
Manual Part # 99905705

SIII Telescopic Crane Radio Remote System (Emulator)

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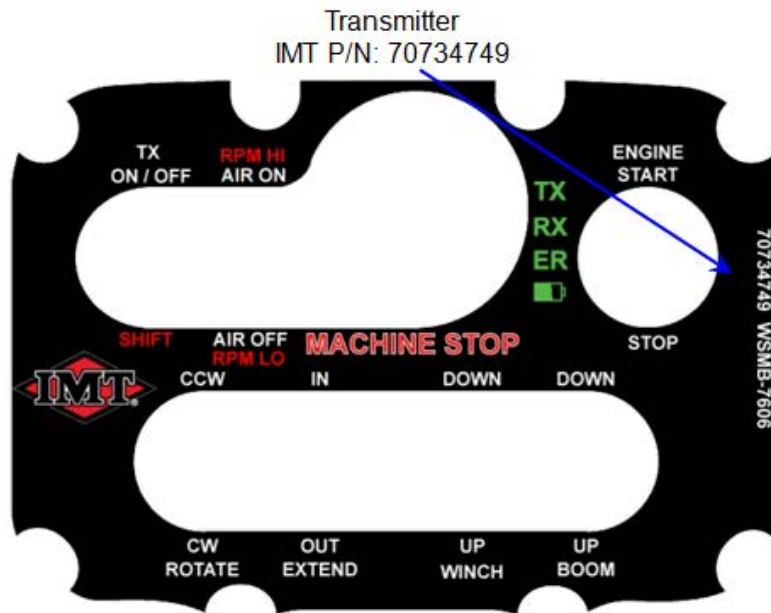
SECTION 1: Transmitter and Receiver Identification

Fully Proportional Control System

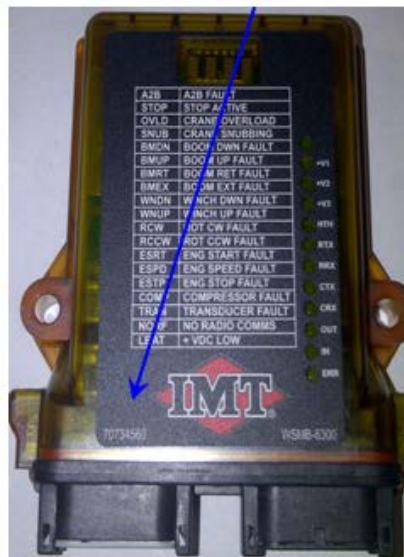
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Fully Proportional Control System 7 Toggle Switches WITHOUT Horn Switch

For this system go to Section 3.



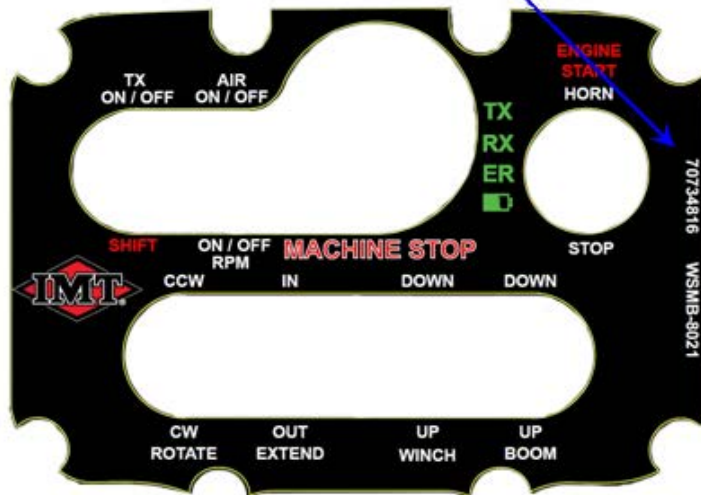
Receiver
IMT P/N: 70734560



Fully Proportional Control System 7 Toggle Switches WITH Horn Switch

For these systems go to Section 4.

Transmitter
IMT P/N: 70734816



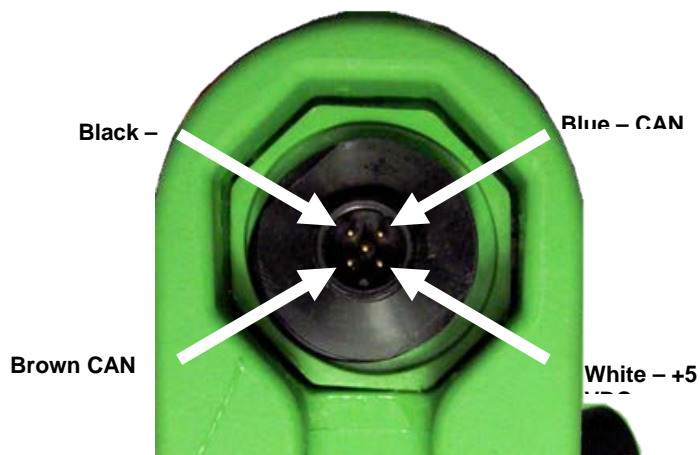
Receiver
IMT P/N: 70734763



CAN Connection – Radio & Battery Elimination Cable



Transmitter Cable Backup Connector



SECTION 2: System Properties and Statement – Applies to all Systems in this Manual

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Safety Precautions

- ✓ *Read and follow all instructions.*
- ✓ *Failure to abide by Safety Precautions may result in equipment failure, loss of authority to operate the equipment, and personal injury.*
- ✓ *Use and maintain proper wiring. Follow equipment manufacturer instructions. Improper, loose, and frayed wiring can cause system failure, equipment damage, and intermittent operation.*
- ✓ *Changes or modifications made to equipment not expressly approved by the manufacturer will void the warranty.*
- ✓ *Owner/operators of the equipment must abide by all applicable Federal, State, and Local laws concerning installation and operation of the equipment. Failure to comply could result in penalties and could void user authority to operate the equipment.*
- ✓ *Make sure that the machinery and surrounding area is clear before operating. Do not activate the remote control system until certain that it is safe to do so.*
- ✓ *Turn off the transmitter remote and remove power from the receiver before attempting any maintenance. This will prevent accidental operation of the controlled machinery.*
- ✓ *Power is removed from the Receiver by detaching the 12-pin cable from the receiver connector P1 and P2, or by removing the source power from the circuit.*
- ✓ *Use a damp cloth to keep units clean. Remove mud, concrete, dirt, etc. after use to prevent obstructing or clogging the buttons, levers, wiring, and switches.*
- ✓ *Do not intentionally allow liquid to enter the transmitter or receiver enclosures. Do not use high pressure equipment to clean the transmitter remote or receiver.*
- ✓ *Operate and store units only within the specified operation and storage temperatures defined in this document.*

NOTE:

Disconnect the radio receiver before welding on the body or chassis, or any component sitting on work bench or in vise. Failure to disconnect the receiver may result in destruction of or damage to the receiver.

RoHS Compliance Statement

This system complies with the requirements of **Restriction of Hazardous Substances (RoHS/WEEE) Specification** based on in-house practice and declaration of compliance from the vendors. For additional information concerning RoHS compliance, please contact IMT.

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This product may contain material that may be hazardous to human health and the environment. In compliance with EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE):

- ✓ Do not dispose of the product as unsorted municipal waste.
- ✓ This product should be recycled in accordance with local regulations. Contact local authorities for detailed information.
- ✓ This product may be returnable to the distributor for recycling. Contact your distributor for details.

FCC Statements

15.19 - Two Part Warning

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

15.21 - Unauthorized Modification

NOTICE: The manufacturer is not responsible for any unauthorized modifications to this equipment made by the user. Such modifications could void the user's authority to operate the equipment.

15.105(b) - Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Industry Canada Statement

This device complies with Canadian RSS-210.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc.ca/rpb.

LIST OF EQUIPMENT

	QTY	PART NUMBER	DESCRIPTION
TRANSMITTERS	1	70734749	Transmitter, 2.4 GHz, Piston Grip, Green 7 Toggle Switches, w/o Horn switch Use with 70734560 Receiver
	1	70734816	Transmitter, 2.4 GHz, Piston Grip, Green 7 Toggle Switches, with Horn switch Use with 70734763 Receiver
RECEIVERS	1	70734560	Receiver, 2.4 GHz, fully proportional 16 FET CH, 2 Analog CH, Internal Antenna Use with 70734749 transmitter
	1	70734763	Receiver, 2.4 GHz, fully proportional 16 FET CH, 2 Analog CH, Internal Antenna Use with 70734816 transmitter
PARTS	7	77041917	Toggle Switch
	1	77041918	E-Stop Switch
	1	70399506	Decal, faceplate, for 70734749 transmitter
	1	70399526	Decal, faceplate, for 70734816 transmitter
	1	77441552	Cap & Chain Asm for Radio/Bat Elimination Cable
	1	77344540	Cover, battery compartment
	1	70399502	Trigger switch asm w/springs, set screw, and dowel pin
	1	71415460	Magnet, disc, for handle (screws included)
	1	77344546	Faceplate, 7 toggle switches
	1	77041967	Handle guard with thread inserts GRN CERVIS

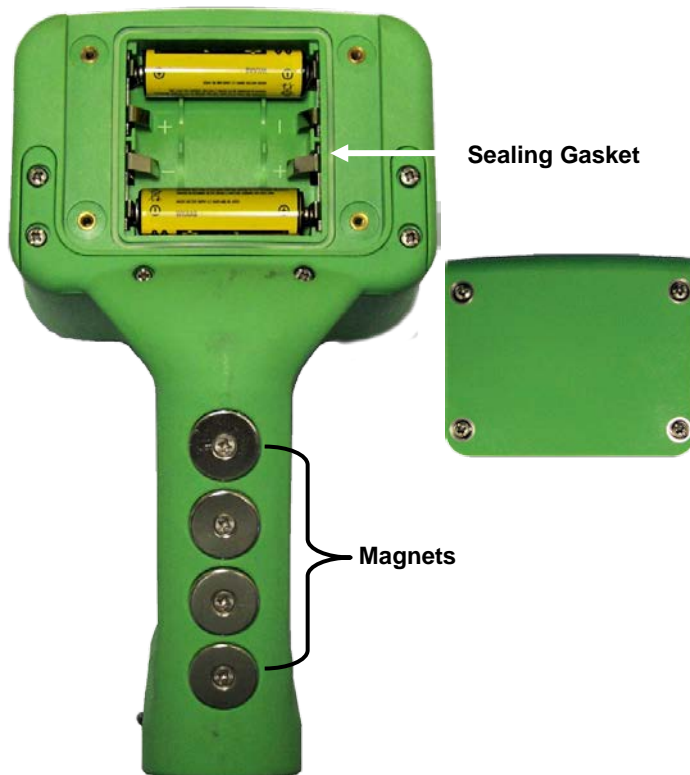
Transmitter Battery Installation

This transmitter unit is powered by four size AA batteries. When installing batteries, be sure to observe proper polarity as marked on the inside of the compartment to avoid damaging the unit.

To replace or install batteries in the transmitter:

1. Loosen the four captive battery compartment cover screws on the rear of the remote and lift the cover from the transmitter.
2. Install (or replace with) four (4) fresh size AA batteries. Observe the proper polarity by positioning the batteries as shown in Figure 3.
3. Replace the compartment cover and tighten the four screws. These screws should not be over-tightened, but **they must be tight enough to assure the gasket provides a proper environmental seal.**

NOTE: *Be sure to observe proper polarity when placing batteries in the transmitter battery compartment.*



Transmitter Battery Installation

✓ **Note:** Cover screws must be tightened enough to assure the sealing gasket is compressed. Do not over-tighten the screws.

NOTE

Receiver is sealed. Do Not Open! Equipment damage may result.

Hardware Configuration Details

Receiver Hardware Configuration Details

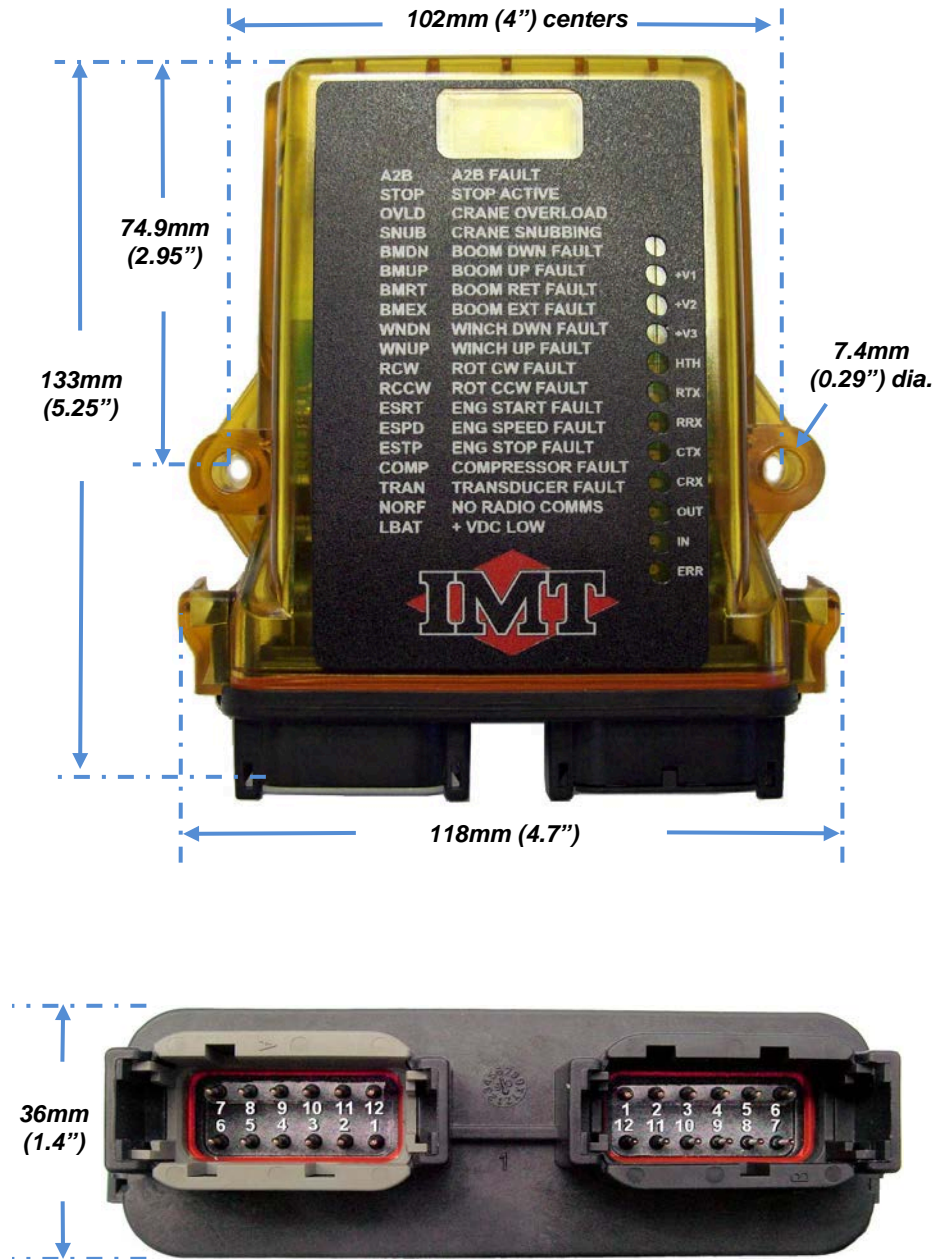
Characteristic	Interface Description	Notes
Control Power	7-32 VDC	Control/Supply Voltage
Number of I/O Channels	16 Digital /2 Analog	Fully Proportional
Output Composition	FET	2 A/Channel
RF, Antenna Option	2.4GHz, INTERNAL	Fully Proportional
Dither Freq. Dither Amplitude	40...70 Hz - 55 Hz optimal See valve spec sheet:	Fully Proportional
Digital Input Voltage Range	<1V Active, >3V Inactive	
Analog Input Range	4-20mA = 0-5000psi	Intended to interface to a Wika MH-2 pressure sensor

Safety Link

Receiver Safety Link

Receiver Safety Link	
X	
<p style="text-align: center;">ENABLED</p> <p>When any of the following occurs:</p> <ul style="list-style-type: none"> • Machine Stop is pressed • Transmitter unit goes out of range • Transmitter unit deactivates due to loss of power, Inactivity timeout, or deliberate deactivation (off switch) <p>Then, all latched outputs unlatch and all momentary outputs that are active deactivate. Upon activation of the transmitter, no outputs are allowed to be activated until all switches (unless masked) are first centered or returned to their neutral state.</p>	<p style="text-align: center;">DISABLED</p> <p>When any of the following occurs:</p> <ul style="list-style-type: none"> • Machine Stop is pressed • Transmitter unit goes out of range • Transmitter unit deactivates due to loss of power, Inactivity timeout, or deliberate deactivation (off switch) <p>Then all latched outputs remain latched but all momentary commands that are active deactivate.</p> <p>Note: If transmitter unit is powered on and a momentary command that was deactivated due to range, is still active when the transmitter returns in range the output will immediately be active again.</p>

Receiver Mounting



Receiver Mounting Dimensions

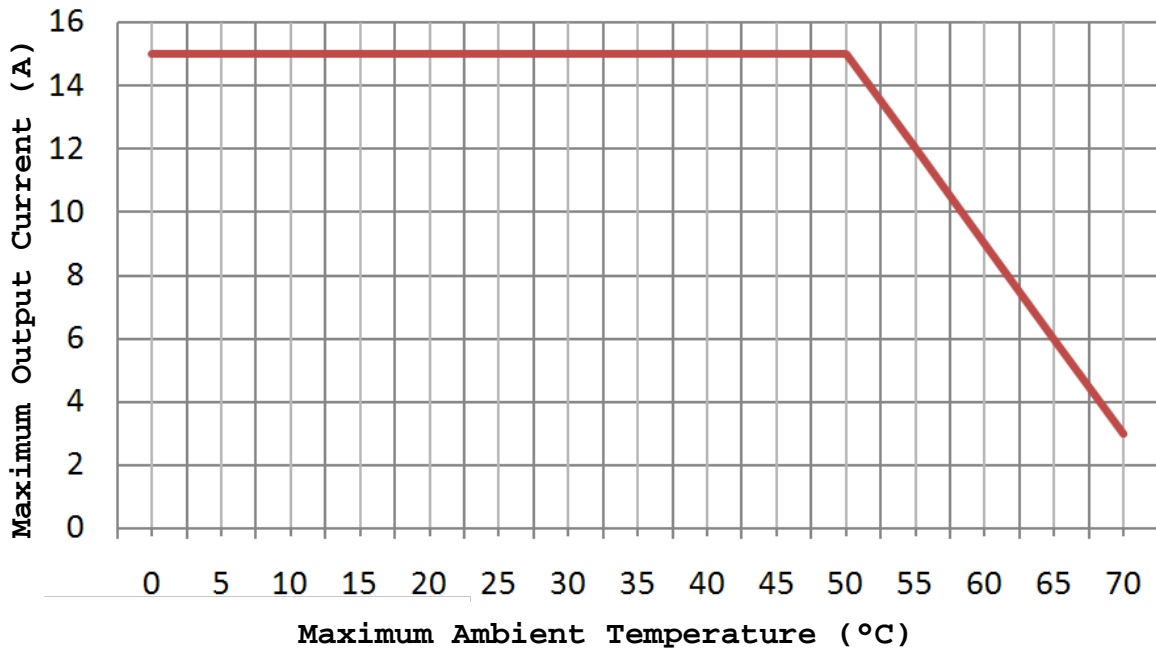
Transmitter Specifications

Item	Description	
Power	V_{in}	+1.6V to +3.2VDC
	Batteries	Four (4) AA
	Battery Life	175 to 200 hours (ADJUSTED)
	Low V Shutdown	1.6VDC
	Auto-shutdown	10 min. of button inactivity
Environment	Operating Temp	-20°C to 55°C (-4°F to 131°F)
	Storage Temp	-40°C to 55°C (-40°F to 131°F)
	Humidity	0 to 100%
Radio	Frequency	2405-2480MHz
	RF Power	2mW
	License	License free
	Modulation	DSSS
	Antenna	Internal
Enclosure	Dimensions	mm: 230.6x133.9x146.9 inch: 9.1 x 5.3 x 5.8
	Total Weight	3 lbs
	Durability	High Impact Glass Filled Polymer case
	Faceplate	Aluminum or Polycarbonate
Indicators (5)	LEDs	
	TX	Blinking– transmitting, no switch active Solid– transmitting, switch active
	RX	Blinking– receiving, no output of interest active Solid– receiving, output of interest active
	BATT	Low battery indication
	ERR	Indicates error with transmitter
Control Switches	Toggle	7 momentary
	Mushroom	Oversized Machine Stop

Receiver Specifications

Receiver Specifications		
POWER	Vin	+7 to +32VDC
RADIO	Frequency	2405 – 2480MHz
	2.4GHz RF Power	2mW
	License	License Free
	Modulation	DSSS
	Antenna	Internal
ENVIRONMENT	Operating Temp	See Derating Curve chart below for details
	Storage Temp	-40°C to 85°C (-40°F to 185°F)
	Humidity	0 to 100%
	Vibration/Shock	IEC60068-2-6 10Hz to 150Hz @ 1.0g peak acceleration 10.0g peak shock acceleration
INDICATORS (11)	+V1	OK when active solid
	+V2	OK when active solid
	+V3	OK when active solid
	D1 - Health	OK when active blinking
	D2 – RF TX	Blinking when transmitting
	D3 – RF RX	Solid when receiving
	D4 - Out	Solid when active
	D5 - In	Solid when active
	D6 – CAN TX	Blinking when transmitting
	D7 – CAN RX	Solid when receiving
	D8 - Error	Solid while error occurring
ENCLOSURE	Dimensions	119mm x 133mm x 36mm (5.24" x 4.69" x 1.42")
	Durability	High Impact Polymer
	Mounting Holes	7.4mm (0.29") dia. 102mm center-to-center (4" center-to-center)
OUTPUTS/INPUTS	Digital Channels	
	Sixteen	FET—Open Drain
	Output Current	4A per channel 15A Max. total
	Input Voltage	<1V Inactive, >3V Active
	Analog Channels	
	Two	4-20mA Input
	Input Impedance	165Ω

Output Current De-rating Curve



Transmitter Output Current Derating Curve

Receiver Troubleshooting Guide

Receiver Troubleshooting

Indication	Suggestions
Power LED (+V1,+ V2, +V3) not active	<ul style="list-style-type: none"> ✓ Is +VDC input power present? ✓ Check input power polarity.
Health LED steady ON	<ul style="list-style-type: none"> ✓ Indicates an internal component failure.
TX/RX not active	<ul style="list-style-type: none"> ✓ Check for obstructions preventing line-of-sight transmission. ✓ Check that the transmitter is active. ✓ Re-associate the transmitter to the receiver.
CTX/CRX not active	<ul style="list-style-type: none"> ✓ Check CAN connection.
Out LED not active	<ul style="list-style-type: none"> ✓ Check that the transmitter LEDs are active when the appropriate buttons are pushed.
Error LED active	<ul style="list-style-type: none"> ✓ Check the outputs for loose wiring, etc. ✓ Over-temperature channel indication. ✓ Over-current channel indication. ✓ Error condition exists. Active channel current consumption less than 1A typical. (This is not a problem in cases where less than 1A draw is a normal condition.)
In LED not active when expected	<ul style="list-style-type: none"> ✓ Check that the input signal is referenced to P1:12.

Receiver Display Messages

Receiver Display Messages

A2B	A2B Fault	A2B switch is active
STOP	STOP ACTIVE	Stop switch is active
OVL	CRANE OVERLOAD	90% of setpoint* reached
SNUB	CRANE SNUBBING	80% of setpoint* reached
BMDN	BOOM DWN FAULT	No connection
BMUP	BOOM UP FAULT	No connection
BMRT	BOOM RET FAULT	No connection
BMEX	BOOM EXT FAULT	No connection
WNDN	WINCH DWN FAULT	No connection
WNUP	WINCH UP FAULT	No connection
RCW	ROT CW FAULT	No connection
RCCW	ROT CCW FAULT	No connection
ESRT	ENG START FAULT	No connection
ESPD	ENG SPEED FAULT	No connection
ESTP	ENG STOP FAULT	No connection
COMP	COMPRESSOR FAULT	No connection
TRAN	TRANSDUCER FAULT	No connection
NORF	NO RADIO COMMS	Loss of Link
LBAT	+ VDC LOWA2B	Input voltage <8V

* Setpoint is 3500psi for BOOM DOWN motion only. Setpoint is 3100psi for any other motion.

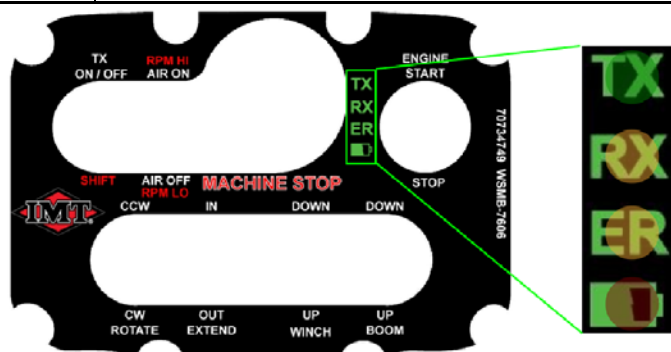
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Transmitter Switch and LED Description

70734559 Transmitter Switch & LED Description

Switch/LED	Function
Red E-Stop Button IN OUT	E-STOP, the transmitter powers off immediately. If depressed during normal crane operation, Engine Stop command is sent to chassis or auxiliary power engine; all hydraulic functions stop. Normal operating position; transmitter may be powered up.
Trigger	PROPORTIONAL CONTROL - Must be release before toggling switches 2 thru 5. Toggle switch, then pull proportional trigger slowly.
Switch 1 UP DOWN	ENGINE START ENGINE START
Switch 2 UP DOWN	BOOM DOWN BOOM UP
Switch 3 UP DOWN	WINCH DOWN WINCH UP
Switch 4 UP DOWN	EXTEND IN EXTEND OUT
Switch 5 UP DOWN	ROTATE CCW ROTATE CW
Switch 6 UP DOWN	TX ON/OFF SHIFT
Switch 7 UP DOWN SHIFT + UP SHIFT + DOWN	AIR ON AIR OFF ENGINE SPEED HIGH ENGINE SPEED LOW



Transmitter Diagnostic LEDs

LED Information	Condition	Color
TX rapid blinking TX solid	Transmitter is transmitting Switch active on transmitter	Green
RX blinking (indication of RF signal integrity) RX solid	Receiver messages received Output on receiver is active	Amber
ER slow blink ER solid	Machine Stop depressed at power-up Switch fault at power-up	Amber
BATT slow blink	Low battery	Red

Transmitter Operation

Turn ON the Unit

This remote is powered **ON** by releasing the large Red mushroom-style STOP button and activating the **TX ON/OFF** toggle switch.

Turn OFF the Unit

During normal operation, you do not need to do anything to power down the radio remote transmitter. The transmitter will automatically power down after 15 minutes of inactivity.

IMPORTANT NOTE: The primary function of the red E-Stop button is an emergency stop. If the red E-Stop button is pushed when the vehicle engine or auxiliary power unit is running, and the crane is powered up, the transmitter will send an “Engine Stop” command to the engine or power unit and shut down immediately thereby stopping all hydraulic powered functions.

Pushing the E-Stop when the vehicle engine or power unit is not running, or the crane does not have electrical power, will shut the radio transmitter off immediately without affecting the vehicle engine or power unit.

Proportional Control

The proportional trigger and crane movement momentary toggle switches are used for proportional control of crane functions Winch, Telescope, Elevation and Rotation. The trigger is programmable via the configuration set-up features. See Transmitter Adjustments (Adjust Mode).

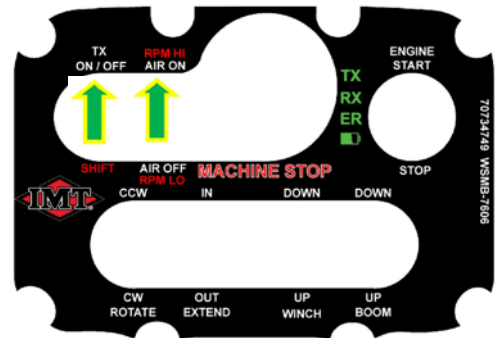
Toggle Switches SW1 through SW7

Toggle switches SW1 through SW7 are three position momentary with latched commands (where necessary) in software. These switches are used for digital control and for various setup and adjustment functions. See Transmitter Adjustments (Adjust Mode).

Fully Proportional Radio Remote (Emulator)

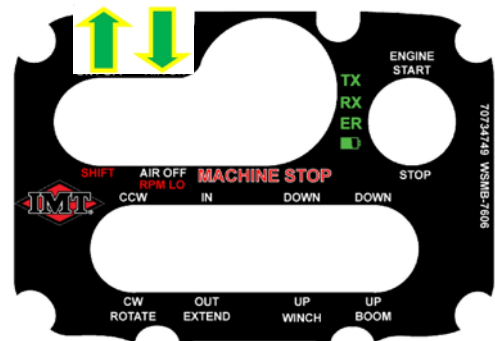
Handshake (Association) – Note: You must have a direct line-of-sight between the transmitter and receiver.

1. Power off transmitter and receiver (pto and/or ignition switch off)
2. Release the STOP button on the handheld by twisting it clockwise.
3. Push and hold the switches for AIR ON (up) and TX ON/OFF (up) - All LED's will turn on (TX, RX, ER, BAT).
4. When the RX LED goes out, turn on the power to the receiver (pto and/or ignition switch).
5. Release the switches on the transmitter.
6. Both TX and RX LED's on the transmitter should be blinking rapidly. If not, repeat steps 1 – 6.



Setting parameters:

1. HYDRAULICS OFF (Turn on ignition and pto switches, but do not start engine)
2. Turn transmitter on (receiver should be on).
3. Push and hold the switches for AIR OFF/RPM LO (down) and TX ON (up).
4. On the receiver display you will see “L-xx” (xx=number). Release switches. The transmitter is ready to set the LOW SIDE parameters.
5. Push and hold the function switch you wish to change. Use the AIR ON/RPM HI (up) switch to raise and SHIFT (down) to lower the setting. Observe the display on the receiver for the number change.
6. Once you have the new set value, push AIR OFF/RPM LOW (down) to store it. Release the switch.
7. Repeat steps 5 & 6 for each function.
8. Push and hold the switches for AIR ON/RPM HI (up) and ENGINE START (up).
9. On the receiver, you will see “H-xx” (xx=number). Release switches. The transmitter is now ready to set the high side parameters.
10. Push and hold the function switch you wish to change. Use the AIR ON/RPM HI (up) switch to raise and SHIFT (down) to lower the setting. Make sure to watch the receiver for the number change.
11. Once you have the new set value, push AIR OFF/RPM LO (down) to store it. Release the switch.
12. Repeat steps 10 & 11 for each function.



To exit calibration mode, push E-STOP or RPM or just wait for the programming mode to time out.

These are the IMT recommended starting parameters. You may tune your transmitter to your personal preferences.

IMT does recommend setting the Low above 32 for best slow resolution.

IMT does not recommend setting the HIGH setting below 50.

Function	Low	High
BOOM DOWN	30	62
BOOM UP	30	60
ROTATE CW	20	50
ROTATE CCW	20	50

Function	Low	High
WINCH DOWN	30	60
WINCH UP	30	60
BOOM EXTEND	28	55
BOOM RETRACT	28	55

Receiver Channel Configuration

Receiver Channel Configuration

Channel #	Channel Type	Output Style	Channel Logic
BOOM EXTEND M1	PWM	Momentary	BOOM EXTEND (AND NOT BOOM RETRACT) If cranes load input is within 20% of overload condition reduces output by 50%.
BOOM RETRACT M2	PWM	Momentary	BOOM RETRACT (AND NOT BOOM EXTEND) If cranes load input is within 20% of overload condition reduces output by 50%.
Boom Rotate CCW M3	PWM	Momentary	ROTATE CCW (AND NOT ROTATE CW) If cranes load input is within 20% of overload condition reduces output by 50%.
Boom Rotate CW M4	PWM	Momentary	ROTATE CCW (AND NOT ROTATE CW) If cranes load input is within 20% of overload condition reduces output by 50%.
BOOM UP M5	PWM	Momentary	BOOM UP (AND NOT BOOM DOWN) If cranes load input is within 20% of overload condition reduces output by 50%.
BOOM DOWN M6	PWM	Momentary	BOOM DOWN (AND NOT BOOM UP) If cranes load input is within 20% of overload condition reduces output by 50%.
WINCH IN M7	PWM	Momentary	WINCH IN (AND NOT WINCH OUT) If cranes load input is within 20% of overload condition reduces output by 50%.
WINCH OUT M8	PWM	Momentary	WINCH OUT (AND NOT WINCH IN) If cranes load input is within 20% of overload condition reduces output by 50%.
ENGINE SPEED M9	Level	Latched ON	ENGINE SPEED HIGH OR AIR ON
		Latched OFF	ENGINE SPEED LOW OR AIR OFF
ENGINE START M10	Level	Momentary	ENGINE START (AND NOT ENGINE STOP)
ENGINE STOP M11	Level	Momentary	ENGINE STOP (AND NOT ENGINE START)
AIR COMPRESSOR M12	Level	Latched ON	AIR ON
		Latched OFF	AIR OFF
STOP/LINK/HOUR METER M13	Level	Latched ON	RF LINK
		Latched OFF	LOSS OF RF LINK
A2B INPUT M14	Digital Input	Momentary	FROM NORMALLY CLOSED SWITCH: ACTIVE LOW

Receiver Channel Configuration

Channel #	Channel Type	Output Style	Channel Logic
UNUSED M15			
UNUSED M16			
UNUSED AI1			
LOAD INPUT AI2	Pressure Transducer Input	4-20mA	[4mA,20mA] →[0,5000psi]

Cable Wiring Information



Receiver P1 and P2 Pinout

Receiver Wiring Table

Pin	Signal Name	Pin	Signal Name
P1:1	+VDC	P2:1	M5: BOOM UP
P1:2	AI1: NOT USED	P2:2	M6: BOOM DOWN
P1:3	M9: ENGINE SPEED	P2:3	M7: WINCH IN
P1:4	M10: ENGINE START	P2:4	M8: WINCH OUT
P1:5	M11: ENGINE STOP	P2:5	CANH: See Error! Reference source not found.
P1:6	M12: AIR COMPRESSOR ON	P2:6	UMBILICAL PWR (+5V): See Error! Reference source not found.
P1:7	M13: STOP/HOUR METER	P2:7	+VDC
P1:8	M14: A2B INPUT LOW	P2:8	CANL: See Error! Reference source not found.
P1:9	M15: NOT USED	P2:9	M1: EXTEND
P1:10	M16: NOT USED	P2:10	M2: RETRACT
P1:11	AI2: 4-20mA LOAD INPUT	P2:11	M3: CCW
P1:12	-VDC, UMBILICAL COM: See 2.4	P2:12	M4: CW

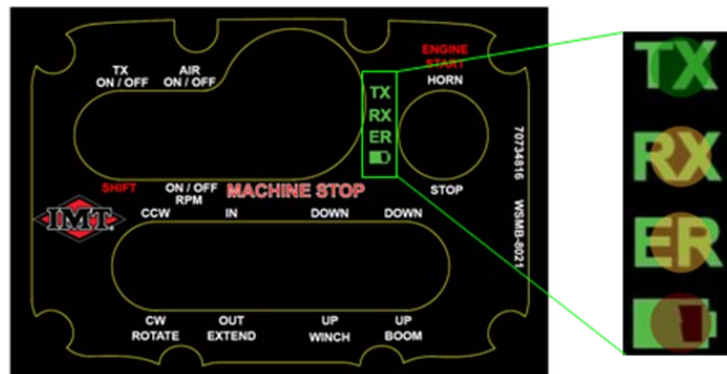
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Transmitter Switch and LED Description

70734816 Transmitter Switch and LED Description

Switch/LED	Function
Red E-Stop Button IN OUT	E-STOP, the transmitter powers off immediately. If depressed during normal crane operation, Engine Stop command is sent to chassis or auxiliary power engine; all hydraulic functions stop. Normal operating position; transmitter may be powered up.
Trigger	PROPORTIONAL CONTROL - Must be release before toggling switches 2 thru 5. Toggle switch, then pull proportional trigger slowly.
Switch 1 UP DOWN SHIFT + UP	HORN ENGINE STOP ENGINE START
Switch 2 UP DOWN	BOOM DOWN BOOM UP
Switch 3 UP DOWN	WINCH DOWN WINCH UP
Switch 4 UP DOWN	EXTEND IN EXTEND OUT
Switch 5 UP DOWN	ROTATE CCW ROTATE CW
Switch 6 UP DOWN	TX ON/OFF SHIFT
Switch 7 UP DOWN	AIR ON & OFF ENGINE SPEED HIGH ON & OFF



Transmitter Diagnostic LEDs

Transmitter Operational LED Diagnostic Information

LED Information	Condition	Color
TX rapid blinking TX solid	Transmitter is transmitting Switch active on transmitter	Green
RX blinking (indication of RF signal integrity) RX solid	Receiver messages received Output on receiver is active	Amber
ER slow blink ER solid	Machine Stop depressed at power-up Switch fault at power-up	Amber
BATT slow blink	Low battery	Red

Transmitter Operation

Turn ON the Unit

This remote is powered **ON** by releasing the large Red mushroom-style STOP button and activating the **TX ON/OFF** toggle switch.

Turn OFF the Unit

During normal operation, you do not need to do anything to power down the radio remote transmitter. The transmitter will automatically power down after 15 minutes of inactivity. You may also toggle the **TX ON/OFF** switch at any time to shut off the transmitter.

IMPORTANT NOTE: The primary function of the red E-Stop button is an emergency stop. If the red E-Stop button is pushed when the vehicle engine or auxiliary power unit is running, and the crane is powered up, the transmitter will send an “Engine Stop” command to the engine or power unit and shut down immediately thereby stopping all hydraulic powered functions.

Pushing the E-Stop when the vehicle engine or power unit is not running, or the crane does not have electrical power, will shut the radio transmitter off immediately without affecting the vehicle engine or power unit.

Proportional Control

The proportional trigger and crane movement momentary toggle switches are used for proportional control of crane functions Winch, Telescope, Elevation and Rotation. The trigger is programmable via the configuration set-up features. See Transmitter Adjustments (Adjust Mode).

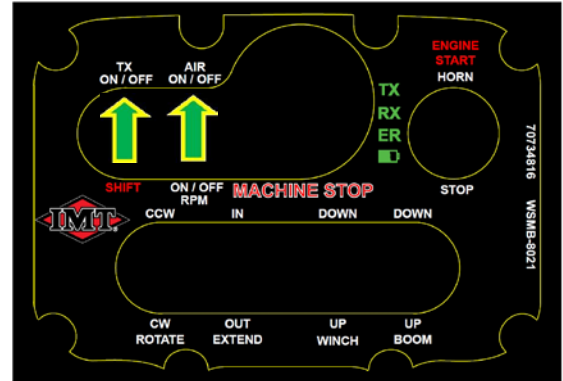
Toggle Switches SW1 through SW7

Toggle switches SW1 through SW7 are three position momentary with latched commands (where necessary) in software. These switches are used for digital control and for various setup and adjustment functions. See Transmitter Adjustments (Adjust Mode).

Fully Proportional Radio Remote (Emulator)

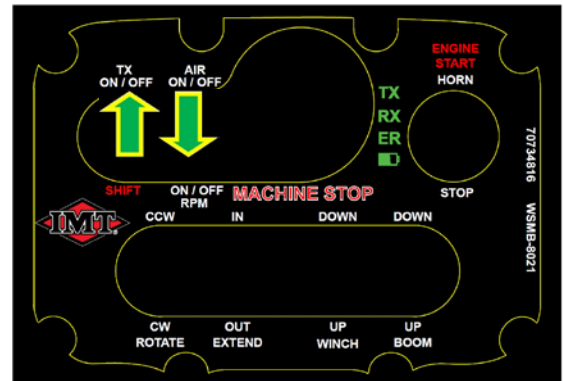
Handshake (Association) – Note: You must have a direct line-of-sight with between the transmitter and receiver.

1. Power off transmitter and receiver (pto and/or ignition switch off)
2. Release the STOP button on the handheld by twisting it clockwise.
3. Push and hold the switches for AIR ON/OFF (up) and TX ON/OFF (up) - All LED's will turn on (TX, RX, ER, BAT).
4. When the RX LED goes out, turn on the power to the receiver (pto and/or ignition switch).
5. Release the switches on the transmitter.
6. Both TX and RX LED's on the transmitter should be blinking rapidly. If not, repeat steps 1 – 6.



Setting parameters:

1. HYDRAULICS OFF (Turn on ignition and pto switches, but do not start engine)
2. Turn transmitter on (receiver should be on).
3. Push and hold the switches for RPM ON/OFF (down) and TX ON/OFF (up).
4. On the receiver display you will see “L-xx” (xx=number). Release switches. The transmitter is ready to set the LOW SIDE parameters.
5. Push and hold the function switch you wish to change. Use the AIR ON/OFF (up) switch to raise and SHIFT (down) to lower the setting. Observe the display on the receiver for the number change.
6. Once you have the new set value, push RPM ON/OFF (down) to store it. Release the switch.
7. Repeat steps 5 & 6 for each function.
8. Push and hold the switches for AIR ON/OFF (up) and ENGINE START (up).
9. On the receiver, you will see “H-xx” (xx=number). Release switches. The transmitter is now ready to set the HIGH SIDE parameters.
10. Push and hold the function switch you wish to change. Use the AIR ON/OFF (up) switch to raise and SHIFT (down) to lower the setting. Make sure to watch the receiver for the number change.
11. Once you have the new set value, push RPM ON/OFF (down) to store it. Release the switch.
12. Repeat steps 10 & 11 for each function.



To exit calibration mode, push E-STOP or just wait for the programming mode to time out.

These are the IMT recommended starting parameters. You may tune your transmitter to your personal preferences.

IMT does recommend setting the Low above 32 for best slow resolution.

IMT does not recommend setting the HIGH setting below 50.

Function	Low	High
BOOM DOWN	30	62
BOOM UP	30	60
ROTATE CW	20	50
ROTATE CCW	20	50

Function	Low	High
WINCH DOWN	30	60
WINCH UP	30	60
BOOM EXTEND	28	55
BOOM RETRACT	28	55

Receiver Channel Configuration

Receiver Channel Configuration

Channel #	Channel Type	Output Style	Channel Logic
BOOM EXTEND M1	PWM	Momentary	BOOM EXTEND (AND NOT BOOM RETRACT) If cranes load input is within 20% of overload condition reduces output by 50%.
BOOM RETRACT M2	PWM	Momentary	BOOM RETRACT (AND NOT BOOM EXTEND) If cranes load input is within 20% of overload condition reduces output by 50%.
Boom Rotate CCW M3	PWM	Momentary	ROTATE CCW (AND NOT ROTATE CW) If cranes load input is within 20% of overload condition reduces output by 50%.
Boom Rotate CW M4	PWM	Momentary	ROTATE CCW (AND NOT ROTATE CW) If cranes load input is within 20% of overload condition reduces output by 50%.
BOOM UP M5	PWM	Momentary	BOOM UP (AND NOT BOOM DOWN) If cranes load input is within 20% of overload condition reduces output by 50%.
BOOM DOWN M6	PWM	Momentary	BOOM DOWN (AND NOT BOOM UP) If cranes load input is within 20% of overload condition reduces output by 50%.
WINCH IN M7	PWM	Momentary	WINCH IN (AND NOT WINCH OUT) If cranes load input is within 20% of overload condition reduces output by 50%.
WINCH OUT M8	PWM	Momentary	WINCH OUT (AND NOT WINCH IN) If cranes load input is within 20% of overload condition reduces output by 50%.
ENGINE SPEED M9	Level	Latched ON	ENGINE SPEED HIGH OR AIR ON
		Latched OFF	ENGINE SPEED LOW OR AIR OFF
ENGINE START M10	Level	Momentary	ENGINE START (AND NOT ENGINE STOP)
ENGINE STOP M11	Level	Momentary	ENGINE STOP (AND NOT ENGINE START)
AIR COMPRESSOR M12	Level	Latched ON	AIR ON
		Latched OFF	AIR OFF
STOP/LINK/HOUR METER M13	Level	Latched ON	RF LINK
		Latched OFF	LOSS OF RF LINK
A2B INPUT M14	Digital Input	Momentary	FROM NORMALLY CLOSED SWITCH: ACTIVE LOW

Receiver Channel Configuration

Channel #	Channel Type	Output Style	Channel Logic
WARNING 1 OUT/HORN M15	Level	Momentary	Ai2 > (Pressure Input > 80%)*
WARNING 2 OUT/HORN M16	Level	Momentary	Ai2 > (Pressure Input > 100%)*
UNUSED AI1			
LOAD INPUT AI2	Pressure Transducer Input	4-20mA	[4mA,20mA] →[0,5000psi]

*Current dependent on motion function Boom Down/Non-Boom Down/Snubby/Overload characteristics.

Note: Air compressor stays on with signal loss – loss of link – and the engine runs at high idle.

Note: Machine Stop latches off all functions and will activate Engine STOP output for 10 seconds.

Cable Wiring Information



Figure 9: Receiver P1 and P2 Pinout

Receiver Wiring Table

Pin	Signal Name	Pin	Signal Name
P1:1	+VDC	P2:1	M5: BOOM UP
P1:2	AI1: NOT USED	P2:2	M6: BOOM DOWN
P1:3	M9: ENGINE SPEED	P2:3	M7: WINCH IN
P1:4	M10: ENGINE START	P2:4	M8: WINCH OUT
P1:5	M11: ENGINE STOP	P2:5	CANH: See 2.7
P1:6	M12: AIR COMPRESSOR ON	P2:6	UMBILICAL PWR (+5V): See 2.7
P1:7	M13: STOP/HOUR METER	P2:7	+VDC
P1:8	M14: A2B INPUT LOW	P2:8	CANL: See 2.7
P1:9	M15: WARNING 1/HORN	P2:9	M1: EXTEND
P1:10	M16: WARNING 2/HORN	P2:10	M2: RETRACT
P1:11	AI2: 4-20mA LOAD INPUT	P2:11	M3: CCW
P1:12	-VDC, UMBILICAL COM: See 2.4	P2:12	M4: CW



Iowa Mold Tooling Co., Inc.