout instead of doing it by default.

Bug Fix – Contrast is no longer reset during factory defaults unless it is already out of range.

#### Version 1.0.0.6

Added the option for Commit and No Commit transfer.

#### Version 1.0.0.7

Bug Fix – More time is now given for the controller to recognize that the transfer switch made a successful transfer before going into a false "Fail to Transfer" alarm. This caused an issue with larger switch gears.

To update a controller that is currently in service, please visit our website <u>www.flightsystems.com</u> and download our firmware update utility from the 76-ATC300-00 product page. This update utility will always have the most recent firmware version. Updating a controller will require a mini-USB cable and a laptop to connect to.