LINE TYPES

SYMBOL	DESCRIPTION
	PROCESS FLOW LINE
	INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
	UNDEFINED DIGNAL
	PNEUMATIC SIGNAL
	ELECTRIC SIGNAL
	HYDRALIC SIGNAL
	CAPILLARY TUBE
	ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
	ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)
	INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK
	MECHANICAL LINK
OPTIONAL BINARY (ON–OFF) SYMBOLS	
	PNEUMATIC BINARY SIGNAL
	ELECTRIC BINARY SIGNAL
	ELECTRICAL HEAT TRACING
	STEAM HEAT TRACING
XX	FP – FLOOR PENETRATION RP – ROOF PENETRATION WP – WALL PENETRATION SB – SYSTEM BREAK

INSTRUMENT/FUNCTION SYMBOLS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	XX XXX	XX XXX	XX XXX	XX XXX
SHARED DISPLAY, SHARED CONTROL	XX XXX	XX XXX	XX XXX	XX XXX
COMPUTER FUNCTION	XX XXX	XX XXX	XX XXX	XX XXX
PROGRAMMABLE LOGIC CONTROL	XX XXX	XX XXX	XX XXX	XX XXX

	FLOW INDICATOR	XX XXX XX XXX	INSTRUMENTS SHARING COMMON HOUSING
X XX	PANEL MOUNTED PATCHBOARD POINT 12		

INSTRUMENTATION IDENTIFICATION TABLE

J–1 COMPONENT FUNCTION NUMBER
J–2 COMPONENT SEQUENCE NUMBER
J–2A COMPONENT SEQUENCE # CONT'D
J–3 VENDOR DESIGNATION
J–4 PANEL NUMBER
J–5 APPLICABLE NOTES
J–6 SYSTEM ACRONYM
J–7 ASME TEST SYMBOL FOR TEST ONLY OR TEST PLUS NORMAL USE
J–8 SET–POINT(S)
J–9 FUNCTION (SEE INSTRUMENT/FUNCTION SYMBOLS)

NOTE:

INSTRUMENTATION FUNCTION IDENTIFIERS (J–1) AND FUNCTION SYMBOLS PER ANSI/ISA S5.1.

VALVE & INSTRUMENTATION FUNCTION IDENTIFIERS (SELECTED)

First–Letters	Initiating, Measured, or Controlled Variable	Controllers			Valves	Readout Device		Switches and Alarm Devices *			Transmitters			Solenoids, Relays, Computing Devices	Primary Element	Test Point	Well or Probe	Viewing Device, Glass	Safety Device	Final Element
		Recording	Indicating	Blind		Recording	Indicating	High**	Low	Comb	Recording	Indicating	Blind							
A	Analysis	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
C	Conductivity		CIC	CC										CCD	CE					
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 FICV	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	FFI	FFSH	FFSL						FE					FFV
G	User's Choice																			
H	Hand		HIC	HC	HV					HS										HV
I	Current	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE					IZ
J	Power	JRC	JIC	ARC		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	Moisture/ Humidity						MI						MT							
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	PTP			PSV PSE	PV
PD	Pressure Differential	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	PDT	PDY	PE	PTP				PDV
Q	Quality	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	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
T	Temperature Differential	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TDE	TDP TP	TDW TW			TDV
U	Multivariable					UR	UI							UY						UV
V	Machinery Vibration Analysis					VR	VI	VSH VS	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 Differential	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	WDT	WDY	WDE					WDZ
X	User's Choice																			
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:
THIS TABLE IS NOT ALL–INCLUSIVE. SEE LEM CH.1, SECTION 230.

* A, ALARM, THE ANNUNCIATING DEVICE, MAY BE USED IN THE SAME FASHION AS S, SWITCH, THE ACTING DEVICE.

** THE LETTERS H AND L MAY BE OMITTED IN THE UNDEFINED CASE.

OTHER POSSIBLE COMBINATIONS:

FO	(RESTRICTION ORIFICE)	PFR	(RATIO)
FRK, HIK	(CONTROL STATIONS)	KQI	(RUNNING TIME INDICATOR)
FX	(ACCESSORIES)	QQI	(INDICATING COUNTER)
TJR	(SCANNING RECORDER)	WKIC	(RATE–OF–WEIGHT–LOSS CONTROLLER)
LLH	(PILOT LIGHT)	HMS	(HAND MOMENTARY SWITCH)

INSTRUMENT/FUNCTION SYMBOLS

SYMBOL	DESCRIPTION
X	P =PURGE OR FLUSHING DEVICE R =RESET FOR LATCH–TYPE ACTUATOR I =UNDEFINED INTERLOCK LOGIC
X	S=SOLENOID D=DIGITAL P=PILOT T=TRAP M=MAGNETIC FLOWMETER SP=SET POINT
√	ROOT EXTRACTION
±	BIAS
X	MULTIPLY
>	HIGH SELECTING
<	LOW SELECTING
→	HIGH LIMITING
←	LOW LIMITING
K	PROPORTIONAL
÷K	REVERSE PROPORTIONAL
+	SUMMING
÷	DIVIDING
CA–1	EQUIPMENT TAG
SC SS	SC = SAFETY GLASS SS = SAFETY SIGNIFICANT

PLAN BREAKS & CONTINUATION FLAGS

SYMBOL	DESCRIPTION
X Y–# OR X Y–#	PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y–#); FLOW IS TO THAT DRAWING.
X Y–# OR X Y–#	PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y–#); FLOW IS FROM THAT DRAWING.
X Y–#	PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y–#); FLOW IS IN BOTH DIRECTIONS

GENERAL NOTES:

1. M–0001 IS A STANDARD PIPING AND INSTRUMENTATION DIAGRAM LEGEND SHEET.
2. FOR DRAWING TITLE BLOCK CONTENTS REFER TO THE DRAFTING.
3. THE SHEET NUMBER IN THE TITLE BLOCK IS A REFERENCE NUMBER FOR THIS MANUAL.

NO	DATE	CLASS REV	DESCRIPTION	DRN	VER	CHKD	SUB	APP

FWO FACILITY & WASTE OPERATIONS
SYSTEMS ENGINEERING & MAINTENANCE

LEM STANDARD DETAIL
MECHANICAL

PROCESS FLOW AND PIPING AND INSTRUMENTATION DIAGRAM LEGEND

DRAWN
DESIGN
CHECKED
DATE

BLDG. XX TA–XX
SUBMITTED APPROVED FOR RELEASE

Los Alamos NATIONAL LABORATORY PO Box 1663 Los Alamos, New Mexico 87545

SHEET M–0002 OF

CLASSIFICATION U REVIEWER DATE

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