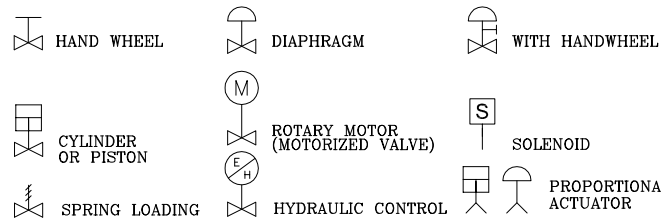
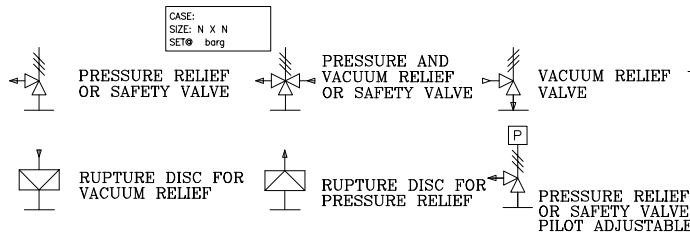


INSTRUMENTATION SYMBOLS

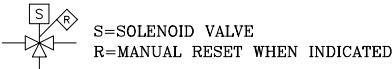
CONTROL VALVE ACTUATORS



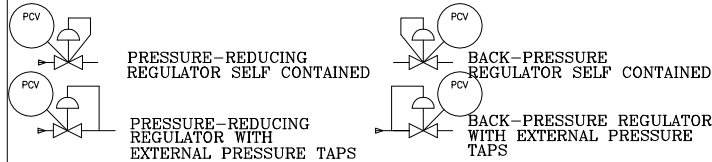
PRESSURE RELIEVING DEVICES



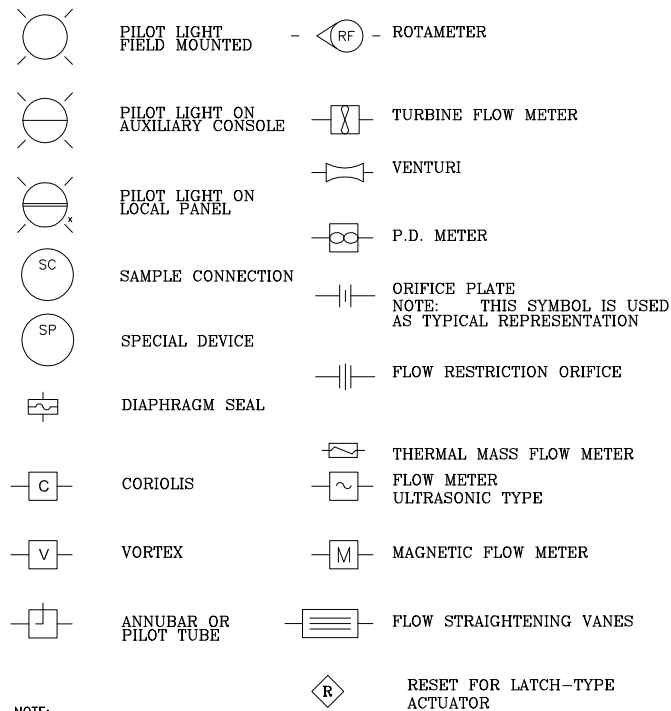
SOLENOID VALVES



SELF ACTUATED REGULATOR

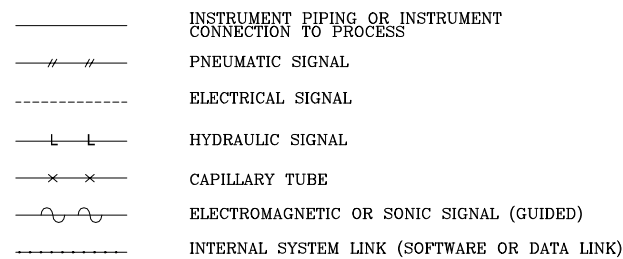


OTHER DEVICES

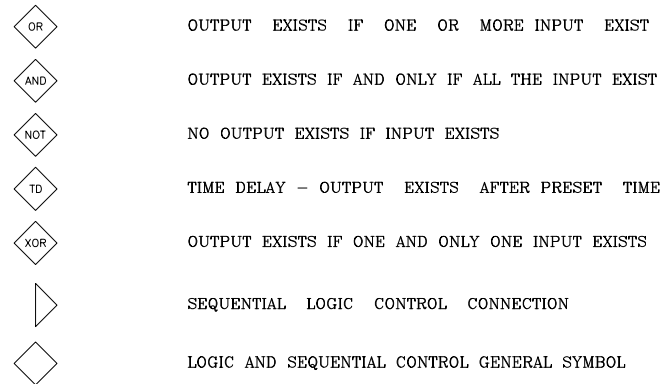


NOTE:
 () PILOT LIGHT "X" DESIGNATION:
 R= RED W= WHITE
 G= GREEN A= AMBER
 B= BLUE Y= YELLOW

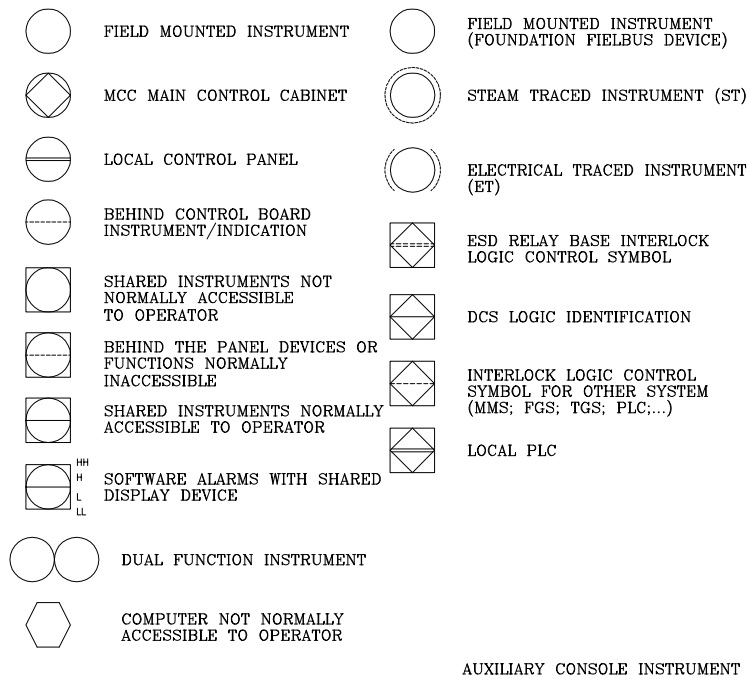
INSTRUMENTATION LINES SYMBOLS



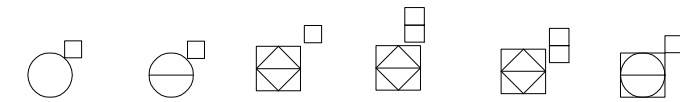
INTERLOCK LOGIC SYMBOLS



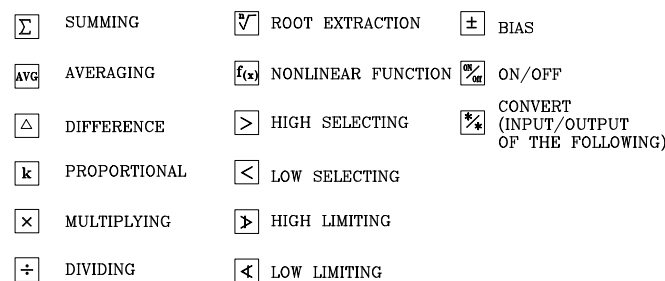
GENERAL INSTRUMENT OR FUNCTION SYMBOLS



FUNCTION IDENTIFICATION



FUNCTION BLOCKS - FUNCTION DESIGNATIONS



| DESIGNATION | SIGNAL | DESIGNATION | SIGNAL |
|-------------|-----------|-------------|--------------------------|
| A | ANALOG | H | HYDRAULIC |
| D | DIGITAL | O | ELECTROMAGNETIC OR SONIC |
| E | VOLTAGE | R | RESISTANCE |
| I | CURRENT | mV | MILLIVOLTS |
| P | PNEUMATIC | | |

INSTRUMENT IDENTIFICATION

IDENTIFICATION LETTERS

| | FIRST-LETTER | | SUCCEEDING-LETTERS | | |
|---|---------------------------------|---------------------|-----------------------------|--|----------------------|
| | MEASURED OR INITIATING VARIABLE | MODIFIER | READOUT OR PASSIVE FUNCTION | OUTPUT FUNCTION | MODIFIER |
| A | ANALYSIS | | ALARM | | |
| B | BURNER, COMBUSTION | BY PASS | | | |
| C | COMPUTATION | | | CONTROL | |
| D | | DIFFERENTIAL | | | |
| E | VOLTAGE | | SENSOR (PRIMARY ELEMENT) | | |
| F | FLOW RATE | RATIO (FRACTION) | | | |
| G | EQUIPMENT STATUS | | INDICATING (GAUGE) | | |
| H | HAND (MANUALLY INITIATED) | | | | HIGH/OPEN |
| I | CURRENT (ELECTRICAL) | | INDICATE (ANALOGUE) | | |
| J | POWER | SCAN | | | |
| K | TIME, TIME SCHEDULE KEY PHASOR | TIME RATE OF CHANGE | | | MULTIPLEXER OR TREND |
| L | LEVEL | | LIGHT | LOGIC (SEQUENCE/SWITCHING) | LOW/CLOSED |
| M | MOTOR OPERATED (MOV) | MOMENTARY | | | MIDDLE, INTERMEDIATE |
| N | STATUS | | | | |
| O | | | ORIFICE RESTRICTION | | |
| P | PRESSURE, VACUUM | | POINT (TEST) CONNECTION | | |
| Q | QUANTITY, NUMBER | INTEGRATE, TOTALIZE | | | |
| R | RADIATION (NUCLEAR) | RESTRICTION | RECORD OR PRINT | | |
| S | SPEED, FREQUENCY | SAFETY | | SWITCH (ING) (SEQUENCE CONTROL) | |
| T | TEMPERATURE | | | TEMPERATURE | |
| U | MULTIVARIABLE | | MULTIFUNCTION | MULTIFUNCTION | MULTIFUNCTION |
| V | VIBRATION | | | VALVE DAMPER, LOUVER | |
| W | WEIGHT, FORCE | | WELL | | |
| X | UNCLASSIFIED | | UNCLASSIFIED | UNCLASSIFIED | UNCLASSIFIED |
| Y | EVENT, STATE OR PRESENCE | | | RELAY, COMPUTE, CONVERT | |
| Z | POSITION, DIMENSION | | ESD | DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT | |

TYPICAL LETTER COMBINATIONS

| PROCESS VARIABLE | PRIMARY ELEMENT | TRANSMITTER | SCAN | INDICATOR | RECORDER | CONTROLLER | INDICATING CONTROLLER | RECORDING CONTROLLER | SWITCH | | | | ALARM | | | | GLASS VIEWING DEVICE | WELL (W) CONNECTION (P) | SELF-ACTUATED REGULATOR VALVE | SOLENOID VALVE *** | RELAY CONVERTER | FINAL ELEMENT |
|-----------------------------|-----------------|-------------|------|-----------|----------|------------|-----------------------|----------------------|------------------------------|-------|-------------------------------|----------|------------------------------|-------|-------------------------------|----------|----------------------|-------------------------|-------------------------------|--------------------|-----------------|---------------|
| | | | | | | | | | ABNORMAL PROCESS FIRST STATE | | ABNORMAL PROCESS SECOND STATE | | ABNORMAL PROCESS FIRST STATE | | ABNORMAL PROCESS SECOND STATE | | | | | | | |
| | | | | | | | | | HIGH | LOW | VERY HIGH | VERY LOW | HIGH | LOW | VERY HIGH | VERY LOW | | | | | | |
| A ANALYSIS | AE | AT | AJ | AI | AR | AC | ARC | ASH | ASL | ASHH | ASLL | AAH | AAL | AAHH | AALL | - | - | - | - | AY | AV | |
| B BURNER | BE | BT | BJ | BI | BR | BC | BIC | BSH | BSL | BSHH | BSLL | BAH | BAL | BAHH | BALL | BG | - | - | BY | BZ | | |
| C | | | | | | | | | | | | | | | | | | | | | | |
| D | | | | | | | | | | | | | | | | | | | | | | |
| E VOLTAGE | | | | | | | | | | | | | | | | | | | | | | |
| F FLOW | FE | FT | FJ | FI | FR | FC | FRC | FSH | FSL | FSHH | FSLL | FAH | FAL | FAHH | FALL | FG | - | - | FY | FV | | |
| FF FLOW RATIO | - | - | - | FFI | FFR | FFC | FFRC | FFSH | FFSL | FFSHH | FFSLL | FFAH | FFAL | FFAHH | FFALL | - | - | - | FFY | FFV | | |
| FQ FLOW QUANTITY | FQE | FQT | FQJ | FQI | FQR | FQC | FQRC | FQSH | FQSL | FQSHH | FQSLL | FQAH | FQAL | FQAHH | FQALL | - | - | - | FQY | FQV | | |
| G | | | | | | | | | | | | | | | | | | | | | | |
| H HAND | - | - | - | - | HC | HIC | - | HS | - | - | - | - | - | - | - | - | - | - | - | HY | HV | |
| I CURRENT | IE | IT | IJ | II | IR | IC | IRC | ISH | ISL | ISHH | ISLL | IAH | IAL | IAHH | IALL | - | - | - | IY | IZ | | |
| J POWER | JE | JT | JJ | JJ | JR | JC | JRC | JSH | JSL | JSHH | JSLL | JAH | JAL | JAAH | JALL | - | - | - | JY | JV | | |
| K TIME | KE | KT | KJ | KI | KR | KC | KRC | KSH | KSL | KSHH | KSLL | KAH | KAL | KAHH | KALL | - | - | - | KY | KV | | |
| L LEVEL | LE | LT | LJ | LI | LR | LC | LRC | LSH | LSL | LSHH | LSLL | LAH | LAL | LAHH | LALL | LG | - | LCV | LY | LV | | |
| M | | | | | | | | | | | | | | | | | | | | | | |
| N STATUS | | | | | | | | | | | | | | | | | | | | | | |
| O | | | | | | | | | | | | | | | | | | | | | | |
| P PRESSURE/VACUUM | PE | PT | PJ | PI | PR | PC | PRC | PSH | PSSL | PSHH | PSSL | PAH | PAL | PAHH | PALL | PG | - | PCV** | PY | PV | | |
| PD PRESSURE DIFFERENTIAL | PDE | PDT | PDJ | PDI | PDR | PDC | PDRC | PDSH | PDSL | PDSHH | PDSL | PAH | PAL | PAHH | PDALL | - | - | - | PDY | PDV | | |
| Q QUANTITY | QE | QT | QJ | QI | QR | QC | QRC | QSH | QSL | QSHH | QSLL | QAH | QAL | QAHH | QALL | - | - | - | QY | QZ | | |
| R RADIATION | RE | RT | RJ | RI | RR | RC | RRC | RSH | RSL | RSHH | RSLL | RAH | RAL | RAHH | RALL | - | - | - | RY | RZ | | |
| S SPEED/FREQUENCY | SE | ST | SJ | SI | SR | SC | SRC | SSH | SSL | SSHH | SSLL | SAH | SAL | SAHH | SALL | - | - | - | SY | SV | | |
| T TEMPERATURE | TE | TT | TJ | TI | TR | TC | TRC | TSH | TSL | TSHH | TSLL | TAH | TAL | TAHH | TALL | TG | TW | TCV | TY | TV | | |
| TD TEMPERATURE DIFFERENTIAL | TDE | TDI | TDJ | TDI | TDR | TDI | TDRC | TDSH | TDSL | TDSHH | TDSSL | TAH | TAL | TAHH | TDALL | - | - | - | TDY | TDV | | |
| U MULTIVARIABLE | - | - | - | - | UR | - | - | - | - | - | - | - | - | - | - | - | - | - | UY | UV | | |
| V VIBRATION | VE | VT | VJ | VI | VR | VC | - | VSH | VSL | VSHH | VSSL | VAH | VAL | VAHH | VALL | - | - | - | VY | VZ | | |
| W WEIGHT | WE | WT | - | WI | WR | WC | WRC | WSH | WSL | WSHH | WSLL | WAH | WAL | WAHH | WALL | - | - | - | WY | WZ | | |
| X SKIN | | | | | | | | | | | | | | | | | | | | | | |
| Y STATE | YE | YT | YJ | YI | YR | YC | YRC | YSH | YSL | YSHH | YSLL | YAH | YAL | YAAH | YALL | - | - | - | YY | YZ | | |
| Z POSITION | ZE | ZT | ZJ | ZI | ZR | ZC | ZRC | ZSH | ZSL | ZSHH | ZSLL | ZAH | ZAL | ZAAH | ZALL | - | - | - | ZY | ZV | | |

SPECIAL ABBREVIATIONS

| | | | |
|----|--------------------|-----|--|
| FC | FAILURE CLOSED | CSO | CAR SEALED OPEN (OPERATING WITH PROCEDURE) |
| FO | FAILURE OPEN | CSC | CAR SEALED CLOSED (OPERATING WITH PROCEDURE) |
| FI | FAIL INDETERMINATE | SP | SET POINT |
| FL | FAIL LAST POSITION | PV | PROCESS VARIABLE |
| LO | LOCKED OPEN | VS | VENDOR SUPPLY |
| LC | LOCKED CLOSED | TSO | TIGHT SHUT-OFF |

REFERENCE DRAWINGS

| NO. | DRAWING NUMBER | DRAWING TITLE |
|-----|-------------------------|-------------------|
| 1 | UT-MT-00-PR-PID-0100-01 | SYMBOL AND LEGEND |

NOTES:

DESCRIPTION:

- DELETED.
- LOCAL ELECTRONIC TYPE INDICATORS TO BE CONSIDERED ADJACENT TO CONTROL VALVE BY-PASS LOCATION.
- CONTROL VALVE FAILURE POSITION WILL BE INDICATED ON P&ID'S.
- CONTROL VALVES WILL BE SHOWN WITH APPROPRIATE SIZE ON ALL P&ID'S.
- SAFETY VALVES WILL BE SHOWN WITH SIZE, SET PRESSURE AND THERMOCOUPLE, RESISTANCE TEMPERATURE DETECTORS, AND THERMOMETER INSTALLED IN A PIPE HAVE AN ASSOCIATED THERMO-WELL WHICH IS NOT SHOWN'S ON P&ID'S EXCEPT SKIN POINT TEMPERATURE.
- DELETED

GENERAL NOTE:

- 1-LEGEND WILL BE FINALIZED AFTER RECEIVING FINAL OFFER FROM VENDOR.

| | | | | | | | | |
|------|-----------|--------|------|-------|---------|------|--|-------------|
| B3 | 7.Jul.14 | LQ | M.P | LQ | M.Q | | | IFA |
| B2 | 15.Jun.13 | M.A | M.P | M.A | M.Q | | | IFA |
| B1 | 16.Apr.13 | M.A | M.P | M.A | M.Q | | | IFA |
| A4 | 26.Jan.13 | M.A | M.P | M.A | M.Q | | | IFA |
| A3 | 29.Nov.12 | M.A | M.P | S.S | M.Q | | | FOR REVIEW |
| A2 | 21.Oct.12 | M.A | M.A | S.S | M.Q | | | IFA |
| A1 | 10.Oct.12 | M.A | M.A | S.S | M.Q | | | FOR REVIEW |
| REV. | DATE | DESIGN | DRAW | CHECK | APPROVE | M.C. | | DESCRIPTION |

CLIENT: ENERGY INVESTMENT COMPANY

PROJECT: METHANOL PLANT (5000 MTPD) UTILITY AND OFFSITE

MC: CONTRACTOR:

DRAWING TITLE: LEGEND OF P&ID

| SIZE: | REV. | DRAWING NUMBER | | | | |
|--------|--------|----------------|------|------|-------|----------|
| A1 | B3 | CODE No. | TYPE | SIZE | GROUP | CODE No. |
| PAGE: | SCALE: | 1277 | PD | 1 | EPP | 10000 |
| 4 OF 5 | N/A | | | | | |