Aemulus

DM400e

.NET Wrapper Library Programming Manual

Version 1.3, 08-2013

Table of Contents

Section 1: Pre-requisites

Test program needs to add following references:

Aemulus.Hardware.DM.dll
Aemulus.Hardware.ResourceManager.dll

Section 2: General

DM

Synopsis

DM (hardwareProfile, dpingroup_sel, testHeadNumber, testSiteNumber, offline, initOption)

Arguments

String ^ hardwareProfile (in)

Specifies the hardware profile to be used.

int dpingroup_sel (in)

Note: This is only specific for DM482e only.

Specifies the pin group to be turned on or activated.

1 = DPin group 0 (PIN0 to PIN5) and trigout0

2 = DPin group 1 (PIN6 to PIN11) and trigout1

3 = DPin group 0 and 1(PIN0 to PIN11), trigout0 and trigout1

int testHeadNumber (in)

Specifies the test head number.

int testSiteNumber (in)

Specifies the test site number.

bool offline (in)

Specifies whether to run tester in offline mode.

int init_options (in)

To open a session and leave the device in its existing configuration, set this argument to 0.

To place the device in a known start-up state when creating a new session set the appropriate bit value:

bit[0] = Specifies whether to reset the device during the initialization procedure (enabled) or maintain current configuration in the hardware (disabled).

bit[1] = Specifies whether to reset the cmd fifo during the initialization procedure.

bit[2] = Specifies whether to reset the result fifo during the initialization procedure.

bit[3] = Specifies whether to reset the lock status to unlock during the initialization procedure.

bit[5] = To bypass calibration data loading process.

Descriptions

This function will return a *DM* object to the test program upon initialization of resource mapping. Once *DM* object is returned, users can then access all hardware functions. When this object is disposed, the communication session will be closed accordingly.

Core Library Function Mapping

DM	Function
DM280	DM280e_Initialize DM280e_Close
DM482e	DM482e_DPINOpen DM482e_DPINClose
DM485e	DM485e_Initialize DM485e_Close

Table 1: DM

DM

Synopsis

DM (hardwareProfile, testHeadNumber, testSiteNumber, offline, initOption)

Arguments

String ^ hardwareProfile (in)

Specifies the hardware profile to be used.

int testHeadNumber (in)

Specifies the test head number.

int testSiteNumber (in)

Specifies the test site number.

bool offline (in)

Specifies whether to run tester in offline mode.

int init_options (in)

To open a session and leave the device in its existing configuration, set this argument to 0.

To place the device in a known start-up state when creating a new session set the appropriate bit value:

bit[0] = Specifies whether to reset the device during the initialization procedure (enabled) or maintain current configuration in the hardware (disabled).

bit[1] = Specifies whether to reset the cmd fifo during the initialization procedure.

bit[2] = Specifies whether to reset the result fifo during the initialization procedure.

bit[3] = Specifies whether to reset the lock status to unlock during the initialization procedure.

bit[5] = To bypass calibration data loading process.

Descriptions

This function will return a *DM* object to the test program upon initialization of resource mapping. Once *DM* object is returned, users can then access all hardware functions. When this

object is disposed, the communication session will be closed accordingly. This function dpingroup_sel is default to 3 for module DM482e.

Core Library Function Mapping

DM	Function
DM280	DM280e_Initialize DM280e_Close
DM482e	DM482e_DPINOpen DM482e_DPINClose
DM485e	DM485e_Initialize DM485e_Close

Table 2: DM

DM

Synopsis

DM (hardwareProfile, testHeadNumber, testSiteNumber, offline)

Arguments

String ^ hardwareProfile (in)

Specifies the hardware profile to be used.

int testHeadNumber (in)

Specifies the test head number.

int testSiteNumber (in)

Specifies the test site number.

bool offline (in)

Specifies whether to run tester in offline mode.

Descriptions

This function will return a *DM* object to the test program upon initialization of resource mapping. Once *DM* object is returned, users can then access all hardware functions. When this object is disposed, the communication session will be closed accordingly. This function dpingroup_sel is default to 3 for module DM482e and initOption is default to 0xF.

Core Library Function Mapping

DM	Function
DM280	DM280e_Initialize DM280e_Close
DM482e	DM482e_DPINOpen DM482e_DPINClose
DM485e	DM485e_Initialize DM485e_Close

Table 3: DM

Force

Synopsis

long Force (pinAlias, state)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int state (in)

Specifies the operation mode:

State	Description
0	CONST_FORCE_STATE_VECTOR
1	CONST_FORCE_STATE_PMU
2	CONST_FORCE_STATE_DIO
5	CONST_FORCE_STATE_CLOCK
6	CONST_FORCE_STATE_INVERTED_CLOCK

Table 4: Mode of Operation

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINForce

Table 5: Force

ReadRevision

Synopsis

long ReadRevision (moduleAlias, instrumentDriverRevision, firmwareRevision)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

StringBuilder ^ instrumentDriverRevision (out)

Returns the driver revision information of DM482e.dll. Space allocated by the caller, must be at least 32 bytes.

StringBuilder ^ firmwareRevision (out)

Space allocated by the caller, must be at least 32 bytes, returns firmware revision information for the device you are using. This argument returns both firmware version of master and daughter card separated by a hyphen.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadRevision

Table 6: ReadRevision

ReadChannelTemperature

Synopsis

long ReadChannelTemperature (pinAlias, temperature)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double % temperature (out)

Read the temperature of the on-board Pin Electronics IC. Temperature is in degree Celsius.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadChannelTemperature

Table 7: ReadChannelTemperature

ReadAmbientTemperature

Synopsis

long ReadAmbientTemperature (moduleAlias, temperature)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double % temperature (out)

Return the current temperature on the board, in degrees Celsius. This temperature sensor is placed on bottom plane of master card.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadAmbientTemperature

Table 8: ReadAmbientTemperature

ReadSerialNumber

Synopsis

long ReadSerialNumber (moduleAlias, sn)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

StringBuilder ^ sn (out)

Serial number length should at least 64 bytes. It returns both master and daughter card serial numbers separated by a hyphen.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadSerialNumber

Table 9: ReadSerialNumber

Reset

Synopsis

long Reset (moduleAlias)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

Core Library Function Mapping

DM	Function
DM280e	DM280e_Reset
DM482e	DM482e_Reset

Table 10: Reset

ResetGroup

Synopsis

long ResetGroup (moduleAlias, group)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int group (in)

Specifies the pin group to be reset.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ResetGroup

Table 11: ResetGroup

QueryUpTime

Synopsis

long QueryUpTime (moduleAlias, uptime_s)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double % uptime_s (out)

Returns the uptime of module in seconds.

Core Library Function Mapping

DM	Function
DM485e	QueryUpTime

Table 12: QueryUpTime

ConfigureMultiSiteMode

Synopsis

long ConfigureMultiSiteMode (moduleAlias, mode)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mode (in)

Mode = 0 for single site operation. Lock/unlock operation is not performed. This is the default mode.

Mode = 1 for multi-site operation. Lock/unlock operation is performed.

Core Library Function Mapping

DM	Function
DM280e	DM280e_ConfigureMultiSiteMode
DM482e	DM482e_ConfigureMultiSiteMode

Table 13: ConfigureMultiSiteMode

ReadSlotAddress

Synopsis

long ReadSlotAddress (moduleAlias, slotAddress)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int % slotAddress (out)

Return the slot address of the DM482e.

Core Library Function Mapping

DM	Function
DM482e	ReadSlotAddress

Table 14: ReadSlotAddress

DrivePort

Synopsis

long DrivePort (moduleAlias, value)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int value (in)

Specifies the port value to be driven.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DrivePort

Table 15: DrivePort

DrivePin

Synopsis

long DrivePin (pinAlias**,** value)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int value (in)

Specifies the pin value.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DrivePin

Table 16: DrivePin

SetPortDirection

Synopsis

long SetPortDirection (moduleAlias, value)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int value (in)

Specifies the direction of the targeted port where each bit value represents one port. Bit 0 means input, bit 1 means output.

Core Library Function Mapping

DM	Function
DM482e	DM482e_SetPortDirection

Table 17: SetPortDirection

SetPinDirection

Synopsis

long SetPinDirection (pinAlias, value)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int value (in)

Specifies the direction of the targeted pin.

Core Library Function Mapping

DM	Function
DM482e	DM482e_SetPinDirection

Table 18: SetPinDirection

ReadPort

Synopsis

long ReadPort (moduleAlias, value)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int % value (out)

Returns the read back port value.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadPort

Table 19: ReadPort

ReadPin

Synopsis

long ReadPin (pinAlias**,** value)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int % value (out)

Returns the read back pin value.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadPin

Table 20: ReadPin

DPINVectorResourceAllocation

Synopsis

long DPINVectorResourceAllocation (moduleAlias, vecSetCount, resourceArray)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int vecSetCount (in)

The amount of vector set to be used.

array <int> ^ resourceArray (in)

Specifies the required memory depth of each vector set. This has to be multiple of 512k. For example, if resourceArray[0]=6, resourceArray[1]=2, resourceArray[2]=3, it means that vector set 0 requires 6*512k of memory, vector set 1 requires 2*512k of memory, and vector set 2 requires 3*512k of memory.

By default, vecSetCount is 32 and resourceArray is 1 for each vector set.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINVectorResourceAllocation

Table 21: DPINVectorResourceAllocation

DPINLevel

Synopsis

long DPINLevel (pinAlias, VIH, VIL, VOH, VOL, IOH, IOL, VCH, VCL, VTERM)

Arguments

String ^ pinAlias (in)
: Specifies the alias of the target pin.

double VIH (in)
: Specifies the output driver high voltage level from the pin.

double VIL (in)
: Specifies the output driver low voltage level from the pin.

double VOH (in)
: Specifies the input comparator high voltage level into the pin.

double VOL (in)
: Specifies the input comparator low voltage level into the pin.

double IOH (in)
: Specifies the sink current when active load is enabled.

double IOL (in)
: Specifies the source current when active load is enabled.

double VCH (in)
: Specifies the reflection voltage clamp level for high range.

double VCL (in)
: Specifies the reflection voltage clamp level for low range.

double VTERM (in)
: Specifies the termination voltage when input termination is enabled. If input termination is disabled, driver is in high impedance.

DM	Function
DM482e	DM482e_DPINLevel

Table 22: DPINLevel

DPINVecLoad

Synopsis

long DPINVecLoad (moduleAlias, option, vecSetNo, vecFileName)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int option (in)

Specifies the clock frequency rate based for following options:

0 : Supprots bidirectional IO but clock frequency up to 200 Mbps.

1 : Supports dedicated IO but clock frequency up to 300 Mbps.

int vecSetNo (in)

Specifies the vector set to be loaded.

String ^ vecFileName (in)

Specifies file name of the vector file to be loaded.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINVecLoad

Table 23: DPINVecLoad

DPINPeriod

Synopsis

long DPINPeriod (moduleAlias, timingSetNo, period_s)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int timingSetNo

Specifies the timing set to be used.

double period_s (in)

Specifies the period of each bit of data as pointed by the specified timing set.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINPeriod

Table 24: DPINPeriod

DPINOn

Synopsis

long DPINOn (pinAlias)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINOn

Table 25: DPINOn

DPINOff

Synopsis

long DM482e_DPINOff (pinAlias)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINOff

Table 26: DPINOff

DPINHVOn

Synopsis

long DPINHVOn (pinAlias)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINHVOn

Table 27: DPINHVOn

DPINHVOff

Synopsis

long DPINHVOff (pinAlias)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

Core Library Function Mapping

DM	Function
DM482e	DM482e_DPINHVOff

Table 28: DPINHVOff

RunVector

Synopsis

long RunVector (moduleAlias, vecSetNo)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int vecSetNo (in)

Specifies the vector set to be executed.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ RunVector

Table 29: RunVector

AcquireVecEngineStatus

Synopsis

long AcquireVecEngineStatus (moduleAlias, status)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int * status (out)

Return the status of the vector execution.

0: Completed.

1: Busy.

Core Library Function Mapping

DM	Function
DM482e	DM482e_AcquireVecEngineStatus

Table 30: AcquireVecEngineStatus

ReadHistoryRam

Synopsis

long ReadHistoryRam (moduleAlias, vectorCount, startVectorLocation, vecSetNo, history_ram_data)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int vectorCount (in)

Specifies the number of vectors to be returned from the device.

int startVectorLocation (in)

Specifies the starting location of the vectors to be returned from the device.

int ViInt32 vecSetNo (in)

Specifies the vector set of interest.

array <int> ^ history_ram_data(out)

Returns an array of measurements. User has to allocate enough memory for history_ram_data.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ReadHistoryRam

Table 31: ReadHistoryRam

ConfigurePEAttribute

Synopsis

long ConfigurePEAttribute (pinAlias, inputTerminationEnable, HVEnable, activeLoadEnable, differentialComparatorEnable)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

bool inputTerminationEnable (in)

Specifies whether to enable input termination.
If input termination is disabled, the specified pin is in high-Z.
If input termination is enabled, the specified pin drives VT voltage level.

bool HVEnable (in)

Specifies whether to enable high voltage capability.
When HVEnable is enabled, VIH is twice of VT level while VIL maintains.

bool activeLoadEnable (in)

Specifies whether to enable active load capability.

bool differentialComparatorEnable (in)

Specifies whether to enable differential comparator capability.
When differential comparator is enabled, odd pins (1, 3, 5, 7, 9 and 11) will be disabled.
The voltage difference between pin 0 and pin 1 will be feed to the comparator of pin 0 only. Same goes to other pair of differential channels.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePEAttribute

Table 32: ConfigurePEAttribute

ConfigureVectorEngineAttribute

Synopsis

long ConfigureVectorEngineAttribute (moduleAlias, triggerEnable, continuousEnable)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

bool triggerEnable (in)

Vector Engine only starts to drive vector when an external trigger is received. External trigger can be configured using triggers API.

bool continuousEnable(in)

Vector Engine continuously repeats the vector until reset is called or argument continuousEnable is disabled. Vector file has to contain at least 5k bits of vector to avoid discontinuity. In addition, the vector file has to be in the multiple of 16 bits to avoid discontinuity.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigureVectorEngineAttribute

Table 33: ConfigureVectorEngineAttribute

ConfigureClockFrequency

Synopsis

long ConfigureClockFrequency (moduleAlias, frequency)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double frequency (in)

Specify the frequency, in Hz.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigureClockFrequency

Table 34: ConfigureClockFrequency

AcquireVectorFailCount

Synopsis

long AcquireVectorFailCount (moduleAlias, failCount)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int % failCount (out)

Return the total fail count.

Core Library Function Mapping

DM	Function
DM482e	DM482e_AcquireVectorFailCount

Table 35: AcquireVectorFailCount

AcquireChannelVectorFailCount

Synopsis

long AcquireChannelVectorFailCount (pinAlias, failCount)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int % failCount (out)

Return the fail count.

Core Library Function Mapping

DM	Function
DM482e	DM482e_AcquireChannelVectorFailCount

Table 36: AcquireChannelVectorFailCount

AcquireChannelFirstFailVectorCount

Synopsis

long AcquireChannelFirstFailVectorCount (pinAlias, failCount)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int % failCount (out)

Return the first-failed vector location count.

Core Library Function Mapping

DM	Function
DM482e	DM482e_AcquireChannelFirstFailVectorCount

Table 37: AcquireChannelFirstFailVectorCount

ConfigureInputChannelDelay

Synopsis

long ConfigureInputChannelDelay (pinAlias, delay)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double delay (in)

Specifies delay in clock cycle. Delay range is from -10 of clock cycle to 100 of clock cycles.
The delay resolution is 11 ps for delay from 0 ns to 5.621 ns.
For delay more than 5.621 ns, the delay resolution is half of the clock cycle.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigureInputChannelDelay

Table 38: ConfigureInputChannelDelay

ConfigurePMUVoltageLevel

Synopsis

long ConfigurePMUVoltageLevel (pinAlias, level)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double level (in)

Specifies the voltage level, in volts.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUVoltageLevel

Table 39: ConfigurePMUVoltageLevel

ConfigurePMUVoltageLimit

Synopsis

long ConfigurePMUVoltageLimit (pinAlias, high_limit, low_limit)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double high_limit (in)

Specifies the voltage clamp level for High Clamp Range (VCH), in volts.

double low_limit (in)

Specifies the voltage clamp level for Low Clamp Range (VCL), in volts.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUVoltageLimit

Table 40: ConfigurePMUVoltageLimit

ConfigurePMUCurrentLevel

Synopsis

long ConfigurePMUCurrentLevel (pinAlias, level)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double level (in)

Specifies the current level, in amps.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUCurrentLevel

Table 41: ConfigurePMUCurrentLevel

ConfigurePMUCurrentLevelAndRange

Synopsis

long ConfigurePMUCurrentLevelAndRange (pinAlias, level, range)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double level (in)

Specifies the current level, in amps.

double range (in)

Specifies the current range, in amps.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUCurrentLevelAndRange

Table 42: ConfigurePMUCurrentLevelAndRange

ConfigurePMUCurrentLimitRange

Synopsis

long ConfigurePMUCurrentLimitRange (pinAlias, range)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double range (in)

Specifies the current limit range, in amps.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUCurrentLimitRange

Table 43: ConfigurePMUCurrentLimitRange

GetPMUVoltageLevelRange

Synopsis

long GetPMUVoltageLevelRange (pinAlias, range)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double % range (out)

Returns the range of the voltage level, in volts.

Core Library Function Mapping

DM	Function
DM482e	DM482e_GetPMUVoltageLevelRange

Table 44: GetPMUVoltageLevelRange

GetPMUVoltageLimitRange

Synopsis

long GetPMUVoltageLimitRange (pinAlias, range)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double % range (out)

Returns the range of the voltage limit, in volts.

Core Library Function Mapping

DM	Function
DM482e	DM482e_GetPMUVoltageLimitRange

Table 45: GetPMUVoltageLimitRange

GetPMUCurrentLevelRange

Synopsis

long GetPMUCurrentLevelRange (pinAlias, range)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double % range (out)

Returns the range of the current level, in amps.

Core Library Function Mapping

DM	Function
DM482e	DM482e_GetPMUCurrentLevelRange

Table 46: GetPMUCurrentLevelRange

GetPMUCurrentLimitRange

Synopsis

long GetPMUCurrentLimitRange (pinAlias, range)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double % range (out)

Returns the range of the current limit, in amps.

Core Library Function Mapping

DM	Function
DM482e	DM482e_GetPMUCurrentLimitRange

Table 47: GetPMUCurrentLimitRange

ConfigurePMUOutputFunction

Synopsis

long ConfigurePMUOutputFunction (pinAlias, function)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int function (out)

Select DVCI or DICV mode.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUOutputFunction

Table 48: ConfigurePMUOutputFunction

ConfigurePMUSamplingTime

Synopsis

long ConfigurePMUSamplingTime (pinAlias, samplingTime, units)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

double samplingTime (in)

Specifies the sampling time.

int units (in)

Specifies the unit of the sampling time:

units	Description
0	Seconds
1	PLC

Table 49: Sampling Time Unit

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUSamplingTime

Table 50: ConfigurePMUSamplingTime

ConfigurePowerLineFrequency

Synopsis

long ConfigurePowerLineFrequency (moduleAlias, powerLineFrequency)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double powerLineFrequency (in)

Specifies the power line frequency.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePowerLineFrequency

Table 51: ConfigurePowerLineFrequency

ConfigurePMUSense

Synopsis

long ConfigurePMUSense (pinAlias, sense)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int sense (in)

Specifies local or remote sense operation.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigurePMUSense

Table 52: ConfigurePMUSense

GetPMUSense

Synopsis

long GetPMUSense (pinAlias, sense)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int % sense (out)

Returns the sense (local/remote) operation.

Core Library Function Mapping

DM	Function
DM482e	DM482e_GetPMUSense

Table 53: GetPMUSense

PMUMeasure

Synopsis

long PMUMeasure (pinAlias, measurementType, measurement)

Arguments

String ^ pinAlias (in)

Specifies the alias of the target pin.

int measurementType (in)

Specifies voltage or current measurement.

double % measurement (out)

Returns the measured result.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ PMUMeasure

Table 54: PMUMeasure

ConfigureTriggerEdgeLevel

Synopsis

long ConfigureTriggerEdgeLevel (moduleAlias, triggerEnum, option)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int triggerEnum (in)

Specifies the triggering source.

int option (in)

Specifies the triggering mode.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigureTriggerEdgeLevel

Table 55: ConfigureTriggerEdgeLevel

ConfigureTriggerEdgeLevel

Synopsis

long ConfigureTriggerEdgeLevel (moduleAlias, triggerEnum, option, ignoreTriggerCount)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int triggerEnum (in)

Specifies the triggering source.

triggerEnum	Description
0	Tristate line 0
1	PXI backplane trigger line 0
2	PXI backplane trigger line 1
3	PXI backplane trigger line 2
4	PXI backplane trigger line 3
5	PXI backplane trigger line 4
6	PXI backplane trigger line 5
7	PXI backplane trigger line 6
8	PXI backplane trigger line 7
9	PXI backplane PXI_LBL6 signal
10	PXI backplane PXI_LBR6 signal
11	PXI backplane star trigger line
19	Software trigger signal 0
20	Software trigger signal 1
28	Trigger marker 0
29	Trigger marker 1
30	Trigger marker 2
31	Trigger marker 3

Table 56: TriggerEnum

int option (in)

Specifies the edge of trigger.

option	Description
0	Pin will be triggered when rising edge is detected. This is the default mode
1	Pin will be triggered when falling edge is detected
2	Pin will be triggered when trigger signal is below a TTL logic level
3	Pin will be triggered when trigger signal exceeds logic level high

Table 57: option

Core Library Function Mapping

DM	Function
DM485e	DM485e_ConfigureTriggerEdgeLevel

Table 58: ConfigureTriggerEdgeLevel

MapTriggerInToTriggerOut

Synopsis

long MapTriggerInToTriggerOut (moduleAlias, inputTerminal, outputTerminal)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int inputTerminal (in)

Specifies the triggering line to be connected to outputTerminal.

int outputTerminal (in)

Specifies the triggering line to be connected to inputTerminal.

Core Library Function Mapping

DM	Function
DM482e	DM482e_MapTriggerInToTriggerOut

Table 59: MapTriggerInToTriggerOut

ConfigureInputTriggerSelect

Synopsis

long ConfigureInputTriggerSelect (moduleAlias, triggerInput)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int triggerInput (in)

Specifies the triggering source.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigureInputTriggerSelect

Table 60: ConfigureInputTriggerSelect

ConfigureInputTriggerSelect

Synopsis

long ConfigureInputTriggerSelect (moduleAlias, triggerInput, delay_s)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int triggerInput (in)

Specifies the triggering source, upon power-up nothing is selected for the triggerInput.

triggerInput	Description
0	Tristate line 0
1	PXI backplane trigger line 0
2	PXI backplane trigger line 1
3	PXI backplane trigger line 2
4	PXI backplane trigger line 3
5	PXI backplane trigger line 4
6	PXI backplane trigger line 5
7	PXI backplane trigger line 6
8	PXI backplane trigger line 7
9	PXI backplane PXI_LBL6 signal
10	PXI backplane PXI_LBR6 signal
11	PXI backplane star trigger line
19	Software trigger signal 0
20	Software trigger signal 1
28	Trigger marker 0
29	Trigger marker 1
30	Trigger marker 2
31	Trigger marker 3

Table 61: TriggerInput

double delay_s(in)

Specifies delay seconds for trigger.

0⩽ delay_s ⩽ 0.05s

Core Library Function Mapping

DM	Function
DM485e	DM485e_ConfigureInputTriggerSelect

Table 62: ConfigureInputTriggerSelect

ConfigureOutputTriggerSelect

Synopsis

long ConfigureOutputTriggerSelect (moduleAlias, triggerOutput0, triggerOutput1)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int triggerOutput0 (in)

Specifies the triggering output signal.

int triggerOutput1 (in)

Specifies the triggering output signal.

Core Library Function Mapping

DM	Function
DM482e	DM482e_ConfigureInputTriggerSelect

Table 63: ConfigureInputTriggerSelect

DriveSoftwareTrigger

Synopsis

long DriveSoftwareTrigger (moduleAlias, select, pulseWidth)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int select (in)

Specifies the software trigger line.

double pulseWidth (in)

Specifies the pulse width of the trigger signal, in seconds.

Note: For DM485e, this is a reserved argument, set it to '0'.

Core Library Function Mapping

DM	Function
DM485e	DM485e_DriveSoftwareTrigger
DM482e	DM482e_DriveSoftwareTrigger

Table 64: DriverSoftwareTrigger

MIPI_ConfigureClock

Synopsis

long MIPI_ConfigureClock(moduleAlias, freqHz);

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int freqHz (in)

Specifies the frequency of the MIPI operation.

Core Library Function Mapping

DM	Function
DM280e	DM280e_CONFIGURE_MIPI_CLOCK

Table 65: MIPI_ConfigureClock

MIPI_ConfigureClock

Synopsis

long MIPI_ConfigureClock (moduleAlias, mipi_pair, freqHz)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mipi_pair (in)

Specifies the MIPI controller set number.

mipi_pair	Remark	Pin Number	Function
0	Available for dpingroup 1 & 3 only	0	SCLK0
		1	SDATA0
		2	VIO0
1	Available for dpingroup 1 & 3 only	3	VIO1
		4	SCLK1
		5	SDATA1
2	Available for dpingroup 2 & 3 only	6	SCLK2
		7	SDATA2
		8	VIO2
3	Available for dpingroup 2 & 3 only	9	VIO3
		10	SCLK3
		11	SDATA3

Table 66: MIPI pair

int freqHz (in)

Specifies the frequency of the full-speed clock.

DM	Function
DM482e	DM482e_MIPI_Configure_Clock

Table 67: MIPI_ConfigureClock

MIPI_Connect

Synopsis

long MIPI_Connect (moduleAlias, mipi_pair, setting)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mipi_pair (in)

Specifies the MIPI controller set number.

mipi_pair	Remark	Pin Number	Function
0	Available for dpingroup 1 & 3 only	0	SCLK0
		1	SDATA0
		2	VIO0
1	Available for dpingroup 1 & 3 only	3	VIO1
		4	SCLK1
		5	SDATA1
2	Available for dpingroup 2 & 3 only	6	SCLK2
		7	SDATA2
		8	VIO2
3	Available for dpingroup 2 & 3 only	9	VIO3
		10	SCLK3
		11	SDATA3

Table 68: MIPI pair

int setting (in)

Enable or disable MIPI operations.

DM	Function
DM482e	DM482e_MIPI_Connect

Table 69: MIPI_Connect

MIPI_ConfigureLoopback

Synopsis

long MIPI_ConfigureLoopback(pinAlias, loopback)

Arguments

String ^ pinAlias (in)

Specifies the alias of the selected channel.

Int loopback(in)

Specifies whether to enable [1] to disable [0] loopback.

If it is enable [1], the selected channel will act as MIPI Master, the other will be as MIPI Slave.

Core Library Function Mapping

DM	Function
DM280e	DM280e_CONFIGURE_LOOPBACK

Table 70: MIPI_ConfigureLoopback

MIPI_ConfigureDelay

Synopsis

long MIPI_ConfigureDelay(pinAlias, delay)

Arguments

String ^ pinAlias (in)

Specifies the alias of the selected channel.

int delay (in)

Specifies the delay inserted before data sampling during read operation starts, in terms of the number of resolution of 1/2f.

Core Library Function Mapping

DM	Function
DM280e	DM280e_CONFIGURE_MIPI_DELAY

Table 71: MIPI_ConfigureDelay

MIPI_ConfigureDelay

Synopsis

long MIPI_ConfigureDelay(moduleAlias, mipi_pair, delay)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mipi_pair (in)

Specifies the MIPI controller set number.

mipi_pair	Remark	Pin Number	Function
0	Available for dpingroup 1 & 3 only	0	SCLK0
		1	SDATA0
		2	VIO0
1	Available for dpingroup 1 & 3 only	3	VIO1
		4	SCLK1
		5	SDATA1
2	Available for dpingroup 2 & 3 only	6	SCLK2
		7	SDATA2
		8	VIO2
3	Available for dpingroup 2 & 3 only	9	VIO3
		10	SCLK3
		11	SDATA3

Table 72: MIPI pair

int delay (in)

Specifies the delay inserted before data sampling during read operation starts, in terms of the number of resolution of 1/2f.

DM	Function
DM482e	DM482e_MIPI_ConfigureInputDelay

Table 73: MIPI_ConfigureDelay

MIPI_ConfigureVoltageSupply

Synopsis

long MIPI_ConfigureVoltageSupply(moduleAlias, targetVio, actualVio)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double targetVio (in)

Specifies the targeted VIO.

double % actualVio (out)

Returns the actual VIO.

Core Library Function Mapping

DM	Function
DM280e	DM280e_CONFIGURE_VOLTAGE_SUPPLY

Table 74: MIPI_ConfigureVoltageSupply

MIPI_ConfigureBPC

Synopsis

long MIPI_ConfigureBPC (moduleAlias, BPC)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int BPC (in)

Specifies the BPC delay inserted each command or data frame involving changing of bus ownership, in terms of the number of full speed clock cycles.

Core Library Function Mapping

DM	Function
DM280e	DM280e_CONFIGURE_BPC

Table 75: MIPI_ConfigureBPC

MIPI_Write

Synopsis

long MIPI_Write(pinAlias, command, data)

Arguments

String ^ pinAlias (in)

Specifies the alias of the selected channel.

int command (in)

Specifies the command for the write operation.

array <int> ^ data (in)

Specifies the array of data to be written into the module.

Core Library Function Mapping

DM	Function
DM280e	DM280e_MIPI_RFFE_WR

Table 76: MIPI_Write

MIPI_Write

Synopsis

long MIPI_Write (moduleAlias, mipi_pair, Command, Data)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mipi_pair (in)

Specifies the MIPI controller set number.

mipi_pair	Remark	Pin Number	Function
0	Available for dpingroup 1 & 3 only	0	SCLK0
		1	SDATA0
		2	VIO0
1	Available for dpingroup 1 & 3 only	3	VIO1
		4	SCLK1
		5	SDATA1
2	Available for dpingroup 2 & 3 only	6	SCLK2
		7	SDATA2
		8	VIO2
3	Available for dpingroup 2 & 3 only	9	VIO3
		10	SCLK3
		11	SDATA3

Table 77: MIPI pair

int Command (in)

Specifies the command for the operation.

array <int> ^ Data (in)

Specifies a pointer to an array corresponding to each 8 bit data frame that will be written to the pin.

DM	Function
DM482e	DM482e_MIPI_RFFE_WR

Table 78: MIPI_Write

MIPI_Read

Synopsis

long MIPI_Read (pinAlias, speed, command, data)

Arguments

String ^ pinAlias (in)

Specifies the alias of the selected channel.

int speed (in)

Specifies the speed of reading. 0 = full-speed, 1 = half-speed.

int command (in)

Specifies the command for the read operation.

array <int> ^ data (in)

Specifies the data to be read from the module, which is usually an array of addresses.

Core Library Function Mapping

DM	Function
DM280e	DM280e_MIPI_RFFE_RD

Table 79: MIPI_Read

MIPI_Read

Synopsis

long MIPI_Read (moduleAlias, mipi_pair, speed, Command, Data)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mipi_pair (in)

Specifies the MIPI controller set number.

mipi_pair	Remark	Pin Number	Function
0	Available for dpingroup 1 & 3 only	0	SCLK0
		1	SDATA0
		2	VIO0
1	Available for dpingroup 1 & 3 only	3	VIO1
		4	SCLK1
		5	SDATA1
2	Available for dpingroup 2 & 3 only	6	SCLK2
		7	SDATA2
		8	VIO2
3	Available for dpingroup 2 & 3 only	9	VIO3
		10	SCLK3
		11	SDATA3

Table 80: MIPI pair

int speed (in)

Specifies the speed of reading.

1 = full speed, 0 = half speed.

int Command (in)

Specifies the command of read operation.

array <int> ^ Data (in)

The array of addresses that will be reading from the channel.

Core Library Function Mapping

DM	Function
DM482e	DM482e_MIPI_RFFE_RD

Table 81: MIPI_Read

MIPI_Retrieve

Synopsis

long MIPI_Retrieve(pinAlias, rd_byte_data_count, rd_data, parity_check)

Arguments

String ^ pinAlias (in)

Specifies the alias of the selected channel.

int % rd_byte_data_count (out)

Specifies the byte count of the data retrieved.

array <int> ^ rd_data (out)

Specifies the array of data retrieved from the module.

array <int> ^ parity_check (out)

Specifies the array of parity check data retrieved from the module.

2 => No response frame, 1 => Check failed, 0 => Check passed

Core Library Function Mapping

DM	Function
DM28oe	DM28oe_MIPI_RFFE_RETRIEVE

Table 82 : MIPI_Retrieve

MIPI_Retrieve

Synopsis

long MIPI_Retrieve (moduleAlias, mipi_pair, rd_byte_data_count, rd_data, parity_check)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int mipi_pair (in)

Specifies the MIPI controller set number.

mipi_pair	Remark	Pin Number	Function
0	Available for dpingroup 1 & 3 only	0	SCLK0
		1	SDATA0
		2	VIO0
1	Available for dpingroup 1 & 3 only	3	VIO1
		4	SCLK1
		5	SDATA1
2	Available for dpingroup 2 & 3 only	6	SCLK2
		7	SDATA2
		8	VIO2
3	Available for dpingroup 2 & 3 only	9	VIO3
		10	SCLK3
		11	SDATA3

Table 83: MIPI pair

int % rd_byte_data_count (out)

Specifies the number of bytes of data retrieved from the pin.

array <int> ^ rd_data (out)

Returns the array of data that retrieved from pin.

array <int> ^ parity_check (out)

Returns the array of parity_check corresponding to the array of rd_data that retrieved from the pin.

Core Library Function Mapping

DM	Function
DM482e	DM482e_MIPI_RFFE_Retrieve

Table 84: MIPI_Retrieve

Section 7: Power Measurement (DM485e)

StartPowerMeasurement

Synopsis

long StartPowerMeasurement (moduleAlias, sample_size, wait_input_trigger)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int sample_size (in)

Specifies the sample size.

sample_size ⩽ 60

int wait_input_trigger (in)

Specifies whether to wait for input trigger before start sampling.

wait_input_trigger	Description
0	Wait for input trigger or software trigger before start sampling
1	Start sampling after calling this API

Table 85: wait_input_trigger

Core Library Function Mapping

DM	Function
DM485e	DM485e_StartPowerMeasurement

Table 86 :StartPowerMeasurement

RetrievePowerMeasurement

Synopsis

long RetrievePowerMeasurement (moduleAlias, dBm)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double % dBm (out)

Returns power measurement in dBm.

Core Library Function Mapping

DM	Function
DM485e	DM485e_RetrievePowerMeasurement

Table 87: RetrievePowerMeasurement

RetrieveIQArray

Synopsis

long RetrieveIQArray (moduleAlias, arraySize, i, q)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

int array_size (in)

Specifies the array size of measurements.

array <int> ^ i (out)

Returns array of current measurements.

array <int> ^ q (out)

Returns array of power measurements.

Core Library Function Mapping

DM	Function
DM485e	DM485e_RetrieveIQArray

Table 88: RetrieveIQArray

StartIQClockFrequencyCounter

Synopsis

long StartIQClockFrequencyCounter (moduleAlias, meas_time_s)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double meas_time_s (in)

Activate the counter for the specified time.

Core Library Function Mapping

DM	Function
DM485e	DM485e_StartIQClockFrequencyCounter

Table 89: StartIQClockFrequencyCounter

RetrieveIQClockFrequencyCounter

Synopsis

long RetrieveIQClockFrequencyCounter (moduleAlias, meas_time_s, freq_Hz)

Arguments

String ^ moduleAlias (in)

Specifies the alias of the selected module.

double meas_time_s (in)

Activate the counter for the specified time.

int % freq_Hz (out)

Returns the clock rate.

Core Library Function Mapping

DM	Function
DM485e	DM485e_RetrieveIQClockFrequencyCounter

Table 90: RetrieveIQClockFrequencyCounter

Section 7: Error Message

The table below shows the error message specific to wrapper library.

Error Code (Hex)	Description
0xAE100100	Load_DLL_File_Error
0xAE100101	Load_DLL_Function_Error
0xAE050006	AEMHW_E_WRONG_MSG_SIZE
0xAE050007	AEMHW_E_API_NOT_IMPLEMENTED
0xAE050009	AEMHW_E_FIRMWARE_FILE_CHECKSUM_ERROR
0xAE05000A	AEMHW_E_FIRMWARE_FILESIZE_ERROR
0xAE05000B	AEMHW_E_WAIT4UNLOCK_TIMEOUT
0xAE090001	AEMPXIE_E_OPEN_FAIL
0xAE090002	AEMPXIE_E_DLL_NOT_FOUND
0xAE090003	AEMPXIE_E_API_NOT_FOUND
0xAE090004	AEMPXIE_E_INVALID_MULTI_SITE_MODE
0xAE040002	AEMVECTOR_SYNTAX_ERROR
0xAE040003	AEMVECTOR_FILE_CORRUPTED
0xAE040008	AEMVECTOR_NOT_FOUND
0xAE04000C	AEMVECTOR_INVALID_ARGUMENT
0xAE04000D	AEMVECTOR_INVALID_CH
0xAE04000E	AEMVECTOR_UNDEFINED_PIN
0xAE0B0001	AEMDM_E_INVALID_ARGUMENTS
0xAE0B0002	AEMDM_E_INVALID_CALIBRATION_ARGUMENTS
0xAE0B0003	AEMDM_E_UNDEFINED_VECTOR_SET
0xAE0B0004	AEMDM_E_CHANNEL_NOT_IN_PMU_STATE
0xAE0B0005	AEMDM_E_ADATE_TIMEOUT
0xAE0B0006	AEMDM_E_ADC_TIMEOUT
0xAE0B0007	AEMDM_E_DDS_TIMEOUT
0xAE0B0008	AEMDM_E_PATTERN_MEMORY_TIMEOUT
0xAE0B0009	AEMDM_E_HISTORY_RAM_TIMEOUT
0xAE0B000A	AEMDM_E_D2R_FAIL_CALIBRATION_STAGE1
0xAE0B000B	AEMDM_E_CAL_HEADER_NOT_FOUND
0xAE0B000C	AEMDM_E_CAL_SIZE_NOT_MATCH
0xAE0B000D	AEMDM_E_INVALID_CAL_ACCUM_COUNT
0xAE0B000E	AEMDM_E_INVALID_CAL_DATE
0xAE0B000F	AEMDM_E_VECTOR_ENGINE_BUSY

0xAE0B0010	AEMDM_E_EXCEED_VECTOR_MEMORY_LIMIT
0xAE0B0011	AEMDM_E_EXCEED_TOTAL_VECTOR_MEMORY_LIMIT
0xAE0B0012	AEMDM_E_DM482E_NOT_FOUND
0xAE0B0013	AEMDM_E_D2R_FAIL_CALIBRATION_STAGE2
0xAE0B0014	AEMDM_E_INPUT_DELAY_OUT_OF_RANGE
0xAE0B0015	AEMDM_E_EXCEED_PERIOD_LIMIT
0xAE0B0016	AEMDM_E_EXCEED_READ_VECTOR_LIMIT
0xAE0B0017	AEMDM_E_CHANNEL_NOT_IN_DIO_STATE
0xAE0B0018	AEMDM_E_INVALID_DIO_VALUE
0xAE0B0041	AEMDM_E_INVALID_CLK_FREQ
0xAE0B0042	AEMDM_E_INVALID_CH
0xAE0B0043	AEMDM_E_INVALID_MIPI_COMMAND
0xAE0B0044	AEMDM_E_INVALID_MIPI_DATA
0xAE0B0045	AEMDM_E_INVALID_MIPI_CONNECT
0xAE0B0046	AEMDM_E_INVALID_MIPI_SPEED
0xAE0B0047	AEMDM_E_MIPI_STATUS_TIMEOUT
0xAE0B0048	AEMDM_E_INVALID_MIPI_RDDATA_COUNT
0xAE0B0049	AEMDM_E_INVALID_MIPI_RDDATA

Table 91: Wrapper Library Error Code

Section 8: Revision History

1.0	DEC 2012	INITIAL RELEASE
1.1	JUN 2013	ADDED MIPI FUNCTIONS
1.2	AUG 2013	ADDED DM FUNCTIONS
1.3	AUG 2013	REVIEW READHISTRORYRAM FUNCTION ADDED MIPI_CONFIGURECLOCK MIPI_CONFIGURELOOPBACK MIPI_CONFIGUREVOLTAGESUPPLY MIPI_WRITE MIPI_READ MIPI_RETRIEVE

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