Product overview

The AX-CN-FXO provides automatic change over for two fans based on time or failure and includes a two line display to show current state and display the set up menu. The timed change-over can be set between 1 hour and 31 days or disabled. Failure changeover can be triggered by high or low fan supply current, loss of airflow or loss of air pressure or disabled. A Local on input is also provided with a timed run and or air quality run on. The unit also includes air filter monitoring and configurable alarm relays.

Features

- Air flow/Air pressure/Over-under current detection
- Timed / Air quality run on
- Timed fan changeover, 1 to 24 hours / 2 to 31 days
- Auto / Manual Switch for commissioning
- Air filter monitoring
- Internally fused

Product specifications

Operating Voltage:		230Vac 50/60Hz ±15%
Inputs:	Air flow switch	VFC (to switch 5V at 1mA)
	Air pressure	0-10Vdc (<0.2mA)
	Air Diff Pressure Switch	VFC (to switch 5V at 1mA)
	Air quality sensor	0-10Vdc (<0.2mA)
	Remote on	VFC (to switch 5V at 1mA)
	Emergency stop	VFC (to switch 15V at 60mA)
	Local on	VFC (to switch 5V at 1mA)
Outputs:	Fan 1 / Fan 2 supply relay	Normally open contacts 12A (Res), 250Vac fused at 13Amps
	Status relays (5 off)	Normally open contacts with combined common terminal. 250Vac 5A(Res) each, combined maximum 10A.

Order codes

AX-CN-FXO   Fan changeover controller

Product specifications

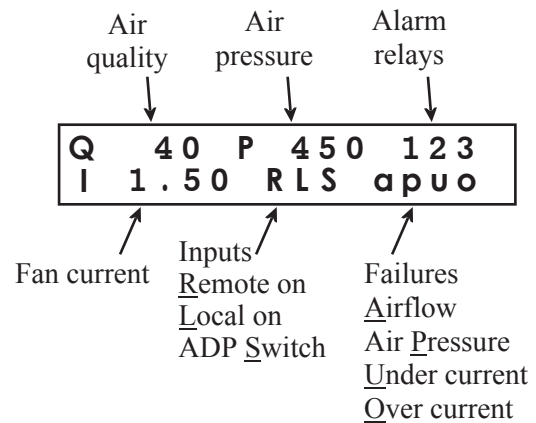|	
LCD Display:	2 line 16 digit LCD with timed back light with four function buttons
Setting ranges / defaults	See table
Wiring:	Push-on 2-part connectors with rising clamp screw terminals for 0.5-2.5mm² cable
Dimensions:	186(W) x 122(H) x 92(D) mm
Operating environment:	0-40ºC, 5-95% RH (non-condensing)
Country of Origin:	United Kingdom

Datasheet contents

Every effort has been taken in the production of this data sheet to ensure accuracy. Annicom do not accept responsibility for any damage, expense, injury, loss or consequential loss resulting from any errors or omissions. Annicom has a policy of continuous improvement and reserves the right to change this specification without notice.
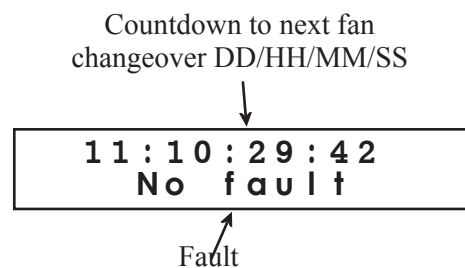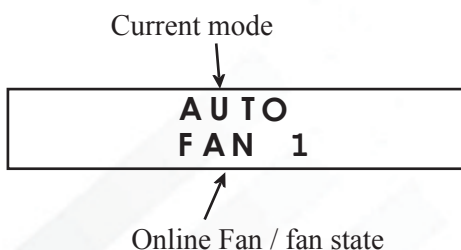
Installation

The AX-CN-FXO should be installed by a suitably qualified technician in conjunction with any guidelines for the equipment it is to be connected to and any local regulations. Field wiring should be installed to satisfy the requirements set out by the manufacturer of the equipment that the module is being connected to.

Display and buttons

Controller information is displayed on a 2 line by 16 character LCD display with four menu buttons. The display can be scrolled to show the input and output values and option menus. The main display is shown below.

Current mode

Online Fan / fan state

With the main display screen shown press the INC button to show the operating display below. If an option is disabled in the menu the value will be replaced with dashed lines.

Air quality   Air pressure   Alarm relays

```
Q   40 P  450  123
I  1.50 RLS  apuo
```

Fan current   Inputs Remote on Local on ADP Switch   Failures Airflow Air Pressure Under current Over current

With the main display screen shown press the DEC button to show the fault display below. If the timed changeover option is disabled in the menu the value will be replaced with dashed lines. If the remaining count down is less the 24 hours the days value (DD) is not displayed

Countdown to next fan changeover DD/HH/MM/SS

```
11:10:29:42
No fault
```

Fault

Operation

The AX-CN-FXO is intended to control two fans with one fan on line and the second in standby. The fans can be continuously swapped at the set time interval. If the online fan fails the standby fan is switched on and the relevant fan fail alarm is set. The auto-hand switch can be used to inhibit the failed fan and clear the alarm prior to replacement. The unit can be enabled using the remote on or local on terminals. The local on function could be activated for example by a PIR and provides a run on time option and an air quality option keeping the fan running until the required air quality level is reached. The unit can also run independently on the air quality level using the Auto air quality setting. Several configurations are available for the auto / alarms relay action.

Timed change over

The fans cycle at the set time, between 1 to 24 hours or 2 to 31 days. The time to the next changeover is shown on the alternate display.

Failure detection

The fan failure detection can be triggered by any combination of the following:

Loss of air flow

Fan supply under current

Fan supply over current

Loss of air pressure

The fans will not switch on in Auto mode if no failure detection is selected and all alarms will be set.

The over and under current values are based on the nominal fan 1 supply current. If this has not been set an error message will be displayed when the current failure mode is selected. See calibrating fan supply current in the menu section.

Auto - Manual mode

Several Auto - Manual operating modes are available to aid commissioning and fault investigation.

Auto - both fans running in auto.

Off - both fans off and failures reset.

Auto Fan 1 - only fan 1 running in auto, fan 2 will not be switched on if a fan failure is detected.

Auto Fan 2 - only fan 2 running in auto, fan 1 will not be switched on if a fan failure is detected.

Manual Fan 1 - Fan 1 is on regardless of failure conditions.

Manual Fan 2 - Fan 2 is on regardless of failure conditions.

Emergency stop

This input must be made closed for the Fan 1, Fan 2 supply and run relay contacts to be enabled. These relay contacts will open immediately this input is opened. (Units are supplied with a link across these terminals).

Remote on

When this option is enabled the Remote on input has to be connected to 0V with a VFC contact to allow the unit to run. Any fan failed while the unit is enabled will remain failed when the unit is disabled.

Local on

When this option is enabled the Local on input has to be connected to 0V with a VFC for the fan to start, for example this could be triggered by a PIR. After the contact is removed the fan will run for the set run on time (if enabled) or until the air quality reaches the set air quality limit (if enabled). The Local on action does not override the Remote on action, therefore if the unit is inhibited remotely Local on will not switch any fans on.

Air quality input

The air quality input accepts a 0-10V input equating to 0 to 100% air quality. 0% being clean air and 100% unclean air. This is used by the Local on and Air quality run on options.

Air filter monitoring

When enabled the Air differential pressure switch (ADPS) is monitored. Under normal air flow conditions the ADPS input should be shorted by the ADPS. Under blocked filter conditions the input should be open circuit. When the filter blocked condition is detected the alarm will be set and the FL indication on the display will flash.

Relay contacts / modes

Fan 1 or Fan 2 supply relay contacts

These are single pole relays switching live to the fan, the connection is rated and fused as stated in the product overview.

Fan 1 or Fan 2 run relay contacts

These are normally open contacts that close (set) to indicate the fan is running.

Relay 1,2,3 relay contacts

These are normally open contacts that close (set) to indicate the associated condition.

The relays can be configured for several modes, see table in Options and menu descriptions.

Fault actions

Normal running conditions

Under normal conditions with Auto selected one fan will be running, the relevant fan run relay will be set.

First Fan failure

When a fan failure is detected the fans will switch over. The relevant fan run relay and alarm relay will be set.

Second Fan failure

Both fans will be switched off. Both fan run relays will be off and the relevant alarm relay will be set.

Resetting fault

To reset the fault alarm condition turn the Auto-Manual switch to off, leave for several seconds and turn back to Auto.

Auto Fan 1 or Auto Fan 2

Only the relevant fan will be allowed to run. When the fan is running the relays will be in the as per the Normal running conditions state.
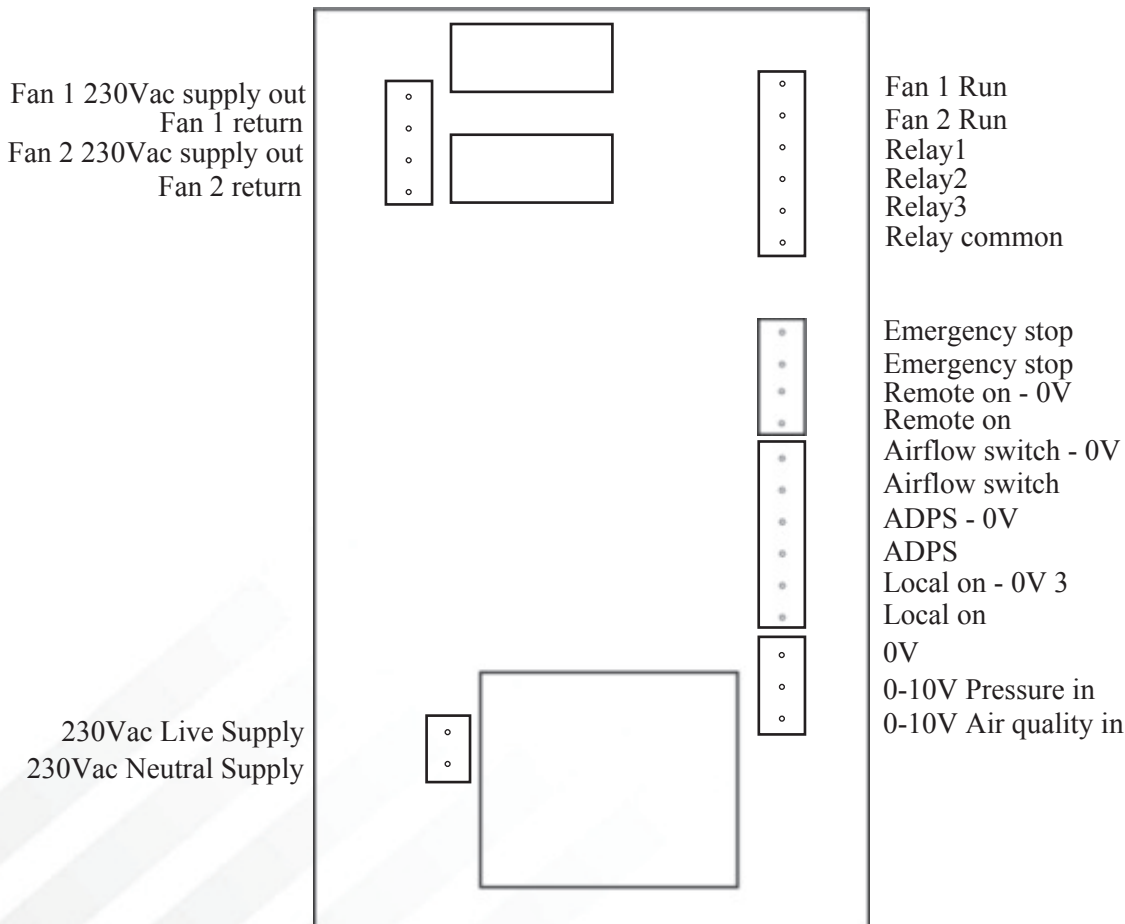
Auto Fan 1 or Auto Fan 2 fan failure

Both fans are switched off. Only the relevant fan failed relay contact and auto relay contact will be set.

Fan 1 or Fan 2 run

The relevant fan will be on regardless of any failure condition. The fan failed relay will reflect the current state.

Connections

Fan 1 230Vac supply out
Fan 1 return
Fan 2 230Vac supply out
Fan 2 return

Fan 1 Run
Fan 2 Run
Relay1
Relay2
Relay3
Relay common

Emergency stop
Emergency stop
Remote on - 0V
Remote on
Airflow switch - 0V
Airflow switch
ADPS - 0V
ADPS
Local on - 0V 3
Local on
0V
0-10V Pressure in
0-10V Air quality in

230Vac Live Supply
230Vac Neutral Supply

Dimensions and fixings

Fixing hole distance 163 mm

Fixing hole distance 98 mm

122

186

```
Auto
Fan 1
```

AUTO1   AUTO   AUTO2
OFF   OFF
MAN1   MAN2

FAULT

Options menu table

Option	Range	Increments	Units	Default
Fan change over time	Disabled / 1 to 24 / 2 - 31	1	Hour / Days	12 Days
Fail on airflow	Disabled / Enabled	–	–	Enabled
Fail on under current	Disabled / 10 - 50	1	%	50
Fail on over current	Disabled / 110 - 150	1	%	150
Calibrate fan supply current	0.2 to 10.00	0.05	Amp	1
Fail on pressure	Disabled / Enabled	–	–	Disabled
Pressure range	200 - 1000	10	Pascal	500
Pressure limit	100 - Set range	10	Pascal	400
Filter monitor	Disabled / Enabled	–	–	Disabled
Remote on	Disabled / Enabled	–	–	Disabled
Local on	Disabled / Enabled	–	–	Disabled
Run on time	Disabled / 10 to 60	1	Minute	Disabled
Air quality mode	Disabled / Enabled / Auto	–	–	Disabled
Air quality limit	10 - 60	1	%	40
Fault relay configuration	1-2-A / 1-2-F / F-A-F	–	–	1-2-A

Options menu and descriptions

All of the AX-CN-FXO settings can be checked and adjusted using the Options menu. Press the MENU button to step through the options shown below. Press the ESC button at any time to return to the main display, any value that has been changed will remain at the new value.

Changing values

Press the MENU button until the value to be changed is displayed. Press and hold the INC button, the display will show Locked followed by S1. Press and hold the MENU button, the display will change to S2. Press and hold the DEC button, the display will change to S3. Press the MENU button, the value should start flashing.

Option descriptions

The options are listed in the table above along with their selectable ranges, increments and default values.

Fan change over time

Options - Disabled / 1 to 24 hours / 2 to 31 days

Action - Sets the fan run time before changing over to the stand by fan.

Fail on airflow

Options - Disabled / Enabled

Action - The air flow switch is monitored. If no air flow is detected the on line fan is switched off, the stand by fan switched on and the alarm relay contact closed.

Fail on undercurrent

Options - Disabled / 10% to 50%

Action - The on line fan supply current is monitored. If the current falls below the under current value the on line fan is switched off, the stand by fan switched on and the alarm relay contact closed.

Fail on overcurrent

Options - Disabled / 110% to 150%

Action - The on line fan supply current is monitored. If the current rises above the over current value the on line fan is switched off, the stand by fan switched on and the alarm relay contact closed.

Calibrate fan supply current

Availability - Only available if Fail on undercurrent or Fail on overcurrent are enabled.

Options - 0.2 to 10.0 amps

Action - Displays the online fan supply current and the calibration current. The Auto switch will have to be turned to the relevant position to enable the fan. With the fan operating under normal conditions the fan supply current is shown. Use the INC and DEC buttons to set the calibration current to this value. If the fan cannot be switched on and the required calibration current is known the required value can be set.

Fail on pressure

Options - Disabled / Enabled

Action - The duct pressure is monitored. If the pressure falls below the pressure limit the on line fan is switched off, the stand by fan switched on and the alarm relay contact closed.

Pressure range

Availability - Only available when Fail on Pressure enabled

Options - 100 to 1000 Pascal

Action - The pressure input is 0-10V. The pressure range is the pressure value that is required to produce a 10V input.

Pressure limit

Availability - Only available when Fail on Pressure enabled

Options - 100 to set Pressure range

Action - This sets the limit at which the fan is failed if Fail on Pressure is enabled.

Filter monitor

Options - Disabled / Enabled

Action - Monitors the air differential pressure switch (ADPS) input to detect blocked filters. The general alarm relay contact is closed when a filter blockage is detected.

Remote On

Options - Disabled / Enabled

Action - Monitors the remote on input. If the input is connected to 0V the unit is enabled and operates as set up. If Remote On is disabled the unit will be controlled by the Local On input in combination with the Auto switch.

Local On

Options - Disabled / Enabled

Action - Monitors the local on input. If the input is connected to 0V the unit is enabled and operates as set up. The Local on function has several run on options. This does not override the Remote On. If Remote on and Local On are both disabled the unit will be controlled by the Auto switch.

Run on time

Availability - Only available when Local on enabled

Options - Disable / 10 to 60 minutes, in 10 minutes steps

Action - Keeps the fan running for the set time after local on removed.

Air quality run on

Availability - Only available when Local on enabled

Options - Disable / Enabled / Auto

Action - Keeps the fan running until the air quality falls to the set limit. If Auto is selected the fan will start independently when the air quality rises above the set level.

Air quality limit

Availability - Only available when Local on and Air quality run on are enabled.

Options - 10% to 60%

Action - Sets the limit at which the Air quality run on starts. The Air Quality run stops at 5% below the set value.

Fault relay configuration

Options - 1-2-A / 1-2-F / F-A-F

Action - Sets the relay 1,2 and 3 actions. These can be configured for various auto alarm actions as shown below.

	Relay	Action (Closed)
Mode 1-2-A	Relay1	Fan 1 fail
	Relay2	Fan 2 fail
	Relay3	Auto selected
Mode 1-2-F	Relay1	Fan 1 fail
	Relay2	Fan 2 fail
	Relay3	Filter blocked
Mode F-A-F	Relay1	Fan fail
	Relay2	Auto selected
	Relay3	Filter blocked

Internal view