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## CKAS T2s 2DOF Motion System (220kg / 500lb Payload)



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### Introduction

The CKAS T2s 2DOF Motion System, is specifically directed at **very low cost small scale motion simulator applications**, such as commercial and industrial simulators, consumer coin-operated arcade entertainment simulators or home built flight and racing entertainment simulators.

### Target Applications

- **Small Scale Low Cost Entry Level Flight Training Applications**
- **Small Scale Commercial Vehicle and Truck Driver Training Simulators**
- **Small Scale Mining Equipment Simulators and Heavy Earth Moving Equipment Simulators**
- **Small Scale Train Driver Simulators**
- **Next Generation Unsupervised Coin-operated Motion Simulator Arcade Machines**
- **Home Built Flight Simulators**
- **Home Built Car Racing Simulators.**

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## General Description and Capabilities

The CKAS T2s 2DOF Motion System is Ideal for OEM manufacturers of existing simulator products or home builders who are looking for a cost effective method to instantly add motion to an existing or new design. This unit is pre-built to CKAS standards, and is USB plug and play straight out of the box. The only assembly required is to bolt on whatever goes on top of the motion system.

The CKAS T2s 2DOF Motion System features a mere 96kg total weight, 800mm total width for easily passing through doorways, and sits only 300mm high, therefore eliminating the need for any specialised stair or gangway for stepping up onto it. CKAS has used the technology it has developed for the heavier motion systems to design this unit, incorporating industry leading electronics, encoders and actuators.

The expected life of the T2s is extremely high for its price point, and the maintenance requirements are minimal, especially important in commercial or consumer based applications.

The CKAS T2s 2DOF motion system comes with the following key features:

- Fully Electric Actuation
- USB 2.0 plug and play
- Washout filters and acceleration onset cueing algorithms for:
  - Microsoft Flight Simulator FSX / 2004
  - Microsoft ESP
  - Lockheed Martin Prepar3D
  - X-Plane
  - rFactor (v1.255 or higher) and rFactor2
  - iRacing
  - Generic UDP interface for custom user program or other systems
- Basic Serial over USB interface for immediate connection to X-Sim or custom software to immediately move the motion system
- Very high speed update 100Hz motion controller for extremely smooth high fidelity response

## General Specifications

(Subject to change without notification)

Product Name	CKAS T2s 2DOF Motion System
Product Code	T2sMP
Product Number	14.0001.11
Product Description	Small Scale 2 degree of freedom pitch-roll electric motion system
Harmonization Code (HS)	854370 or 854380 or 8543.70.96.50 (depending on Harmonisation system)

## Mechanical Specifications

Architecture	2 Degree of Freedom Pitch – Roll Crank Arm
Actuation	Fully Electric
Nominal Width (Parked)	800 mm (31.5")
Nominal Length (Parked)	1180 mm (46.5")
Nominal Height (Parked)	300 mm (11.8")
Approx unit weight	96 kg (212 lb)
Anchoring Specification	Not required for this motion system

## Performance Specifications

Payload Mass Limit	220 kg (500lb)
Payload Moment of Inertia	75 kg.m <sup>2</sup> (1,780 lb.ft <sup>2</sup> )
Payload CG horizontal offset	Less than 50mm from Centroid of Flying Platform
Payload CG Vertical offset	Less than 600mm high from top of Flying Platform
Payload Max Floor Size	2000mm x 2000mm (79" x 79")
Indep. Surge (disp. / vel. / accel.)	Not actuated
Indep. Sway (disp. / vel. / accel.)	Not actuated
Indep. Heave (disp. / vel. / accel.)	Not actuated
Indep. Yaw (disp. / vel. / accel.)	Not actuated
Indep. Pitch (disp. / vel. / accel.)	±8°, ±18°/s, ±160°/s <sup>2</sup>
Indep. Roll (disp. / vel. / accel.)	±8°, ±18°/s, ±160°/s <sup>2</sup>
Max Motion Excitation Frequency	50 Hz

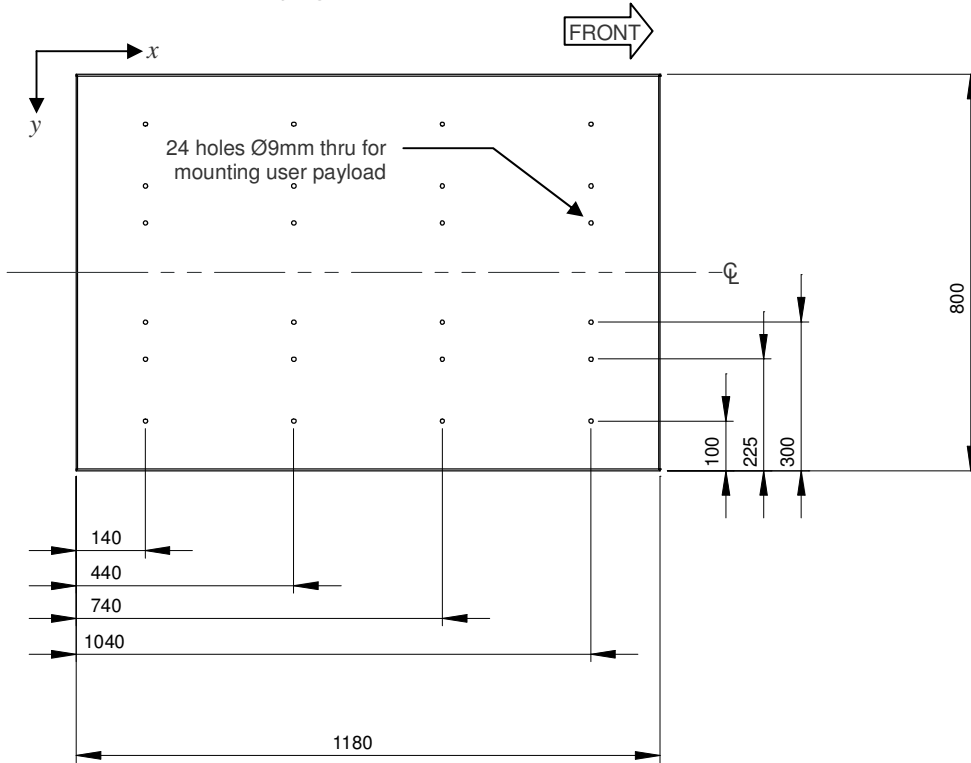
## Electrical Specifications

Power Supply Requirements	200 – 250V AC Single Phase @ 5 Amps
PC Connectivity	USB 2.0
Controller Update Frequency	100 Hz

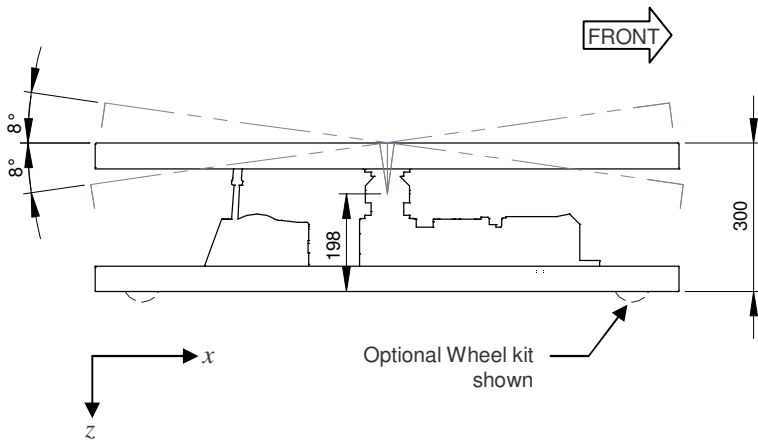
## Software Specifications

PC Interface Protocol	Serial over USB
Washout Algorithm Drive	Modified Classical Washout System with 2DOF optimisations for: <ul style="list-style-type: none"><li>• Microsoft FSX / FS2004 / ESP</li><li>• Lockheed Martin Prepar3D</li><li>• X-Plane</li><li>• rFactor (v1.255 or higher) and rFactor2</li><li>• iRacing</li><li>• Generic UDP interface for custom user program</li></ul>
Direct Drive	Serial Direct Motor Position Commands

View of Flying Platform from TOP



View of Motion System from RIGHT



View of Motion System from FRONT

