



**TS7000 CANBUS SAFE LOAD INDICATOR (SLI)
FOR HYDRAULIC / TELESCOPIC MOBILE CRANES**

GLOBAL LEADERS IN MOBILE CRANE SAFETY & CONTROL SOLUTIONS

INNOVATIVE TECHNOLOGY | EXPERIENCE | GLOBAL SUPPORT ORIENTATED



MANUFACTURING SAFETY SYSTEMS SINCE 1983

UNEQUIVOCALLY THE MOST ADVANCED CRANE SAFETY SLI CONTROL SOLUTION

- Comprehensive load chart memory
- Rated Capacity as MAX load
- Lifted load
- Radius with accurate deflection factoring
- Percentage of rated capacity - % utilisation
- Main boom length
- Angles – main boom and jibs
- Telescoping positioning - visual
- 90% & 100% visual & audible warning
- Wind speed
- Outrigger monitoring
- Slew positioning
- On screen crane level monitoring / tilt monitoring
- Data logging

The Safe-Aid TS7000 system is an industry-proven Safe Load Indicator and Safe-Aid is a market leader in safety and control systems for Mobile Telescopic and Lattice cranes.

As one of the leading innovators in technology based crane safety systems since 1983 and with years of experience in the field of Safe Load Indication, we pride ourselves in the most up-to-date hardware and software incorporated into the TS7000 Safe-Aid SLI.

Product and system consists of all hardware, consistently updated software, improvement and enhancement upgrades, robust sensors and the tried and tested TS7000 7-inch Human Machine Interface console.

Safe-Aid is service and quality inspired and our team is committed to safety, reliability & leading edge technology in the crane industry. Long term and established relationships with our clients is a barometer of our success and more so, our clients' confidence in our products.

ADVANTAGES OF INSTALLING A TS7000 SLI

- Excellent HMI console with superb operator friendly interface supports simplistic operator interaction
- Self diagnostic capability
- Fault reporting as either virtual error message or codes
- Simplified, seamless calibration of all parameters
- Vibration proof and tested at extreme temperatures, including high humidity
- Custom software integration (if required)
- PLC "Real time" integration enabled via CANbus (optional)
- Multiple Telescopic Sections may be monitored and/or controlled
- "On Screen" momentary override
- Override keyswitch with intelligent monitoring and logging
- Event recording – data logging enabled
- User limits may be defined by the operator or supervisor / rigging personnel
- High accuracy accelerometers utilized for measurement of angles
- Streamlined enhancements to fault finding process

SAFE-AID TS7000 SUPPORTS A LARGE SET OF SLI APPLICATION FEATURES

- Measurement of force using piston and rod side pressure transducers with PSRT (Pressure Spike Restrictor Technology)
- Force (load) may also be measured using a running rope dynamometer for older cranes - easy and reduced time on installation.
- Wireless outrigger monitoring
- Supports crane levelling and setup
- Support for additional jibs and inserts
- Rigging mode enabled
- Wind speed integration
- Telescoping synchronously or asynchronously
- Boom section locking & unlocking monitoring and positioning
- Multiple winches
- 3rd layer device - underwind - winch lowering limiter
- Angle deduction deflection (2 accelerometers)

SAFE-AID SLI LIFESPAN CYCLE SUPPORT

CRANE DEFINITION

- Load Chart
- Crane Geometry
- Serial Number
- Inspection
- Software Initiation
- Retrofit or OEM Prototype

SYSTEM CALIBRATION

- Radius deflection factoring
- Load Accuracy Trimming
- Length / Angle Calibration
- Sensor Calibration
- Menu Driven Settings Adjusted

CRANE COMMISSIONING

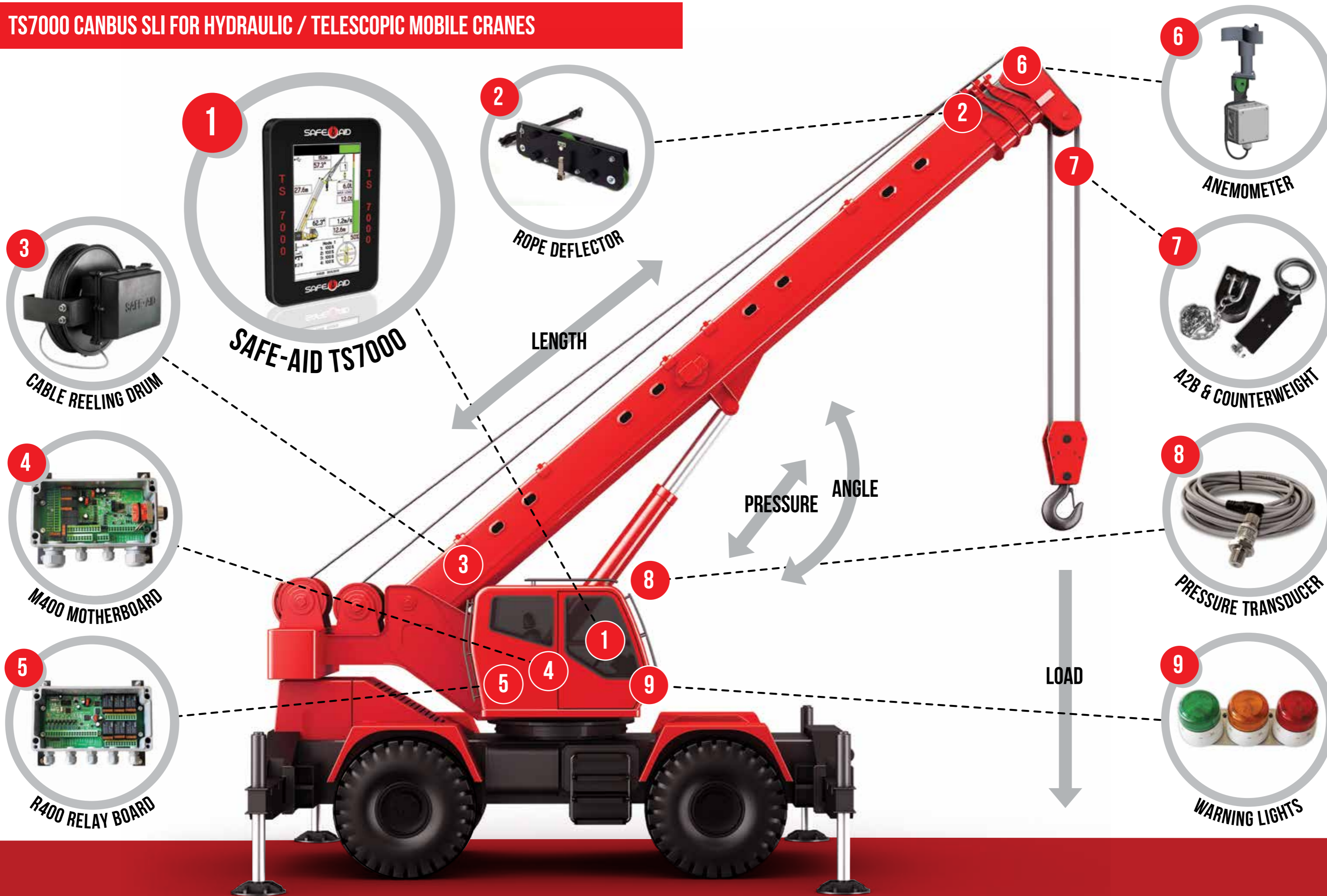
- Load Testing
- Minor Adjustments
- Operation with Weights
- Sign off

SERVICE & UPDATE

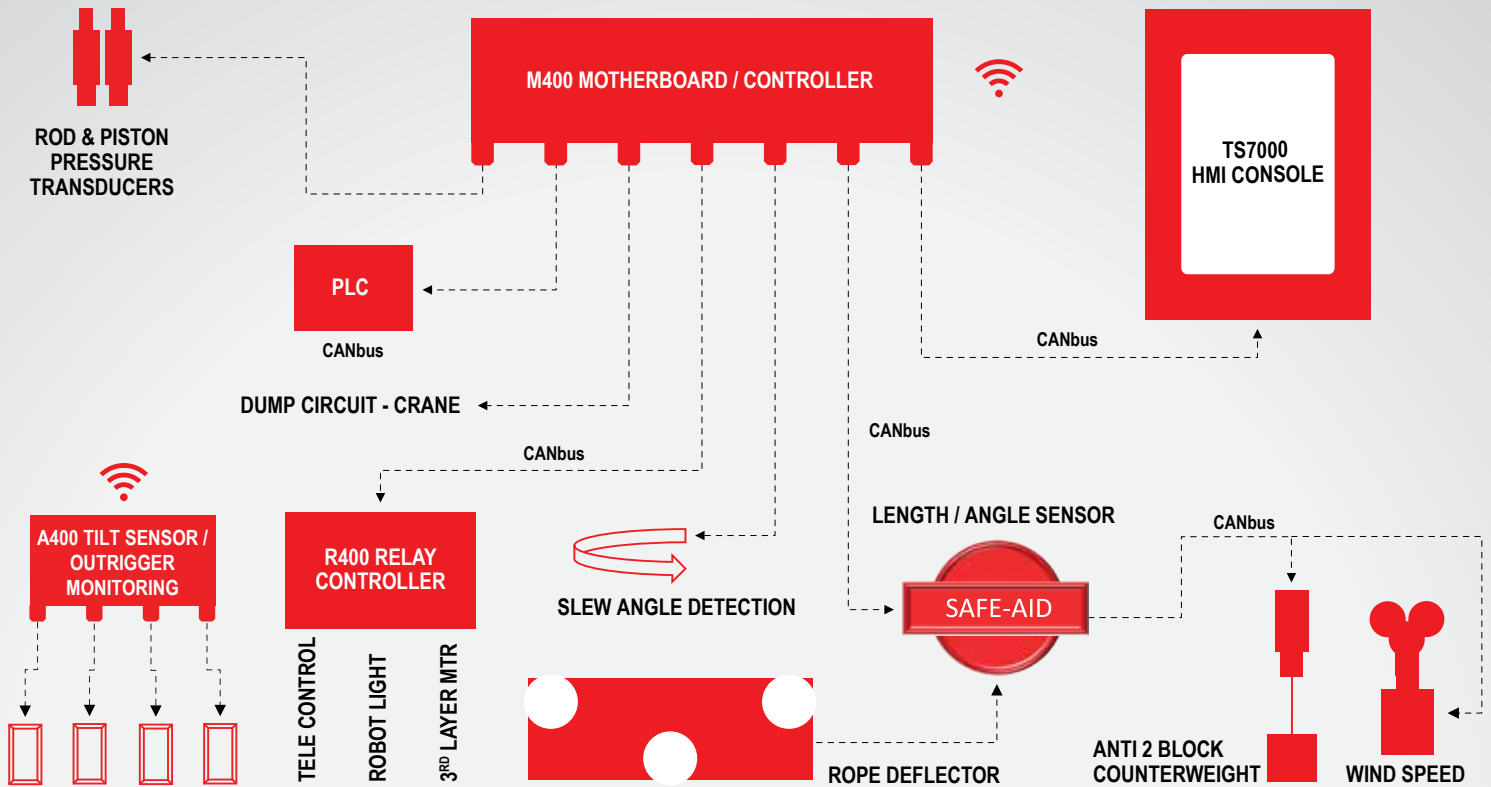
- Regularly Service
- Regularly Calibrate
- Software Enhancements
- Hardware Upgrades
- Maintenance Support

Consider the Safe-Aid TS7000 a long term investment – immeasurable safety & support throughout the life of your crane.

TS7000 CANBUS SLI FOR HYDRAULIC / TELESCOPIC MOBILE CRANES



SAFE-AID TS7000 SLI SYSTEM BASIC SCHEMATIC



SAFE-AID TS7000 CRANE LOG REPORT

Crane Event Report					
Equipment Description / Plant ID			Download Date / Time		
S/N: 1763			16 Feb 2016 12:50:20:pm		
MAIN BOOM OUTRIGGERS FULL		Event: On : Program Selection		Override.:No	
Date: 16 Feb 2016 09:42:34:am		Boom Length: 9.5m		Area Sw.: Open	
Reeving: 8		Jib Length: 0.0m		Non Fly Deduction: 0.0t	
Fly Fitted: No		Radius: 5.5m		Fly Deduction: 0.0t	
Rated Capacity: 17.8t		Main Ang.: 36.7°		Wind Speed: 0.0 Km/h	
Lifted Load: 0.4t		Aux. Ang.: 0.0°		Wind Limit: 0.0 Km/h	
Tele #1: 0%	0.0m	Tele #3: 0%	0.0m	Tele #5: 0%	0.0m
Tele #2: 0%	0.0m	Tele #4: 0%	0.0m	Tele #6: 0%	0.0m
OutRigger #1: In	OutRigger #2: In	OutRigger #3: In	OutRigger #4: In		
MAIN BOOM OUTRIGGERS FULL		Event: On : Reeving Selection		Override.:No	
Date: 16 Feb 2016 09:42:38:am		Boom Length: 9.5m		Area Sw.: Open	
Reeving: 8		Jib Length: 0.0m		Non Fly Deduction: 0.0t	
Fly Fitted: No		Radius: 5.5m		Fly Deduction: 0.0t	
Rated Capacity: 17.8t		Main Ang.: 36.7°		Wind Speed: 0.0 Km/h	

TECHNICAL SPECIFICATIONS

TS7000 DISPLAY UNIT

- Single Multi-Layered Circuit Board – 4 layers
- 7" TFT Colour Capacitive Touch LCD
- 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
- USB A Port for Software Upgrade or Data Logging
- CAN Bus or MOD Bus Communication
- Real Time Clock for Data and Error Logging Timestamps
- 1 x Optically Isolated Digital Input
- 1 x High Side Driver
- 85dB Buzzer
- External USB Connector for Data Logging (Optional)
- IP55 Protection (BS7262 5.7)
- Outside Dimensions 145 x 203 x 55mm (L x W x H)

M400 MOTHERBOARD

- Single Multi-Layered Circuit Board – 2 Layers
- Phoenix Contact Spring Terminals
- 10 – 36VDC Input Voltage
- Fuse Protected Input Voltage – 2Amp
- 4 x Optically Isolated Digital Inputs (Optional) (PNP or NPN User Selectable)
- 1 x Load Cell Input (mV Input)
- 4 x Inputs Built in any Combination of 4-20mA or 0 – 5VDC Analogue Input
- 1 x 10Amp Relay Output (Potential Free Contact) with Fault Reporting (Dump/Auto/Cut Off) - 10Amp Fuse
- 3 x 10Amp Relay Outputs (Potential free contacts) – 3 x 5Amp Fuses
- Monitored & Fuse Protected Key Switch Input for Dump/Auto - Cut Off Relay
- USB A Port for Software Upgrade
- CAN Bus and/or 2.4Ghz Wireless(Optional) Communication
- IP66 Glass Fibre Reinforced Polyester Enclosure
- Outside Dimensions 220 x 120 x 100mm (L x W x H)

PRESSURE SENSOR

- 4-20mA Output
- 0 – 600 Bar Measuring Range
- IP67 M12 Connector
- ¼ NPT High Pressure Hydraulic Fitting
- Pressure Spike Restriction
- Outside Dimensions 50 x 22 x 22mm (L x W x H)

ANEMOMETER / WIND SPEED METER

(OPTIONAL)

- Measuring Range 0.5 to 50 Meters per Second (2 – 200 Kilometres per Hour)
- Black Technical Plastic body with Robust Flexible Rotor
- High Quality Stainless Steel Bearings
- Self Levelling Mounting Bracket
- IP65 Environmental Protection
- Outside Dimensions 125 x 125 x 315mm (L x W x H)

BOOM TIP JUNCTION BOX – A-2-B AND TELESCOPE SEQUENCE SWITCH

- Single Layered Circuit Board
- Phoenix Contact Spring Terminals
- Two A-2-B Connections
- One Telescope Sequence Switch Connection
- 4 Core Boom Length Cable Connection
- Outside Dimensions 75 x 80 x 65mm (L x W x H)

CABLE REELING DRUM

- IP66 Cast Aluminium Enclosure with Powder Coated Steel Reel and Galvanised Spring Assembly
- Twin Spring Driven Cable Reel with Anti-Run Back Feature to Prevent Damage to Spring if Cable is broken
- Simple Boom Length Cable Replacement Procedure
- Length Measurement using Potentiometer with Resistor Pull U Feature to detect Open Circuit
- Angle Measurement Using a High Sensitivity Multi Axis Accelerometer (Accuracy $\pm 0.1^\circ$)
- 2 x Load Cell Input (mV Input)
- 2 x 0 - 5 VDC Inputs(Standard) or 2 x 4-20mA Inputs (Optional)
- 3 Analog Inputs Maximum can be Configured and used Simultaneously
- 1x 4K7 Sensing Input for Anti-2-Block Input (Can be Built as Optional Optically Isolated Digital Input)
- 3 x Optically Isolated Digital Inputs (PNP or NPN User Selectable)
- CAN Bus and/or 2.4Ghz Wireless(Optional) Communication
- Outside Dimensions 160 x 75 x 60mm (L x W x H) Excluding Gland and Plug Entries

R400 INPUT OUTPUT BOARD

(OPTIONAL)

- Single Multi-Layered Circuit Board – 2 Layers
- Phoenix Contact Spring Terminals
- 10 – 36VDC Input Voltage
- 6 x 10Amp Relay Outputs (Potential Free Contacts)
- 6 x 5Amp Fuses
- 8 x Optically Isolated Digital Inputs with LED Status Indication (PNP or NPN User Selectable)
- USB A Port for Software Upgrade
- CAN Bus and/or 2.4Ghz Wireless(Optional) Communication
- IP66 Glass Fibre Reinforced Polyester Enclosure
- Outside Dimensions 220 x 120 x 100mm (L x W x H)

RUNNING ROPE DEFLECTOR UNIT

(OPTIONAL)

- Rugged Galvanised OR Stainless Steel Assembly
- Oilon (Nylon) OR Steel 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 Ω + 4 Ω
- Load Cell Rated Output $\pm 1mV/V$
- 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.

QUALITY



Management System
ISO 9001:2015



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ID 9105087034

LEGAL COMPLIANCES

The TS7000 Safe Load Indicator meets and exceeds the standards as set out in the ISO 10245-2:2014, British Standard BS7262:1990 & SANS 578-2:2008.

TS7000 SAFE LOAD INDICATOR SLI

INVEST IN YOUR CRANE

- Crane pays off the entire system within months
- Current and future developments and trends employed with software updating
- A high quality, complex yet simple solution
- Minimization of repair and maintenance costs due to quality of all system components
- You not only procure a system but our experience and lifelong support
- Guaranteed constant enhancements and upgrades for the safety of your crane
- Understanding of turnaround times

SAFETY A PRIORITY

- HMI console allows for easy operation, minimal input
- System with watchdog constantly monitoring operation
- Step by step guidance throughout the operation of the crane
- Virtual graphical interface highly readable and interpretation made easy with real crane graphic configuration
- Crane profile software and parameters a mirror image of OEM load chart and specifications
- Cut out on all errors – early warning enabled
- Safety risk of selecting wrong program or mode is minimized

SIMPLIFIED CALIBRATION

- Constant improvements to calibration procedures
- User friendly menu driven calibration procedure and setup
- Cost reduction in time of calibration
- SCP – Specific Crane Profile uploaded and kept in secure database
- OEM or retrofit cranes
- Installation manuals with step by step instructions streamline installation and calibration
- Calibration stored values protection

SUPPORT

- Basic problems or issues serviced via telephonic or email support line
- Reduced software update time
- Technical experience spanning decades
- Turnaround time consideration
- Hardware designed for easy replacement or upgrade
- Support throughout the lifecycle of the crane
- Commitment and service orientated backup

