

Miller Park Terrace Offices

6N03-0137

BAS
Controls
Chillers
Boilers



Creating a better climate for business.

- Environmental Control System
- Facility Management System
- Air and Water System Balancing
- Fire Management System
- Security System
- Lighting Services
- Instrumentation System Installation
- Building Operations Management
- Energy Conservation Control
- Training Programs
- Performance Contracting
- Planned Service Agreements

Air Conditioning
Heating
Diagnostic Services
Coil Cleaning
Refrigeration
Automatic Temperature Controls
Facility Management Systems
Fire Management
Security Management
Building Operations and Management
Water Treatment
Electrical Equipment
Emergency Generator / Lighting Equipment
Industrial Controls / Recording / Indication Equipment

DWG NUMBER	DRAWING TITLE
1.1-1.3	LEGENDS
2.1	COMMUNICATION BUS
3.1	RTU-5506 FLOW
	ROOM SCHEDULE DETAILS
4.1	DETAIL A: VAV BOX WITH REHEAT
4.2	DETAIL B: VAV BOX WITH REHEAT AND RADIATION
4.3	DETAIL C: ELECTRIC BASEBOARD HEATERS
5.1	DETAIL A: 24VAC POWER DISTRIBUTION PANELS
RS-1	ROOM SCHEDULE
VS-1	VALVE SCHEDULE

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REVISION INFORMATION	
NUMBER	number
DATE	03/21/16
TIME	02:06 PM
	extra
FILE NAME	Title001.vsd

PROJECT TITLE
Miller Park Terrace Offices Alterations
1 Brewers Way Milwaukee, WI 53214

ARCHITECT: _____ ENGINEER: _____
Phone: _____ Phone: _____

MECHANICAL CONTRACTOR: _____ ELECTRICAL CONTRACTOR: _____
Total Mechanical
W234 N2830 Paul Rd.
Waukesha, WI 53072
Phone: (262) 623-2500

NO.	REVISION/LOCATION	ECN	DATE	BY
1	Record Drawing		3/21/16	MPM

Branch Information
Milwaukee Branch
12000 West Wirth Street
Wauwatosa, WI 53222
Phone: (414) 259-2800
Fax: (414) 259-2775

SUBS ENGINEER	PROJECT MANAGER	APPLICATION ENGINEER	DATE	CONTRACT NUMBER
KFC	JMT	MPM	1/19/2016	6N03-0137

LEGEND

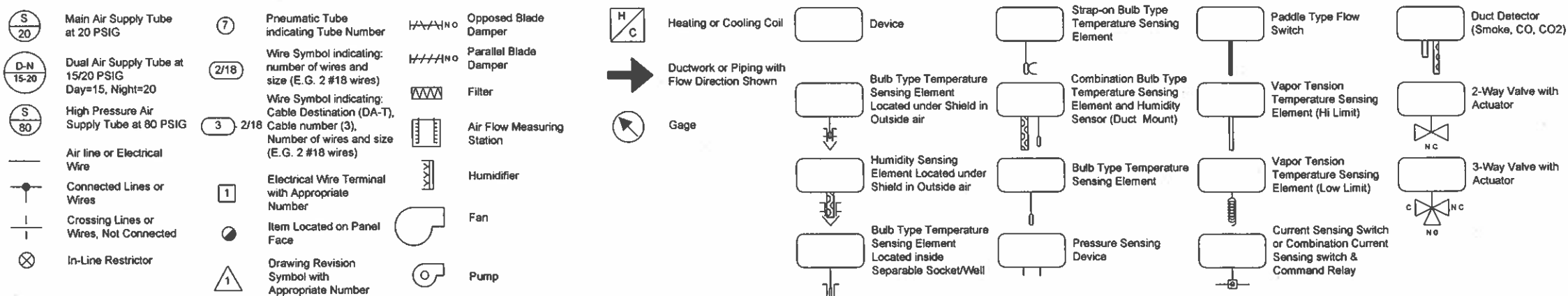


TABLE 1	COLOR CODED CABLE 18 GAUGE								NON-COLOR CODED CABLE 18 GAUGE								DRAIN	COMMENTS
	CABLE / WIRE SPECIFICATION		CABLE / WIRE SPECIFICATION		TERMINALS PER CONDUCTOR COLOR				CABLE / WIRE SPECIFICATION		CABLE / WIRE SPECIFICATION		TERMINALS PER CONDUCTOR COLOR					
	PLENUM PART NUMBER		NON-PLENUM PART NUMBER		BLACK	WHITE	JACKET COLOR	RED	PLENUM PART NUMBER	NON-PLENUM PART NUMBER	BLACK	WHITE	JACKET COLOR	RED				
	USAGE	ANIXTER	DESCRIPTION	ANIXTER	DESCRIPTION	BLACK	WHITE	JACKET COLOR	RED	ANIXTER	DESCRIPTION	ANIXTER	DESCRIPTION	BLACK	WHITE	JACKET COLOR		
AI	CBL-18/2YEL-PLN	18/2 Shld Yellow	CBL-18/2YEL-PVC	18/2 Shld Yellow	AI Com	—	AI	—	CBL-18/2NAT-PLN	18/2 Shld	CBL-18/2NAT-PVC	18/2 Shld	AI Com	AI	—	—	TABLE 2	
AI	CBL-18/3YEL-PLN	18/3 Shld Yellow	CBL-18/3YEL-PVC	18/3 Shld Yellow	AI Com	Power	AI	—	CBL-18/3NAT-PLN	18/3 Shld	CBL-18/3NAT-PVC	18/3 Shld	AI Com	Power	—	AI	TABLE 2	
AO	CBL-18/2TAN-PLN	18/2 Shld Tan	CBL-18/2TAN-PVC	18/2 Shld Tan	AO Com	—	AO	—	CBL-18/2NAT-PLN	18/2 Shld	CBL-18/2NAT-PVC	18/2 Shld	AO Com	AO	—	—	TABLE 2	
AO	CBL-18/3TAN-PLN	18/3 Shld Tan	CBL-18/3TAN-PVC	18/3 Shld Tan	AO Com	Power	AO	—	CBL-18/3NAT-PLN	18/3 Shld	CBL-18/3NAT-PVC	18/3 Shld	AO Com	Power	—	AO	TABLE 2	
BI	CBL-18/2ORG-PLN	18/2 Shld Orange	CBL-18/2ORG-PVC	18/2 Shld Orange	BI 24V	—	BI	—	CBL-18/2NAT-PLN	18/2 Shld	CBL-18/2NAT-PVC	18/2 Shld	BI 24V	BI	—	—	TABLE 2	
BO	CBL-18/2VLT-PLN	18/2 Shld Violet	CBL-18/2VLT-PVC	18/2 Shld Violet	BO Com	—	BO	—	CBL-18/2NAT-PLN	18/2 Shld	CBL-18/2NAT-PVC	18/2 Shld	BO Com	BO	—	—	TABLE 2	
BO	CBL-18/3VLT-PLN	18/3 Shld Violet	CBL-18/3VLT-PVC	18/3 Shld Violet	BO Com	BO	BO	—	CBL-18/3NAT-PLN	18/3 Shld	CBL-18/3NAT-PVC	18/3 Shld	BO Com	BO	—	BO	TABLE 2	
GENERAL PURPOSE	CBL-18/2NAT-PLN	18/2 Shld Natural	CBL-18/2NAT-PVC	18/2 Shld Natural	Common	Power	—	—	CBL-18/2NAT-PLN	18/2 Shld	CBL-18/2NAT-PVC	18/2 Shld	Common	Power	—	—	—	
GENERAL PURPOSE	CBL-18/3NAT-PLN	18/3 Shld Natural	CBL-18/3NAT-PVC	18/3 Shld Natural	Common	Power	—	Signal	CBL-18/3NAT-PLN	18/3 Shld	CBL-18/3NAT-PVC	18/3 Shld	Common	Power	—	Signal	—	
GENERAL PURPOSE	CBL-18/2WHITNS-PLN	18/2 Non-Shld White	—	—	Common	Power	—	—	CBL-18/2WHITNS-PLN	18/2 Non-Shld White	—	—	Common	Power	—	—	—	
GENERAL PURPOSE	CBL-18/3WHITNS-PLN	18/3 Non-Shld White	—	—	Common	Power	—	Signal	CBL-18/3WHITNS-PLN	18/3 Non-Shld White	—	—	Common	Power	—	Signal	—	
METASTAT	CBL-24/8NAT-PLN	24/8 Natural	CBL-24/8NAT-PVC	24/8 Natural	—	—	—	—	CM-00424BBG-3	24/8 Natural	CM-00424BBG-3	24/8 Natural	—	—	—	—	—	SEE TABLES 4, 5, & 6
METASTAT PHONE JACK	CBL-STATxxx	Pre-Term'd Blue	CBL-STATxxx	Pre-Term'd Blue	—	—	—	—	CBL-STATxxx	Pre-Term'd Blue	CBL-STATxxx	Pre-Term'd Blue	—	—	—	—	—	SEE TABLES 4, 5, & 6, NOTE #4
24VAC	CBL-18/2GRY-PLN	18/2 Shld Gray	CBL-18/2GRY-PVC	18/2 Shld Gray	24 V Com	—	24 VAC	—	CBL-18/2GRY-PLN	18/2 Shld Gray	CBL-18/2GRY-PVC	18/2 Shld Gray	24 V Com	24 VAC	—	—	—	—
24VAC POWER BUS	AL-1402C-2-2N-01	14/2 Shld White	AL-1402C-2-2N-01	14/2 Shld White	Common	—	—	24 VAC	AL-1402C-2-2N-01	14/2 Shld White	AL-1402C-2-2N-01	14/2 Shld White	Common	—	—	24 VAC	—	—
600 V	B8248	18/2	B8248	18/2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
600 V	B83336	18/3	B83336	18/3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
N2 BUS	CBL-22/3-FC-PLN	22/3 Shld Blue	CBL-22/3-FC-PVC	22/3 Shld Blue	N2-	REF	N2+	—	CBL-22/3-FC-PLN	22/3 Shld Blue	CBL-22/3-FC-PVC	22/3 Shld Blue	N2-	REF	N2+	—	—	TABLE 3
N1 BUS-ARCNET	CBL-RG62PUR-PLN	RG62 Purple	CBL-RG62PUR-PVC	RG62 Purple	—	—	—	—	CBL-RG62PUR-PLN	RG62 Purple	CBL-RG62PUR-PVC	RG62 Purple	—	—	—	—	—	—
N1 BUS-ETHERNET	CBL-CAT52404P-7U	24/8 Purple	CM-00424BKTE-5U-10	24/8 Purple	—	—	—	—	CBL-CAT52404P-7U	24/8 Purple	CM-00424BKTE-5U-10	24/8 Purple	—	—	—	—	—	SEE TABLES 7 & 8, CAT 5E
BACNET IP	CBL-CAT52404P-7U	24/8 Purple	CM-00424BKTE-5U-10	24/8 Purple	—	—	—	—	CBL-CAT52404P-7U	24/8 Purple	CM-00424BKTE-5U-10	24/8 Purple	—	—	—	—	—	SEE TABLES 7 & 8, CAT 5E
LON BUS	CBL-22/2-NS-PLN	22/2 Non-Shld White	CBL-22/2-NS-PVC	22/2 Non-Shld Gray	—	—	—	—	CBL-22/2-NS-PLN	22/2 Non-Shld White	CBL-22/2-NS-PVC	22/2 Non-Shld Gray	—	—	—	—	—	—
XT BUS	CBL-22/3-FC-PLN	22/3 Shld Blue	CBL-22/3-FC-PVC	22/3 Shld Blue	XT-	REF	XT+	—	CBL-22/3-FC-PLN	22/3 Shld Blue	CBL-22/3-FC-PVC	22/3 Shld Blue	XT-	REF	XT+	—	—	—
BACNET MS/TP FC BUS	CBL-22/3-FC-PLN	22/3 Shld Blue	CBL-22/3-FC-PVC	22/3 Shld Blue	FC-	COM	FC+	—	CBL-22/3-FC-PLN	22/3 Shld Blue	CBL-22/3-FC-PVC	22/3 Shld Blue	FC-	COM	FC+	—	—	TABLE 3
BACNET MS/TP SA BUS	CBL-22/2P-SA-PLN	22/4 Shld Brown	CBL-22/2P-SA-PVC	22/4 Shld Brown	SA- (BLUE)	COM (BLACK)	SA+ (BRN)	PWR (WHITE)	CBL-22/2P-SA-PLN	22/4 Shld Brown	CBL-22/2P-SA-PVC	22/4 Shld Brown	SA- (BLUE)	COM (BLACK)	SA+ (BRN)	PWR (WHITE)	TABLE 3	TERMINAL BLOCK
BACNET MS/TP SA BUS	CBL-NETWORKxxx	26/6 Preassembled	CBL-NETWORKxxx	26/6 Preassembled	—	—	—	—	CBL-NETWORKxxx	26/6 Preassembled	CBL-NETWORKxxx	26/6 Preassembled	—	—	—	—	TABLE 3	MODULAR JACK, 26AWG IS ACCEPTABLE, NOTE #4

NOTE #1: WHEN USING COLOR CODED CABLE, REFERENCE DETAILS OVERRIDE COLOR CODE IN TABLE 1. WHEN USING NON-COLOR CODED CABLE, TABLE 1 DETAILS OVERRIDE COLOR CODE IN REFERENCE DETAILS.

NOTE #2: EXISTING JOB STANDARDS OVERRIDE NOTE #1 AND TABLE 1.

NOTE #3: SEE JOHNSON CONTROLS INSTALLATION INFORMATION FOR CABLE LENGTH LIMITATIONS.

NOTE #4: AVAILABLE IN 25FT, 50FT, 75FT AND 100FT LENGTH.

NOTE #5: USE PLENUM CABLE PER NEC REQUIREMENTS.

NOTE #6: USE SHIELDED CABLE IN "NOISY" ENVIRONMENTS.

NOTE #7: FOR VENDOR DEVICES ON THE N2 OR MS/TP BUS, DO NOT TERMINATE THE REF / COM WIRE BUT WIRE STRAIGHT THROUGH TO THE NEXT JCI DEVICE. THIS IS ESPECIALLY IMPORTANT FOR ALL VFD'S.

REVISION INFORMATION	Drawing Title									
NUMBER	Legend									
number										
DATE										
01/19/16										
TIME	Project Title									
03:47 PM	Miller Park Terrace Offices Alterations									
extra	1 Brewers Way									
FILE NAME	Milwaukee, WI 53214									
LegA.vsd										
		REFERENCE DRAWING	NO	REVISION-LOCATION	ECN	DATE	BY			
		Sales Engineer	Project Manager	Application Engineer	DRAWN		APPROVED			
		KFC	JMT	MPM	BY	DATE	BY	DATE		
		Branch Information				CONTRACT NUMBER				
		Milwaukee Branch				12000 West Wirth Street				
		Wauwatosa				WI 53222				
		Phone: (414) 259-2800				Fax: (414) 259-2775				
		6N03-0137				DRAWING NUMBER				
		1.1								

TABLE 2	DRAIN CABLE		
	I/O GROUNDING		COMMENTS
	ENCLOSURE	NO ENCLOSURE	
I/O	HARD GROUND @ EACH PANEL. TAPE BACK @ EACH DEVICE	TAPE BACK @ EACH END	SEE FIGURE A
BO (NOISY INDUCTIVE LOADS)	TAPE BACK @ EACH END	TAPE BACK @ EACH END	ADD MOV-1 @ CONTROLLER TERMINALS
BO (GAS IGNITION)	TAPE BACK @ EACH END	TAPE BACK @ EACH END	ADD FILTER-1 @ CONTROLLER TERMINALS. HARD GROUND CASE

FIGURE A

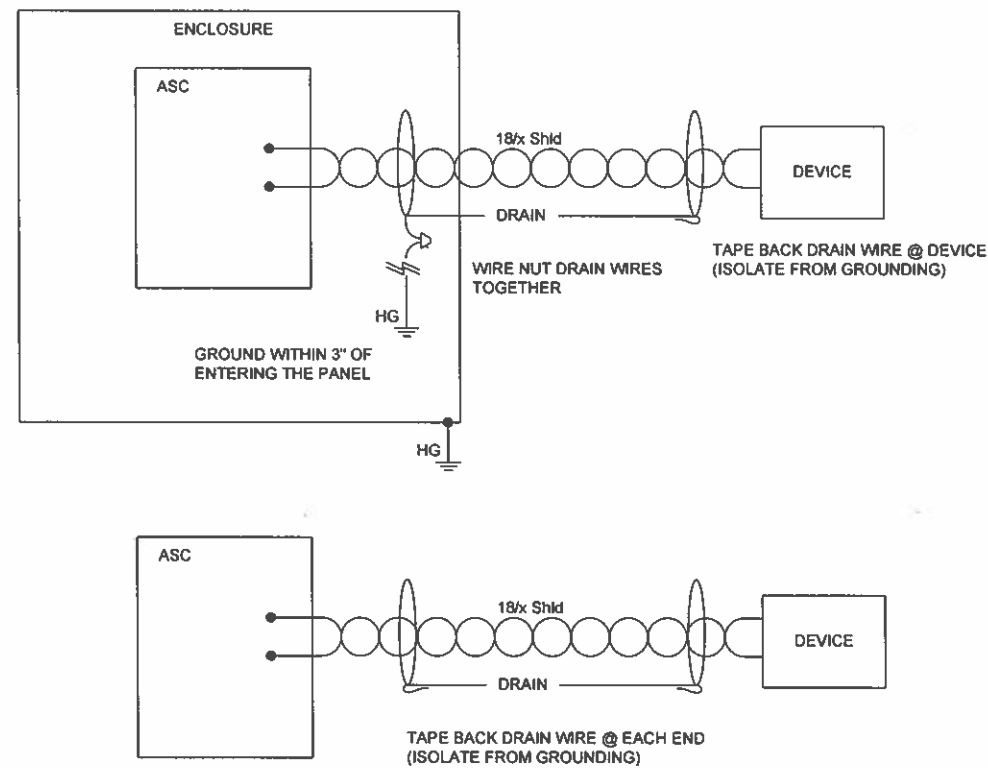
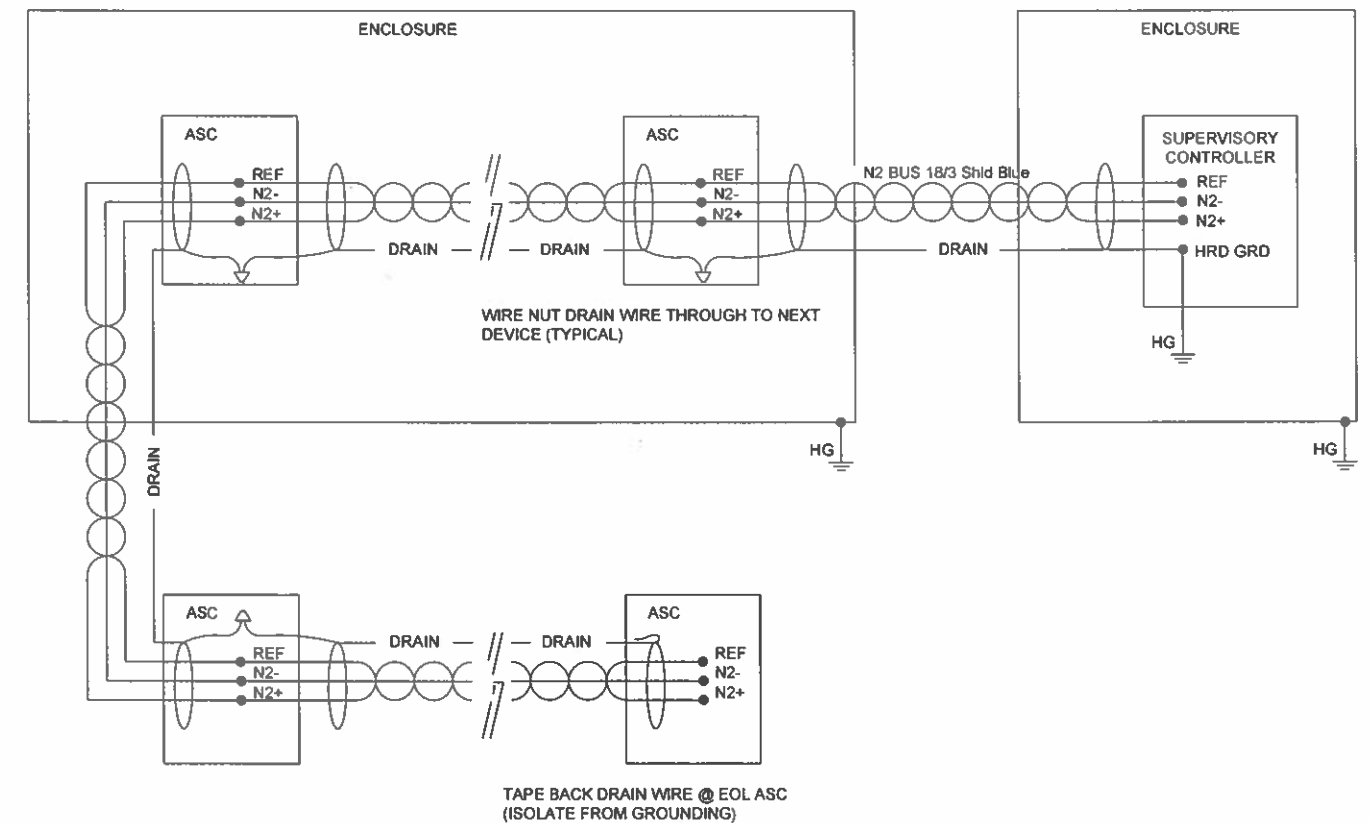


TABLE 3	DRAIN CABLE		
	N2 GROUNDING		COMMENTS
	ENCLOSURE	NO ENCLOSURE	
SUPERVISORY CONTROLLER	HARD GROUND TO BACK PLANE	NA	SEE FIGURE B
ASC	STRAIGHT THROUGH TO NEXT DEVICE	STRAIGHT THROUGH TO NEXT DEVICE	
ASC (EOL)	TAPE BACK @ ASC	TAPE BACK @ ASC	
ASC (NOISY)	SOFT GROUND ONCE PER ENCLOSURE	TAPE BACK @ ASC	ADD CAP-1 @ ENCLOSURE

FIGURE B



REVISION INFORMATION	Drawing Title								
NUMBER	Legend								
DATE	01/19/16	REFERENCE DRAWING	NO.	REVISION	LOCATION	ECH	DATE	BY	
TIME	03:47 PM	Sales Engineer	Project Manager	Application Engineer	DRAWN	BY	DATE	BY	DATE
FILE NAME	LegB.vsd	KFC	JMT	MPM					
Project Title						Branch Information Milwaukee Branch 12000 West Wirth Street Wauwatosa WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775			
Miller Park Terrace Offices Alterations 1 Brewers Way Milwaukee, WI 53214						CONTRACT NUMBER 6N03-0137 DRAWING NUMBER 1.2			

TE-6700 SERIES

TABLE 4 PHONE JACK PIN DESIGNATIONS		
PHONE JACK PIN NO.	SIGNAL DESIGNATION	COLOR
1	HEATING SETPOINT OR LED AND MANUAL OVERRIDE	WHT / GRN
2	SETPOINT (COOLING)	WHT / BLU
3	TEMPERATURE SENSOR	WHT / BRN
4	TEMPERATURE SENSOR COMMON	ORN / WHT
5	15 VDC POWER (VMA) 24 VAC POWER (AHU, UNT, VAV)	BLU / WHT
6	POWER COMMON OR ZONE BUS COMMON	GRN / WHT
7	SETPOINT COMMON	BRN / WHT
8	ZONE BUS	WHT / ORN

TABLE 5 TERMINAL BLOCK WIRING		
TERMINAL NO.	SIGNAL DESIGNATION	COLOR
1	TEMPERATURE SENSOR AND MANUAL OVERRIDE	WHT / BLU
2	TEMPERATURE SENSOR COMMON	BLU / WHT
3	SETPOINT COMMON	WHT / ORN
4	SETPOINT	ORN / WHT
5	15 VDC POWER (VMA) 24 VAC POWER (AHU, UNT, VAV)	WHT / GRN
6	COMMON FOR POWER, ZONE BUS, OR MANUAL OVERRIDE AND LED	GRN / WHT
7	ZONE BUS	WHT / BRN
8	LED AND MANUAL OVERRIDE	BRN / WHT

NOTE: MANUAL OVERRIDE IS SELECTED FOR EITHER TERMINALS 1 AND 2 OR 6 AND 8 WITH THE LED ENABLED. TERMINAL 6 IS COMMON FOR TERMINAL 7.
A DUAL (HEATING/COOLING SETPOINT IS NOT AVAILABLE WITH A TERMINAL BLOCK.

HE-6700 SERIES

TABLE 6 TERMINAL BLOCK WIRING		
TERMINAL NO.	SIGNAL DESIGNATION	COLOR
1	TEMPERATURE SENSOR COMMON	WHT / BLU
2	TEMPERATURE SENSOR AND MANUAL OVERRIDE	BLU / WHT
3	SETPOINT (WARMER/COOLER)	WHT / ORN
4	SETPOINT COMMON	ORN / WHT
5	COMMON (FOR POWER, ZONE BUS, OR MANUAL OVERRIDE AND LED)	WHT / GRN
6	15 VDC POWER (VMA) 24 VAC POWER (AHU, UNT, VAV)	GRN / WHT
7	RH OUTPUT	WHT / BRN
8	ZONE BUS	BRN / WHT
9	LED AND MANUAL OVERRIDE	

NOTE: MANUAL OVERRIDE IS SELECTED FOR EITHER TERMINALS 1 AND 2 OR 5 AND 9 WITH THE LED ENABLED. TERMINAL 5 IS COMMON FOR TERMINAL 7.

ETHERNET PATCH CABLE

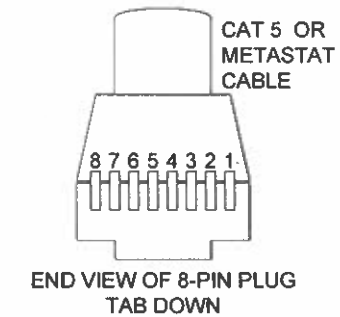
TABLE 7 STANDARD EA/TIA T568B	
PIN NO.	COLOR
1	WHT / ORN
2	ORN / WHT
3	WHT / GRN
4	BLU / WHT
5	WHT / BLU
6	GRN / WHT
7	WHT / BRN
8	BRN / WHT

NOTE: A PATCH CABLE HAS BOTH ENDS CONFIGURED AS A PATCH CABLE.

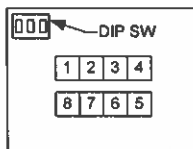
ETHERNET CROSSOVER CABLE

TABLE 8 STANDARD EA/TIA T568B	
PIN NO.	COLOR
1	WHT / GRN
2	GRN / WHT
3	WHT / ORN
4	BLU / WHT
5	WHT / BLU
6	ORN / WHT
7	WHT / BRN
8	BRN / WHT

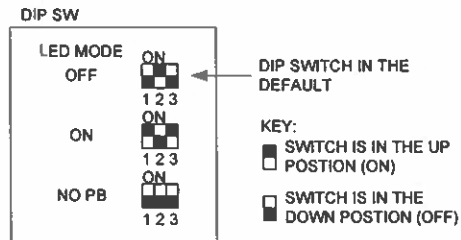
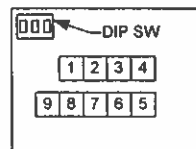
NOTE: A CROSSOVER CABLE HAS ONE END CONFIGURED AS A CROSSOVER CABLE AND THE OPPOSITE END CONFIGURED AS A PATCH CABLE.



TERMINALS ON BACK OF TE-6700 SERIES SEE TABLE 5



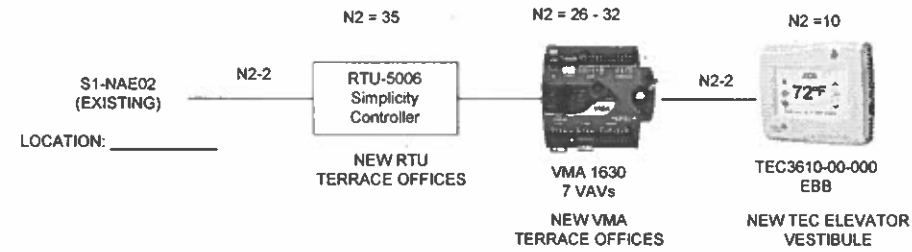
TERMINALS ON BACK OF HE-6700 SERIES SEE TABLE 6



NOTE: SENSOR WILL CAUSE ERRORS IF DIP SWITCHES ARE SET ANY OTHER WAY BUT THOSE SHOWN ABOVE.

REVISION INFORMATION	Drawing Title				
NUMBER	Legend				
DATE	01/19/16	03:48 PM	extra	FILENAME	LegC.vsd
Project Title	Miller Park Terrace Offices Alterations 1 Brewers Way Milwaukee, WI 53214	Project Manager	JMT	Application Engineer	MPM
Branch Information	Milwaukee Branch 12000 West Wirth Street Wauwatosa WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775	Branch Information		CONTRACT NUMBER	6N03-0137
DRAWING NUMBER	1.3				

TERRACE LEVEL



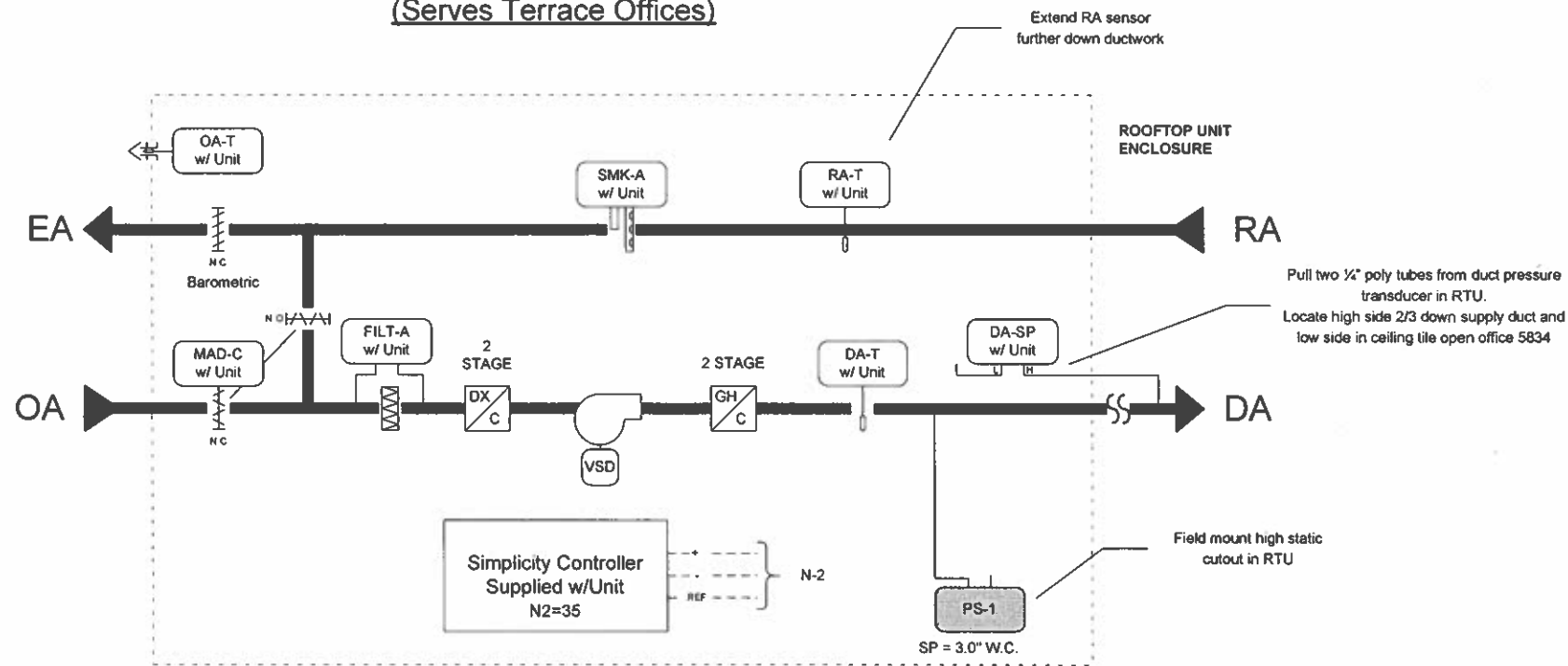
TRUNK SCHEMATIC LEGEND

<u>N1-A</u>	N1 ARCNET BUS	<u>R</u>	RS232 CABLE
<u>N1-E</u>	N1 ETHERNET BUS	<u>M</u>	MODEM CABLE - RS232
<u>N1-F</u>	N1 FIBER BUS	<u>P</u>	PARALLEL PRINTER CABLE
<u>BAC</u>	BACNET BUS (CAT-5 CABLE)	<u>XT</u>	XT BUS
<u>N2</u>	N2 BUS	*	N2 BUS END OF LINE
<u>NT</u>	NT BUS	#	LON BUS END OF LINE
<u>N2/NT</u>	N2 AND NT BUS	+	N1 BUS END OF LINE
<u>LON</u>	LON BUS		

ETHERNET ADDRESSES		
NAE # / NC #	TYPE	ADDRESS
S1-NAE02	IP ADDRESS	192.168.55.71
S1-NAE02	SUBNET MASK	255.255.255.0
S1-NAE02	DEFAULT GATEWAY	
S1-NAE02	DHCP (True / False)	FALSE
S1-NAE02	DEVICE NETWORK NAME	S1-NAE02

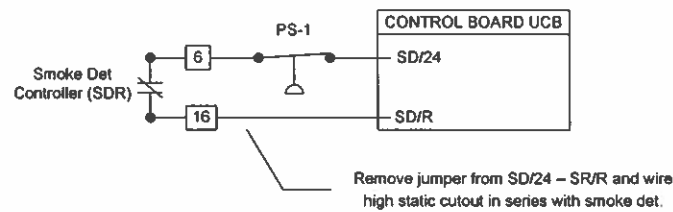
REVISION INFORMATION	Drawing Title										
NUMBER	Communications Trunk										
DATE	03/21/16	NO.	1	REVISION-LOCATION	Record Drawing	ECH	DATE	3/21/16	BY	MPM	
TIME	02:04 PM	State Engineer	KFC	Project Manager	JMT	Application Engineer	MPM	DRAWN	BY	DATE	
FILE NAME	trunk.vsd	Project Title		Miller Park Terrace Offices Alterations 1 Brewers Way Milwaukee, WI 53214		Branch information		Milwaukee Branch 12000 West Wirth Street Wauwatosa WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775		CONTRACT NUMBER	6N03-0137
		Johnson Controls						DRAWING NUMBER		2.1	

RTU-5006
(Serves Terrace Offices)



BILL OF MATERIALS

Designation	Qty	Part Number	Description
Field Devices:			
DA-SP	1	A-302-K	STATIC PRESSURE TIP 1/4"
	1	A-345-K	FLANGE MOUNTING KIT
PS-1	1	AFS-460	DIF,0.4 - 12 INWC,DIF=MR,NC
	1	FTG18A-600R	REMOTE MTD PROBE



SEQUENCE OF OPERATION

RTU-5006:

UPON A CALL FOR OCCUPIED MODE, THE ECONOMIZER DAMPER WILL MOVE TO ITS MINIMUM POSITION AND THE SUPPLY FAN WILL BE ENERGIZED.

THE SUPPLY AIR VOLUME IS MODULATED VIA A VFD BASED ON A STATIC PRESSURE SENSOR LOCATED IN THE SUPPLY AIR DUCTWORK. THE DAMPER WILL MODULATE TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT. A MANUAL-RESET HIGH STATIC PRESSURE CONTROLLER IS ALSO ELECTRICALLY INTERLOCKED WITH THE SUPPLY FAN TO SHUTDOWN IF DUCT STATIC PRESSURE REACHES 3.0" W.C.

HEATING AND COOLING ARE STAGED IN SEQUENCE TO PREVENT SIMULTANEOUS HEATING AND COOLING, AND TO MAINTAIN ZONE TEMPERATURE SETPOINT. ZONE TEMPERATURE IS A RESULT OF CALCULATING THE AVERAGE OF THE SEVEN VAV ZONES FED BY THE RTU.

UPON A CALL FOR COOLING, THE MODE OF COOLING OPERATION WILL BE DETERMINED. IF OUTSIDE AIR TEMPERATURE IS LOWER THAN THE DRY BULB SWITCHOVER SETPOINT, THE ECONOMIZER DAMPERS WILL BE POSITIONED FOR MAXIMUM FREE COOLING USING OUTSIDE AIR TO MEET THE COOLING DEMAND. ONCE THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE DRY BULB SWITCHOVER SETPOINT, AND OUTSIDE AIR TEMPERATURE IS ABOVE THE COOLING LOCKOUT SETPOINT, THE ECONOMIZER DAMPER WILL MOVE TO ITS MINIMUM POSITION, AND MECHANICAL COOLING WILL STAGE ON AND OFF TO MAINTAIN THE DESIRED ZONE TEMPERATURE SETPOINT.

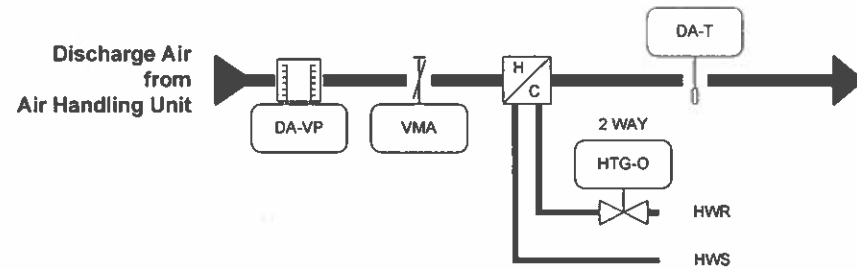
UPON A CALL FOR HEATING, AND OUTSIDE AIR TEMPERATURE IS BELOW THE HEATING LOCKOUT SETPOINT, THE ECONOMIZER DAMPER WILL MOVE TO ITS MINIMUM POSITION, AND THE GAS-FIRED HEATING WILL STAGE ON AND OFF TO MAINTAIN THE DESIRED ZONE TEMPERATURE SETPOINT.

DURING THE UNOCCUPIED MODE, THE SUPPLY FAN AND HEATING AND COOLING STAGES WILL OPERATE INTERMITTENTLY TO MAINTAIN SPACE TEMPERATURE OF 60°F, AND A MAXIMUM SPACE TEMPERATURE OF 80°F.

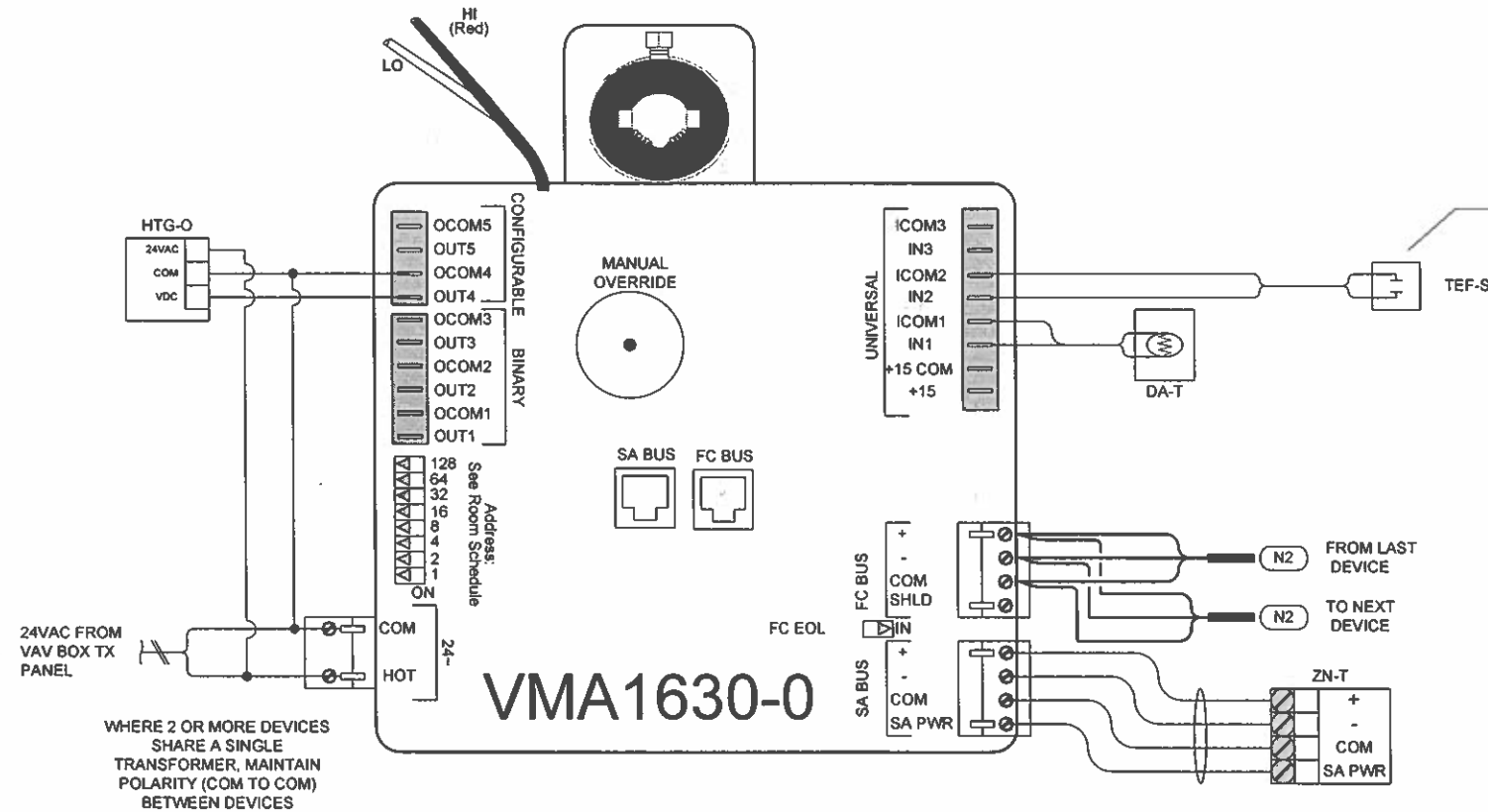
REVISION INFORMATION	Drawing Title						
NUMBER	RTU Flow						
number		1		Record Drawing		3/21/16 MPM	
DATE		03/21/16					
TIME	Project Title	02:04 PM					
extra	Miller Park Terrace Offices Alterations						
FILE NAME	1 Brewers Way Milwaukee, WI 53214	RTU-5006-1001.vsd					
Sales Engineer		Project Manager		Application Engineer		DRAWN	
KFC		JMT		MPM		BY DATE	
Branch Information		CONTRACT NUMBER					
Johnson Controls		6N03-0137		Milwaukee Branch 12000 West Wirth Street Wauwatosa, WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775		DRAWING NUMBER	
						3.1	

BILL OF MATERIALS

Designation	Qty	Part Number	Description
Field Devices:			
DA-T	4	TE-631GV-2	NICKEL DUCT PROB.4 INCHES
TEF-S	2	CSD-CF0A0-1	SPLT/FIXED .15A W/O RELAY
VMA	4	MS-VMA1630-0	VMA 3 UI & 3 BO 2 CO
ZN-T	4	NS-BTB7002-0	3X4.5.T.F.C.D.ADJ.TB
HTG-O		See Room Schedule	



DETAIL A
TYPICAL OF 4



Typical for 2 VMA:
VMA-20 - EF5823B
VMA-21 - EF5823A

SEQUENCE OF OPERATION
VAV UNITS & REHEAT COILS:

AS SPACE TEMPERATURE RISES ABOVE SETPOINT, THE HEATING VALVE WILL MOVE TO THE CLOSED POSITION AND THE INTEGRATED ACTUATOR WILL MOVE TO THE MINIMUM COOLING FLOW POSITION. ON A FURTHER INCREASE OF SPACE TEMPERATURE, THE INTEGRATED ACTUATOR WILL MOVE TO THE MAXIMUM COOLING FLOW POSITION.

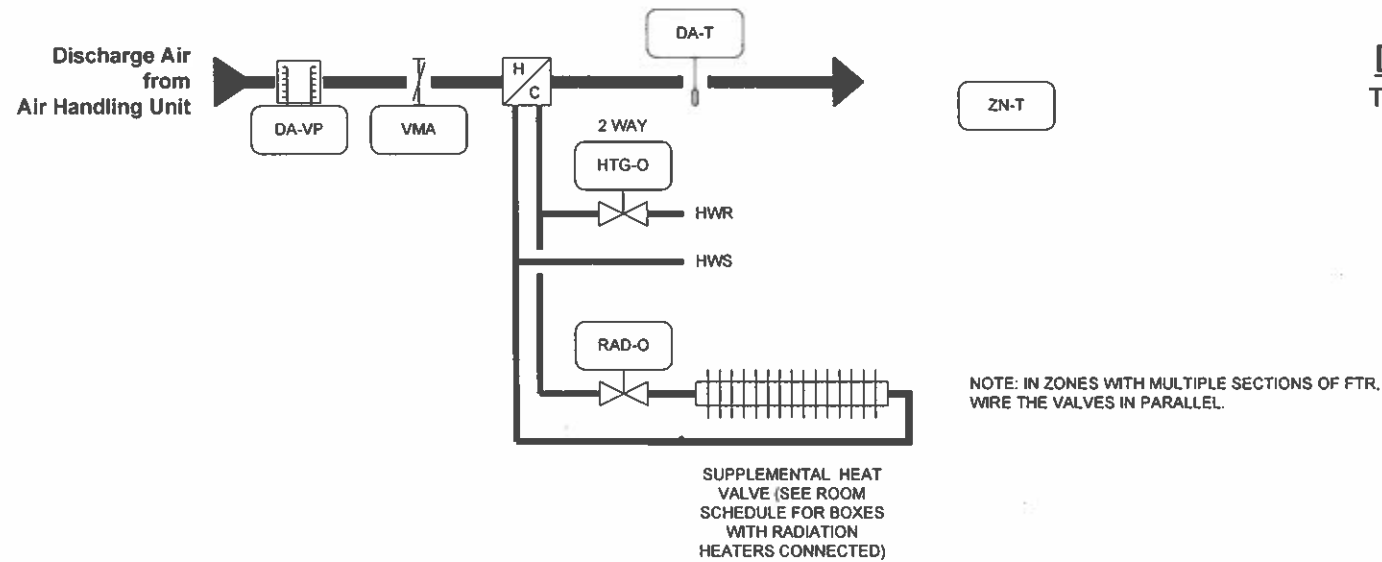
AS SPACE TEMPERATURE DECREASES BELOW SETPOINT, THE INTEGRATED ACTUATOR WILL BEGIN TO MODULATE TO ITS MINIMUM FLOW POSITION AND THE HEATING VALVE MODULATE OPEN. ON A FURTHER DECREASE IN SPACE TEMPERATURE, THE INTEGRATED ACTUATOR WILL MOVE TO THE MAXIMUM HEATING FLOW POSITION, AND THE HEATING VALVE WILL MOVE TO THE FULLY OPEN POSITION.

FOR BOX PARAMETERS AND SETTINGS SEE THE ROOM SCHEDULE

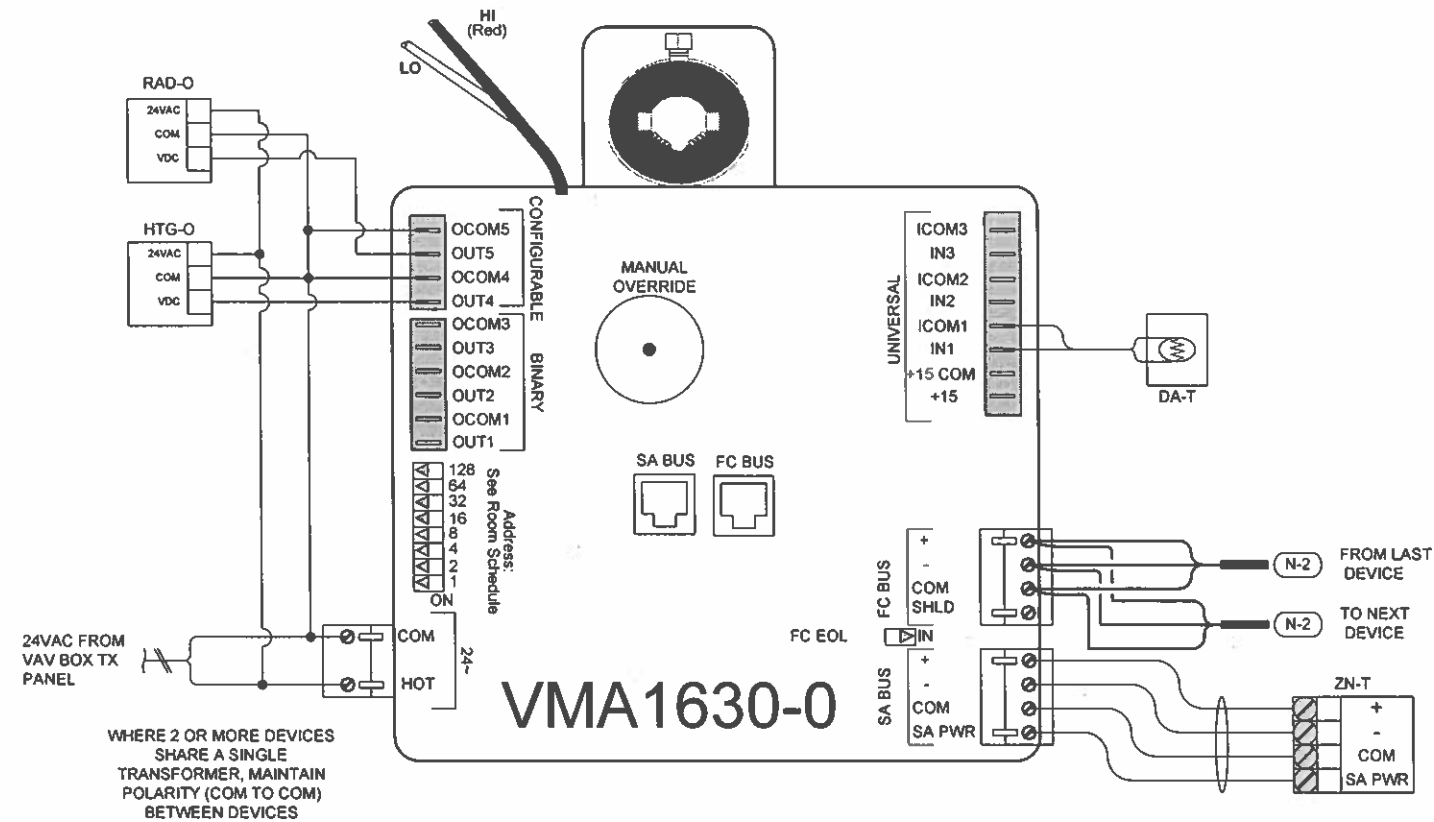
REVISION INFORMATION	Drawing Title						
NUMBER	Detail A VA Box w/Reheat						
number		1	Record Drawing	3/21/16	MPM		
DATE	03/21/16	NO	REVISION LOCATION	ECN	DATE	BY	
TIME	02:04 PM	Galva Engineer	Project Manager	Application Engineer	DRAWN	APPROVED	
extra	Project Title	KFC	JMT	MPM	BY	DATE	BY
FILE NAME	Miller Park Terrace Offices Alterations 1 Brewers Way Milwaukee, WI 53214	Branch Information		MILWAUKEE BRANCH		CONTRACT NUMBER	
rsd-a003.vsd		Milwaukee Branch 12000 West Wirth Street Wauwatosa, WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775		6N03-0137		DRAWING NUMBER	
				4.1			

BILL OF MATERIALS

Designation	Qty	Part Number	Description
Field Devices:			
VMA	3	MS-VMA1630-0	VMA 3 UI & 3 BO 2 CO
ZN-T	3	NS-BTB7002-0	3X4.5.T F/C.D.ADJ.TB
DA-T	3	TE-631GV-2	NICKEL DUCT PROB, 4 INCHES
HTG-O, REH-O		See Room Schedule	



DETAIL B
TYPICAL OF 3



SEQUENCE OF OPERATION

VAV UNITS w/ REHEAT AND RADIATION COILS:

AS SPACE TEMPERATURE RISES ABOVE SETPOINT, THE REHEAT & RADIATION HEATING VALVES WILL MOVE TO THE CLOSED POSITION AND THE INTEGRATED ACTUATOR WILL MOVE TO THE MINIMUM COOLING FLOW POSITION. ON A FURTHER INCREASE OF SPACE TEMPERATURE, THE INTEGRATED ACTUATOR WILL MOVE TO THE MAXIMUM COOLING FLOW POSITION.

AS SPACE TEMPERATURE DECREASES BELOW SETPOINT, THE INTEGRATED ACTUATOR WILL BEGIN TO MODULATE TO ITS MINIMUM FLOW POSITION AND THE REHEAT & RADIATION HEATING VALVES MODULATE OPEN. ON A FURTHER DECREASE IN SPACE TEMPERATURE, THE INTEGRATED ACTUATOR WILL MOVE TO THE MAXIMUM HEATING FLOW POSITION, AND THE HEATING VALVES WILL MOVE TO THE FULLY OPEN POSITION.

FOR BOX PARAMETERS AND SETTINGS SEE THE ROOM SCHEDULE

REVISION INFORMATION	Drawing Title Detail B VAV Box w/ Reheat & Radiation						
NUMBER	number	1		Record Drawing		3/21/16 MPM	
DATE	03/21/16						
TIME	02:03 PM	Project Title Miller Park Terrace Offices Alterations		Branch Information Johnson Controls		CONTRACT NUMBER 6N03-0137	
FILE NAME	rsd-b.vsd	Milwaukee, WI 53214		12000 West Wirth Street Wauwatosa, WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775		DRAWING NUMBER 4.2	

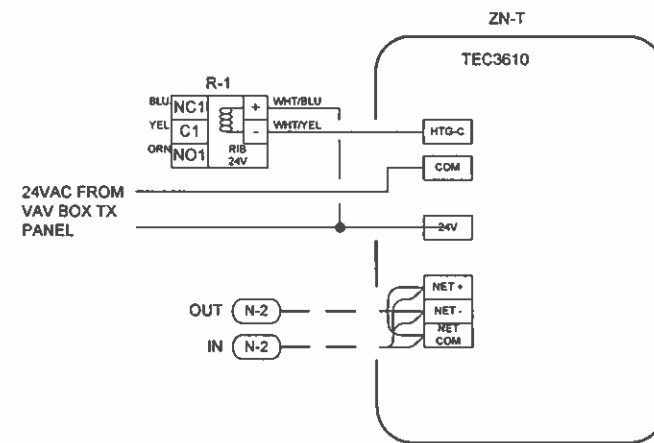
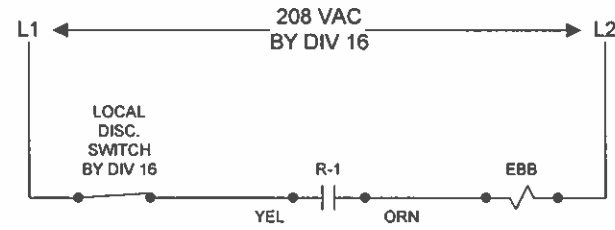
DETAIL C

BILL OF MATERIALS

Designation	Qty	Part Number	Description
Field Devices:			
R-1	1	RIB2401B	SPDT, 20A, HC=24 VAC/DC, WLED
ZN-T	1	TEC3610-00-000	TSTAT, N2 & MSTP

ZN-T

R-1



OCCUPIED MODE: DURING THIS MODE THE ELECTRIC HEATING COIL WILL BE ENERGIZED AS NEEDED TO MAINTAIN ZONE HEATING TEMPERATURE SETPOINT.

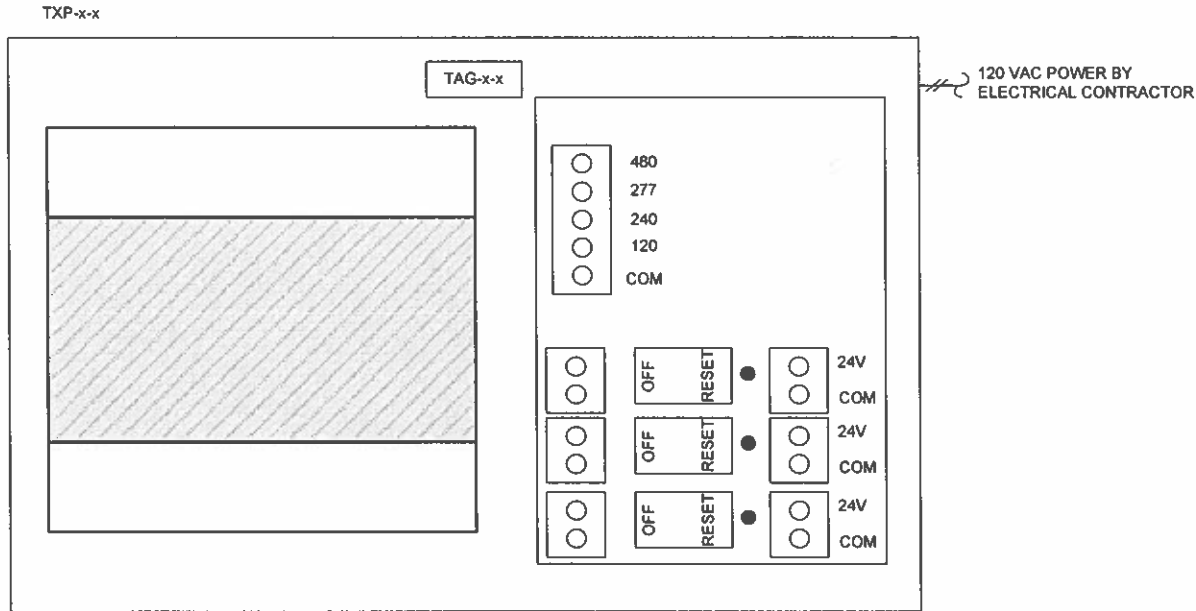
UNOCCUPIED MODE: DURING THIS MODE THE HEATING COIL WILL BE DE-ENERGIZED.

Drawing Title Detail C Electric Baseboard Radiation		1 Record Drawing		3/21/16	MPM
REFERENCE DRAWING	NO.	REVISION-LOCATION	ECN	DATE	BY
KFC	JMT	MPM			
Project Title Miller Park Terrace Offices Alterations 1 Brewers Way Milwaukee, WI 53214		Branch Information Johnson Controls Milwaukee Branch 12000 West Wirth Street Wauwatosa, WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775		CONTRACT NUMBER 6N03-0137 DRAWING NUMBER 4.3	

BILL OF MATERIALS

Designation	Qty	Part Number	Description
Panel Devices:			
TAG-T-1	1	NAMETAG-CUSTOM	1" X 3" TAG, 3-LINES MAX CUSTOM PNL FACE
TXP-T-2	1	PSH300A-LVC	ENCL 300VA PS W/3 100VA

DETAIL A
TYPICAL FOR 1

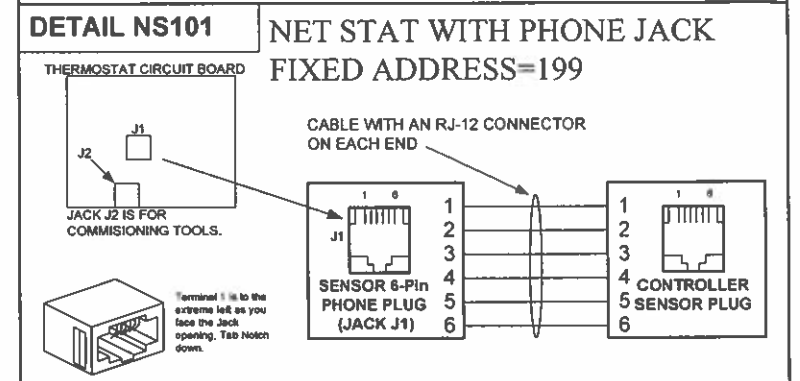
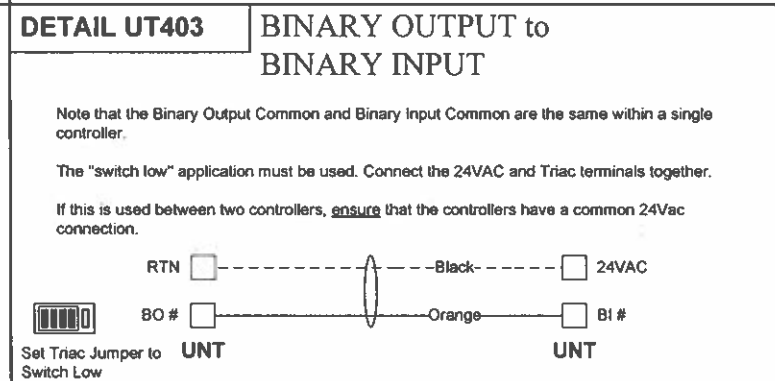
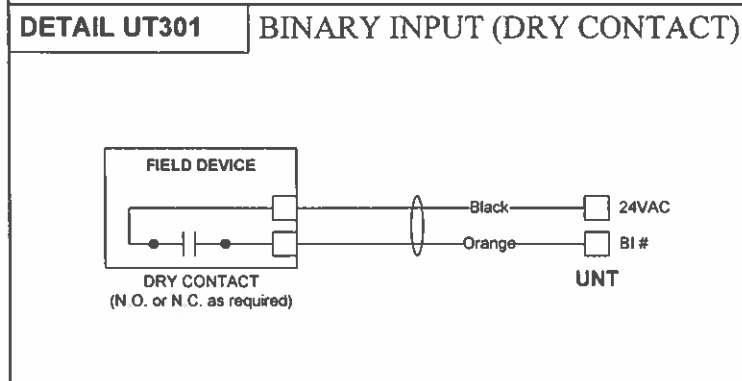
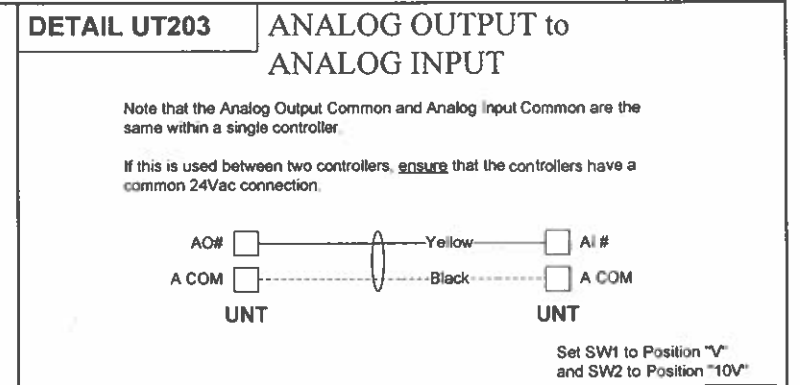
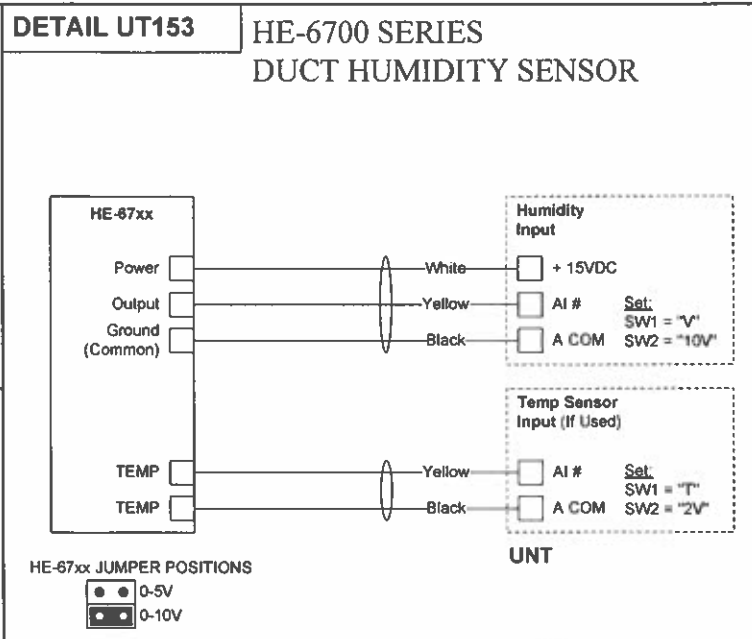
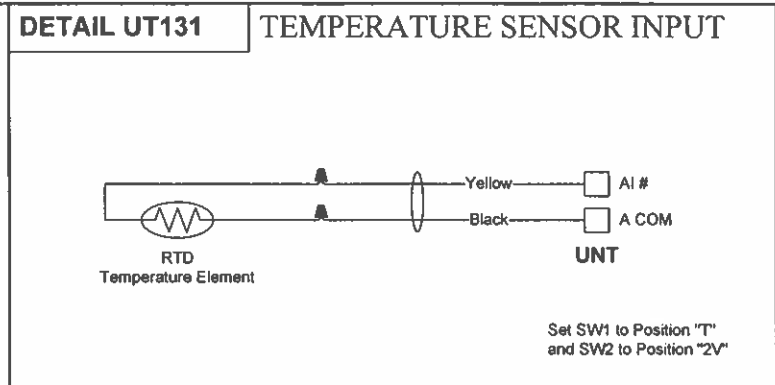
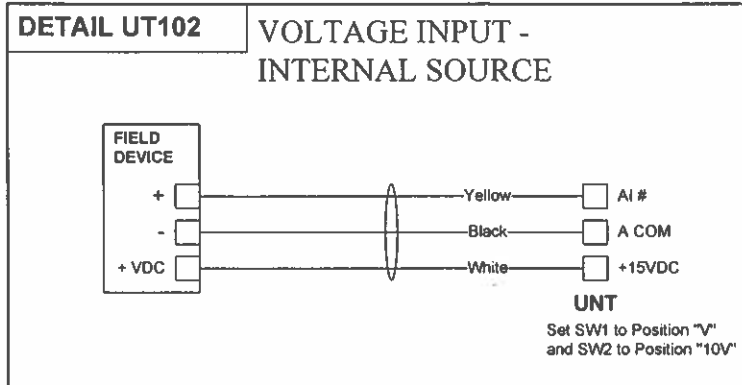


NOTE: CIRCUIT DESIGNATIONS MUST BE FOLLOWED DUE TO VOLT-AMP REQUIREMENTS. DO NOT DEVIATE FROM CIRCUIT DESIGNATION.

TXP-T-2 LOCATION: TERRACE LEVEL		
24VAC-1	24VAC-2	24VAC-3
VAV-16	VAV-21	
VAV-17	VAV-22	
VAV-18	EBB-1	
VAV-19	EBB-2	
VAV-20		

PANEL FACE TAGS:
TAG-x: PANEL TXP-T-2
VAV BOX POWER
JCI 1 6N03-0137

REVISION INFORMATION	Drawing Title								
NUMBER	24 VAC Power Distribution Panels								
number		1		Record Drawing		3/21/16		MPM	
DATE		REFERENCE DRAWING	NO.	REVISION-LOCATION	ECN	DATE	BY		
03/21/16		KFC	JMT	MPM					
TIME	Project Title	DRAWN		APPROVED		CONTRACT NUMBER			
02:06 PM	Miller Park Terrace Offices Alterations 1 Brewers Way Milwaukee, WI 53214	BY DATE		BY DATE		6N03-0137			
extra		Branch Information		CONTRACT NUMBER		DRAWING NUMBER			
FILE NAME		Johnson Controls		6N03-0137		5.1			
medet-a001.vsd		Milwaukee Branch 12000 West Wirth Street Wauwatosa, WI 53222 Phone: (414) 259-2800 Fax: (414) 259-2775							



REVISION INFORMATION	Drawing Title						
NUMBER	WIRING DETAILS						
DATE							
03/21/16							
TIME	Project Title						
02:07 PM	Miller Park Terrace						
extra	1 Brewers Way						
FILE NAME	Milwaukee, WI 53214						
wd-1.vsd							
		1		Record Drawing		3/21/16 MPM	
REFERENCE DRAWINGS		NO.		REVISION-LOCATION		ECH DATE BY	
Sales Engineer KFC		Project Manager SDC		Application Engineer JJB		DRAWN APPROVED	
		BY DATE		BY DATE		CONTRACT NUMBER	
						5075-0463	
						DRAWING NUMBER	
						WD-1	



Milwaukee Branch
10201 Innovation Dr Ste
300
Milwaukee, WI 53226
Phone: (414) 259-2800
Fax: (414) 259-2775

Room Schedule

Box Location								Controller Information							Box Information							Comments			
Room								Controller					Sensor		Box Config					Required (N2)					
Bldg./Flr.	No.	Name	System Name	Mech. Dwg.	System Serving this Box	Box Mfg.	Mfgr Box Type	JCI Ctrl Dwg No.	Controller Part No.	NC/ NAE Addr	Trunk ID	Device Addr	PAN Offset	CSModel or Template	Code No.	Box Heat	Supplemental Heat	Config File Name	Inlet Size (Inches)	Inlet Area (Sq. Ft.)	K Factor		Cig Min Flow	Cig Max Flow	VMA Box Config
Terrace	5708E	GM Office	VAV-16	H100	RTU-5006	JCI	TSS	4.2	MS-VMA1630-0	S1-NAE02	2	26		VAV REH RAD	NS-BTB7002-0	Yes	Yes		12	0.69	1.61	240	800		FT-1
Terrace	5708E	Assist GM Office	VAV-17	H100	RTU-5006	JCI	TSS	4.2	MS-VMA1630-0	S1-NAE02	2	27		VAV REH RAD	NS-BTB7002-0	Yes	Yes		12	0.69	1.61	240	800		FT-2, 3
Terrace	5811	Conference Room	VAV-18	H100	RTU-5006	JCI	TSS	4.1	MS-VMA1630-0	S1-NAE02	2	28		VAV REH	NS-BTB7002-0	Yes	No		6	0.2	1.67	75	250		
Terrace	5834	Open Office	VAV-19	H100	RTU-5006	JCI	TSS	4.2	MS-VMA1630-0	S1-NAE02	2	29		VAV REH RAD	NS-BTB7002-0	Yes	Yes		14	0.86	1.59	335	1100		FT-4 (2)
Terrace		Interior Open Office	VAV-20	H100	RTU-5006	JCI	TSS	4.1	MS-VMA1630-0	S1-NAE02	2	30		VAV REH EF	NS-BTB7002-0	Yes	No		12	0.69	1.61	240	800		EF-5823B Status
Terrace	5834	Open Office	VAV-21	H100	RTU-5006	JCI	TSS	4.1	MS-VMA1630-0	S1-NAE02	2	31		VAV REH EF	NS-BTB7002-0	Yes	No		8	0.35	1.61	105	400		EF-5823A Status
Terrace	5833	Storage Room	VAV-22	H100	RTU-5006	JCI	TSS	4.1	MS-VMA1630-0	S1-NAE02	2	32		VAV REH	NS-BTB7002-0	Yes	No		6	0.2	1.67	53	200		
Terrace		Elevator Lobby	EBB-1	H100				4.3	TEC3610-00-000	S1-NAE02	2	33													Electric baseboard heater

Valve Schedule

Tag					Valve Information														Actuator Information		Piping Information	Comments
Item	System	Service	Qty.	Ref. Dwg.	Code Number	Valve Family	Configuration	Fail Position	Inlet Pipe Size (in)	Valve Size (in)	Medium	Flow (gpm or lbs/hr)	Design Delta P (psi)	Valve Delta P (psi)	Design Coefficient (Cv)	Valve Coefficient (Cv)	Design Close Off (psi)	Valve Close Off (psi)	Trim Material	Connection		
1	VAV-16	Reheat	1		VG1241AD+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	1.7	2.0	2.0	1.2	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
2	VAV-16	FT-1	1		VG1241AD+923GGA	Ball Valve	2-Way	Valve Open	1/2	1/2	Water	1.3	2.0	1.2	0.9	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
3	VAV-17	Reheat	1		VG1241AD+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	1.6	2.0	1.8	1.1	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
4	VAV-17	FT-2	1		VG1241AE+923GGA	Ball Valve	2-Way	Valve Open	1/2	1/2	Water	2.4	2.0	1.6	1.7	1.9		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
5	VAV-17	FT-3	1		VG1241AD+923GGA	Ball Valve	2-Way	Valve Open	1/2	1/2	Water	0.5	2.0	0.2	0.4	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
6	VAV-18	Reheat	1		VG1241AD+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	0.8	2.0	0.4	0.6	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
7	VAV-19	Reheat	1		VG1241AF+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	2.8	2.0	0.9	2.0	2.9		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
8	VAV-19	FT-4	1		VG1241AD+923GGA	Ball Valve	2-Way	Valve Open	1/2	1/2	Water	0.5	2.0	0.2	0.4	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
9	VAV-19	FT-4	1		VG1241AD+923GGA	Ball Valve	2-Way	Valve Open	1/2	1/2	Water	0.5	2.0	0.2	0.4	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
10	VAV-20	Reheat	1		VG1241AD+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	0.7	2.0	0.3	0.5	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
11	VAV-21	Reheat	1		VG1241AD+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	0.8	2.0	0.4	0.6	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP
12	VAV-22	Reheat	1		VG1241AD+943GGA	Ball Valve	2-Way	Valve Closed	3/4	1/2	Water	0.5	2.0	0.2	0.4	1.2		200.0	Brass	Threaded	VA9203-GGA-2Z	0-10VDC PROP