![dlm logo] **dlm**
Dynamic Load Monitoring

Container
Monitoring System

**A unique load monitoring system
for weighing containers**

About the System

The Container Monitoring System has been developed in accordance with the IMO SOLAS VI Regulation 2 amendment, but with the intention to go beyond the requirements to future proof the investment. It will provide accurate Verified Gross Mass (VGM) of containers being weighed and can be utilised with many different types of container lifting equipment.

The Container Monitoring System comprises of twistlock load cells, junction box and cab display with output for TOS integration as standard and further options for printer and remote access.

The Twistlock Load Cell has been manufactured to suit use in all container lifting applications which utilise twistlocks, the design is such that the load reading is taken from within the twistlock, meaning there are no mechanical losses within the system.

The Twistlock Load Cell is based on existing dimensions for container plant equipment and is supplied with all the required components to integrate into existing equipment from suppliers including Kalmar, Bromma, Stinnis and more. This means the Twistlock Load Cell can be integrated without major re-design to equipment and can be installed and maintained by existing trained technicians.

Providing accurate and repeatable readings the Twistlock Load Cell can be implemented in sets of 4 or 8 and when used in conjunction with the Container Monitoring System they will provide accurate Verified Gross Mass (VGM) readings, centre of gravity position, usage reports and integration to TOS systems.

The Container Monitoring System has been designed to provide the VGM of each container, but also to provide many additional features for enhanced ROI, Including:

- **Accurate centre of gravity calculation**
- **Overload monitoring**
- **Overload reporting**
- **Integration to Terminal Operating System (TOS)**
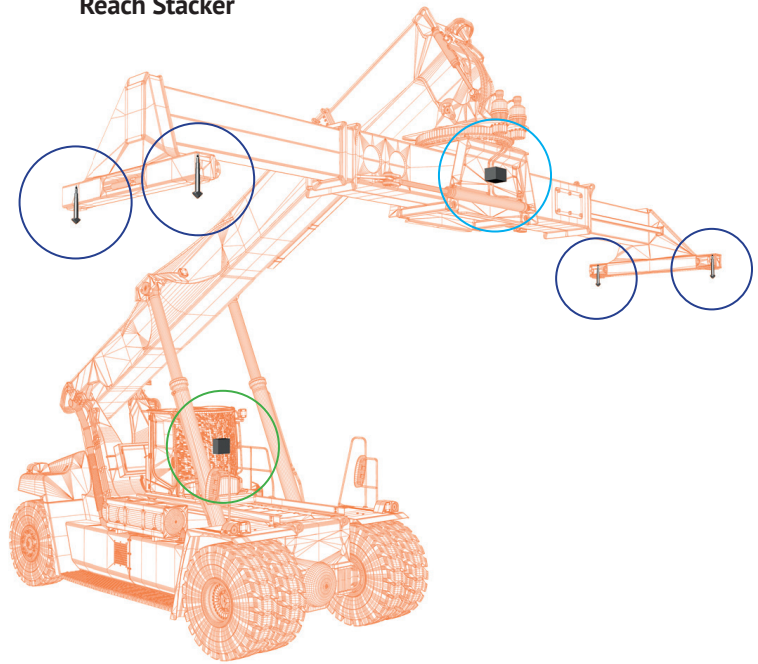- **Usage reporting**
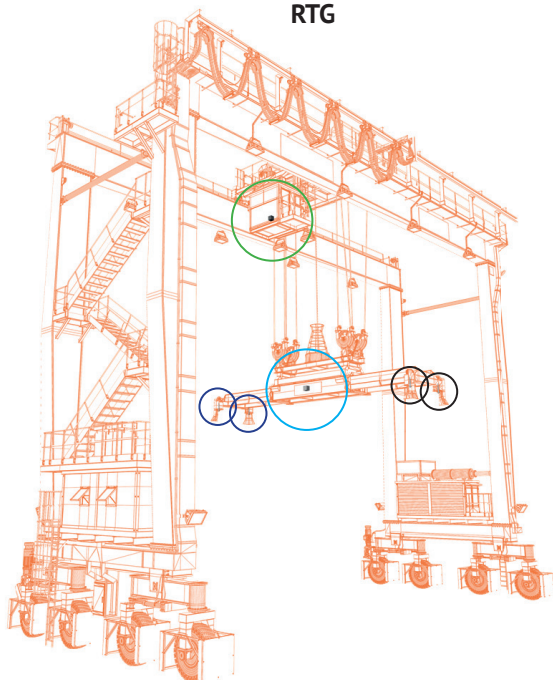
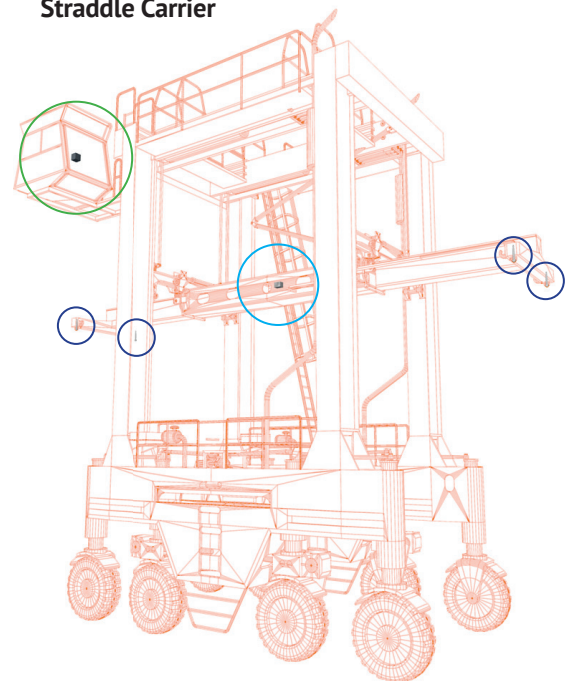# Applications and Installation Locations

Custom Spreader
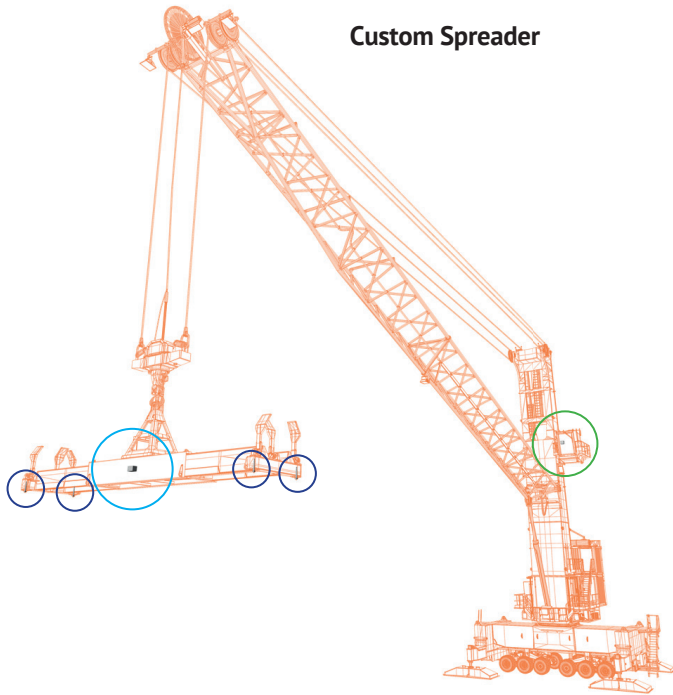
Reach Stacker

RTG

Straddle Carrier

● - Cab Display   ● - Twistlock   ● - Junction Box

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System Options

Option 1

4x or 8x Twistlocks

1 x Junction Box

1 x Cab Display

Option 2

4x or 8x Twistlocks

1 x Junction Box

1 x Cab Display

Printer

Option 3

4x or 8x Twistlocks

1 x Junction Box

1 x Cab Display

Remote Access

Description	4 x Twistlocks Part Number	8x Twistlocks Part Number
Option 1	0001-1133	0001-1134
Option 2	0001-1135	0001-1136
Option 3	0001-1137	0001-1138

Why Choose Dynamic Load Monitoring

Dynamic Load Monitoring have a specialist design team of expert engineers with over 25 years experience of successfully designing and manufacturing load monitoring equipment for a range of industries including Offshore, Marine, Lifting and Rigging.

Working in partnership with AMBA Dockside who are specialists in the field of port machinery, DLM and AMBA's Container Monitoring System is designed and manufactured in the UK to the highest quality standards. With quality and reliability at the core of DLM's ethos, we are approved and work to ISO9001:2008 Quality Management System, ISO14001:2004 Environmental Management System and OHSAS18001:2007 Health and Safety Management System.

Based in Southampton in the UK, DLM operate a global presence through a number of key partners in countries across the globe such as Chant Engineering Co Inc in North America and Talurit Pte Ltd in Singapore to name a few. Therefore, sales and technical support can be readily available in multiple time zones.

Specifications

Twistlock Specification

SWL	15T
Proof Load	30T
Safety Factor	6:1
NPI Tested	Yes
Dimesions	Depends on OEM

Remote Access Module

The remote access module allows for remote connection to the system installed on the vehicle, via a normal web browser on a PC connected to the internet. By typing in a predefined IP address the user will be able to gain access to live data and also data logs of container VGM's.

Mounting Location:	Fitted into existing PLC/HMI enclosure
Communication Method:	GPRS mobile telephone standard for many providers
Signal transmission:	Via external Antenna
User interface:	Via PC web browser with predefined IP address
Software:	Remote access software is required to be installed on a PC which can be interfaced with up to 8 systems.

Printer

The printer allows for a ticket printout showing the VGM, time and date values.

Printer type:	Desk mounted thermal ticket printer
Mounting location:	Inside cab
Print Resolution:	300 dpi/12 dots per mm
Print Speed:	4"/102mm per second
Print Width:	4.09"/104mm
Interface to Cab display:	RS232 auto sensing serial interface

Junction Box Specificationion

The junction box is designed to be mounted on the spreader and wire connected to the Twistlocks and cab display.

Housing:	IP66 Polyglas enclosure
Cable Connections:	IP67 Nickel plated cable glands
Mounting location:	Spreader
Signal processor:	- 4 x 4-20mA 3 wire Amplifiers for single lift - 8 x 4-20mA 3 wire Amplifiers for twin lift
Signal processor features:	- Input RF suppression - Reverse polarity protection - 12/30VDC supply - Zero temperature coefficient of 0.3 µV/°C (typical) - Span temperature coefficient of 0.01% °C (typical) - Each calibrated so that 4mA = 0 tonne and 20mA = 15 tonne
Power supply:	24VDC fed from cab supply
Temperature range:	-20 to +50 degrees C

Cab Display Specification

Using Siemens PLC components the Container Monitoring System is built using components frequently used within the industry which are proven to be durable and reliable. They can also be configured and maintained onsite by existing qualified technicians.

Power Requirements	120 – 240VAC or 12-24VDC
Inputs	Voltage, Current, ASI, CANBUS and more
Outputs	Analogue, Digital, Profibus, Profinet, CANBUS, Wireless and more
Communication Protocols	CANBUS, Profinet, Profibus, GSM, Wireless and more
Data logging	Data logging of individual loads, total loads and CoG
System Integration	Integration with TOS systems
Shock and Peak Load Detection	Stores the highest value seen on any Twistlock Load Cell
Calibration	Using system features the system can be calibrated without the need to remove the Twistlock Load Cells
Accuracy	<1% FRO