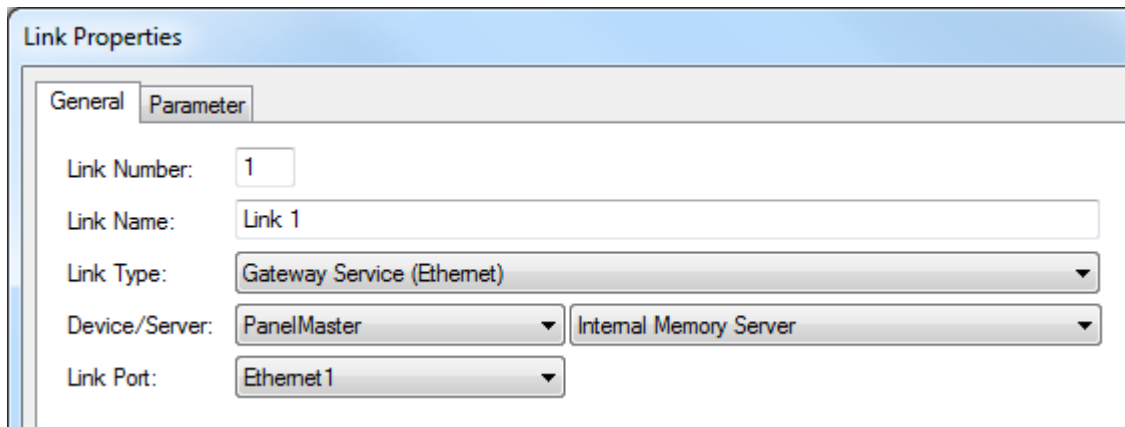# Accessing Internal Memory through Ethernet

Introduction

This document describes how to configure HMI units so that they can access the internal memories of others through Ethernet.

Making the Internal Memory Accessible

To make the internal memory of an HMI unit accessible to other HMI units, you need to create the following communication link for the accessed HMI unit.

Note:

1) The Modbus TCP/IP protocol is used.
2) The internal memory server can support up to 8 clients.
3) The maximal number of words that can be read once is 125.
4) The maximal number of words that can be written once is 120.
5) The maximal number of bits that can be read once is 2000.
6) The maximal number of bits that can be written once is 800.
7) If the specified internal memory address or range is invalid or unavailable, the request is failed.
8) The driver name is C2C301.

Enabling the Access of Internal Memory

To enable an HMI unit to access the internal memory of another HMI unit through Ethernet, you need to create the following communication link for the accessing HMI unit.

Remember to specify the IP address of the accessed HMI unit in the Parameter page.

Note:

1) There is no limitation on the number of data per read and write operations.
2) The driver name is C2C311.

The following table describes the addresses that you can use to refer to the internal memory of the accessed HMI unit.

Address Range	Corresponding Internal Memory Addresses Range	R/W	Remark
N0.0-S4094.f	$N0.0-$N4094.f	R	The first 65520 bits of the battery backed user memory
U0.0-N4094.f	$U0.0-$U4094.f	R/W	The first 65520 bits of the regular user memory
U0-U8388607	$U0-$U8388607	R/W	The regular user memory
N0-N8388607	$N0-$N8388607	R/W	The battery backed user memory
R0:0-R0:8388607	$R0:0-$R0: 8388607	R/W	The recipe block No. 0
R1:0-R1: 8388607	$R1:0-$R1: 8388607	R/W	The recipe block No. 1
R2:0-R2: 8388607	$R2:0-$R2: 8388607	R/W	The recipe block No. 2
...	...	...	...
R15:0-R15: 8388607	$R15:0-$R15: 8388607	R/W	The recipe block No. 15

Modbus Masters/Clients Can Also Be Clients

A Modbus master/client that supports 5-digit addresses can access part of the internal memory thanks to the internal memory server.

The following table describes the addresses that a Modbus master/client can use to access the internal memory of an HMI unit.

Modbus Addresses	Internal Memory Addresses	R/W	Remark
1-65535	$U0.0-$U4095.e	R/W	The first 65535 bits of the regular user memory
100001-165535	$N0.0-$N4095.e	R	The first 65535 bits of the battery backed user memory
300001-365535	$N0-$N65534	R	The first 65535 words of the battery backed user memory
400001-465535	$U0-$U65534	R/W	The first 65535 words of the regular user memory

A Modbus master/client that supports function codes 20 (Read General Reference) and 21 (Write General Reference) can access all of the accessible internal memory thanks to the internal memory server.

The following table describes the addresses that a Modbus master/client can use to access the internal memory of an HMI unit.

Modbus Reference Type	Modbus Reference Number	Corresponding Internal Memory Addresses	Remark
0	0-8388607	$U0-$U8388607	The regular user memory
1	0-8388607	$N0-$N8388607	The battery backed user memory
3	0-8388607	$R0:0-$R0: 8388607	The recipe block No. 0
4	0-8388607	$R1:0-$R1: 8388607	The recipe block No. 1
5	0-8388607	$R2:0-$R2: 8388607	The recipe block No. 2
…	…	…	…
18	0-8388607	$R15:0-$R15: 8388607	The recipe block No. 15

Note:

1) The internal memory server supports only one group at a time for function codes 20 and 21.