Analog Output

Two versions of the Analog Output IOP are available: one with 8 outputs and one with 16 outputs.

Both processors provide the following functions:

- Readback check of actual output current
- Output characterization (5 segment)
- Output default action on failure (hold or unpowered)
- Modes and associated functions to support Manual loader and DDC control
- Software calibration

The 8-pt. analog output processor provides separate D/A converters and power regulator per channel for maximum output security. As an option, one-on-one Analog Output processor redundancy (available for both versions) provides even higher control strategy integrity.

Digital Input

Two Digital Input IOP models are available, both with 32 inputs. The Digital Input Processor provides the following functions:

- Event counting (accumulation) (maximum pulse rate = 15 Hz)
- Push-button and status type inputs (minimum on-time = 40 ms)
- Time deadband on alarms for status inputs
- Input direct/reverse
- PV source selection
- State or change of state alarming for status inputs
- Sequence of events resolution of 20 ms

Several voltage types are handled through a selection of FTAs. As an option, one-on-one Digital Input processor redundancy is available.

Digital Input Sequence of Events (APM and HPM only)

This specialized digital input processor (DISOE) provides all the functions of the conventional Digital Input except accumulation. Inputs from the board can be used for control strategies just like any other digital input. Note that the DISOE IOP is supported by the APM and HPM *only.*

In addition, this DISOE processor provides high-resolution sequence of events monitoring. Using the DISOE processor, SOE time stamp resolution within 1 ms is assured.

The DISOE processor provides optimum resolution when used with the standard 24 Vdc Digital Input FTA.

Optional one-on-one redundancy is available for higher availability.

Digital Output

Two versions of the Digital Output IOP are available: one with 16 outputs and one with 32 outputs. Both processors provide the following functions:

- Output types (configurable per output)
  - Latched
  - Pulsed
  - Pulse-width modulated
- Output default action on failure (hold or unpowered)
- Output readback checking

The 16-point digital output processor provides separate output latches with redundant power regulators for added output security. As an option, one-on-one Digital Output processor redundancy is available for the 32-output IOP.

I/O Simulation Option

(APM/HPM only)

The optional I/O Simulator package simulates the functions of the IOPs for the APM and HPM. It is a low cost, high fidelity simulation approach for control strategy checkout or for operator training support. A unique feature of this optional package is complete database transportability between the Simulation personality and the APM or HPM On-Process (normal operating) personality. This is especially useful for configuring the system before the physical I/O is available or connected. Features of the package include:

- "Bumpless" pause/resume interruption/restart
- Physical IOPs, FTAs and field wiring not required
- Simulation status indicated and journaled
- Database (checkpoint) transportable to target system
- Simulation rerun from saved data base using PV data
- Full peer-to-peer capability
- I/O functions simulated by Communications processor
- Almost any I/O configuration can be simulated
- Simulation load and status supported on system network
- Fault response testing and I/O redundancy simulation

The benefits of this package include:

- The ability to perform high fidelity simulation
- Control strategy checkout
- Operator training
- Project cost savings

Smart Transmitter Interface Processor* **MU-PSTX03**

Parameter	Specification
FTA Models	**MU-TAIH02, TAIH12, TAIH22, TAIH52, TAIH62, TSTX03, TSTX13, TSTX53**
Input Type	Honeywell DE (digital enhanced) protocol (bidirectional)
Input Channels	16 digital input channel PVs
Resolution	The resolution of the connected field instrument is passed through without degradation.
Maximum Input Voltage (any input referenced to common, no damage)	-10 V to +30 V
Transmitter broadcast frequency (PV)	2.4-3.6 PVs per second per channel (configuration dependent).
Accuracy	The accuracy of the connected field instrument is passed through without degradation.
Surge withstand capability (Common mode)	ANSI/IEEE C37.90.1-1978
Transmitter Power Conditioning MU-TAIH02, MU-TAIH52, MU-TAIH12, MU-TSTX03,	Resistor Current Limited, 145 Ω (not fused) for Class 1, Div 2 interfacing
MU-TSTX13, MU-TSTX53 MU-TAIH22 & TAIH62	Individual Protected Current Limiting Circuits for Class 1, Div 2 interfacing Maximum current: 30 ma Minimum voltage 23 V

Smart Transmitter Interface Processor* Redundancy Option **MU-TAIH12, TAIH52, TSTX13, TSTX53**

Parameter	Specification
Input Scan Cycles Missed or Delayed During Swap or Failover	No cycles missed or delayed
Hardware Accuracy Effect of Failure	No effect nominally. The resolution of the connected field instrument is passed through without degradation.

* Smart Transmitter Interface Processor (MU-PSTX03) supports both single and multivariable transmitter types.