

# NAG Library Routine Document

## F06JDF (ZDSCAL)

**Note:** before using this routine, please read the Users' Note for your implementation to check the interpretation of *bold italicised* terms and other implementation-dependent details.

### 1 Purpose

F06JDF (ZDSCAL) scales a complex vector by a real scalar.

### 2 Specification

```
SUBROUTINE F06JDF (N, ALPHA, X, INCX)
  INTEGER          N, INCX
  REAL (KIND=nag_wp) ALPHA
  COMPLEX (KIND=nag_wp) X(*)
```

The routine may be called by its BLAS name *zdscal*.

### 3 Description

F06JDF (ZDSCAL) performs the operation

$$x \leftarrow \alpha x$$

where  $x$  is an  $n$ -element complex vector scattered with stride INCX, and  $\alpha$  is a real scalar.

### 4 References

Lawson C L, Hanson R J, Kincaid D R and Krogh F T (1979) Basic linear algebra subprograms for Fortran usage *ACM Trans. Math. Software* **5** 308–325

### 5 Arguments

- 1: N – INTEGER *Input*  
*On entry:*  $n$ , the number of elements in  $x$ .
- 2: ALPHA – REAL (KIND=nag\_wp) *Input*  
*On entry:* the scalar  $\alpha$ .
- 3: X(\*) – COMPLEX (KIND=nag\_wp) array *Input/Output*  
**Note:** the dimension of the array X must be at least  $\max(1, 1 + (N - 1) \times \text{INCX})$ .  
*On entry:* the  $n$ -element vector  $x$ .  $x_i$  must be stored in  $X(1 + (i - 1) \times \text{INCX})$ , for  $i = 1, 2, \dots, N$ .  
Intermediate elements of X are not referenced.  
*On exit:* the vector  $\alpha x$  stored in the array elements used to supply the original vector  $x$ .  
Intermediate elements of X are unchanged.
- 4: INCX – INTEGER *Input*  
*On entry:* the increment in the subscripts of X between successive elements of  $x$ .  
*Constraint:*  $\text{INCX} > 0$ .

## **6 Error Indicators and Warnings**

None.

## **7 Accuracy**

Not applicable.

## **8 Parallelism and Performance**

F06JDF (ZDSCAL) is not threaded in any implementation.

## **9 Further Comments**

None.

## **10 Example**

None.

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