

NAG Library Routine Document

F06UMF

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

F06UMF 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 upper Hessenberg matrix.

2 Specification

```
FUNCTION F06UMF (NORM, N, A, LDA, WORK)
REAL (KIND=nag_wp) F06UMF
INTEGER                N, LDA
REAL (KIND=nag_wp)    WORK(*)
COMPLEX (KIND=nag_wp) A(LDA,*)
CHARACTER(1)          NORM
```

3 Description

None.

4 References

None.

5 Arguments

- 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: N – INTEGER *Input*
On entry: n , the order of the matrix A .
 When $N = 0$, F06UMF returns zero.
Constraint: $N \geq 0$.

3: A(LDA,*) – COMPLEX (KIND=nag_wp) array Input

Note: the second dimension of the array A must be at least N.

On entry: the n by n upper Hessenberg matrix A ; elements of the array below the first subdiagonal are not referenced.

4: LDA – INTEGER Input

On entry: the first dimension of the array A as declared in the (sub)program from which F06UMF is called.

Constraint: $LDA \geq \max(1, N)$.

5: WORK(*) – REAL (KIND=nag_wp) 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 Parallelism and Performance

F06UMF is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.
