Tausand AB1000 Matlab library example: Read Speed Test Example

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Repeat reading of counters and settings for a specified number of times, and returns statistics on the timing of execution of these reading functions:

- readMeasurement()
- queryAllSettings()

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User's parameters

```
port = 'COM6';  %indicate the port to connect with. E.g.: 'COM4'
samples = 1000;  %how many times the read test should be made
```

Connection with Tausand Abacus device

Open connection with device

```
my_tausand = openAbacus(port);

idn_string = idnQuery(my_tausand);
fprintf("Connected to: ");
fprintf(idn_string);
fprintf("\n");
```

```
Connected to: Tausand Abacus AB2504
```

Read speed tests

Create empty arrays

```
tRdCounters=zeros(samples,1);
```

```
tRdSettings=zeros(samples,1);
```

Do not show this type of warnings

```
warning('off','TAUSAND:timeout');
```

Print in command window progress percentage

```
fprintf("Read speed test. Progress=%5.1f%%",0);
k=1;
if samples < k
    samples = k;
end
```

Read speed test. Progress= 0.0%

Perform reading tests, and get their timing

```
while k <= samples
    try
        stopwatch = tic();
        d=readMeasurement(my_tausand);
        tRdCounters(k,1)=toc(stopwatch);

        stopwatch = tic();
        q=queryAllSettings(my_tausand);
        tRdSettings(k,1)=toc(stopwatch);

        % if both stopwatchs are non-zero, measument is ok. Go to next
        % mesurement.
        if (tRdCounters(k,1) > 0) && (tRdSettings(k,1) > 0)
            k=k+1; %go to next reading
        end

    catch ME
        switch ME.identifier
            case 'TAUSAND:unexpectedReadByte'
                fprintf("\n");
                warning('Read failed. Repeating read.');
                fprintf("\nRead speed test. Progress=%5.1f%%",k/
samples*100);

            case 'TAUSAND:timeout'
                fprintf("\n");
                warning('Read timeout. Repeating read.');
                fprintf("\nRead speed test. Progress=%5.1f%%",k/
samples*100);
            otherwise
                rethrow(ME)
        end
    end

    fprintf("\b\b\b\b\b\b");
    fprintf("%5.1f%%",(k-1)/samples*100);
end
```

```
fprintf("\n");
```

Enable back those warnings that were turned off:

```
warning('on','TAUSAND:timeout');
```

Close connection

```
closeAbacus(my_tausand);
```

Statistics

```
fprintf("Statistics report for ");
fprintf(idn_string);
fprintf("\n");
fprintf("NumReads:  %d\n",k-1)
fprintf("readMeasurement() statistics\n")
fprintf("  Min:  %0.5f s\n", min(tRdCounters))
fprintf("  Max:  %0.5f s\n", max(tRdCounters))
fprintf("  Mean: %0.5f s\n", mean(tRdCounters))
fprintf("  StdD: %0.5f s\n", std(tRdCounters))
fprintf("queryAllSettings() statistics\n")
fprintf("  Min:  %0.5f s\n", min(tRdSettings))
fprintf("  Max:  %0.5f s\n", max(tRdSettings))
fprintf("  Mean: %0.5f s\n", mean(tRdSettings))
fprintf("  StdD: %0.5f s\n", std(tRdSettings))
```

```
Statistics report for Tausand Abacus AB2504
NumReads:  1000
readMeasurement() statistics
  Min:  0.01214 s
  Max:  0.36388 s
  Mean: 0.01546 s
  StdD: 0.01147 s
queryAllSettings() statistics
  Min:  0.01092 s
  Max:  0.14947 s
  Mean: 0.01371 s
  StdD: 0.00487 s
```

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