# PCU CORE FIRE PROTECTION ELECTRICAL DETAIL

ELECTRICIAN:

1) WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC

ELECTRICAL CONTRACTOR REQUIREMENT									
ITEM	ITEM CONNECTION IN PANEL		VOLTAGE	AMPERAGE	COMMENTS				
PCU CORE CONTROL PANEL POWER H1, N1, GROUND C		CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER				
REMOTE ANSUL AUTOMAN (OPTIONAL)	AU1, AU2	SOLENOID	120 VAC	< 6 AMPS	120V TO AU1, AU2 TO ANSUL ELECTRIC AUTOMAN, ANSUL SOLENOID TO NEUTRAL				



BREAK WIRE

BEFORE

INSERTING INTO TERMINALS

NO-WH

Ø 26 Ø

NO-WH

(OR RD)

NO-WH

(OR RD)

# PCU CORE FIRE PROTECTION LOW-VOLTAGE WIRING DETAIL

ALARM CONTRACTOR:

WIRE REMOTE FIRESTAT SENSOR(S), HOOD/PCU CORE INTERLOCK AND FIRE ALARM CONTACTS

COMPLETE FINAL HOOKUP OF SYSTEM 2) 3)

INSPECT ALL WIRING TO POLLUTION CONTROL UNIT

PERFORM FINAL FIRE SYSTEM TEST 4)

5) FILL SURFACTANT TANK

### ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

ALARM CONTRACTOR REQUIREMENT									
ITEM	CONNECTION IN PCU CORE PANEL	CONNECTION ON DEVICE	VOLTAGE	AMPERAGE	COMMENTS				
SUPERVISED LOOP**	25 AND 23 26 AND 24	BLACK & WHITE	24 VDC	< 1.0 AMPS	WIRE FIRE SENSOR BLACK WIRES BETWEEN TERMINALS 25 AND 23. WIRE FIRE SENSOR WHITE (OR RED) WIRE BETWEEN TERMINALS 26 AND 24. USE BELDEN# 6320UL OR SIMILAR WIRE				
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	<1.0 AMPS	WIRE TO AL1 & AL2 NORMALLY OPEN CONTACT, CLOSES IN FIRE CONDITION				
CORE INTERLOCK	ila, ilb, ilc	ILA, ILB, ILC	RS-485 COMMUNICATIONS SIGNAL		CORE SYSTEM (1) ILA, TO CORE SYSTEM (2) ILA. CORE SYSTEM (1) ILB, TO CORE SYSTEM (2) ILB. CORE SYSTEM (1) ILC, TO CORE SYSTEM (2) ILC. USE BELDEN# 88760 OR SIMILAR WIRE				
TROUBLE CONTACT	TBC, TBL, TOK	VARIES	MAX 120 VAC	UP TO 6 AMPS	WIRE TO TBL & TBC NORMALLY OPEN CONTACT, CLOSES IN TROUBLE CONDITION				
CORE COMMUNICATIONS CABLE	RJ-45 Jack	INTERNET CONNECTION SIGNAL		<1.0 AMPS	TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION				
					·				

\*\*ALL EXTERIOR WIRING CONNECTIONS TO PCU MUST BE ROUTED IN LIQUID TIGHT CONDUIT.



#### SUPERVISED LOOP

-4 WIRES, 24VDC CONNECT BLACK WIRES BETWEEN 25 AND 23 IN PANEL, CONNECT WHITE (OR RED) WIRES BETWEEN 26 AND 24 IN PANEL -ALL EXTERIOR WIRING TO PCU MUST BE IN LIQUID TIGHT CONDUIT -ALL CONNECTIONS MUST BE INSPECTED BY FIRE SYSTEM INSTALLER -ADDITIONAL FIRESTATS, WIRED IN SUPERVISED LOOP -USE BELDEN #6320UL OR SIMILAR WIRE -IF MANUAL ACTUATION DEVICE IS NOT SUPPLIED, JUMPER 21 TO 26 AND JUMPER 22 TO 25 IN PCU CORE PANEL -SEE FIGURE 1

J2-1 Ø 21 Ø

J2-2 Ø 22 Ø

#### FIRE ALARM CONTACT -2 WIRES WIRED TO NORMALLY OPEN

CONTACTS (CLOSES IN FIRE CONDITION -PCU CORE PANEL TERMINALS - AL1 AND AL2 -SEE FIGURE 2



WIRING CONNECTIONS FOR FIRE

ALARM CONTACT

FIGURE 2

-USE BELDEN#88760 OR SIMILAR WIRE

CORE INTERLOCK

-2 WIRES + SHIELD

-SEE FIGURE 3



WIRING CONNECTIONS FOR SUPERVISED LOOP **FIGURE 1** 

MANUAL

DEVICE





WIRING CONNECTIONS FOR CORE INTERLOCK **FIGURE 3** 

# PCU CORE FIRE PROTECTION PLUMBING DETAIL

PLUMBER:

1) CONNECT PCU CORE PANEL DRAIN

2) CONNECT PCU DRAIN



# PCU CORE FIRE PROTECTION SPRINKLER DETAIL

BUILDING SPRINKLER CONTRACTOR:

1) CONNECT CORE WATER LINE TO BUILDING WET SPRINKLER SYSTEM. STAINLESS STEEL, COPPER, STEEL PIPE ONLY

2) CONNECT PCU CORE PANEL TO PCU SPRAY BARS. STAINLESS STEEL, COPPER, STEEL PIPE ONLY



# 24V CORE BASIC OPERATING INSTRUCTIONS

### **CORE PROTECTION FIRE SYSTEM**

CORE PROTECTION FIRE SYSTEMS CAN BE INSTALLED FOR HOOD FIRE PROTECTION, AS WELL AS POLLUTION CONTROL UNIT FIRE PROTECTION. IN THE EVENT OF A FIRE, OR ON MANUAL ACTUATION CORE PROTECTION IS ACTIVATED.

IF THE INSTALLED FIRESTAT IN THE AIRSTREAM SENSES A TEMPERATURE HOTTER THEN ITS INTERNAL SET POINT OR IF THE MANUAL ACTUATION DEVICE IS PUSHED THE FIRE SYSTEM IS ACTIVATED. IN KITCHEN HOODS AN ELECTRIC WATER SOLENOID IS ENERGIZED ALLOWING THE FLOW OF WATER TO THE HOOD DUCT AND PLENUM THROUGH THE SELF CLEANING HOOD SPRAY BAR. AT THE SAME TIME A SECOND WATER SOLENOID IS ENERGIZED AND ALLOWS THE FLOW OF WATER TO THE APPLIANCES. SURFACTANT IS CONTINUALLY INJECTED INTO THE WATER STREAM TO HELP SUPPRESS THE FIRE. IN A POLLUNTION CONTROL UNIT, THIS ELECTRONIC SIGNAL ENERGIZES A SOLENOID ALLOWING THE FLOW OF WATER INTO THE INDIVIDUALLY PIPED MODULES.

ONCE THE FIRE SYSTEM IS ACTIVATED, A "FIRE SYSTEM ACTIVATED" LIGHT IS ILLUMINATED ON THE CORE CONTROL PANEL AND AN AUDIBLE ALARM SOUNDS. FOR KITCHEN HOOD PROTECITON ALL GAS AND ELECTRIC APPLIANCES UNDER THE HOOD MUST BE ELECTRICALLY INTERLOCKED TO SHUT OFF. THIS IS ACHIEVED VIA A GAS VALVE RELAY AND/OR A SHUNT TRIP BREAKER. A TIMER IS ALSO ENERGIZED UPON FIRE SYSTEM ACTIVATION. THE TIMER IS SET FOR 30 MINUTES AND KEEPS THE WATER SPRAY SYSTEM RUNNING FOR A MINIMUM OF 30 MINUTES. THIS IS NECESSARY TO HELP EXTINGUISH ALL REMAINING DUCT FIRE POTENTIAL.

THE FIRE SYSTEM IS ELECTRICALLY OPERATED AND THUS REQUIRES A BATTERY BACKUP SYSTEM. IN THE EVENT OF A LOSS OF ELECTRICAL POWER, ALL GAS AND ELECTRIC APPLIANCES UNDER THE HOOD MUST BE ELECTRICALLY INTERLOCKED TO SHUT OFF. THIS IS ACHIEVED VIA A GAS VALVE RELAY AND/OR A SHUNT TRIP BREAKER. THE BATTERY

BACKUP WILL AUTOMATICALLY ENERGIZE UPON A LOSS OF POWER. THE BATTERY BACKUP WILL MONITOR THE FIRE SYSTEM CIRCUIT FOR ONE DAY AND BE ABLE TO OPERATE THE FIRE SYSTEM CIRCUIT FOR A MINIMUM OF 30 MINUTES. ONCE POWER IS RESTORED, THE BATTERY WILL AUTOMATICALLY RECHARGE.

### CORE PROTECTION RESET OVERVIEW

THERE ARE MULTIPLE ACTIONS REQUIRED TO RESET THE FIRE SYSTEM. FIRST, THE FIRESTAT MUST BE COOLED TO BELOW ITS INTERNAL SET POINT AND THE MANUAL ACTUATION DEVICE MUST BE RESET BY TWISTING THE BUTTON IN A CLOCKWISE DIRECTION. ONCE BOTH OF THESE DEVICES HAVE BEEN RESET, THE TIMER WILL AUTOMATICALLY STOP THE FIRE SYSTEM ONCE ITS TIME DURATION HAS ENDED. AN ALTERNATIVE METHOD TO BYPASSING THE TIMER IS TO PRESS THE FIRE SYSTEM RESET BUTTON ON THE FACE OF THE CORE CONTROL CABINET. THIS WILL DE-ENERGIZE THE TIMER AND RESET THE SYSTEM. NOTE: THE FIRESTAT MUST BE COOL AND THE MANUAL ACTUATION DEVICE MUST BE RESET FOR THIS BUTTON TO WORK.

THE FIRE SYSTEM MUST BE FILLED WITH SURFACTANT AND NOZZLE CAPS MUST BE REINSTALLED.

AFTER A FIRE, FULL INSPECTION BY A CERTIFIED PROFESSIONAL MUST BE CONDUCTED PRIOR TO RESTARTING THE FIRE SYSTEM.

### **CORE APPLICATION SPECIFIC DETAILS**

### **SELF CLEANING HOODS**

SELF CLEANING HOOD OPTION IS REQUIRED TO APPLY CORE PROTECTION. HIGH EFFICIENCY, HIGH VELOCITY CARTRIDGE, SOLO, OR COMBO FILTERS ARE REQUIRED. IF SUBSTITUTE FILTERS ARE UTILIZED, PRODUCT WARRANTY IS VOID AND THERE IS NO GUARANTEE IN PERFORMANCE.

### **SOLID FUEL APPLIANCES**

SOLID FUEL APPLIANCES PRODUCE SPARKS THAT CAN TRAVEL INTO DUCTWORK. THESE APPLIANCES REQUIRE SOLO FILTERS AND AN ADDITIONAL FIRESTAT AT THE DUCT DISCHARGE NEAR THE FAN IF THE DUCTWORK EXCEEDS 10 FEET IN LENGTH OR CONTAINS HORIZONTAL DUCT RUNS. INDICATE ON DUCTWORK DRAWING WHERE FIRESTAT IS TO BE INSTALLED WITH QUICK SEAL. ALL ADDITIONAL FIRESTATS ARE WIRED INTO THE SUPERVISED LOOP WITH THE FIRST FIRESTAT. DUCT SHOULD BE INSULATED PER CODE REQUIREMENTS. IF SUBSTITUTE FILTERS ARE UTILIZED, PRODUCT WARRANTY IS VOID AND THERE IS NO GUARANTEE IN PERFORMANCE. SELF CLEANING HOODS AND ETL LISTED DUCTWORK ARE ALSO REQUIRED.

### **DUCT FIRESTATS**

A FIRESTAT MUST BE INSTALLED AT 50 FT INTERVALS WHEN THE DUCT LENGTH EXCEEDS 50 FT.

### **IMPORTANT:**

ANY DEVIATION FROM ANY OF THE MANUFACTURER'S RECOMMENDATIONS IN THIS DOCUMENT OR THE OPERATION AND INSTALLATION MANUAL MUST BE APPROVED BY THE OWNER OF THIS EQUIPMENT AND VOIDS THE WARRANTY AND PERFORMANCE GUARANTEE OF THIS PRODUCT.

# 24V SUPERVISED LOOP INSTRUCTIONS

ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES



## SUPERVISED LOOP INSTALLATION

-LOOP MUST BE CONTINUOUS BETWEEN THE FIRESTATS AND PULL STATIONS, QUANTITY OF EACH COMPONENTS MAY VARY,

-POLLUTION CONTROL UNIT MAY NOT HAVE A MANUAL ACTUATION DEVICE INSTALLED; IN THIS CASE, INSTALL A JUMPER BETWEEN

TERMINALS 21 AND 26, AS WELL AS TERMINALS 22 AND 25 -MULTIPLE PULL STATIONS AND FIRE SENSORS CAN BE USED ON EACH PANEL, WHEN INSTALLED, THEY ARE WIRED IN A DAISY-CHAIN STYLE AS SHOWN

# CONNECTION BETWEEN MULTIPLE CORE SYSTEMS

-THERE IS AN RS-485 CONNECTION IN EACH CORE PANEL; TO CONNECT MULTIPLE CORE PANELS, SIMPLY CONNECT MATCHING TERMINALS FROM ONE PANEL TO THE NEXT IN SERIES -USE BELDEN #88760 OR SIMILAR WIRE, SHIELDED, SINGLE TWISTED PAIR



**RS-485 INTERLOCK NETWORK** 

### PRESSURE REDUCING VALVE WITH SUPERVISION SWITCH AND PRESSURE MONITORING SWITCH (OPTIONAL)



#### ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

#### -PRV SUPERVISION SWITCH

-THE PRESSURE REDUCING VALVE MUST BE INSTALLED WITH AN APPROVED SUPERVISION SWITCH -SWITCH PART NUMBERS AND SUPPORT BRACKETS ARE LISTED IN THE TABLE -SWITCH COMES WITH TWO SINGLE POLE, DOUBLE THROW SWITCHES -SWITCH MUST BE ATTACHED PER PRESSURE REDUCTION VALVE BRACKET INSTRUCTIONS

#### VALVE SUPERVISION SWITCH BRACKET

-VALVE BRACKET CONTAINS NECESSARY PARTS AND INSTRUCTIONS TO ADAPT THE SUPERVISION SWITCH TO THE VALVE.

#### WATER PRESSURE SUPERVISION SWITCH

-SWITCH IS AVAILABLE WITH A 1/2" NPT CONNECTION -PRESSURE MONITORING VALVE COMES WITH TWO SINGLE POLE, DOUBLE THROW SWITCHES, EACH WITH AN ADJUSTABLE SETPOINT -SETPOINT CAN BE BETWEEN 10 AND 60 PSI -PART NUMBER PL-PS402

#### PRESSURE REDUCING VALVE

-VALVE IS AVAILABLE IN 1-1/2" NPT CONNECTIONS -PRESSURE REDUCING VALVE (IF REQUIRED) MUST BE INSTALLED BEFORE THE CORE PROTECTION PANEL TO REDUCE SPRINKLER LINE INCOMING PRESSURE AND VOLUME -PRESSURE REDUCTION IS BASED UPON THE INCOMING PRESSURE AND VOLUME -SEE TABLE FOR OUTLET PRESSURE

COMPLETE PARTS KIT	UR-20 VALVE	OUTLET PRESSURE PERCENTAGE	SUPERVISION SWITCH	SWITCH BRACKET		
UR-20-W KIT	UR-20-W	28.7%	PL-PCVS2	80574001		
UR-20-X KIT	UR-20-X	33.8%	PL-PCVS2	80574001		
UR-20-Z KIT	UR-20-Z	56.5%	PL-PCVS2	80574001		

	UR-20 VALVE	INCOMING PRESSURE (PSI)												
		50	60	70	80	90	100	110	120	130	140	150	160	170
OUTLET PRESSURE (PSI)	UR-20-W	14.35	17.22	20.09	22.96	25.83	28.7	31.57	34.44	37.31	40.18	43.05	45.92	48.79
	UR-20-X	16.9	20.28	23.66	27.04	30.42	33.8	37.18	40.56	43.94	47.32	50.7	54.08	57.46
	UR-20-Z	28.25	33.9	39.55	45.2	50.85	56.5	62.15	67.8	73.45	79.1	84.75	90.4	96.05

THE CORE PANEL CONTAINS TWO ISOLATED INPUTS FOR AUXILIARY SUPERVISION OF PRESSURE REDUCING VALVES AND PRESSURE SWITCHES. EACH SUPERVISION DEVICE ABOVE HAS TWO SINGLE POLE, DOUBLE THROW SWITCHES. THESE SWITCHES MAY BE WIRED IN PARALLEL TO THE CORE PANEL TERMINALS H1D AND 39. WHEN A FAULT IS DETECTED, THE CORE BOARD WILL SHUT DOWN THE GAS VALVE AND SHUNT TRIP, TRIGGER A LOCAL TROUBLE SIGNAL, AND ALERT ALL ATTACHED CORE PACKAGES. ALTERNATIVELY, THE SWITCHES FROM EACH DEVICE COULD BE CONNECTED TO THE TROUBLE INPUT OF THE BUILDING FIRE ALARM PANEL TO INDICATE A TROUBLE CONDITION. BOTH METHODS ARE SHOWN BELOW.



#### WIRING CONNECTIONS FOR TROUBLE CONTACT



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