



CRANE SAFE LOAD SYSTEMS AND WEIGHING EQUIPMENT

TECHNICAL DATA SHEET – SAFE-AID TS7000 LOAD MOMENT INDICATOR FOR LATTICE BOOM CRANES

The TS7000 Safe Load Indicator complies fully with the requirements of the OSHACT (Act 85 of 1993). The system also meets and exceeds the standards as set out in the South African standards SANS 19:2007 Edition 1.1, SANS 61-1:2009 Edition 2, ISO 10245-1:2008 Edition 2 and the British Standard BS7262:1990.

SYSTEM FEATURES

- Designed for easy operator use
- System test with self-diagnostic capabilities
- Resistive touch screen operation
- Large colour display with excellent sunlight readability
- All faults displayed as text messages – no codes
- Complete load chart memory – 4000 programs
- On board basic calibration with simple calibration techniques
- Vibration proof and tested at extreme temperatures including high humidity (-20 to 70°C)
- Rated Load Display – Max load allowed for selected configuration and sensed parameters
- Lifted Load Display – Load on hook (including hook and all ancillary lifting equipment)
- Radius Display – Distance from centre line of rotation to load centre
- Percentage of Rated Load Display - % Utilisation
- Program Selection Displayed Permanently
- Main Boom Angle Display
- Luffing Fly Jib Angle Display
- Tare Load Display
- Anti-2-Block incorporated into the system
- 90% Audio and Visual pre-warning
- 100% Audio and Visual overload warning
- Relay output for lever cut-off (output to cut-out circuit)
- On screen override for momentarily overriding lever cut-off - Optional
- Key switch for overriding lever cut-off
- Data Logger – Optional
- Wind Speed Display with selectable units of measure and Main or Fly positioning enabled – Optional
- Maximum Wind Speed allowed with audio and visual alarm – Optional

SYSTEM COMPONENTS

QUANTITY	ITEM DESCRIPTION
1	TS7000 DISPLAY UNIT INCLUDING SWIVEL MOUNTING BRACKET
1	M400 MOTHERBOARD IN IP67 JUNCTION BOX SUITABLE FOR EXTERIOR MOUNTING
1 OR 2	A400 AMPLIFIERS IN IP67 JUNCTION BOXES WITH VIBRATION MOUNT BRACKETS FOR BOOM TIP MOUNTING – ONE AMPLIFIER REQUIRED ON MAIN BOOM AND ONE ON FLY JIB IF FITTED
1 OR 2	COMPLETE HAND REELING DRUMS (INCLUDING BOLT ON MOUNTING BRACKETS, CABLE & MILITARY SPECIFICATION PLUGS)
1	TENSION LOAD CELL FOR MAIN LOAD SENSING
1	RUNNING ROPE DEFLECTOR UNIT FOR FLY JIB LOAD SENSING (CAN BE USED FOR MAIN BOOM IF REQUIRED)
1 OR 2	ANTI-2-BLOCK SWITCHES INCLUDING EASYFIT COUNTERWEIGHT ASSEMBLIES
1	PROXIMITY SWITCH FOR SLEW AREA SELECTION
1	COMPLETE OPERATORS MANUAL
ALL CABLES TO COMPLETE INSTALLATION OF COMPLETE TS7000 SAFE LOAD INDICATOR	

OPTIONAL COMPONENTS

QUANTITY	ITEM DESCRIPTION	SYSTEM USE
1	DATA LOGGER WITH REAL TIME CLOCK AND BATTERY BACKUP	OPTIONAL EXTRA FOR TS7000 DISPLAY UNIT – CAN ONLY BE FITTED AT FACTORY
1	WIRED ANEMOMETER – WIND SPEED METER	OPTIONAL EXTRA – REQUIRES 4 PIN MILITARY SPECIFICATION PLUGS ON MAIN AND/OR AUXILIARY AMPLIFIER BOXES
1	3 TIER ROTATING ROBOT LIGHT (RED, AMBER & GREEN) WITH FILAMENT TYPE BULB - 12 OR 24VDC)	OPTIONAL EXTRA REQUIRED BY SOME CONSTRUCTION AND MINING REGULATIONS
1	3 TIER FLASHING LED ROBOT LIGHT (RED, AMBER & GREEN) – 24VDC ONLY	OPTIONAL EXTRA REQUIRED BY SOME CONSTRUCTION AND MINING REGULATIONS

TECHNICAL SPECIFICATIONS

TS7000 Display Unit:

- Single Multi-layered circuit board – 4 layers
- 7” TFT Colour Touch LCD with backlight
- Graphical Colour Screen – 256,000 Colours
- Display Resolution – 800 x 480 Pixels
- 91 x 152mm Viewing Area
- Aluminium Bezel fitted to powder coated sheet metal enclosure
- Replaceable Transparent Touch Screen protection sticker
- CAN Bus or MOD Bus communication
- 1 x Optically Isolated Digital Input
- 1 x High side driver with intelligent protection and fault reporting
- IP55 Protection (BS7262 5.7)
- Outside Dimensions 145 x 203 x 55mm (L x W x H) excluding mounting bracket

M400 Mother Board

- Single Multi-layered circuit board – 2 layers
- 10 – 36VDC Input Voltage
- 2 x Optically Isolated Digital Inputs (PNP or NPN user selectable)
- 1 x Load Cell Input (mV input)
- 1 x 0 – 5VDC Analogue Input
- 2 x 4-20mA Inputs
- 4 x Relay Outputs with intelligent protection and fault reporting
- IP66 Glass Fibre reinforced polyester enclosure
- CAN Bus and/or Wi-Fi (Optional) Communication
- Outside Dimensions 220 x 120 x 100mm (L x W x H) excluding gland entries

Hand Reeling Drum

- Tried and tested rugged design
- Powder coated and galvanised steel assembly with simple bolt on brackets
- Lockable once correct cable length is reached
- Military specification plugs with end caps for reliability and durability
- Screened 4 core data cable for CAN BUS communication and power
- Simple cable replacement procedure if required
- Nylon bushes and handle for extreme durability
- Outside Dimensions 360 x 360 x 350mm (L x W x H) excluding gland entry

A400 Angle Amplifier Boards

- IP66 Glass Fibre reinforced polyester enclosure
- Angle measurement using a high sensitivity multi axis accelerometer (accuracy $\pm 0.1^\circ$)
- Anti-2-Block switch monitoring with resistor pull up for short circuit detection
- 1 x Load Cell Input (mV input)
- 2 x 4-20mA Inputs
- 1 x 0 – 5 VDC Input
- 2 x Digital Inputs with intelligent monitoring for A-2-B & Wind Speed
- CAN Bus and/or Wireless (Optional) Communication
- Outside Dimensions 160 x 75 x 60mm (L x W x H) excluding gland and plug entries

Tension Load Cell

- Stainless steel and hardened body for extreme durability
- Bridge resistance 350 Ω + 4 Ω
- Rated Output ± 1 mV/V
- Maximum excitation 15 VDC
- Measuring range – As per crane manufacturers maximum single line pull specifications
- IP67 Military Specification connector

Running Rope Deflector Unit

- Rugged powder coated steel assembly
- Oilon (Nylon) Pulleys with twin bearings to prevent rope damage and for longevity
- Oilon (Nylon) Sleeves to facilitate easy removal of load cell and shafts
- Individually designed with 1.5t load cell to suit crane specifications
- Load cell Bridge resistance $350\Omega + 4\Omega$
- Load Cell Rated Output $\pm 1\text{mV/V}$
- Load Cell Maximum excitation 15 VDC
- Measuring range – As per crane manufacturers maximum single line pull specifications
- IP67 Military Specification connector on Load cell
- Splash Cover over load cell assembly to prevent build-up of grease etc.

Wired Anemometer (Wind speed meter)

- Measuring range 2-30 meters per second (7.2 – 108 kilometres per hour)
- Black PVC Body with stainless steel rotor
- Self-levelling mounting bracket
- 5m Connecting cable from anemometer to A400 amplifier
- IP54 environmental protection