MOX Peer-to-Peer Communication Configuration Guide

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Preface

Scope of the User Guide

This MOX Configuration Guide provides basic information about the Peer-to-Peer protocol, and how to use the MOX Configuration Software tools to configure MOX Products equipment for when using inter-network data transfer communications.

The guide has been organized for the owner and installer, and it is expected that the user is an engineer, technician, electrician or similar with an understanding of the operating and programming requirements of the MOX system.

Many concepts in this guide are built upon concepts that are detailed in specific product User Guides.

It is recommended that each product User Guide is read, and understood before using this guide.

Related Documents

A MOX system contains a collection of MOX equipment and several software packages. For this reason, a number of related documents should be read in conjunction with this users guide.

The related documents are noted below:

- MOX Open Controller User Guide
- MOX Unity User Guide
- MOXGRAF User Guide

Contents

1 MOX Peer-to-Peer Communication Overview

MOX Peer-to-Peer communications make it possible to synchronize variable values across MOX controllers via Ethernet network.

To establish Peer-to-Peer communication, the variables to be synchronized should be declared as ‘network variables’ that conform to specific naming conventions. The source and destination network variables should be of the same type and declared to the same network group and index.

Peer-to-Peer sync session is controlled by declaring and assigning proper value to specific variables for sending/receiving, cycle time, counter, etc.

During Peer-to-Peer sync session, the network group is processed one by one. Each network group is controlled according to its control variable.

2 Data Variable Definition and Operation

2.1 Network Variable - NGm_nXXX

Network Variable should conform to a specific naming standard: **NGm_nXXX**

- 'NG' stands for network group. These characters are not alterable.
- m is the designated group number and should be assigned between 1~255
- n is the index of the variable and should be assigned between, 1~255
- XXX is any suffix defined by user

The following are examples of declared network variables:

- NG1_1PMP
- NG2_255SWT

NGm_n is only the network variable prefix. User can add any suffix as needed.

The variable can be defined as the following standard IEC61131 data types:

BOOL,SINT,DINT,REAL,LREAL,INT,LINT,USINT,UINT

UDINT,ULINT,BYTE,WORD,DWORD,LWORD

2.2 Sending and Receiving Control

For a network group of data variables, the sending and receiving process is controlled by variables that conform to naming standard: **NGm_CMND**

- 'NG' stands for Network Group. These characters are not alterable.
- m is the designated group number and should be assigned between 1~255. This value should match those of the declared data variables to be transferred.
- 'CMND' is the command identifier, without this, commands are not recognized by the system

The following are the control values that can be assigned to the command variable:

0. No operation/switch off
1. Receive data
2. Send once
3. Send continually

NGm_CMND must be declared as data type SINT.

NGm_CMND is a reserved name. If there is no NGm_CMND, all variables started with NGm_ are treated as ordinary variables.

2.3 Destination Definition

The communication destination is controlled by a variable that conform to the naming standard: **NGm_ADDR**

- 'NG' stands for Network Group. These characters are not alterable.
- m is the designated group number and should be assigned between 1~255. This value should match those of the declared data variables to be transferred.
- 'ADDR' is the address identifier

The following are the accepted values that can be assigned to the NGm_ADDR variable and their operation within the control code:

- Sending data to a single IP address using peer-to-peer communication, e.g. "192.168.0.31"
- Sending data to two IP addresses, e.g. "192.168.0.31,192.168.0.32". This application is usually used when the destination controllers are configured redundant. Make sure to declare the first primary IP address and then the redundant IP address.
- To multicast to a group of IP addresses, e.g. "192.168.0.31~39"
- To broadcast to all IP addresses, leave null

If destination IP addresses are not consecutive, a fake group broad mechanism can be used. For instance, if the actual group IP addresses are 192.168.0.31, 192.168.0.33 and 192.168.0.35, the NGm_ADDR of can be set to NULL or 192.168.0.31~35; and enable only the controller that need the update by configuring NGm_CMND to 1.

NGm_ADDR must be declared as data type STRING of length 35.

2.4 Cycle Time

The cycle time (in ms) for sending data when NGm_CMND is '3' is controlled by a variable that conform to the naming standard: **NGm_CYCLE**

- ‘NG’ stands for Network Group. These characters are not alterable.
- m is the designated group number and should be assigned between 1~255. This value should match those of the declared data variables to be transferred.
- ‘CYCLE’ is the cyclic identifier

NGm_CYCLE must be declared as data type DINT.

NGm_CYCLE default is 500.

2.5 Counter

The data send and receive counter is controlled by a variable that conform to the naming standard: **NGm_COUNTER**

- ‘NG’ stands for Network Group. These characters are not alterable.
- m is the designated group number and should be assigned between 1~255. This value should match those of the declared data variables to be transferred.
- ‘COUNTER’ is the counter identifier

NGm_COUNTER must be declared as data type DINT.

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