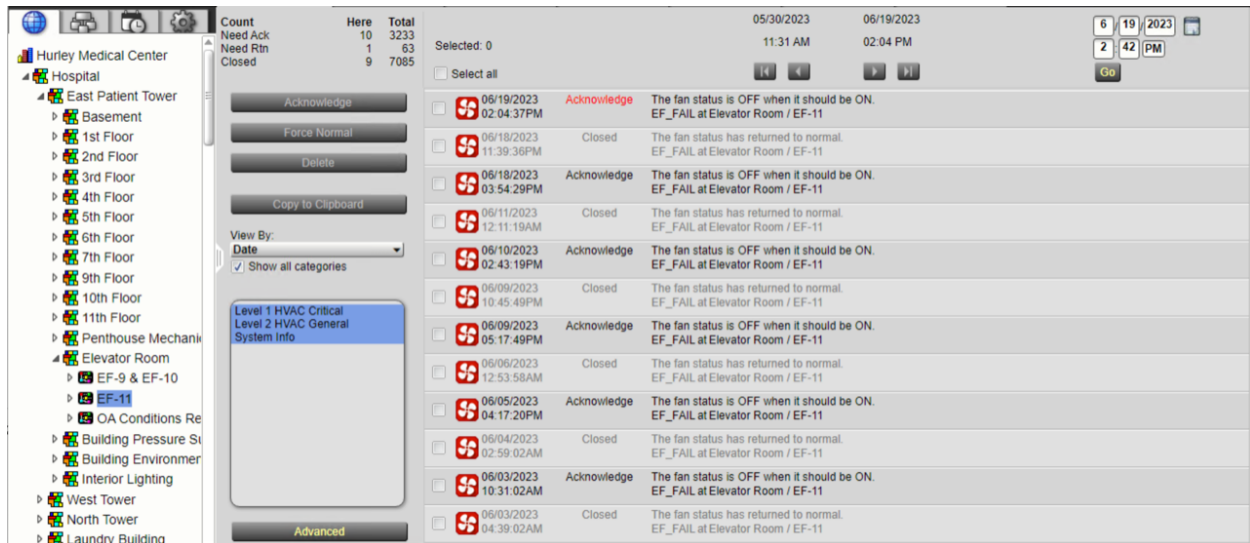


I spent some time reviewing the alarms for the EF-11 fan failures and this is what I found. You will notice the fan status to “on” follows the comand failure by at least 4 hours in every instance. Therefore, fails the immediate command to run.



Alarms are being issued and recorded that appear to be in error and are non-synchronous to operation of the unit EF-11.

According to the as-built drawings supplied by your organization (see below). The controller is shown wired to a RIB relay (not found) at the fan unit and there is no integral damper actuator shown that opens the OA damper before fan operation either. No Sequence Of Operation (SOO) is described.

Examining the control panel I found one, not two controllers, operating both rooms with EF-9,10,&11. The fans are wired to existing IDEC “ice cube relays” in the old Honeywell panel and appear to have DO1 output connect to orange wire and DO2&3 (EF-9&10) with gray wired to the outputs and spliced to white wire at the relays (why?). There is a newly installed spring return Belimo actuator wired to open each exhaust fan damper and (I assume) the power to the fan is wired through the limit switch on the actuator, requiring "proof of open" before the fan starts. The as-built diagram in no way represents this.

Exhaust Fan - Cooling

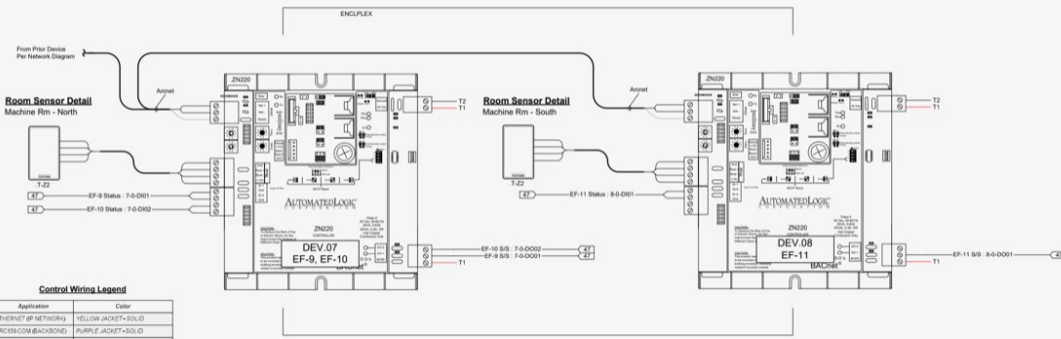
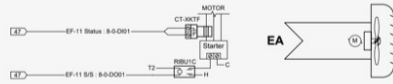
Elevator Machine Room (EF-9, EF-10, EF-11) / Penthouse (EF-8) Propeller Fans.
EFs controlled based on space temperature sensor.

Phase 1 Phase 2

Bill of Materials				
ID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
T-22	252 STANDARD 50K OHM TEMP SMT	AUTOMATED LOGIC	252 ALC	2.00
ZN20	ZN20 CONTROL MODULE	AUTOMATED LOGIC	ZN20	2.00
CT-4X7	CURRENT SENSOR, 0.25-1.00 AMP, 5000-COM, TEMP STAMP	FUNCTIONAL SERVICES	RB007F	1.00
ENCPLX	TERMINAL BOX BLOCK, 10X10X1.5 (STANDARD), 5/16" PITCH	MECH PARTS	TK000	1.00
RB007C	10A PILOT RELAY, 10-30 VAC/250V, 1.00 VAC COIL, STATUS LED, VA	FUNCTIONAL SERVICES	RB007C	4.00
TK00	TRANSFORMER, 120 TO 240VAC, 50VA	COMPONENTS	LE1000	1.00

Propeller Exhaust Fan Detail

Typical of 4, EF-11 Shown



Control Wiring Legend

Application	Color
ETHERNET 6P NETWORK	YELLOW JACKET-SOLID
ARCIS.COM @ACBOND	PURPLE JACKET-SOLID
ARCIS.COM @WBNET	GREEN JACKET-SOLID
ARCIS.COM @MNT	ORANGE JACKET-SOLID
POWER @WHITE JACKET	WHITE JACKET
SIGNAL @ANALOG OUTPUT	RED STRIPE-ORANGE/BLACK
SIGNAL @ANALOG INPUT	BLACK CONDUCTOR @ORANGE/BLACK
SIGNAL @ANALOG OUTPUT	WHITE JACKET-RED STRIPE
SIGNAL @ANALOG INPUT	WHITE JACKET-BLUE STRIPE
SIGNAL @BINARY OUTPUT	WHITE JACKET-RED STRIPE
SIGNAL @BINARY INPUT	WHITE JACKET-YELLOW STRIPE



General Notes:
1. Refer to Cable Specification Chart for wiring details.
2. Coordinate with Facilities for provision of 120 VAC circuit power to control panels.
3. Refer to ALC Technical Documentation for specifications on control module setup, wiring, and driver configuration.

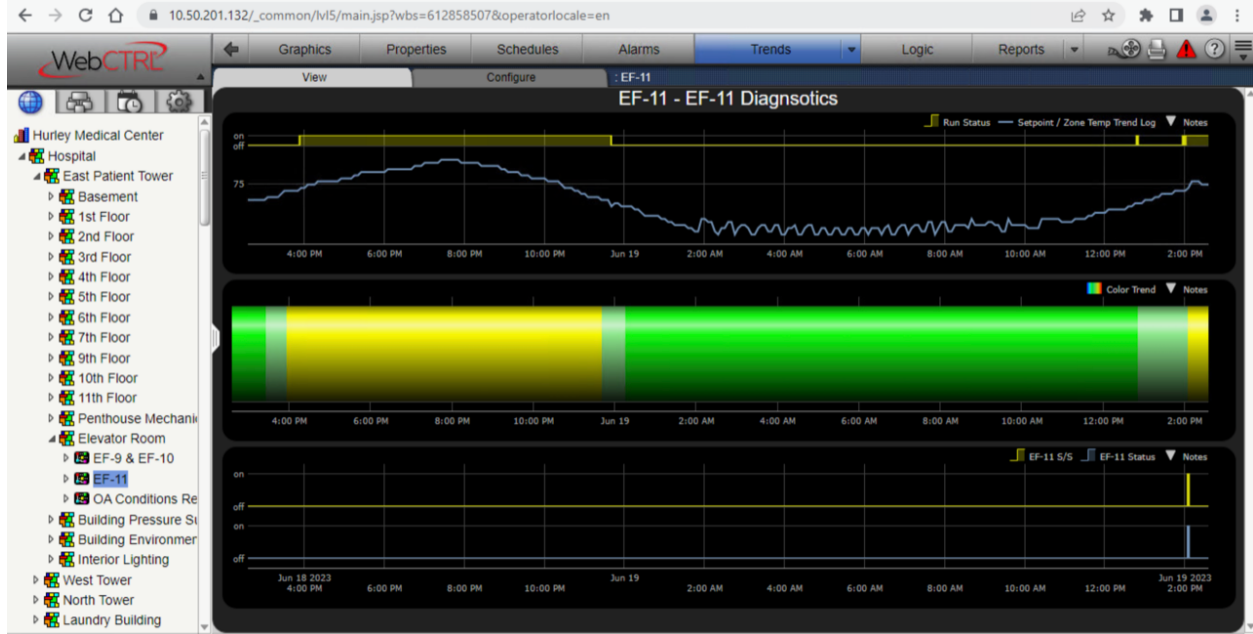
I discovered this after reviewing the graphics and putting some trends to them. When putting the fan in "on" in the EF-11 graphical "Unit override" switch the graphics shows a command of "on" for the output. However, at the controller wired to the relay, (DO1) does not energize. It does nothing. Unless overridden in the logic on the graphic dedicated to EF-9 & EF-10- which shows EF-11 on that logic does DO1 energize. So I am not sure any of the logic or graphics on EF-11 graphic is doing anything correctly.

WebCTRL interface for EF-11. The interface includes a navigation menu on the left for Hurley Medical Center, a top navigation bar with options like Graphics, Properties, Schedules, Alarms, Trends, Logic, Reports, and a main display area for unit control and monitoring. The main display shows environmental data (85.4 °F, 26.8 %rh, 1997 lux), a 'Unit Override' section, a 3D model of the exhaust fan unit, and 'Current Zone Conditions' (Zone Temp: 74.9 °F, Setpt Adj By: 0.0 °F, Effective Cool Setpt: 74.5 °F, Effective Heat Setpt: 67.9 °F). A 'Setpoint Control' bar is also visible at the bottom left.

WebCTRL interface showing Exhaust Fan Control logic. The interface displays a logic diagram with various inputs and outputs. Inputs include OA Temp (85.79), Valid, Clg Dmd Level (0), and Htg Dmd Level (0). Outputs include EF-11 Status (On), EF-11 Run, EF-11 Fail, and EF-11 Hand. The logic diagram shows the relationship between these variables and the fan's operation.

WebCTRL interface showing Zone Environmental Index logic. The interface displays a logic diagram for the Zone Environmental Index (EI). Inputs include EF-11 Status (Off), EF-10 Status, and various fan failure and manual status signals. The output is the Zone Environmental Index (EI) set to 40. A 'Metric Conversion' table is also visible at the bottom left.

Metric	Value	Unit	Conversion	Result
RV	32			32
EI	40	%		40



This trend **discloses the fan works fine and does not run and is not commanded on???**- and was only commanded on by me- the far right yellow and blue "blips".

Physical checkout , after seeing the wiring and going to the EF9&10 logic page was simple and worked for EF-11. However, overriding teh zone temperature for the EF-11 Zone on the EF-11 graphics page shhowed a cooling 100% response but no actual fan came on.

Please have your technician review the programming and wiring and have the programs corrected. Also, correct the erroneous as-built document to the correct wiring and controller name and address.

Also,

The right side of the sheet metal housing of EF-9 was cut out to accomodate the Belimo damper actuator which, in turn, allows the air exhausting the fan cage to blow right back into this opening- short circuiting the fans air flow and compromising the cooling effect of the nearby cooling unit. Please have sheet metal be put back to cover this area and use caulk to seal it so its air tight and moisture resistant like the old uncut housing.

Respectfully,

Douglas Lafever, CMVP, A&P
Award Winning Engineer
upgradeevolvepres@gmail.com



P.S.

blip

noun

1. 1.

an unexpected, minor, and typically temporary deviation from a general trend.