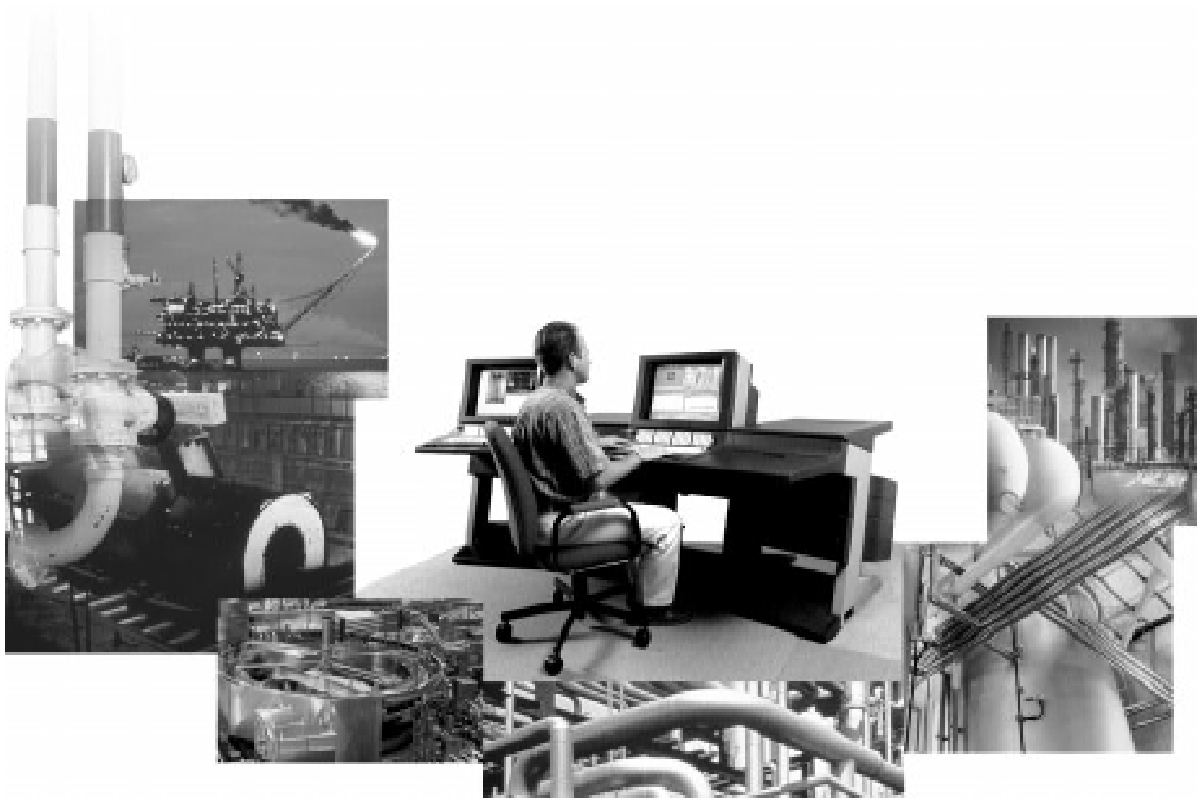


TPS Process Manager I/O Specification and Technical Data

**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.

High Level Analog Input Processor - 16 Inputs

MC-PAIH03

Parameter	Specification
FTA Models	MU-TAIH02, TAIH12, TAIH52, TAIH03, TAIH13, TAIH23, TAIH53, TAIH22, TAIH62
Input Type	Voltage, current (2-wire or self-powered transmitters)
Input Channels	16 differential input channels
Common Mode Rejection Ratio, dc to 60 Hz (500 Ω source imbalance)	70 dB
Common Mode Voltage, dc to 60 Hz ⁽¹⁾	-6 to +5 V peak
A/D Converter Resolution	16 bits (14 bits used)
Input Range	0 to 5 V 1 to 5 V 0.4 to 2 V 4-20 mA (through 250 Ω)
Normal Mode Rejection Ratio, at 60 Hz	32 dB
Normal Mode Filter Response	Single-pole RC, -3 dB @ 1 Hz
Maximum Normal Mode Input (differential inputs, no damage)	± 30 Volts
Crosstalk, dc to 60 Hz (channel-to-channel)	60 dB
Input Impedance (Voltage Inputs)	> 10 M Ω powered
Maximum Input Voltage (any input referenced to common, no damage)	± 30 Volts
Input Scan Rate	4 samples per second per channel. All channels sampled within a 250 ms window.
Hardware Accuracy (@ CMV = 0 V)	$\pm 0.075\%$ full-scale (23.5° $\pm$ 2°C) $\pm 0.15\%$ full-scale (0 to 50°C)
Transmitter Power Conditioning MU-TAIH02, TAIH52, TAIH12, TAIH03, TAIH13, TAIH53	Resistor Current Limited, 145 Ω (not fused) for Class 1, Div 2 interfacing
MU-TAIH22, TAIH23, & TAIH62	Individually Protected Current Limiting Circuits for Class 1, Div 2 interfacing Maximum current: 30 ma Minimum voltage 23 V
Surge withstand capability (Common mode)	ANSI/IEEE C37.90.1-1978
(1) The low-side input connection is normally connected to system common by a wire jumper on the FTA. This can be removed by the user, subject to operating within the CMV specification.	

IOP/FTA Compatibility Matrix

IOP Model Number	FTA Model Number	Description	Red	CE Mark	Term Type⁽⁶⁾	Circuits	Size⁽¹⁾
MC-PAIH03		High Level Analog Input	√	√		16	
	MU-TAIH02	HLAI/STI			C	16	A
	MU-TAIH12	HLAI /STI Redundant	√		C	16	B
	MU-TAIH52	HLAI/STI Redundant	√		S	16	B
	MU-TAIH03	HLAI		√	C	16	A
	MU-TAIH13	HLAI Redundant	√	√	C	16	B
	MU-TAIH53	HLAI Redundant	√	√	S	16	B
	MU-TAIH22	Enhanced Power HLA I /STI	√		C	16	B
	MU-TAIH23	Enhanced Power HLA I	√	√	C	16	B
	MU-TAIH62	Enhanced Power HLA I /STI	√		S	16	B
	MU-GAIH13	GI/IS - Aux. Out (4041B)	√	√	C ⁽³⁾	16	B
	MU-GAIH83	GI/IS - Aux. Out (4041B)	√	√	CP ⁽³⁾	16	B
	MU-GAIH14	GI/IS - Aux. & Hi V Out (4041P)	√	√	C ⁽³⁾	16	B
	MU-GAIH84	GI/IS - Aux. & Hi V Out (4041P)	√	√	CP ⁽³⁾	16	B
	MU-GAIH22	GI/IS - Aux. Current Out (4041B)	√	√	C ⁽³⁾	16	B
	MU-GAIH92	GI/IS - Aux. Current Out (4041B)	√	√	CP ⁽³⁾	16	B
MU-PSTX03		Smart Xmtr Int. - Multi-Var.	√	√		16	
	MU-TAIH02	HLAI /STI			C	16	A
	MU-TAIH12	HLAI/STI Redundant	√		C	16	B
	MU-TAIH52	HLAI/STI Redundant	√		S	16	B
	MU-TAIH22	Enhanced Power HLA I/STI	√		C	16	B
	MU-TAIH62	Enhanced Power HLA I/STI	√		S	16	B
	MU-TSTX03	STI		√	C	16	A
	MU-TSTX13	STI Redundant	√	√	C	16	B
	MU-TSTX53	STI Redundant	√	√	S	16	B
	MU-GAIH13	GI/IS - Aux. Out (4041B)	√	√	C ⁽³⁾	16	B

NOTE: The footnotes are located at the end of the table.

(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* - Compression Terminals)		
High Level Analog Input/STI FTA (16 Inputs)	MU-TAIH02	MC-TAIH02
High Level Analog Input/STI FTA for Redundancy (16 Inputs) **	MU-TAIH12	MC-TAIH12
High Level Analog Input FTA (16 Inputs) (CE Mark)	MU-TAIH03	MC-TAIH03
High Level Analog Input FTA for Redundancy (16 Inputs) (CE Mark) **	MU-TAIH13	MC-TAIH13
Smart Transmitter Interface FTA (16 Inputs) (CE Mark)	MU-TSTX03	MC-TSTX03
Smart Transmitter Interface FTA for Redundancy (16 Inputs) (CE Mark) **	MU-TSTX13	MC-TSTX13
Enhanced Power High Level /STI Analog Input FTA (16 Inputs) **	MU-TAIH22	MC-TAIH22
Enhanced Power High Level Analog Input FTA (16 Inputs) (CE Mark)**	MU-TAIH23	MC-TAIH23
Low Level Analog Input FTA (8 Inputs)	MU-TAIL02	MC-TAIL02
Low Level Analog Input FTA (8 Inputs) (CE Mark)	MU-TAIL03	MC-TAIL03
Low Level Analog Input Multiplexer RTD FTA (16 Inputs)	MU-TAMR03	MC-TAMR03
Low Level Analog Input Multiplexer TC FTA (16 Inputs)	MU-TAMT03	MC-TAMT03
Low Level Analog Input Multiplexer TC FTA with Remote CJR (16 Inputs)	MU-TAMT13	MC-TAMT13
RHMUX Remote FTA		MC-GRMT01
RHMUX GI/IS Power Adapter	MU-GRPA01	MC-GRPA01
RHMUX GI/NI Power Adapter	MU-TRPA01	MC-TRPA01
RHMUX NEMA 4 Enclosure (Painted Carbon Steel)	MU-CMSC03	
RHMUX NEMA 4X Enclosure (Stainless Steel)	MU-CMSS03	
LLMUX, SDI, SI Power Adapter	MU-TLPA02	MC-TLPA02
Pulse Input FTA (8 Inputs)	MU-TPIX12	MC-TPIX12
Analog Output FTA (8 Outputs)	MU-TAOX02	MC-TAOX02
Analog Output FTA for Redundancy (8 Outputs) **	MU-TAOX12	MC-TAOX12
Analog Output 16 FTA (16 Outputs), w/StbyMan (use ONLY w/ MU-PAOY22)**	MU-TAOY22	MC-TAOY22
Analog Output 16 FTA (16 Outputs), w/o StbyMan (use ONLY w/ MU-PAOY22)**	MU-TAOY23	MC-TAOY23
Digital Input Isolated 120 Vac FTA (32 Inputs)	MU-TDIA12	MC-TDIA12
Digital Input Isolated 240 Vac FTA (32 Inputs)	MU-TDIA22	MC-TDIA22
Digital Input 24 Vdc FTA (32 Inputs)	MU-TDID12	MC-TDID12
Digital Input 24 Vdc FTA (32 Inputs) (use ONLY w/ MU-PDIY22)**	MU-TDIY22	MC-TDIY22
Digital Output 120/240 Vac Solid-State FTA (16 Outputs)	MU-TDOA13	MC-TDOA13
Digital Output 3-30 Vdc Solid-State FTA (16 Outputs)	MU-TDOD13	MC-TDOD13
Digital Output 3-30 Vdc Solid-State FTA (16 Outputs) (CE Mark)	MU-TDOD14	MC-TDOD14
Digital Output 31-200 Vdc Solid-State (16 Outputs)	MU-TDOD23	MC-TDOD23
Digital Output 24 Vdc, 100 ma Nonisolated FTA (16 Outputs)	MU-TDON12	MC-TDON12
Digital Output 120 Vac/125 Vdc Relay FTA (16 Outputs)	MU-TDOR12	MC-TDOR12
Digital Output 240 Vac/125 Vdc Relay FTA (16 Outputs)	MU-TDOR22	MC-TDOR22
Digital Output 24 Vdc FTA (32 Outputs) (use ONLY w/ MU-PDOY22)**	MU-TDOY22	MC-TDOY22
Digital Output Relay FTA (16 Outputs) (use two w/ MU-PDOY22)**	MU-TDOY23	MC-TDOY23
* 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).		