

Service Manual

09

Load Moment Indicator

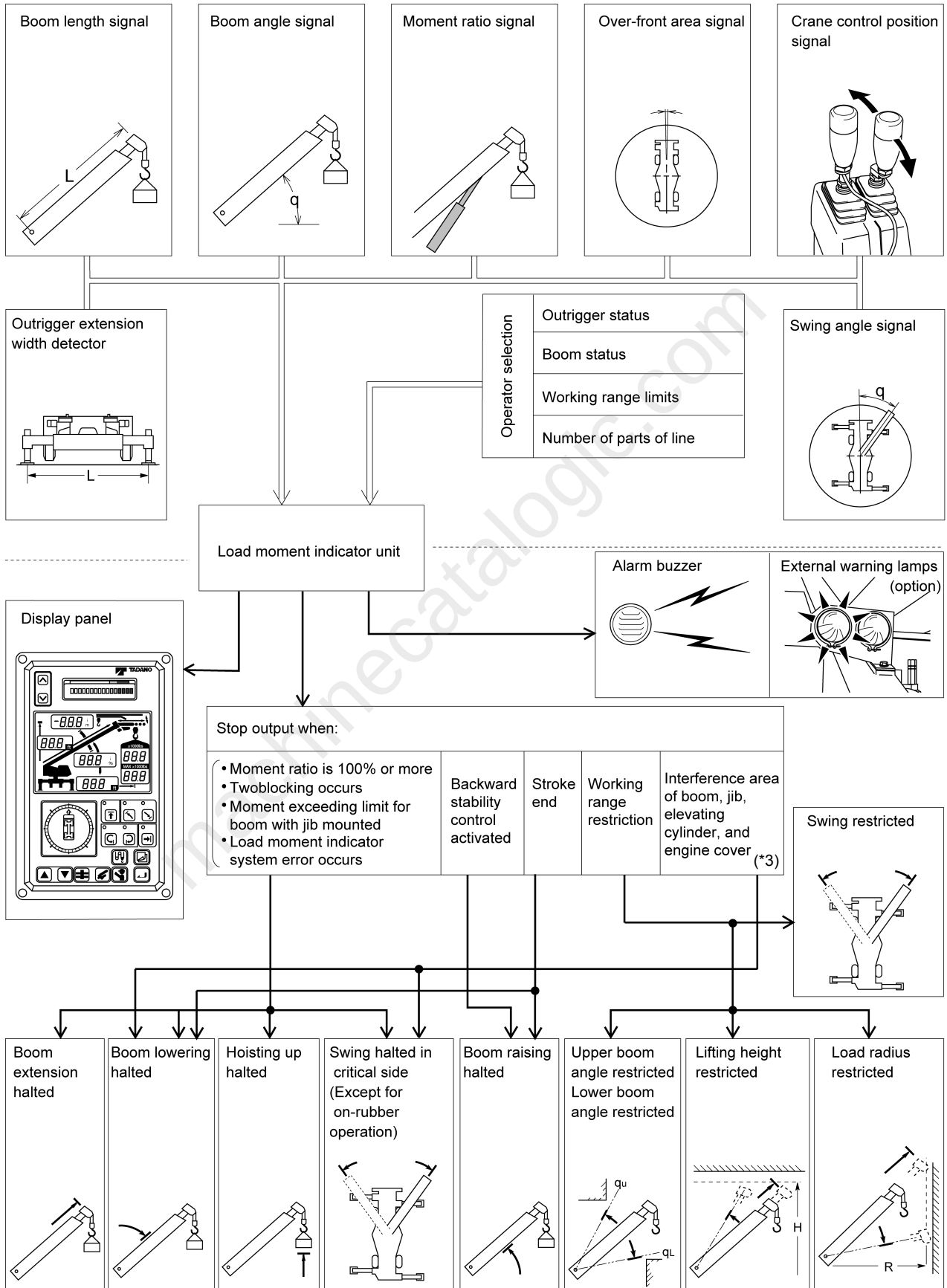
Model **AML-LIIC**

Input/Output Signals of the AML System (GR-600-1/GR-800-1)

CN 1 connector		Signal names and functions
Pin No.	Name	
22	ACC	<u>Signal name: Swing stop cancel switch input</u> Switch input representing whether the swing stop is cancelled. Input voltage: DC24V Switch ON (DC24V): Swing stop is cancelled. Switch OFF (DC0V): Swing stop is functioning.
24	Di5	<u>Signal name: Anti-two block disable switch input</u> Switch input representing whether automatic stop caused by two-blocking is overridden. Switch ON (DC0V): Automatic stop caused by two-blocking is cancelled and the alarm buzzer does not sound. Switch OFF (DC24V): Anti-two block function is ready.
25	Di6	<u>Signal name: Override key switch input</u> Switch input representing whether automatic stop caused by overloading is overridden. Switch ON (DC0V): Automatic stop caused by overloading is cancelled. Switch OFF (DC24V): Automatic stop function is ready.
26	Di7	<u>Signal name: Elevation slow stop cancel switch input</u> Switch input representing whether elevation slow stop is cancelled. Switch ON (DC0V): Slow stop function is cancelled. Switch OFF (DC24V): Slow stop function is ready.
27	Di8	<u>Signal name: Jib stowed detection switch input</u> Switch input representing whether the jib is stowed. Switch ON (DC0V): The jib is stowed. Switch OFF (DC24V): The jib is not stowed.
28	Di9	<u>Signal name: Over-front detection switch input</u> Switch input representing whether the boom is in the over-front area. Switch ON (DC0V): The boom is in the over-front area. Switch OFF (DC5V): The boom is out of the over-front area.
34	ANAING	<u>Signal name: Input for pressure sensor for moment detection (extension side)</u> Analog input to detect the elevating cylinder extension pressure. Input voltage: DC 0 to 5 V
35	ANAINH	<u>Signal name: Input for pressure sensor for moment detection (retraction side)</u> Analog input to detect the elevating cylinder retraction pressure. Input voltage: DC 0 to 5 V

Functions of and How to Use User Mode (GR-450-1/GR-500-1)

AML System Configuration

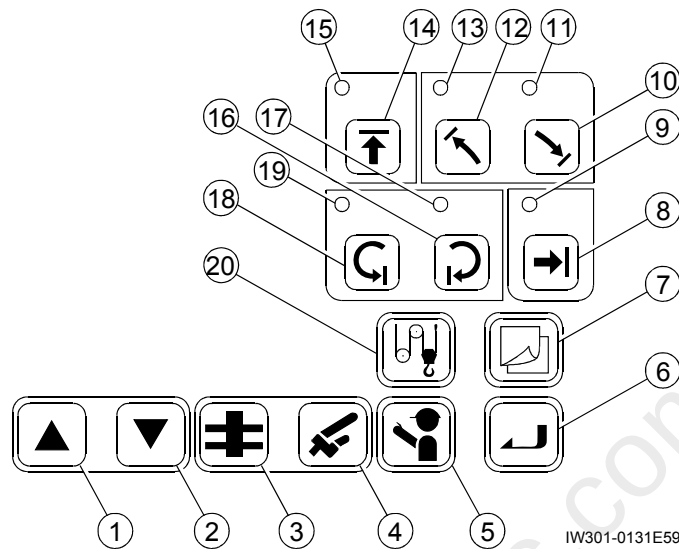


(*3): For GR-500-1-00211, 00213, 00214

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Functions of and How to Use User Mode (TR-150-4/GR-150-1)

Controls



IW301-0131E59

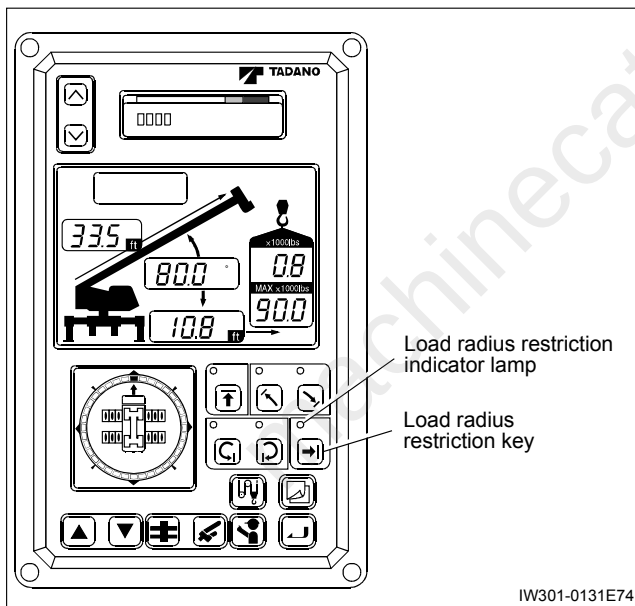
1. Increase key
Used to increase the selected value.
2. Decrease key
Used to decrease the selected value.
3. Outrigger mode select key
Used to select the outrigger status.
4. Lift mode select key
Used to select the lift status.
5. Check key
Used to check the AML system functions.
6. Register key
Used to register a selected status.
7. Display alteration key
Used to alter the displays on display panel 1.
8. Load radius restriction key
Used to activate and release the load radius limiting function.
9. Load radius restriction indicator lamp
Lights up when the load radius limiting function is activated.
10. Lower boom angle restriction key
Used to activate and release the lowermost boom angle limiting function.
11. Lower boom angle restriction indicator lamp
Lights up when the lowermost boom angle limiting function is activated.
12. Upper boom angle restriction key
Used to activate and release the uppermost boom angle limiting function.
13. Upper boom angle restriction indicator lamp
Lights up when the uppermost boom angle limiting function is activated.
14. Lifting height restriction key
Used to activate and release the lifting height limiting function.
15. Lifting height restriction indicator lamp
Lights up when lifting height limiting function is activated.
16. Right swing restriction key
Used to activate and release the right swing limiting function.
17. Right swing restriction indicator lamp
Lights up when the right swing limiting function is activated.
18. Left swing restriction key
Used to activate and release the left swing limiting function.

Load Radius Limit

Move the boom to the desired load radius, and press the load radius restriction key. The load radius restriction indicator lamp will flash and the buzzer will sound continuously, indicating that the load radius limit has been registered in the memory. When the boom is moved back toward the non-critical side, the load radius restriction indicator lamp stops flashing, and stays lit and the buzzer stops.

The load radius restriction indicator lamp flashes and the buzzer sounds continuously whenever the limit previously registered is reached. (Boom extending and lowering stop automatically.)

To cancel the load radius limit function, press the load radius restriction key again. The corresponding load radius restriction indicator lamp will go off.



Configuration and Functions of the AML System

The AML system is a safety device provided to prevent overloading of the crane which may cause it to overturn or be damaged.

The AML system has various kinds of functions, including the following typical functions. Based on the registered work conditions by operator selection and the signals from various sensors, the crane operations are controlled.

(1) Automatic stop function for overloading

The AML calculates and compares the working and rated moment values and displays them as a percentage. When the working moment exceeds the rated moment (100% or more), failure message is shown, alarm buzzer sounds, and the crane operation toward the critical side stops.

(2) Automatic stop function at backward instability

When the outriggers are extended minimum, the backward stability might be insufficient depending on the work condition. For preventing the overturning to backward, if the backward stability is reduced, message and alarm are output and the crane operation toward the critical side (boom raising and boom retracting) stops.

(3) Working range limit functions

When any working range limit is registered to the AML, the crane is controlled so that the crane work posture does not exceed this registered working range limit. When the boom reaches the previously registered restriction, buzzer sounds, and the crane operation stops.

(4) Slow stop function

In the following cases, the boom elevation speed or the boom swing speed gradually decreases to stop before the boom reaches the stoppage position.

- When the automatic stop is caused by overloading (Boom lowering will stop.)
- When the elevating cylinder reaches its stroke end (Boom raising/lowering will stop.)

- When the automatic stop is caused by working range limit function (Boom raising/lowering will stop.)
- When the automatic stop is caused by backward stability (Boom raising will stop.)

The situation of automatic stop due to automatic stop function and working range limit function is as listed below, depending on the working condition.

Automatic stop by overloading	Hoisting up	○
	Boom lowering	◎
	Boom extension	○
	Swing	○
Stop by backward instability	Boom raising	◎
	Boom retraction	○
Stop at stroke end	Boom raising/lowering	◎
Stop by working range restriction	Boom raising/lowering	◎
	Boom extension	○
	Swing	○

◎ :Slow stop ○ :Stop

Error Message

4.2 Group Code 1

Message	Description
Error : 1001 Error : 1002	Serial port transmission line 1 open Serial port transmission line 2 open
Situation:	All operations except boom swing are unavailable because the transmitter cannot receive any signal from the AML.
Cause:	A part of wiring to the transmitter is open. The connector pins of wiring to the transmitter are in poor contact. The receiving circuit of transmitter or the transmitting circuit of AML is defective.
Action:	Check the wiring to the transmitter for continuity. If no continuity exists, replace or repair the wiring. Replace the transmitter or AML's power circuit board.
Message	Description
Error : 1003 Error : 1004	Serial port receiving line 1 open Serial port receiving line 2 open
Situation:	All operations except boom swing are unavailable because the AML cannot receive any signal from the transmitter.
Cause:	The line from the transmitter includes open wiring or poorly contacting connection. The transmitter is not connected (the connector is disconnected). The receiving circuit of AML or the transmitting circuit of transmitter is defective. The serial port fuse (SIF1, 2) of AML has blown.
Action:	Check the wiring to the transmitter for continuity. If no continuity exists, replace or repair the wiring. Replace the transmitter or AML's power circuit board. Replace the serial port fuse of AML.
Message	Description
Error : 1005 Error : 1006	Transmitter 1 defect Transmitter 2 defect
Situation:	All operations except boom swing are unavailable due to the faulty transmitter.
Cause:	The internal circuit of transmitter is defective.
Action:	Replace the defective transmitter.

Error Message

Message	Description
Error : 2006	Jib angle detector trouble
Situation:	All operations except boom swing are unavailable due to the abnormal input value from the jib angle detector.
Cause:	The jib angle detector is defective, or its wiring is open. The transmitter unit is defective.
Action:	Perform inspection for the possible causes listed above. The status of any input from the detector can be checked using the "Ai check" function from the "Maintenance" menu.
Message	Description
Error : 2009	Right front outrigger length detector trouble
Error : 2010	Right rear outrigger length detector trouble
Error : 2011	Left front outrigger length detector trouble
Error : 2012	Left rear outrigger length detector trouble
Situation:	The input data from the outrigger length detector are abnormal.
Cause:	The outrigger length detector is defective, or its wiring is open. The AML outrigger length detector is maladjusted. (For multiplex data transmitter) The transmitter unit is defective.
Action:	Perform inspection for the possible causes listed above. The status of any input from the detector can be checked using the "Ai check" function from the "Maintenance" menu.
Message	Description
Error : 2017	Swing angle detector 1 trouble (swing dead angle switch OFF)
Error : 2019	Swing angle detector 2 trouble (swing dead angle switch ON) (same as swing angle detector 1,2 select switch)
Situation:	All operations except boom swing are unavailable due to the input data from the swing angle detector inconsistent with the swing dead angle detector switch position.
Cause:	Swing angle detector is faulty or maladjusted, or its wiring is open. Swing dead angle detector switch is faulty or maladjusted, or its wiring is open. The AML itself is defective.
Action:	Perform inspection for the possible causes listed above. The status of any input from the detector can be checked using the "Ai & Di check" function from the "Maintenance" menu.

Full Version Available

Tadano AML-L2C Load Moment Indicator Service Manual

Tadano AML-L2C load moment indicator service manual with adjustment, error message and disassembly procedures. Searchable PDF, instant download.

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