NAG Library Function Document

nag_zrscl (f06kec)

1 Purpose
nag_zrscl (f06kec) multiplies a complex vector by the reciprocal of a real scalar.

2 Specification

```c
#include <nag.h>
#include <nagf06.h>
void nag_zrscl (Integer n, double alpha, Complex x[], Integer incx)
```

3 Description
nag_zrscl (f06kec) performs the operation

\[ x \leftarrow \frac{1}{\alpha} x \]

where \( x \) is an \( n \)-element complex vector and \( \alpha \) is a real nonzero scalar scattered with stride \( \text{incx} \).

4 References
None.

5 Arguments

1: \( n \) – Integer
   
   On entry: \( n \), the number of elements in \( x \).

2: \( \text{alpha} \) – double
   
   On entry: the scalar \( \alpha \).
   
   Constraint: \( \text{alpha} \neq 0.0 \).

3: \( x[\text{dim}] \) – Complex
   
   Input/Output
   
   Note: the dimension, \( \text{dim} \), 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 \( i = 1,2,\ldots,n \).
   
   Intermediate elements of \( x \) are not referenced.
   
   On exit: the updated vector \( x \), stored in the same array elements used to supply the original vector.

4: \( \text{incx} \) – 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

*nag_zrscl* (f06kec) is not threaded by NAG in any implementation.

*nag_zrscl* (f06kec) makes calls to BLAS and/or LAPACK routines, which may be threaded within the vendor library used by this implementation. Consult the documentation for the vendor library for further information.

Please consult the X06 Chapter Introduction for information on how to control and interrogate the OpenMP environment used within this function. Please also consult the Users’ Note for your implementation for any additional implementation-specific information.

9 Further Comments

None.

10 Example

None.