

# Learning Instrumentation And Control Engineering

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P&ID Instrument Abbreviations

Instrumentation Abbreviations

ZSC P&ID

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## Instrument Abbreviations Used in Instrumentation Diagrams (P&ID)

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### Safety Valve Manufacturer - ASME UV snd NB STAMP

Manufacturer of the World's Largest top entry ball valve 48" Class 600. luofusv.

Typically instrument abbreviations used in P&IDs consist of two letters: the first indicating the process variable and the second indicating the instrument/controller function. For example, the instrument abbreviation "PI" denotes a "Pressure Indicator". Occasionally, a third letter is included in the instrument abbreviation to describe a simultaneous function or a special function. For example: the abbreviation "FRC" represents a "Flow Recorder and Controller" which describes both the recording and control functions and the abbreviation "PAL" denotes a "Pressure Alarm Low" which describes an alarm used in the event of a low pressure condition.



## Safety Valve Manufacturer

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OPI

The table below contains some of the instrument abbreviations used in conjunction with P&ID symbols in instrumentation diagrams. I have dealt with some of them before but for the purpose of emphasis and completeness let us go through again. The list here is by no means exhaustive but it is a good starting point for beginners to P&IDs:

Read also: [Instrument Abbreviations Used in Instrumentation Diagrams \(P&IDs\) II](#)

[Instrument Abbreviations Used in Instrumentation Diagrams \(P&IDs\) III](#)

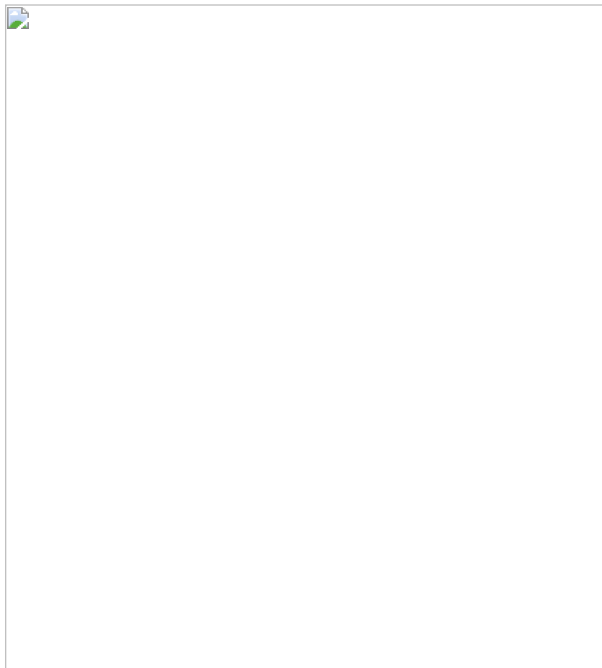
Instrument Abbreviation	Expansion	Functions Performed
FC	Flow controller	Flow measurement and control
LC	Level controller	Level control
FE	Flow element	Flow sensor
LG	Level gauge	Level measurement
FIC	Flow indicator and controller	Indicating flow as well as controlling flow

LA	Level alarm	Indicating level alarm
FR	Flow recorder	Recording flow
LAH	Level alarm high	Indicating high level
FRC	Flow recorder and controller	Flow recording; controlling flow
LAHH	Level alarm high high	Indicating very high level
FT	Flow transmitter	Transmitting flow signal
LAL	Level alarm low	Indicating low level
FA	Flow alarm	Indicating flow alarm
LI	Level indicator	Level indication
LIC	Level indicator and controller	Indicating level; controlling level
PC	Pressure controller	controlling pressure
TC	Temperature controller	Controlling/regulating temperature
PI	Pressure indicator	Indicating pressure
TI	Temperature indicator	Indicating pressure
PIC	Pressure indicator and controller	Indicating pressure; controlling pressure
TIC	Temperature indicator and controller	Indicating temperature; controlling temperature
PR	Pressure recorder	Recording pressure
TR	Temperature recorder	Recording temperature
PRC	Pressure recorder and controller	Recording pressure; controlling pressure
TRC	Temperature recorder and controller	Recording temperature; controlling temperature
PSV	Pressure safety valve	Relieving excess pressure in case of high pressure situation
TT	Temperature transmitter	Transmitting measured temperature signals
PT	Pressure transmitter	Transmitting measured pressure signals
TW	Thermowell	Houses temperature sensors
RV	Relief valve	To relieve excess pressure in case of high pressure
TY	Temperature relay/transducer	Converts electrical signals to pneumatic signals
PSH	Pressure switch high	A pressure switch used to indicate high pressure alarm
ZI	Position/limit indicator	Indicates whether a valve is open or close
SDV	Shut down valve	A valve initiating shutdown
ZSC	Position/unit switch closed	Limit switch indicating a valve is closed
ZSO	Position/unit switch open	Limit switch indicating a valve is open

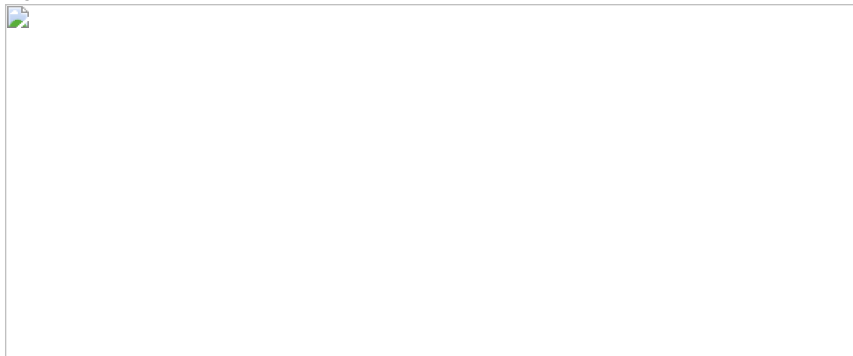
SDY	Shutdown relay	A transducer attached to a shutdown valve
USD	Unit shutdown	Initiate Shut down of a process unit

**Read also:**[Instrument Abbreviations Used in Instrumentation Diagrams \(P&IDs\) II](#)[Instrument Abbreviations Used in Instrumentation Diagrams \(P&IDs\) III](#)

Below are some common P&ID symbols used with the instrument abbreviations discussed above for developing P&ID drawings

**Tag Numbers on P&ID Symbols**

Numbers on the P&ID symbols in instrumentation diagrams represent instrument tag numbers. Often these numbers are associated with a particular control loop (e.g., Temperature indicator and controller 123) as shown in the diagram below:



One easy way to learn how to read P&ID drawings and become proficient in it is to look at a lot of Piping and instrumentation diagrams; both simple and complex ones! (please don't get scared). By so doing, you will eventually become good at reading P&IDs. Any good instrumentation textbook should contain one or two sections dedicated to understanding how to interpret and read P&ID drawings.

For a detailed list of common symbols used in P&IDs checkout:

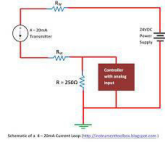
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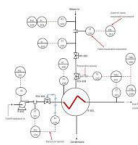
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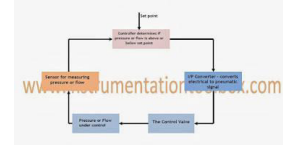
**Basics of The 4 - 20mA Current Loop**

	Central Control Room		Auxiliary Location	
	Required the panel of instrument independent to Operator	Required the panel of instrument independent to Operator	Required the panel of instrument independent to Operator	Field Mounted Instrument
Process Instruments	⊖	⊖	⊖	⊖
Shared Hardware Shared Display Shared Control	⊖	⊖	⊖	⊖
Software Computer Graphics	⊖	⊖	⊖	⊖
Shared Logic Programmable Logic Controller	⊖	⊖	⊖	⊖

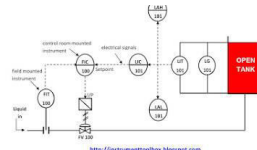
**Basics of Piping and Instrumentation Diagrams (P&IDs)**



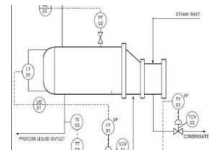
**Piping and Instrumentation Diagrams:Tutorials I**



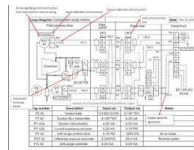
**How a Typical Control Valve Loop Works**



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**Common Equipme Used in I**

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