

# 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

```
#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 **incx**.

### 4 References

None.

### 5 Arguments

- |    |   |                     |
|----|---|---------------------|
| 1: | <b>n</b> – Integer  | <i>Input</i>        |
|    | <i>On entry:</i> $n$ , the number of elements in $x$ .  |                     |
| 2: | <b>alpha</b> – double   | <i>Input</i>        |
|    | <i>On entry:</i> the scalar $\alpha$ .  |                     |
|    | <i>Constraint:</i> <b>alpha</b> $\neq$ 0.0.   |                     |
| 3: | <b>x</b> [ <i>dim</i> ] – Complex   | <i>Input/Output</i> |
|    | <b>Note:</b> the dimension, <i>dim</i> , of the array <b>x</b> must be at least $\max(1, 1 + (\mathbf{n} - 1) \times \mathbf{incx})$ .                      |                     |
|    | <i>On entry:</i> the $n$ -element vector $x$ . $x_i$ must be stored in <b>x</b> [ $1 + (i - 1) \times \mathbf{incx}$ ], for $i = 1, 2, \dots, \mathbf{n}$ . |                     |
|    | Intermediate elements of <b>x</b> are not referenced.   |                     |
|    | <i>On exit:</i> the updated vector $x$ , stored in the same array elements used to supply the original vector.  |                     |
| 4: | <b>incx</b> – Integer   | <i>Input</i>        |
|    | <i>On entry:</i> the increment in the subscripts of <b>x</b> between successive elements of $x$ .   |                     |
|    | <i>Constraint:</i> <b>incx</b> $>$ 0.   |                     |

### 6 Error Indicators and Warnings

None.

## 7 Accuracy

Not applicable.

## 8 Parallelism and Performance

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.

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