# Module -- Diagnostics Manager Core

# High-Level Description

# Figures

## Component Diagram

# Variable Data Dictionary

|  |  |  |
| --- | --- | --- |
| Module Inputs | Module Outputs | |
|  | |  |

## Module Internal Variables

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable Name | Datatype | Resolution | Legal Range  (min) | Legal Range  (max) | Software Segment  {Data Type} |
| ResetNTCFlag\_Cnt\_M\_u08 | Uint8 | 1 | 0  FF | | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_8 |
| NTCQueueIndex#\_Cnt\_M\_u08 | Uint8 | 1 | Range depends on size of NTCInfoQueue#\_Cnt\_M\_Str[SIZE]  Refer \* | | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_UNSPECIFIED |
| DiagMgrInitComp#\_Cnt\_M\_lgc | Boolean | NA | False | True | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_Unspecified |
| DiagMgr\_NTCInfo#\_Cnt\_M\_str[SIZE] | NTCInfo\_Str | NA | See section 3.1.1 | See section 3.1.1 | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_Unspecified |
| NTCInfoQueue#\_Cnt\_M\_str[SIZE] | NTCInfoQueue\_Str | NA | See section 3.1.1 | See section 3.1.1 | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_Unspecified |
| ActDiagSts#\_Cnt\_M\_u08 | Uint8 | 1 | 0 | 1 | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_8 |
| ResetNTCFlag#\_Cnt\_M\_u08 | Uint8 | 1 | 0  FF | | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_8 |
| DiagSts#\_Cnt\_M\_b16[SIZE] | Uint16 | 1 | 0 | FULL | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_Unspecified |
| ActiveRmpRate#\_UlspmS\_M\_f32[SIZE] | Float32 | Single Precision float | 0.0001 | 0.5 | DIAGMGR#\_START\_SEC\_VAR\_CLEARED\_32 |

Note: \*Refer: Size varies across projects. Check Configuration files under UTP/Contract folder

### User defined typedef definition/declaration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Typedef Name | Element Name | User Defined Type | Legal Range  (min) | Legal Range  (max) |
|  |  |  |  |  |
|  |  |  |  |
| typedef struct { } NTCInfo\_Str | Param | uint8 | 0 | FULL |
| Status | uint8 | 0 | FULL |
| AgingCounter | uint8 | 0 | FULL |
| typedef struct { } NTCInfoQueue\_Str | NTC | NTCNumber | 0 | 511 |
|  | Param | Uint8 | 0 | FULL |
|  | Status | NxtrDiagMgrStatus | 0 | 255 |

# Constant Data Dictionary

## Calibration Constants

|  |
| --- |
| Constant Name |
| k\_FltRspTbl\_Cnt\_str[] |
| k\_FltRmpRate\_UlspmS\_f32[] |

## Program(fixed) Constants

### Embedded Constants

#### Local

#### Global

|  |
| --- |
| Constant Name |
| \*\* DIAGMGR\_NUMAPPS |
| \*\* DIAGMGR\_EVENTNUM\_# |
| \*\* DIAGMGR\_APID\_# |
| \*\*D\_NOOFACTIVEINVERTER\_CNT\_U08 |

### Note \*\*: Global const values varies across projects. Check configuration files under UTP/Contract folder. “#” denotes application number.

### Module specific Lookup Tables Constants

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Value | Software Segment |
| T\_NTCMapTbl#\_Cnt\_enum[SIZE] | N/A | { \*\* } | AP\_DIAGMGR\_CONST |
| T\_DiagMgrNtcInfoPtr\_Cnt\_Str[SIZE] | N/A | \*\* {&DiagMgr\_NTCInfo#\_Cnt\_M\_str[0], #,  } | AP\_DIAGMGR\_CONST |
| T\_DiagMgrNtcAppInfoMap\_Cnt\_Str[SIZE] | N/A | \*\* {{ &DiagMgr\_NTCInfo#\_Cnt\_M\_str[0], #},  …  } | AP\_DIAGMGR\_CONST |

\*\*NOTE : Elements and Size of table are different across different projects and applications. Check Configuration files under UTP/Contract folder

# Functions/Macros used by the Sub-Modules

## Library Functions / Macros

The library and functions / Macros that are called by the various sub modules are identified below,

1. TableSize\_m()

## Data Hiding Functions

1. <None>

## Global Functions/Macros Defined by this Module

### Diagnostic Manager Initialization

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | DiagMgr#\_Init | Type | Min | Max |
| **Arguments Passed** | None |  |  |  |
| **Multiplicity** |  |  |  |  |
| **Return Value** | None |  |  | |

#### Description



### Diagnostic Manager Periodic Code

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | DiagMgr#\_Per | Type | Min | Max |
| **Arguments Passed** | None |  |  |  |
| **Multiplicity** |  |  |  |  |
| **Return Value** | none |  |  | |

#### Description



### Diagnostic Manager Transition Core

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | DiagMgr#\_Trns | Type | Min | Max |
| **Arguments Passed** | None |  |  |  |
| **Multiplicity** |  |  |  |  |
| **Return Value** | none |  |  | |

#### Description



### Diagnostic Manager Get NTC Failed

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | NxtrDiagMgr#\_GetNTCFailed | Type | Min | Max |
| **Arguments Passed** | NTC\_Cnt\_T\_enum | NTCNumber | 0 | 511 |
|  | NTCFailed\_Ptr\_T\_lgc | const boolean pointer | False | True |
| **Multiplicity** |  |  |  |  |
| **Return Value** | RetVal | Std\_ReturnType | E\_OK | |

#### Description



### Diagnostic Manager Get NTC Active

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | NxtrDiagMgr#\_GetNTCActive\_Core | Type | Min | Max |
| **Arguments Passed** | NTC\_Cnt\_T\_enum | NTCNumber | 0 | 511 |
|  | NTCActive\_Ptr\_T\_lgc | const boolean pointer | FALSE | TRUE |
| **Multiplicity** |  |  |  |  |
| **Return Value** | RetVal | Std\_ReturnType | E\_OK | |

#### Description



### Diagnostic Manager Get NTC Status

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | NxtrDiagMgr#\_GetNTCStatus | Type | Min | Max |
| **Arguments Passed** | NTC\_Cnt\_T\_enum | NTCNumber | 0 | 511 |
|  | Status\_Ptr\_T\_u08 | const boolean pointer | FALSE | TRUE |
| **Multiplicity** |  |  |  |  |
| **Return Value** | RetVal | Std\_ReturnType | E\_OK | |

#### Description



### Diagnostic Manager Set NTC Status

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | NxtrDiagMgr#\_SetNTCStatus | Type | Min | Max |
| **Arguments Passed** | NTC\_Cnt\_T\_enum | NTCNumber | 0 | 511 |
|  | Param\_Cnt\_T\_u08 | Uint8 | 0 | FULL |
|  | Status\_Cnt\_T\_enum | NxtrDiagMgrStatus | NTC\_STATUS\_PASSED  NTC\_STATUS\_FAILED  NTC\_STATUS\_PREPASSED  NTC\_STATUS\_PREFAILED | |
| **Multiplicity** |  |  |  |  |
| **Return Value** | RetVal | Std\_ReturnType | E\_OK  E\_NOT\_OK | |

#### Description



### Diagnostic Manager Report NTC Status

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | NxtrDiagMgr#\_ReportNTCStatus | Type | Min | Max |
| **Arguments Passed** | NTC\_Cnt\_T\_enum | NTCNumber | 0 | 511 |
|  | Param\_Cnt\_T\_u08 | Uint8 | 0 | FULL |
|  | Status\_Cnt\_T\_enum | NxtrDiagMgrStatus | NTC\_STATUS\_PASSED  NTC\_STATUS\_FAILED  NTC\_STATUS\_PREPASSED  NTC\_STATUS\_PREFAILED | |
| **Multiplicity** |  |  |  |  |
| **Return Value** | RetVal | Std\_ReturnType | E\_OK | |

#### Description



## Local Functions/Macros Used by this MDD only

# Software Module Implementation

## Runtime Environment (RTE) Initial Values

|  |  |
| --- | --- |
| Data | Value |
|  |  |

## Initialization Functions

None

## Periodic Functions

None

## Fault Recovery Functions

None

## Shutdown Functions

None

## Interrupt Functions

None

## Fault Recovery Functions

None

## Shutdown Functions

None

## Interrupt Functions

None

## Serial Communication Functions

None

# Execution Requirements

## Execution Sequence of the Module

## Execution Rates for sub-modules called by the Scheduler

This table serves as reference for the Scheduler design

|  |  |  |
| --- | --- | --- |
| Function Name | Calling Frequency | System State(s) in which the function is called |
|  |  |  |

## Execution Requirements for Serial Communication Functions

|  |  |
| --- | --- |
| Function Name | Sub-Module called by (Serial Comm Function Name) |
|  |  |

# Memory Map Definition Requirements

## Sub Modules (Functions)

This table identifies the software segments for functions identified in this module.

|  |  |
| --- | --- |
| Name of Sub Module | Software Segment |
| DiagMgr#\_Init | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| DiagMgr#\_Per | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| DiagMgr#\_Trns | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| NxtrDiagMgr#\_GetNTCFailed | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| NxtrDiagMgr#\_GetNTCActive | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| NxtrDiagMgr#\_GetNTCStatus | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| NxtrDiagMgr#\_SetNTCStatus | RTE\_AP\_DIAGMGR\_APPL\_CODE |
| NxtrDiagMgr#\_ReportNTCStatus | RTE\_AP\_DIAGMGR\_APPL\_CODE |

## Global and Local Functions

This table identifies the software segments for local functions identified in this module.

|  |  |
| --- | --- |
| Name of Sub Module | Software Segment |
|  |  |

# Known Issues / Limitations With Design

1. (Item #1)

# Revision Control Log

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev #** | **Change Description** | **Date** | **Author Initials** |
| 1 | Initial MDD version | 25-June-13 | NRAR |
| 2 | Unit Testing Fixes | 10-Mar-14 | KPIT-PM |
| 3 | Updated for Inverter1 and Inverter 2 Fault response. | 21-July-15 | Selva |