

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.