

NAG Toolbox for MATLAB

x02aj

1 Purpose

x02aj returns ϵ , the value *machine precision*.

2 Syntax

```
[result] = x02aj()
```

3 Description

x02aj returns *machine precision*; i.e., one half of the smallest model number ϵ_M such that $1 + \epsilon_M$ and $1 - \epsilon_M$ both differ from 1 (see the X02 Chapter Introduction for a discussion of model numbers). More precisely, ϵ has the value $\frac{1}{2} \times b^{1-p}$, where b is the arithmetic base (see x02bh) and p is the number of significant base- b digits (see x02bj).

It is important to note that the definition of ϵ here differs from that in ISO 1997.

4 References

ISO 1997 ISO Fortran 95 programming language (ISO/IEC 1539–1:1997)

5 Parameters

5.1 Compulsory Input Parameters

None.

5.2 Optional Input Parameters

None.

5.3 Input Parameters Omitted from the MATLAB Interface

None.

5.4 Output Parameters

1: **result** – double scalar

The result of the function.

6 Error Indicators and Warnings

None.

7 Accuracy

None.

8 Further Comments

None.

9 Example

```
[result] = x02aj()  
result =  
    1.1113e-16
```
