

NAG Fortran Library Routine Document

F06RKF

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

F06RKF 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 real n by n triangular matrix, stored in packed form.

2 Specification

```
double precision FUNCTION F06RKF (NORM, UPLO, DIAG, N, AP, WORK)
  INTEGER                                N
  double precision                     AP(*), WORK(*)
  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:
 if NORM = '1' or 'O', the 1-norm;
 if NORM = 'I', the ∞ -norm;
 if NORM = 'F' or 'E', the Frobenius (or Euclidean) norm;
 if 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 as follows:
 if UPLO = 'U', A is upper triangular;
 if UPLO = 'L', A is lower triangular.
Constraint: UPLO = 'U' or 'L'.
- 3: DIAG – CHARACTER*1 *Input*
On entry: specifies whether A has non-unit or unit diagonal elements, as follows:
 if DIAG = 'N', the diagonal elements are stored explicitly;
 if 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 .
Constraint: $N \geq 0$.
- 5: AP(*) – **double precision** array *Input*
Note: the dimension of the array AP must be at least $\max(1, N \times (N + 1)/2)$.
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.
