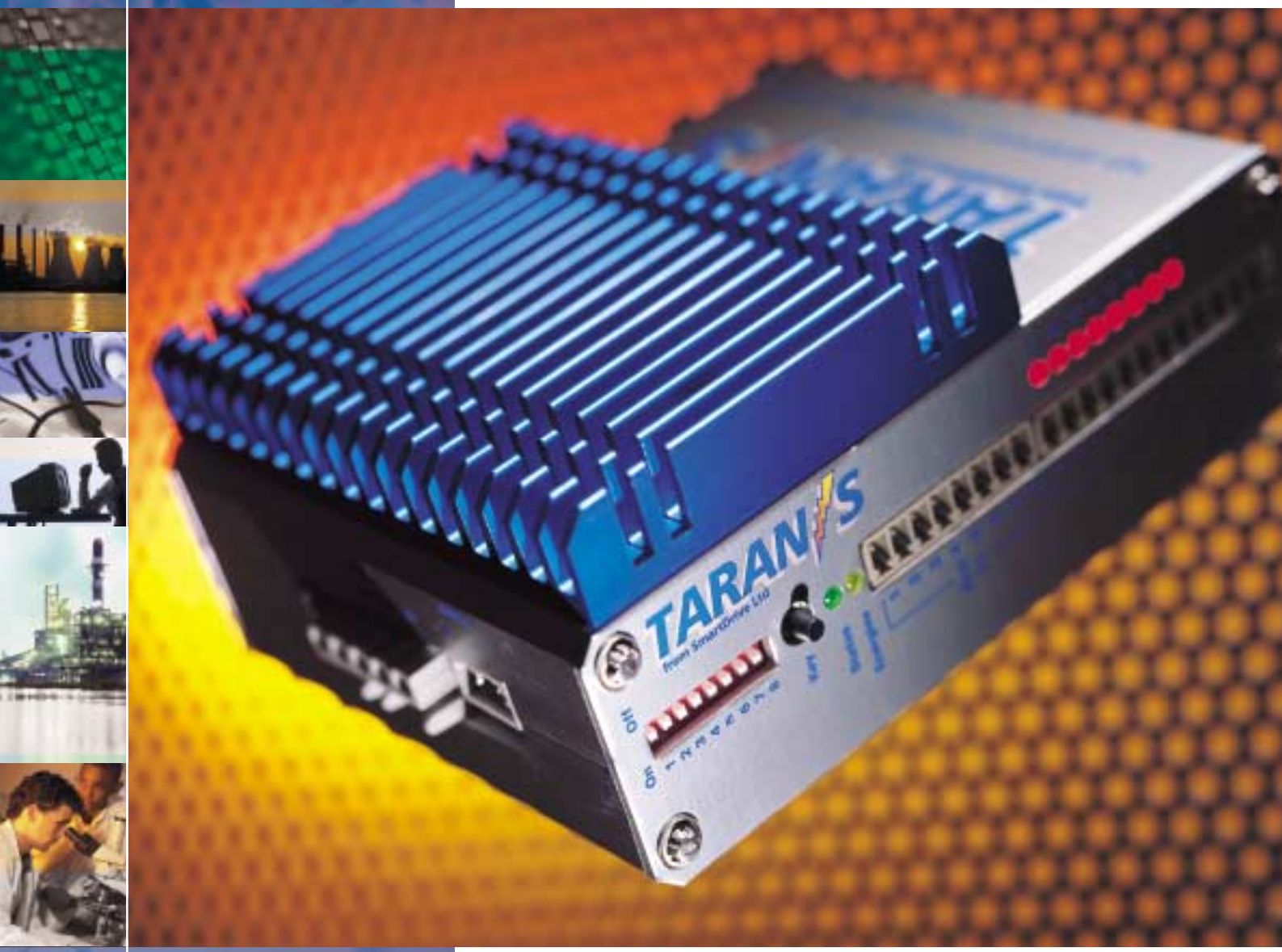
TARANIS®
from SmartDrive Ltd



The Future of Motion Control

- Ultra smooth microstepping - over 3 million steps per revolution !
- Super fast digital processing giving silent motor operation at low speeds
- Powerful 7.5 Amp Drive @ 85V - for large range of stepper motors
- Low cost, compact DIN rail & panel mountable design
- On board BASIC language with PC programming tools

SmartDrive®
• DRIVES AND CONTROLS •

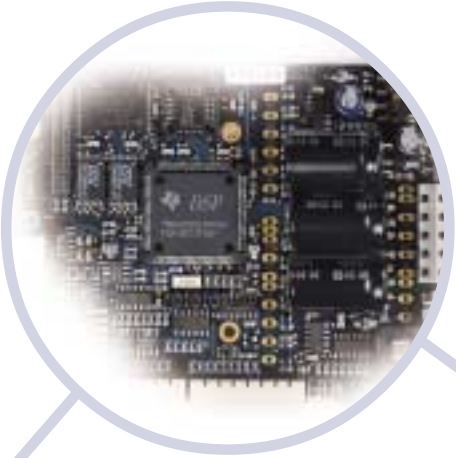
The first combined digital Stepper Drive & BASIC Cont

Taranis The Concept

The basic analogue techniques used to drive stepper motors have changed little in recent decades. With many new digital signal processors (DSP) becoming available SmartDrive's Engineering team felt new and exciting opportunities were opening up to improve Stepper performance and Controller capability. However with no comparable products on the market and few published articles relating to this technology our Engineering team embarked on a long term research project to investigate these new devices and evaluate their suitability for Stepper products. Out of this pioneering work Taranis was born - a fast BASIC machine and motion controller, setting new performance standards and taking stepper technology into a new exciting digital era.

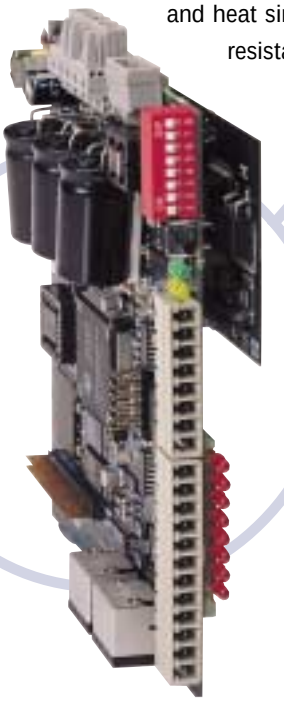
Taranis Technology

The heart of this ground breaking design is a super fast DSP. The PWM (pulse width modulation) gerating structure of the DSP, intended for 3 phase AC/DC motor drives, has been cleverly utilised to also generate the 4th phase switching and control needed for the classic 2/4 phase stepper motor. This adaption allows the MOSFET power devices to be directly controlled by the DSP PWM outputs, enabling adaptive mathematical modelling to control the winding current accurately. This advanced technique means low speed motor noise can be eliminated and ultra smooth motion is possible, with over 3 million steps per revolution!



Design

With complex ancillary circuits not now required the component count is low and the circuit board and heat sink construction is minimised, combined with the latest low-on resistance power MOSFETS Taranis is much more compact and thermally efficient than traditional solutions, resulting in a unique DIN rail mountable design exploiting standard "user friendly" connectors.



Versatile

Despite its small size Taranis is packed with high performance features, lending itself to a wide range of user applications. Capable of providing up to 7.5 A @ 85V Taranis can smoothly drive size 17, 23 and 34 frame stepper motors developing up to 8Nm shaft torque! This can be further increased when used with SmartDrive's extensive gearbox options.

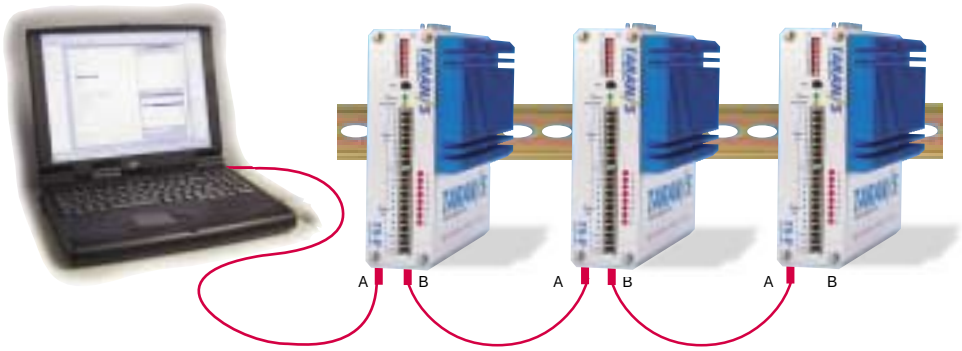
TARANIS - from the Celtic sky god whose symbols are a wheel in motion and a bolt of lightning.

Taranis Multiple Axis

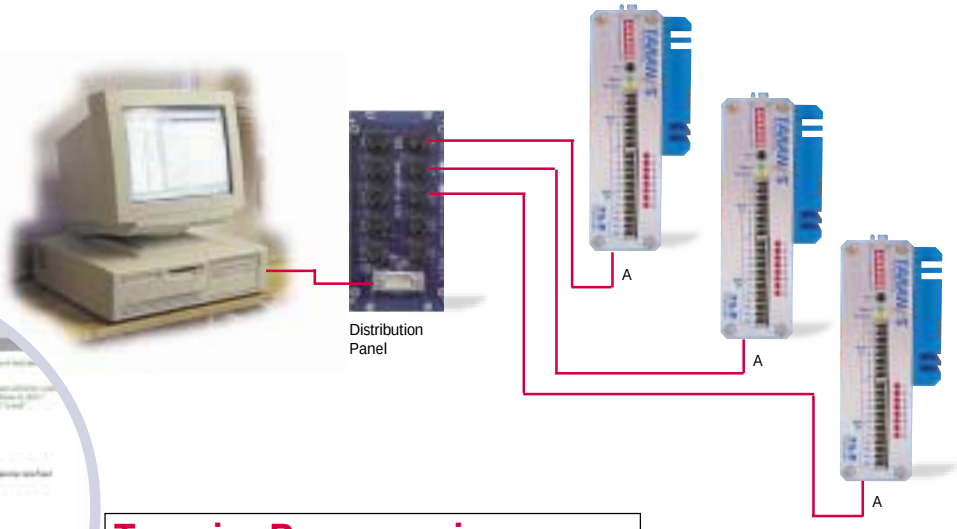
Taranis has been specifically designed for multiple axis co-ordinated working over an RS485/4W multi-drop link from a PC, PLC or other host. Each of up to 31 drives has an address and responds to data sent specifically to that address; in addition there are 6 global commands accepted by all drives to provide synchronisation. Using Taranis BASIC any program subroutine or PAUSE can be set up to be actioned within 2ms in all drives and moves can be set up and initiated within 50us of each other using the Taranis BASIC SYNCMOVE. Alternately the same responses can be initiated using the two high speed opto inputs where synchronisation is required by hardwired connection.

Each drive has two parallel wired serial MiniDIN connectors so that multiple units can be simply and reliably linked in a daisy chain as well as by star connection to a node box using pre-assembled Taranis cables. An RS232 to 485/4W serial adapter cable is available to simplify interface connection to the host, and a +5V feed on Serial port A is available to power a keypad or display.

Daisy Chain Multidrop



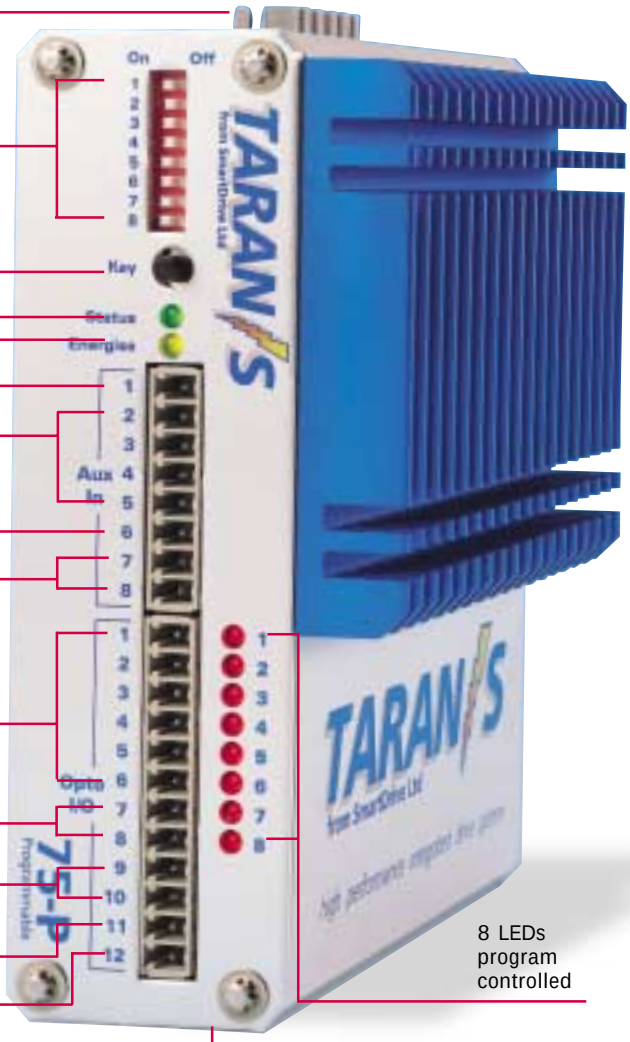
Star Connection Multidrop



Taranis Programming

Taranis use a specially developed motion language featuring over 120 keywords - Taranis BASIC, combined with a user friendly Windows development package - Nimbus. Applications are easily developed on a PC host and can be fixed into the onboard Flash EPROM to quickly create stand alone turnkey systems.

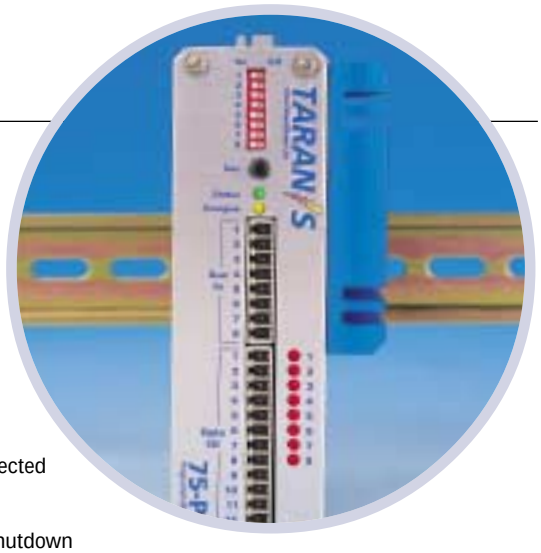
NIMBUS - the aura that surrounds and gives strength to a god.



Dimensions 135H, 55W, 105D (shown actual size)

General specification

- 51200 microsteps per rev position resolution
- Motion interpolation between microsteps
- 24-85VDC supply at 50mA to typically 4A
- Idle, Run and Boost current control up to 7.5A
- Motor outputs short circuit protected
- Under volt supply lockout
- Over temp indication prior to shutdown
- Up to 40°C ambient operation in free air
- Optional clip on temp controlled fan
- Multiple unit synchronised motion
- 120 keyword floating point BASIC
- 30K Flash Eprom program store
- Variables saved on power down



EMC Compliant

- BS EN50082-2 (1995) Industrial Noise Immunity.
- BS EN55011 (1998) Class A Noise Emissions.

Nimbus PC support package

A comprehensive Windows 95/98 compatible environment to create, develop and test Taranis programs.
The program editor features automatic colour highlight of key words, variables etc, cut and paste between multiple program windows and plain ASCII source files.

Complete with serial PC cable, manuals, software, and plug in test switch PCB.

Designed and built in the UK by

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