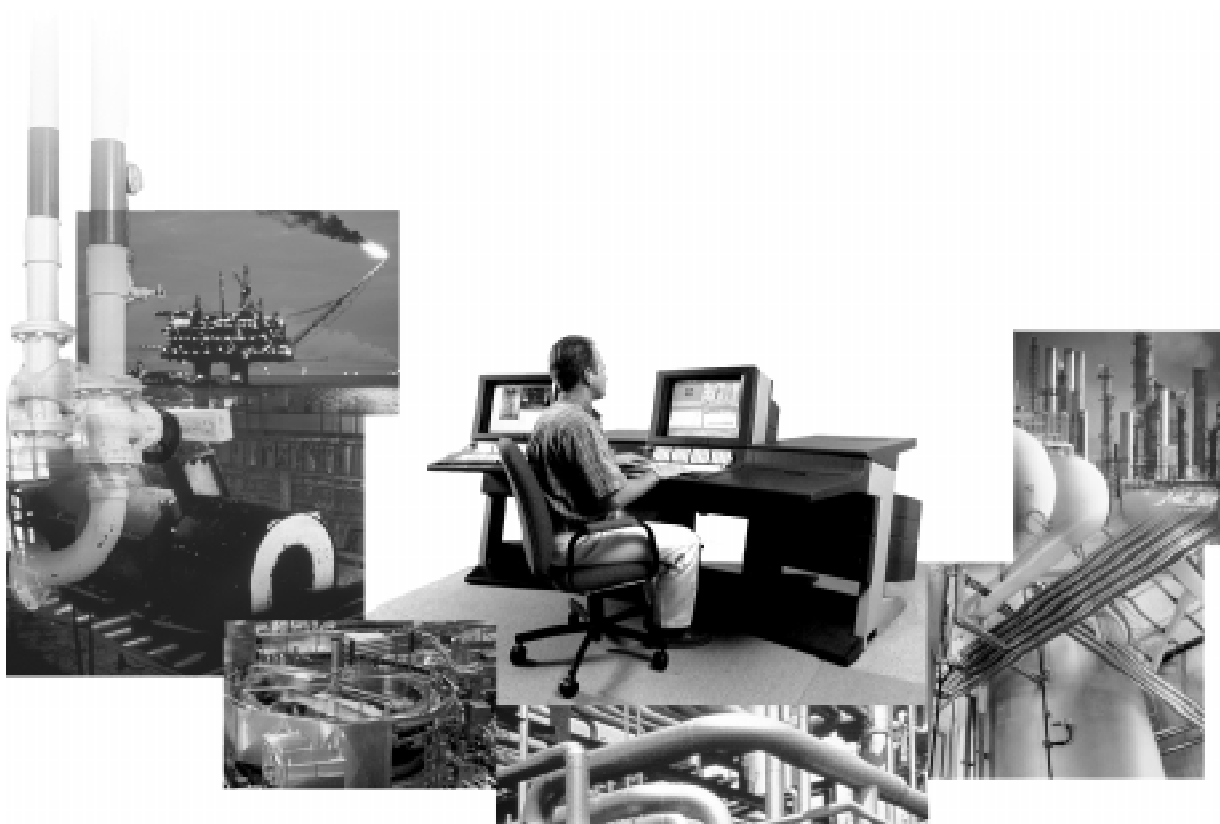


TPS Process Manager I/O Specification and Technical Data

**IO03-500
Release 500
11/97**



Analog Output 8-Point Processor/FTA**MC-PAOX03**

Parameter	Specification
FTA Models	MU-TAOX02, TAOX12, TAOX52
Output Type	4-20 mA
Output Channels	8
Output Ripple	100 mV peak-to-peak at power line frequency, across 250 Ω load
Output Temperature Stability	0.02% Full Scale/°C
Resolution	$\pm 0.05\%$
Calibrated Accuracy	$\pm 0.35\%$ (25°C) including linearity
Output Readback Checking Accuracy	$\pm 4\%$
Humidity	10 - 90% non-condensing
Directly Accessible Output Current Range	0.1-21.4 mA
Maximum Current Output	26 mA
Maximum Resistive Load	750 Ω @ 22 mA
Output Settling Time (digital input code to 98% of final output value)	4 ms
Surge withstand capability	ANSI/IEEE C37.90.1-1978

Analog Output 8-Point Processor Redundancy Option**MU-TAOX12, TAOX52**

Parameter	Specification
Output Signal Perturbation During Swap	1 ms nominal 4 ms maximum
Output Signal Perturbation During Failover	30 ms nominal 125 ms maximum
FTA Switching Hardware Diagnostic Frequency	Once per minute

Analog Output IOP Comparison

Function IOP Models	AO (8 points) MC-PAOX03	AO (16 points) MU-PAOY22
IOP Configuration	AO	AO_16
Number of Channels	8	16
Smallest ORU ⁽¹⁾	IOP	IOP
Redundancy ⁽²⁾	Yes	Yes
Redundancy Method	Outputs Electrically Isolated via Field Replaceable Relay Switch Module on FTA	Parallel Outputs -- Solid-State Switch in IOPs
Redundancy Bias ⁽³⁾	Yes	No
Output Condition on IOP failure ⁽⁴⁾	Configurable	Unpowered
Output Condition on PMM failure ⁽⁵⁾	Configurable	Configurable
Single Channel Failure Robustness ⁽⁶⁾	High	Medium
External Connection Check ⁽⁷⁾	Yes	Yes
Standby Manual ⁽⁸⁾	Yes	Yes
(1) The Optimal Replaceable Unit (ORU) is the object that can be replaced on a failure that minimally impacts the operation of the system. The ORU is generally an item that can be replaced in the field using a minimum number of tools. In many cases the item is plug replaceable such as the IOP. (2) Failure detection coverage for the redundancy option is equivalent. (3) In a redundant configuration, the primary is a "preferred" primary. System availability is slightly increased when the primary IOP is the "preferred" Primary. Servicing of the FTA switching module can be performed without disturbing the process when the IOP is the "preferred" primary. (4) The output state upon failure of the AO8 IOP is configurable to either Hold or Unpower the output. AO16 outputs are always set to Unpowered upon failure of the IOP. (5) The output state upon failure of the PMM for both AO8 and AO16 IOPs is configurable to either Hold or Unpower the output. (6) Channel robustness is different in the two module types. The AO8 provides individual channel output circuitry including individual output power systems and individual DAC output circuits. The AO16 provides one power supply and one DAC per IOP. Individual AO16 outputs are controlled using sample and hold circuitry. (7) Point level failures are detected by both AO8 and AO16 IOPs. Both IOPs can detect if the output is being correctly propagated to the field (i.e., wires are connected). (8) The Standby Manual is an optional unit which handles 8 outputs. The AO16 provides a Standby manual function by using two AO8 standby manual units connected into the AO16 FTA.		

IOP / FTA Compatibility Matrix (continued)

IOP Model Number	FTA Model Number	Description	Red	CE Mark	Term Type ⁽⁶⁾	Circuits	Size ⁽¹⁾
MU-PSIM11		Serial Interface		√		32 ⁽⁵⁾	
	MU-TSIA12	SI - Allen Bradley PLC-2/3/5 IF ⁽²⁾		√	DB25	1	A
	MU-TSIM12	SI - Modbus IF ⁽²⁾		√	DB25 or C	1	A
MC-PAOX03		Analog Output (8 Outputs)	√	√		8	
	MU-TAOX02	AO		√	C	8	A
	MU-TAOX12	AO Redundant	√	√	C	8	B
	MU-TAOX52	AO Redundant	√	√	S	8	B
	MU-GAOX02	GI/IS - AO (4045C)		√	C ⁽³⁾	8	B
	MU-GAOX72	GI/IS - AO (4045C)		√	CP ⁽³⁾	8	B
	MU-GAOX12	GI/IS - AO Redundant (4045C)	√	√	C ⁽³⁾	8	B
	MU-GAOX82	GI/IS - AO Redundant (4045C)	√	√	CP ⁽³⁾	8	B
MU-PAOY22		Analog Output (16 Outputs)	√	√		16	
	MU-TAOY22	AO16 Redundant w/ Stby Man.	√	√	C	16	B
	MU-TAOY52	AO16 Redundant w/ Stby Man.	√	√	S	16	B
	MU-TAOY23	AO16 Redundant w/o Stby Man.	√		C	16	B
	MU-TAOY53	AO16 Redundant w/o Stby Man.	√		S	16	B
MU-PDIX02		Digital Input		√		32	
MU-PDIS12		Digital Input SOE	√	√		32	
	MU-TDID12	DI 24 Vdc	√	√	C	32	C
	MU-TDID52	DI 24 Vdc	√	√	S	32	C
	MU-TDID72	DI Packaged 24 Vdc			RS	32	C
	MU-TDIA12	DI Isolated 120 Vac	√	√	C	32	C
	MU-TDIA52	DI Isolated 120 Vac	√	√	S	32	C
	MU-TDIA72	DI Pckgd. Isolated 120 Vac			RS	32	C
	MU-TDIA22	DI 240 Vac	√	√	C	32	C
	MU-TDIA62	DI 240 Vac	√	√	S	32	C

(Continued)

Model Numbers

Description	Uncoated Model Number	Coated Model Number (see note)
I/O Processors		
High Level Analog Input Processor (16 Inputs)	n/a	MC-PAIH03
Smart Transmitter Interface (Multivariable) Processor (16 Inputs)	MU-PSTX03	MC-PSTX03
Serial Device Interface Processor (16 Points/Port)	MU-PSDX02	MC-PSDX02
Serial Interface Processor (16 Points/Port)	MU-PSIM11	MC-PSIM11
Low Level Analog Input Processor (8 Inputs)	MU-PAIL02	MC-PAIL02
Low Level Analog Input Multiplexer Processor (32 Inputs)	MU-PLAM02	MC-PLAM02
Remote Hardened Multiplexer IOP (32-Points)	MU-PRHM01	MC-PRHM01
Pulse Input Processor (8 Inputs)	MU-PPIX02	MC-PPIX02
Analog Output Processor (8 Outputs)	n/a	MC-PAOX03
Analog Output 16 Processor (16 Outputs)	n/a	MC-PAOY22
Digital Input Processor (32 Inputs)	MU-PDIX02	MC-PDIX02
Digital Input Processor for Sequence of Events (32 Inputs)	MU-PDIS12	MC-PDIS12
Digital Input 24 Vdc Processor (32 Inputs)	MU-PDIY22	MC-PDIY22
Digital Output Processor (16 Outputs)	MU-PDOX02	MC-PDOX02
Digital Output 32 Processor (32 Outputs)	MU-PDOY22	MC-PDOY22
Blank Filler Plate for I/O Slot	MU-PFPX01	n/a
I/O Link Extender Pair–Main Location	MU-IOLM02	MC-IOLM02
I/O Link Extender Pair–Remote Location	MU-IOLX02	MC-IOLX02
Long Distance I/O Link Extender Pair	MU-ILDX03	MC-ILDX03
I/O Link Extender Shroud (EC)	MU-ILES01	n/a
NOTE: MC model numbers indicate conformally coated boards. All IOPs are available conformally coated (MC models).		

(Continued)