

Active Controlled Cooling System

Features

- ◆ Closed Loop Digital Controllers
- ◆ High-Temperature capable
- ◆ Internal 1kW Heating Element for faster warm-up of system to desired temperature
- ◆ Simple front-panel user interface:
 - Controls desired flow rate, temperature and option to enable the internal heater
 - Uses a Bright Vacuum Fluorescent Display
- ◆ Remotely controllable through a computer interface using a USB cable
- ◆ Internal Fluid Level Sensor
- ◆ Protection from Over-Temperature and Over-Pressure
- ◆ Fill Mode: Pump runs at low speed for easy system priming



Description

The Active Controlled Cooling System (ACCS) is designed to cool electrical or mechanical systems that require a regulated temperature with coolant temperatures up to 105°C. Two versions are available for heat loads of 5kW (ACCS-5) or 10kW (ACCS-10). The rated amount of heat can be rejected over a temperature range of 60°C to 105°C. The coolant loop uses a regular radiator with powerful fans to reject the heat. The system can be controlled either through the easy to use front-panel interface or remotely through a USB computer interface.

The cooling system utilizes full digital control to allow tight regulation of the coolant flow rate and temperature. The controller senses the flow rate, the outlet and inlet pressure, and the outlet and inlet temperature. The system is designed for laboratory and industrial environments which require a tightly regulated coolant. The system features easy to access fill and drain ports, pressure relief valves, and large outlet and inlet ports. Additionally there are several measures taken to protect the unit from excessive pressure and to prevent boiling.



Absolute Maximum Ratings

	Parameters	Max.	Units
V_{in}	Input Voltage	130	Vac
I_{in}	Input Current	20	Arms
I_o	System Pressure	60	PSI
T_A	Ambient Operating Temperature	35	°C
T_{out}	Outlet Coolant Temperature	105	°C
T_{in}	Inlet Coolant Temperature	132.6	°C

Table 1: Absolute Maximum Ratings

Recommended Operating Conditions

	Parameters	Min.	Typ.	Max.	Units	Conditions
V_{in}	Input Voltage	100	120	130	Vac	(1)
F_r	Flow rate	6	-	15	LPM	
I	Heat Load	-	-	5	kW	ACCS-5
				10	kW	ACCS-10
T_{in}	Inlet Temperature	-	-	132.6	°C	
T_{out}	Outlet Temperature	60	-	105	°C	
	Coolant Type	30%	50%	70%	EGW	(2)
T_A	Ambient Operating Temperature	-	-	35	°C	
ΔP_{max}	Max Outlet Pressure Drop	-	-	15	PSI	(2)
P_{heater}	Auxiliary Heater Power	-	1000	-	W	

Table 2: Operating Characteristics

Notes:

(1) 240 Vac version available

(2) 50% EGW, contact Apecor for other coolant options

Front-Panel User Interface



Figure 1: Front-Panel User Interface

Display and Button Status Information

Function	Status	Physical Description	Interpretation
Power Switch	on	Toggle up / Red light on	Unit is powered up
	off	Toggle down / Light off	Wait 5 seconds for unit to turn off
Pump Enabled	on	Button is pushed in	Pump is enabled
	off	Button is pushed out	Pump is disabled
Heater Enabled	on	Button is pushed in	Heater is enabled
	off	Button is pushed out	Heater is disabled
Red LED	on	LED is ON	Heater is on
	off	LED is OFF	Heater is off
Temp	+	Increase/decrease Set Temperature	Screen displays Set: Temperature on the bottom center
	-		
Flow	+	Increase/Decrease Flow Rate	Screen displays Set: Flow rate on the bottom left
	-		
Toggle Switch	Remote	Toggle switch is up	When in this position use the USB PC Control port (System requires hard power reset for 5 seconds)
	Local	Toggle switch is down	When in this position use the chassis mounted interface (System requires hard power reset for 5 seconds)

Table 3: Interface Status

Dimensions and Drawings of ACCS-5

	Parameters	Typ.	Units
L	Length	85.09	cm
		33.5	inch
W	Width	40.86	cm
		16.09	inch
H	Height	38.56	cm
		15.18	inch

Table 4: ACCS-5 Dimensions

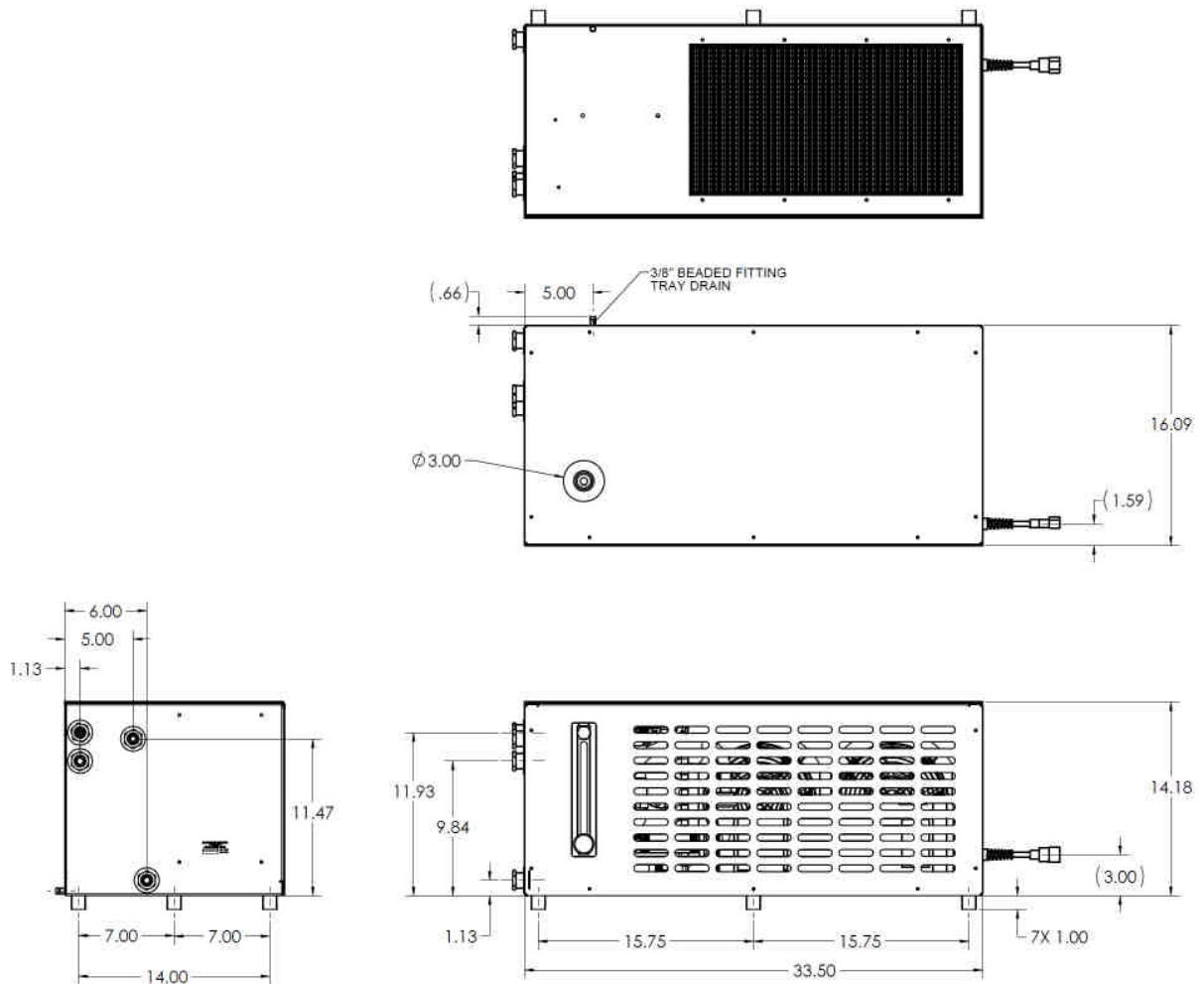


Figure 2: ACCS-5 Drawing (Dimensions in Inches)

Dimensions and Drawings of ACCS-10

	Parameters	Typ.	Units
L	Length	108.28	cm
		42.63	inch
W	Width	40.86	cm
		16.09	inch
H	Height	38.56	cm
		15.18	inch

Table 5: ACCS-10 Dimensions

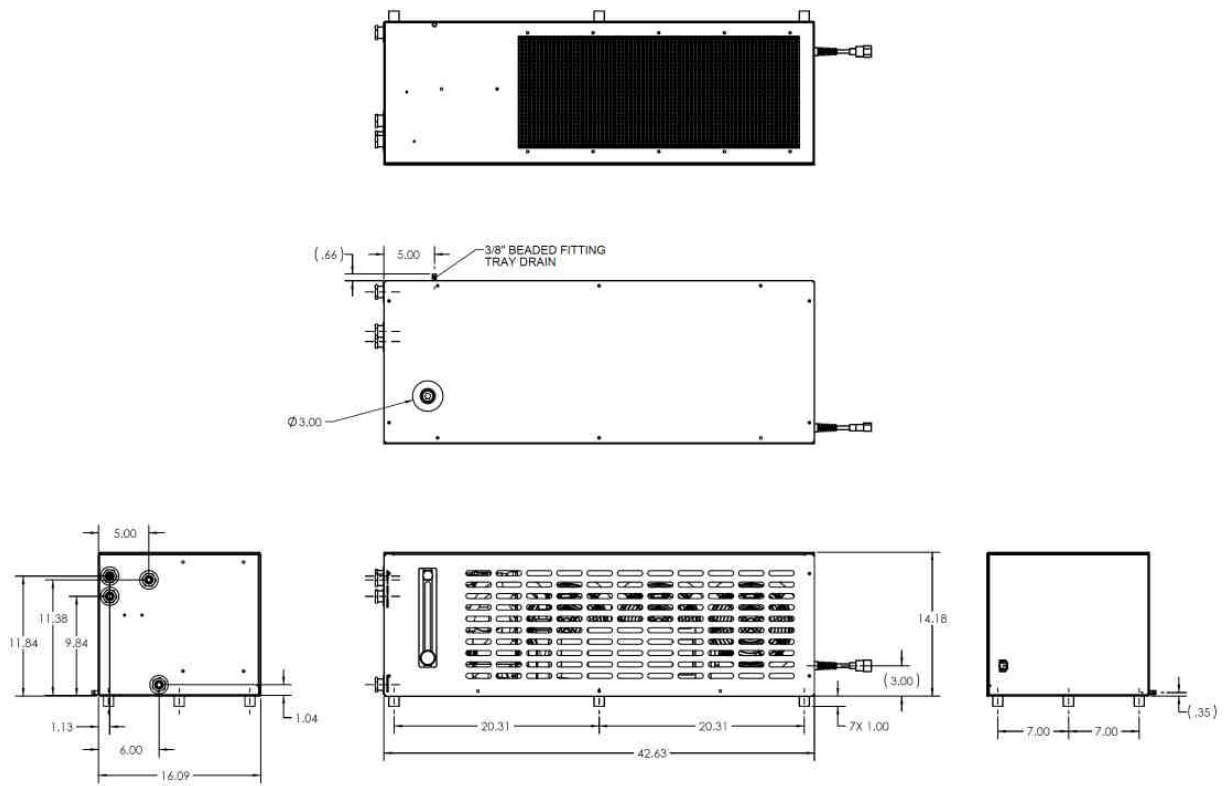


Figure 3: ACCS-10 Drawing (Dimensions in Inches)



ACCS-10 Pictures



Figure 4: ACCS-10 Front Side



Figure 5: ACCS-10 Back Side



Figure 6: ACCS-10 Fluid Level Side



Figure 7: ACCS-10 Radiator Side