

NAG Library Routine Document

F06UKF

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

F06UKF returns, via the function name, the value of the 1-norm, the ∞ -norm, the Frobenius norm, or the maximum absolute value of the elements of a complex n by n triangular matrix, stored in packed form.

2 Specification

double precision FUNCTION F06UKF(NORM, UPLO, DIAG, N, AP, WORK)

INTEGER

N

double precision

WORK(*)

complex*16

AP(*)

CHARACTER*1

NORM, UPLO, DIAG

3 Description

None.

4 References

None.

5 Parameters

1: NORM – CHARACTER*1

Input

On entry: specifies the value to be returned.

NORM = '1' or 'O'

The 1-norm.

NORM = 'I'

The ∞ -norm.

NORM = 'F' or 'E'

The Frobenius (or Euclidean) norm.

NORM = 'M'

The value $\max_{i,j} |a_{ij}|$ (not a norm).

Constraint: NORM = '1', 'O', 'I', 'F', 'E' or 'M'.

2: UPLO – CHARACTER*1

Input

On entry: specifies whether A is upper or lower triangular.

UPLO = 'U'

A is upper triangular.

UPLO = 'L'

A is lower triangular.

Constraint: UPLO = 'U' or 'L'.

- 3: DIAG – CHARACTER*1 *Input*
On entry: specifies whether A has nonunit or unit diagonal elements.
 DIAG = 'N'
 The diagonal elements are stored explicitly.
 DIAG = 'U'
 The diagonal elements are assumed to be 1, and are not referenced.
Constraint: DIAG = 'N' or 'U'.
- 4: N – INTEGER *Input*
On entry: n , the order of the matrix A .
 When $N = 0$, F06UKF is set to zero.
Constraint: $N \geq 0$.
- 5: AP(*) – **complex*16** array *Input*
Note: the dimension of the array AP must be at least $N \times (N + 1)/2$.
On entry: the n by n triangular matrix A , packed by columns.
 More precisely,
 if UPLO = 'U', the upper triangle of A must be stored with element A_{ij} in
 $AP(i + j(j - 1)/2)$ for $i \leq j$;
 if UPLO = 'L', the lower triangle of A must be stored with element A_{ij} in
 $AP(i + (2n - j)(j - 1)/2)$ for $i \geq j$.
 If DIAG = 'U', the diagonal elements of A are assumed to be 1, and are not referenced; the same
 storage scheme is used whether DIAG = 'N' or 'U'.
- 6: WORK(*) – **double precision** array *Workspace*
Note: the dimension of the array WORK must be at least $\max(1, N)$ if NORM = 'I', and at least 1
 otherwise.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.