Modicon Edge I/O

Deployment User Guide For EcoStruxure Control Expert Classic

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

Document Scope

The document explains how to use Modicon Edge I/O with EcoStruxure Control Expert Classic, detailing software, hardware, and firmware prerequisites, as well as steps for offline and online configuration. It describes how to add and configure the device using the DTM Browser, assign IP addresses, manage modules, and store or load configurations. Guidance is provided on connecting to the device, using credentials, and accessing diagnostic tools. The document also lists related manuals and reference materials for deeper understanding of system components, network interfaces, and configuration procedures.

Validity Note

The information contained herein has been created for the release of EcoStruxure Control Expert Classic 16.4.

Product Related Information

⚠WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.[1]
- Test each implementation of a system for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

[1] For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The examples given herein are for information only.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

Adapt examples given herein to the specific functions and requirements of your industrial application before you implement them.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

General Cybersecurity Information

In recent years, the growing number of networked machines and production plants has seen a corresponding increase in the potential for cyber threats, such as unauthorized access, data breaches, and operational disruptions. You must, therefore, consider all possible cybersecurity measures to help protect assets and systems against such threats.

To help keep your Schneider Electric products secure and protected, it is in your best interest to implement the cybersecurity best practices as described in the Cybersecurity Best Practices document.

Schneider Electric provides additional information and assistance:

- Subscribe to the Schneider Electric security newsletter.
- Visit the Cybersecurity Support Portal web page to:
  - Find Security Notifications.
  - Report vulnerabilities and incidents.
- Visit the Schneider Electric Cybersecurity and Data Protection Posture web page to:
  - Access the cybersecurity posture.
  - Learn more about cybersecurity in the cybersecurity academy.
  - Explore the cybersecurity services from Schneider Electric.

Available Languages of the Document

The information contained herein is available in the following languages:

- English (EIO0000004841)

Product Related Cybersecurity Information

Refer to *Modicon Controller Platform Cybersecurity, User Guide*.

Related Documents

Title of documentation	Reference number
EcoStruxure™ Control Expert, Topology Manager, User Manual	EIO0000002756 (ENG) EIO0000004373 (CHS) EIO0000004371 (FRE) EIO0000004372 (GER) EIO0000004370 (ITA) EIO0000004369 (SPA)
Modicon M580, Hardware, Reference Manual	EIO0000001578 (ENG) EIO0000001579 (FRE) EIO0000001580 (GER) EIO0000001582 (ITA) EIO0000001581 (SPA) EIO0000001583 (CHS)
Modicon M580, Safety Manual	QGH46982 (ENG) QGH46983 (FRE) QGH46984 (GER) QGH46985 (ITA) QGH46986 (SPA) QGH46987 (CHS)
Modicon M580 BMENOC0301/11, Ethernet Communication Module, Installation and Configuration Guide	HRB62665 (ENG) HRB65311 (FRE) HRB65313 (GER) HRB65314 (ITA) HRB65315 (SPA) HRB65316 (CHS)
Modicon M580 BMENOC0302, High Performance Ethernet Communication Module, Installation and Configuration Guide	NNZ44174 (ENG) NNZ44175 (FRE) NNZ44176 (GER) NNZ44177 (ITA) NNZ44178 (SPA) NNZ44179 (CHS)
EcoStruxure™ Control Expert, Operating Modes	33003101 (ENG) 33003102 (FRE) 33003103 (GER) 33003104 (SPA) 33003696 (ITA) 33003697 (CHS)
EcoStruxure™ Control Expert, I/O Management, Block Library	33002531 (ENG) 33002532 (FRE) 33002533 (GER) 33003684 (ITA) 33002534 (SPA) 33003685 (CHS)
EcoStruxure™ Control Expert Guidelines	EIO0000004875 (ENG) EIO0000004876 (FRE) EIO0000004877 (GER) EIO0000004878 (ITA) EIO0000004879 (SPA) EIO0000004880 (CHS)
EcoStruxure™ Control Expert, Security Editor, Operation Guide	EIO0000004105 (ENG) EIO0000004106 (FRE) EIO0000004107 (GER) EIO0000004108 (ITA) EIO0000004109 (SPA) EIO0000004110 (CHS)
EcoStruxure™ Control Expert, Installation Manual	35014793 (ENG) 35014792 (FRE) 35014794 (GER) 35014795 (SPA) 35014796 (ITA) 35012191 (CHS)
Modicon Edge I/O, System Planning and Installation User Guide	EIO0000004786 (ENG)
Modicon Edge I/O, Configurator and Web Interface User Guide	EIO0000004810 (ENG)
Modicon Edge I/O, Software Integration and Compatibility User Guide	EIO0000004818 (ENG)
Modicon Edge I/O, Network Interface User Guide	EIO0000004794 (ENG)

NOTE: After clicking one of the above download links, you may need to select your country before you can download the document.

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in the information contained herein, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives, and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2023	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2021	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2021	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the information contained herein may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term *zone of operation* may be used in conjunction with the description of specific hazards, and is defined as it is for a hazard zone or danger zone in the Machinery Directive (2006/42/EC) and ISO 12100:2010.

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

Understanding EcoStruxure Control Expert Classic

EcoStruxure Control Expert Classic Overview

For detailed information about EcoStruxure Control Expert Classic, refer to:

- *Description of the DTM Hardware Catalog* (see *EcoStruxure Control Expert Operation Modes Guide*).
- Access *Security Management* and *Security Editor* (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*).

System Requirements

Before using EcoStruxure Control Expert Classic, ensure that software, hardware and firmware settings meet the required specifications.

For more information, refer to *System and Installation Requirements* (see *EcoStruxure Control Expert Installation Manual*).

Using EcoStruxure Control Expert Classic

To configure and deploy a project in EcoStruxure Control Expert Classic, refer to *Build a Project* (see *EcoStruxure Control Expert Guidelines*).

Understanding Modicon Edge I/O

Modicon Edge I/O Overview

For detailed information about Modicon Edge I/O, refer to the sections below in the *Modicon Edge I/O System Planning and Installation Guide*:

- Modicon Edge I/O System
- Modicon Edge I/O Network Interface Module (NIM)
- Modicon Edge I/O NTS Modules
- Modicon Edge I/O Network Structure
- Modicon Edge I/O Power Supply

System Requirements

Before using the Modicon Edge I/O configurator, ensure that software and hardware settings meet the required specifications.

Refer to System Requirements in the Modicon Edge I/O Configurator and Web Interface - User Guide.

Using Modicon Edge I/O

To configure and deploy Modicon Edge I/O, refer to Getting Started in the Modicon Edge I/O Configurator and Web Interface - User Guide.

Modicon Edge I/O NTS Compatible Modules

Modicon Edge I/O NTS Discrete Modules

The range of Modicon Edge I/O NTS discrete modules includes:

- Discrete input modules
- Discrete output modules

The following table lists the discrete modules of Modicon Edge I/O NTS compatible with EcoStruxure Control Expert Classic:

Module Types	References
Discrete input modules	NTSDAI0215H
	NTSDAI0403H
	NTSDAI0404H
	NTSDAI0804
Discrete output modules	NTSDAO0205
	NTSDAO0415 / NTSDAO0415H
	NTSDDI0402 / NTSDDI0402H
	NTSDDI1642
	NTSDDO0402 / NTSDDO0402H
	NTSDDO0602
	NTSDDO1602
	NTSDDO1602X / NTSDDO1602XH
	NTSDDO1602XA / NTSDDO1602XAH
	NTSDRC0215
	NTSDRC0415 / NTSDRC0415H

Modicon Edge I/O NTS Analog Modules

The range of Modicon Edge I/O NTS analog modules includes:

- Analog input modules
- Analog output modules
- Analog input/output modules
- Temperature input modules

The following table lists the analog modules of Modicon Edge I/O NTS compatible with EcoStruxure Control Expert Classic:

Module Types	References
Analog input modules	NTSAHI0412XH
	NTSAMI0420
	NTSAMI0800
Analog output modules	NTSAHO0212H
	NTSAMO0210 / NTSAMO0210H
Analog input/output modules	NTSAMM0600
Temperature input modules	NTSART0214 / NTSART0214H
	NTSART0404
	NTSART0404XH
	NTSART0603

Modicon Edge I/O NTS Counting Modules

The range of Modicon Edge I/O NTS counting modules includes:

- Counting input modules
- Counting input/output modules

The following table lists the counting modules of Modicon Edge I/O NTS compatible with EcoStruxure Control Expert Classic:

Module Types	References
Counting input modules	NTSEHC0100
Counting input/output modules	NTSEHC0120H
	NTSEHC0220

Modicon Edge I/O NTS Field Device Master Modules

The range of Modicon Edge I/O NTS field device master modules includes:

- IO-Link field device master modules
- Serial line field device master modules

The following table lists the field device master modules of Modicon Edge I/O NTS compatible with EcoStruxure Control Expert Classic:

Module Types	References
IO-Link field device master modules	NTSFIO0400
Serial Line field device master modules	NTSFMB0120 / NTSFMB0120H

Modicon Edge I/O NTS Function Blocks

Overview

For detailed information about Modicon Edge I/O NTS function blocks, refer to the *Modicon Edge I/O NTS* chapter in *EcoStruxure™ Control Expert, I/O Management, Block Library*.

Structure of Device DDT Instances in Modicon Edge I/O NTS

Introduction

As part of the Modicon Edge I/O NTS configuration, each module has its own Device DDT (Data Description Type) instance.

The instance naming convention generally follows the format *IslandName_ cXXmYY*, where:

- *IslandName* is the name of the Modicon Edge I/O NTS island defined by the user in EcoStruxure Control Expert (IO variable name in the DTM Master).
- *cXXmYY* is the name assigned to the module using the Modicon Edge I/O NTS Configurator tool, where *XX* is the cluster number and *YY* is the module number.

Predefined Device DDT Instances

T_NTS_NEC

The characteristics of T_NTS_NEC / T_NTS_NEC_16 are:

- T_NTS_NEC: Modicon M580 configurations with 1 to 8 Ethernet connections.
- T_NTS_NEC_16: Modicon M580 configurations with up to 16 Ethernet connections.

The Device DDT:

- includes upper-level diagnostics for the island
- includes Ethernet connection health (input connections only, per DTM behavior)
- excludes the status of Module Receivers (Bus Extenders)

The table below describes the structure of the T_NTS_NEC Device DDT.

Subfield composition	Device Type	Comment	I/O Object
-	-	NIM process data	-
Freshness	BOOL	Global freshness (all connexions)	MyEdge_NEC.Freshness
Freshness_1	BOOL	Freshness of object number 1 (first input connexion)	MyEdge_NEC.Freshness_1
Freshness_2	BOOL	Freshness of object number 2 (if used)	MyEdge_NEC.Freshness_2
Freshness_3	BOOL	Freshness of object number 3 (if used)	MyEdge_NEC.Freshness_3
Freshness_4	BOOL	Freshness of object number 4 (if used)	MyEdge_NEC.Freshness_4
Freshness_5	BOOL	Freshness of object number 5 (if used)	MyEdge_NEC.Freshness_5
Freshness_6	BOOL	Freshness of object number 6 (if used)	MyEdge_NEC.Freshness_6
Freshness_7	BOOL	Freshness of object number 7 (if used)	MyEdge_NEC.Freshness_7
Freshness_8	BOOL	Freshness of object number 8 (if used)	MyEdge_NEC.Freshness_8
Cluster_Status[1]	DWORD	Status of Cluster (1bit/cluster)	MyEdge_NEC.Cluster_Status
NIM_GCS[2]	BYTE	Group Cyclic Status of the NEC	MyEdge_NEC.NIM_GCS
GCS_DataQuality	Extracted Bit	Data Quality (dataset validity)	MyEdge_NEC.GCS_DataQuality
GCS_GeneralModuleStatus	Extracted Bit	General Module Status	MyEdge_NEC.GCS_ GeneralModuleStatus
GCS_IOStatus	Extracted Bit	I/O Status	MyEdge_NEC.GCS_IOStatus
GCS_ReceiveStatus	Extracted Bit	Receive Status	MyEdge_NEC.GCS_ReceiveStatus
GCS_OutputStatus	Extracted Bit	Output Status	MyEdge_NEC.GCS_OutputStatus
GCS_WarningStatus	Extracted Bit	Alert Status	MyEdge_NEC.GCS_WarningStatus
GCS_Reserved	Extracted Bit	-	-
GCS_DataFreshness	Extracted Bit	Data Freshness	MyEdge_NEC.GCS_DataFreshness
Island_Command[3]	WORD	Island command	MyEdge_NEC.Island_Command
ApplyOutput	Extracted Bit	Apply the outputs	MyEdge_NEC.ApplyOutput

[1] Input. Corresponding description in Modicon Edge I/O editor: Cluster_Status

[2] Input. Corresponding description in Modicon Edge I/O editor: NIM_GCS

[3] Output. Corresponding description in Modicon Edge I/O editor: Island_Command

T_NTS_DIS_IN / T_NTS_DIS_OUT

T_NTS_DIS_IN

The table below describes the structure of the T_NTS_DIS_IN_ChNb Device DDT, where the Channel Number (ChNb) can be 2, 4, 6, 8, or 16.

Sub-level 1 composition **Structure or subfield**	**Sub-level 2 composition** **Structure or subfield**	**Device Type**	**Comment**	**I/O Object**
-	-	-	Discrete input process data	-
GCS[1]	-	BYTE	Group Cyclic Status	MyEdge_c00m01.GCS
DIS_CH_IN	-	Array[0.. ChNb-1] of T_NTS_DIS_IN	Discrete input channel	-
-	IValue[2]	EBOOL	Discrete input value	MyEdge_c00m01.DIS_CH_IN[i].IValue
-	Channel-Health[3]	BOOL	Channel health	MyEdge_c00m01.DIS_CH_IN[i].ChannelHealth
-	Latch-Ack[4]	BOOL	Acknowledge input latch flag (NTSDDI•••• and NTSDAI0403H)	MyEdge_c00m01.DIS_CH_IN[i].LatchAck

[1] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_GCS

[2] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_IValue0_7 / ModuleName_IValue8_15

[3] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_ChannelHealth0_7 / ModuleName_ChannelHealth8_15

[4] Output. Corresponding description in Modicon Edge I/O editor: ModuleName_LatchAck0_7 / ModuleName_LatchAck8_15

i: Channel index (from 0 to ChNb-1)

T_NTS_DIS_OUT

The table below describes the structure of the T_NTS_DIS_OUT_ChNb Device DDT, where the Channel Number (ChNb) can be 2, 4, 6, 8, or 16.

Sub-level 1 composition **Structure or subfield**	**Sub-level 2 composition** **Structure or subfield**	**Device Type**	**Comment**	**I/O Object**
-	-	-	Discrete output process data	-
GCS[1]	-	BYTE	Group Cyclic Status	MyEdge_c00m02.GCS
DIS_CH_OUT	-	Array[0.. ChNb-1] of T_NTS_DIS_OUT	Discrete output channel	-
-	QValue[2]	EBOOL	Discrete output value	MyEdge_c00m02.DIS_CH_OUT[i].QValue
-	Channel-Health[3]	BOOL	Channel health (except NTSDAO0415)	MyEdge_c00m02.DIS_CH_OUT[i].ChannelHealth
-	QBackValue[4]	BOOL	NTSDDO0402: Read back discrete output value	MyEdge_c00m02.DIS_CH_OUT[i].QBackValue
RearmOutputCmd[5]	-	BOOL	NTSDDO••••: Re-arm all outputs (manual mode)	MyEdge_c00m02.RearmOutputCmd

[1] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_GCS

[2] Output. Corresponding description in Modicon Edge I/O editor: ModuleName_QValue0_7 / ModuleName_QValue8_15

[3] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_ChannelHealth0_7 / ModuleName_ChannelHealth8_15

[4] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_QBackValue0_7 / ModuleName_QBackValue8_15

[5] Output. Corresponding description in Modicon Edge I/O editor: ModuleName_RearmOutputCmd

i: Channel index (from 0 to ChNb-1)

T_NTS_DIS_IN_ChNb_DIAG

The following table describes the structure of the T_NTS_DIS_IN_ChNb_DIAG Device DDT, where the Channel Number (ChNb) can be 2, 4, 6, 8, or 16.

Sub-level 1 composition Structure or subfield	Sub-level 2 composition Structure or subfield	Device Type	Comment	I/O Object
-	-	-	Discrete input process data	-
GCS[1]	-	BYTE	Group Cyclic Status	MyEdge_c00m01.GCS
DIS_CH_IN	-	Array[0.. ChNb-1] of T_NTS_DIS_IN	Discrete input channel	-
-	IValue[2]	EBOOL	Discrete input value	MyEdge_c00m01.DIS_CH_IN[i].IValue
-	Channel-Health[3]	BOOL	Channel health	MyEdge_c00m01.DIS_CH_IN[i].ChannelHealth
-	LatchAck[4]	BOOL	Acknowledge input latch flag (NTSDDI•••• and NTSDAI0403H)	MyEdge_c00m01.DIS_CH_IN[i].LatchAck
ChannelFault[5]	-	Array[0.. ChNb-1] of BYTE	Channel alert	MyEdge_c00m01.ChannelFault[i]

[1] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_GCS

[2] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_IValue0_7 / ModuleName_IValue8_15

[3] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_ChannelHealth0_7 / ModuleName_ChannelHealth8_15

[4] Output. Corresponding description in Modicon Edge I/O editor: ModuleName_LatchAck0_7 / ModuleName_LatchAck8_15

[5] Input.

i: Channel index (from 0 to ChNb-1)

T_NTS_ANA_IN / T_NTS_ANA_OUT

T_NTS_ANA_IN

The table below describes the structure of the T_NTS_ANA_IN_ChNb Device DDT, where the Channel Number (ChNb) can be 1, 2, 4, 6 or 8.

Sub-level 1 composition	Sub-level 2 composition	Sub-level 3 composition	Device Type	Comment	I/O Object
-	-	-	-	Analog input process data	-
GCS[1]	-	-	BYTE	Group Cyclic Status	MyEdge_SliceName.GCS
ANA_IN	-	-	Array[0.. ChNb-1] of ANA_CH_IN	Analog input channel	-
-	ANA	-	T_NTS_ANA_VALUE_IN	Analog input	-
-	-	IValue[2]	INT	Analog input value (used in application)	MyEdge_SliceName.ANA_IN[i].ANA.IValue
-	-	FORCED_VALUE	INT	Forced value	MyEdge_SliceName.ANA_IN[i].ANA.FORCED_Value
-	-	FORCED_CMD	BOOL	Force / unforce the value	MyEdge_SliceName.ANA_IN[i].ANA.FORCED_CMD
-	-	FORCED_STATE	BOOL	Forced status	MyEdge_SliceName.ANA_IN[i].ANA.FORCED_STATE
-	-	TRUE_VALUE	INT	Untreated analog input value (on the module)	MyEdge_SliceName.ANA_IN[i].ANA.TRUE_VALUE
-	Channel-Health[3]	-	BOOL	Channel health	MyEdge_SliceName.ANA_IN[i].ChannelHealth

[1] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_GCS

[2] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_Channel_i_IValue

[3] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_ChannelHealth0_7

i = Channel index (from 0 to ChNb-1)

T_NTS_ANA_OUT

The table below describes the structure of the T_NTS_ANA_OUT_ChNb Device DDT, where the Channel Number (ChNb) can be 1, 2, 4, 6 or 8.

Sub-level 1 composition	Sub-level 2 composition	Sub-level 3 composition	Device Type	Comment	I/O Object
-	-	-	-	Analog output process data	-
GCS[1]	-	-	BYTE	Group Cyclic Status	MyEdge_ SliceName.GCS
ANA_OUT	-	-	Array[0.. ChNb-1] of ANA_CH_OUT	Analog output channel	-
-	ANA	-	T_NTS_ANA_ VALUE_OUT	Analog output	-
-	-	QValue[2]	INT	Analog output value (used in application)	MyEdge_ SliceName.ANA_ OUT[i].ANA.QValue
-	-	FORCED_VALUE	INT	Forced value	MyEdge_ SliceName.ANA_ OUT[i].ANA. FORCED_Value
-	-	FORCED_CMD	BOOL	Force / unforce the value	MyEdge_ SliceName.ANA_ OUT[i].ANA. FORCED_CMD
-	-	FORCED_STATE	BOOL	Forced status	MyEdge_ SliceName.ANA_ OUT[i].ANA. FORCED_STATE
-	-	TRUE_VALUE	INT	Untreated analog output value (on the module)	MyEdge_ SliceName.ANA_ OUT[i].ANA.TRUE_ VALUE
-	Channel-Health[3]	-	BOOL	Channel health	MyEdge_ SliceName.ANA_ OUT[i]. ChannelHealth

[1] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_GCS

[2] Output. Corresponding description in Modicon Edge I/O editor: ModuleName_Channel_i_QValue

[3] Input. Corresponding description in Modicon Edge I/O editor: ModuleName_ChannelHealth0_7

i = Channel index (from 0 to ChNb-1)

T_NTS_AHI

The table below describes the structure of the T_NTS_AHI_4 Device DDT.

Sub-level 1 composition	Sub-level 2 composition	Device Type	Comment	I/O Object	Corresponding description in Modicon Edge I/O editor
-	-	-	Analog HART inputs/outputs process data	-	-
GCS[1]	-	BYTE	Group Cyclic Status	MyEdge_c00m04.GCS	ModuleName_GCS
AHI_CH	-	Array [0..3] of T_NTS_AHI_CH	Analog HART input channel	-	-
-	IValue[1]	INT	-	MyEdge_c00m04.AHI_CH[i].IValue	ModuleName_Channel_i_IValue
-	InstrumentStatus[1]	UINT	-	MyEdge_c00m04.AHI_CH[i].InstrumentStatus	ModuleName_Channel_i_InstrumentStatus
-	ChannelStatus[1]	BYTE	-	MyEdge_c00m04.AHI_CH[i].ChannelStatus	ModuleName_Channel_i_ChannelStatus
-	PrimaryVariable[1]	REAL	-	MyEdge_c00m04.AHI_CH[i].PrimaryVariable	ModuleName_Channel_i_PrimaryVariable
-	SecondaryVariable[1]	REAL	-	-	ModuleName_Channel_i_SecondaryVariable
-	TertiaryVariable[1]	REAL	-	-	ModuleName_Channel_i_TertiaryVariable
-	QuaternaryVariable[1]	REAL	-	-	ModuleName_Channel_i_QuaternaryVariable
-	CurrentValue[1]	REAL	-	-	ModuleName_Channel_i_CurrentValue
-	PercentValue[1]	REAL	-	-	ModuleName_Channel_i_PercentValue
	ChannelHealth[1]	BOOL	-	MyEdge_c00m04.AHI_CH[i].ChannelHealth	ModuleName_ChannelHealth0_7

[1] Input

i = Channel index (from 0 to ChNb-1)

T_NTS_AHO

The table below describes the structure of the T_NTS_AHO_2 Device DDT.

Sub-level 1 composition	Sub-level 2 composition	Device Type	Comment	I/O Object	Corresponding description in Modicon Edge I/O editor
-	-	-	Analog HART inputs/outputs process data	-	-
GCS[1]	-	BYTE	Group Cyclic Status	MyEdge_c00m04.GCS	ModuleName_GCS
AHO_CH	-	Array [0..3] of T_NTS_AHO_CH	Analog HART output channel	-	-
-	QValue[2]	INT	-	MyEdge_c00m04.AHO_CH[i].QValue	ModuleName_Channel_i_QValue
-	QBackValue[2]	INT	-	MyEdge_c00m04.AHO_CH[i].QBackValue	ModuleName_Channel_i_QBackValue
-	InstrumentStatus[1]	UINT	-	MyEdge_c00m04.AHO_CH[i].InstrumentStatus	ModuleName_Channel_i_InstrumentStatus
-	ChannelStatus[1]	BYTE	-	MyEdge_c00m04.AHO_CH[i].ChannelStatus	ModuleName_Channel_i_ChannelStatus
-	PrimaryVariable[1]	REAL	-	MyEdge_c00m04.AHO_CH[i].PrimaryVariable	ModuleName_Channel_i_PrimaryVariable
-	SecondaryVariable[1]	REAL	-	-	ModuleName_Channel_i_SecondaryVariable
-	TertiaryVariable[1]	REAL	-	-	ModuleName_Channel_i_TertiaryVariable
-	QuaternaryVariable[1]	REAL	-	-	ModuleName_Channel_i_QuaternaryVariable
-	CurrentValue[1]	REAL	-	-	ModuleName_Channel_i_CurrentValue
-	PercentValue[1]	REAL	-	-	ModuleName_Channel_i_PercentValue
-	ChannelHealth[1]	BOOL	-	MyEdge_c00m04.AHO_CH[i].ChannelHealth	ModuleName_ChannelHealth0_7

[1] Input

[2] Output

i: Channel index (from 0 to ChNb-1)

Structure of Device DDT Instances in Modicon Edge I/O NTS

Introduction

As part of the Modicon Edge I/O NTS configuration, each module has its own Device DDT (Data Description Type) instance.

The instance naming convention generally follows the format *IslandName_cXXmYY*, where:

- *IslandName* is the name of the Modicon Edge I/O NTS island defined by the user in EcoStruxure Control Expert (IO variable name in the DTM Master).
- *cXXmYY* is the name assigned to the module using the Modicon Edge I/O NTS Configurator tool, where *XX* is the cluster number and *YY* is the module number.

Dynamic Substructures for Field Device Master Modules (FDM)

Overview

Field Device Master (FDM) modules use configuration files (.IODD) to define the process data structure of each channel. This information is interpreted by the Modicon Edge I/O NTS Configurator tool, allowing the system to generate a dynamic structured type for each channel of a Field Device Master module.

In EcoStruxure Control Expert Classic, the variables I_ProcessData and Q_ ProcessData are defined using these newly generated types.

NOTE: To ensure consistency, any modification that affects the size of the process data is supported only in offline mode.

Modicon Edge I/O Deployment In EcoStruxure Control Expert Classic

Overview

Modicon Edge I/O can be integrated with EcoStruxure Control Expert Classic.

This chapter allows you to:

- Verify System Requirements, page 23.
- Configure Modicon Edge I/O offline, refer to Offline Procedures, page 23.
- Finalize, test, and download configurations, refer to Online Procedures, page 26.

Requirements

Components and Requirements

The following table provides an overview of the requirements.

Components	Requirements
Software	• EcoStruxure Control Expert Classic Refer to *System and Installation Requirements* (see *EcoStruxure™ Control Expert, Installation Manual*). • Modicon Edge I/O DTM Modicon Edge I/O DTM is installed by default in EcoStruxure Control Expert Classic. To add more DTMs, refer to *Adding a DTM to the Control Expert Hardware Catalog* (see *EcoStruxure™ Control Expert, Operating Modes*).
Hardware	• Modicon M580 controller with an available Ethernet port Refer to *Ethernet Ports* (see *Modicon M580, Hardware, Reference Manual*). • Modicon Edge I/O NTS network interface modules Refer to *Modicon Edge I/O NTS, Network Interface Modules User Guide*. • Modicon Edge I/O NTS modules Refer to *Modicon Edge I/O NTS Modules* in the *Modicon Edge I/O System Planning and Installation Guide*. • Modicon Edge I/O power supply Refer to *Modicon Edge I/O NTS Power Supply* in the *Modicon Edge I/O System Planning and Installation Guide*.
Firmware	• Modicon M580 V4.50 • Modicon Edge I/O NTS (refer to Modicon Edge I/O, Software Integration and Compatibility User Guide for information on Modicon Edge I/O NTS modules firmware).

Offline Configuration

Introduction

Before deploying Modicon Edge I/O, it must be configured offline in EcoStruxure Control Expert Classic, by adding it to a new project and configuring it in the **DTM Browser.**

Creating a Modicon Edge I/O Project

To integrate the Modicon Edge I/O device in EcoStruxure Control Expert Classic, refer to *Services in Offline Mode* (see *EcoStruxure™ Control Expert, Operating Modes Guide*).

Assigning an IP Address to Modicon M580 and Modicon Edge I/O

To select a configuration mode or edit IP address settings,

- For Modicon M580, refer to *TCP/IP Properties* (see *Modicon M580 BMENOC0321, Control Network Module, Installation and Configuration Guide*)
- For Modicon Edge I/O, refer to *Rotary Switch* in the *Modicon Edge I/O NTS Network Interface Modules - User Guide*.

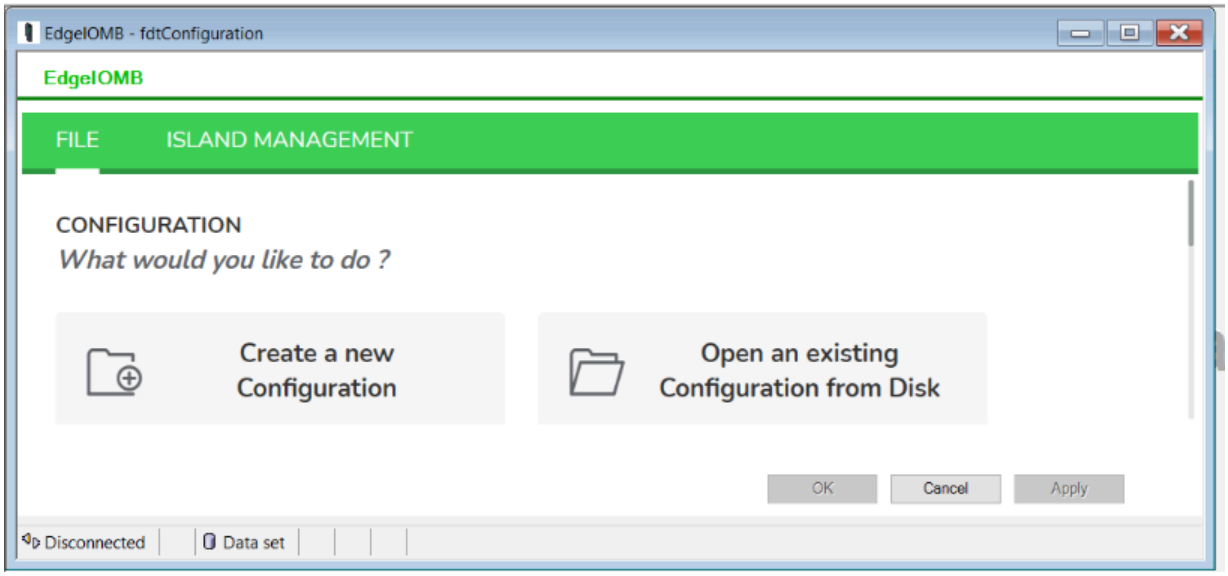
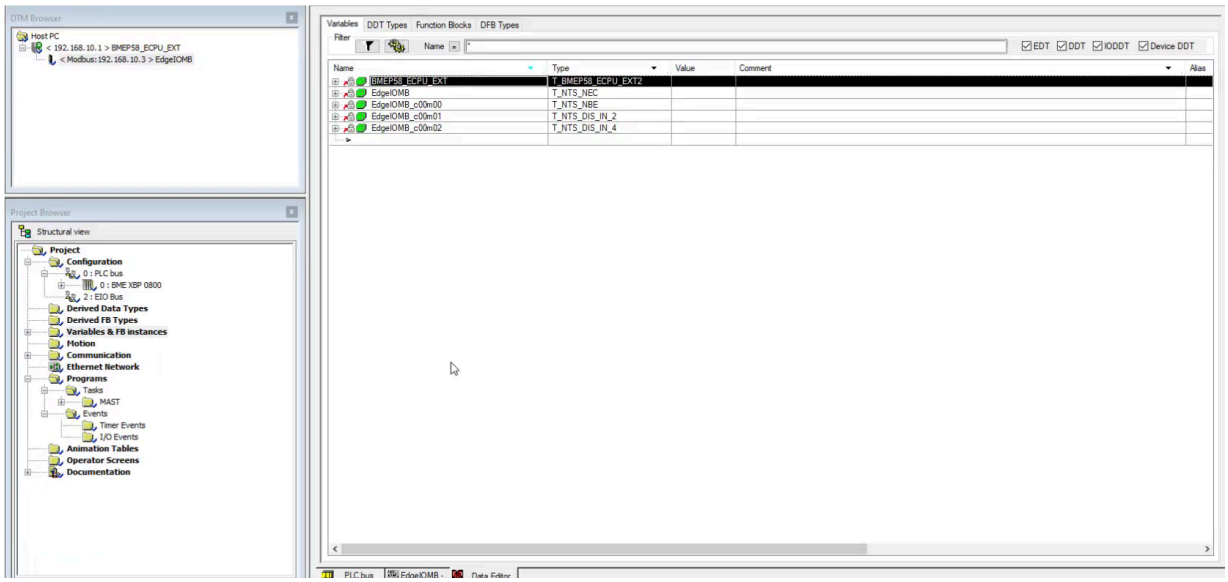
Adding Modicon Edge I/O DTM

To manually add Modicon Edge I/O DTM to a Modicon M580 controller, refer to *Adding a DTM to the Control Expert Hardware Catalog* (see *EcoStruxure™ Control Expert, Operating Modes*).

Configuring Modicon Edge I/O DTM in the DTM Browser

Once the Modicon Edge I/O DTM is added to the project and it is assigned an IP address, it must be configured in the **DTM Browser**.

Follow the procedure below to configure Modicon Edge I/O in the **DTM Browser**.

Step	Action
1	In the **DTM Browser**, double-click the Modicon Edge I/O Modbus TCP or Ethernet IP device. **Result:** The **EdgeIOMB - fdtConfiguration** window is displayed.  For more information, refer to *File Page* in the *Modicon Edge I/O Configurator and Web Interface - User Guide*.
2	In the **FILE** tab, you can either **Create a new Configuration** or **Open an existing Configuation from Disk**. For details, refer to *File Page* in the *Modicon Edge I/O Configurator and Web Interface - User Guide*
3	In the **ISLAND MANAGEMENT** tab, you can add and manage a Modicon Edge I/O NTS module or bus extender. For details, refer to *ISLAND MANAGEMENT* in *Modicon Edge I/O Configurator and Web Interface - User Guide*. **Result:** In the **Project Browser**, variables are displayed in **Variables & FB instances** after you click **Apply** or **OK**. 

NOTE: There is one Device DDT per Modicon Edge I/O NTS module.

Storing/Loading Configuration to Modicon Edge I/O Device

To store/load a configuration with Modicon Edge I/O DTM:

1. Open the **DTM Browser**.
2. Right-click the master DTM.
3. Select **Store data to device** or **Load data from device**.

Saving a Configuration (.eio File)

To *Save Configuration to Disk*, refer to *Modicon Edge I/O Configurator and Web Interface - User Guide*.

Managing Redundant Owner with M580 Hot StandBy

The redundant owner is compatible with M580 Hot StandBy and supported by the EIP protocol only. When the Modicon Edge I/O is scanned by a Hot StandBy controller, the redundant owner is set by default. This case is managed between the Modicon Edge I/O DTM and the DTM Master.

Online Configuration

Prerequisites

- Activate the Modicon Edge I/O by trusting the device in the Security Editor. Refer to *Certificate Whitelist* (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*).
- Enable communication protocols and configure OPC UA security settings in the **ISLAND SETUP** page.
  Refer to *ISLAND SETUP Page* in the *Modicon Edge I/O Configurator and Web Interface - User Guide*.
- Ensure that the IP address of the Network Interface Module (NIM) is set correctly.
  Refer to *Setting an IP Address* in the *Modicon Edge I/O NTS Network Interface Modules - User Guide*.

Connecting to Modicon Edge I/O Through DTM

To connect to Modicon Edge I/O through DTM:

1. Go to the **DTM Browser**.
2. Right-click the Modicon Edge I/O device that you want to connect.
3. Select **Connect**.

To access the Network Interface Module (NIM), refer to *First Login* in the *Modicon Edge I/O Configurator and Web Interface - User Guide*.

Logging with Credentials

The **User Management** subpage allows you to login with your credentials. Refer to *User Management Subpage* in the *Modicon Edge I/O Configurator and Web Interface - User Guide*.

After you are connected, your access level determines your ability to monitor, diagnose, and update I/O and security configurations.

Credential Management

The **Credential Management** page can be accessed from Modicon M580 in **DTM Browser**. This page allows you to configure the **Default Credentials** used by the added Modicon Edge I/O DTMs.

Use this page to set or update the default username and password. By default, the password is set to “AAAAAAAA”.

Storing/Loading Modicon Edge I/O Configuration Through DTM

After Modicon Edge I/O is connected, verify that no configuration mismatch is detected and store/load the final configuration to the device.

To store/load a configuration with Modicon Edge I/O DTM:

1. Go to the **DTM Browser**.
2. Right-click the master DTM.
3. Select **Store data to device** or **Load data from device**.

To monitor Modicon Edge I/O detected errors in the **DTM Browser**, refer to **Diagnostic Page** in the *Modicon Edge I/O Configurator and Web Interface - User Guide*.

Access Island Setup Page in Modicon Edge I/O DTM

To access the **Island Setup** page from Modicon Edge I/O DTM:

1. Open the **DTM Browser**.
2. Locate the Modicon Edge I/O device that you want to connect to.
3. Right-click the device and select **Connect**.

   Result: The DTM is successfully connected.
4. Right-click the DTM.
5. Select **Properties** from the context menu.
6. In the **Properties** dialog, select **Additional Functions**.
7. Click **Island Setup** to open the **Island Setup** page.

   Result: The **Island Setup** page is displayed.

Access Diagnostics Page in Modicon Edge I/O DTM

To access the Diagnostics page from Modicon Edge I/O DTM:

1. Open the **DTM Browser**.
2. Locate the Modicon Edge I/O device that you want to connect to.
3. Right-click the device and select **Connect**.

   Result: The DTM is successfully connected.
4. Double-click the DTM.

   Result: The diagnostics page is displayed.

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