INSTRUMENTATION IDENTIFICATION LETTERS

(USED INSIDE INSTRUMENT BALLOONS) (FROM ISA"TABLE 2")

FIRST LETTER	MEASURED OR INITIAL VARIABLE	CONTROLLING DEVICES: RECORDING	CONTROLLING DEVICES: INDICATING	CONTROLLING DEVICES: BLIND	CONTROLLING DEVICES: SELF-ACTUATED CONTROL VALVE	READOUT DEVICES: RECORDING	READOUT DEVICES: INDICATING	SWITCHES & ALARMS DEVICES *: HIGH	SWITCHES & ALARMS DEVICES *: LOW	SWITCHES & ALARMS DEVICES *: COMBO	TRANSMITTERS: RECORDING	TRANSMITTERS: INDICATING	TRANSMITTERS: BLIND	DEVICES: SOLENOIDS, RELAYS & COMPUTING	DEVICES: PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE GLASS	SAFETY DEVICE	FINAL ELEMENT
A	ANALYZER	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW			AV
B	BURNER/COMBUSTION	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW	BG		BZ
D	USER'S CHOICE																			
E	VOLTAGE	ERC	EIC	EC		ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE					EZ
F	FLOW RATE	FRC	FIC	FC	FCV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP		FG		FV
FQ	FLOW QUANTITY	FQRC	FQIC			FQR	FQI	FQSH	FQSL			FQIT	FQT	FQY	FQE					FQV
FF	FLOW RATIO	FFRC	FFIC	FFC		FFR	FFRI	FFSH	FFSL						FE					FFV
H	HAND		HIC	HC						HS										HV
I	CURRENT	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE					IZ
J	POWER	JRC	JIC			JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE					JV
K	TIME	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE					KV
L	LEVEL	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG		LV
M	USER'S CHOICE																			
N	USER'S CHOICE																			
O	USER'S CHOICE																			
P	PRESSURE/VACUUM	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP			PSV	PV
PD	PRESSURE, DIFFERENTIAL	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	PDT	PDY	PE	PP				PDV
Q	QUANTITY	QRC	QIC			QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE					QZ
R	RADIATION	RRC	RIC	RC		RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE		RW			RZ
S	SPEED/FREQUENCY	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSHL	SRT	SIT	ST	SY	SE					SV
T	TEMPERATURE	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TW		TSE	TV
TD	TEMPERATURE, DIFFERENTIAL	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TE	TP	TW			TDV
U	MULTIVARIABLE					UR	UI							UY						UV
V	VIBRATION/MACHINERY ANALYSIS					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE					VZ
W	WEIGHT/FORCE	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE					WZ
WD	WEIGHT/FORCE DIFFERENTAL	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	WDT	WDY	WE					WDZ
X	UNCLASSIFIED																			
Y	EVENT/STATE/PRESENCE		YIC	YC		YR	YI	YSH	YSL				YT	YY	YE					YZ
Z	POSITION/DIMENSION	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE					ZV
ZD	GAUGING/DEVIATION	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDRT	ZDIT	ZDT	ZDY	ZDE					ZDV

NOTE: ADDITIONAL INSTRUMENT ABBREVIATIONS, IF REQUIRED SHALL USE THIS TABLE AS A GUIDE.

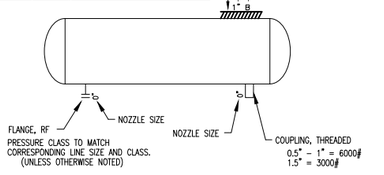
"H", "L", "HH", OR "LL" SUFFIXED TO TAGS FOR SWITCHES AND RELATED DEVICES INDICATE ALARM OR SHUTDOWN AS FOLLOWS:

H = HIGH, L = LOW } ALARM — HH = HIGH HIGH, LL = LOW LOW } SHUTDOWN

FD = FIRE DETECTOR, FDA = FAILURE DETECTION ALARM, FFD = FAILURE FIRE DETECTOR
GD = GAS DETECTOR, GDA = GAS DETECTION ALARM, FACS = FIRE ALARM CONTROL SYSTEM
SD = SMOKE DETECTOR, SDA = SMOKE DETECTION ALARM, HA = HORN ALARM
PB = PUSH BUTTON, PBA = PUSH BUTTON ALARM, LA = LIGHT ALARM
FA = FAILURE ALARM, UA = UNIT ALARM

INSULATION SYMBOLS

SYMBOL	SERVICE	MATERIAL
C	COLD	URETHANE, SEALED
F	COLD	FOAM GLASS, SEALED
U	HOT	URETHANE, BELOW 225°F
H	HOT	CALCIUM SILICATE
B	HOT	CAL. SIL., PERSONNEL PROTECTION



INSTRUMENT FUNCTION SYMBOLS

- LOCAL MOUNTED INSTRUMENT
- PRIMARY LOCATION, PANEL MOUNTED INSTRUMENT (FRONT OF PANEL)
- AUXILIARY LOCATION, PANEL MOUNTED INSTRUMENT (FRONT OF PANEL)
- REMOTE PANEL MOUNTED INSTRUMENT (REAR OF PANEL)
- LOCAL PANEL MOUNTED INSTRUMENT (REAR OF PANEL)
- HUMAN MACHINE INTERFACE (HMI) WITH COMMON/SHARED DISPLAY (NOTE 1)
- (DCS) DISTRIBUTED CONTROL SYSTEM (PROGRAMMABLE LOGIC CONTROLLER)
- UNIT CONTROL PANEL (UCP) (PROGRAMMABLE LOGIC CONTROLLER)
- LOCAL CONTROL STATION (H O A)
- START/STOP PUSHBUTTON SWITCH (S S)

PLC I/O: AI=ANALOG INPUT, DI=DIGITAL INPUT, AO=ANALOG OUTPUT, DO=DIGITAL OUTPUT

NOTE:
1. ONLY SHOWING COMMON/SHARED DISPLAYS FOR ALARM CONDITIONS. COMMON/SHARED DISPLAYS FOR INDICATION ARE NOT SHOWN ON P&ID'S FOR CLARITY.

LEGEND AND SYMBOLS

RELAY FUNCTION DESIGNATIONS

- TOTALIZE (Σ)
- SQUARE ROOT
- LOW SIGNAL SELECT (<)
- HIGH SIGNAL SELECT (>)
- CURRENT REPEATER
- CURRENT TO PRESSURE TRANSDUCER (I/P)
- PNEUMATIC TO CURRENT TRANSDUCER (P/I)
- RESISTANCE TO CURRENT CONVERTER
- VOLTAGE TO CURRENT
- UNDEFINED CONTROL LOGIC (USUALLY HIGH PRESSURE GAS OR GAS/HYD. VALVE ACTUATORS)
- INTERLOCK LOGIC (I)

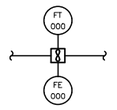
EXAMPLE: Σ

LINE SYMBOLS

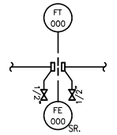
- LINEA DE PROCESO
- LINEA DE PROCESO SECUNDARIO
- SKID LIMITS (F) FURNISHED W/EQUIPMENT
- SOFTWARE OR DATA LINK
- INSTRUMENT AIR (OR GAS) TUBING
- INSTRUMENT ELECTRICAL SIGNAL
- INSTRUMENT ELECTROMAGNETIC SIGNAL
- INSTRUMENT CAPILLARY TUBING
- HYDRAULIC SIGNAL
- HEAT TRACE (ELECTRIC)
- AIR SUPPLY (A.S.)
- INSULATION DESIGNATION FOR EQUIPMENT (1" H)
- SPECIALTY PIPING ITEM (SP)

FLOW INSTRUMENTS

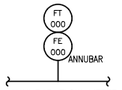
DENOTES: FI, FIC, FR, FS, FT etc.



TURBINE FLOW METER



ORIFICE FLOW METER (SENIOR FITTING)



ANNUBAR FLOW METER

INLINE FLOW METER

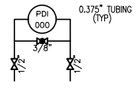
- SONIC FLOWMETER
- TURBINE METER
- POSITIVE DISPLACEMENT METER
- PITOT TUBE (AVERAGE)
- PITOT TUBE (SINGLE PORT)

PRESSURE INSTRUMENTS

DENOTES: PC, PI, PT, PSH, PSL, etc.

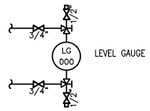
(1/2" MNPT x FNPT NEEDLE VALVE)

PRESSURE CONNECTION

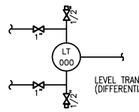


LEVEL INSTRUMENTS

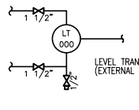
DENOTES: H – HIGH or L – LOW



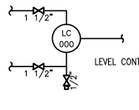
LEVEL GAUGE



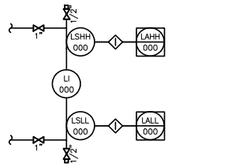
LEVEL TRANSMITTER (DIFFERENTIAL PRESSURE TYPE)



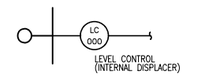
LEVEL TRANSMITTER (EXTERNAL DISPLACER CHAMBER)



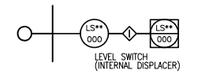
LEVEL CONTROLLER



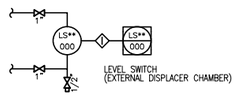
MAGNETIC LEVEL INDICATOR w/ LEVEL SWITCHES ATTACHED



LEVEL CONTROL (INTERNAL DISPLACER)



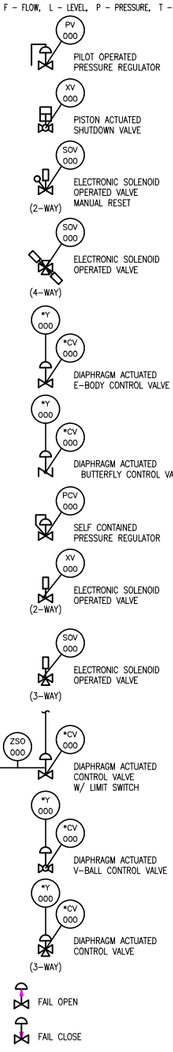
LEVEL SWITCH (INTERNAL DISPLACER)



LEVEL SWITCH (EXTERNAL DISPLACER CHAMBER)

CONTROL VALVES

DENOTES: FV, LV, PV, TV, etc.
(DENOTES: F – FLOW, L – LEVEL, P – PRESSURE, T – TEMPERATURE)



PETROSUR
INGENIERIA EN SERVICIOS PETROLEROS

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Teléfonos: (03) 531700-01
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Casilla de correo: 2760 - Santa cruz - Bolivia
http://www.petrosursrl.com
e-mail: petrosur@petrosur.com

DOCUMENTOS DE REFERENCIA

IPE-PROY. No.: 2010-1200
ARCHIVO : LP-E07-EC-DG 0118-02 de 02=2.dwg

NOTAS GENERALES

1. PLANOS NO MODIFICADOS EN PROYECTO DE RE - INGENIERIA

YPFB TRANSPORTE S.A.

GERENTE DE PROY.: Ing.Gonzalo Arce Ortiz
REVISOR 1: Ing. Jorge Dorado
REVISOR 2: Ing. Juan Pablo Pino
REVISOR 3: Ing. Fernando Mérida

CONTRATISTA

GERENTE DE PROY.: Ing. J. Rojas
REVISOR 1: Ing. David Roca
REVISOR 2: Ing. J. Ibarra
REVISOR 3:

FECHA	DIBUJO	REVISOR: Calidad	REVISOR: Técnico	APROBO	REV.N°	DESCRIPCION	EMPRESA
09-Abr-11	M. Aldayuz	J. Ibarra	D. Roca	J. Rojas	3	Según Construcción	PETROSUR SRL.
08-Sep-10	R. Estremadoiro	H. Callau	A. Rosales	A. Rosales	2	Re-Ingeniería Aprovado Para Construcción	IPE-BOLIVIA
28-Jul-08	R. Estremadoiro	W.Chavez	A. Rosales	A. Rosales	0	Diseño Para Construcción	IPE-BOLIVIA

YPFB Transporte S.A.

Ubicación: Estación Sica Sica (La Paz)

Etapa: Conforme a Obra

Código: LP-E07-EC/PR 0118-02 de 02

Proyecto: Instalacion 3° Compresor Sica Sica
Diseño para Construcción

Escala: S/E

Título del Plano: P & ID Simbolos y Leyendas

Formato: Tabloide: 279 mm x 432 mm