



Exploration & Production

GENERAL SPECIFICATION

HVAC

GS EP HVA 803

Symbols for P&ID and D&ID

02	10/08	Updating and addition of symbol
01	10/05	Addition of "EP" root to GS identification
00	11/03	First issue
Rev.	Date	Notes



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1. Scope

The present specification defines the COMPANY requirements for drawing normalisation of HVAC documents.

The words and expressions in CAPITAL characters and *italic* are defined inside the general specification **GS EP HVA 801**.

When other words require a definition only to be used in the present document, then the definition is given in a dedicated paragraph of the present document and the defined word, when used, is marked in small and *italic* letters.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	



Total General Specifications

Reference	Title
Not applicable	

3. Symbols for instrument diagrams (P&ID and D&ID)

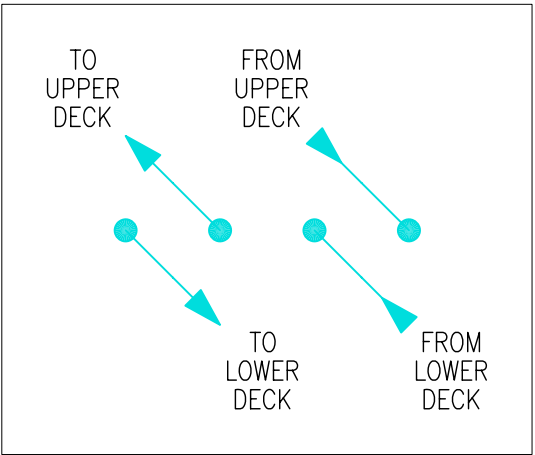
3.1 Lines (2 sheets)

SD-EP-HVA-803-Sh1.dwg

SD-EP-HVA-803-Sh2.dwg

CONNECTIONS DEFINITIONS

DEFINITION	LINE TYPE OBJECT/GLOBAL	SCALE	LAYER	TH. A1 mm	COLOUR	LINE NAME	LINE TYPE DEFINITION (ACLTISO.LIN FILE)
INSTRUMENT OR EQUIPMENT SUPPLY OR CONNECTION TO PROCESS	ST* ST : SUPPLY TYPE SEE DETAIL	1.000/1.000	70-IL1	0.2	132	Continuous	
CAPILLARY LINK		1.000/1.000	70-IL2	0.2	132	Capillary_tube	*CAPILLARY_TUBE,CAPILLARY TUBE ----X----X----X----- A,9.375,[TRACK1,LTYPESH.P.SHX,R=330,S=1.25],.625,[TRACK1,LTYPESH.P.SHX,R=30,S=1.25,X=-.625],0
ELECTRIC ANALOGIC SIGNAL		1.000/1.000	70-IL3	0.2	132	Electric_analogic_signal	*ELECTRIC_ANALOGIC_SIGNAL,ELECTRIC_ANALOGIC_SIGNAL - - - - - A,1.5625,-.9375
ELECTRIC BINARY SIGNAL		1.000/1.000	70-IL4	0.2	132	Electric_binary_signal	*ELECTRIC_BINARY_SIGNAL,ELECTRIC_BINARY_SIGNAL ----\-----\----- A,1.5625,-.9375,1.5625,-.9375,1.5625,-.9375,1.5625,-.9375, [TRACK1,LTYPESH.P.SHX,R=30,S=1.25,X=-4.21875],0
PNEUMATIC ANALOGIC SIGNAL		1.000/1.000	70-IL5	0.2	132	Pneumatic_analogic_signal	*PNEUMATIC_ANALOGIC_SIGNAL,PNEUMATIC_ANALOGIC_SIGNAL ----//----//---- A,8.125,[TRACK1,LTYPESH.P.SHX,R=330,S=1.25],1.25,[TRACK1,LTYPESH.P.SHX,R=330,S=1.25],.625
PNEUMATIC BINARY SIGNAL		1.000/1.000	70-IL6	0.2	132	Pneumatic_binary_signal	*PNEUMATIC_BINARY_SIGNAL,PNEUMATIC_BINARY_SIGNAL ----//X---- A,6.25,[TRACK1,LTYPESH.P.SHX,R=330,S=1.25],1.25,[TRACK1,LTYPESH.P.SHX,R=330,S=1.25],1.875, [TRACK1,LTYPESH.P.SHX,R=330,S=1.25],.625,[TRACK1,LTYPESH.P.SHX,R=30,S=1.25,X=-.625],0
HYDRAULIC SIGNAL		1.000/1.000	70-IL7	0.2	132	Hydraulic_signal	*HYDRAULIC_SIGNAL,HYDRAULIC_SIGNAL ----L-----L----- A,9.375,[TRACK1,LTYPESH.P.SHX,S=1.25],.625,[TRACK1,LTYPESH.P.SHX,R=90,S=.625,Y=-1.25],0
BINARY LINK SYSTEM LINK (SOFTWARE OR DATA LINK)		1.000/1.000	70-IL10	0.2	132	Binary_link_system	*BINARY_LINK_SYSTEM,BINARY_LINK_SYSTEM ----0----0---- A,6.875,-2.5,[CIRC1,LTYPESH.P.SHX,X=-2.5,S=1.25],.625
UNDEFINED SIGNAL		1.000/1.000	70-IL11	0.2	132	Undefined_signal	*UNDEFINED_SIGNAL,UNDEFINED_SIGNAL ----/----/---- A,9.375,[TRACK1,LTYPESH.P.SHX,R=330,S=1.25],.625
MECHANICAL LINK		1.000/1.000	70-IL13	0.2	132	Mechanical_link	*MECHANICAL_LINK,MECHANICAL_LINK _ _ _ _ _ A,3.755,-1.25,1.25,-1.25
SUPPLY DUCT (NON ESSENTIAL)		1.000/1.000	70-Supply_Non_essential	0.35	0,0,128	Supply_non_essential	*BLOWING_NORMAL,BLOWING_NORMAL _ _ . _ . _ _ A,3.75,-1.25,0,-1.25
SUPPLY DUCT (ESSENTIAL)		1.000/1.000	70-Supply_Essential	0.35	0,0,128	Supply_essential	*BLOWING_EMERGENCY,BLOWING_EMERGENCY _ _ . _ . _ _ A,3.75,-1.25,0,-1.25,0,-1.25
SUPPLY DUCT (TO GALLEY HOOD)		1.000/1.000	70-Supply_Galley	0.35	0,0,128	Kitchen_compensation	*KITCHEN_COMPENSATION,KITCHEN_COMPENSATION ---- ---- ---- A,9.375,[TRACK1,LTYPESH.P.SHX,S=1.25],.625
EXHAUST DUCT (NON ESSENTIAL)		1.000/1.000	70-Exhaust_Non_essential	0.35	128,0,0	Exhaust_non_essential	*EXHAUST_NORMAL,EXHAUST_NORMAL _ _ . _ . _ . _ . _ . _ . _ A,3.75,-1.25,3.75,-1.25,3.75,-1.25,0,-1.25
EXHAUST DUCT (ESSENTIAL)		1.000/1.000	70-Exhaust_Essential	0.35	128,0,0	Exhaust_essential	*EXHAUST_EMERGENCY,EXHAUST_EMERGENCY _ _ . _ . _ . _ . _ . _ . _ A,3.75,-1.25,3.75,-1.25,3.75,-1.25,0,-1.25,0,-1.25
EXHAUST DUCT (LOCAL)		1.000/1.000	70-Exhaust_Local	0.35	128,0,0	Exhaust_local	*EXHAUST_LOCAL,LOCAL_EXHAUST _ _ . _ . _ . _ . _ . _ . _ A,3.75,-1.25,3.75,-1.25,3.75,-1.25,0,-1.25,0,-1.25,0,-1.25
OUTDOOR AIR DUCT		1.000/1.000	70-Outdoor	0.35	0,128,0	Outdoor_air	*FRESH_AIR,FRESH_AIR --- --- --- --- A,3.75,-1.25
RECIRCULATION DUCT (NON ESSENTIAL)		1.000/1.000	70-Recirculation_Non_essential	0.35	255,165,0	Recirculation_non_essential	*RETURN_NORMAL,RETURN_NORMAL _ _ . _ . _ . _ . _ . _ . _ A,3.75,-1.25,3.75,-1.25,0,-1.25
RECIRCULATION DUCT (ESSENTIAL)		1.000/1.000	70-Recirculation_Essential	0.35	255,165,0	Recirculation_essential	*RETURN_EMERGENCY,RETURN_EMERGENCY _ _ . _ . _ . _ . _ . _ . _ A,3.75,-1.25,3.75,-1.25,0,-1.25,0,-1.25
PACKAGE LIMIT or SUB-SYSTEM LIMIT		1.000/1.000	70-Unit_limit	0.40	131	Unit_limit	*UNIT_LIMIT,UNIT_LIMIT ---- - ---- - ---- - ---- A,3.755,-1.25,1.25,-1.25,1.25,-1.25
HVAC EQUIPMENT (NON ESSENTIAL)		1.000/1.000	70-Equipment_Non_essential	0.09	150	Continuous	
HVAC EQUIPMENT (ESSENTIAL)		1.000/1.000	70_Equipment_Essential	0.09	240	Continuous	



01	-	3-10-08	Sub-system limits adding	DD	SB	GA
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	TOTAL EXPLORATION & PRODUCTION CLIENT PROJET					
	HVAC D&I / P&I SYMBOLS FOR INSTRUMENTS DIAGRAMS LINES (sheet 1)					
				Revision	Status	Folio
COMPANY Doc. ref.	SD-EP-HVA-803-Sh1					.
Contractor ref.	-			Electronic Filename :	SD-EP-HVA-803-Sh1.dwg	

CONNECTIONS DEFINITIONS							
DEFINITION		LINE TYPE SCALE OBJECT/GLOBAL	LAYER	TH. A1 mm	COLOUR	LINE NAME	LINE TYPE DEFINITION (ACLTISO.LIN FILE)
CHILLED WATER PIPING		1.000/1.000	70–Chilled water	0.35	162	Chilled_water	*CHILLED_WATER,CHILLED WATER ---- CW ---- CW ---- A,15,-7.5,["CW",ARIAL,S=2.5,X=-5,Y=-1.25],-2.5
HOT WATER PIPING		1.000/1.000	70–Hot water	0.35	162	Hot_water	*HOT_WATER,HOT WATER ---- HW ---- HW ---- A,15,-7.5,["HW",ARIAL,S=2.5,X=-5,Y=-1.25],-2.5
POTABLE WATER PIPING		1.000/1.000	70–Potable water	0.25	151	Potable_water	*POTABLE_WATER,POTABLE WATER ---- DW ---- DW ---- A,15,-7.5,["DW",ARIAL,S=2.5,X=-5,Y=-1.25],-2.5
SEA WATER PIPING (FOULING SCAVENGER/CHLORINE)		1.000/1.000	70–Sea water chl	0.25	162	Sea_water–Chlorine	*SEA_WATER-CHLORINE,SEA WATER CHLORINE ---- SW ---- SW ---- A,15,-7.5,["SW",ARIAL,S=2.5,X=-5,Y=-1.25],-2.5
UTILITY WATER PIPING		1.000/1.000	70–Utility water	0.25	20	Utility_water	*UTILITY_WATER,UTILITY WATER ---- UW ---- UW ---- A,15,-7.5,["UW",ARIAL,S=2.5,X=-5,Y=-1.25],-2.5
DIRTY WATER DRAIN		1.000/1.000	70–Dirty water drain	0.25	40	Dirty_water_drain	*DIRTY_WATER_DRAIN,DIRTY WATER DRAIN ---- WD ---- WD ---- A,15,-7.5,["WD",ARIAL,S=2.5,X=-5,Y=-1.25],-2.5
INSTRUMENT AIR		1.000/1.000	70–Instrument air	0.25	130	Instrument_air	*INSTRUMENT_AIR,INSTRUMENT AIR ---- IA ---- IA ---- A,15,-7.5,["IA",ARIAL,S=2.5,X=-3.75,Y=-1.25],-2.5
REFRIGERANT PIPING		1.000/1.000	70–Refrigerant	0.25	56	Refrigerant	*REFRIGERANT,REFRIGERANT ---- R ---- R ---- A,15,-7.5,["R",ARIAL,S=2.5,X=-3.75,Y=-1.25],-2.5
LUBRICATION PIPING		1.000/1.000	70–Lubrifcation	0.25	180	Lubrication	*LUBRIFICATION,LUBRIFICATION ---- LUB ---- LUB ---- A,15,-7.5,["LUB",ARIAL,S=2.5,X=-5.9375,Y=-1.25],-2.5

"SUPPLY TYPE" DETAIL

THE FOLLOWING ABBREVIATIONS MUST BE INDICATED TO IDENTIFY TYPE OF SUPPLY:

AS : AIR SUPPLY
ES : ELECTRICAL SUPPLY
GS : GAS SUPPLY
HS : HYDRAULIC SUPPLY
IAS : INSTRUMENT AIR SUPPLY
PAS : PLANT AIR SUPPLY
NS : NITROGEN SUPPLY
SS : STEAM SUPPLY
WS : WATER SUPPLY

SQUARE SHAPE SIZES :

ES

THE SUPPLY LEVEL MAY BE ADDED TO THE SUPPLY LINE, e.g. 100 bars g, 24VDC :

ES-24VDC

DIRECTION OF FLOW OR OF SIGNAL CAN BE INDICATED TO AVOID CONFUSION.



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	TOTAL EXPLORATION & PRODUCTION CLIENT PROJET					
	HVAC D&ID / P&ID SYMBOLS FOR INSTRUMENTS DIAGRAMS LINES (sheet 2)					
				Revision	Status	Folio
COMPANY Doc. ref.	SD-EP-HVA-803-Sh2					
Contractor ref.	-			Electronic Filename : SD-EP-HVA-803-Sh2.dwg		

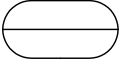
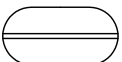
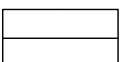
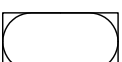
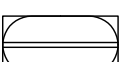
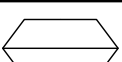
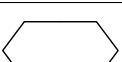
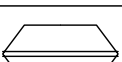
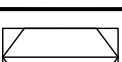
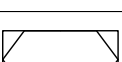
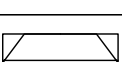
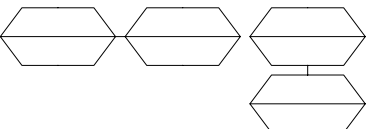


3.2 Instruments (3 sheets)

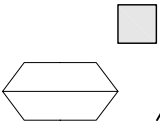
SD-EP-HVA-803-Sh3.dwg

SD-EP-HVA-803-Sh4.dwg

SD-EP-HVA-803-Sh5.dwg

CONNECTIONS DEFINITIONS		
INSTRUMENT TYPE	DEFINITION	SYMBOL
DISCRETE INSTRUMENT	INSTRUMENT INSTALLED INSIDE CONTROL ROOM	 <i>I01</i>
	INSTRUMENT FIELD MOUNTED	 <i>I02</i>
	AUXILIARY LOCATION	 <i>I03</i>
SHARED DISPLAY, SHARED CONTROL	INSTRUMENT INSTALLED INSIDE CONTROL ROOM	 <i>I04</i>
	INSTRUMENT FIELD MOUNTED	 <i>I05</i>
	AUXILIARY LOCATION	 <i>I06</i>
COMPUTER FUNCTION	INSTRUMENT INSTALLED INSIDE CONTROL ROOM	 <i>I07</i>
	INSTRUMENT FIELD MOUNTED	 <i>I08</i>
	AUXILIARY LOCATION	 <i>I09</i>
PROGRAMMABLE LOGIC CONTROLLER	INSTRUMENT INSTALLED INSIDE CONTROL ROOM	 <i>I10</i>
	INSTRUMENT FIELD MOUNTED	 <i>I11</i>
	AUXILIARY LOCATION	 <i>I12</i>
INSTRUMENTS SHARING COMMON HOUSING		
AVAILABLE FOR EVERY INSTRUMENT		

NOTE 1 : STATUS AT INPUTS (0 OR 1) OF INTERLOCKING MUST BE INDICATED, TO OBTAIN STATUS (0 OR 1) INDICATED AT OUTPUT.

"BLOCK-FUNCTION" SYMBOLS LIST ASSOCIATED WITH CONTROLLERS, COMPUTING DEVICES, CONVERTERS, RELAYS.		
FUNCTION	DEFINITION	SYMBOL
SUMMING	THE OUTPUT EQUALS THE ALGEBRAIC SUM OF THE INPUTS (THE INPUTS MAY BE LABELLED WITH POSITIVE OR NEGATIVE SIGNS).	 <i>I30</i>
AVERAGING	THE OUTPUT EQUALS THE ALGEBRAIC SUM OF THE INPUTS DIVIDED BY THE QUANTITY OF INPUTS.	 <i>I31</i>
DIFFERENCE	THE OUTPUT EQUALS THE ALGEBRAIC DIFFERENCE OF THE INPUTS.	 <i>L_011</i>
PROPORTIONAL	THE OUTPUT IS DIRECTLY PROPORTIONAL TO THE INPUT. IN CASE OF A VOLUME BOOSTER, "K" MAY BE REPLACED BY 1:1, FOR FIXED GAINS, 2:1, 3:1, ETC MAY BE SUBSTITUTED FOR K.	   <i>L_011</i>
INTEGRAL	THE OUTPUT VARIES IN ACCORDANCE WITH BOTH MAGNITUDE AND DURATION OF THE INPUT. THE OUTPUT IS PROPORTIONAL TO THE TIME INTEGRAL OF THE INPUTS.	 <i>I34</i>
DERIVATIVE	THE OUTPUT IS PROPORTIONAL TO THE RATE OF CHANGE (DERIVATIVE) OF THE INPUT.	 <i>I35</i>
MULTIPLYING	THE OUTPUT EQUALS THE PRODUCT OF THE INPUTS.	 <i>L_011</i>
DIVIDING	THE OUTPUT EQUALS THE QUOTIENT OF THE TWO INPUTS.	 <i>L_011</i>
ROOT EXTRACTION	THE OUTPUT EQUALS THE ROOT (I. E, CUBE ROOT, FOURTH ROOT, 3/2 ROOT, ETC.) OF THE INPUT. IF n IS OMITTED, A SQUARE ROOT IS ASSUMED.	 <i>I38</i>
EXPONENTIAL	THE OUTPUT EQUALS THE INPUT RAISED TO A POWER (I.E., SECOND, THIRD, FOURTH, ETC.).	 <i>I39</i>
NON LINEAR or UNSPECIFIED FUNCTION	THE OUTPUT EQUALS SOME NON LINEAR OR UNSPECIFIED FUNCTION OF THE INPUT.	 <i>L_011</i>
TIME FUNCTION	THE OUTPUT EQUALS THE INPUT TIMES SOME FUNCTION OF TIME OR EQUALS SOME FUNCTION OF TIME ALONE.	 <i>L_011</i>

HIGH SELECTING	THE OUTPUT IS EQUAL TO THE GREATER OF THE INPUTS.	 I42																		
LOW SELECTING	THE OUTPUT IS EQUAL TO THE LESSER OF THE INPUTS.	 I43																		
HIGH LIMITING	THE OUTPUT EQUALS THE INPUT OR THE HIGH LIMIT VALUE WHICHEVER IS LOWER.	 I44																		
LOW LIMITING	THE OUTPUT EQUALS THE INPUT OR THE LOW LIMIT VALUE WHICHEVER IS HIGHER.	 I45																		
REVERSE PROPORTIONAL	THE OUTPUT IS REVERSELY PROPORTIONAL TO THE INPUT.	 L_011																		
VELOCITY LIMITER	THE OUTPUT EQUALS THE INPUT AS LONG AS THE RATE OF CHANGE OF THE INPUT DOES NOT EXCEED A LIMIT VALUE. THE OUTPUT WILL CHANGE AT THE RATE ESTABLISHED BY THIS LIMIT UNTIL THE OUTPUT AGAIN EQUALS THE INPUT.	 I47																		
BIAS	THE OUTPUT EQUALS THE INPUT PLUS (OR MINUS) SOME ARBITRARY VALUE (BIAS).	  L_011																		
CONVERT	THE FORM OF THE OUTPUT SIGNAL IS DIFFERENT FROM THAT OF THE INPUT : OUTPUT / INPUT <table><tr><td>E :</td><td>VOLTAGE</td></tr><tr><td>I :</td><td>CURRENT</td></tr><tr><td>P :</td><td>PNEUMATIC</td></tr><tr><td>A :</td><td>ANALOGIC</td></tr><tr><td>B :</td><td>BINARY</td></tr></table> OUTPUT / INPUT <table><tr><td>H :</td><td>HYDRAULIC</td></tr><tr><td>O :</td><td>ELECTROMAGNETIC – SONIC</td></tr><tr><td>R :</td><td>RESISTANCE (ELECTRIC)</td></tr><tr><td>D :</td><td>DIGITAL</td></tr></table>	E :	VOLTAGE	I :	CURRENT	P :	PNEUMATIC	A :	ANALOGIC	B :	BINARY	H :	HYDRAULIC	O :	ELECTROMAGNETIC – SONIC	R :	RESISTANCE (ELECTRIC)	D :	DIGITAL	 L_011
E :	VOLTAGE																			
I :	CURRENT																			
P :	PNEUMATIC																			
A :	ANALOGIC																			
B :	BINARY																			
H :	HYDRAULIC																			
O :	ELECTROMAGNETIC – SONIC																			
R :	RESISTANCE (ELECTRIC)																			
D :	DIGITAL																			

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		TOTAL EXPLORATION & PRODUCTION CLIENT PROJET					
		HVAC D&ID / P&ID SYMBOLS FOR INSTRUMENTS DIAGRAMS INSTRUMENTS (sheet 1)					
					Revision	Status	Folio
COMPANY Doc. ref.		SD-EP-HVA-803-Sh3					
Contractor ref.		—			Electronic Filename : SD-EP-HVA-803-Sh3.dwg		

SYMBOLS COMPLEMENTARY INFORMATION

WV/WV
SSS

WV : TYPE OF DISPLAY (COMBINATION OF ONE OR SEVERAL ITEM(S))

LED : LED

VDU : VIDEO DISPLAY UNIT

ANP : ANNUNCIATOR PANEL

PRN : PRINTER

IND : INDICATOR OF VALUE

SYN : SYNTHESIS LED

SSS : INDICATION OF STATUS

1 : ON

2 : OFF

4 : ABSENCE OF FAULT

8 : FAULT

INDICATION IS SUM OF THE ABOVE USED STATUS.

COMPLEMENTARY INFORMATION FOR COMMAND, ANALYSIS (OPTIONAL)

XXX

XXX : COMPLEMENTARY INFORMATION USED ONLY WHEN :

– COMMAND –

H : ON/START

L : OFF/STOP

HL : ON/OFF

MSA : MANUAL/STOP/AUTO.

1/2 : SWAPPING

– ANALYSIS –

XXX VALUES : ANALYSIS TYPE

COMPLEMENTARY INFORMATION FOR SENSORS AND / OR CONTROLLERS (OPTIONAL)

XXX

COMPLEMENTARY INFORMATION USED ONLY WHEN SIGNAL IS SENT TO PLC (COMBINATION OF ITEMS WHEN NECESSARY)

XXX VALUE DEFINES LEVEL OF SIGNAL WHICH LEADS AN ACTION ON EQUIPMENT.

XXX VALUE

H : ACTION WHEN HIGH LEVEL OF SIGNAL

L : ACTION WHEN LOW LEVEL OF SIGNAL

AL : ALARM WHEN LEVEL OF SIGNAL IS LOW

AH : ALARM WHEN LEVEL OF SIGNAL IS HIGH

WHEN ACTION TO EQUIPMENT OTHER THAN PLC,
LINE MUST BE DRAWN FROM INSTRUMENT TO EQUIPMENT.

COMPLEMENTARY INFORMATION FOR SENSORS, SWITCHES, CONTROLLERS (OPTIONAL)

XXX/ZZ

XXX VALUE

SEE "COMPLEMENTARY INFORMATION FOR SENSORS AND / OR CONTROLLERS (ABOVE PARAGRAPH). IN CASE OF SWITCH, "XXX" IS NOT USED BUT "/" MUST BE MAINTAINED.

ZZ VALUE DEFINES ACTION ON FINAL EQUIPMENT RECEIVING THE COMMAND.

ZZ VALUE

H : LEAD "ON" OF EQUIPMENT

L : LEAD "OFF" OF EQUIPMENT

DE : SIGNAL DECREASE

IN : SIGNAL INCREASE

SYMBOLS LIST ATTACHED TO CONNECTION LINES	
DESIGNATION	SYMBOL
PURGE OR FLUSHING DEVICE	
RESET FOR LATCH TYPE ACTUATOR	
UNDEFINED INTERLOCK LOGIC	
INTERLOCKING : "AND" FUNCTION	
INTERLOCKING : "OR" FUNCTION	

LOGIC OUTPUT

150

(SUPPLIER OF SIGNAL)

ONE LINE PER OUTPUT

LOGIC INPUT

150

(SUPPLIER OF SIGNAL)

XXX= TYPE OF LOGIC CONTROLLER

YY= SIGNAL USING

HVA : HVAC LOGIC CONTROLLER

H : ACTION WHEN HIGH LEVEL

F&G : FIRE & GAS SYSTEM

L : ACTION WHEN LOW LEVEL

PCS : PROCESS CONTROL SYSTEM

AL : ALARM WHEN LOW LEVEL

PSS : PROCESS SAFETY SYSTEM

AH : ALARM WHEN HIGH LEVEL

SSS : SAFETY SHUTDOWN SYSTEM

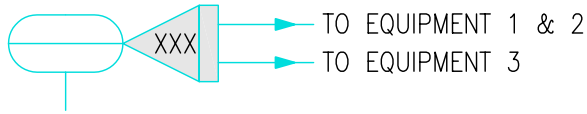
IN : INCREASE THE SIGNAL

DE : DECREASE THE SIGNAL

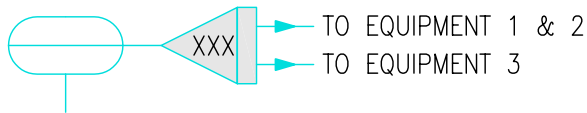


SIGNAL FROM CONTROLLER TO EQUIPMENT 1 & 2 IS ISSUED FROM A COMMON OUTPUT.

SYMBOL  IS OPTIONAL WHEN ONLY ONE OUTPUT



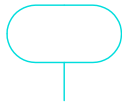
CONTROLLER AS TWO OUTPUTS. ONE IS SENT TO EQUIPMENT 1 & 2. A SECOND OUTPUT IS SENT TO EQUIPMENT 3.



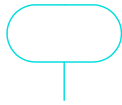
CONTROLLER AS ONLY ONE OUTPUT. SIGNAL FROM CONTROLLER IS RELAYED.

SYMBOL  IS NOT ATTACHED TO INSTRUMENT

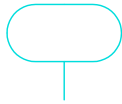
ONE RELAY CONTACT IS SENT TO EQUIPMENT 1 & 2. A SECOND RELAY CONTACT IS SENT TO EQUIPMENT 3.



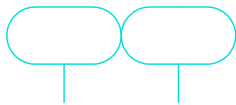
CO2 ANALISER WITH RESULT INDICATOR.
ANALYSER LOCATED IN FIELD.



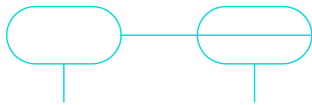
CO2 ANALISER WITH INDICATOR AND CONTROL.
ANALYSER LOCATED IN FIELD.



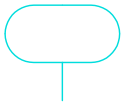
CO2 ANALISER – CONTROLLER OUTPUT ACTIVATED WHEN CO2 HIGH LEVEL.
ANALYSER LOCATED IN FIELD.



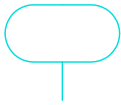
CO2 ANALISER – CONTROLLER SUPPLIES ALARM WHEN CO2 HIGH LEVEL – SENSOR AND CONTROLLER IN COMMON HOUSING.
ANALYSER LOCATED IN FIELD.



CO2 ANALISER – CONTROLLER SUPPLIES ACTION WHEN CO2 HIGH LEVEL– SENSOR AND CONTROLLER IN SEPARATED HOUSING.
SENSOR IN FIELD, ANALYSER IN CONTROL ROOM.



THERMOSTAT – ACTION WHEN TEMPERATURE DECREASE.
LOCATED IN FIELD.



THERMOSTAT – ALARM WHEN TEMPERATURE DECREASE.
LOCATED IN FIELD.

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COMPANY Doc. ref.	SD-EP-HVA-803-Sh5					
Contractor ref.	-			Electronic Filename :	SD-EP-HVA-803-Sh5.dwg	



3.3 Actuators and motors (1 sheet)

SD-EP-HVA-803-Sh6.dwg

ACTUATORS	
DEFINITION	SYMBOL
ELECTRIC MOTOR DRIVE	 RB050
ELECTRIC MOTOR DRIVE – FAIL SAFE OPEN (RETURN SPRING)	 RB051
ELECTRIC MOTOR DRIVE – FAIL SAFE CLOSED (RETURN SPRING)	 RB052
ELECTRIC MOTOR DRIVE BLOCKED IN CASE OF FAILURE OF ACTUATING ENERGY	 RB053
SOLENOID DRIVE	 RB054
PISTON DRIVE	 RB055
PISTON DRIVE RETURN TO INITIAL POSITION WHEN FAILURE OF ACTUATING ENERGY	 RB056
FLOATING DRIVE	 RB057
OPENING AT RISING LEVEL	 RB058
OPENING AT FALLING LEVEL	 RB059

DRIVING MOTORS	
DEFINITION	SYMBOL
ELECTRIC MOTOR DRIVE	 RB070
ELECTRIC MOTOR DRIVE 1 PHASE – VAC	 RB071
ELECTRIC MOTOR DRIVE 3 PHASES – VAC	 RB071
ELECTRIC MOTOR DRIVE DC	 RB073

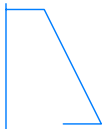
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				Scale	Folio	
COMPANY Doc. ref.	SD–EP–HVA–803–Sh6					
Contractor ref.	–			Electronic Filename :	SD–EP–HVA–803–Sh6.dwg	



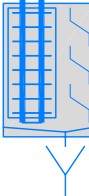
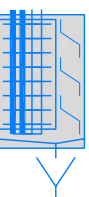
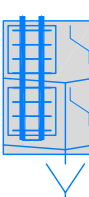
3.4 Aeraulic equipment (2 sheets)

SD-EP-HVA-803-Sh7.dwg

SD-EP-HVA-803-Sh13.dwg

EQUIPMENT	
DEFINITION	SYMBOL
PRESSURE RELIEF DAMPER / BACK DRAFT DAMPER	 V001
SHUT-OFF DAMPER / BALANCING DAMPER	 V002
FIRE DAMPER / GAS DAMPER	 V003
FIRE DAMPER / GAS DAMPER ON FLOOR OR CEILING	 V004
BIRD SCREEN	 V005
LOUVRE / DROPLET SEPARATOR / RADIATION SCREEN	 V006
COALESCER FILTER	 V007
GOOSE NECK OR 90° ELBOW	 V008
AIR TRANSFERT GRILLE	 V009
PRE-FILTER	 V010

FILTER	 V011
PRE-FILTER INSTALLED INSIDE CASING (MOUNTING ON FRAME)	AIR FLOW  V012
FILTER INSTALLED INSIDE A CASING (MOUNTING ON FRAME)	AIR FLOW  V013
CASING	 V014
CASING	 V015
CASING EQUIPPED WITH CONDENSATE DRAIN	 V016
HEATING / COOLING COIL (FINNED TUBE)	 V017
HEATING COIL INSIDE CASING	 V018

COOLING COIL WITH DROPLET SEPARATOR AND CONDENSATE DRAIN	 V019
DIRECT EXPANSION COIL WITH DROPLET SEPARATOR AND CONDENSATE DRAIN	 V020
TWO IMBRICATED DIRECT EXPANSION COILS WITH DROPLET SEPARATOR AND CONDENSAT DRAIN	 V021
COOLING COIL WITH DROPLET SEPARATOR AND DOUBLE CONDENSAT DRAIN	 V022
FAN	 V023
CENTRIFUGAL FAN	 V024
AXIAL FAN	 V025
ORIFICE FOR MEASUREMENT (TEMPERATURE, RELATIVE HUMIDITY, PITOT)	 V026
RETURN AIR GRILLE (IN OCCUPIED AREA)	 V027

RECTANGULAR, CIRCULAR, SQUARE DIFFUSER (IN OCCUPIED AREA)	 V028
RAISED FLOOR GRILLE (PERFORATED GRILLE) BLOWING AIR FROM RAISED FLOOR SPACE	 V029
AIR HANDLING UNIT ELECTRICAL HEATING COIL (INCLUDING SCREEN TO AVOID RADIATIONS)	 V030
FLEXIBLE DUCT	 V031
SOUND ATTENUATOR	 V032
CONSTANT VOLUME BOX WITH DUCT HEATER	 V033
CONSTANT VOLUME BOX	 V034
HEATER FOR DUCT	 V035
BLAST RESISTANT DAMPER	 V036
PERFORATED GRILLE FOR BALANCING	 V037
FIRE RATED DUCTING	 V038

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COMPANY Doc. ref.						
Contractor ref.						

EQUIPMENT	
DEFINITION	SYMBOL
ACCESS PANEL INSIDE DUCT	DUCT LINE  V039

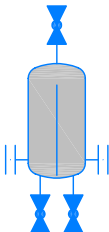
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Contractor ref.	-			Electronic Filename :	SD-EP-HVA-803-Sh13.dwg	



3.5 Piping (1 sheet)

SD-EP-HVA-803-Sh8.dwg

PIPE ACCESSORIES	
DEFINITION	SYMBOL
PIPING COMPENSATOR	 RB080
REDUCER	 RB081
FLANGES	 RB082
SIGHT GLASS	 RB083
SIGHT GLASS WITH HUMIDITY INDICATOR	 RB084
MUFFLER	 RB085
ORIFICE PLATE	 RB086
STEAM TRAP	 RB087
FUNNEL	 RB088
VENTING DEVICE	 RB089

VENTING DEVICE TO OUTSIDE OF BUILDING	 RB090
EXPANSION TANK	 RB091
FEMALE PLUG	 RB093
MALE PLUG	 RB092
VENT OR AIR INLET (INCLUDING GRATE TO PREVENT BIRD ENTRANCE)	 RB094
BUFFER TANK	 RB096
TANK	 RB097
GLOBE VALVE CLOSED AT NORMAL OPERATION	 RB004
BALL VALVE OPEN AT NORMAL OPERATION	 RB005
BALL VALVE CLOSED AT NORMAL OPERATION	 RB006

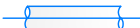
THREE-WAYS VALVE	 RB007
BUTTERFLY VALVE OPEN AT NORMAL OPERATION	 RB008
BUTTERFLY VALVE CLOSED AT NORMAL OPERATION	 RB009
FOUR-WAYS VALVE	 RB010
BALANCING VALVE WITH MEASUREMENT SOCKETS	 RB011
PRESSURE REDUCING VALVE DRIVEN BY FLUID	 RB012

PUMPS	
DEFINITION	SYMBOL
CENTRIFUGAL PUMP	 RB130

FILTERS	
DEFINITION	SYMBOL
STRAINER FILTERS «T»	 RB030
STRAINER FILTERS «Y»	 RB031

CHECK VALVES	
DEFINITION	SYMBOL
GENERAL CHECK VALVE	 RB021
LIFT CHECK VALVE	 RB022
ANGLE CHECK VALVE	 RB023
SWING CHECK VALVE	 RB024

MANUAL VALVES	
DEFINITION	SYMBOL
GENERAL VALVE OPEN AT NORMAL OPERATION	 RB001
GENERAL VALVE CLOSED AT NORMAL OPERATION	 RB002
GLOBE VALVE OPEN AT NORMAL OPERATION	 RB003

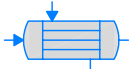
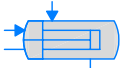
PIPING INSULATION	
DEFINITION	SYMBOL
THERMAL INSULATION	 RB130

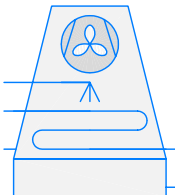
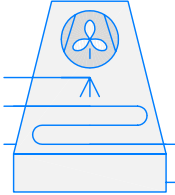
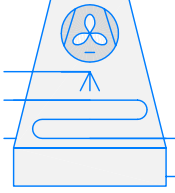
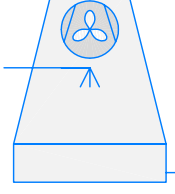
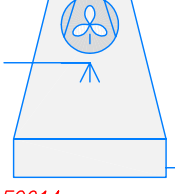
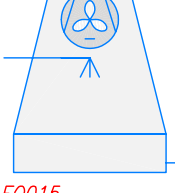
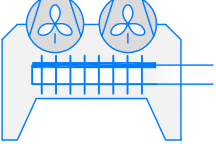
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3.6 Exchangers (1 sheet)

SD-EP-HVA-803-Sh9.dwg

EXCHANGER	
DEFINITION	SYMBOL
TUBE BUNDLE HEAT EXCHANGER SHELL AND TUBE	 <i>EQ001</i>
FLOATING HEAD TUBE BUNDLE HEAT EXCHANGER	 <i>EQ002</i>
HEAT EXCHANGER WITH TUBE COIL	 <i>EQ003</i>
DOUBLE PIPE HEAT EXCHANGER	 <i>EQ004</i>
PLATE TYPE HEAT EXCHANGER	 <i>EQ005</i>
FINNED COIL HEAT EXCHANGER (WATER OR THERMAL FLUID)	 <i>EQ006</i>
DIRECT EXPANSION COIL EXCHANGER	 <i>EQ007</i>
SPRAY	 <i>EQ008</i>
TUBE COIL HEAT EXCHANGER	 <i>EQ009</i>

EVAPORATIVE FLUID COOLER CLOSED SYSTEM	 <i>EQ010</i>
EVAPORATIVE FLUID COOLER (WITH AXIAL FAN) – CLOSED SYSTEM	 <i>EQ011</i>
EVAPORATIVE FLUID COOLER (WITH CENTRIFUGAL FAN) – CLOSED SYSTEM	 <i>EQ012</i>
EVAPORATIVE FLUID COOLER – OPEN SYSTEM	 <i>EQ013</i>
EVAPORATIVE FLUID COOLER (WITH AXIAL FAN) – OPEN SYSTEM	 <i>EQ014</i>
EVAPORATIVE FLUID COOLER (WITH CENTRIFUGAL FAN) – OPEN SYSTEM	 <i>EQ015</i>
AIR COOLED CONDENSER WITH AXIAL FAN	 <i>EQ016</i>

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3.7 Refrigerating equipment (1 sheet)

SD-EP-HVA-803-Sh10.dwg

REFRIGERATING PIPING ACCESSORIES	
DEFINITION	SYMBOL
FIXED BED FILTER	 <i>RB100</i>
CARTRIDGE FILTER	 <i>RB101</i>

REFRIGERATING COMPRESSORS	
DEFINITION	SYMBOL
RECIPROCATING COMPRESSOR	 <i>RB110</i>
ROTARY PISTON COMPRESSOR	 <i>RB111</i>
TURBO COMPRESSOR	 <i>RB112</i>
SCROLL COMPRESSOR	 <i>RB113</i>
ROLLER VANE COMPRESSOR	 <i>RB114</i>
SCREW COMPRESSOR	 <i>RB115</i>
CENTRIFUGAL PUMP FOR REFRIGERANT	 <i>RB130</i>

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3.8 Pneumatic (1 sheet)

SD-EP-HVA-803-Sh11.dwg

DISTRIBUTION	
DEFINITION	SYMBOL
SLIDE VALVE 3/2	 <i>PN004</i>

REGULATION	
DEFINITION	SYMBOL
PRESSURE REGULATOR	 <i>PN001</i>

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3.9 Miscellaneous (1 sheet)

SD-EP-HVA-803-Sh12.dwg

DEFINITION	SYMBOL
DRIP PAN	 MI001
OIL / WATER TRAP	 MI002
HVAC MCC	HVAC MCC MI003
HVAC CONTROL PANEL	HVAC CC MI004

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