CRANE MONITORING SYSTEMS

POWER JACKS
Load Monitoring Solutions

RaycoWylie
SYSTEMS

A HISTORY OF RELIABLE MONITORING SYSTEMS

The Evolution of Crane Monitoring Systems

B&A Engineering was founded on the release of the first Factorate Inspectorate Approval Certificate for Cranes in 1933. A year later, in 1934, they bought their competitor, Wylie Systems. Using their combined knowledge, the amalgamated companies produced the first mechanical overload warning systems and load indicators. Revolutionising crane safety, these mechanical systems continued to lead the way into the 1970's.

With the introduction of hydraulic machines, starting in the 1960s, there became a need for higher capacity, microprocessor based monitoring systems. This technology was in its infancy during the 1960s, and was therefore not commercially adopted until the 1980s.

The Dawn of Microprocessor Systems

1982 saw the B & A Engineering Company, (by now known as Wylie), purchase another competitor, Weighload Ltd. The resulting collection of experience allowed the development of more reliable microprocessor systems, leading to the production of the WW225, WW230 and the WW250 systems, some of which remain in service today.

Today's RaycoWylie

In 1994, the Rayco Technology Group purchased the B & A Engineering Company forming RaycoWylie Systems as we know it today. Through joint experience, shared passion and combined expertise, the company has been able to develop the W2245, i3000, i3500, i4000, i4300, R147, R180 and the latest RaycoWylie i4500 Series.

2016 saw the opening of an office in Singapore further establishing RaycoWylie in the area and ensuring our customers can receive service and support all over the world.

Early 2017 saw a new RaycoWylie office, based in Cairo which can now offer systems and support within the region, further extending our sales and support network.

Install of i4500 to a Liebherr LTM1160 carried out by PSM - South Africa

RESEARCH & DEVELOPMENT

RaycoWylie are driven by innovation, with product and software development an unceasing priority. Whether designing or improving systems for a specific bespoke machine, fully integrated systems with leading manufacturers or focusing on refining the current technology ranges, our R&D engineers work constantly to help improve reliability, reduce cost, and incorporate developments in international standards.

Our development engineers constantly review and evolve the current range, incorporating the best of innovative technologies into each; further driving the high standards RaycoWylie upholds. From mini-cranes to some of the world's largest heavy lift barges, our engineers have developed monitoring systems which have revolutionised them all. This approach has left us with an ever increasing pool of knowledge to help us to continue driving crane systems into the future.

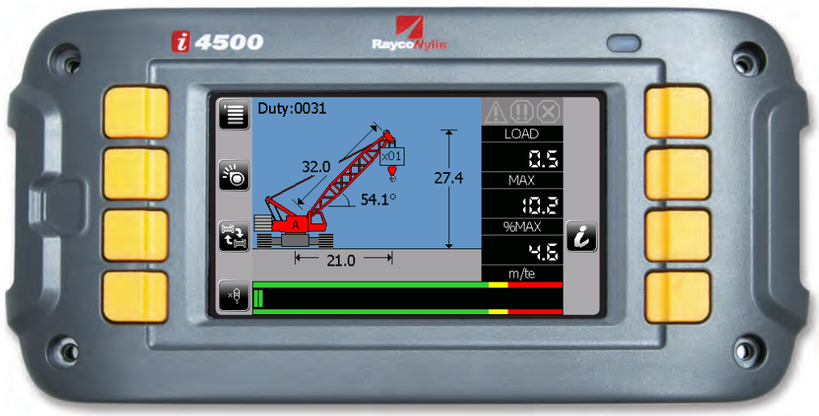
OUR PRODUCTS

Providing holistic monitoring systems for all categories of cranes, the current product range includes the W2245, i4000, R180, R147, i4300 and i4500 series of systems. At the heart of all the current systems are simple, intuitive controls and straight-forward, precise procedures to operate and calibrate systems. Integrating advances in technology, the i4000, i4300 and i4500 series also utilise USB connectivity to make the transfer of calibration files, load charts, software and more, easier than ever before.

The complete range of systems is designed for practical use, without the need for specialist hardware or software, with calibration and operation performed through the display itself.

CONTENTS

i4500 SERIES



i4500

- 4.3” display
- 480x272 pixels resolution screen

The i4500 series of systems (i4500, i4507 and i4510) were first brought into production in 2013. These systems have been developed to meet the ever demanding regulations and standards of the crane and lifting industry while maintaining simple, clear information for the operator.

Utilising a full colour display in 4.3”, 7” and 10.4” models mean there is always an option to suit your requirements. This coupled with self-diagnostics, operator usability, and ease of calibration keeps the i4500 series ahead of the competition. The systems use the CANbus J1939 protocol to communicate with each interface, constantly monitoring all the cranes sensors to give clear accurate information to the operator, the CANbus network also allows huge amounts of flexibility allowing you to add or remove sensors when required at any time throughout the life of the equipment.

The i4500 series has been developed with your crane in mind, whether it’s a 5te telescopic mobile, 100te crawler, 80m luffing tower, 10te flat top tower, swan-neck tower, port crane, barge crane, rail crane or even a complete bespoke machine the i4500 series from RaycoWylie will have the solution for your machine.

Application specifics are detailed on the coming pages, however, as our team in R&D are constantly developing the systems if there is anything not shown in the brochure please contact us to discuss your requirements as we may be able to help.

i4507

- 7” display
- 800x480 pixels resolution screen

camera display

i4510

- 10.4” display
- 800x600 pixels resolution screen

winch line display

TECHNICAL DATA

	i4500	i4507	i4510
Display Size	4.3" (16/9 ratio)	7" (16/9 ratio)	10.4" (4/3 ratio)
Screen Resolution (pixels)	480x272	800x480	800x600
Display Rating	IP67		
Accuracy (of rated capacity)	In accordance with SAE J159		
Operating Temperature	-20°C to 70°C (-4°F to 158°F)		
Extended Temperature	-40°C to 70°C (-40°F to 158°F)		
Supply Voltage	11 to 36 vdc		
CANbus Protocol	J1939 (CANOpen also available)		

USER FRIENDLY

- Centralised information on one screen
- Colour screen
- High resolution LCD Screen readable in direct sunlight
- Night mode images
- Operator selected units m/te, m/kg, ft/klbs, ft/tons, ft/long tons, ft/lbs
- Camera input ready (only available on 4507 & 4510)

FLEXIBILITY

- Engineered to fit all applications
- Multilingual interface for international use
- Choice of 10 languages
- Tactile button interface with simple intuitive icons
- Compatible with many canbus sensors

DESIGNED FOR SERVICEABILITY

- Load chart, software and calibration file with transfer via USB stick
- Canbus communication link
- Utilising top quality Deutsch connectors and industry standard M12 5 pin connections
- Quick and easy to install and calibrate
- Ultra fast calibration using pre-entered weight data for all attachments

PERFORMANCE

- Compliant with current international standards
- Self diagnostic mode
- Fault log
- Event recorder
- Optional Datalogger
- Inbuilt operator audible and visual warnings

i4500 MOBILE

i4500

- 4.3” display
- 480x272 pixels resolution screen

i4500 mobile crane applications can vary massively depending on your specific requirements. From basic kits utilising CANbus sensors to monitor load, boom angle and boom extension to more complex systems including multiple reeling drums, hydraulic luffing jibs and more. The i4500 series and its software are perfectly suited to mobile cranes and the needs of their owners and operators.

The software has been developed to make operation, calibration and fault finding as fast and simple as practically possible. This is done through listening to the needs and recommendations of our customers, from flexible calibration points, Centre of Gravity calculations for attachments, USB connectivity, the ability to add extra sensors when and if required mean the clean, intuitive software is easy and simple for both operators and engineers to use.

Install of i4500 to a Liebherr LTM1160 carried out by PSM - South Africa

OPTIONS

- Load
- Angle
- Relay controller
- Extension
- Over hoist input (ATB)
- Boom tip wind speed
- XY chassis angle
- Slew encoder
- Camera inputs
- Data logger
- Virtual wall range limiting
- Outrigger position monitoring
- Travel monitoring
- Hook height monitoring
- Rope pay-out monitoring

More options available upon request, please contact RaycoWylie.

i4500 CRAWLER

i4507

- 7” display
- 800x480 pixels resolution screen

Crawler cranes, similar to mobiles, come in all shapes and sizes, whether it is a 5te telescopic, 120te lattice or 50te telescopic with outriggers the i4500 series has a solution. The ability to recondition and reuse existing load sensors to minimise the financial impact of needing a new system coupled with intuitive controls, simple calibration procedures, outstanding functionality and excellent customer support mean the i4500 series is the unit for your crane. From a basic system comprising of display, relay controller, boom angle sensor, load interface and load cell to roped luffing fly jibs and more. This leaves the i4500 series the perfect choice for your machine.

Using centre of gravity calculations for attachments has removed the need to calibrate every attachment and reduce the calibration time required on site. With load calibration interpolation between boom lengths of up to 15m, new easy to use deflection, load and friction compensation calibrations means the i4500 series calibration can be completed faster and with more accurate results than ever before.

Our R&D department are constantly developing both software and hardware meaning the i4500 series continues to develop with your machines requirements.

The software has been developed to make operation, calibration and fault finding as fast and simple as practically possible. This is done through listening to the needs and recommendations of our customers, from flexible calibration points, Centre of Gravity calculations for attachments, USB connectivity, the ability to add extra sensors when and if required mean the clean, intuitive software is easy and simple for both operators and engineers to use.

OPTIONS

- Load
- Angle
- Relay controller
- Extension
- Over hoist input (ATB)
- Boom tip wind speed
- XY chassis angle
- Slew encoder
- Camera inputs
- Data logger
- Virtual wall range limiting
- Outrigger position monitoring
- Travel monitoring
- Hook height monitoring
- Rope pay-out monitoring

More options available upon request, please contact RaycoWylie.

Install of i4500 to a Marchetti CW 70-42L carried out by AGD - United Kingdom

i4500 TOWER

i 4507

- 7” display
- 800x480 pixels resolution screen

Tower cranes are the newest application the i4500 series has been developed for. RaycoWylie have worked extensively with tower crane specialists and invested heavily to develop a truly flexible and versatile system that is perfectly suited to the tower crane and it’s market’s.

Be it Luffers, Flat Tops or Swan Necks, the software has been developed to work with all of them. From utilising current machine sensors to upgrading with CANbus encoders, the i4500 series can handle it all.

With clear, easy to understand system controls, calibration procedures, state of the art diagnostics and industry competitive pricing, the i4500 series is the choice of operators and owners worldwide.

3D WORK AREA LIMITATION

The prohibited zone function allows to limit access of the jib or trolley and lifted load to different zones without losing sight of the critical load information. You get 1 zone to determine the job site and up to 10 zones (3D) to determine obstacles inside the jobsite.

OPTIONS

- Load
- Angle
- Trolley position
- Relay controller
- Cab height wind speed
- Boom tip wind speed
- Slew encoder
- Camera inputs
- Data logger
- 3D work area limitation
- Travel monitoring (rail mounted cranes)
- Hook height monitoring
- Anti-collision interface

More options available upon request, please contact RaycoWylie.

i4300 RATED CAPACITY INDICATOR/LIMITER

NEW

i 4300

- 4.3” display
- 480x272 pixels resolution screen

The i4300 is the new cost effective system from RaycoWylie. Now in the final stages of approval RaycoWylie are proud to introduce the successor to the W2245. Brought specifically to the market as a cost effective solution the i4300 will boast a 4.3” colour screen, USB connectivity, full on- screen calibration (no need for laptops or expensive specialist equipment) and CANbus communication. The i4300 will bring your machine up to date with a simple clear display, easy to follow calibration procedures and state of the art diagnostics.

Available for standard telescopic cranes and lattice hoist applications.

For more information on the i4300 please contact RaycoWylie.

FEATURES

- Continuous display of Load, Hoist, Parts of line, Radius, boom length, boom angle and % of maximum capacity.
- Diagnostic menu and continuous error detection and recording
- Audible and visual alarms indicating two-block, load limit conditions
- Operator adjustable low, high angle, length, height and radius limits
- Optional lock-out for load, A2B
- Easy calibration via keypad. No additional programming hardware necessary
- Quick and easy installation
- USB file transfers
- Multi-language: English, Spanish, French
- Selectable units
- Upgradable to the i4500 LMI Series

TECHNICAL DATA

	i 4300
Display Size	4.3” (16/9 ratio)
Screen Resolution (pixels)	480x272
Display Rating	IP67
Accuracy (of rated capacity)	In accordance with SAE J159
Operating Temperature	-20°C to 70°C (-4°F to 158°F)
Supply Voltage	11 to 36 vdc
CANbus Protocol	J1939

R180 WIRELESS WIND SPEED INDICATOR

wireless wind speed sensor

The R180 is the cost effective, easy to install and simple to use wireless wind speed indicator.

With an inbuilt relay output to trigger an external alarm, internal audible and visual operator warnings, clear LCD display, low battery warning and the ability to display the speed in various units of measurement. The RaycoWylie R180 is the answer to your wind speed indication needs.

TECHNICAL DATA

	R180
Display Size	4.69"x3.13"x2.13" [11.95cmx 7.90cmx5.55cm]
Display & Sensor Rating	IP67
Supply Voltage	10.2 to 30vdc
Operating Temperature	-30°C to 70°C [-22°F to 158°F]
Relay Output	1 [500mA]
Accuracy	<0.2 mpg for the range 11mph to 55mph

FEATURES

- Direct Sequence spread spectrum transmission technology for an enhanced range of operation and better RFI resistance (2.4 GHz transceivers)
- Internal antenna on both the display and sensor, which means low susceptibility to damage
- Selectable units MPH, KM/H, M/S
- Display and sensor pre-calibrated
- Easy installation and sensor replacement
- Uses lithium 'D' Battery
- Battery life : up to 2 years (low battery warning)
- User friendly display
- Pre-set limits with audible and visual warning
- Operating range: 300m

R147 WIRELESS ANTI-TWO BLOCK INDICATOR

wireless anti-two block switch

The R147 wireless over hoist limit system is an easy to install cost effective solution to monitor an over-hoist situation.

With an inbuilt relay output to trigger a motion cut function, internal audible and visual operator warnings, clear LCD display and low battery warning.

The R147 is suited to those applications where running cables is not desired.

FEATURES

- Direct Sequence spread spectrum transmission technology for an enhanced range of operation and better RFI resistance (2.4 GHz transceivers)
- Internal antenna on both the display and sensor, which lowers susceptibility to damage
- Easy installation and sensor replacement
- Uses lithium 'AA' Battery
- Battery life : up to 1 year (low battery warning)
- User friendly display
- Pre-set limits with audible and visual warning
- Operating range: 300m
- One display can be used with two sensors for multi hoist applications

TECHNICAL DATA

	R147
Display Size	4.69"x3.13"x2.13" [11.95cmx 7.90cmx5.55cm]
Display & Sensor Rating	IP67
Supply Voltage	10.2 to 30vdc
Operating Temperature	-30°C to 70°C [-22°F to 158°F]
Relay Output	1 [500mA]

i4000 MULTIPURPOSE INDICATOR RANGE LIMITING DEVICE

slew and height limit displayed

i 4000

- 3.5” display
- 320x240 pixels resolution screen

A new product to the range, the i4000 is a multi-application indicator for use as load, range limiting, boom angle, boom length, radius, height, hoist or slew indication. Unlike the i4300 and i4500 series, the i4000 has no programmed load charts.

It is best suited to fixed capacity machines. Still boasting the latest CANbus communication, high quality components and colour screen the i4000 is ready to meet the needs of your indicator system.

Install of i4000 to a Manitou telehandler carried out by RaycoWylie - Quebec

TECHNICAL DATA

	i 4000
Display Size	6.15" x 3.56" x 2.36" (15.61cmx9.03x5.99cm)
Screen Size	3.5" LCD Colour Screen
Screen Resolution	320x240
Display Rating	IP67
Supply Voltage	10 to 30 Vdc
Operating Temperature	-20°C to 70°C (-4°F to 158°F)
CANbus Protocol	J1939
Relay Output	1 (500mA)

FEATURES

- Diagnostic menu and continuous error detection and recording
- Inbuilt audible and visual alarms indicating two-block, load limit conditions and range limit conditions
- Easy calibration via keypad. No additional programming hardware necessary
- Quick and easy installation
- USB file transfers
- Multi-language: English, Spanish, French
- Selectable units
- Upgradable to the i4500 LMI Series

i4000 WIRELESS MULTIPURPOSE INDICATOR

NEW

i 4000

- 3.5” display
- 320x240 pixels resolution screen

Coming to market mid 2017 the i4000 wireless system is due to boast a dipole aerial for the display/controller for increased signal strength and range, 3.5” colour screen, constant battery monitoring of all wireless sensors adjustable limits and even the possibility to combine wireless and wired sensors.

The i4000 wireless will be a fully versatile system which can be supplemented with new sensors as the system grows with your equipment.

For more information on the i4000 please contact RaycoWylie.

FEATURES

ANTI-TWO BLOCK

- Uses lithium ‘AA’ Battery
- Estimated battery life; up to 1 year
- Monitor multiple switch inputs for cranes with multiple hoists

WIND SPEED

- Uses lithium ‘D’ Battery
- Estimated battery life; up to 2 years
- Operator selectable units (MPH, KM/H, M/S, KNOTS)

FEATURES

DISPLAY/CONTROLLER

- Diagnostic menu and continuous error detection and recording
- User friendly intuitive display with inbuilt audible and visual alarms
- Easy calibration via keypad. No additional programming hardware necessary
- Quick and easy installation
- USB file transfers
- Multi-language: English, Spanish, French
- Selectable units
- Using 915Mhz or 868Mhz for increased range and signal reliability
- Dipole antenna
- Easy installation and sensor replacement

Appearance and specification subject to change during development

TECHNICAL DATA

	i 4000
Display Size	6.15" x 3.56" x 2.36" (15.61cmx9.03x5.99cm)
Screen Size	3.5" LCD Colour Screen
Screen Resolution	320x240
Display Rating	IP67
Supply Voltage	10 to 30 Vdc
Operating Temperature	-20°C to 70°C (-4°F to 158°F)
CANbus Protocol	J1939
Relay Output	1 (500mA)
Accuracy (wind speed)	+/- 2% (11mph-55mph)
Operating Range	300m

LOAD LINKS AND LOAD SHACKLES

load shackle

At RaycoWylie we have a variety of load links and load shackles. Both wired and wireless models are available in a range of capacities (links) 6.5te to 500te (shackles) 25te to 600te (up to 2000te upon request). All load links are constructed from high grade aluminium for ease of installation and transportation. Load shackle pins are constructed from 17-4 stainless steel, for strength and reliability.

TECHNICAL DATA

	i4000
Display Size	7.9" x 3.75" x 1.2" (20cm x 9.5cm x 3cm)
Screen Size	8 Digit LCD 2.6" x 0.6" (65mm x 15mm)
Display Rating	IP67
Sensor Rating	IP67
Display Estimated Battery Life	50 hours continues use
Display Battery Type	3 x AA
Operating Temperature	-10°C to 40°C
Safety Factor	5:1

FEATURES

- Internal antenna on display, lowering susceptibility to damage
- Zero, Tare and peak hold controls on display
- Available in 433MHz and 900MHz
- User friendly display
- Operating range: 300m
- Display and sensor pre-calibrated
- Wireless load cells use standard AA batteries

SENSORS & SPARES

Sensor options and system configurations are becoming a never ending list for RaycoWylie. Our R&D departments are constantly looking ahead to meet the requirements of the next project whilst ensuring price and quality remain at the forefront of RaycoWylie values.

If you have a bespoke project or specific sensor option you require please contact RaycoWylie.

SENSORS

LOAD PINS

Load pins come in all sizes to suit a full range of applications, from a tiny 1k pin installed to a 4" dynamometer to 100te+ pins custom made to fit your machines existing dimensions.

LOAD LINKS

A full range of load links are also available and again our engineers are ready to find the load link which best suits your machines requirements. From 1te links up to 50+te our engineers are ready to help, we can also supply load tested side plates and pins to ensure your installation goes to plan.

PRESSURE TRANSDUCERS

Pressure transducers are available with a variety of outputs, mV, 4-20 mA or J1939 CANbus. Transducers are supplied with ¼ BSPP hydraulic fittings as standard to make them easy to install to your machine.

WINDSPEED SENSORS

Knowing an accurate windspeed is considered essential information for many crane manufactures, owners, customers and operators and maybe required for the safe use of the crane. RaycoWylie offer a range of windspeed sensors, from the R180 wireless stand alone unit to fully integrated windspeed into the latest of systems, windspeed is now an option on all i4500 series systems.

3 SHEAVE DYNAMOMETERS

The 33Y series are available in 3 sizes 4", 6" and 8", to suit rope sizes from 12-38mm as standard and are available in either mild or Stainless Steel. Dynos can be supplied with amplifiers, junction boxes or CANbus load interfaces and can be mounted vertically or horizontally on either fixed or pantograph mountings which are all available from RaycoWylie.

CANBUS ENCODERS

Used to monitor any rotation based input the 24bit CANbus encoders consistently provide an accurate measurement. Whether used to monitor slew angle for slew specific load charts, range limiting, work area limitation, hook height and direction, tower crane trolley position or hoist rope pay out this new range of encoders is perfect for your application.

SENSORS & SPARES

ANGLE SENSOR

The voltage based 33A0001 angle sensor is a tried and tested 0-5v non potentiometric angle sensor, this means your old worn out pot can now be replaced by this robust angle sensor.

CANBUS ANGLE SENSOR

CANbus angle sensors housed in a IP66 cast aluminium enclosure this means the new angle sensor is ready for anything. Simply set which side of the boom the sensor is fitted and set the zero point and you're ready to work. Sensor calibration has never been easier.

X/Y ANGLE SENSOR

Used for a variety of applications to monitor chassis tilt of the machine, the RaycoWylie X/Y sensor is sturdy yet simple to install.

A2B SWITCH

Available in both aluminium and stainless steel the latest anti-two block / over hoist switches are built to last. Exposed to the harshest of weathers, RaycoWylie switches have been manufactured to the highest of standards and are perfect for new and retrofit applications.

CANBUS LOAD INTERFACES

CANbus load interfaces can now be used to convert either mV or mA signals into CANbus. This has opened the opportunity to reuse sensors and therefore minimise the cost to upgrade or renew your system.

GPIO 33M0106

The general purpose input/output interface is used for a variety of applications. From switch inputs to converting analog signals to CANbus the GPIO is as flexible as they come.

RADIO REMOTES

Remote controls are rapidly becoming a popular option offered by both crane manufacturers and retrofit suppliers, to meet the need for operators to constantly monitor safety critical information. RaycoWylie has collaborated with several of the top radio remote manufactures in the industry and are always happy to collaborate with new companies and your chosen remote control supplier.

CAMERAS

Cameras, whether winch view, rear view, boom tip or even hook view are becoming a popular tool to aid in the operation of cranes. This is why RaycoWylie now offer an integrated camera option on the i4507 and i4510 systems. On these larger screens it is possible to clearly view the camera and all critical load information on one screen. Take the chance to save money and cab space by adding the camera option to your new RaycoWylie system.

For boom tip and hook block cameras RaycoWylie have collaborated with some of the biggest names in the industry and are always happy to work with your chosen camera supplier.

ADDITIONAL ACCESSORIES

LIGHTS AND ALARMS

Warning lights and alarms are some of the most important components to any system. RaycoWylie utilise a full range of both audible and visual alarms. Taking advantage of the latest LED technology means lights are not only brighter but also last longer than ever before.

DATALOGGER

Dataloggers are rapidly becoming a standard requirement for all working in the crane industry. RaycoWylie have developed the i4500 series logger and its software to be more user friendly than ever before. From the USB download procedure which removes the need for heavy or specialist equipment to the user friendly software supplied to all who purchase the datalogger option. RaycoWylie are always happy to help interpret any datalogger information.

REELING DRUMS

33R4000 SERIES

With an extension range of up to 12m the 33R4000 series is a high quality compact reeling drum perfectly suited to smaller machines. The CANbus version can house boom angle sensor, boom extension pot and up to 4 sliprings.

33R6000 SERIES

This is the medium sized reel and has an extension capacity of up to 24m. Available with either CANbus or voltage based sensors and the ability to house up to 4 sliprings the 33R6000 series is perfect for most applications.

33R2000 SERIES

The 33R2000 drums are the largest of the range, servicing machines with a boom extension of up to 46m and available with voltage based sensors which can be easily converted to CANbus through a CAN interface and up to 4 slip rings. The 33R2000 series is ready for the bigger machine in your fleet.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