

THE ENGLISH  ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES
STAFFORD
MATHEMATICAL PHYSICS LABORATORY.

Report No. NS t 58
Date 16.8.55
Reference
Order No.

Telephone:—Stafford 700.

Front Sheet.
Data Sheet 1.
Figure sheet S6/10159

DEUCE Subroutine No. 65 (S01/1)

Report by
N.P.L.

SUMMARY.

The attached document contains details of a DEUCE subroutine which has been prepared and tested by N.P.L.

C. ROBINSON.

MATHEMATICAL PHYSICS LABORATORY.

NW

NELSON RESEARCH LABORATORIES
STAFFORD E. E. CO. LTD.

NS t 58
Sheet No.: 1

Description. Sums a power series of up to 32 terms, the coefficients a_0, a_1, \dots, a_{n-1} being stored in D.L.B_{10,11} ...
Second Order.

Data. Coefficients a_0, a_1, \dots, a_{n-1} of the series.
n the number of terms ($n \leq 32$)
x the argument ($|x| \leq 1$)
p the number of binary places in x ($16 \leq p \leq 32$)

Result.
$$c = \sum_0^{n-1} a_r x^r$$
 to same number of binary places as coefficients.

Uses. MO4/1 (NO. 64) in D.L.A.

Instructions for Use.

Stores Used.	13	14	15	16	21	B ₁₀ onwards.
Contents at entry.	Link	-	Parameter	x	-	a ₀ onwards.
Contents at exit.	c	-	-	x	-	a ₀ onwards.
Occupies.	m.c.'s. 0-7, 29, 31 or, if used with MO4/1 (64) in same D.L., m.c.'s 0-17, 27-31.					
Entry.	m.c. 29.					
Time.	(4n-2) m.s. plus one m.s. for each coefficient stored outside m.c.'s 11,12, ... to 2.					
Parameters.	NIS. A to be added to m.c. 4. 2 B-25 (n-2) 23 in TS15. Shift Parameter for MO4/1 (64). (s = 32 - p)					
Waste Instruction.	1, 0-0, 0, 28 in m.c. 1.					
Constants Available.	0, 15-0, 1, 0, 0 in m.c. 7.					

NOTE: a₀ must be in B₁₀.

D.L.		Track					
Card Nos.							
mc	NIS	S	D	C	W	T	
							Y
							X
							0
		2 28		20	0	1	1
0		1 0		0	0	28	2
1		2 13		14	0	0	3
2		2 13		15	0	0	4
3		A 2		13	0	2	5
4		2 21		13	0	0	6
5		2 15		13	0	0	7
6		0 15		0	20		8
7							9
8							Y
9							X
10							0
11							1
12							2
13							3
14							4
15							5
16							6
17							7
18							8
19							9
20							Y
21							X
22							0
23							1
24							2
25							3
26							4
27							5
28		2 3		1	0	0	6
29							7
30		2 30		21	0	4	8
31							9

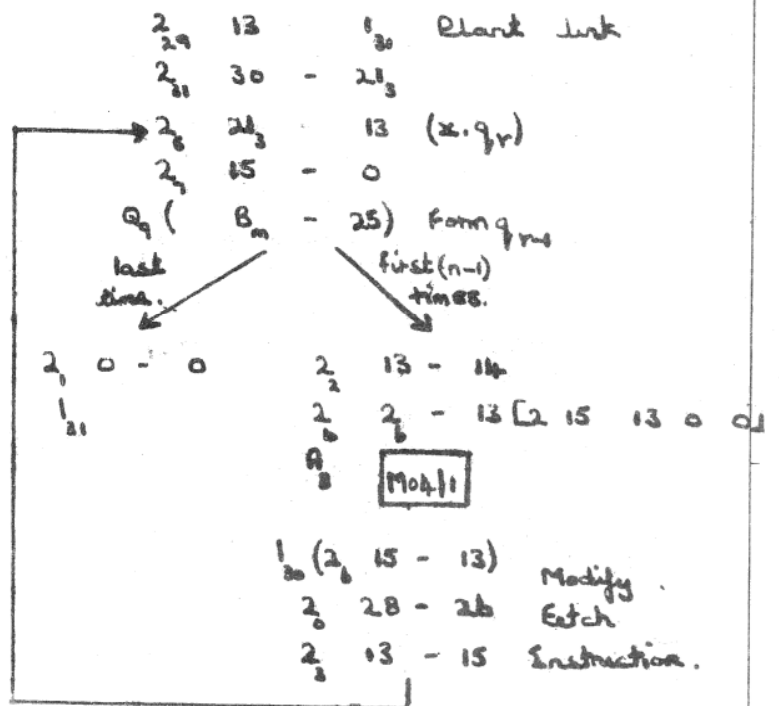


FIG. 1 DIAGRAM AND CODING FOR SUBROUTINE
NO 65 (50 1/2) Sum Power Series.

Date AUGUST 1955
File Ref. NO. L. 12
Sheet Ref. 66/10189