



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)

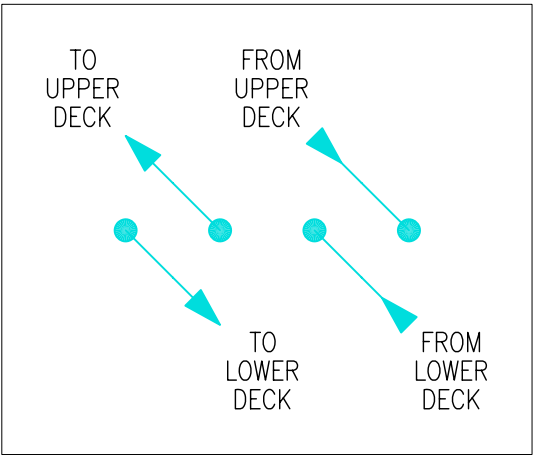
3.1 Lines (2 sheets)

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
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			
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			HVAC D&I / P&I			
			SYMBOLS FOR INSTRUMENTS DIAGRAMS			
			LINES (sheet 1)			
				Revision	Status	Class
				Scale	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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	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.	-			SD-EP-HVA-803-Sh2.dwg		

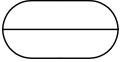
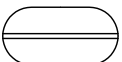
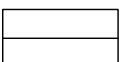
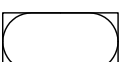
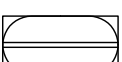
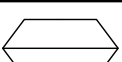
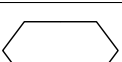
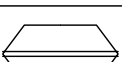
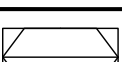
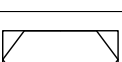
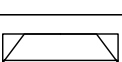
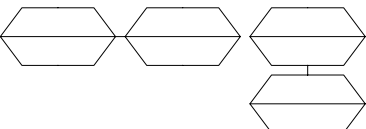


3.2 Instruments (3 sheets)

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	Class	Scale	Folio
COMPANY Doc. ref.	SD-EP-HVA-803-Sh3								
Contractor ref.	—				Electronic Filename :		SD-EP-HVA-803-Sh3.dwg		