

ART-5470 TRAIN ENGINEER CONTROL SYSTEM is a two-piece Set that includes...

A. ART-5471 RECEIVER - An Indoor/Outdoor (if protected), FCC-approved FM 2-Channel Linear RECEIVER-10AMP MAXIMUM OUTPUT, with attached soft wire lead antenna.

B. ART-5473 TRANSMITTER - An Indoor/Outdoor, FCC-approved FM hand-held Transmitter Unit with flexible 'stick' antenna and 2-Channel Train Operation-Memory with EMERGENCY STOP Override Button, and 1 meter / 39in. of Track Connector Wire.

...however, the TRAIN ENGINEER requires attachment of flexible antenna to ART-5473 TRANSMITTER by customer. Also insertion of 4 - 1.5V ALKALINE AA batteries (not included) into TRANSMITTER.

FEATURES:

Realistic 'Wireless Walk-around' control of model railroad train with no modification to existing Power Supply or locomotive(s).

Memory capability allows continued operation of first TRACK Channel at preset speed/direction during changeover to second TRACK Channel.

Operational with most conventional DC track power supplies up to 10AMP MAXIMUM.

NOTE: Will work with Pulse Width Control/PWC a feature of ARISTOCRAFT TRAINS ART-5400, ART-5401 and ART-5450 Power Supply units, though a fan unit is required over 5 amps. There is an optional switch to use with other non-PWC linear style power supplies. Linear style use requires a fan from 3.5 amps up and will work only up to a maximum of 7 amps, while PWC can operate up to 10 Amps.

TRANSMITTER easily fits into pocket or 'clip-on' to belt. TRANSMITTER and/or RECEIVER are available for separate purchase as replacement or to control additional train.

ART-5470 TRAIN ENGINEER Specifications:

The ART-5470 TRAIN ENGINEER is a two-piece Set -

RECEIVER - ART-5471...

FREQUENCY: 27Mhz

IF FREQUENCY: single conversion 455Khz

TYPE OF EMISSION: FM (code type)

MAXIMUM SENSITIVITY: 10 DB at SINAD -12 DB

INPUT VOLTAGE: 15V - 20V DC

OUTPUT CONTROL CURRENT: 10A MAXIMUM

VOLTAGE: 0 to 20V DC (from Track Power Source)

TRANSMITTER - ART-5473...

FREQUENCY: 27Mhz BAND

ANTENNA INPUT POWER: 100mW

SPURIOUS POWER UP TO: -55 DB

RF BAND WIDTH: -55 DB at + 10Khz MAX.

MODULATION: FM (code type)

POWER SUPPLY: 4 - 1.5V AA ALKALINE Batteries (internal)

CURRENT: 100mA TYP.

INSTALLATION -

1. Requires Phillips-head screwdriver.

2. DO NOT TURN ON OR CONNECT any track DC power source until assembly is completed.

3. RECEIVER: Connect (supplied) wire leads from OUTPUT 0-18V terminals to normal connector on track. Polarity not important.

4. RECEIVER: Extend attached ANTENNA wire away from RECEIVER Unit. Do not allow interference with (any) Input-/Output power wire leads. Vertical extension is optimum (for a longer distance to RECEIVER) but horizontal extension is sufficient.

5. RECEIVER: Connect wire leads from INPUT 18V - + terminals to terminals on Power Supply source. Power Supply terminal usually reads DC Track Power. DO NOT CONNECT TO ANY POWER SUPPLY AC TERMINAL.

6. RECEIVER: Keep POWER switch on RECEIVER in OFF position until TRANSMITTER ready.

7. Continue to keep DC Track Power Supply OFF also.

8. TRANSMITTER: Using Phillips-head screwdriver, remove 2 recessed Phillips-head screws from back cover. Remove the back cover to insert 4 - 1.5V ALKALINE AA Batteries (not included).

8A. TRANSMITTER: Using Phillips-head screwdriver and with back cover removed, also remove top left screw to attach Flexible Antenna by inserting screw through loop end of the Antenna.

8C. TRANSMITTER: Replace back cover, allowing Antenna to protrude through top. Do not use excessive force to tighten screw(s).

9. Verify that both the TRANSMITTER on Back cover and RECEIVER on Rear Panel have same color circle/dot. This indicates that unit(s) have same FM frequency. ART-5470 TRAIN ENGINEER Set will not operate when units are not on the same frequency.

10. At this time, turn to ON position DC Track Power Source (and turn control knob to Full power setting if applicable).

11. RECEIVER: Turn Power switch to ON position. RED POWER light will then illuminate on front panel of RECEIVER. If RED POWER light is not illuminated, turn OFF both RECEIVER Power Switch and DC Track Power Source, then...

11A. RECEIVER: Reverse polarity from DC Power Source by changing Directional Forward/Reverse Switch on Power Supply. If DC Power Supply does not have Directional Forward/Reverse Switch, reverse wire leads on RECEIVER INPUT 18V terminals, then...

11B. RECEIVER: Again turn to ON position both DC Track Power Source (see Item 9.) and RECEIVER Power Switch. RED POWER light should now illuminate properly and continuously during operation.

11C. There is an Orange color fuse at the rear of the ART-5471 receiver that can be replaced if the incorrect polarity is applied to the input terminals or if there has been an overload of track incoming power. This fuse can be replaced without the need for tools and is available in all auto supply stores or from your Aristo-Craft Trains dealer.

12. RECEIVER: NOTE: Additional Instructions will be included with ART-5474 AUXILIARY REMOTE DISTRIBUTION PANEL when produced. See Item 19.

RECEIVER: CODE / ON After depressing the transmitter (5473) buttons A and B simultaneously you will see a blinking light on the transmitter. At this time you may depress the set button on the 5471 receiver and the transmitter and receiver will now be communicating.

14. RECEIVER: SIGNAL light will illuminate to show that RECEIVER has accepted each signal transmission from TRANSMITTER.

14A. TRANSMITTER: Light will illuminate to show that TRANSMITTER has sent each signal transmission to RECEIVER. (NOTE: First-production TRANSMITTER has RED light but will be changed in future production to show GREEN as on RECEIVER)

15. RECEIVER: TRACK 1/2 Switch allows operation of 2 separate train track blocks/loops/circles etc. with only 1 ART-5471 TRANSMITTER. Changing TRACK 1/2 Switch on TRANSMITTER will only transmit to that specific TRACK 1 or TRACK 2 RECEIVER. See Item 9A.

16. With both TRANSMITTER and RECEIVER operational, place locomotive on track for operation.

17.. Train Operation with TRAIN ENGINEER...

17A. TRANSMITTER: Depress FAST button and locomotive will gradually increase speed each time the button is depressed, to voltage limit of Power Supply.

17B. TRANSMITTER: Depress SLOW button and locomotive will gradually decrease speed each time the button is depressed until finally STOPS.

17C. TRANSMITTER: Direction Forward/Reverse is depicted by left/right arrows. There is now a * second delay between the change from forward to reverse. We still suggest decreasing speed until almost STOPPED, then change direction and increase speed setting.

17D. TRANSMITTER: EMERGENCY STOP/BRAKE is immediate STOP but ONLY on the TRACK 1/or TRACK 2 channel selected/in use.

18. TRANSMITTER: Memory function allows continuous operation at an almost constant speed on level/downgrade/upgrade trackage and also direction for a specific TRACK channel even when the transmitter is operating the opposite switch track selection.

19. TRANSMITTER: Keypad with 5 buttons will allow for the operation of optional AUXILIARY functions (see Item 12.), not used at this time. NOTE: Additional Instructions will be included with ART-5474 REMOTE R/C DISTRIBUTION PANEL.

20. Note - to set an individual signal code for multi-rx/tx use press tx keys A&B simultaneously and the light on the tx will blink for 3 seconds. Within the 3 seconds you may push anyone of the 10 tx buttons (A-E + Fast-Stop) to select an independent signal code. After you have made the selection press the code set button on the receiver and any button on the tx simultaneously. Hold both for 3 seconds until the light flashes on the rx indicating a successful link. To set a second rx code on a second receiver move the track # switch to 2 and then press the button on the rx and any button on the tx for 3 seconds until the light on the rx flashes. To set a second tx you must repeat the entire process as above, but select a different tx button than the previous one. You may also move the tx track button to position 2 to select 10 more codes for up to 20 for simultaneous users.

* tx=transmitter rx=receiver

MOMENTUM. A new feature has been added that allows the selection of momentum speeds. This allows setting the momentum speeds for a more realistic operation depending on the size of the locomotive and the number of cars pulled and for the scale size of the train. The factory setting is the "C" setting as shown below. This setting can be changed at any time the train is stopped by pressing the appropriate key and the code set button on the receiver. This flexibility allows for experimentation until satisfactory results are achieved. The setting choices are as follows.

<u>TIME TO REACH FULL SPEED</u>	<u>TO FULL STOP</u>
KEY A = 5 SECONDS	5 SECONDS
B = 7 SECONDS	10 SECONDS
C = 10 SECONDS	15 SECONDS
D = 15 SECONDS	20 SECONDS
E = 20 SECONDS	30 SECONDS

22. To Link an older style tx (with dip switches) to a new rx you may set the dip switches as before or change to a new code and then press any keypad on the transmitter while simultaneously pressing the Code Set on the new receiver. Continue pressing both for three seconds until the light on the rx starts flashing.

LIMITED WARRANTY:

Your new ARISTO-CRAFT TRAINS product is warranted for 180 days from DATE OF PURCHASE against defects in workmanship and/or materials. Proper purchase may be required by ARISTO - CRAFT TRAINS.

This product is no longer covered by warranty.

This warranty is void and does not apply to any product and/or parts and components which have been improperly installed by purchaser/owner, abused or damaged in any way through improper operation, modified, or repaired by unauthorized service centers and/or non-factory authorized technicians.

***SERVICING:**

Should your ARISTO-CRAFT TRAINS product require warranty service, be sure to take the following steps to assure proper servicing:

1. Return product in ORIGINAL BOX, then pack this ORIGINAL BOX in proper brown corrugated shipping carton. If not possible to use original box, pack product carefully in brown corrugated box, FULLY INSURED and PREPAID. ARISTO-CRAFT TRAINS will not be responsible for any damage or loss incurred during shipping.

2. Include a brief but thorough explanation of the problem(s) and the servicing that may be required.

3. Be sure to include your NAME, ADDRESS (no Post Office Box, please), CITY, STATE (or PROVINCE), COUNTRY (if outside USA), and postal ZIP CODE along with daytime phone number including Area Code, so that you may be contacted if it becomes necessary. All identification should be both INSIDE package and on OUTSIDE brown corrugated shipping carton.

4. Include proper payment for shipping/handling -

TRANSMITTER (ART-5474) (see instructions) component pieces..... \$29.00 +**SHIPPING COSTS**

- with your (USA Bank Account only) check/Money Order payable in US Dollars(\$) to: Polk's Hobbies. Please DO NOT SEND CASH. If your item is out of warranty, you will be contacted with amount of repair costs before repairs are started.

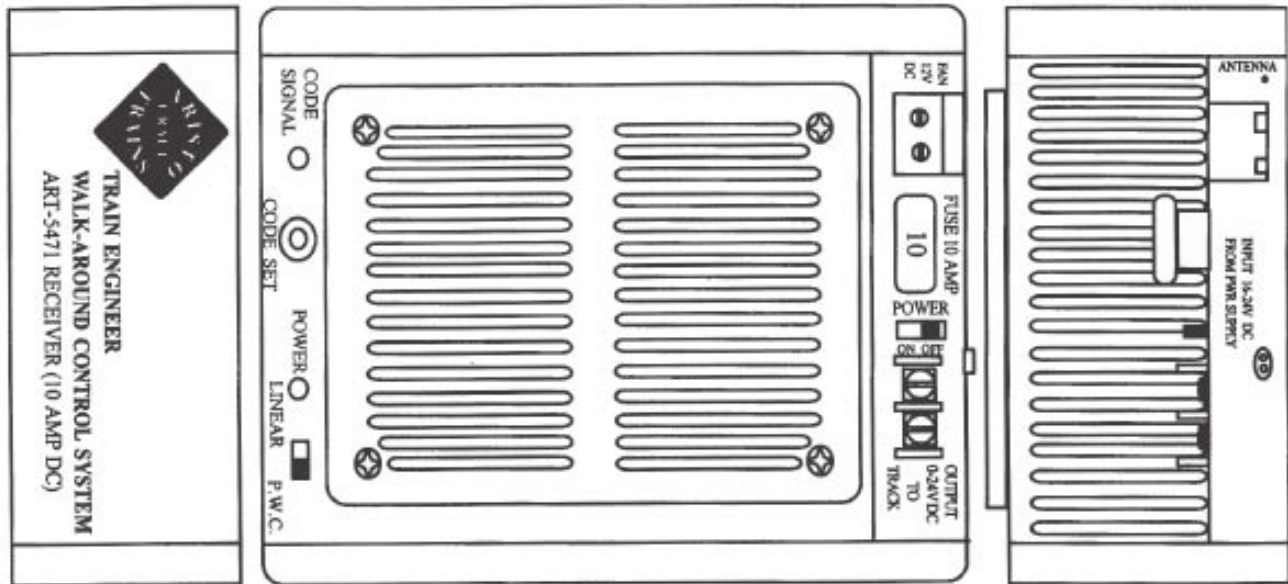
C.O.D. charges are additional cost

5. Ship your item(s) to:


ARISTO-CRAFT TRAINS
698 SOUTH 21ST STREET
IRVINGTON, NJ 07111
PHONE: 973-351-9800
FAX: 973-351-9700
EMAIL: aristo@mindspring.com
www.aristocraft.com

6. Immediate written confirmation of receipt of returned item(s) will be sent along with estimated repair time by ARISTO-CRAFT TRAINS Service/Repair Department.

*Due to technological changes not all components are available. Therefore this product may not be repairable.



ARISTO-CRAFT TRAINS
TRAIN ENGINEER
 WALK-AROUND CONTROL SYSTEM
 ART-5471 RECEIVER (10 AMP DC)



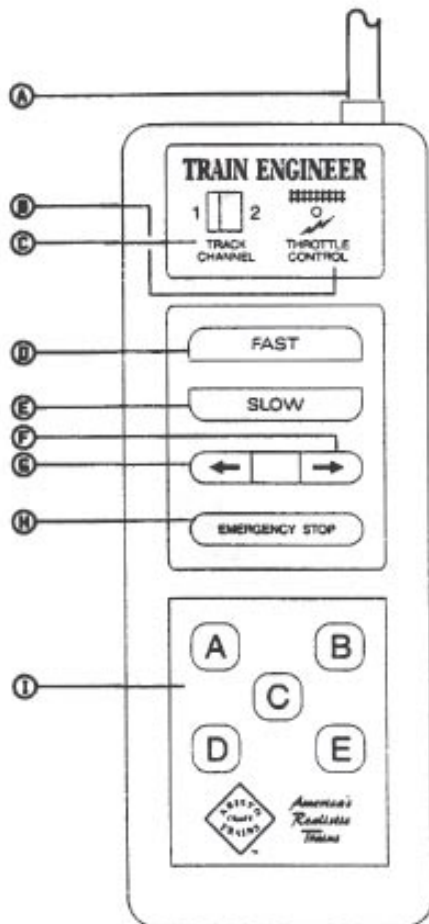
ART-5471

FREQUENCY: 27 MHz
 MODULATION: FM
 POWER INPUT: 16-24V DC
 POWER OUTPUT: 0.34V DC

FOR USE WITH ART-5470 TRAIN ENGINEER
 WALK-AROUND CONTROL SYSTEM

POLK'S MODEL CRAFT HOBBIES, INC.
 ARISTO-CRAFT TRAINS
 JERSEY CITY, N.J. 07304 USA

CRAFTED IN CHINA



Note Current Contact Information:
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 698 SOUTH 21ST STREET
 IRVINGTON, NJ 07111
 PHONE: 973-351-9800
 FAX: 973-351-9700
 EMAIL: aristo@mindspring.com
 www.aristocraft.com

- Ⓐ ANTENNA
- Ⓑ CONTROL LAMP
- Ⓒ TRACK SELECTS/W
- Ⓓ FAST
- Ⓔ SLOW
- Ⓕ REVERSE
- Ⓖ FORWARD
- Ⓗ EMERGENCY STOP
- Ⓘ ADDITIONAL



ART-5473

FREQUENCY: 27 MHz
 MODULATION: FM
 POWER: 6V BATTERY (ALKALINE "AA" x 4)

FCC ID: BBGMT25E
 Made in Korea

FOR USE WITH ART-5470 TRAIN ENGINEER
 WALK-AROUND CONTROL SYSTEM

POLK'S MODEL CRAFT HOBBIES, INC.
 ARISTO-CRAFT TRAINS
 JERSEY CITY, NJ 07304 USA

"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."

Fig - 2