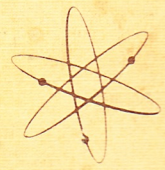


MODEL **GDA-405-S** 8-Channel Digital
Proportional Radio Control Transmitter

HEATHKIT[®]

ASSEMBLY MANUAL

HEATH COMPANY • BENTON HARBOR, MICHIGAN



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PRICE \$2.00

595-1405-05

Assembly
and
Operation
of the



**8-CHANNEL DIGITAL
PROPORTIONAL
RADIO CONTROL
TRANSMITTER**

MODEL GDA-405-S



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HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

INTRODUCTION

The Heathkit 8-Channel Digital Proportional Radio Control Transmitter, Model GDA-405-S, is a solid-state, single-control-stick Transmitter. Digital techniques are used to provide eight channels of simultaneous proportional control.

This Transmitter may be purchased to operate on any of the two frequencies as they are listed below. A coin operated switch at the top of the transmitter selects the operating frequency.

<u>27 MHz Band</u>	<u>53 MHz Band</u>	<u>72 MHz Band</u>
26.995 MHz	53.100 MHz	72.080 MHz
27.045 MHz	53.200 MHz	72.240 MHz
27.095 MHz	53.300 MHz	72.160 MHz
27.145 MHz	53.400 MHz	72.320 MHz
27.145 MHz	53.400 MHz	72.400 MHz
27.195 MHz	53.500 MHz	72.960 MHz
		75.640 MHz (no second frequency)

The Transmitter is housed in an attractive, blue, vinyl-covered aluminum case with black nylon top and bottom covers. The telescoping whip antenna collapses into the case when it is not in use. A relative power output meter is provided for monitoring the radiated signal strength. This meter is also used for making voltage measurements during "Test and Adjustments."

A single control stick provides control of three Servos. Five auxiliary controls allow control of five more Servos. Four trim tabs allow adjustment of the first four channels without changing the position of the channel controls.

Most of the parts are mounted on two circuit boards. One of these, the rf circuit board is preassembled and prealigned at the factory for FCC requirements. Power for the Transmitter is supplied by a 9.6 volt nickel-cadmium rechargeable battery. A charging circuit built into the Transmitter allows the Receiver Battery to be charged at the same time as the transmitter battery.

This Transmitter has been designed to operate as a trainer when used with another Model GDA-405 Heath Transmitter which contains the trainer feature. This allows an experienced operator to take control of the Transmitter of a beginning operator. (The two Transmitters do not have to be on the same frequency or bands.) These and many other features will add to the fun of radio control operation.

NOTE: It is necessary to have a CLASS C operator's license from the FCC (Federal Communication Commission) before the GDA-405-S Transmitter can be operated on the 27 and 72 MHz bands. A technician class or higher amateur radio operator's license is required to operate on the 53 MHz band.

A delay of at least a few weeks will occur between the time you apply for your license and the time you receive it from the FCC. Therefore, you will save time if you apply for your license immediately. The necessary forms are included with this kit. All applications for this license must be accompanied by the FCC license fee.

Refer to the "Kit Builders Guide" for complete information on unpacking, parts identification, tools, wiring, soldering, and step-by-step assembly procedures.

PARTS LIST

Check each part against the following list. The key numbers refer to the corresponding numbers on the Parts Pictorial (fold-out from Page 7). Any part that is packed in an envelope should be returned to the envelope after it has been identified.

To order replacement parts, use the Parts Order Form furnished with this kit. If a Parts Order Form is not available, refer to "Replacement Parts" inside the rear cover of the Manual.

KEY PART No.	PARTS No.	PER KIT	DESCRIPTION	PRICE Each	KEY PART No.	PARTS No.	PER KIT	DESCRIPTION	PRICE Each
RESISTORS					Controls (cont'd.)				
1/4-Watt, 10%					B1	10-222	2	50 kΩ vertical	.45 ✓
A1	1-17-12	2	220 Ω (red-red-brown)	.10 ✓	B2	10-924	2	15 kΩ	1.45 ✓
A1	1-4-12	1	2200 Ω (red-red-red)	.10 ✓	B2	10-922	4	75 kΩ	1.00 ✓
A1	1-6-12	2	3300 Ω (orange-orange-red)	.10 ✓	B3	10-916	1	100 kΩ	4.65 ✓
A1	1-8-12	2	4700 Ω (yellow-violet-red)	.10 ✓	SWITCHES				
A1	1-9-12	5	10 kΩ (brown-black-orange)	.10 ✓	B4	60-35	1	Slide switch	1.15 ✓
A1	1-45-12	1	22 kΩ (red-red-orange)	.10 ✓	B5	63-634	1	Rotary switch with slotted shaft	1.05 ✓
A1	1-11-12	4	47 kΩ (yellow-violet-orange)	.10 ✓	B6	63-635	1	Miniature rotary switch	2.15 ✓
Others					B7	64-90	1	Pushbutton switch	1.45 ✓
A2	1-3	1	100 Ω, 10%, 1/2-watt (brown-black-brown)	.10 ✓	DIODES-TRANSISTORS-INTEGRATED CIRCUIT				
A2	1-64	1	5100 Ω, 5%, 1/2-watt (green-brown-red-gold)	.10 ✓	NOTE: Transistors and integrated circuits are marked for identification in one of the following four ways.				
A2	4-23	1	22 kΩ, 5%, 1/2-watt (red-red-orange-gold)	.10 ✓	1. Part number.				
A2	4-32	1	390 kΩ, 5%, 1/2-watt (orange-white-yellow-gold)	.10 ✓	2. Type number. (In integrated circuits this refers only to the numbers; the letters may vary.)				
A2	2-274	1	60 kΩ, precision	.20 ✓	3. Part number and type number.				
A3	3-26-10	1	1000 Ω, 10-watt	.75 ✓	4. Part number with a type number other than the one listed.				
CAPACITORS					C1	56-56	11	1N4149 diode	.20 ✓
Disc					C1	56-61	1	GESTB620	.55 ✓
A4	21-140	10	.001 μF	.10 ✓	C1	57-27	1	1N2071 diode	.50 ✓
A4	21-27	3	.005 μF	.10 ✓	C2	417-118	2	2N3393 transistor	.40 ✓
Mylar*					C2	417-201	4	X29A829 transistor	.50 ✓
A5	27-63	1	.022 μF	.10 ✓	C3	443-689	1	SCUS0127 integrated circuit (IC)	10.00 ✓
A5	27-138	2	.033 μF	.15 ✓	HARNESS-WIRE-SLEEVING-CORD				
A5	27-73	1	.047 μF	.15 ✓	134-807	1	Wiring harness	5.00 ✓	
A5	27-47	1	.1 μF	.20 ✓	344-40	1	Small black wire	.05/ft ✓	
Tantalum					344-41	1	Small white wire	.05/ft ✓	
A6	25-209	1	.047 μF	.75 ✓	344-42	1	Small red wire	.05/ft ✓	
A7	25-212	1	22 μF	.70 ✓	344-93	1	Large orange wire	.05/ft ✓	
CONTROLS					344-90	1	Large black wire	.05/ft ✓	
B1	10-312	7	10 kΩ vertical	.35 ✓	344-92	1	Large red wire	.05/ft ✓	
					346-1	1	Fiberglass sleeving	.05/ft ✓	
					346-10	1	Large sleeving	.15 ✓	
					346-35	1	Heat shrinkable sleeving	.15/ft ✓	
					89-38	1	Line cord	.40 ✓	

*DuPont registered trademark

KEY PART No.	PARTS No.	DESCRIPTION	PRICE Each	KEY PART No.	PARTS No.	DESCRIPTION	PRICE Each
Molded Parts (cont'd.)				Miscellaneous (cont'd.)			
K9	95-46	2	.30	N3	142-113	1	Whip antenna 2.55 ✓
				N4	260-16	2	Alligator clip .10 ✓
K10	203-856	1	.60		352-13	1	Silicone grease .15 ✓
K11	210-55	9	.10		390-919	1	Frequency label .45 ✓
K12	462-350	7	.25		390-980	1	Heath nameplate .15 ✓
METAL PARTS							
					391-34	1	Blue and white identification label ✓
					407-168	1	Meter 3.45 ✓
L1	90-555	1	3.10		412-47	1	#1820 lamp .35 ✓
L2	203-858	1	.40	N5	413-15	1	Red lens .30 ✓
				N6	418-27	8	Battery cell 2.55 ✓
L3	204-922	1	.10	N7	490-5	1	Nut starter .10 ✓
				N8	490-14	1	Allen wrench .10 ✓
L4	204-1817	1	.75	N9	490-110	1	Antenna wrench .25 ✓
					490-165	1	Open-end wrench .30 ✓
L5	204-1862	1	1.70		597-405	1	FCC form
L6	204-1818	1	1.20			1	Manual (See front cover for part number.) 2.00 ✓
L7	204-1867	1	1.20				Solder (Additional 3' rolls of solder, #331-6, can be ordered for 15 cents each.) ✓
L8	204-1276	1	.25				
L9	205-843	1	1.30				
MISCELLANEOUS				The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering from a Heathkit Electronic Center to cover local sales tax, postage, and handling. Outside the U.S.A. parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.			
Refer to the Parts Pictorial below.							
N1	45-39	4	.20				
N2	73-79	1	.15				
	73-77	1	.10				
	75-93	5	.10				
	85-1452-1	1	1.45				

PARTS PICTORIAL

