EUROTHERM
PROCESS
AUTOMATION

6000

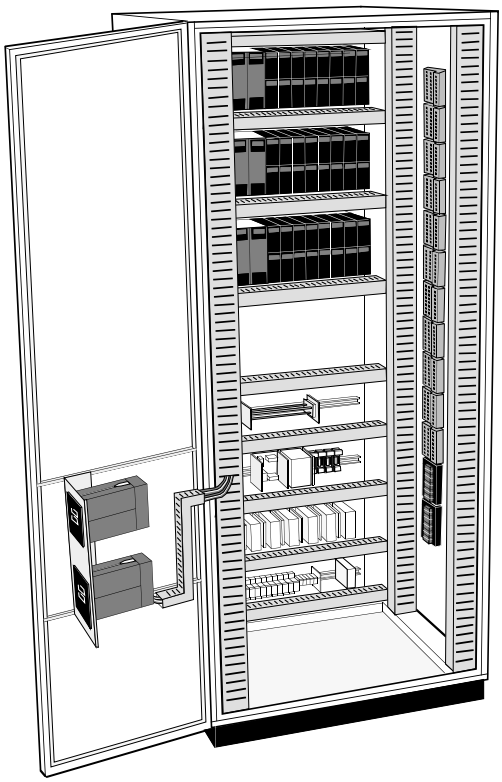
NETWORK

T754X series control enclosures

Product Specification

HIGH AVAILABILITY PROCESS CONTROL ENCLOSURE

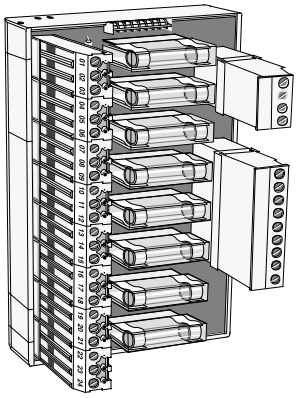
- **Capacity 512 I/O points based on T103/T303 control units**
- **Redundant options with live replacement of all components**
- **Standard construction and wiring minimises cost**
- **Floor standing and wall mounting versions**
- **Front access minimises space required**
- **Panel workstation and controller options**
- **Supplied tested and documented against simple order codes and I/O layout sheet**
- **CE compliant**
- **Protected up to IP55**
- **Application specific configurations on request**



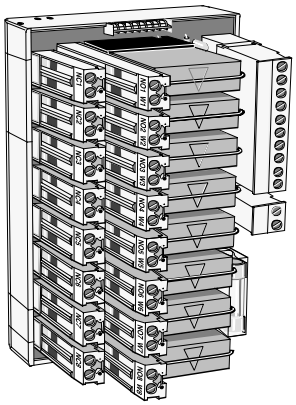
The T754X series of standard enclosures has been designed to accommodate up to four T103 Unit controllers and associated I/O termination units. The pre-configured design keeps build time and implementation costs to a minimum and all active components are easily removable to facilitate maintenance. Enclosures are CE compliant which is a major benefit compared to alternative bespoke offerings. Careful attention has been given to power distribution with a range of redundancy and backup options to provide a high degree of fault tolerance.

Enclosures may accommodate a T1500 panel workstation on the front door as a local operator interface and up to six T640 Controllers.

Enclosures may be interconnected to form a suite with a peer-to-peer network connection as well as a communication link to the control room.



TA122/mA I/O termination



TA180/1p I/O termination

I/O TERMINATIONS

Connection between the T103 input/output modules and the termination assemblies is by colour coded multicore flat cables with plug on connector. The termination assemblies provide wiring for transmitter and contact wetting supplies, as well as fuses or test disconnect jumpers and plug in relays for digital outputs.

HIGH INTEGRITY POWER SUPPLY SYSTEM

All main control units are powered by 24V dc for simplicity and safety. With an ac mains primary supply the 24V dc is provided by a module assembly comprising several PSUs with a "1 for N" redundancy option; if any power supply fails then the load is provided by the remaining ones. A secondary dc supply may be used as backup. An auxiliary mains supply can be used for the internal fan (and light, if fitted) if the primary supply is dc.

Control unit memory is protected against loss of power by a RAM backup battery option and charger.

NETWORK CONNECTIONS

Internal communications is via ALIN which may be connected in a bussed or star configuration, the latter using a passive hub. The simple bus connection may be used for direct external communication up to a 100m total length. Both bussed and star connected systems may be connected via T221 bridges to a LIN network which may run up to 1000m. A bussed ALIN electrical segment supports a total of 16 nodes including external workstations etc. An active hub then allows ALIN expansion either via twisted pair cables or fibre-optic. A passive hub based cabinet with star connection supports up to 12 nodes internally, including T221 bridge and test points.

Communications wiring is via a feed-through connector on a dedicated gland plate for floor standing versions.

SYSTEM AVAILABILITY

High availability of the control system is assured by the fundamental reliability of the Control units and redundant CPU options, plus the following features built into the enclosure design:

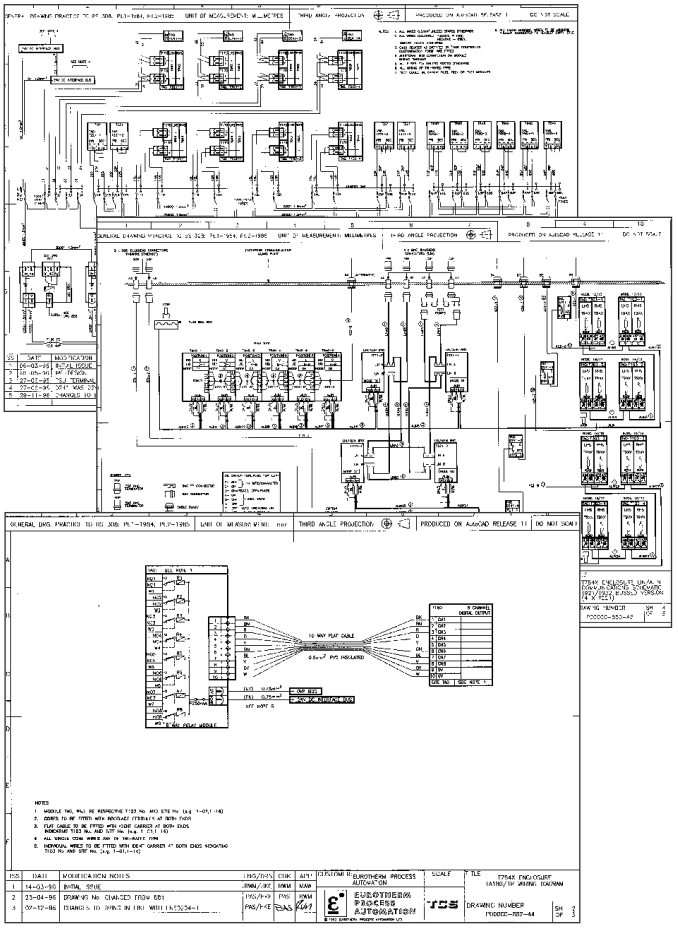
- Optional redundant power supplies with additional standby input
- Live replacement of all active components, including relays
- Extensive health monitoring and diagnostics with indicator LEDs/watchdog relays
- ALIN integrity enhanced by optional passive hub with up to 12 network drops protected against short circuit on any line
- Dual T221 bridges for redundant LIN connection, or dual active hub for connection to dual server-workstation

COMPONENTS

Power supply and auxiliary components are either bulkhead or DIN rail mounting and may be supplied without the enclosure to system integrators and customers with specific installation requirements.

DOCUMENTATION

The cabinets are supplied with standard drawings available on paper or disk in AutoCAD format.



CUSTOMISED ENCLOSURES

Enclosures may be customised to accommodate additional equipment or variants in wiring standards but this will require a specific quotation and incur an engineering charge.

SUPPORT SERVICES

Eurotherm Process Automation Customer Services Department offers a variety of on site support services, including verification of network wiring and assistance with commissioning.

SPECIFICATIONS

Physical (version dependent)

	T7540	T7541	T7542	T7545	Notes
Mounting:	Floor	Floor	Floor	Wall	
External dimensions (mm):	800W × 2100H × 600D	1200W × 2100H × 600D	800W × 2100H × 800D	800W × 1200H × 400D	
Door	Single	Double	Single	Single	
Internal equipment					
T103:	2/3[1]	4	4	1/2[1]	1. Additional T103 subject
T303:	2	2	2	1	to specified I/O capacity
T1500:	1	1	1	1	
T640:	6	6	6	6[2]	2. In lieu of second T103
IS barrier option:	*	*	*	*	* consult factory
Capacity ALIN nodes:	16/12*	16/12*	16/12*	16/12*	Lower figure using passive hub
Capacity, I/O points:	256	512	512	128	
Power rating (maximum):	325W	430W	430W	190W	Including T1500
Protection category:	IP55	IP55	IP55	IP55	Derated to IP43 when
Cable trunking (mm)	80 × 80	80 × 80	80 × 80	60 × 60	ventilation fan fitted; consult factory regarding panel mounted equipment

Power supply

Supply option:	120V ac	230V ac	24V dc
Input voltage range:	92-132V RMS	184-264V RMS	18-36V
Input frequency:	47.5-63Hz	47.5-63Hz	—
RAM backup battery:	4.7V 5Ah 10 days holdup fully charged		
Health status:	Green LED plus relay (SPCO) monitoring each PSU		

Accessories

T221 ALIN bridge:	Single or dual.
S9572 ALIN passive hub:	12-way; e.g. 9 CPU nodes plus 2 × T221 and test point
S9573 ALIN adaptor:	RJ45 socket for connection of ALIN test equipment (not supplied with S9572 hub)
Thermostat:	Internal temperature alarm contact (set at 50°C)
Internal lamp:	Operates via door switch when door open
Fan inlet/outlet) or stirrer fan:	Assists uniform temperature distribution

General/environmental

Storage Temperature:	–25°C to +85°C.
Operating Temperature:	0-35°C (0-50°C inside enclosure)
Relative humidity:	5 to 95% (non-condensing)
Design standards	
Protection:	BS EN60529
EMC emission:	EN50081-1
EMC immunity:	EN50082-2
Electrical, mechanical:	IEC1131-2
Safety:	EN60204-1

CE Conforms to EMC Directive 89/336/EEC and Low Voltage Directive 72/23/EEC

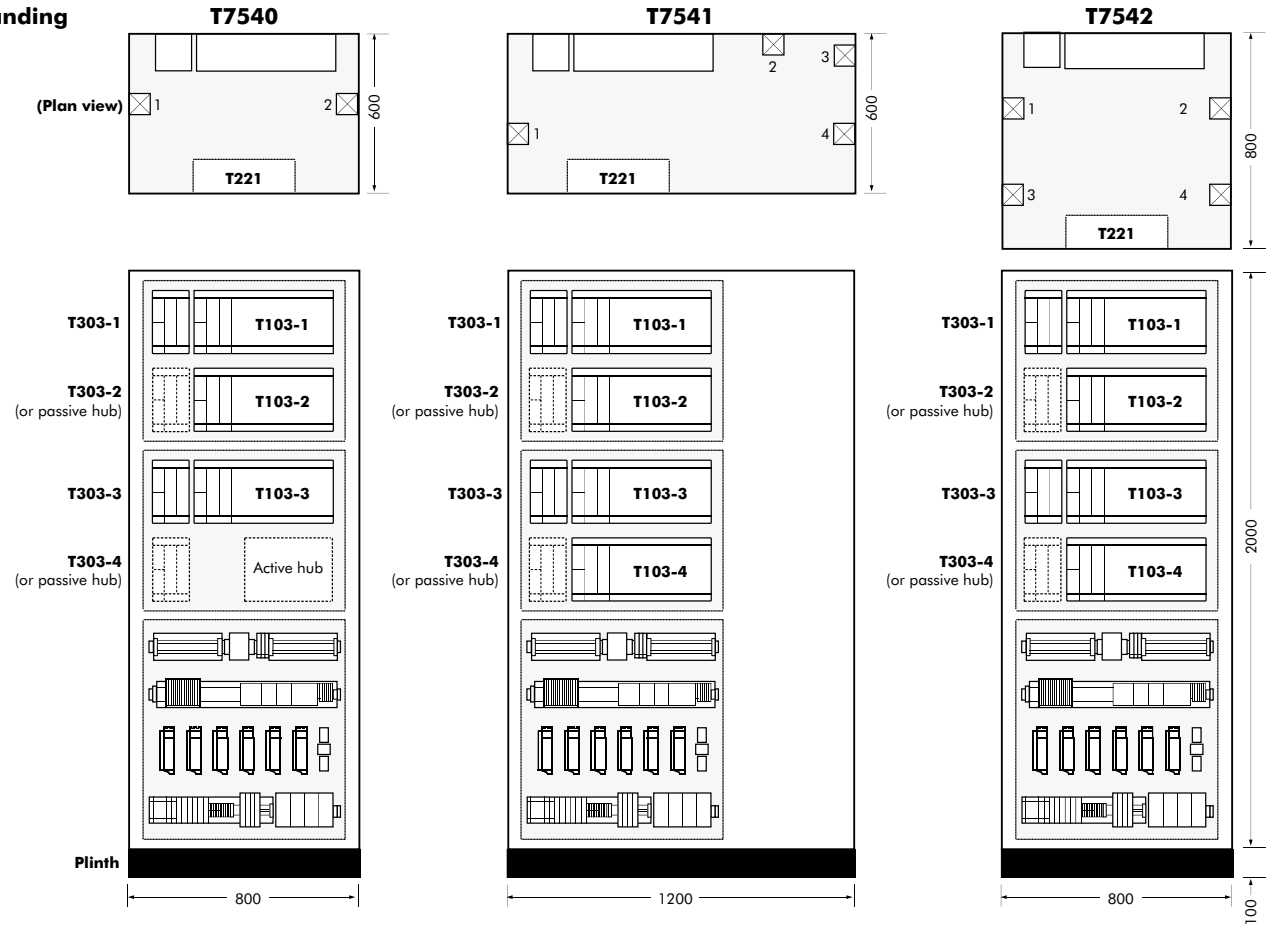
Construction standards

Enclosures are built to EPA guidelines for construction and EMC precautions. These are detailed in the following documents:–

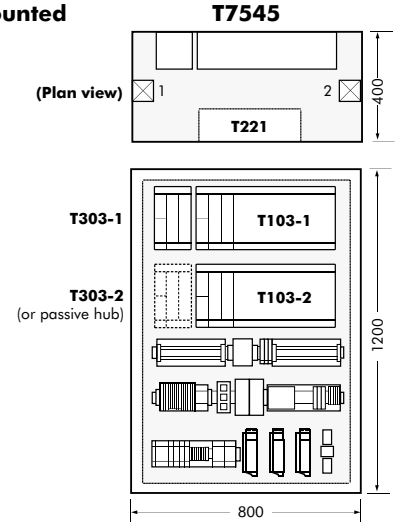
T754X Enclosure construction standards	HL083637
T754X Test specification	HW083636
EMC Installation	HG08365U001

INSTALLATION DETAILS

Floor standing



Wall mounted



Notes: Plan views show main components and terminal rail trunking only.
Floor standing enclosures are fitted with lifting eyes at the top.
Wall mounting units supplied with fixing brackets.
1 or 2 active hubs may take the place of lowest T103 and T303.

ORDERING INFORMATION

T754X enclosures

Base unit	Primary supply	Auxiliary ac supply	Secondary dc supply	Power supply	RAM back-up battery	ALIN Hub	T103	T303	D241
T7541	230V	230V	–	RD	BATT	–	3T103D	1T303	–
1T221	–	–	SF	L	BE	DBL	100	–	–
ALIN Bridge	T1500	T640	Cooling fan	Internal lamp	Cable entry	Door hinge	Plinth	Drawings	Test record

Example

Base unit	Footprint	#T103/303	#I/O	**Code**
Floor standing (2100H)	800W × 600D	3/2	256	T7540
	1200W × 600D	4/2	512	T7541
	800W × 800D	4/2	512	T7542
Wall mounted (1200H)	800W × 400D	2/1	128	T7545

Primary supply	
184-264V 50/60Hz	230V
92-132V 50/60Hz	120V
18-36V dc	DC

Auxiliary ac supply for fan etc.	
184-264V 50/60Hz	230V
92-132V 50/60Hz	120V
None	–

Secondary dc supply (backup to primary supply)	
Secondary dc supply fitted	SD
Not fitted *default*	–

Power supply backup ac/24V	
Redundant (N + 1) ac primary supply only	RD
Not fitted	—

RAM backup battery option and charger	
Fitted	BATT
Not fitted	—

ALIN hub fitting	
1 S9572 passive hub fitted – takes place of T303	1PHB
2 S9572 passive hubs fitted* – takes place of T303	2PHB
1 S9574 active hub fitted* – takes place of T103	1AHB
2 S9574 active hubs fitted – takes place of T103 and T303	2AHB
Not fitted	—

T103 fitting (4 max, base unit dependent)	
Quantity n Simplex units fitted	nT103S
Quantity n Duplex units fitted	nT103D
Not fitted	—

T303 fitting (4 max, base unit/hub dependent)	
Quantity n units fitted	nT303
Not fitted	—

D241 fitting (4 max)	
Quantity n units fitted	n D241
Not fitted	—

ALIN bridge fitting	
Single T221	1T221
Dual T221	2T221
Quad T221 (not T7545)*	4T221

T1500 Operator station fitting	**Code**
Fitted	T1500
Not fitted	—

T640 Loop processor fitting	
Quantity n (specify n = 0 to 6)* T745 with exceptions	nT640
Not fitted	—

Cooling fan	
Ventilation fan fitted	VF
Stirrer fan *default*	SF
Not fitted	—

Internal lamp	
Lamp fitted (not T7545)	L
No lamp fitted	—

Cable entry	
Top	TE
Bottom *default*	BE
Top module (T7540/1 only, adds 200mm overall height)	TM

Door hinge	
On left (not T7541) *T7545 default*	LHS
On right (not T7541) *default others*	RHS
Double (T7541 only)	DBL

Plinth	
0mm	–
100mm (not T7545) *default*	100
200mm (not T7545)	200

Drawings	
Standard	–
Custom	CD

Test record	
None	–
Supplied	TR

* Consult factory

How to order T754X enclosure

A Specify installed equiment:
T103, T303, T1XX I/O modules, T221, D241, S9572/S9574, T1500, T640 (consult factory)

B Specify enclosure
Includes power supplies, mounting and wiring (but not supply) of installed equipment

C Specify I/O terminations

Internal layout
Complete layout form on back page, noting rules:
Analogue modules at LHS, Digital at RHS to allow cable segregation while allowing expansion

I/O configuration (chargeable extra)
Specify ranges, linearisation and units for all I/O

Consult factory for EXCEL-based order specification package

ORDERING INFORMATION (continued)

TA1XX I/O terminations – Includes subassemblies per Sales Specification HA 08736U 001

Temperature and low level analogue inputs	Code
T111 1-channel RTD	TA111/RTD
T112 8-channel T/C or mV – direct (unwired)	TA112/–
T112 8-channel T/C or mV – via terms/comp cable[1]	TA112/TC
T113 6-channel RTD – via terms[2]	TA113/–

High level analogue inputs	
T120 1-channel AI V or mA (self powered)	TA120/–
T122 8-channel AI V	TA122/V
T122 8-channel AI mA – ext or loop supply (individual fuse) Termination unit LA082755	TA122/mA
T122 8-channel AI mA – ext or loop supply (single fuse) Termination unit LA083450	TA122/mAS
T123 8-channel AI mA – ext or bulk loop supply Termination unit LA082755	TA123/mA
T123 8-channel AI mA isolated external powered	TA123/mAT
T124 6-channel isolated mA – individual loop power[2] Termination unit LA083872	TA124/mA

Frequency inputs	
T130 1-channel Pulse/Freq (self powered)	TA130/–

Digital inputs	Code
T140 8-channel DI – logic	TA140/log
T140 8-channel DI – LEDs 24V dc Termination unit LA083350	TA140/DC
T140 8-channel DI – LED/24V dc and test disconnect Termination unit LA083383	TA140/TDC
T140 8-channel DI – LED/OPTO 120V ac Termination unit LA083611U120	TA140/120
T140 8-channel DI – LED/OPTO 230V ac Termination unit LA083611U230	TA140/230
T140 8-channel DI – LED/OPTO 24V dc	TA140/24

Analogue outputs	
T150 1-channel AO 0-10V or 0-20mA	TA150/–
T151 8-channel AO 0-20mA	TA151/–

Digital outputs	
T180 8-channel DO – logic	TA180/log
T180 8-channel DO – LED/relay SPCO Termination unit LA083451U008	TA180/1p
T180 8-channel DO – LED/relay DPCO Termination unit LA083608	TA180/2p

Notes
1 Single T/C (or mV) type to be specified
2 Consult factory

Installed equipment – typical order codes; see relevant Sales Specification for further detail

T103 Unit controller

Sales specification HA 083671U 001

Base unit	CPU options	Software options	Base unit identification	Mounting	Factory installation				
T103	T920/T920	CTRL	–	–	–				
									Example

T303 Unit supervisor

Sales specification HA 083671U 001

Base unit	CPU 1 options	Software 1 options	CPU 2 options	Software options	Base unit identification				
T303	T921	SEQU	T920B	–	–				
									Example

T1XX I/O modules

Sales specification HA 083736U 001

Base unit									
T140									
									Example

T221 LIN/ALIN bridge

Sales specification HA 082716U 001

Base unit	Power supply	Serial comms	LIN	Modem	Sleeve				
T221	DC	–	RLIN	–	T720				
									Example

D241 Comms isolator

Sales specification HA 081096U 001

Base Unit									
D241(101)									
									Example

S9572 ALIN hub

S9574 Active hub

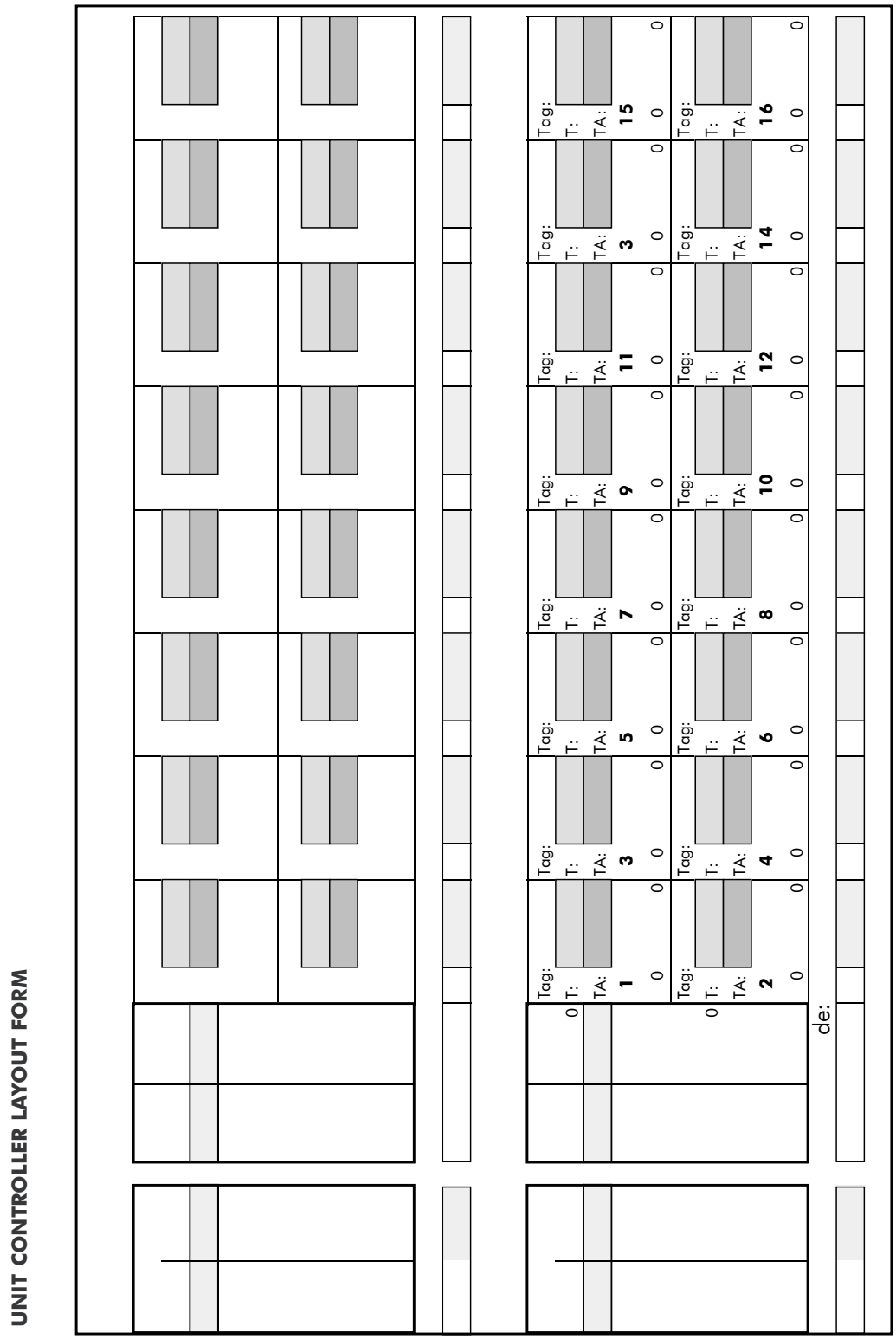
Sales specification HA 083904U 001

T1500 Panel workstation

Sales specification HA 083566U 001

T640 Loop processor

Sales specification HA 082468U 001



EUROTHERM PROCESS AUTOMATION LIMITED

SOUTHDOWNVIEW WAY, WORTHING, WEST SUSSEX BN14 8NN

TELEPHONE: +44 (0) 1903 205277 FAX: +44 (0) 1903 233902 TELEX: 87437

HA 083704U 001
Issue 1/A May 1997