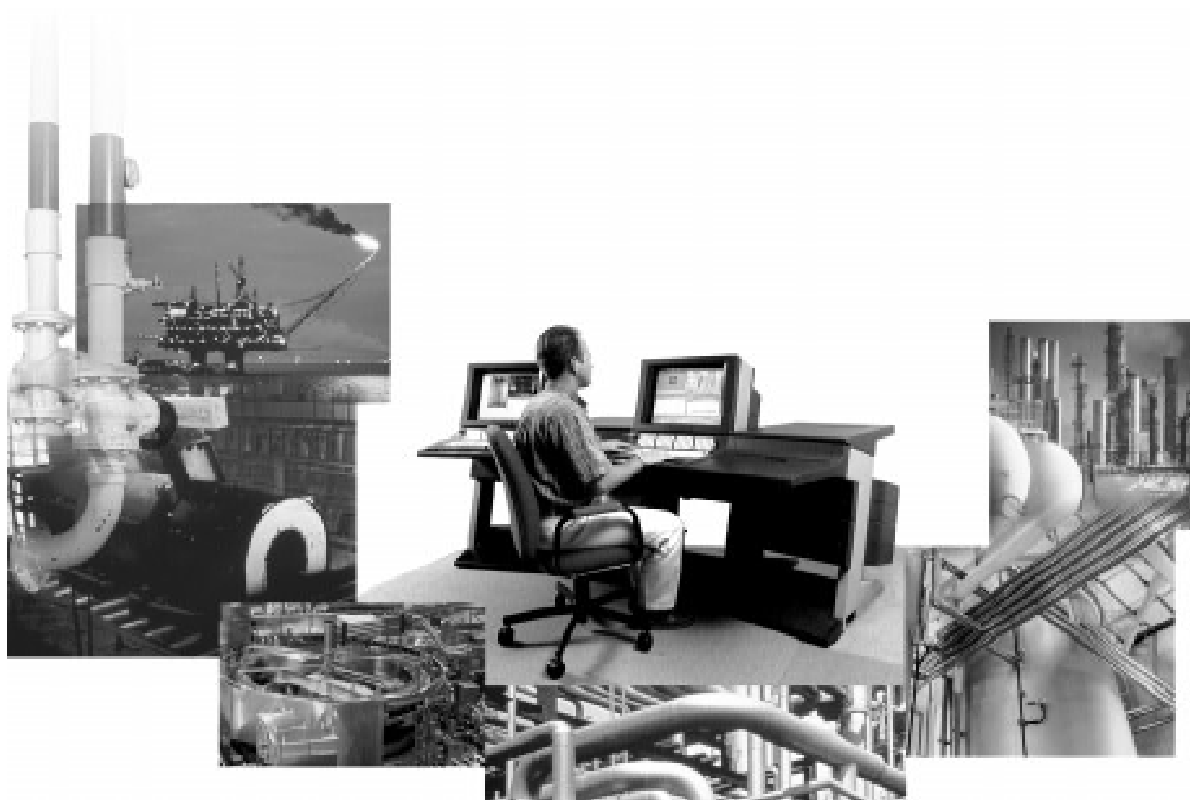


TPS Process Manager I/O Specification and Technical Data

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



Field Termination Assemblies

All connections to and from the process are made to Field Termination Assemblies (FTAs). Compression-type termination blocks (that can accept wire sizes as large as 14 AWG or ~1.6 mm) are available for all FTAs. Screw-type termination's can also be provided for most FTAs as shown in Table 1 in the "Specifications" section. The FTAs are connected to the I/O processors by cables that can be up to 50 meters in length. Three sizes of FTAs are used as shown in this table. Twenty-four Vdc transmitter and digital inputs sense power connections are provided through the standard FTA cable.

Options

I/O Redundancy

A one-on-one I/O redundancy option is also available for critical high level analog inputs, smart transmitter interface connections, analog outputs, digital inputs and digital outputs. This option offers significantly increased availability of automatic control by providing continuous operation through failure and replacement of I/O Processors, FTA cables, backplanes, and AO switching hardware. Up to 40 I/O Processors can be supported in a redundant or non-redundant PM, APM, or HPM, and the user can selectively apply redundancy to some or all IOPs, for a maximum of 40 IOP pairs. The one-on-one design approach offers maximum coverage and fast switchover times. Integrity of the backup database and of the switching functions is provided through the extensive diagnostic coverage made possible by the processing capability of the smart I/O Processors.

Galvanically Isolated/ Intrinsically Safe FTAs

These FTAs are available for applications requiring a direct interface to either FM or CSA Class 1, Div 1, or CENELEC Zone 0 hazardous areas. Wiring and installation are simplified because integral galvanically isolated intrinsic safety isolators are part of the FTA. See GA03-100, Galvanic Isolation/ Intrinsic Safety Specification and Technical Data for further information.

Standby Manual

The 16-point digital output FTA and both analog output FTAs (8-point and 16-point) support connection to a standby manual unit. This option allows outputs to be maintained during I/O Processor replacement.

Digital Input Processor and Digital Input SOE Processor (continued)

MU-PDIX02/ MU-PDIS12

Packaged FTAs without Plug-In Isolators		
Parameter	Specification	
	24 Vdc FTA	120 Vac FTA
FTA Model Numbers	MU-TDID72	MU-TDIA72
Input Channels	32	32
Accumulated Input Frequency	dc - 15 Hz	NA
Galvanic Isolation (field to APM)	1500 Vac rms or ± 1500 Vdc ⁽⁵⁾	1500 Vac rms or ± 1500 Vdc
Isolation Technique	Optical	Optical
Digital Input Pwr. Range ⁽¹⁾	18-30 Vdc	90-132 Vac rms
Sense Current (ON condition)	12 mA minimum	5.2 mA minimum
Sense Current (OFF condition)	4.3 mA maximum	1.47 mA maximum
Absolute Delay Across Input Filter and Isolation (Bounceless Input to PM/APM/HPM logic level change)	3.6 ms maximum	25 ms maximum
Field Resistance for Guaranteed ON condition ^(2, 3)	100 Ω maximum	100 Ω maximum
Field Resistance for Guaranteed OFF condition ^(2, 3)	45 k Ω minimum ⁽⁴⁾	71 k Ω minimum
Frequency Range	dc	47-63 Hz
Surge withstand capability	ANSI/IEEE C37.90.1-1978	ANSI/IEEE C37.90.1-1978
(1) These dc voltage limits include an ac component that has a peak value of 5% of the nominal dc range value. (2) This resistance is present between the two legs of a DI current sense circuit. (3) For field wiring distance guidelines, see the appropriate <i>Site Planning</i> manual. (4) Reduce to 37.4 kΩ if digital input power range is limited to 18-25 Vdc. (5) Not applicable if system power is used to power field inputs.		

Digital Input Processor Redundancy Option (MU-PDIS12 Only)

Parameter	Specification
Input Scan Cycles Missed or Delayed During Swap or Failover	No cycles missed or delayed (all FTA types)

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)

IOP / FTA Compatibility Matrix (continued)

IOP Model Number	FTA Model Number	Description	Red	CE Mark	Term Type ⁽⁶⁾	Circuits	Size ⁽¹⁾
MU-PDOX02 (cont'd)	MU-GDOL12	GI/IS - DO w/ line fault dect.(4023)		√	C ⁽³⁾	16	B
	MU-GDOL82	GI/IS - DO w/ line fault dect.(4023)		√	CP ⁽³⁾	16	B
	MU-GDOD12	GI/IS - DO (4021)		√	C ⁽³⁾	16	B
	MU-GDOD82	GI/IS - DO (4021)		√	CP ⁽³⁾	16	B
	MU-GLFD02	GI/IS DO Combiner Panel		√	N/A	32	A
MU-PDOY22		Digital Output (32 Outputs)	√	√		32	
	MU-TDOY22	Digital Output 32, 24 Vdc	√	√	C	32	B
	MU-TDOY62	Digital Output 32, 24 Vdc	√	√	S	32	B
	MU-TDOY23	Digital Output 32, Relay ⁽⁴⁾	√	√	C	16	B
	MU-TDOY63	Digital Output 32, Relay ⁽⁴⁾	√	√	S	16	B
		Misc. / Multiple Use FTAs					
	MU-TLPA02	LLMUX, SI, SDI Power Adapter		√	C	2	A
	MU-TDPR02	DI Power Distribution FTA		√	S	12	A
	MU-GPRD02	GI/IS Power Distribution FTA		√	N/A	12	A
	MU-GMAR52	GI/IS — Marshalling Panel		√	S	16	B
(1) Length: A = 15.24 cm/6.0 in. B = 30.73 cm/12.1 in. C = 46.228 cm/18.2 in. (1) Width: All FTAs except GI/IS FTAs = 12.065 cm/4.75 in. All GI/IS FTAs = 12.446 cm/4.90 in. MU/MC-TAIL03 = 13.335 cm/5.25 in. (2) Requires Power Adapter FTA. (3) Terminals are on top of the GI/IS modules. (4) One FTA supports up to 16 circuits. When 17-32 circuits are used, 2 FTAs are required. Bridge cable MU-KBFT01 or MU-KBFT02 is required to connect the two FTAs. (5) Number of Circuits denotes number of logical connections. (6) For nongalvanically isolated FTAs, the terminal connector types are compression (C), nonremovable screw (S), and removable screw (RS). For galvanic isolation type FTAs, the terminal connector types are compression (C), and crimp pin (CP). The Marshalling Panel has nonremovable screw (S) terminals. (7) The MC-GRMT01 is a remotely mountable Field Termination for Thermocouple inputs. Two of these FTAs can be connected to a single Power Adapter (MU-GRPA01 or MU-TRPA01) depending on the hazardous environment. The Power Adapter is, in turn, connected to the IOP (MU-PRHM01).							

Model Numbers (continued)

Description	Uncoated Model Number	Coated Model Number
Field Termination Assemblies (Phone Connector* Style with Screw Terminals)		
High Level Analog Input/STI FTA (16 Inputs)**	MU-TAIH52	MC-TAIH52
High Level Analog Input FTA (16 Inputs) (CE Mark)**	MU-TAIH53	MC-TAIH53
Smart Transmitter Interface FTA for Redundancy (16 Inputs) (CE Mark)**	MU-TSTX53	MC-TSTX53
Enhanced Power High Level Analog Input/STI FTA (16 Inputs)**	MU-TAIH62	MC-TAIH62
Pulse Input FTA (8 Inputs)	MU-TPIX52	MC-TPIX52
Analog Output FTA (8 Outputs)**	MU-TAOX52	MC-TAOX52
Analog Output 16 FTA (16 Outputs), w/StbyMan (use ONLY w/ MU-PAOY22)**	MU-TAOY52	MC-TAOY52
Analog Output 16 FTA (16 Outputs), w/o StbyMan (use ONLY w/ MU-PAOY22)**	MU-TAOY53	MC-TAOY53
Digital Input Isolated 120 Vac FTA (32 Inputs)	MU-TDIA52	MC-TDIA52
Digital Input Isolated 120 Vac FTA -Packaged (32 Inputs)	MU-TDIA72	MC-TDIA72
Digital Input Isolated 240 Vac FTA (32 Inputs)	MU-TDIA62	MC-TDIA62
Digital Input 24 Vdc FTA (32 Inputs)	MU-TDID52	MC-TDID52
Digital Input 24 Vdc FTA -Packaged, without plug-in isolators (32 Inputs)	MU-TDID72	MC-TDID72
Digital Input 24 Vdc FTA (32 Inputs) (use ONLY w/ MU-PDIY22)**	MU-TDIY62	MC-TDIY62
Digital Output 120/240 Vac Solid-State FTA (16 Outputs)	MU-TDOA53	MC-TDOA53
Digital Output 3-30 Vdc Solid-State FTA (16 Outputs)	MU-TDOD53	MC-TDOD53
Digital Output 3-30 Vdc Solid-State FTA (16 Outputs) (CE Mark)	MU-TDOD54	MC-TDOD54
Digital Output 31-200 Vdc Solid-State (16 Outputs)	MU-TDOD63	MC-TDOD63
Digital Output 5-200 Vdc Solid State (16 Outputs)	MU-TDOD62	MC-TDOD62
Digital Output 24 Vdc, 100 ma Nonisolated FTA (16 Outputs)	MU-TDON52	MC-TDON52
Digital Output 120 Vac/125 Vdc Relay FTA (16 Outputs)	MU-TDOR52	MC-TDOR52
Digital Output 240 Vac/125 Vdc Relay FTA (16 Outputs)	MU-TDOR62	MC-TDOR62
Digital Output 24 Vdc FTA (32 Outputs) (use ONLY w/ MU-PDOY22)**	MU-TDOY62	MC-TDOY62
Digital Output Relay FTA (16 Outputs) (use two w/ MU-PDOY22)**	MU-TDOY63	MC-TDOY63
Field Termination Assemblies for Serial Device Interface and Serial Interface		
Serial Device Interface FTA for Toledo Scale (8142)	MU-TSDT02	MC-TSDT02
Serial Device Interface FTA for Manual/Auto Station	MU-TSDM02	MC-TSDM02
Serial Device Interface FTA for UDC 6000	MU-TSDU02	MC-TSDU02
Serial Interface FTA for Modbus	MU-TSIM12	MC-TSIM12
Serial Interface FTA for Allen-Bradley	MU-TSIA12	MC-TSIA12
* For DIN-style FTAs, Cables and File Options, See the <i>Site Planning</i> manual. ** These FTAs can be used for single or redundant applications. All FTAs are available conformally coated (MC- models).		