330. Defined Constants

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The C and Fortran name is listed in the left column and the C++ name is listed in the middle or right column. Constants with the type const int may also be implemented as literal integer constants substituted by the preprocessor.

Return Codes

C type: const int (or unnamed enum) C++ type: const int Fortran type: INTEGER (or unnamed enum) MPI SUCCESS MPI::SUCCESS MPI::ERR BUFFER MPI ERR BUFFER MPI ERR COUNT MPI::ERR COUNT MPI ERR TYPE MPI::ERR TYPE MPI ERR TAG MPI::ERR TAG MPI ERR COMM MPI::ERR COMM MPI ERR RANK MPI::ERR RANK MPI ERR REQUEST MPI::ERR REQUEST MPI ERR ROOT MPI::ERR ROOT MPI ERR GROUP MPI::ERR GROUP MPI::ERR OP MPI ERR OP

MPI_ERR_TOPOLOGY MPI::ERR_TOPOLOGY

MPI_ERR_DIMS MPI::ERR_DIMS MPI ERR ARG MPI::ERR ARG

MPI_ERR_UNKNOWN
MPI_ERR_TRUNCATE
MPI_ERR_TRUNCATE
MPI_ERR_OTHER
MPI_ERR_INTERN
MPI_ERR_INTERN
MPI_ERR_PENDING
MPI::ERR_UNKNOWN
MPI::ERR_TRUNCATE
MPI::ERR_OTHER
MPI::ERR_INTERN
MPI::ERR_PENDING

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Return Codes (continued)

MPI_ERR_IN_STATUS
MPI_ERR_ACCESS
MPI_ERR_AMODE
MPI_ERR_ASSERT
MPI_ERR_BAD_FILE
MPI_ERR_BASE
MPI::ERR_IN_STATUS
MPI::ERR_ACCESS
MPI::ERR_ACCESS
MPI::ERR_AMODE
MPI::ERR_BAD_FILE
MPI::ERR_BAD_FILE
MPI::ERR_BAD_FILE
MPI::ERR_BASE

MPI ERR CONVERSION MPI::ERR CONVERSION

MPI ERR DISP MPI::ERR DISP

MPI_ERR_DUP_DATAREP
MPI_ERR_FILE_EXISTS
MPI_ERR_FILE_IN_USE
MPI::ERR_FILE_IN_USE
MPI::ERR_FILE_IN_USE

MPI ERR FILE MPI::ERR FILE

MPI ERR INFO KEY MPI::ERR INFO VALUE

MPI_ERR_INFO_NOKEY

MPI::ERR_INFO_NOKEY

MPI::ERR_INFO_KEY

MPI::ERR_INFO_KEY

MPI_ERR_INFO
MPI ERR IO
MPI::ERR_INFO
MPI::ERR IO

MPI_ERR_KEYVAL

MPI_ERR_LOCKTYPE

MPI_ERR_LOCKTYPE

MPI_ERR_NAME

MPI::ERR_NAME

MPI::ERR_NO_MEM

MPI::ERR_NO_MEM

MPI_ERR_NOT_SAME

MPI::ERR_NOT_SAME

MPI::ERR_NO_SPACE

MPI::ERR_NO_SPACE

MPI_ERR_NO_SUCH_FILE MPI::ERR_NO_SUCH_FILE

MPI_ERR_PORT MPI::ERR_PORT MPI::ERR_QUOTA

MPI_ERR_READ_ONLY
MPI_ERR_RMA_CONFLICT
MPI_ERR_RMA_SYNC
MPI::ERR_RMA_SYNC
MPI::ERR_RMA_SYNC

MPI_ERR_RMA_SYNC

MPI.:ERR_RMA_SYNC

MPI::ERR_RMA_SYNC

MPI::ERR_SERVICE

MPI::ERR_SERVICE

MPI::ERR_SIZE

MPI_ERR_SPAWN MPI::ERR_SPAWN

MPI_ERR_UNSUPPORTED_DATAREP MPI::ERR_UNSUPPORTED_DATAREP MPI_ERR_UNSUPPORTED_OPERATION MPI::ERR_UNSUPPORTED_OPERATION

MPI_ERR_WIN MPI::ERR_WIN

MPI ERR LASTCODE MPI::ERR LASTCODE

Buffer Address Constants

C type: void * const C++ type:

Fortran type: (predefined memory location) void * const
MPI_BOTTOM MPI::BOTTOM
MPI IN PLACE MPI::IN PLACE

Assorted Constants

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_PROC_NULL
MPI_ANY_SOURCE
MPI_ANY_TAG
MPI_UNDEFINED
MPI::PROC_NULL
MPI::PROC_NULL
MPI::PROC_NULL
MPI::ANY_SOURCE
MPI::ANY_TAG
MPI::UNDEFINED

MPI_BSEND_OVERHEAD
MPI::BSEND_OVERHEAD
MPI_KEYVAL_INVALID
MPI_LOCK_EXCLUSIVE
MPI_LOCK_EXCLUSIVE
MPI_LOCK_SHARED
MPI::LOCK_SHARED

MPI ROOT MPI::ROOT

Status size and reserved index values (Fortran only)

Fortran type: INTEGER

MPI_STATUS_SIZE Not defined for C++
MPI_SOURCE Not defined for C++

> MPI TAG Not defined for C++ Not defined for C++ MPI ERROR

Variable Address Size (Fortran only)

Fortran type: INTEGER

MPI ADDRESS KIND Not defined for C++ MPI INTEGER KIND Not defined for C++ MPI OFFSET KIND Not defined for C++

Error-handling specifiers

C type: MPI_Errhandler C++ type: MPI::Errhandler

Fortran type: INTEGER

MPI_ERRORS_ARE_FATAL MPI::ERRORS_ARE_FATAL MPI ERRORS RETURN MPI::ERRORS RETURN

MPI::ERRORS THROW EXCEPTIONS

Maximum Sizes for Strings

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI MAX PROCESSOR NAME MPI::MAX PROCESSOR NAME MPI MAX ERROR STRING MPI::MAX ERROR STRING MPI MAX DATAREP STRING MPI::MAX DATAREP STRING

MPI MAX INFO KEY MPI::MAX INFO KEY MPI MAX INFO VAL MPI::MAX INFO VAL

MPI MAX OBJECT NAME MPI::MAX OBJECT NAME MPI MAX PORT NAME MPI::MAX PORT NAME

Named Predefined Datatypes

C/C++types

C type: MPI Datatype C++ type: MPI::Datatype

Fortran type: INTEGER

MPI CHAR MPI::CHAR char

> (treated as printable character)

signed short

MPI::SHORT MPI SHORT int

MPI::INT MPI INT signed int MPI LONG MPI::LONG signed long signed long

MPI_LONG_LONG_INT MPI::LONG_LONG_INT long

long long MPI_LONG_LONG MPI::LONG_LONG (synonym) MPI SIGNED CHAR MPI::SIGNED CHAR signed char

(treated as integral

value)

unsigned char

MPI UNSIGNED CHAR MPI::UNSIGNED CHAR

(treated as integral

value)

MPI_UNSIGNED_SHORT MPI::UNSIGNED SHORT

MPI UNSIGNED MPI::UNSIGNED unsigned int

unsigned long

unsigned short

MPI::UNSIGNED LONG MPI UNSIGNED LONG unsigned long MPI::UNSIGNED_LONG LONG MPI UNSIGNED LONG LONG long MPI FLOAT MPI::FLOAT float MPI DOUBLE MPI::DOUBLE double MPI LONG DOUBLE MPI::LONG DOUBLE long double MPI::WCHAR wchar t MPI WCHAR (defined in <stddef.h>) (treated as printable character) MPI C BOOL (use C datatype handle) Bool MPI INT8 T (use C datatype handle) int8 t (use C datatype handle) MPI INT16 T int16 t MPI INT32 T (use C datatype handle) int32 t MPI INT64 T (use C datatype handle) int64 t MPI UINT8 T (use C datatype handle) uint8 t (use C datatype handle) MPI UINT16 T uint16 t MPI UINT32 T (use C datatype handle) uint32 t (use C datatype handle) MPI UINT64 T uint64 t MPI AINT (use C datatype handle) MPI Aint (use C datatype handle) MPI Offset MPI OFFSET MPI C COMPLEX (use C datatype handle) float Complex MPI C FLOAT COMPLEX (use C datatype handle) float Complex MPI C DOUBLE COMPLEX (use C datatype handle) double _Complex long double MPI C LONG DOUBLE COMPLEX (use C datatype handle) Complex MPI BYTE MPI::BYTE (any C/C++ type)

MPI::PACKED MPI PACKED (any C/C++ type)

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	Named Predefined Datatypes		Fortran types
C type: MPI_Datatype	C++ type: MPI::Datatype		
Fortran type: INTEGER			
MPI_INTEGER	MPI::INTEGER	INTEGER	
MPI_REAL	MPI::REAL	REAL	
MPI_DOUBLE_PRECISION MPI::DOUBLE_PRECISION DOUBLE PRECISION			
MPI_COMPLEX	MPI::F_COMPLEX	COMPLEX	
MPI_LOGICAL	MPI::LOGICAL	LOGICAL	
MPI_CHARACTER	MPI::CHARACTER	CHARACTER(1)	
MPI_AINT	(use C datatype handle)	<pre>INTEGER (KIND=MPI_ADDRESS_KIND)</pre>	
MPI_OFFSET	(use C datatype handle)	<pre>INTEGER (KIND=MPI_OFFSET_KIND)</pre>	
MPI_BYTE	MPI::BYTE	(any Fortran type)	
MPI_PACKED	MPI::PACKED	(any Fortran type)	

C++-Only Named Predefined Datatypes C++ types

C++ type: MPI::Datatype

MPI::BOOL bool

MPI::COMPLEX Complex<float>
MPI::DOUBLE COMPLEX Complex<double>

Optional datatypes (Fortran) Fortran types

C type: MPI_Datatype C++ type: MPI::Datatype

Fortran type: INTEGER

MPI_DOUBLE_COMPLEX MPI::F_DOUBLE_COMPLEX DOUBLE COMPLEX

MPI_INTEGER1 MPI::INTEGER1 INTEGER*1
MPI_INTEGER2 MPI::INTEGER2 INTEGER*8
MPI_INTEGER4 MPI::INTEGER4 INTEGER*4
MPI_INTEGER8 MPI::INTEGER8 INTEGER*8
MPI_INTEGER16 INTEGER*16

MPI REAL2 MPI::REAL2 REAL*2 REAL*4 MPI REAL4 MPI::REAL4 MPI REAL8 MPI::REAL8 REAL*8 MPI REAL16 REAL*16 MPI COMPLEX4 COMPLEX*4 MPI COMPLEX8 COMPLEX*8 MPI COMPLEX16 COMPLEX*16 COMPLEX*32 MPI COMPLEX32

Datatypes for reduction functions (C and C++)

C type: MPI Datatype C++ type: MPI::Datatype

Fortran type: INTEGER

MPI_FLOAT_INT MPI::FLOAT_INT
MPI_DOUBLE_INT MPI::DOUBLE_INT
MPI_LONG_INT MPI::LONG_INT
MPI_2INT MPI::TWOINT
MPI SHORT INT MPI::SHORT INT

MPI LONG DOUBLE INT MPI::LONG DOUBLE INT

Datatypes for reduction functions (Fortran)

C type: MPI_Datatype C++ type: MPI::Datatype

Fortran type: INTEGER

MPI 2REAL MPI::TWOREAL

MPI 2DOUBLE PRECISION MPI::TWODOUBLE PRECISION

MPI 2INTEGER MPI::TWOINTEGER

Special datatypes for constructing derived datatypes

C type: MPI Datatype C++ type: MPI::Datatype

Fortran type: INTEGER

MPI_UB MPI::UB MPI LB MPI::LB

Reserved communicators

C type: MPI Comm C++ type: MPI::Intracomm

Fortran type: INTEGER

MPI_COMM_WORLD MPI::COMM_WORLD MPI COMM SELF MPI::COMM SELF

Results of communicator and group comparisons

C type: const int (or unnamed enum) C++ type: const int
Fortran type: INTEGER (or unnamed enum)

MPI_IDENT MPI::IDENT

MPI_CONGRUENT
MPI_SIMILAR
MPI_UNEQUAL
MPI::CONGRUENT
MPI::SIMILAR
MPI::UNEQUAL

Environmental inquiry keys

C type: const int (or unnamed enum) C++ type: const int
Fortran type: INTEGER (or unnamed enum)
MPI_TAG_UB MPI::TAG_UB

MPI_IO MPI::IO MPI::HOST

MPI WTIME IS GLOBAL MPI::WTIME IS GLOBAL

Collective Operations

C type: MPI Op C++ type: const MPI::Op

Fortran type: INTEGER

MPI MAX MPI::MAX MPI MIN MPI::MIN MPI SUM MPI::SUM MPI PROD MPI::PROD MPI::MAXLOC MPI MAXLOC MPI MINLOC MPI::MINLOC MPI BAND MPI::BAND MPI BOR MPI::BOR MPI BXOR MPI::BXOR MPI LAND MPI::LAND MPI LOR MPI::LOR MPI LXOR MPI::LXOR MPI REPLACE MPI::REPLACE

Null Handles

C/Fortran name C++ name
C type / Fortran type C++ type

MPI_GROUP_NULL
MPI_Group / INTEGER
MPI_COMM_NULL
MPI::GROUP_NULL
const MPI::Group
MPI::COMM_NULL

MPI_Comm / INTEGER 1)

MPI_DATATYPE_NULL
MPI_Datatype / INTEGER
MPI_REQUEST_NULL
MPI_Request / INTEGER
MPI_Request / INTEGER
MPI_OP_NULL
MPI::DATATYPE_NULL
const MPI::Datatype
MPI::REQUEST_NULL
MPI_Request / INTEGER
MPI_OP_NULL
MPI::OP_NULL

MPI Op / INTEGER const MPI::Op

MPI_ERRHANDLER_NULL MPI::ERRHANDLER_NULL MPI Errhandler / INTEGER const MPI::Errhandler

MPI_Errhandler/INTEGER const MPI::Errhan
MPI FILE NULL MPI::FILE NULL

MPI_FILE_NULL
MPI File / INTEGER

MPI_INFO_NULL
MPI_Info / INTEGER const MPI::Info
MPI WIN NULL
MPI::WIN NULL

MPI Win / INTEGER

¹) C++ type: See Section <u>Communicators</u> on page <u>Communicators</u> regarding class hierarchy and the specific type of MPI::COMM NULL

Empty group

C type: MPI_Group C++ type: const MPI::Group

Fortran type: INTEGER

MPI GROUP EMPTY MPI::GROUP EMPTY

Topologies

C type: const int (or unnamed enum) C++ type: const int
Fortran type: INTEGER (or unnamed enum)
MPI_GRAPH MPI::GRAPH
MPI_CART MPI::CART

MPI DIST GRAPH MPI::DIST GRAPH

Predefined functions

C/Fortran name C++ name C type / Fortran type C++ type

MPI COMM NULL COPY FN MPI COMM NULL COPY FN

MPI_Comm_copy_attr_function same as in C 1)

/ COMM COPY ATTR FN

MPI COMM DUP FN MPI COMM DUP FN

MPI_Comm_copy_attr_function same as in \mathbb{C}^{1})

/ COMM COPY ATTR FN

MPI COMM NULL DELETE FN MPI COMM NULL DELETE FN

MPI_Comm_delete_attr_function same as in C 1)

/ COMM DELETE ATTR FN

MPI_Win_copy_attr_function same as in C 1)

/WIN COPY ATTR FN

MPI WIN DUP FN MPI WIN DUP FN

MPI_Win_copy_attr_function same as in C 1)

/WIN COPY ATTR FN

MPI_Win_delete_attr_function same as in C^{1}

/WIN DELETE ATTR FN

MPI_Type_copy_attr_function same as in C^{1})

/ TYPE_COPY_ATTR_FN

MPI_TYPE_DUP_FN MPI_TYPE_DUP_FN

MPI_Type_copy_attr_function same as in C^{1})

/TYPE COPY ATTR FN

MPI TYPE NULL DELETE FN MPI TYPE NULL DELETE FN

MPI_Type_delete_attr_function same as in C^{1}

/ TYPE_DELETE_ATTR_FN

¹ See the advice to implementors on MPI_COMM_NULL_COPY_FN, ... in

Section Communicators on page Communicators

Deprecated predefined functions

C/Fortran name C++ name C type / Fortran type C++ type

MPI_NULL_COPY_FN
MPI_Copy_function / COPY_FUNCTION
MPI::NULL_COPY_FN
MPI::Copy_function

MPI_DUP_FN MPI::DUP_FN

MPI_Copy_function / COPY_FUNCTION MPI::Copy_function MPI_NULL_DELETE_FN MPI::NULL_DELETE_FN

MPI_Delete_function / DELETE_FUNCTION MPI::Delete_function

Predefined Attribute Keys

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_APPNUM MPI::APPNUM

MPI_LASTUSEDCODE MPI::LASTUSEDCODE MPI_UNIVERSE_SIZE MPI::UNIVERSE_SIZE

MPI_WIN_BASE MPI::WIN_BASE

MPI_WIN_DISP_UNIT MPI::WIN_DISP_UNIT

MPI WIN SIZE MPI::WIN SIZE

Mode Constants

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_MODE_APPEND MPI::MODE_APPEND MPI MODE CREATE MPI::MODE CREATE

MPI_MODE_DELETE_ON_CLOSE MPI::MODE_DELETE_ON_CLOSE

MPI MODE EXCL MPI::MODE EXCL

MPI_MODE_NOCHECK MPI::MODE_NOCHECK MPI::MODE_NOPRECEDE MPI::MODE_NOPRECEDE

MPI_MODE_NOPUT

MPI::MODE_NOPUT

MPI::MODE_NOPUT

MPI::MODE_NOSTORE

MPI_MODE_NOSUCCEED

MPI::MODE_RDONLY

MPI::MODE_RDONLY

MPI_MODE_RDONLY MPI::MODE_RDONLY MPI::MODE_RDWR

MPI_MODE_SEQUENTIAL MPI::MODE_SEQUENTIAL MPI_MODE_UNIQUE_OPEN MPI::MODE_UNIQUE_OPEN

MPI_MODE_WRONLY MPI::MODE_WRONLY

Datatype Decoding Constants

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_COMBINER_CONTIGUOUS MPI::COMBINER_CONTIGUOUS

MPI_COMBINER_DARRAY MPI::COMBINER_DARRAY MPI COMBINER DUP MPI::COMBINER DUP

MPI_COMBINER_F90_COMPLEX
MPI_COMBINER_F90_INTEGER
MPI_COMBINER_F90_INTEGER
MPI_COMBINER_F90_INTEGER
MPI_COMBINER_F90_REAL
MPI::COMBINER_F90_REAL

MPI_COMBINER_HINDEXED_INTEGER MPI::COMBINER_HINDEXED_INTEGER

MPI COMBINER HINDEXED MPI::COMBINER HINDEXED

MPI_COMBINER_HVECTOR_INTEGER MPI::COMBINER_HVECTOR_INTEGER

MPI COMBINER HVECTOR MPI::COMBINER HVECTOR

MPI COMBINER INDEXED BLOCK MPI::COMBINER INDEXED BLOCK

MPI_COMBINER_INDEXED MPI::COMBINER_INDEXED MPI_COMBINER_NAMED MPI::COMBINER_NAMED MPI::COMBINER_RESIZED

MPI COMBINER STRUCT INTEGER MPI::COMBINER STRUCT INTEGER

MPI_COMBINER_STRUCT MPI::COMBINER_STRUCT
MPI_COMBINER_SUBARRAY MPI::COMBINER_SUBARRAY
MPI COMBINER VECTOR MPI::COMBINER VECTOR

Threads Constants

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_THREAD_FUNNELED MPI::THREAD_FUNNELED

MPI_THREAD_MULTIPLE MPI::THREAD_MULTIPLE

MPI_THREAD_SERIALIZED MPI::THREAD_SERIALIZED

MPI THREAD SINGLE MPI::THREAD SINGLE

File Operation Constants, Part 1

C type: const MPI_Offset (or unnamed enum) C++ type:

Fortran type: INTEGER (KIND=MPI_OFFSET_KIND) const MPI::Offset (or unnamed enum)
MPI DISPLACEMENT CURRENT
MPI::DISPLACEMENT CURRENT

File Operation Constants, Part 2

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_DISTRIBUTE_BLOCK MPI::DISTRIBUTE_BLOCK

MPI_DISTRIBUTE_CYCLIC MPI::DISTRIBUTE_CYCLIC

MPI_DISTRIBUTE_DFLT_DARG MPI::DISTRIBUTE_DFLT_DARG

MPI_ORDER_C MPI::ORDER_C

MPI_ORDER_FORTRAN MPI::ORDER_FORTRAN

MPI_SEEK_CUR MPI::SEEK_CUR MPI_SEEK_END MPI::SEEK_END MPI::SEEK_SET

F90 Datatype Matching Constants

C type: const int (or unnamed enum) C++ type:

Fortran type: INTEGER const int (or unnamed enum)

MPI_TYPECLASS_COMPLEX MPI::TYPECLASS_COMPLEX

MPI_TYPECLASS_INTEGER MPI::TYPECLASS_INTEGER

MPI_TYPECLASS_REAL MPI::TYPECLASS_REAL

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Constants Specifying Empty or Ignored Input

C/Fortran name C++ name
C type / Fortran type C++ type

MPI_ARGVS_NULL

char*** / 2-dim. array of CHARACTER*(*)

MPI::ARGVS_NULL

const char ***

MPI_ARGV_NULL

char** / array of CHARACTER*(*)

MPI::ARGV_NULL

const char **

MPI ERRCODES IGNORE

Not defined for C++

int* / INTEGER array

MPI STATUSES IGNORE

Not defined for C++

MPI Status* / INTEGER,

DIMENSION(MPI STATUS SIZE,*)

MPI STATUS IGNORE

Not defined for C++

MPI Status*/INTEGER, DIMENSION(MPI STATUS SIZE)

MPI UNWEIGHTED Not defined for C++

C Constants Specifying Ignored Input (no C++ or Fortran)

C type: MPI_Fint*

MPI_F_STATUSES_IGNORE MPI_F_STATUS_IGNORE

C and C++ preprocessor Constants and Fortran Parameters

C/C++ type: const int (or unnamed enum)

Fortran type: INTEGER MPI_SUBVERSION MPI_VERSION

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