

NAG Library Routine Document

F06ECF (DAXPY)

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

F06ECF (DAXPY) adds a scaled real vector to an unscaled real vector.

2 Specification

```
SUBROUTINE F06ECF (N, ALPHA, X, INCX, Y, INCY)
  INTEGER          N, INCX, INCY
  REAL (KIND=nag_wp) ALPHA, X(*), Y(*)
```

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

3 Description

F06ECF (DAXPY) performs the operation

$$y \leftarrow \alpha x + y$$

where x and y are n -element real vectors scattered with stride $INCX$ and $INCY$ respectively, and α 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 | <i>Input</i> |
| | <i>On entry:</i> n , the number of elements in x and y . | |
| 2: | ALPHA – REAL (KIND=nag_wp) | <i>Input</i> |
| | <i>On entry:</i> the scalar α . | |
| 3: | X(*) – REAL (KIND=nag_wp) array | <i>Input</i> |
| | Note: the dimension of the array X must be at least $\max(1, 1 + (N - 1) \times INCX)$. | |
| | <i>On entry:</i> the n -element vector x . | |
| | If $INCX > 0$, x_i must be stored in $X(1 + (i - 1) \times INCX)$, for $i = 1, 2, \dots, N$. | |
| | If $INCX < 0$, x_i must be stored in $X(1 - (N - i) \times INCX)$, for $i = 1, 2, \dots, N$. | |
| | Intermediate elements of X are not referenced. | |
| 4: | INCX – INTEGER | <i>Input</i> |
| | <i>On entry:</i> the increment in the subscripts of X between successive elements of x . | |

5: Y(*) – REAL (KIND=nag_wp) array *Input/Output*

Note: the dimension of the array Y must be at least $\max(1, 1 + (N - 1) \times |\text{INCY}|)$.

On entry: the n -element vector y .

If $\text{INCY} > 0$, y_i must be stored in $Y(1 + (i - 1) \times \text{INCY})$, for $i = 1, 2, \dots, N$.

If $\text{INCY} < 0$, y_i must be stored in $Y(1 - (N - i) \times \text{INCY})$, for $i = 1, 2, \dots, N$.

Intermediate elements of Y are not referenced.

On exit: the updated vector y stored in the array elements used to supply the original vector y .

Intermediate elements of Y are unchanged.

6: INCY – INTEGER *Input*

On entry: the increment in the subscripts of Y between successive elements of y .

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06ECF (DAXPY) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.
