

# ieee\_features: IEEE feature support module

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## 1 Name

`ieee_features` — Intrinsic module for requesting IEEE feature support

## 2 Usage

**USE,INTRINSIC :: IEEE\_FEATURES** [,ONLY:feature [,feature]...]

This module provides a mechanism to request support for particular IEEE features.

The contents of this module conform to technical report ISO/IEC TR 15580:1998(E).

## 3 Synopsis

### Derived Types

IEEE\_FEATURES\_TYPE.

### Parameters

IEEE\_DATATYPE, IEEE\_DENORMAL, IEEE\_DIVIDE, IEEE\_HALTING,  
IEEE\_INEXACT\_FLAG, IEEE\_INF, IEEE\_INVALID\_FLAG, IEEE\_NAN, IEEE\_ROUNDING,  
IEEE\_SQRT, IEEE\_UNDERFLOW\_FLAG.

## 4 Derived-Type Description

```
TYPE IEEE_FEATURES_TYPE
PRIVATE
...
END TYPE
```

This type is the type of the named constants exported by this module. It is provided solely for access to these named constants.

## 5 Parameter Description

Accessing these parameters (on the USE statement) requests support for the specified IEEE features. For example,

```
USE,INTRINSIC :: IEEE_FEATURES,ONLY:IEEE_INF,IEEE_NAN
```

will cause compilation to fail if the requested features (IEEE infinities and NaNs) cannot be supported. Note that a USE statement for IEEE\_FEATURES with no ONLY clause will request support for *all* the possible features.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_DATATYPE

Requests IEEE arithmetic support, returning .TRUE. from IEEE\_SUPPORT\_DATATYPE(X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_DENORMAL

Requests support for IEEE denormalised numbers, returning .TRUE. from IEEE\_SUPPORT\_DENORMAL(X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_DIVIDE

Requests support for IEEE division, returning .TRUE. from IEEE\_SUPPORT\_DIVIDE(X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_HALTING

Requests support for changing the halting mode, return .TRUE. from IEEE\_SUPPORT\_HALTING for at least one exception flag.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_INEXACT\_FLAG

Requests support for the inexact exception, returning .TRUE. from IEEE\_SUPPORT\_FLAG(IEEE\_INEXACT,X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_INF

Requests support for IEEE infinities, returning .TRUE. from IEEE\_SUPPORT\_INF(X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_INVALID\_FLAG

Requests support for the invalid exception, returning .TRUE. from IEEE\_SUPPORT\_FLAG(IEEE\_INVALID,X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_NAN

Requests support for IEEE NaNs (Not-a-Number values), returning .TRUE. from IEEE\_SUPPORT\_NAN(X) for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_ROUNDING

Requests support for dynamic setting of all IEEE rounding modes, returning .TRUE. from IEEE\_SUPPORT\_ROUNDING(ROUND\_VALUE,X) for all rounding modes for at least one kind of REAL.

TYPE(IEEE\_FEATURES\_TYPE),PARAMETER :: IEEE\_SQRT

Requests support for IEEE sqrt, returning `.TRUE.` from `IEEE_SUPPORT_SQRT` for at least one kind of `REAL`.

```
TYPE(IEEE_FEATURES_TYPE),PARAMETER :: IEEE_UNDERFLOW_FLAG
```

Requests support for the underflow exception, returning `.TRUE.` from `IEEE_SUPPORT_FLAG(IEEE_UNDERFLOW,X)` for at least one kind of `REAL`.

## 6 See Also

`nagfor(1)`, `ieee_arithmetic(3)`, `ieee_exceptions(3)`, `intro(3)`, `nag_modules(3)`.

## 7 Bugs

Please report any bugs found to ‘support@nag.co.uk’ or ‘support@nag.com’, along with any suggestions for improvements.