

EATON easy500 Series Timer Package

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Description

The EATON easyE4 provides the ability to automatically control the functions necessary to effectively operate a single DCF or MCF filter unit. The included display provides a way for the operator to make parameter adjustments.



Warning: When the disconnect switch is off, the easyE4 controller is disabled. To prevent electrical shock, use caution when working on the system in this mode.

To prevent electrical shock, follow proper electrical safe work procedures when working on, or making parameter adjustments to this system.

Specifications

Below are the general specifications for a typical EATON easyE4 Control Relay.

Service Requirements

Electrical: 120 – 240 V AC 50/60 Hz. single phase supply.

Air: Minimum 60 PSIG (4 bar), Maximum 116 PSIG (8 bar) at 2.5 cfm (70.79 L/min) clean, dry, non-lubricated air.

Connections

Air supply: 1/4" NPTI

Airborne Noise Emissions

<70 dB(A) During normal operation

Installation

This document applies to the installation of the timer control panel. See additional instructions for the installation of the filter vessel.

Installation Instructions

1. This filter system is equipped with two pneumatic cylinders piloted by individual 4-way solenoid valves. The linear cylinder provides force to move the cleaning disc assembly inside the filter body while a second, rotary type actuator, rotates the purge valve. Connect the air supply line (customer supplied) to the 1/4" NPTI air supply connection.
2. Connect the incoming single-phase electrical supply to the disconnect switch inside the automation enclosure. Line voltage (load) connects to terminal L1, neutral connects to terminal L2 and ground connects to the panel mounted buss bar inside the enclosure.

Transportation

Move the control panel as close as possible to the installation site before it is removed from the crate or skid. Position the enclosure stand on a prepared, level foundation. Level the enclosure before it is anchored to the foundation.

Checklist

- Verify that the input power wiring is attached correctly to the disconnect switch mounted inside the enclosure.
- Verify that the incoming automation electrical supply is the proper voltage. Improper voltage will cause serious damage to the filter's electrical systems. The proper voltage is checked per sales order documentation..
- Verify that the incoming instrument air pressure matches the requirements of this filter unit

Start-up Verification and Operation

Before circulating fluids through the filter system, start the system dry and verify the following using the factory preset values.

1. Press the cleaning disc solenoid valve's manual override button to verify that the actuator actuates and the cleaning disc travels to the bottom of the filter element. Press the purge valve solenoid valve's manual override button to verify the actuator actuates and that the purge valve opens.
2. Turn the selector switch on the front of the automation enclosure to the **ON** position. All timed intervals will start from the time the switch is turned to the **ON** position. The actuators should not actuate until the timers have reached the desired set point
3. If the filter unit is not going to be used at this time, turn the selector switch on the front of the automation enclosure to the **OFF** position and bleed the air by closing the air supply block valve and opening the air supply bleed valve (customer supplied).
4. Once the process fluid is introduced, use the following sections to match the system parameters to your application requirements.

Button Descriptions

Here is a description of each button on the EATON easyE4 Control Relay.

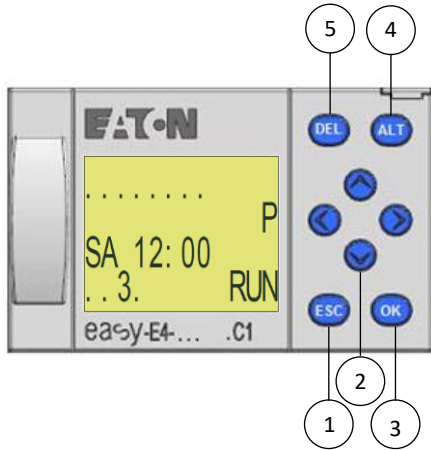


Figure 1

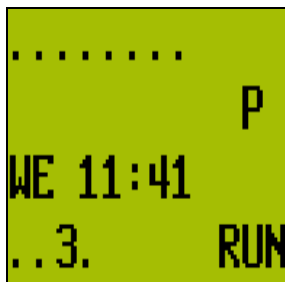
- A. **ECS** (button 1) – Not used. Cancel entry since last OK.
- B. **CURSOR** (button 2) – P1 (left arrow) is used to access the CLEAN INTERVAL; P2 (up arrow) is used to access the CLEAN DURATION; P3 (right arrow) is used to access the PURGE INTERVAL; P4 (down arrow) is used to access the PURGE DURATION.
- C. **OK** (button 3) – Go to next menu level, select menu item and store your entry.
- D. **ALT** (button 4) – Show system menu.
- E. **DEL** (button 5) – Show system menu.

Display Messages

Parameter Adjustment Messages

Below is a description of each adjustment message on the EATON easyE4 text display. To reset the system, turn the system off and back on again.

- A. **MAIN SCREEN** (message 1) – The main screen shows the current status. The screen consists of four rows of information. The first row shows which inputs are currently active. The second row doesn't show any information for this filter. The third row displays the weekday and time. This will not be set at the factory. The fourth row shows which outputs are active and the controller mode (RUN or STOP).



Message 1

- B. **CLEAN INTERVAL** (message 2) – The amount of time between clean sequences. Factory set at 90 seconds. Press the left arrow on the cursor (button 2) to access the function value. Press the ALT button then the OK button to make the value editable. Use the cursor to change the value. Left and right moves between the minutes and seconds and the up and down arrows increase and decrease the values. If you wish to cancel the change you made, press the ESC button to reset the value to what it was. When you are satisfied with the value, press the OK button to accept the value then press the ALT button to exit the edit mode. Press the left cursor arrow to return to the main screen.



Message 2

- C. **CLEAN DURATION** (message 3) – The amount of time given to the linear actuator to clean the element. It is important to allow enough time for the cleaning disc to travel the entire length of the filter element. Factory set at 10 seconds. Press the up arrow on the cursor (button 2) to access the function value. Press the ALT button then the OK button to make the value editable. Use the cursor to change the value. Left and right moves between the seconds and milliseconds and the up and down arrows increase and decrease the values. If you wish to cancel the change you made, press the ESC button to reset the value to what it was. When you are satisfied with the value, press the OK button to accept the value then press the ALT button to exit the edit mode. Press the up cursor arrow to return to the main screen.



Message 3

- D. **PURGE INTERVAL** (message 4) – Allows the system to automatically purge after a pre-determined number of clean sequences. Factory set at 2 hours. Press the right arrow on the cursor (button 2) to access the function value. Press the ALT button then the OK button to make the value editable. Use the cursor to change the value. Left and right moves between the hours and minutes and the up and down arrows increase and decrease the values. If you wish to cancel the change you made, press the ESC button to reset the value to what it was. When you are satisfied with the value, press the OK button to accept the value then press the ALT button to exit the edit mode. Press the right cursor arrow to return to the main screen.



Message 4

- E. **PURGE DURATION** (message 5) – The amount of time the station purge valve is open. Factory set at 0.7 seconds. Press the down arrow on the cursor (button 2) to access the function value. Press the ALT button then the OK button to make the value editable. Use the cursor to change the value. Left and right moves between the seconds and milliseconds and the up and down arrows increase and decrease the values. If you wish to cancel the change you made, press the ESC button to reset the value to what it was. When you are satisfied with the value, press the OK button to accept the value then press the ALT button to exit the edit mode. Press the down cursor arrow to return to the main screen.



Message 5

Status Messages

- A. **RUN** (shown on the main screen) – When the system is operating normally, one of these messages will be displayed to show when the next purge sequence will begin. Which message is shown depends on whether you are purging by time or by number of cleaning cycles.
- B. **STOP** (shown on the main screen) – When the clean sequence is in progress, this message is displayed to show which station is being cleaned.

Action Messages

- A. **NONE** (message 00) – When the system is turned off by pressing ON/OFF (button 1), the display will show this message. To start the system, press ON/OFF (button 1).

Solenoid Valve Operation

This unit is equipped with two solenoid valves. On each solenoid is a manual operator. When air is supplied to the solenoids, pressing this operator will operate the actuator it is connected to.

Customer Interface

- A. **DP START** – This input is used with a Normally Open DP switch contact. When the switch is above its set point for 5 continuous seconds, the system will purge.
- B. **REMOTE CLEAN** – Supply a normally open, monetary dry contact between this input and power line to start a clean from a remote location.
- C. **REMOTE PURGE** – Supply a normally open, monetary dry contact between this input and power line to start a purge from a remote location.
- D. **CLEAN IN PROCESS** – This contact output will be active (closed) while the system is cleaning.
- E. **PURGE IN PROCESS** – This contact output will be active (closed) while the system is purging.

Maintenance

To service the filter unit, isolate it from the process air and electrical supply using proper lockout/tagout plant procedures. Depressurize and de-energize all sources of power.

Troubleshooting

Symptoms

- A Actuator doesn't operate properly
- B Purge valve will not operate properly
- C Leakage at lid seal
- D Leakage where drive shaft enters lid
- E Reduction in flow rate or high differential pressure
- F Drop in filtrate quality

Possible Faults

- A Actuator doesn't operate properly
 - 1 No power
 - a Check to see if the filter system is receiving adequate power.
 - b Check to see if the filter system is set to the proper voltage.
 - c Check all wiring connections.
 - 2 No air
 - a Check to see if the filter system is receiving adequate air.
 - b Check for air leaks.
 - c Check to see if the air bleed valve is closed and the air block valve is open.
 - d Check to see if the air lines are connected to the correct ports.
 - 3 Actuator seals have been destroyed
 - a Order a factory repair kit and replace the seals.
 - 4 Faulty solenoid valve
 - a Check to see whether the manual override button on the solenoid valve actuates the cylinder
 - 5 Cleaning disc not cleaning the filter screen
 - a Inspect and clean the filter screen.
 - b Inspect and replace the cleaning disc.
- B Purge valve will not operate properly
 - 1 No power
 - a Check to see if the filter system is receiving adequate power.
 - b Check to see if the filter system is set to the proper voltage.
 - c Check all wiring connections.
 - 2 No air
 - a Check to see if the filter system is receiving adequate air.
 - b Check for air leaks.
 - c Check to see if the air bleed valve is closed and the air block valve is open.
 - d Check to see if the air lines are connected to the correct ports.
 - 3 Actuator seals have been destroyed
 - a Order a factory repair kit and replace the seals.
 - 4 Faulty solenoid valve
 - a Check to see whether the manual override button on the solenoid valve actuates the cylinder
 - 5 Damaged purge valve
 - a Replace or rebuild purge valve
 - 6 Debris caught in purge valve
 - a Remove debris from purge valve
- C Leakage at lid seal
 - 1 Loose lid nuts/bolts
 - a Tighten lid/nut bolts to
 - 2 Dirty lid sealing surfaces
 - a Clean lid sealing surfaces

- 3 Damaged sealing surfaces
 - a Repair or replace filter station
- 4 Worn lid O-ring
 - a Remove and replace with factory lid O-ring
- D Leakage where drive shaft enters lid**
 - 1 Damaged or worn drive shaft seal
 - a Inspect and replace the drive shaft seal
- E Reduction in flow rate or high differential pressure**
 - 1 Purge time too long
 - a Decrease purge timer setting
 - 2 Purge valve not functioning
 - a Inspect and replace purge valve
 - 3 Dirty or damaged filter screen
 - a Inspect and clean or replace filter screen
 - 4 Flow, viscosity or solids increase
 - a Consult factory
 - 5 Cleaning disc not cleaning
 - a Inspect cleaning disc for wear and replace if necessary
- F Drop in filtrate quality**
 - 1 High differential pressure
 - a Refer to reduction in flow rate or high differential pressure above
 - 2 Damaged filter screen O-rings
 - a Remove and replace with factory filter screen O-rings
 - 3 Damaged filter screen
 - a Remove and replace with factory filter screen
 - 4 Filter screen too coarse
 - a Consult factory for ability of filter system to accept a finer screen retention. Remove and replace with factory filter screen.

WARRANTY

All products manufactured by Seller are warranted against defects in material and workmanship under normal use and service for which such products were designed for a period of eighteen (18) months after shipment from our factory or twelve (12) months after start up, whichever comes first. OUR SOLE OBLIGATION UNDER THIS WARRANTY IS TO REPAIR OR REPLACE, AT OUR OPTION, ANY PRODUCT OR ANY PARTS OR PARTS THEREOF FOUND TO BE DEFECTIVE. SELLER MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WE SHALL NOT BE LIABLE FOR CARTAGE, LABOR, CONSEQUENTIAL DAMAGES OR CONTINGENT LIABILITIES. OUR MAXIMUM LIABILITY SHALL NOT IN ANY EVENT EXCEED THE CONTRACT PRICE FOR THE PRODUCT.

If you are interested in ordering spare parts or having service performed on your filter, please contact Customer Service.

Eaton reserves the right to change specifications, dimensions and model designations without prior notice.

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