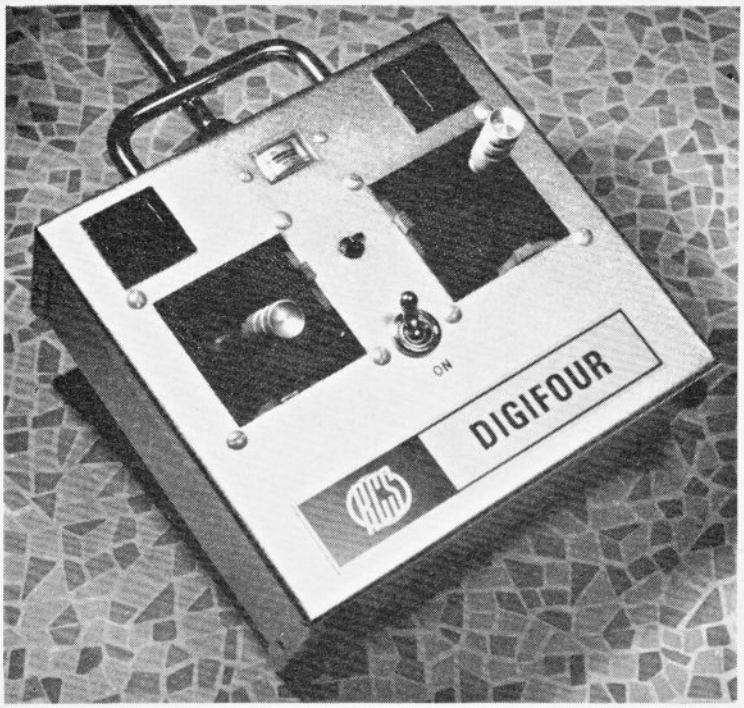
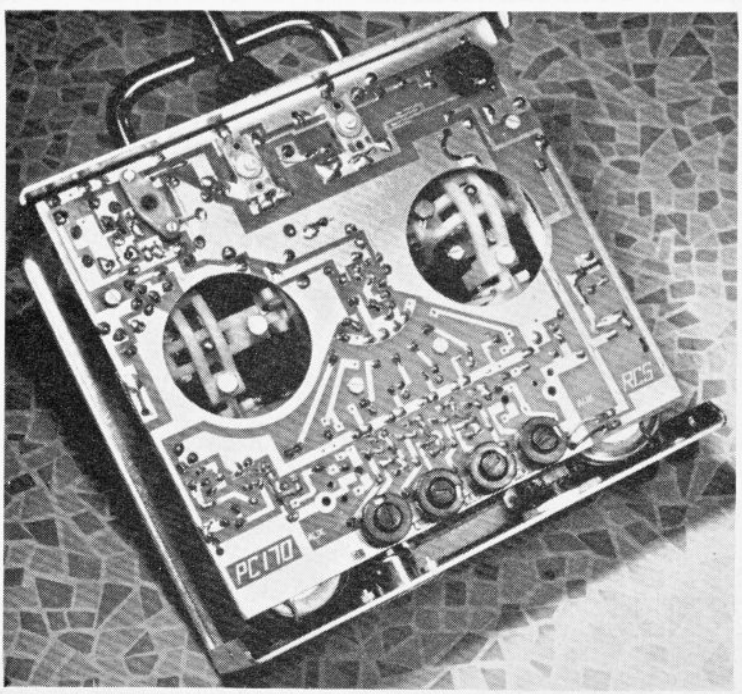


RM TEST REPORT

The R.C.S. DIGIFOUR

IN line with the current trend of producing four channel proportional equipment at prices cheaper than for a five or six function outfit with four servos, RCS have recently announced their Digi-four outfit. This is their Digi-six transmitter and receiver, with the components which provide the two auxiliary channels omitted. As a result, the equipment can be converted to the increased number of functions at a later date if desired.

When RCS introduced the Digi-six about a year ago, they gave the equipment a face-lift and broke away from their silver hammer finish transmitters and black anodised receivers. The use of special plastic mouldings was a contributory factor here, and examples of these are to be found throughout the equipment. To mention a few, there are the special fittings on the transmitter, the receiver case with its snap-in lid, and the case for the Deac pack. The silver anodised transmitter case gives a pleasing and durable finish, rather than the somewhat utilitarian appearance of the earlier outfits. As supplied, the equipment comes complete with all the accessories, neckstrap, frequency pennant, charging leads, servo mounting screws and a comprehensive instruction booklet.



Transmitter

This is housed in a two piece aluminium case of the usual folded construction and features Bonner stick assemblies, fitted with adjustable stick-ends. A meter is provided to indicate RF output and also to show when charging is taking place, sockets for connection to the built-in charger being situated in the base of the transmitter. A small point, but worth mentioning, is that rubber feet are fitted to both the back and the base of the transmitter.

Inside, the fibreglass PC board is mounted with components facing towards the front, carefully positioned so as to project between the stick mechanics and Deacs. This, together with the large cut-outs in the board for clearance and setting up of the stick unit moving parts, results in a transmitter of very small overall depth.

The encoder circuits are situated on the bottom area of the PC

board and space is provided for the additional components required to convert the transmitter to a maximum of six functions. Zener diode stabilisation is employed, together with high stability components, to minimise the effect of drift as the Deacs discharge.

The RF output is commendably high and is obtained from the well proven RCS circuit. Since performance of transmitter RF sections is somewhat dependent upon the transistor characteristics, these are specially made to a specification laid down by RCS.

Receiver

The receiver case is a nylon moulding, with a snap-in aluminium lid, the leads being sleeved and taken out through cutouts in the nylon. Components are mounted on two printed circuits, the main board carrying the RF section and amplifier, and a small subpanel carries the integrated circuit modules forming the decoder.

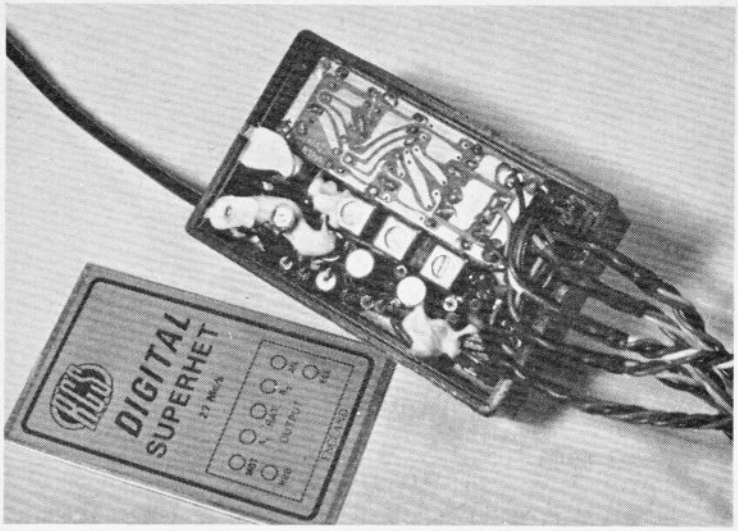
The RF section employs a separate crystal oscillator circuit feeding into the mixer stage, the aerial coil being matched into this for maximum front end selectivity. This is followed by two IF amplifiers using 7mm IF transformers for the interstage coupling.

The triggering for the logic employs noise rejection circuits, to enable the outfit to continue to operate in the presence of external noise. This should not, however, be confused with the effect of a strong RF interfering signal. In the latter case, a sufficiently strong signal will block the Tx signal and more than likely freeze the servos, although generally the effect will be to induce twitching in the servos.

The decoder comprises three integrated circuit modules, one containing gating circuits used for the generating the synchronising and trigger pulses, the other two modules each contain two flip-flop (bistable) circuits. These are arranged in a shift register circuit and each one switches on in turn to generate the appropriate length pulses to be sent to the servos, in accordance with the transmitted signals.

Servos

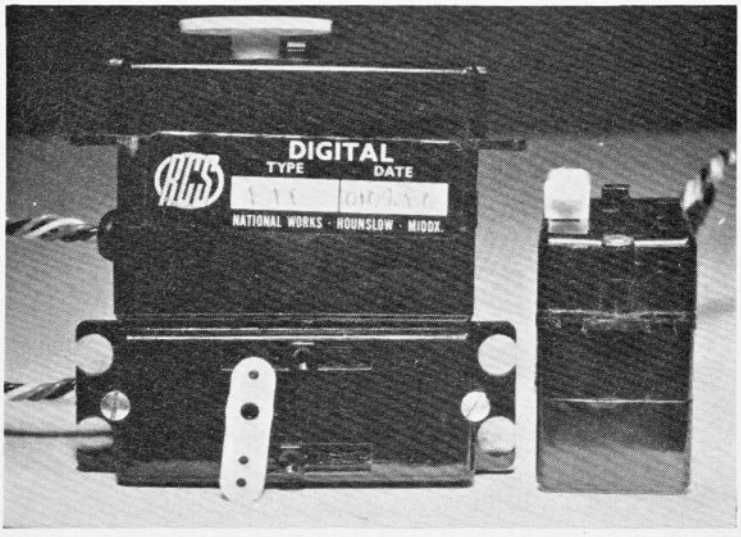
The outfit is supplied with miniature Orbit servos fitted with an RCS amplifier and, in the case of our review outfit, Furuichi motors. The amplifier circuit employs zener diode stabilisation of the reference generator timing circuits in each servo; consequently drift of servo neutral with Deac voltage variation is virtually non-existent. (Without this stabilisation a drift of 1 per cent or 2 per cent could be expected). Eight transistors are employed in the amplifier, all being silicon planar types except for two output ones.

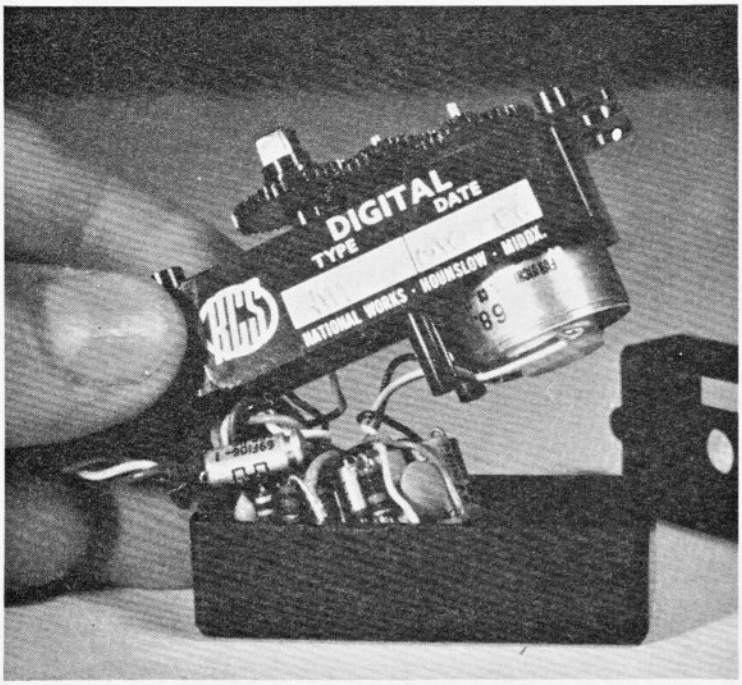


The performance of the servos was, in our opinion, more than adequate for any type of model, being fast and smooth with above average thrust (nearly 5lb.)

Overall System

The airborne system of receiver, servos, Deacs and wiring harness, weighs in at 15ozs., which is more than acceptable for all but the smallest of models. The standard outfit employs a 500 Deac and we would recommend that, wherever possible, this be used rather than a 225 type. There is an opinion that micro circuits take a somewhat large amount of current and, true they do take more than equivalent S.C.S. circuits, but consider for a moment the current consumption of a four-servo system. On a normal flight this will probably average out to around 250mA., since the servo motors will probably be correcting slight errors in servo position all the time, even if no large change in position has been demanded. The mere fact of having hold of the Tx stick will cause slight changes to be





demanded. An S.C.S. decoder probably takes about 30mA. less than the equivalent micrologic type, reducing average consumption from 250mA to 220mA. In return for this, microcircuits offer greater reliability over a wider temperature range and are generally more robust than discrete components.

Prior to leaving the R.C.S. factory, all outfits are given a vibration test and temperature cycle before carrying out a full range check. In this way, R.C.S. aim to ensure that no outfit leaves the factory unless it is 100 per cent up to specification.

Summary

Our overall impression is that a lot of detail design has been put into this outfit to maintain a consistent performance under all conditions. We particularly like the special R.C.S. miniature plugs and sockets and the heat shrink sleeving termination of the 14 strand wire, eliminating a source of trouble in a high vibration environment. The standard of soldering is high throughout. The instruction book is well written and illustrated. Bearing in mind the quality of this outfit and the completeness with all the ancilliaries provided, it represents very good value at £150.

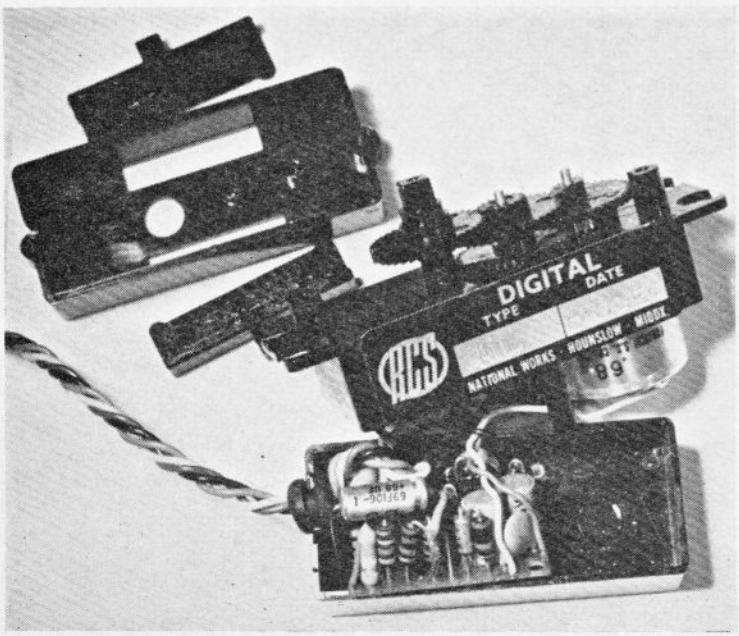
We normally test fly equipment when possible, but as the Digi-four is basically identical to the Digi-six (less the two auxiliary functions) which we have used for almost a year now with every satisfaction, in this case such a test was superfluous.

Manufacturer.

Radio Control Specialists,
National Works, Bath Road,
Hounslow, Middlesex.

Price.

As described and complete with all batteries and accessories the Digi-Four costs £150.



TECHNICAL DATA

TRANSMITTER

Size: 2½ x 6 x 6½in.
Case: 16swg Aluminium, shot-blasted and silver anodised.
Aerial: 6 section telescopic, 12in. retracted, 67in. extended.
Voltage: 9.6v. Deacs.
Test Voltage: 9.8v.
Current: 160mA. No change on retracting aerial.

RECEIVER

Size: 2⅜ x 1 11/16 x ¾in.
Case: Nylon moulding with snap-in aluminium lid.
Aerial: 36in. stranded wire.
Weight: 2½ ounces.

SERVOS

Size: 2 1/16 x ⅞ x 1½in. Mounting flanges project ½in. at each end.
Case: Black nylon moulding.
Weight: 2oz.
Linear Travel: ¼in.
Rotary Travel: 45° each way.
Average thrust on linear output: 4lb. 12oz.

AIRBORNE SYSTEM

Voltage: 4.8v.
Weight: 15oz. (500 DEAC).