

## NAG Toolbox for Matlab

### e05jh

#### 1 Purpose

e05jh is used to check if you have set an optional parameter of e05jb. The initialization function e05ja **must** have been called before calling e05jh.

#### 2 Syntax

```
[result, ifail] = e05jh(optstr, comm)
```

#### 3 Description

e05jh returns 1 if you have previously set the optional parameter contained in **optstr**, otherwise it returns 0.

A complete list of optional parameters, their symbolic names and default values is given in Section 11 in e05jb.

#### 4 References

None.

#### 5 Parameters

##### 5.1 Compulsory Input Parameters

1: **optstr** – string

A single valid optional-parameter name (as described in Section 11 in e05jb).

2: **comm**(*lcomm*) – double array

*lcomm*, the dimension of the array, must satisfy the constraint  $lcomm \geq 100$ .

Communication data as initialized by e05ja.

##### 5.2 Optional Input Parameters

None.

##### 5.3 Input Parameters Omitted from the MATLAB Interface

*lcomm*

##### 5.4 Output Parameters

1: **result** – int32 scalar

The result of the function.

2: **ifail** – int32 scalar

*ifail* = 0 unless the function detects an error (see Section 6).

## 6 Error Indicators and Warnings

Errors or warnings detected by the function:

**ifail** = 1

On entry,  $lcomm < 100$ ,  
or the initialization function e05ja has not been called.

**ifail** = 2

The optional parameter given in **optstr** is invalid. The correct number of word ‘tokens’ are present but a keyword or keyword combination is invalid.

**ifail** = 3

The optional-parameter name contained the wrong number of word ‘tokens’, so could not be recognized by the function.

## 7 Accuracy

Not applicable.

## 8 Further Comments

None.

## 9 Example

```
% Problem data for peaks function
prob = 'peaks';
xres = 100;
yres = 100;

bl = [-3; -3];
bu = -bl;
fglob = -6.55; % Approx.
xglob = [0.23; -1.63]; % Approx.

% Initialize e05jb
n = int32(length(bl));
[comm, ifail] = e05ja(n);

if (ifail == 0)

    ibound = int32(0);           % All bounds will be given;
    iinit = int32(0);           % Default initialization method;
    list = zeros(n,3);          % Only need to _declare_ the init.-
list
    numpts = zeros(n, 1, 'int32'); % data: these will be _set_
internally.
    initpt = zeros(n, 1, 'int32');

    % Set some options.
    disp(sprintf('\n'));
    disp('Solve with options and init.-list data');

    % Echo the setting of opt. params.
    comm = e05jd('List', comm);

    comm = e05jd('Function Evaluations Limit = 100000', comm);
    comm = e05jf('Static Limit', 3*n, comm);
```

```

    % Increase infbnd by factor of 10, checking that it hasn't already
    been
    % modified
    [optset] = e05jh('Infinite Bound Size', comm);
    if not(optset)
        infbnd = e05jl('Infinite Bound Size', comm);
        comm = e05jg('Infinite Bound Size', 10*infbnd, comm);
    end

    comm = e05je('Local Searches', 'on', comm);

    % Set the initialization-list data.
    iinit = int32(3); % We're providing the data
    this time:
    list = zeros(n, 3);
    list(:, 1) = bl; list(:, 3) = bu;
    list(:, 2) = [-1; 0];
    numpts = int32(3)*ones(n, 1, 'int32'); % 3 splitting points for each
    dim;
    initpt = int32(2)*ones(n, 1, 'int32'); % 2nd pt in each row to be the
    'init.' pt.

    [bl, bu, listOut, numptsOut, initptOut, ...
    xbest, obj, comm, userOut, ifail] = ...
        e05jb('e05jb_objective', ibound, iinit, bl, bu, list, ...
            numpts, initpt, 'e05jb_monitor', comm);

    disp(['e05jb (options) exited with ifail = ' num2str(ifail)]);

    if (ifail == 0)
        disp('xbest:');
        disp(xbest);
        disp(['obj = ' num2str(obj)]);
    end
end
end

```

```

Solve with options and init.-list data
Function Evaluations Limit = 100000
Static Limit          6
Infinite Bound Size   1.1579208923731620E+78
Local Searches on

```

(OBJFUN was just called for the first time)

\*\*\* Begin monitoring information \*\*\*

```

Total sub-boxes = 146
Total function evaluations = 169
Total function evaluations used in local searches = 102
Total points used in local search = 7
Total sweeps through levels = 7
Total splits by init. list = 5
Lowest level with nonsplit boxes = 4
Number of candidate minima in the 'shopping basket' = 2
Shopping basket:
    0.2283   -1.3474
   -1.6255    0.2045

```

\*\*\* End monitoring information \*\*\*

```

e05jb (options) exited with ifail = 0
xbest:
    0.2283
   -1.6255

```

```
obj = -6.5511
```

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