GENESIS
ARCHITECTS • ENGINEERS • CONSTRUCTORS
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Blue Bell, PA(HQ) - Philadelphia, PA - Boston, MA - San Diego, CA - San Francisco, CA

PROJECT: ADM: PAC3 Concept & DD

PROJECT NO: 22159.00

SUBMITTAL # 233600-8.0

SUBJECT Air Terminal Unit Submittal

RECEIVED DATE 05/17/2023

DUE DATE 05/30/2023 (KI)

☐ **REVIEWED**

☑ **REVIEWED AS NOTED**

☐ **REJECTED, REVISE AND RESUBMIT**

☐ **RECEIVED FOR RECORD PURPOSES ONLY AND NOT REVIEWED**

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BY: David Soyka **DATE:** 05/25/2023

	Reviewer	Date
☐ ARCH		
☑ MECH	David Soyka	05/25/2023
☐ MECH BAS		
☐ ELEC		
☐ PROC UTIL		
☐ PROC		
☐ PROC AUTO		
☐ PLUM		
☐ FIRE		
☐ STRUC		
☐ CIVIL		
☐		
☐		

COMMENTS:
- COORDINATE ALL HANDING FOR HOT WATER COIL CONNECTIONS AND CONTROL ENCLOSURES WITH SHEET METAL SHOW DRAWINGS.
- FOR TUE-1-1, TUE-2-1 AND TUE-2-2, PROVIDE TITUS DESV 24x16 IN LIEU OF DESV 16.
- PROVIDE SIZE 40 FOR TUS-1-1.
- PROVIDE 2-ROW HEATING COIL WHERE REQUIRED TO MEET REQUIRED LEAVING AIR TEMPERATURE AS SCHEDULED.
-

HUBER GENERAL CONTRACTING

Transmittal

5939 Colerain Avenue • Cincinnati, Ohio 45239 • 513-674-1779 • www.hubergc.com

Wednesday, May 17, 2023

ADM
1260 Pacific Avenue
Erlanger, KY 41018
Don Kalar

ADM-Pac3-CD&D Buildout
1260 Pacific Avenue
Erlanger, KY 41018

Submittal: 8
Specification: 233600
Submittal Category: Action
Subcontractor: Comfort Systems USA
Description: Air Terminal Units
Submittal Type: Product Data

Please see attached for the following:

Description	Date
SUBMITTAL	
Titus Air Terminal Units	5/8/2023

COMMENTS:

For Your Review / Approval

Steve Roach Date: 17-May-23

Project Manager

HUBER SUBMITTAL REVIEW

Reviewed for general conformity to contract documents. Requirements of contract are not altered by this review. Fabrication, dimensions, fit, quality, and coordination with other trades remains the responsibility of the subcontractor.

EXCEPTIONS NOTED

Reviewed By: Steve Roach

COMFORT SYSTEMS USA
Quality People. Building Solutions.

SUBMITTAL COVER PAGE

Project #: 4985

Project Name: ADM Pac 3 Build Out

Construction Manager: Huber Construction

Architect: Genesis

Engineer: Genesis

Reference: Air Terminal Units

Spec #: 233600

Drawing #: M.901

Manufacturer: Titus

Supplier: Controlled Air

Contact Person (name/number): Brian Dougherty 513-769-6600 x222

Comfort Systems Contact: Brian Weller 513-312-5641

Date: 5/8/2023

X Reviewed Spec # N/A
Approved As Noted
Rejected
Revise and Resubmit

419 Elliot Avenue Cincinnati, OH 45215 (513) 681-5700 fax: (513) 681-5784

CONTROLLED AIR, INC. 12009 Tramway Drive • Cincinnati, Ohio 45241

Project: **ADM PAC 3**

Location: **Erlanger, KY**

Customer: **Comfort Systems USA**

Engineer: **Genesis**

Equipment: **Titus Terminal Units**

Submitted by: **Brian Dougherty**
Controlled Air Inc.
12009 Tramway Drive
Cincinnati, OH 45241
Phone: **513-769-6600 x222**
Fax: **513-769-6633**
Brian@controlled-air.com

Date: **5/5/2023**

Single Duct Terminal Unit Schedule

Tag	AHU Tag	Room	Model	Size		CFM		Static Pressure			NC Levels		Unit Information
				Unit	Outlet	Max	Min	Inlet	Down	Min	Rad.	Disch.	Hand
TUE1-1	PROVIDE DESV 24x6		DECV	16	15.9	3250	0	0.75	0.25	0.2	26	27	LH
TUE1-2			DECV	10	9.9	900	600	0.75	0.25	0.1	14	28	LH
TUE1-3			DECV	14	13.9	1700	675	0.75	0.25	0.1	15	19	RH
TUE1-4			DECV	16	15.9	2525	830	0.75	0.25	0.12	19	24	LH
TUE1-5			DECV	16	15.9	2700	750	0.75	0.25	0.14	21	25	RH
TUE-2-01	PROVIDE DESV 24x6		DECV	16	15.9	3955	1425	0.75	0.25	0.3	32	29	RH
TUE-2-02			DECV	16	15.9	3955	1425	0.75	0.25	0.3	32	29	RH
TUE-2-03			DECV	14	13.9	1900	630	0.75	0.25	0.12	18	22	LH
TUE-2-04			DECV	08	7.9	525	300	0.75	0.25	0.08	10	29	RH
TUE-2-05			DECV	06	5.9	100	100	0.75	0.25	0.01	-	20	LH
TUE-2-06			DECV	12	11.9	1455	480	0.75	0.25	0.13	17	22	LH
TUE-2-07			DECV	14	13.9	1500	400	0.75	0.25	0.07	12	18	LH
TUE-2-08			DECV	06	5.9	200	200	0.75	0.25	0.04	-	28	LH
TUE-2-09			DECV	09	8.9	650	475	0.75	0.25	0.08	10	29	RH
TUE-2-10			DECV	12	11.9	1450	775	0.75	0.25	0.13	17	22	LH
TUE-2-11			DECV	06	5.9	100	100	0.75	0.25	0.01	-	20	RH
TUE-2-12			DECV	06	5.9	150	50	0.75	0.25	0.02	-	24	RH
TUE-2-13			DECV	06	5.9	200	200	0.75	0.25	0.04	-	28	RH
TUE-2-14			DECV	09	8.9	775	390	0.75	0.25	0.12	15	29	RH
TUE-2-15			DECV	10	9.9	1080	425	0.75	0.25	0.15	18	31	LH

Notes:
1. Selections are based on Titus as Manufacturer.
2. All performance based on tests conducted in accordance with ASHRAE 130-2008 and AHRI 880-2011.
3. All NC levels determined using AHRI 885-2008 Appendix E.
4. All airflow, pressure losses and heating performance values have been corrected for altitude.
5. Units of measure: dimensions (in), airflow (cfm), water flow (gpm), air pressure (in wg), water head losses (ft) and temperatures (degF).
6. In the "Steps" column, code "S" denotes a modulating SCR heater.
7. The minimum supply circuit ampacity (MCA) and maximum overcurrent protection (MOP) ratings were calculated in accordance with UL standards based

Note: TUE-2-1 & TUE-2-2 show size 24x16 on the drawings. This is not an option from Titus. 16" is the largest size available.

Single Duct Terminal Unit Schedule

LAT = 75
PROVIDE 2-ROW COIL AS REQUIRED

PROVIDE SIZE 40

Tag	AHU Tag	Room	Model	Size		CFM		Static Pressure			NC Levels		Hot Water Heat Coil										Unit Information
				Unit	Outlet	Max	Min	Inlet	Down	Min	Rad	Dis	CFM	MBH	EAT	EWT	LAT	APd	GPM	LWT	WPd	Rows	FPI	Hand
TUS-1-1			DESV	16	24x18	4000	725	0.75	0.25	0.39	22	27	4000	54.7	55	160	67.6	0.33	8.7	147.2	3.92	1-RH	10	RH
TUS-1-2			DESV	10	14x12.5	750	750	0.75	0.25	0.1	15	24	450	12	55	160	79.6	0.09	1.6	144.7	0.27	1-RH	10	RH
TUS-1-3			DESV	12	16x15	1500	475	0.75	0.25	0.18	18	25	475	12.8	55	160	79.8	0.17	1	133.9	0.18	1-RH	10	RH
TUS-1-4			DESV	16	24x18	2525	830	0.75	0.25	0.18	15	20	830	23.2	55	160	80.8	0.16	1.8	133.7	0.22	1-RH	10	RH
TUS-1-5			DESV	16	24x18	2500	550	0.75	0.25	0.17	14	20	550	17.2	55	160	83.8	0.15	1.2	130.7	0.12	1-RH	10	LH
TUS-2-01			DESV	40	38x18	3780	1250	0.75	0.25	0.17	29	28	3780	69.8	55	160	72	0.14	8.2	142.6	4.79	1-RH	10	RH
TUS-2-02			DESV	40	38x18	3780	1250	0.75	0.25	0.17	29	28	3780	69.8	55	160	72	0.14	8.2	142.6	4.79	1-RH	10	LH
TUS-2-03			DESV	12	16x15	1900	630	0.75	0.25	0.25	20	28	630	15.7	55	160	78	0.24	1.4	137.1	0.27	1-RH	10	LH
TUS-2-04			DESV	08	12x10	475	250	0.75	0.25	0.09	14	25	250	6.5	55	160	79	0.08	0.5	133.4	0.22	1-RH	10	RH
TUS-2-05			DESV	12	16x15	1455	480	0.75	0.25	0.17	18	25	480	12.8	55	160	79.7	0.16	1	133.8	0.18	1-RH	10	LH
TUS-2-06			DESV	14	20x17.5	1650	550	0.75	0.25	0.13	14	19	550	15.8	55	160	81.5	0.11	1.2	133.1	0.11	1-RH	10	LH
TUS-2-07			DESV	08	12x10	450	275	0.75	0.25	0.08	13	25	275	7.2	55	160	79.1	0.07	0.6	135.6	0.25	1-RH	10	LH
TUS-2-08			DESV	12	16x15	1350	675	0.75	0.25	0.15	17	25	675	16.4	55	160	77.4	0.14	1.5	137.7	0.31	1-RH	10	RH
TUS-2-09			DESV	06	12x8	250	150	0.75	0.25	0.1	10	22	150	3.8	55	160	78.4	0.05	0.3	134	0.08	1-RH	10	RH
TUS-2-10			DESV	07	12x10	575	190	0.75	0.25	0.22	19	25	190	5.4	55	160	81.3	0.11	0.4	132.4	0.16	1-RH	10	RH
TUS-2-11			DESV	12	16x15	980	325	0.75	0.25	0.09	14	23	325	9.7	55	160	82.5	0.08	0.7	131.7	0.11	1-RH	10	RH
TUS-3-01			DESV	06	12x8	250	250	0.75	0.25	0.1	10	22	250	5.6	55	160	75.8	0.05	0.5	137	0.16	1-RH	10	LH
TUS-3-02			DESV	06	12x8	250	250	0.75	0.25	0.1	10	22	250	5.6	55	160	75.8	0.05	0.5	137	0.16	1-RH	10	LH
TUS-3-03			DESV	10	14x12.5	1000	330	0.75	0.25	0.15	18	27	330	8.4	55	160	78.3	0.14	0.7	135.6	0.09	1-RH	10	LH
TUS-3-04			DESV	07	12x10	465	160	0.75	0.25	0.15	17	24	160	4.5	55	160	80.9	0.08	0.3	129.4	0.1	1-RH	10	RH
TUS-3-05			DESV	10	14x12.5	945	320	0.75	0.25	0.14	18	27	320	8.3	55	160	78.8	0.13	0.7	135.9	0.09	1-RH	10	RH
TUS-3-06			DESV	06	12x8	315	110	0.75	0.25	0.15	13	20	110	2.8	55	160	78.2	0.07	0.2	131.8	0.04	1-RH	10	LH
TUS-3-07			DESV	06	12x8	175	175	0.75	0.25	0.05	-	17	175	4.6	55	160	79	0.03	0.4	136.7	0.12	1-RH	10	LH
TUS-3-08			DESV	12	16x15	1380	460	0.75	0.25	0.16	17	25	460	12.6	55	160	80.3	0.15	1	134.2	0.18	1-RH	10	RH
TUS-3-09			DESV	06	12x8	200	70	0.75	0.25	0.06	-	19	70	2.4	55	160	86	0.03	0.2	135.9	0.04	1-RH	10	LH
TUS-3-10			DESV	08	12x10	500	170	0.75	0.25	0.1	14	25	170	5.2	55	160	83.1	0.09	0.4	133.5	0.16	1-RH	10	RH
TUS-3-11			DESV	12	16x15	1320	440	0.75	0.25	0.15	17	24	440	12.4	55	160	81	0.14	1	134.6	0.18	1-RH	10	RH
TUS-3-12			DESV	06	12x8	175	175	0.75	0.25	0.05	-	17	175	4.6	55	160	79	0.03	0.4	136.7	0.12	1-RH	10	LH
TUS-3-13			DESV	06	12x8	170	60	0.75	0.25	0.04	-	17	60	2	55	160	84.9	0.02	0.1	120.2	0.01	1-RH	10	RH
TUS-3-14			DESV	06	12x8	100	40	0.75	0.25	0.02	-	10	40	1.7	55	160	93.3	0.01	0.1	126	0.01	1-RH	10	LH
TUS-3-15			DESV	08	12x10	250	90	0.75	0.25	0.04	-	24	90	3	55	160	85.7	0.03	0.2	129.4	0.05	1-RH	10	RH
TUS-3-16			DESV	08	12x10	460	160	0.75	0.25	0.09	14	25	160	4.5	55	160	80.9	0.08	0.3	129.4	0.1	1-RH	10	LH
TUS-3-17			DESV	06	12x8	200	70	0.75	0.25	0.06	-	19	70	2.4	55	160	86	0.03	0.2	135.9	0.04	1-RH	10	LH
TUS-3-18			DESV	06	12x8	260	90	0.75	0.25	0.1	10	22	90	2.6	55	160	81.5	0.05	0.2	133.6	0.04	1-RH	10	RH
TUS-3-19			DESV	08	12x10	460	160	0.75	0.25	0.09	14	25	160	4.5	55	160	80.9	0.08	0.3	129.4	0.1	1-RH	10	LH
TUS-3-20			DESV	16	24x18	3200	1100	0.75	0.25	0.27	19	24	1100	30	55	160	80.1	0.23	3.6	143	0.74	1-RH	10	RH

Notes:
1. Selections are based on Titus as Manufacturer.
2. All performance based on tests conducted in accordance with ASHRAE 130-2008 and AHRI 880-2011.
3. All NC levels determined using AHRI 885-2008 Appendix E.
4. All airflow, pressure losses and heating performance values have been corrected for altitude.
5. Units of measure: dimensions (in), airflow (cfm), water flow (gpm), air pressure (in wg), water head losses (ft) and temperatures (degF).
6. Water pressure drop (WPd) units is in ft. water.

Note: TUS-1-1 is shown on the plans as a 16" box. The max airflow for a 16" box is 4000 CFM. Submitted performance adjusted down to 4000CFM

All VAV selections done with 1-row coils and GPM's as scheduled.

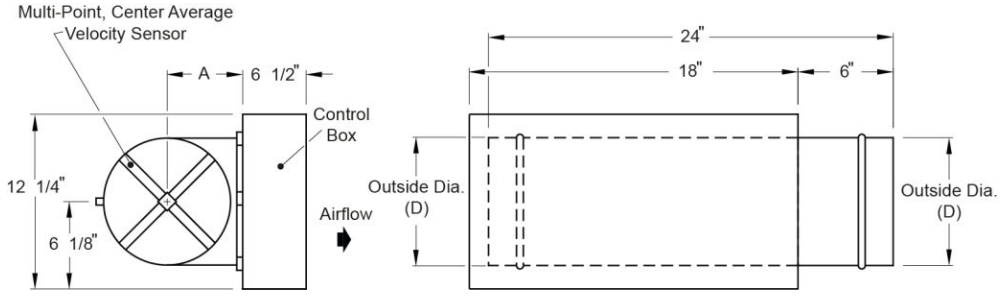
Project	ADM PAC 3	**Date**	05/05/2023
Architect		**Office**	Controlled Air, Inc.
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

DECV

Digital Control Pressure Independent Round Retrofit Unit

Main Product **DECV-1**

DECV



Right Hand Unit is shown.

UNIT SIZE	Outside Dia. (D)	A
16	15 7/8" Dia.	8 9/16"
14	13 7/8" Dia.	7 9/16"

General Description **DECV-1**

Direct digital control package supplied by Titus includes direct digital controller, tested and calibrated.) Room sensor is optional.

- Tight Close-Off damper. Leakafe is less than 2% of nominal CFM at 6" sp W.G.
- Multi-point inlet velocity sensor with center averaging.
- Gauge tees for cfm measurement.
- Inlet and Discharge connections fit inside a standard round duct.
- Uninsulated

Option Schedule **DECV-1**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
1	1	TUE1-1	16	3250	0
4	1	TUE1-4	16	2525	830
8	1	TUE-2-03	14	1900	630
12	1	TUE-2-07	14	1500	400

SENSOR CODE 3 - AEROCROSS
UNIT CONFIG 0 -BASIC
LINER OPTION 0 -STANDARD
CASING CONFIG 0L -STD 22GA LH
DIGITAL CONTROLLER 0000 -NONE
ACTUATOR TYPE 0000 -NONE
CONTROL ACC1 00 -NONE
CONTROL ACC2 00 -NONE
CONTROL ACC3 00 -NONE
UNIT ACC1 E -METAL CTRL ENCLOS
UNIT ACC2 0 -NONE
UNIT ACC3 0 -NONE
UNIT ACC4 0 -NONE
UNIT ACC5 0 -NONE

Option Schedule (continued) **DECV-1**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
3	1	TUE1-3	14	1700	675
5	1	TUE1-5	16	2700	750
6	1	TUE-2-01	16	3955	1425
7	1	TUE-2-02	16	3955	1425

SENSOR CODE 3 - AEROCROSS
UNIT CONFIG 0 -BASIC
LINER OPTION 0 -STANDARD
CASING CONFIG 0R -STD 22GA RH
DIGITAL CONTROLLER 0000 -NONE
ACTUATOR TYPE 0000 -NONE
CONTROL ACC1 00 -NONE
CONTROL ACC2 00 -NONE
CONTROL ACC3 00 -NONE
UNIT ACC1 E -METAL CTRL ENCLOS
UNIT ACC2 0 -NONE
UNIT ACC3 0 -NONE
UNIT ACC4 0 -NONE
UNIT ACC5 0 -NONE

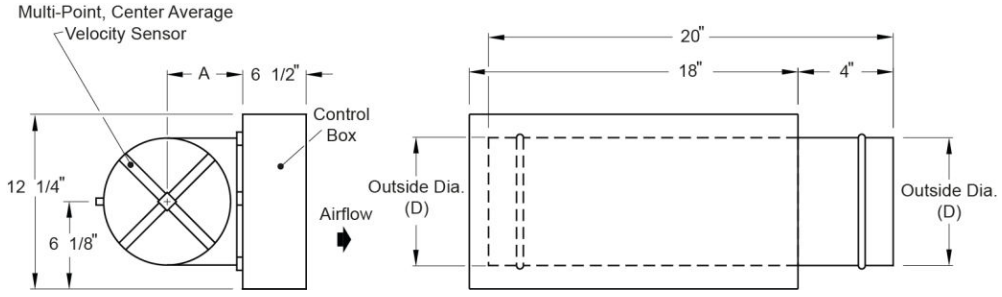
Project	ADM PAC 3	**Date**	05/05/2023
Architect		**Office**	Controlled Air, Inc.
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

DECV

Digital Control Pressure Independent Round Retrofit Unit

Main Product **DECV-1 (2)**

DECV



Right Hand Unit is shown.

UNIT SIZE	Outside Dia. (D)	A
10	9 7/8" Dia.	5 9/16"
12	11 7/8" Dia.	6 9/16"
09	8 7/8" Dia.	5 1/16"

General Description **DECV-1 (2)**

Direct digital control package supplied by Titus includes direct digital controller, tested and calibrated.) Room sensor is optional.

- Tight Close-Off damper. Leakafe is less than 2% of nominal CFM at 6" sp W.G.
- Multi-point inlet velocity sensor with center averaging.
- Gauge tees for cfm measurement.
- Inlet and Discharge connections fit inside a standard round duct.
- Uninsulated

Option Schedule **DECV-1 (2)**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
2	1	TUE1-2	10	900	600
11	1	TUE-2-06	12	1455	480
15	1	TUE-2-10	12	1450	775
20	1	TUE-2-15	10	1080	425

SENSOR CODE 3 - AEROCROSS
UNIT CONFIG 0 -BASIC
LINER OPTION 0 -STANDARD
CASING CONFIG 0L -STD 22GA LH
DIGITAL CONTROLLER 0000 -NONE
ACTUATOR TYPE 0000 -NONE
CONTROL ACC1 00 -NONE
CONTROL ACC2 00 -NONE
CONTROL ACC3 00 -NONE
UNIT ACC1 E -METAL CTRL ENCLOS
UNIT ACC2 0 -NONE
UNIT ACC3 0 -NONE
UNIT ACC4 0 -NONE
UNIT ACC5 0 -NONE

Option Schedule (continued) **DECV-1 (2)**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
14	1	TUE-2-09	09	650	475
19	1	TUE-2-14	09	775	390

SENSOR CODE 3 - AEROCROSS
UNIT CONFIG 0 -BASIC
LINER OPTION 0 -STANDARD
CASING CONFIG 0R -STD 22GA RH
DIGITAL CONTROLLER 0000 -NONE
ACTUATOR TYPE 0000 -NONE
CONTROL ACC1 00 -NONE
CONTROL ACC2 00 -NONE
CONTROL ACC3 00 -NONE
UNIT ACC1 E -METAL CTRL ENCLOS
UNIT ACC2 0 -NONE
UNIT ACC3 0 -NONE
UNIT ACC4 0 -NONE
UNIT ACC5 0 -NONE

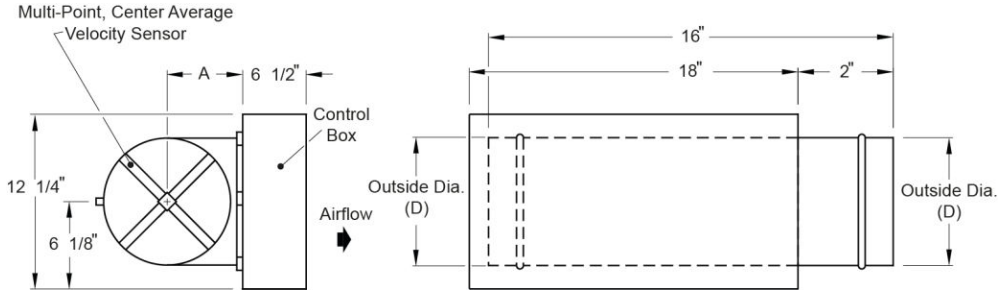
Project	ADM PAC 3	**Date**	05/05/2023
Architect		**Office**	Controlled Air, Inc.
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

DECV

Digital Control Pressure Independent Round Retrofit Unit

Main Product **DECV-1 (3)**

DECV



Right Hand Unit is shown.

UNIT SIZE	Outside Dia. (D)	A
08	7 7/8" Dia.	4 9/16"
06	5 7/8" Dia.	3 9/16"

General Description **DECV-1 (3)**

Direct digital control package supplied by Titus includes direct digital controller, tested and calibrated.) Room sensor is optional.

- Tight Close-Off damper. Leakafe is less than 2% of nominal CFM at 6" sp W.G.
- Multi-point inlet velocity sensor with center averaging.
- Gauge tees for cfm measurement.
- Inlet and Discharge connections fit inside a standard round duct.
- Uninsulated

Option Schedule **DECV-1 (3)**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
9	1	TUE-2-04	08	525	300
16	1	TUE-2-11	06	100	100
17	1	TUE-2-12	06	150	50
18	1	TUE-2-13	06	200	200

SENSOR CODE 3 - AEROCROSS
UNIT CONFIG 0 -BASIC
LINER OPTION 0 -STANDARD
CASING CONFIG 0R -STD 22GA RH
DIGITAL CONTROLLER 0000 -NONE
ACTUATOR TYPE 0000 -NONE
CONTROL ACC1 00 -NONE
CONTROL ACC2 00 -NONE
CONTROL ACC3 00 -NONE
UNIT ACC1 E -METAL CTRL ENCLOS
UNIT ACC2 0 -NONE
UNIT ACC3 0 -NONE
UNIT ACC4 0 -NONE
UNIT ACC5 0 -NONE

Option Schedule (continued) **DECV-1 (3)**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
10	1	TUE-2-05	06	100	100
13	1	TUE-2-08	06	200	200

SENSOR CODE 3 - AEROCROSS
UNIT CONFIG 0 -BASIC
LINER OPTION 0 -STANDARD
CASING CONFIG 0L -STD 22GA LH
DIGITAL CONTROLLER 0000 -NONE
ACTUATOR TYPE 0000 -NONE
CONTROL ACC1 00 -NONE
CONTROL ACC2 00 -NONE
CONTROL ACC3 00 -NONE
UNIT ACC1 E -METAL CTRL ENCLOS
UNIT ACC2 0 -NONE
UNIT ACC3 0 -NONE
UNIT ACC4 0 -NONE
UNIT ACC5 0 -NONE

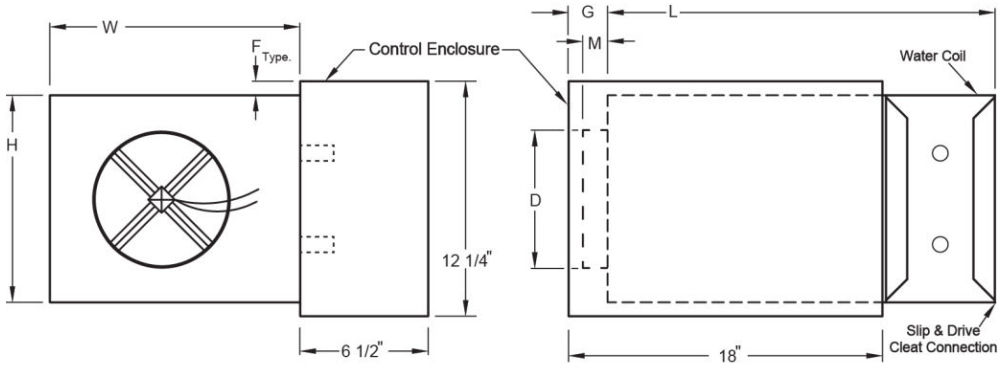
Project	ADM PAC 3	**Date**	05/05/2023
Architect		**Office**	Controlled Air, Inc.
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

DESV

Single Duct Terminal Unit, Direct Digital Control, Pressure Independent

Main Product **DESV-1**

DESV

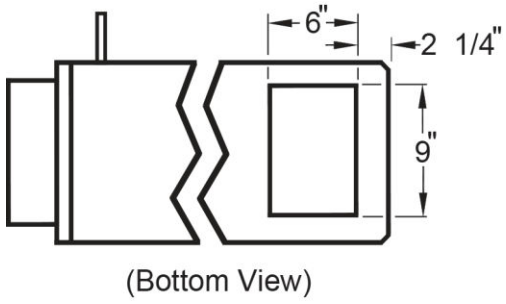


Right Hand Unit with Right Hand HWC Connections shown

Air Inlet (D) is 1/8" smaller than its Nom. Inlet.
All dimensions are in inches.

Unit-Size	CFM Range	Nom. Inlet	F	G	W	H	M	L
16	0 - 4000	16" Dia.	-	3 3/8"	24"	18"	3 3/8"	23"
10	0 - 1400	10" Dia.	-	5 3/8"	14"	12 1/2"	3 3/8"	20 1/2"
12	0 - 2000	12" Dia.	-	5 3/8"	16"	15"	3 3/8"	20 1/2"
08	0 - 900	8" Dia.	1 1/8"	7 3/8"	12"	10"	3 3/8"	20 1/2"
14	0 - 3000	14" Dia.	-	3 3/8"	20"	17 1/2"	3 3/8"	23"
06	0 - 500	6" Dia.	2 1/8"	7 3/8"	12"	8"	3 3/8"	20 1/2"
07	0 - 650	7" Dia.	1 1/8"	7 3/8"	12"	10"	3 3/8"	20 1/2"

Access Door Opening



(Bottom View)

General Description **DESV-1**

- Heavy gauge steel housing. Mechanically sealed and gasketed, leak resistant construction.

Less than 2% of nominal CFM at 1.5" sp wg.

- Dual density internal insulation, treated to resist air erosion. Meets requirements of NFPA 90A and UL 181.
- Rectangular discharge opening is designed for slip and drive cleat duct connection.
- Multipoint center averaging inlet velocity sensor.
- Digital control packages can be factory mounted by Titus.
- Choice of right hand or left hand control location.
- Model DESV can be installed horizontally, vertically, or at any angle. Operation is not affected by position.
- Gauge tees for CFM measurement.

Option Schedule **DESV-1**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
1	1	TUS-1-1	16	4000	725
2	1	TUS-1-2	10	750	750
3	1	TUS-1-3	12	1500	475
4	1	TUS-1-4	16	2525	830
5	1	TUS-1-5	16	2500	550
8	1	TUS-2-03	12	1900	630
9	1	TUS-2-04	08	475	250
10	1	TUS-2-05	12	1455	480
11	1	TUS-2-06	14	1650	550
12	1	TUS-2-07	08	450	275
13	1	TUS-2-08	12	1350	675
14	1	TUS-2-09	06	250	150
15	1	TUS-2-10	07	575	190
16	1	TUS-2-11	12	980	325
17	1	TUS-3-01	06	250	250
18	1	TUS-3-02	06	250	250
19	1	TUS-3-03	10	1000	330
20	1	TUS-3-04	07	465	160
21	1	TUS-3-05	10	945	320
22	1	TUS-3-06	06	315	110
23	1	TUS-3-07	06	175	175
24	1	TUS-3-08	12	1380	460
25	1	TUS-3-09	06	200	70
26	1	TUS-3-10	08	500	170
27	1	TUS-3-11	12	1320	440
28	1	TUS-3-12	06	175	175
29	1	TUS-3-13	06	170	60
30	1	TUS-3-14	06	100	45
31	1	TUS-3-15	08	250	90
32	1	TUS-3-16	08	460	160
33	1	TUS-3-17	06	200	70
34	1	TUS-3-18	06	260	90
35	1	TUS-3-19	08	460	160
36	1	TUS-3-20	16	3200	1100

Option Schedule (continued) — DESV-1

SENSOR CODE	3 - AEROCROSS	**UNIT ACC3**	0 -NONE
UNIT CONFIG	0 -BASIC	**UNIT ACC4**	0 -NONE
LINER OPTION	4 -ULTRALOC	**UNIT ACC5**	0 -NONE
CASING CONFIG	1R -22GA RH, Access Door	**WATER COIL**	W11 -1 ROW RH
DIGITAL CONTROLLER	0000 -NONE	**ELECTRIC HEAT TYPE**	000 -NONE
ACTUATOR TYPE	0000 -NONE	**KW**	0
CONTROL ACC1	00 -NONE	**ELEC COIL ACC1**	0 -NONE
CONTROL ACC2	00 -NONE	**ELEC COIL ACC2**	0 -NONE
CONTROL ACC3	00 -NONE	**ELEC COIL ACC3**	0 -NONE
UNIT ACC1	E -METAL CTRL ENCLOS	**ELEC COIL ACC4**	0 -NONE
UNIT ACC2	0 -NONE		

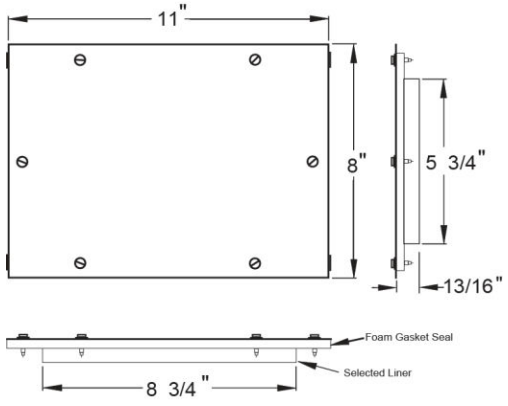
Accessories — DESV-1

Selected Insulation: UltraLoc

Insulation Characteristics:
Material: Solid Metal Liner over Fiberglass
Thickness: 1 inch Fiberglass in ¾" Deep Metal Pan
R-Value: Fiberglass - 3.9 ft2 °F h/Btu @ 75oF
Density: Fiberglass - 1.5 lbs/ft3
Flame Spread: 25
Smoke Density: 50
Mold Growth: None

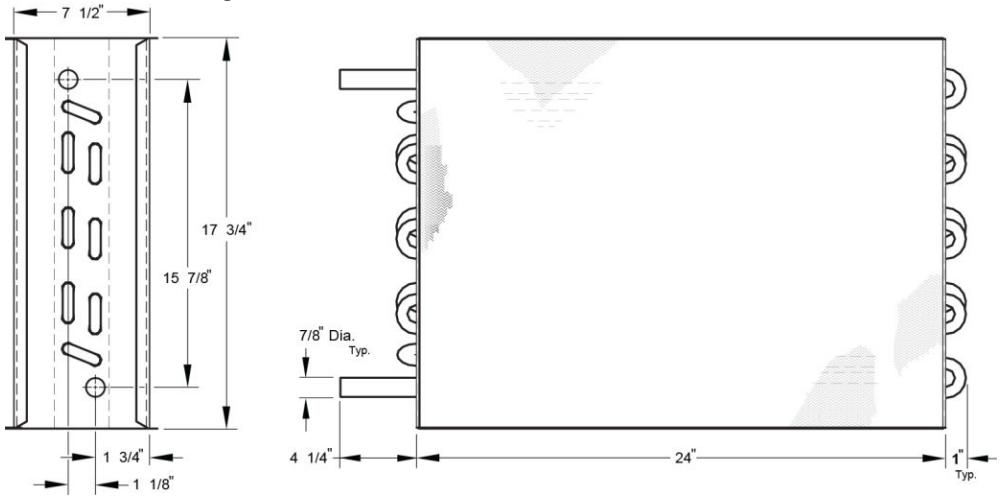
Code Compliances:
NFPA 90A & 90B Appliances
NFPA 255 Flame / Smoke Spread (25/50)
UL 181 Air Erosion
UL 181 Mold Growth and Humidity
UL 723 Flame / Smoke Spread (25/50)
ASTM E84 Flame / Smoke Spread (25/50)

Standard Access Door



Accessories (continued) **DESV-1**

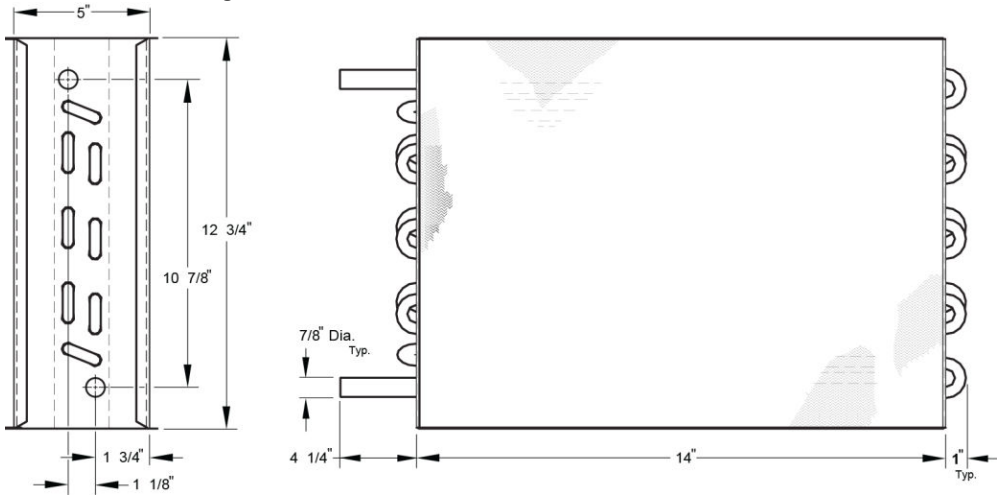
ESV Hot Water Reheat: 1-Row, Right Hand for size 16



- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weight (lbs.)	Water Volume (gal)
2.67	0.32

ESV Hot Water Reheat: 1-Row, Right Hand for size 09 & 10

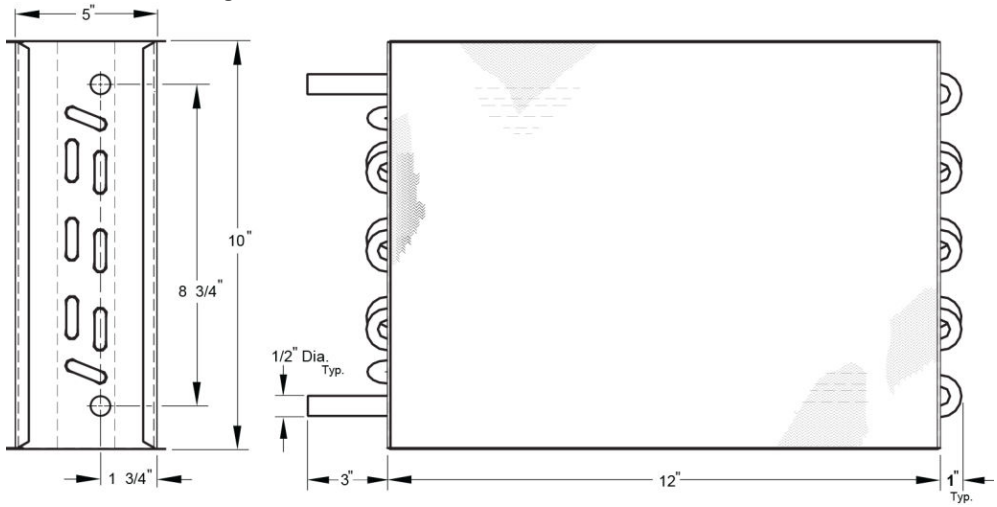


Accessories (continued) **DESV-1**

- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weight (lbs)	Water Volume (gal)
1.17	0.14

ESV Hot Water Reheat: 1-Row, Right Hand for size 07, 08, 5E, & 6E



- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weigth (lbs)	Water Volume (gal)
.77	.09

Project	ADM PAC 3	**Date**	05/05/2023
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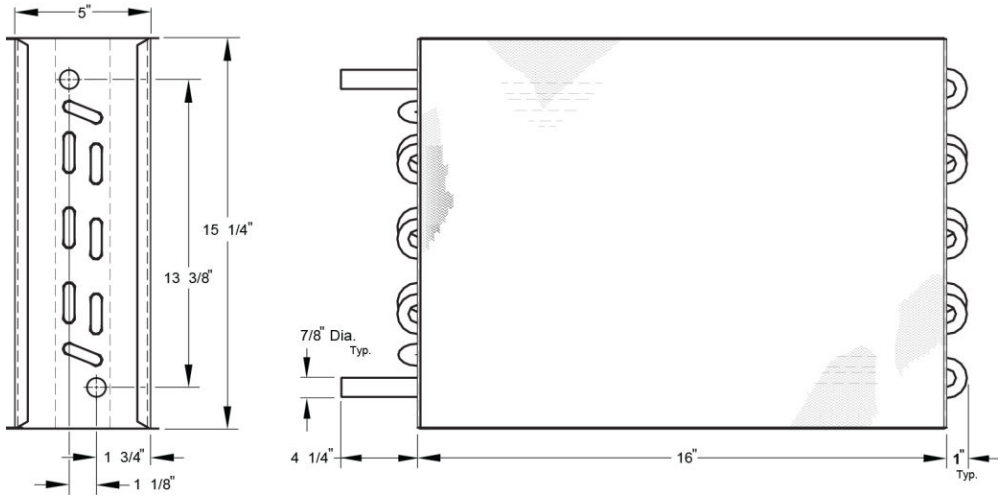
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

Accessories (continued) **DESV-1**

ESV Hot Water Reheat: 1-Row, Right Hand for size 12 & 1E



- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weight (lbs.)	Water Volume (gal)
1.87	0.22

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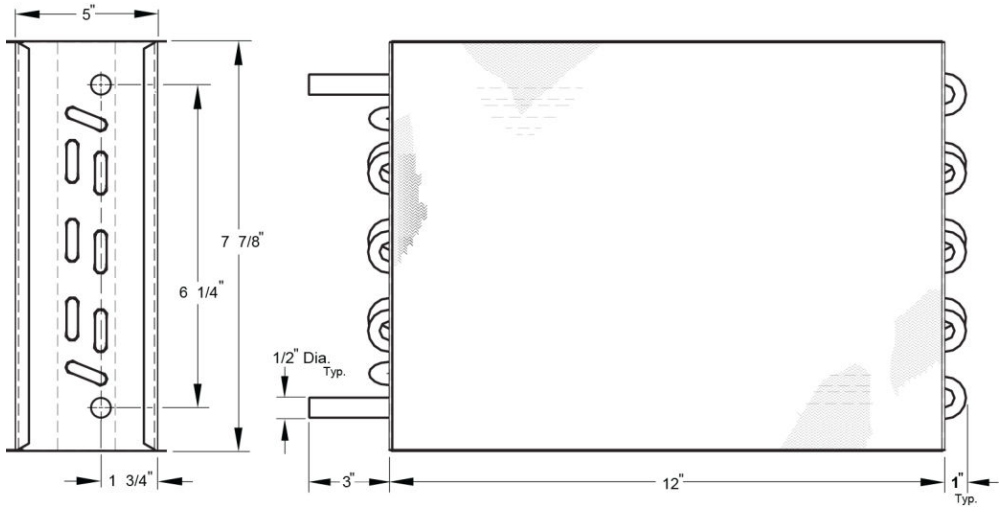
Contractor		**Version**	2014.0.549
Designation			

Titus
Redefine your comfort zone.™

Accessories (continued) **DESV-1**

ESV Hot Water Reheat: 1-Row, Right Hand for size 04, 05, & 06



- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weight (lbs)	Water Volume (gal)
0.59	0.07

Project	ADM PAC 3	**Date**	05/05/2023
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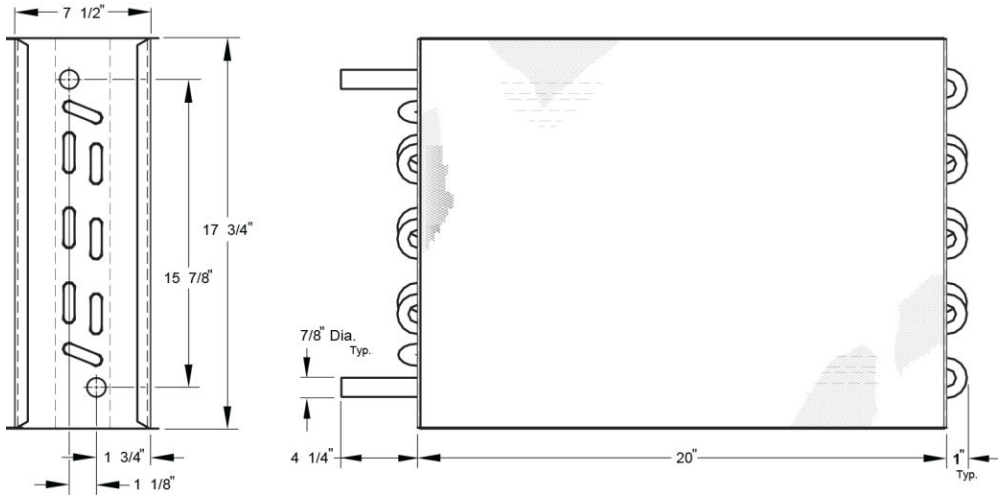
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

Accessories (continued) **DESV-1**

ESV Hot Water Reheat: 1-Row, Right Hand for size 14 & 2E



- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weight (lbs)	Water Volume (gal)
2.29	0.27

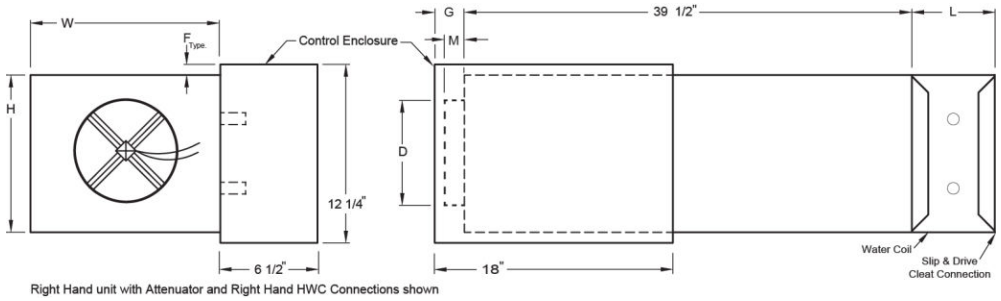
Project	ADM PAC 3	**Date**	05/05/2023
Architect		**Office**	Controlled Air, Inc.
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

DESV

Single Duct Terminal Unit, Direct Digital Control, Pressure Independent

Main Product **DESV-1 (2)**

DESV



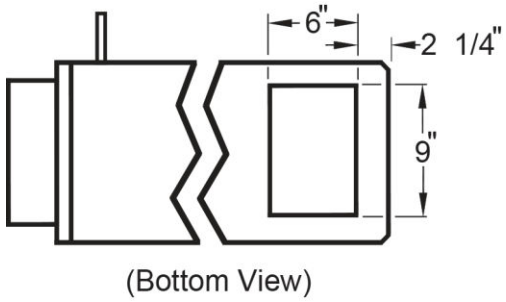
Right Hand unit with Attenuator and Right Hand HWC Connections shown

Air Inlet (D) is 1/8" smaller than its Nom. Inlet.

All dimensions are in inches.

Unit Size	CFM Range	Nom. Inlet	F	G	W	H	M	L
40	0 - 8000	24X16	1 1/8"	5 3/8"	38"	18"	3 3/8"	5"

Access Door Opening



(Bottom View)

General Description **DESV-1 (2)**

- Heavy gauge steel housing. Mechanically sealed and gasketed, leak resistant construction.

Less than 2% of nominal CFM at 1.5" sp wg.

- Dual density internal insulation, treated to resist air erosion. Meets requirements of NFPA 90A and UL 181.
- Rectangular discharge opening is designed for slip and drive cleat duct connection.
- Multipoint center averaging inlet velocity sensor.
- Digital control packages can be factory mounted by Titus.
- Choice of right hand or left hand control location.
- Model DESV can be installed horizontally, vertically, or at any angle. Operation is not affected by position.
- Gauge tees for CFM measurement.

Project	ADM PAC 3	**Date**	05/05/2023
Architect		**Office**	Controlled Air, Inc.
Engineer		**Preparer**	Brian Dougherty
Contractor		**Version**	2014.0.549
Designation			

Option Schedule **DESV-1 (2)**

ID	Quantity	Tag	UNIT SIZE	MAX PRIMARY CFM	MIN PRIMARY CFM
6	1	TUS-2-01	24X16 (40)	3780	1250
7	1	TUS-2-02	24X16 (40)	3780	1250

SENSOR CODE	3 - AEROCROSS	**UNIT ACC3**	0 -NONE
UNIT CONFIG	1 -BASIC W/ATTEN	**UNIT ACC4**	0 -NONE
LINER OPTION	4 -ULTRALOC	**UNIT ACC5**	0 -NONE
CASING CONFIG	1R -22GA RH, Access Door	**WATER COIL**	W11 -1 ROW RH
DIGITAL CONTROLLER	0000 -NONE	**ELECTRIC HEAT TYPE**	000 -NONE
ACTUATOR TYPE	0000 -NONE	**KW**	0
CONTROL ACC1	00 -NONE	**ELEC COIL ACC1**	0 -NONE
CONTROL ACC2	00 -NONE	**ELEC COIL ACC2**	0 -NONE
CONTROL ACC3	00 -NONE	**ELEC COIL ACC3**	0 -NONE
UNIT ACC1	E -METAL CTRL ENCLOS	**ELEC COIL ACC4**	0 -NONE
UNIT ACC2	0 -NONE		

Accessories **DESV-1 (2)**

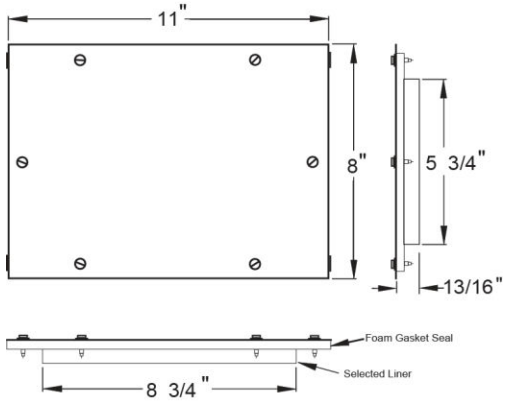
Selected Insulation: UltraLoc

Insulation Characteristics:
Material: Solid Metal Liner over Fiberglass
Thickness: 1 inch Fiberglass in ¾" Deep Metal Pan
R-Value: Fiberglass - 3.9 ft2 °F h/Btu @ 75oF
Density: Fiberglass - 1.5 lbs/ft3
Flame Spread: 25
Smoke Density: 50
Mold Growth: None

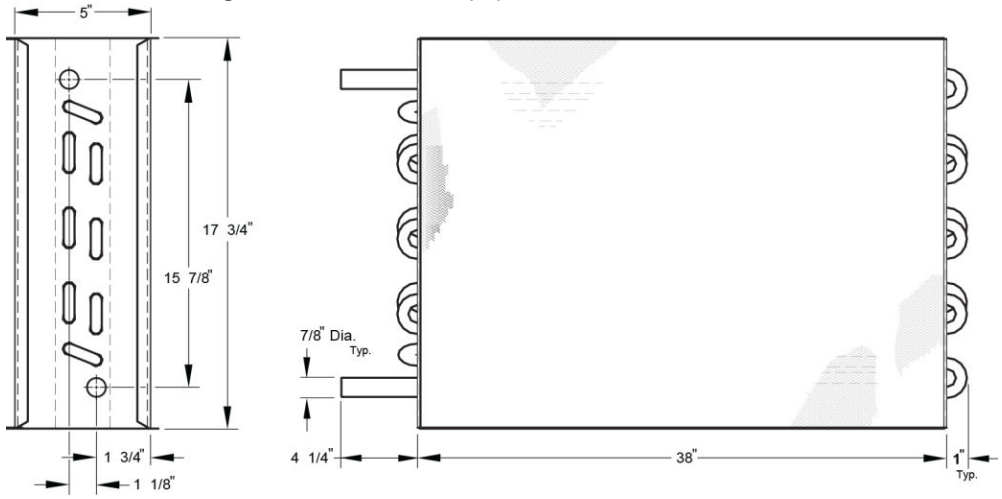
Code Compliances:
NFPA 90A & 90B Appliances
NFPA 255 Flame / Smoke Spread (25/50)
UL 181 Air Erosion
UL 181 Mold Growth and Humidity
UL 723 Flame / Smoke Spread (25/50)
ASTM E84 Flame / Smoke Spread (25/50)

Accessories (continued) **DESV-1 (2)**

Standard Access Door



ESV Hot Water Reheat: 1-Row, Right Hand for size 24x16 (40)



- Coil tubing is 1/2" diameter 0.016" thick copper.
- Coil connection tubing is 0.032" thick copper.
- Aluminum plate fins, 10 per inch.
- Casing is 20 Gauge galvanized steel.
- Copper male solder connections.
- Connection is slip and drive to duct work down stream of terminal.
- Leak tested to 450 PSIG.
- Maximum working pressure, 360 PSIG
- Maximum 200 degree F water
- Coils rated and certified to AHRI Standard 410

Water Weight (lbs.)	Water Volume (gal)
4.20	0.50