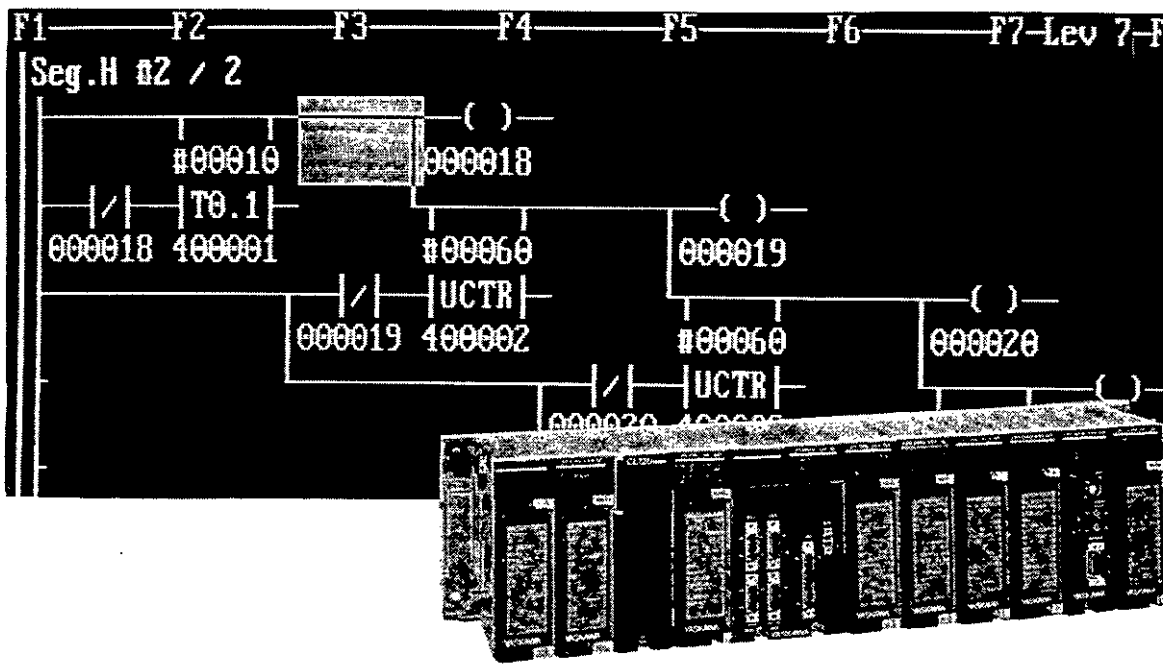


MEMOCON GL120, GL130 Uniwire Interface Module USER'S MANUAL



Manual Contents

This manual describes specifications and applications of the Uniwire Interface Module for the GL120 and GL130 PLCs.

Please read this manual carefully and be sure you understand the information provided before attempting to install or use the Uniwire Interface Module.

Visual Aids

The following aids are used to indicate certain types of information for easier reference.



Indicates references for additional information.

IMPORTANT

Indicates important information that should be memorized.

EXAMPLE

Indicates application examples.



Indicates supplemental information.

SUMMARY

Indicates a summary of the important points of explanations.

Note

Indicates inputs, operations, and other information required for correct operation but that will not cause damage to the device.



Indicates definitions of terms used in the manual.

NOTICE

The following conventions are used to indicate precautions in this manual. Failure to heed precautions provided in this manual can result in injury to people or damage to the products.



WARNING

Indicates precautions that, if not heeded, could possibly result in loss of life or serious injury.



Caution

Indicates precautions that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

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Introduction and Precautions

1

This chapter introduces the features of the Uniwire Interface Module and provides precautions for the use of this manual and the product. **You must read this chapter before attempting to read the rest of the manual or use the product.**

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1.1 Overview of Manual

- This manual describes the functional specifications of the Uniwire Interface Module used for the MEMOCON GL120 and GL130 Programmable Controllers. Read this manual carefully in order to use the Uniwire Interface Module properly. Also, keep this manual in a safe place so that it can be used whenever necessary.
- The model number of the Uniwire Interface Module referred to in this manual is as follows:
 - Model: JAMSC-120CRD21110
- Refer to the following manuals for related Peripheral Devices and Modules.

Manual	Manual number	Contents
MEMOCON GL120, GL130 Hardware User's Manual	SIEZ-C825-20.1	Describes the system configuration, system components, functions, specifications, installation, wiring, and external appearance of the GL120 and GL130.
MEMOCON GL120, GL130 Software User's Manual, Vol. 1	SIEZ-C825-20.11	Describes the operating principles, I/O allocations, programming instructions, processing times, and other basic software information for the GL120 and GL130.
MEMOCON GL120, GL130 Software User's Manual, Vol. 2	SIEZ-C825-20.12	Describes the programming instructions used to create ladder programs for the GL120 and GL130. The following instructions are described in other manuals. 1) Expansion Math Instructions: Software User's Manual, Vol. 3 2) Process Control Instructions: Software User's Manual, Vol. 4 3) Communications Instructions COM: COM Instructions User's Manual FBUS: PC Link Module User's Manual MSTR: MEMOBUS PLUS User's Manual 4) Motion Control (Ladder Motion) Instructions and Motion Language Motion Module MC20 Software User's Manual
MEMOCON GL120, GL130 120-Series I/O Modules User's Manual	SIEZ-C825-20.22	Describes the functions, specifications, and usage of the 120-Series Digital I/O Modules.
MEMOCON GL120, GL130 MEMOSOFT for P120 Programming Panel User's Manual	SIEZ-C825-60.7	Describes the functions, specifications, and usage of the P120 Programming Panel with MEMOSOFT.
MEMOCON GL120, GL130 MEMOSOFT for DOS User's Manual	SIEZ-C825-60.10	Describes the features and operating procedures of the DOS version of MEMOSOFT.

- Thoroughly check the specifications and conditions or restrictions of the product before use.

1.2 Precautions

This section outlines general precautions that apply to using this manual and the product. You must read this section first before reading the remainder of the manual.

1.2.1	Safety Precautions	1-3
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1

1.2.1 Safety Precautions

- MEMOCON was not designed or manufactured for use in devices or systems that concern peoples' lives. Users who intend to use the product described in this manual for special purposes such as devices or systems relating to transportation, medical, space aviation, atomic power control, or underwater use must contact Yaskawa Electric Corporation beforehand.
- This product has been manufactured under strict quality control guidelines. However, if this product is to be installed in any location in which a failure of MEMOCON involves a life and death situation or in a facility where failure may cause a serious accident, safety devices **MUST** be installed to minimize the likelihood of any accident.
- Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all products to which this manual is applicable.
- The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual. A new version of the manual will be re-released under a revised document number when any changes are made.
- Contact your Yaskawa representative or a Yaskawa office listed on the back of this manual to order a new manual whenever this manual is damaged or lost. Please provide the document number listed on the front cover of this manual when ordering.
- Contact your Yaskawa representative or a Yaskawa office listed on the back of this manual to order new nameplates whenever a nameplate becomes worn or damaged.
- Yaskawa cannot make any guarantee for products which have been modified. Yaskawa assumes no responsibility for any injury or damage caused by a modified product.

1.2.2 Installation Precautions

Abide by the following precautions when installing MEMOCON systems.

- The installation environment must meet the environmental conditions given in the product catalog and manuals. Using the MEMOCON in environments subject to high temperatures, high humidity, excessive dust, corrosive gases, vibration, or shock can lead to electric shock, fire, or faulty operation. Do not use the MEMOCON in the following locations.
 - Locations subject to direct sunlight or ambient temperatures not between 0 and 60 °C.
 - Locations subject to relative humidity in excess of 95%, rapid changes in humidity, or condensation.
 - Locations subject to corrosive or flammable gas.
 - Locations that would subject the MEMOCON to direct vibration or shock.
 - Locations subject to contact with water, oil, chemicals, etc.
- Do not allow wire clippings or other foreign matter to enter the MEMOCON. Foreign matter can cause fires, product failure, or malfunctions.
- Do not remove the cover of the connector where a Module is mounted on the Mounting Base.

1.2.3 Wiring Precautions

- Wiring must be performed by qualified personnel.

 **WARNING** Mistakes in wiring can cause fires, product failure, or malfunctions.

- Connect a power supply complying with the rated specifications.

 **WARNING** A power supply that does not comply with the rating may cause a fire. The specifications for the external power supply of the Uniwire Interface Module are shown below.

Voltage: 22.8 to 26.4 VDC

- Select, separate, and lay external wiring correctly.

- Use one transmission cable for each system. Alternatively, use a multi-core cable and separate it from other signal cables.

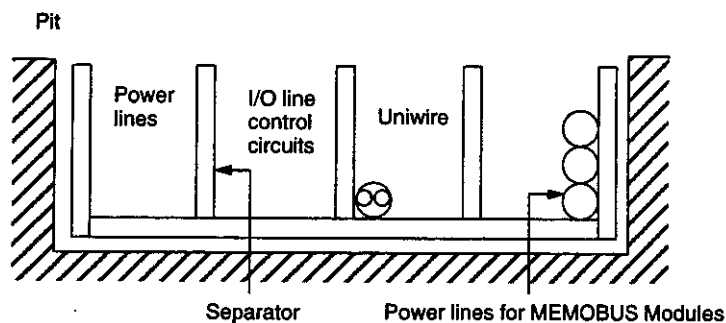
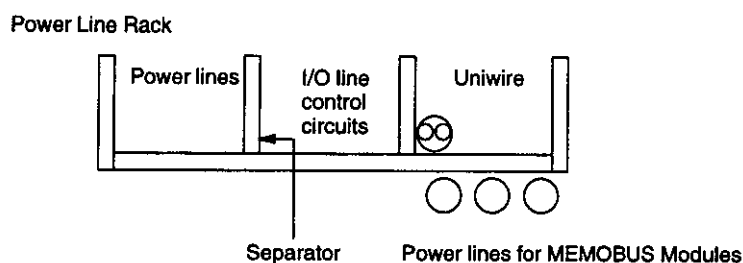
Crosstalk can result in malfunction.

- The Uniwire signal lines D and G and the power supply lines (+24 V, 0 V) can be transmitted through a 4-core cable.

When the length of wiring is long, ensure that the external power supply voltage conforms to the above specifications and watch for drops in voltage.

- Wire the transmission cables separately from high-voltage cables and power lines.

Noise effects can be minimized by taking proper measures. If wires are not separated by sufficient distances, malfunction can result.



1.2.4 Applications Precautions

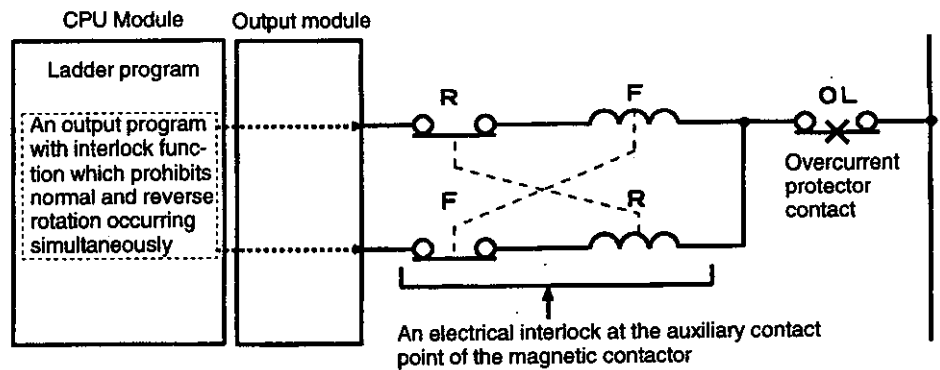
⚠ WARNING Do not touch terminals while the power is ON. There is danger of electric shock or malfunction.

⚠ WARNING Configure the emergency stop circuit and the interlock circuit outside the GL 120, GL 130, or the Uniwire System.

If these types of circuits are not configured outside the GL 120, GL 130, or the Uniwire System a malfunction can occur, causing accidents or damage to the machine.

External Interlock

When the possibility of malfunction in the Uniwire System, GL120, or GL 130 may result in fatal injury, or product or equipment damage, connect an interlock circuit outside the system.



⚠ Caution Operations such as RUN, STOP, program change, forced output and active line insertion and removal must be carried out with care during operation. Operational errors may damage the machine or cause accidents.

⚠ Caution Use caution when transmitting numerical data or coded data. (Refer to 2.3.2 *Uniwire Interface Module Specifications*) The Uniwire System detects transmission errors by rechecking bit status. For this reason, bits for which errors are detected are not changed and the status that is transferred may be incorrect. Check or retransfer data when a transmission error occurs.

1.2.5 Maintenance

- Do not attempt to disassemble or modify the Module or Mounting Base in any way. Doing so can cause fires, product failure, or malfunctions.
- Disconnecting the Uniwire Interface Module while the Power Supply Module is still connected will not cause damage, but take the following precautions for disconnecting.

When the Uniwire Interface Module is removed from the Mounting Base with the power still on, Uniwire System transmissions will stop for the time in which the Module is removed from the Base. The outputs from the Output Units will either maintain the status they had when the time transmission stopped, or all outputs will be cleared (output OFF). This will depend on the type of Output Unit and the settings.

1.3 Using this Manual

This manual is written for those who already have a basic knowledge of MEMOCON PLCs. We recommend reading the *MEMOCON GL120, GL130 Hardware User's Manual* before attempting to read this manual.

• Meaning of Basic Terms

In this manual, the following terms indicate the meanings as described below, unless otherwise specified.

- **Uniwire Module = Uniwire Interface Module**
- **PLC = Programmable (Logic) Controller**
- **PP = Programming Panel**
- **GL120, GL130 = MEMOCON GL120 and MEMOCON GL130 Programmable Controllers**
- **I/O = Input/Output**

• Description of Technical Terms

The bold technical terms in this manual are briefly explained in the **Glossary** provided at the bottom of the page. An example is shown below.



Glossary

The following types of terms are described.

- Specific sequence control terms required for explanation of functions.
- Terms that are specific to programmable controllers and electronic devices.

Outline of the Uniwire Interface Module

2

This chapter outlines features, system configuration, and specifications of the Uniwire Interface Module.

2.1	Features	2-2
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2.1 Features

■ This section describes the features of the Uniwire Interface Module.

Features

- 1) The Uniwire Interface Module is a Digital I/O Module that provides up to 256 I/O points.
- 2) The Uniwire Interface Module can be connected to a Uniwire system* using a single two-core cable.
- 3) A maximum of 20 I/O Units can be connected to one Module.
- 4) The maximum combined cable length is 200 m at 28.5 kbps or 500 m at 14.3 kbps.
- 5) A low-cost distributed I/O system can be constructed with minimal wiring.

* The Uniwire System is a NKE Corporation product.
NKE Corporation Head Office in Japan: TEL: (075) 955-0071
Tokyo Sales Office: TEL: (03) 3833-5330

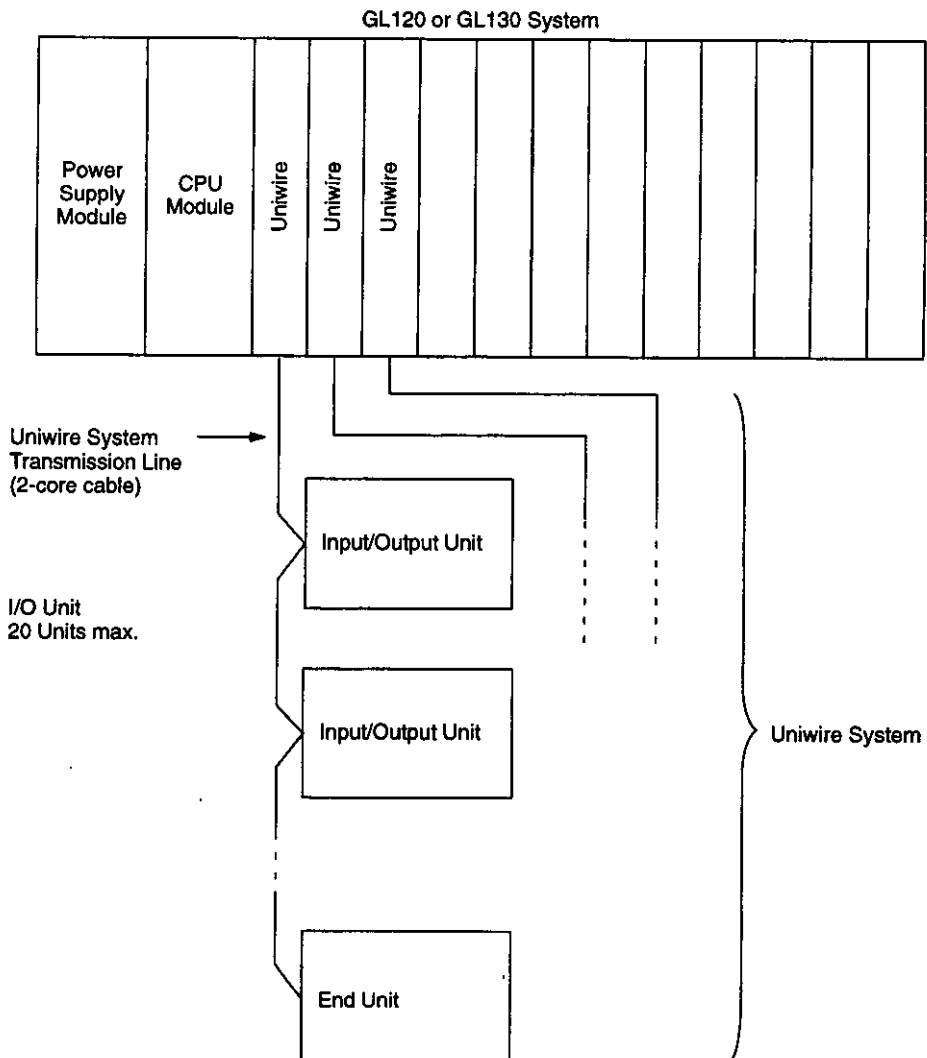
The Uniwire System is handled by Yaskawa Controls Co., Ltd.
Tokyo Sales Office: TEL: (03) 3907-3171

2.2 System Configuration

■ This section describes the Uniwire system configuration.

System Configuration

The following diagram illustrates the system configuration.



Outline of the Uniwire Interface Module

Name		Type	Remarks
Uniwire Interface Module		JAMSC-120CRD21110	—
I/O Unit		Refer to NKE Corporation materials.	Available from Yaskawa Controls Co., Ltd.
End Unit			
CPU Module	CPU10	DDSCR-120CPU14200	8 kW
	CPU20	DDSCR-120CPU34100	16 kW
	CPU21	DDSCR-120CPU34110	16 kW
	CPU30	DDSCR-120CPU54100	32 kW
	CPU35	DDSCR-130CPU54110	40 kW
Power Supply Module	PS10	JRMSP-120CPS11300	100/200 VAC, 7 A, 2 slots
	PS05	JRMSP-120CPS11100	100/200 VAC, 3 A, 1 slot
	PS11	JRMSP-120CPS21300	24 VDC, 7 A, 2 slots
	PS06	JRMSP-120CPS21100	24 VDC, 3 A, 1 slot

2.3 Specifications

■ This section outlines the specifications of the Uniwire Interface Module

2.3.1	General Specifications	2-5
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2.3.3	I/O Unit and End Unit General Specifications	2-6

2.3.1 General Specifications

General Uniwire Interface Module Specifications

Item		Specifications
Environment Conditions	Ambient Operating Temperature	0° to 60°C (I/O Unit: 0 to 50°C)
	Ambient Storage Temperature	-25° to 85°C (I/O Unit: -20 to 70°C)
	Ambient Operating Humidity	30% to 95% RH (With no condensation) (I/O Units: 35% to 85% RH)
	Ambient Storage Humidity	5% to 95% RH (With no condensation)
	Pollution Level	To comply with JISB3501, degree of pollution: 1
	Corrosive Gas	With no corrosive gas
	Operating Altitude	Altitude 2,000 m or less
Mechanical Operating Conditions	Vibration Resistance	10 to 57 Hz with half-amplitude of 0.075 mm 57 to 150 Hz with fixed acceleration of 9.8 m/s ² (1G) 10 sweep times each in X, Y, and Z directions (according to JIS B 3502)/(sweep time: 1 octave/min)
	Shock Resistance	Peak acceleration of 147 m/s ² (15G) twice for 11 ms in X, Y, and Z directions (according to JIS B 3502)
Electrical Operating Conditions	Noise Resistance	1,500 V _{p-p} in either normal or common mode with pulse widths of 100 ns/1 μs and rise time of 1 ns (with impulse noise simulator) (according to JISB3502)
Installation Requirements	Cooling Method	Natural cooling

2.3.2 Uniwire Interface Module Specifications

Uniwire Interface Module specifications are as follows:

Item	Specifications
Name	Uniwire Interface Module
Model No.	JAMSC-120CRD21110
Internal Current Consumption	200 mA max.
Communications Type	Interactive time-sharing multiplex
Sync Format	Bit sync
Transmission Protocol	Uniwire Protocol
Transmission Cable	Twisted-pair cable: 0.5 mm ² min.
Transmission Distance/Baud Rate	200 m at 28.5 kbps 500 m at 14.3 kbps
Refresh Time	Approximately 26 ms at 28.5 kbps (For 256 transmission points)
Number of Connectable I/O Units	20 max.
Number of Transmission Points	I/O total: 256 points max.
I/O Allocation	Digital I/O or Register I/O
Number of I/O Allocation Points	I/O total: 272 points max. (At least 16 input points must be allocated.)
Indicators	READY (Green) Lit when the Module is operating normally. ACTIVE (Green) Lit when the LMS bus is operating normally. SEND (Green) Flashing during normal transmission. ERR1 (Red) } ERR2 (Red) } Display various errors depending on the ERR3 (Red) } combination.
Switches	One DIP switch(4P): Used to set the baud rate. One reset switch: Used to reset the Module.
External Power Supply	0.2 A at 22.8 to 26.4 VDC 0.5 V _{p-p} ripples max.
External Wiring Terminals	1) Five M3.5 terminals 2) Applicable wire: 2 mm ² (AWG14) max.
Watchdog Timer	210 ms (Transmission stopped during time out)
Approximate Mass	300 g
Hot Swapping (Insertion/Removal Under Power)	Permitted (But, an external power supply switch must be installed.)

 **Caution** Transmitting Numerical or Coded Data

The Uniwire System detects transmission errors by rechecking bit status. For this reason, bits for which errors are detected are not changed and the status that is transferred may be incorrect. Check or retransfer data when a transmission error occurs.

Note The Uniwire Interface Module will continue to display normal status even when the I/O Unit power supply is turned OFF, but no signals will be exchanged with external devices.

2.3.3 I/O Unit and End Unit General Specifications

- 1) The I/O Unit and the End Unit are NKE Corporation products.
- 2) The following table lists the specifications common to I/O Units and End Units connected to a Uniwire System transmission line.

Item	Specifications
Power Supply Voltage	24 VDC +15%/−10%
Ambient Operating Temperature	0° to 50°C
Storage Temperature	−20° to 70°C
Ambient Operating Humidity	35% to 85% RH (With no condensation)
Atmosphere	No corrosive gas
Vibration Resistance	According to JIS C 0911 IIB, type 3.
Shock Resistance	10 G
Insulation Resistance	Between external terminals and housing: 20 MΩ min.
Voltage Resistance	Between external terminals and housing: 1,000 VAC for 1 min
Noise Resistance	1200 V _{p-p} (Pulse width: 1 μs)

- 3) The standard for I/O Units is 128 points maximum. Contact the NKE Corporation to use the Uniwire Interface Module for up to 256 points.

Component Names and Connection Methods

3

This chapter describes the components of and connection methods for the Uniwire Interface Module.

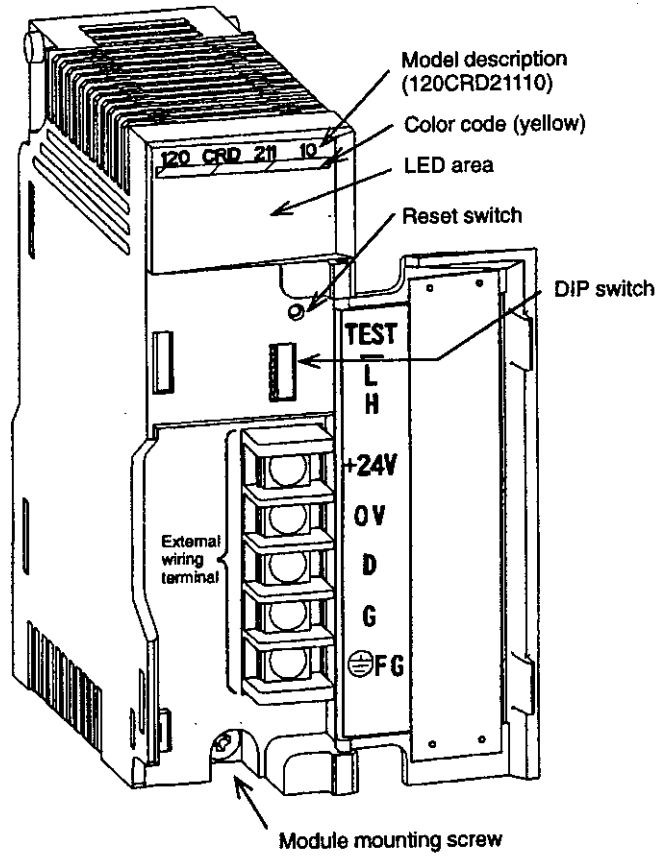
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3.1 External Appearance

■ This section illustrates the external appearance of the Uniwire Module.

The External Appearance of the Uniwire Module

The external appearance of the Uniwire Module is illustrated in the following diagram.



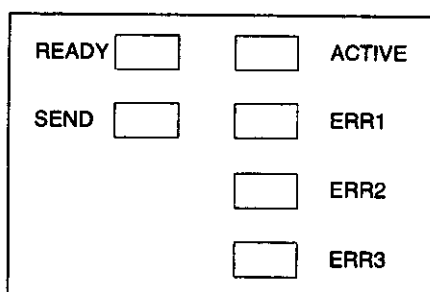
3.2 LED Area

■ This section explains the LED area.

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3.2.3	Error Indicators and Error Processing	3-4

3.2.1 LED Area

The LED area of the Uniwire Module is illustrated in the following diagram.



3.2.2 Indications

The meaning of each indicator is as follows:

- **READY (Green)**
Lit when the Module is functioning normally.
- **SEND (Green)**
Flashes when the Uniwire System is transmitting. The flashing changes depending on the number of points transmitted and the status of the transmission data.
- **ACTIVE (Green)**
Lit when the CPU Module is accessing the Module. When this indicator is not lit, the CPU Module has stopped or an error has occurred.
- **ERR1 (Red), ERR2 (Red), ERR3 (Red)**
Indicate errors in the internal operation of the Uniwire Module or in the Uniwire System. Refer to 3.2.3 *Error Indicators and Error Processing* for details.

3.2.3 Error Indicators and Error Processing

1) When an error occurs in the Uniwire System or the Uniwire Module, the nature of the error is displayed on the indicators on the front of the Module, and at the same time the system status is also reflected in the leading 16 bits of the allocated input relays.

2) The indicator displays and the input status when an error occurs are as follows:

a) Digital I/O Allocation

Indicator				Leading 16 Bits of Input Relays 16..98.....1	Error Contents		Transmission		Response
RDY	ERR1	ERR2	ERR3				Uniwire Outputs	Data to the CPU	
Lit	Not lit	Not lit	Not lit	.... 00000001	Normal		—	—	—
Not lit	Lit	Not lit	Not lit	.... 00000010	ROM error		Transmission stopped	0 clear	Replace the Module.
Not lit	Not lit	Lit	Not lit	.... 00000100	RAM error		Transmission stopped	0 clear	Replace the Module.
Not lit	Not lit	Not lit	Lit	.... 00001000	Internal watchdog timer error		Transmission stopped	0 clear	Replace the Module.
Lit	Lit	Lit	Not lit	.... 00010001	Switch setting error		Transmission stopped	0 clear	Correct the switch setting and press the reset switch.
Lit	Lit	Not lit	Not lit	... .00100001	Uniwire error	D-24V Short circuit	0 clear	0 clear	Correct wiring.
Lit	Not lit	Lit	Not lit	.... 01000001		Short circuit between D-G or a reverse connection of D-G	0 clear	0 clear	Correct wiring.
Lit	Not lit	Not lit	Lit	.... 10000001		End Unit error or D-line disconnection	0 clear	0 clear	Correct wiring.

RDY: Abbreviation for READY. Bits 9 to 16 are not set.

b) Register Allocation

Indicator				Leading 16 Bits of Input Register MSB LSB 15..87.....1	Error Contents		Transmission		Response
RDY	ERR1	ERR2	ERR3				Uniwire Outputs	Data to the CPU	
Lit	Not lit	Not lit	Not lit	.... 00000001	Normal		—	—	—
Not lit	Lit	Not lit	Not lit	.... 00000010	ROM error		Transmission stopped	0 clear	Replace the Module.
Not lit	Not lit	Lit	Not lit	.... 00000100	RAM error		Transmission stopped	0 clear	Replace the Module.
Not lit	Not lit	Not lit	Lit	.... 00001000	Internal watchdog timer error		Transmission stopped	0 clear	Replace the Module.
Lit	Lit	Lit	Not lit	.... 00010001	Switch setting error		Transmission stopped	0 clear	Correct the switch setting and press the reset switch.
Lit	Lit	Not lit	Not lit	... .00100001	Uniwire error	D-24 V short circuit	0 clear	0 clear	Correct wiring.
Lit	Not lit	Lit	Not lit	.... 01000001		Short circuit between D-G or a reverse connection of D-G	0 clear	0 clear	Correct wiring.
Lit	Not lit	Not lit	Lit	.... 10000001		End Unit error or D-line disconnection	0 clear	0 clear	Correct wiring.

RDY: Abbreviation for READY.

Bits 8 to15 are
not set.

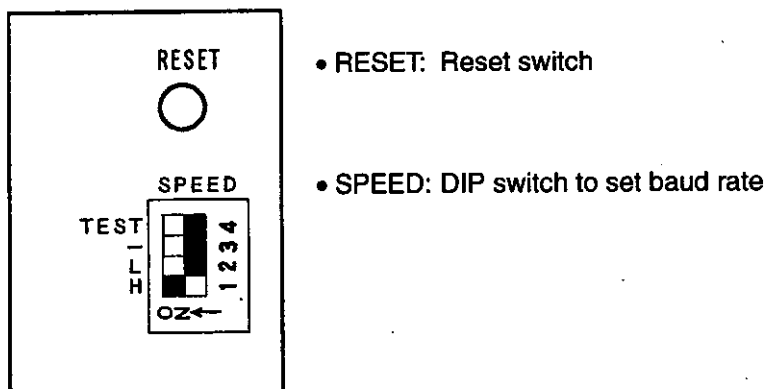
3.3 Switches

■ This section describes the switches of the Uniwire Module.

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3.3.3	Baud Rate DIP Switch	3-7

3.3.1 Switches

The external appearance of the switch section of the Uniwire Module is illustrated below.



3.3.2 Reset Switch

When the reset switch (RESET) is pressed, the initial default values of the Uniwire Module and the baud rate DIP switch (SPEED) are read into memory. Use this switch to reset the Module after an error or to change the DIP switch settings.

3.3.3 Baud Rate DIP Switch

- 1) The pins of the baud rate DIP switch (SPEED) have the following meanings when set to ON.

Pin No.	ON Indication	Meaning
1	H	200 m mode (28.5 kbps)
2	L	500 m mode (14.3 kbps)
3	—	Do not use. (Leave OFF.)
4	TEST	Internal test (normally OFF)

- 2) The SPEED switch settings is read into memory and any new setting is effective when the power supply is turned ON or immediately after the Module is reset. To change the SPEED setting after the power has been turned ON, either turn the power OFF then ON again or press the reset switch.
- 3) The total cable extension length is 200 m maximum when the SPEED switch is set to H and 500 m maximum when it is set to L.

Note (1) Do not set both pin 1 and pin 2 (SPEED setting) to ON at the same time. It will result in a switch setting error.

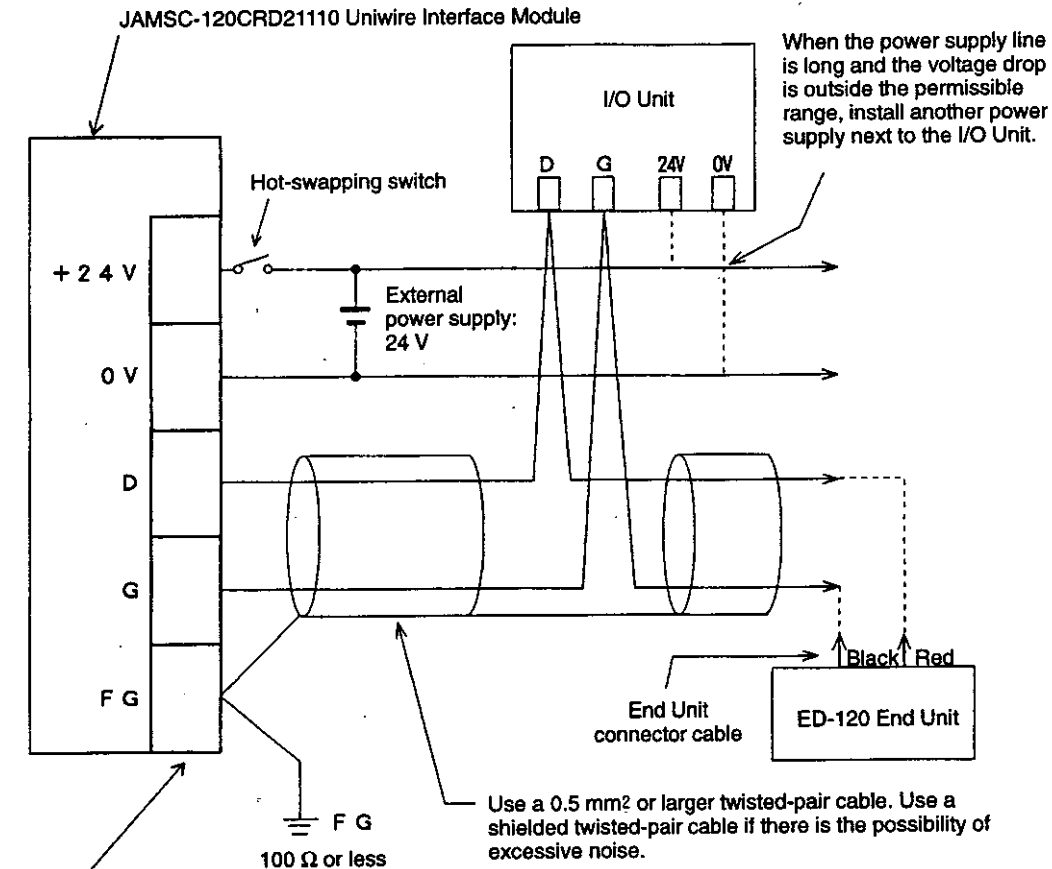
(2) Always ensure pins 3 and 4 are OFF before using the Module. Using the Module with these pins set to ON may result in incorrect outputs.

3.4 External Wiring

■ This section describes the connection of external wiring.

Connecting External Wiring

The external wiring of the Uniwire Module is illustrated in the following diagram.



Field wiring terminals: M3.5 × 5
Compatible wire: 2 mm² (AWG14) max.

Note Connect so that the End Unit connection cable's red wire is D and the black wire is G. If connected in reverse, incorrect outputs may result.

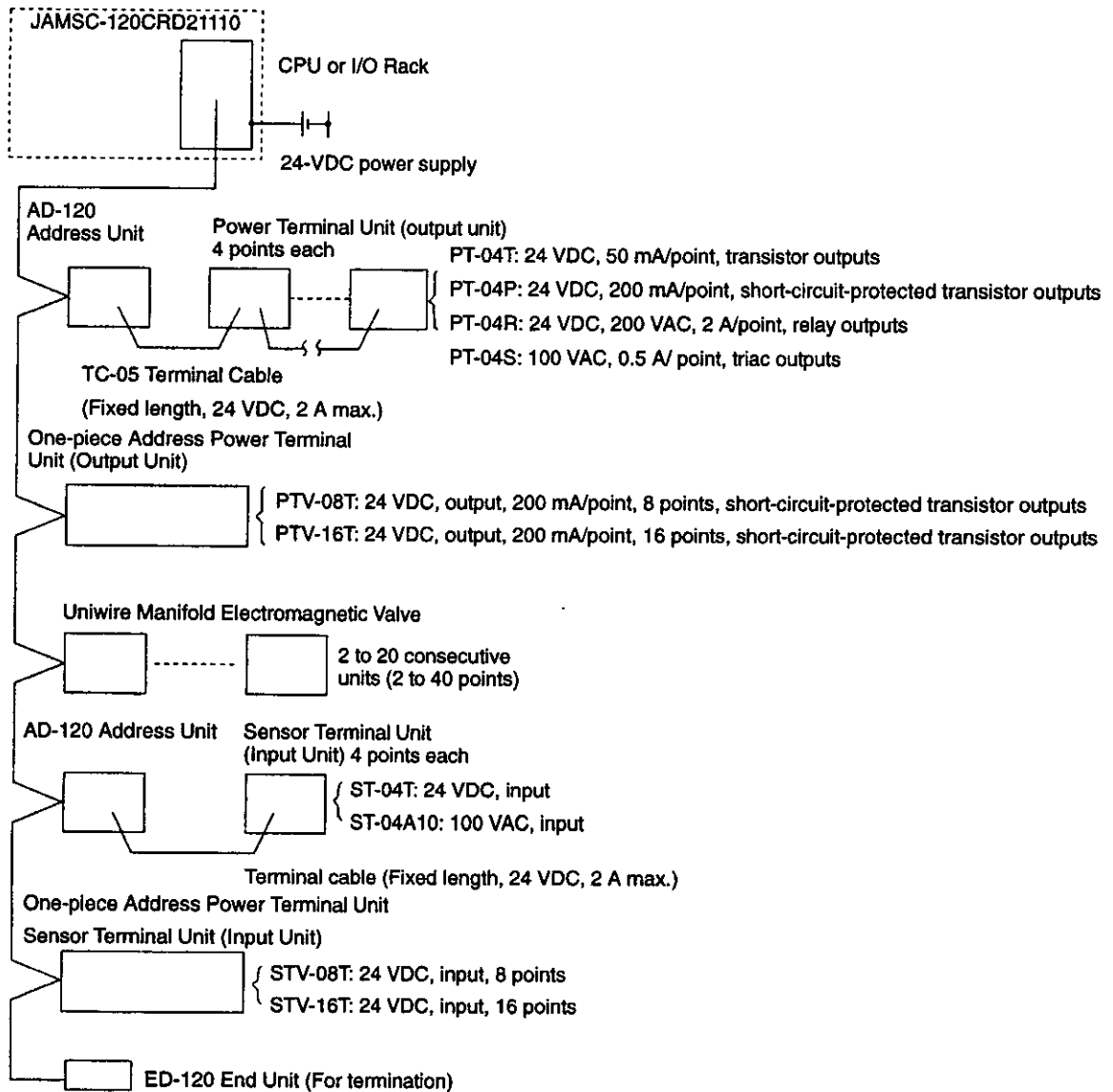
3.5 System Configuration

This section describes the Uniwire system configuration.

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3.5.3	Uniwire Module Connection Example	3-11
3.5.4	Rotary Joint for the Uniwire Module: Reference Material	3-12

3.5.1 System Configuration Example

An example of system configuration using a Uniwire Module is shown below.



Note The above diagram is for a Uniwire System with a transmission distance of 200 m. When the 500 m transmission distance is used, the Uniwire System must be configured accordingly. Refer to NKE Corporation materials for details.

3.5.2 System Configuration Precautions

- 1) Use a 24-VDC stabilized power supply for the Uniwire System devices.
- 2) To increase the system's resistance to noise, separate the transmission wires and input cables from the control wires.
- 3) The 24 V to 0 V connection between each Unit is the power supply line, and the D–G connection is the serial transmission signal line. Use one twisted-pair cable for each series of D–G connection between Units.

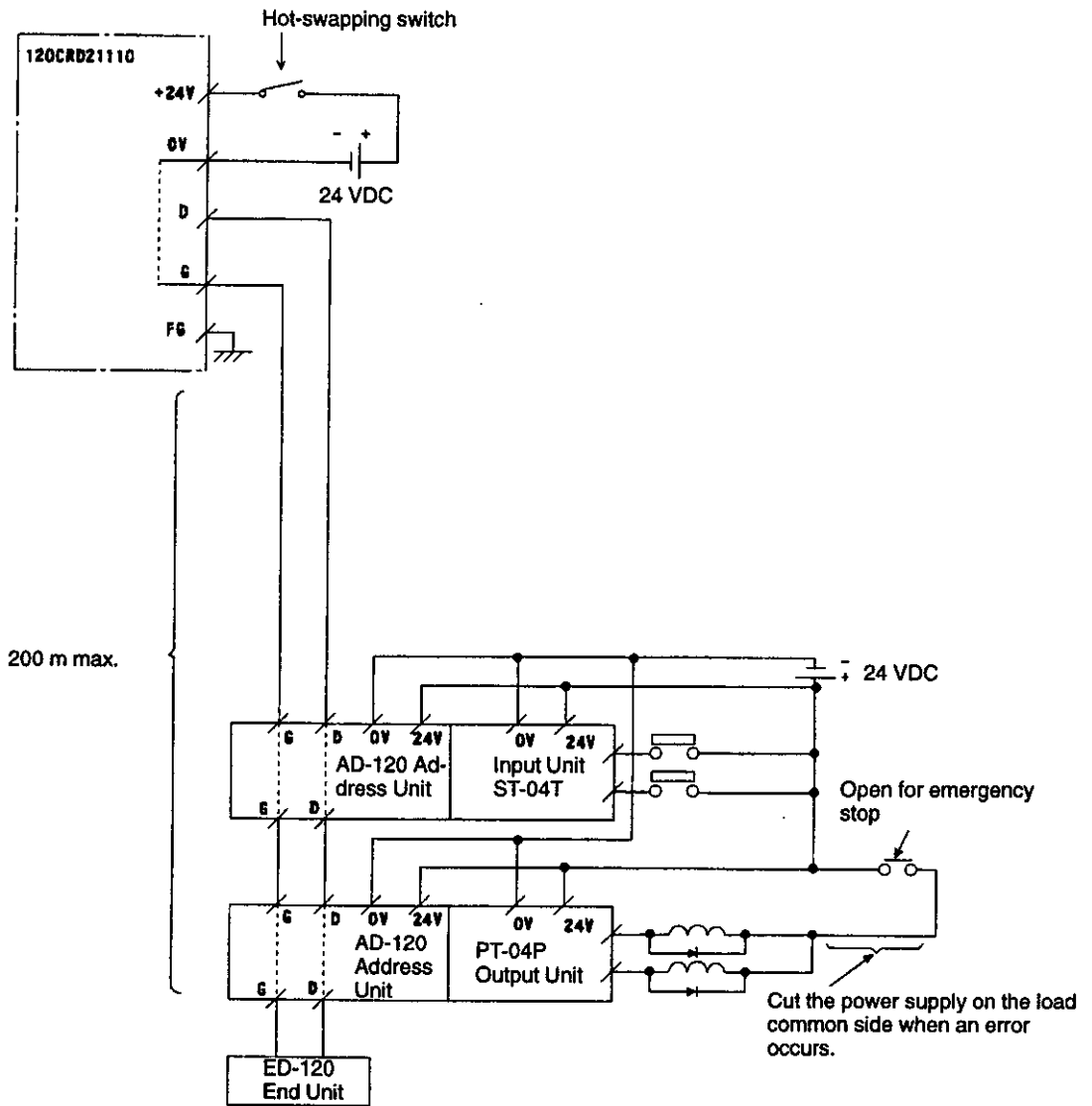
Note Transmitting through several series of Units using a multi-core cable can cause transmission errors due to crosstalk.

- 4) The total extended length between all Units must be a maximum of 200 m (in 200 m transmission distance mode.) When the load capacity (power consumption) of the sensor terminal or the lamp coil is large, the power supply line (24 V to 0 V) voltage drop will increase and the Unit sensors and load (particularly the coils) will malfunction. To prevent this, supply distributed Terminal Units with a 24-V power supply. In this case the connection between the series of Units is only the two lines between D–G terminals.
- 5) The D–G connections can be a maximum of 200 m with a maximum of 20 units (in 200 m transmission distance mode.) In this case, a 0.5 mm² 2-core cable can be used without problem.

Note The Uniwire Interface Module will continue to display normal status even when the I/O Unit power supply is turned OFF, but no signals will be exchanged with external devices.

3.5.3 Uniwire Module Connection Example

An example of the Uniwire Module connection is shown in the following diagram.



Note The above diagram is for a Uniwire System with a transmission distance of 200 m. When the 500 m transmission distance is used, the Uniwire System must be configured accordingly. Refer to NKE Corporation materials for details.

3.5.4 Rotary Joint for the Uniwire Module: Reference Material

1) Function

- **Signal Connection to a Moving Body**
- Rotary coupling sends air and electricity to the rotation section.
- Original metal sheet technology eliminates torque from the long-life air section.
- The built-in non-contact mercury rotary connector allows the Uniwire Module transmission line to be directly connected to the electrical section. For this reason it is simple to control multiple points while the body is rotating.

2) Models

- RJP-061L-RC4: Rotary joint (4 circuits)
- RJP-061L-RC6: Rotary joint (6 circuits)

3) Specifications

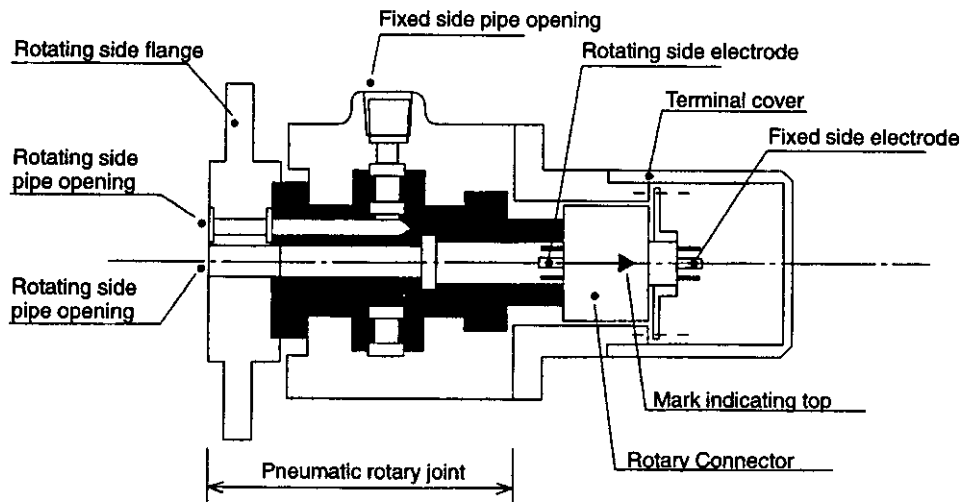
a) Body Specifications

Model		RJP-061L-RC4	RJP-061L-RC6
Operating Fluid		Air	
Rated Voltage		1 MPa	
Rated Speed		200 r/min	
Number of Flow Paths		1	
Pipe Diameter		Rc 1/4	
Ambient Operating Temperature		5° to 50°C	
Mounting Method		Vertical or horizontal (the rotary connector has top and bottom positions.)	
Wiring	Connector	430	630
	Rotating Side	1 m of 0.5 mm ² 4-core cable	Dedicated crimp terminal connector (Using AWG 14 to 16)
	Stationary Side	Dedicated crimp terminal connector (Using AWG14 to 16)	
Approximate Mass		3.2 kg	

b) Rotary Connector Specifications

Type	430	630
Number of Circuits	4 (two 30 A and two 4 A)	6 (four 30 A and two 4 A)
Minimum Operating Voltage	10 ⁻⁶ V	
Maximum Operating Voltage	500 V	
Minimum Operating Current	10 ⁻¹¹ A	
Maximum Operating Current	LG. 30 A, SM. 4 A (For 240 VAC, resistive load)	
Operating Frequency	DC: 100 MHz	
Contact Resistance	1 MΩ max.	

- 4) The internal structure of the rotary joint for the Uniwire Module is shown in the following diagram.



- 5) Contact NKE Corporation for details on the Rotary Joint for use with the Uniwire Module.
TEL: (075) 955-0071 or (03) 3833-5330.

Operation

4

This section details the operation and allocation of the Uniwire Module and the required transmission time.

4.1	Operation Example	4-2
4.2	Allocation Using the MEMOSOFT	4-6
4.3	Required Transmission Time	4-13

4.1 Operation Examples

■ This section describes Uniwire System addresses and I/O allocation.

Operation Examples

I/O must be allocated to the Uniwire Module. There are two methods for doing this: digital I/O allocation and register I/O allocation.

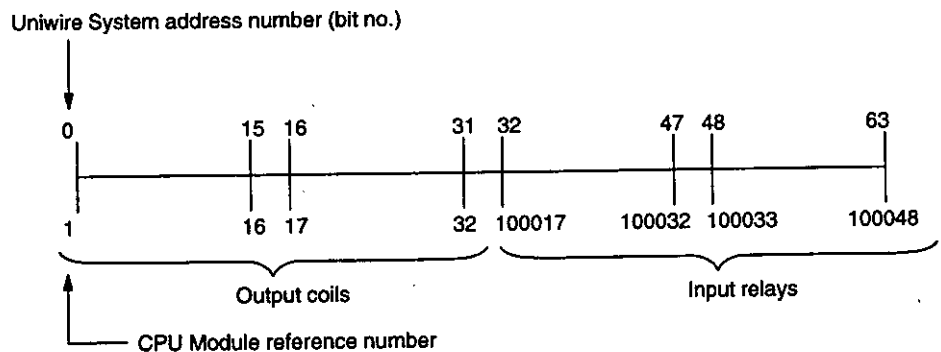
1) Digital I/O Allocation

a) I/O Allocation to CPU Module

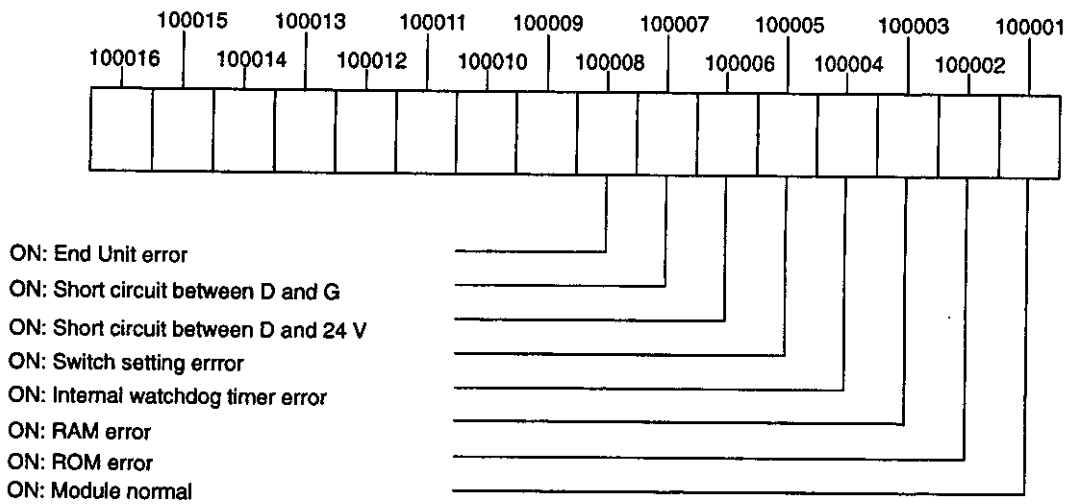
Input relays: 48 points: 100001 to 100048	} Total: 80 points
(100001 to 100016 are used for system status.)	
Output coils: 32 points: 1 to 32	

b) In the above example, signals for 64 points are allocated in sequence from addresses 0 to 63, first to output coils and then to input relays. The first 16 bits of the input relays (here, 100001 to 100016) are used by the Uniwire Module for system status.

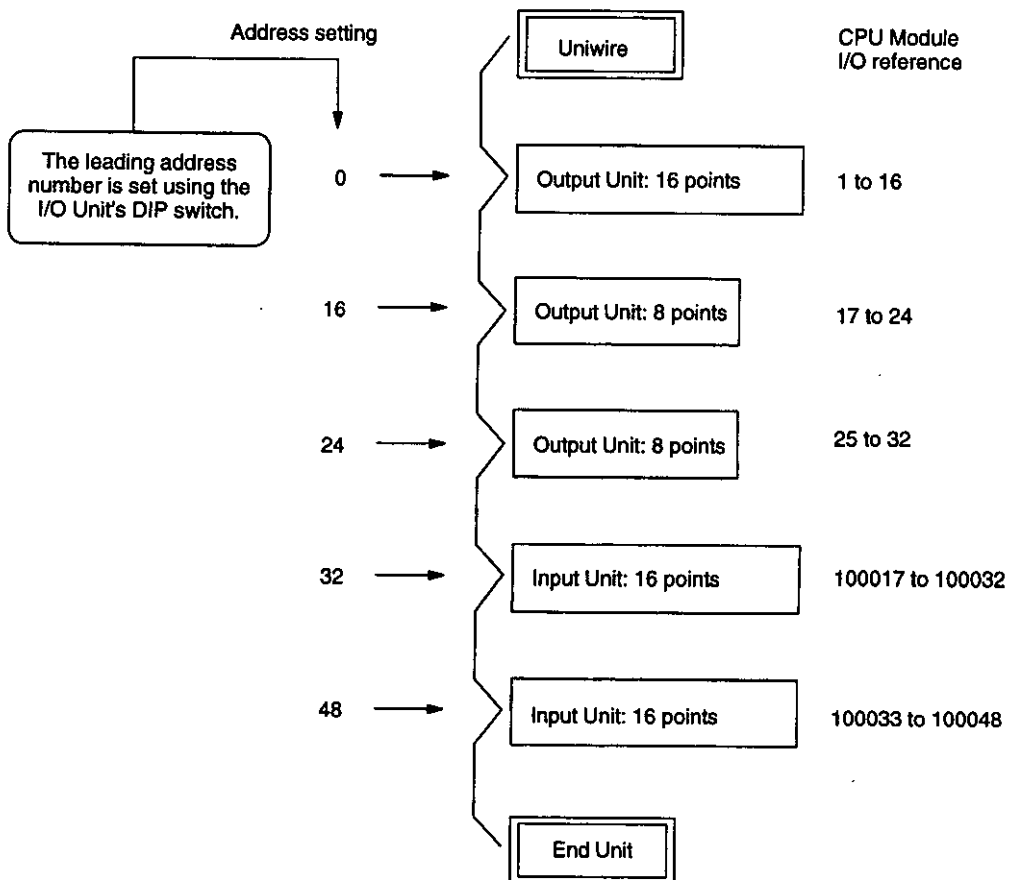
c) The relationship between Uniwire addresses and coils/relays is illustrated in the following diagram.



d) The system status information for the Uniwire Module is contained in the leading 16 bits of the input relays as shown in the following diagram.



e) Addresses are set for the I/O Unit as follows:



Note (1) Do not allocate an Input Unit in the Uniwire System to addresses that are allocated as output in the CPU Module.

- (2) Do not allocate an Output Unit in the Uniwire System to addresses that are allocated as inputs in the CPU Module.
- (3) The order the Units are connected in does not have to follow the order of the addresses, but there must be a Uniwire Module at one end of the cable and an End Unit at the other end.

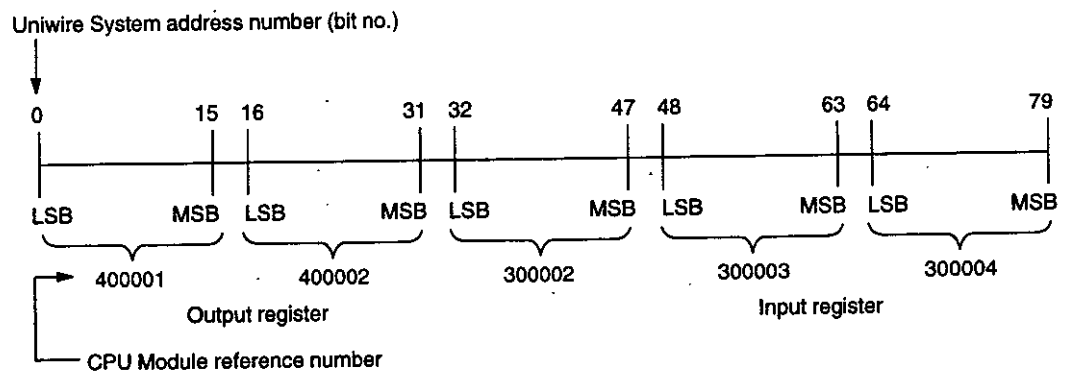
2) I/O Register Allocation

a) I/O Allocation to a CPU Module

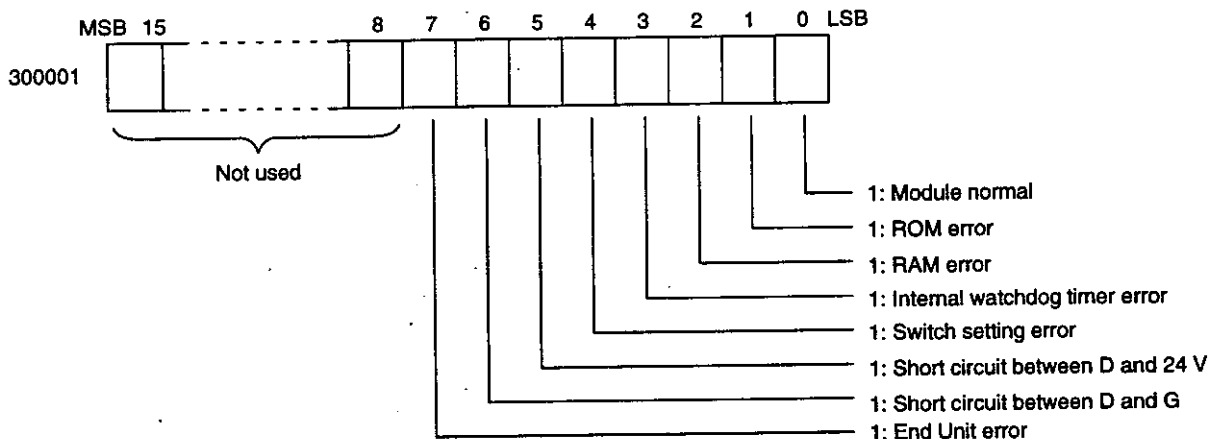
Input registers: 4 (300001 to 300004)
 Output registers: 2 (400001 to 400002) } Total: 96 points

b) In the above example, signals for 80 points are allocated in sequence from addresses 0 to 79, first to output registers and then to input registers. The leading input register (in this case 300001) is used by the Uniwire Module for system status.

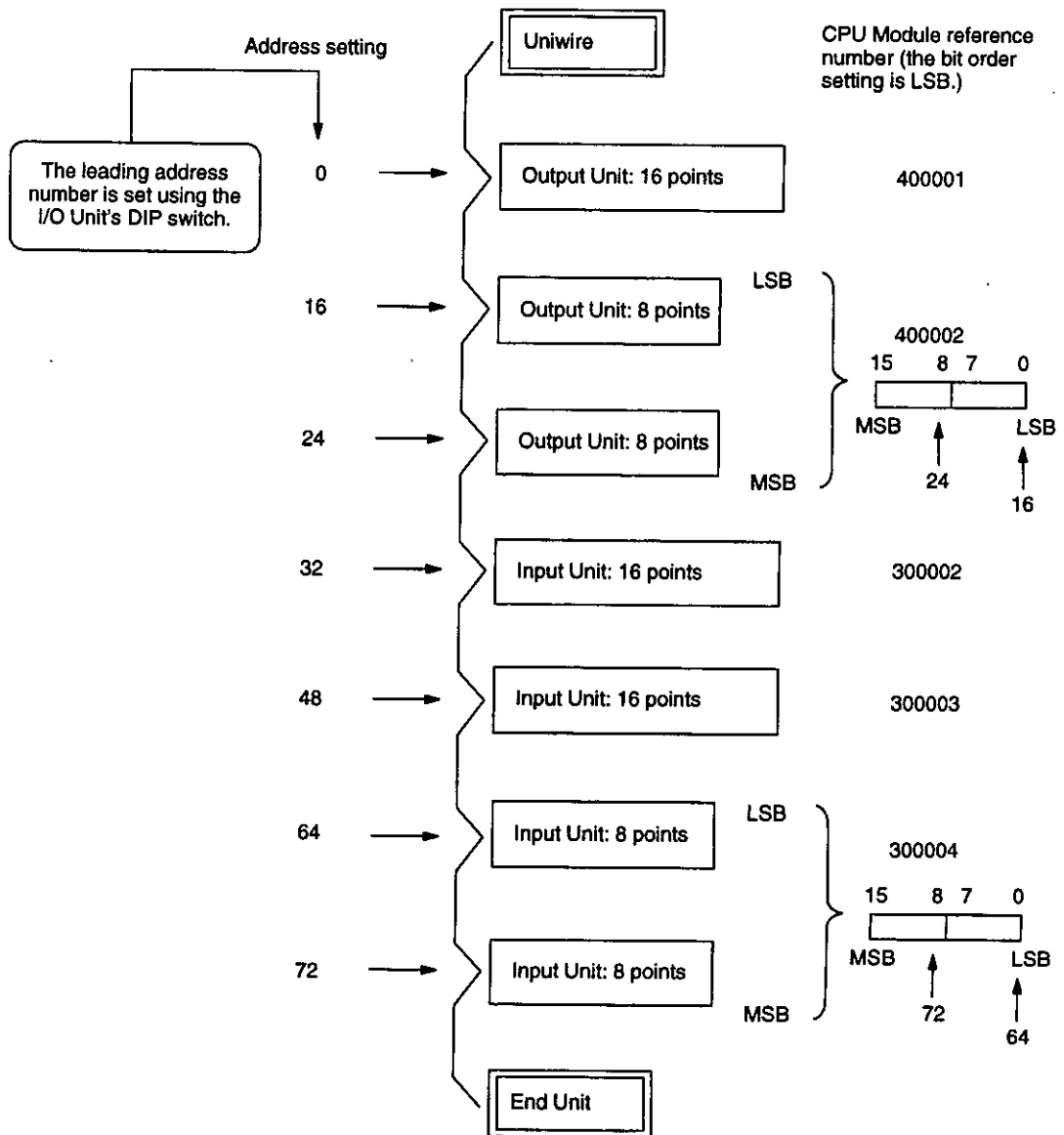
c) The relationship between Uniwire addresses and the I/O register bits is illustrated in the following diagram.



d) The system status information for the Uniwire Module is contained in the leading input register, as shown in the following diagram.



e) Address are set for the I/O Unit as follows:



- Note**
- (1) Do not allocate an Input Unit in the Uniwire System to addresses that are allocated as output in the CPU Module.
 - (2) Do not allocate an Output Unit in the Uniwire System to addresses that are allocated as inputs in the CPU Module.
 - (3) The order the Units are connected in does not have to follow the order of the addresses, but there must be a Uniwire Module at one end of the cable and an End Unit at the other end.

4.2 Allocation Using the MEMOSOFT

- This section describes allocation methods for Uniwire Modules using the MEMOSOFT.

Uniwire Module Allocation

- 1) Up to 272 input points and 256 output points can be allocated 16 points at a time for Uniwire Modules. Of these, however, 16 input points are used for Uniwire Module system status, so be sure to allocate them. For allocation methods refer to the MEMOSOFT manual.
- 2) A total of up to 256 points for output and input can be allocated for each Uniwire Module.
- 3) Allocation to a Uniwire Module is conducted using MEMOSOFT. The procedure for this is given below.
 - a) Startup MEMOSOFT and go online with the PLC. (*Figure 4.1*)
 - b) If the CPU Module is in RUN mode, set it to STOP.
 - c) From the configuration menu ("Config") select **Map** and then **I/O Map**. (*Figure 4.2, 4.3*)
 - d) Select the channel and rack numbers. Move the cursor to the slot number for allocation. (*Figure 4.4*) If the 120CRD21110 is already installed, the Module model will be displayed in the right-hand details column.
 - e) Press the Shift + ? Keys. The module list window will open. Select 120CRD21110. (*Figure 4.5*)
 - f) Move the cursor to the number of points for input allocation and enter the leading input relay number. The leading input relay number must be 100000 plus a multiple of 16 plus one (1, 17, 33...). (*Figure 4.6*)
 - g) The last number is automatically entered when the leading input number is entered. There are 272 points available for allocation so only enter the necessary number. Points are allocated 16 at a time, so the last number will be 100000 plus a multiple of 16 (16, 32, 48...). Allocate the 16 points for system use at this time. (*Figure 4.7*)
 - h) The output coils are allocated in the same way. For the output coils, the leading number will be a multiple of 16 + 1 (1, 17, 33...) and the last number will be a multiple of 16 (16, 32, 48...). With the output coils also, when the leading number is entered the last number will be automatically input. Including the 16 point input section for system use, up to 272 I/O points can be allocated. Only enter the necessary number of points. Output coils are not used by the system. (*Figure 4.8*)

- i) Finally, set the output status for when the CPU stops. Press the F4 Key (Zoom) and the current setting screen will be displayed. (Figure 4.9) Press the Return Key on this screen and the setting window will open. (Figure 4.10) Make a selection by moving the cursor up and down and execute by pressing the Return Key. (Figure 4.11)

If **Hold** is selected, the data in the Uniwire Module immediately before it stopped will continue to be transmitted even when the CPU Module stops. If **Clear** is selected, the output will be turned OFF and no data will be transmitted after the CPU Module stops until the CPU Module and the Uniwire Module are set to RUN. The factory default setting is **Clear**.

- j) This completes allocation of I/O. Press the F9 Key (Quit) to end the operation.

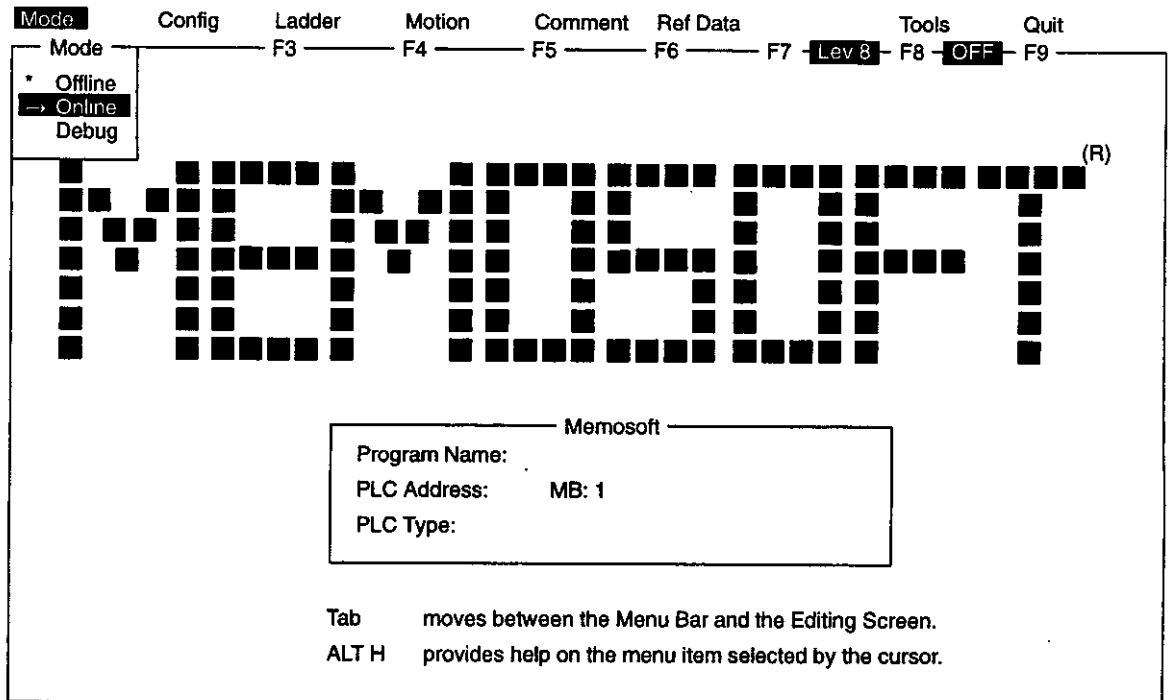


Figure 4.1 Online

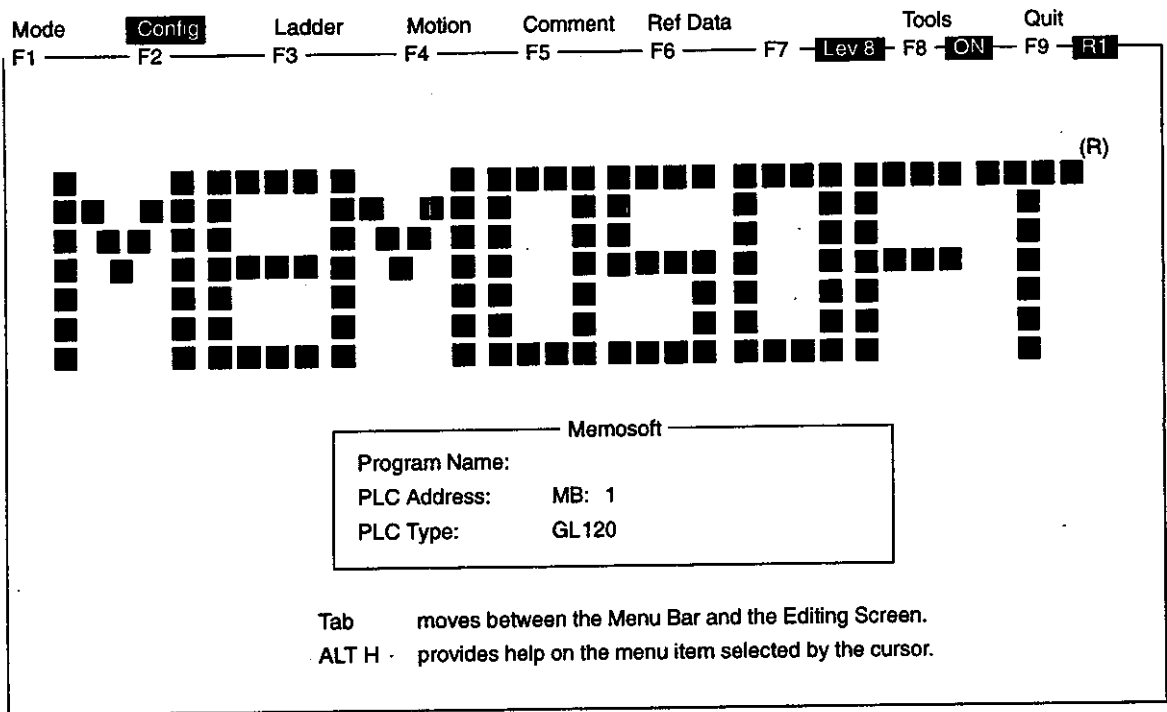


Figure 4.2 System Configuration

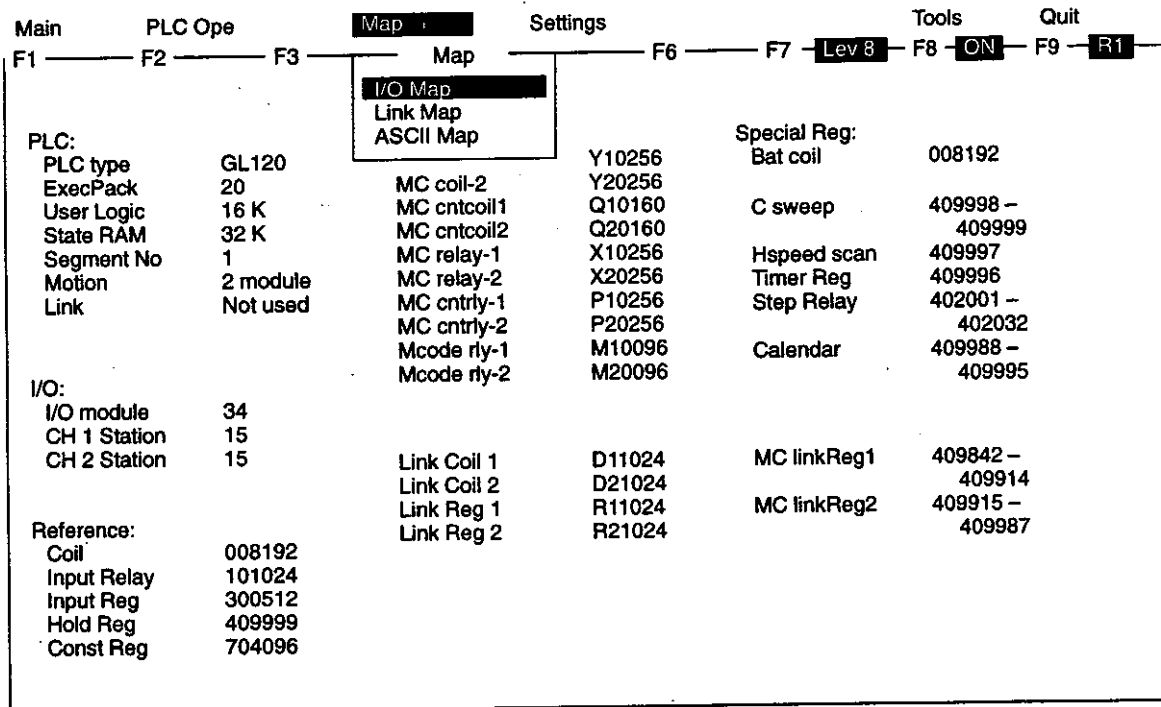


Figure 4.3 I/O Map

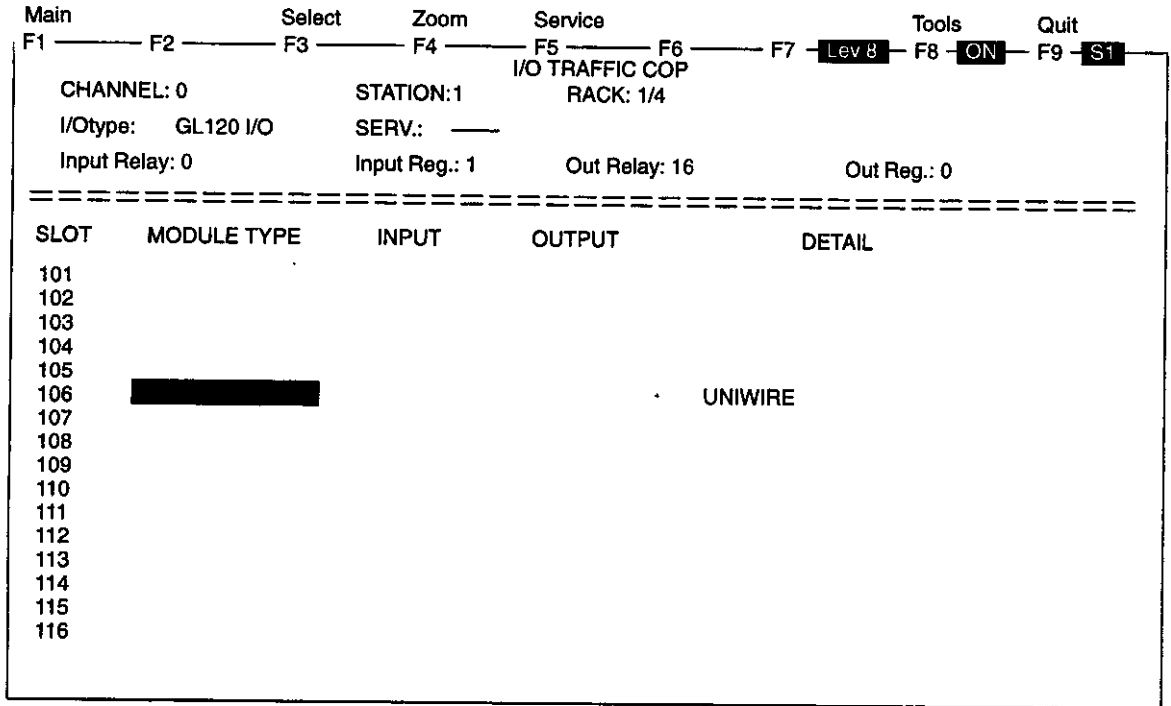


Figure 4.4 I/O Map

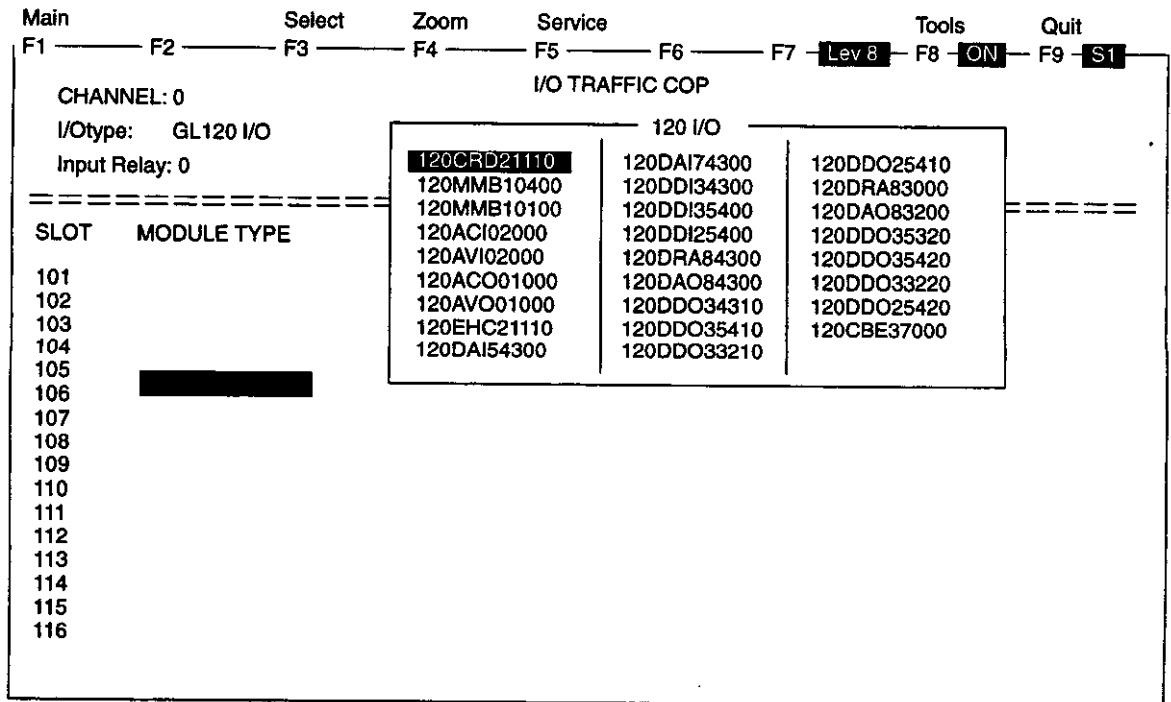


Figure 4.5 Module List

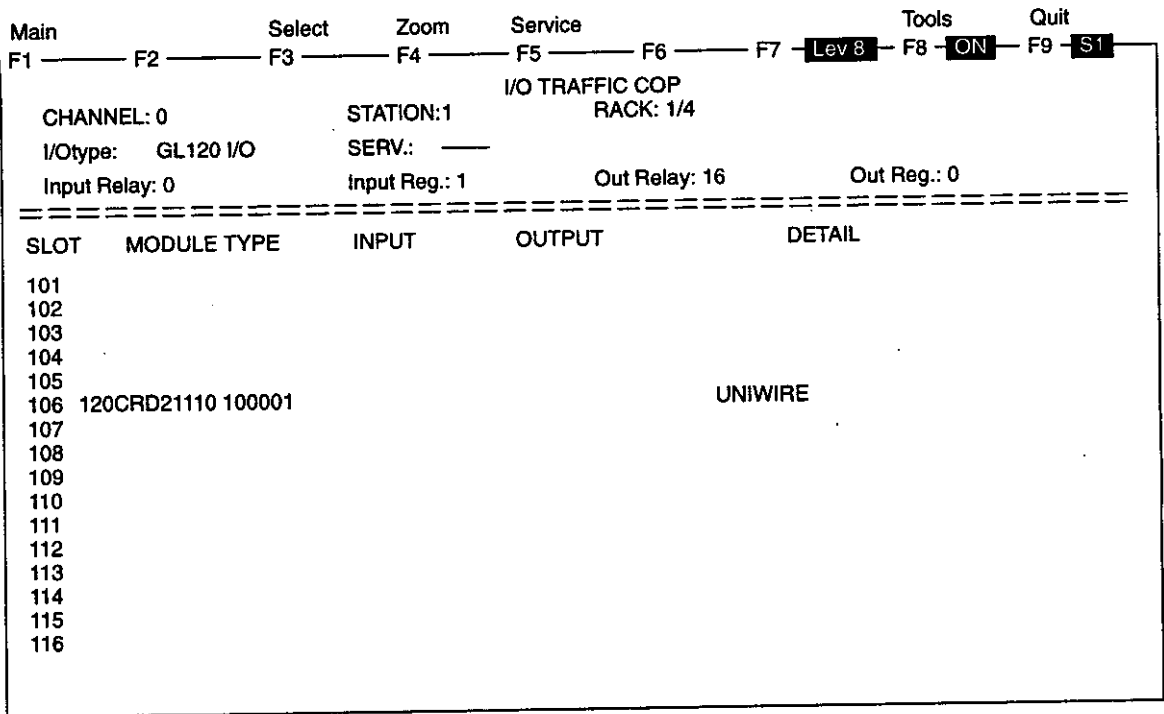


Figure 4.6 Reference Number of Leading Input Relay

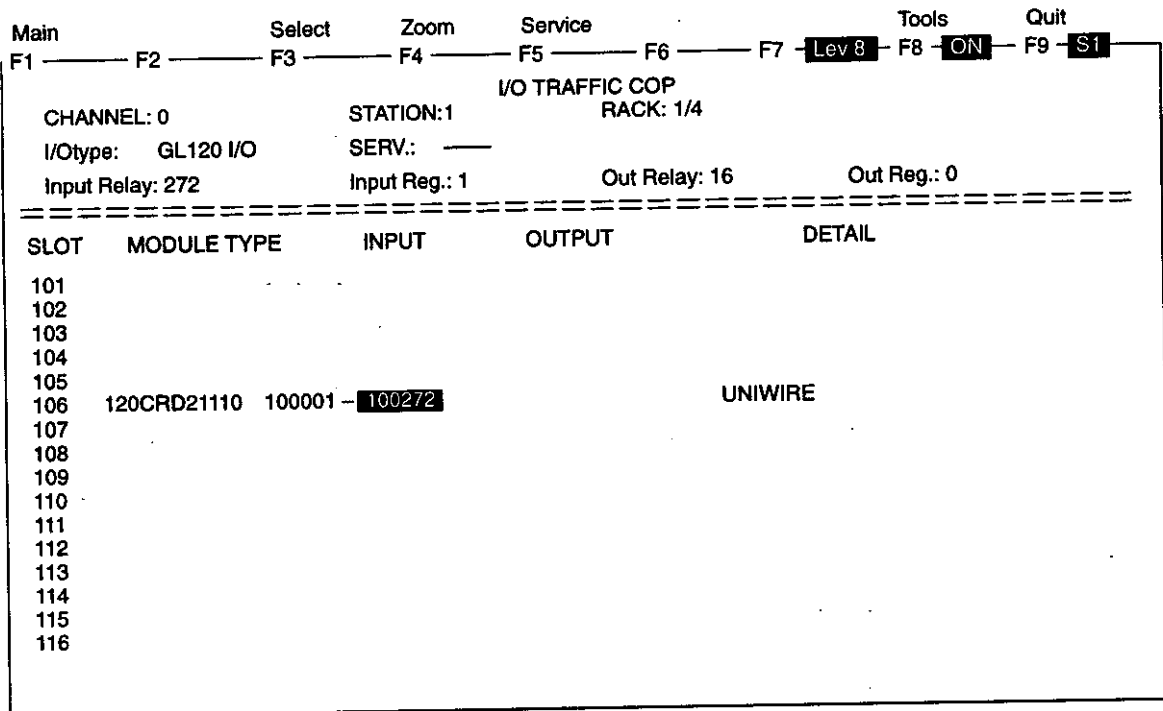


Figure 4.7 Reference Number of Last Input Relay

Main Select Zoom Service Tools Quit
 F1 F2 F3 F4 F5 F6 F7 - Lev 8 - F8 - ON - F9 - S1

I/O TRAFFIC COP
 CHANNEL: 0 STATION: 1 RACK: 1/4
 I/Otype: GL120 I/O SERV.: _____
 Input Relay: 48 Input Reg.: 1 Out Relay: 48 Out Reg.: 0

SLOT	MODULE TYPE	INPUT	OUTPUT	DETAIL
101				
102				
103				
104				
105				
106	120CRD21110	100001 - 100048	000001 - 000032	UNIWIRES
107				
108				
109				
110				
111				
112				
113				
114				
115				
116				

Figure 4.8 Allocation of Input Relays and Output Coils

Hex Decimal Binary Move Quit
 F1 F2 F3 F4 - I/O Map Module Editor - F7 - Lev 8 - F8 - ON - F9 - S1

120CRD21110: UNIWIRES

Head: 0 Drop: 1 Slot: 6

SERVICE SCAN: NORMAL

PARAMETER

FINAL OUTPUT: CLEAR

End of CRD21110 Zoom

Figure 4.9 Zoom Screen

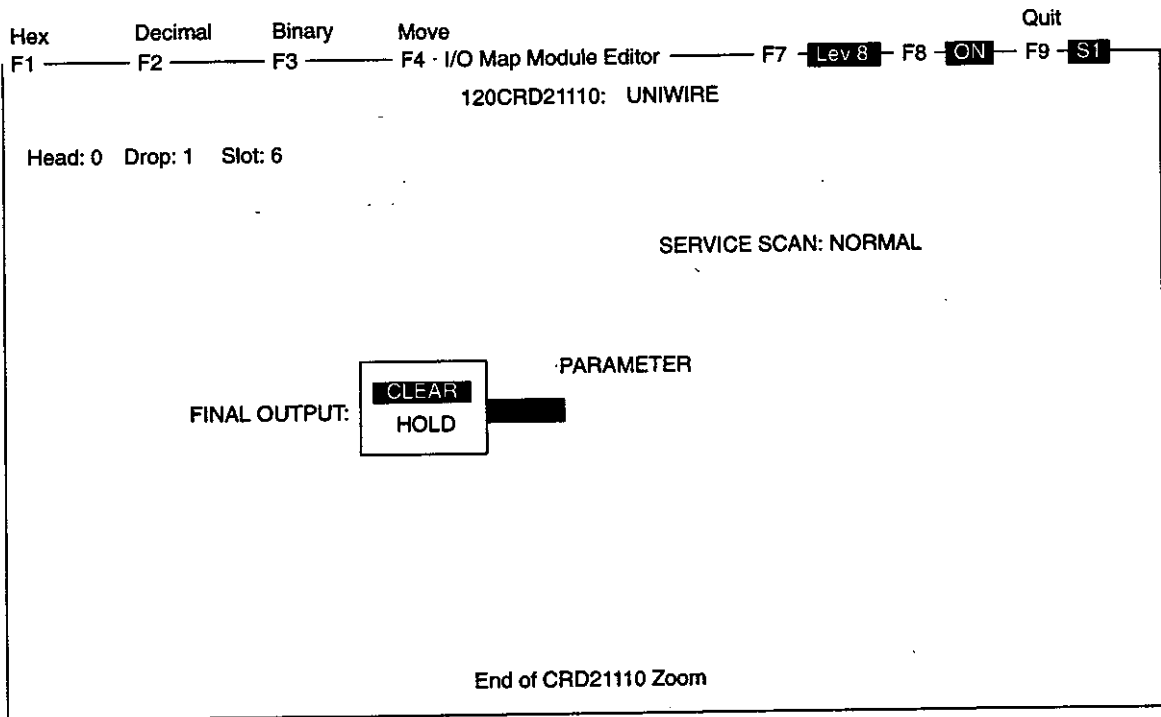


Figure 4.10 Setting the Final Output

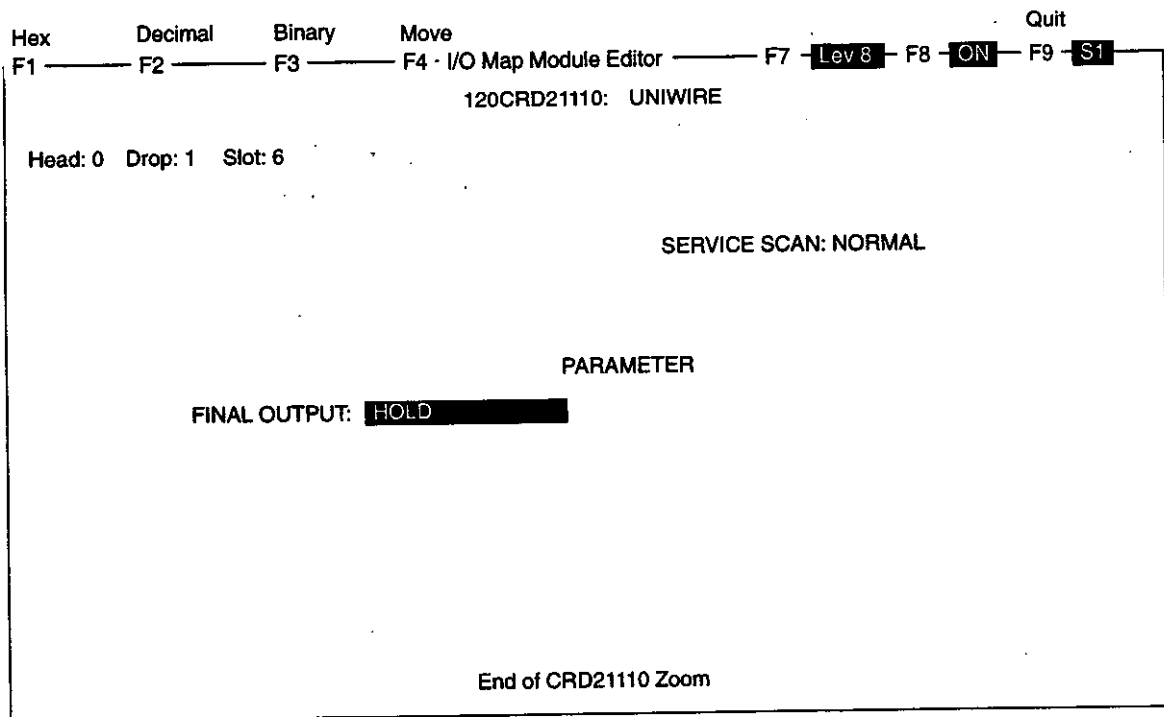


Figure 4.11 Setting the Final Output to Hold

4.3 Required Transmission Time

■ This section describes the transmission time required for the Uniwire Module.

Required Transmission Time

- 1) There is a time delay due to internal processing before Input Unit data is reflected in the input relays or output coil data is reflected in the Output Units.

a) Refresh Time

The amount of time it takes for the Uniwire System to send or receive data is called the refresh time. The refresh time depends on the number of transmission points and the baud rate. These values are given in the following table.

Number of Transmission Points (see note)	Refresh Time (ms)	
	At 14.3 kbps	At 28.5 kbps
32	2.8	1.4
64	5.2	2.6
96	7.4	3.7
128	9.6	4.8
256	19.2	9.6

Note The number of transmission points shown here is the total number of input points allocated to the Uniwire Module minus the 16 input points required for system status.

b) I/O Unit Delay Time

Refer to the manual for each I/O Unit for details on the I/O Unit delay time.

c) Recheck Verification Error Delay Time

To improve the reliability of transmission data within the Uniwire System, a recheck verification check is conducted for each bit. When the same data is received twice in succession, that data is used but when it is received only once, the previously received data is reused. Accordingly, when there are no transmission errors, the delay time is one refresh time cycle but when there is an error in the data the delay time is two refresh time cycles (twice the delay).

d) PLC Scan Delay Time

For the data received in the Uniwire Module to be reflected in the ladder program, it is necessary for the CPU Module to read the data from the Uniwire Module. For this reason, the delay time for the Uniwire Module data to be reflected in the ladder program is one scan time maximum.

- 2) The maximum delay times, based on the above processing will be as follows:

When there are changes to the data:

Maximum delay time = Refresh time \times 2 + I/O Unit delay time + One scan time

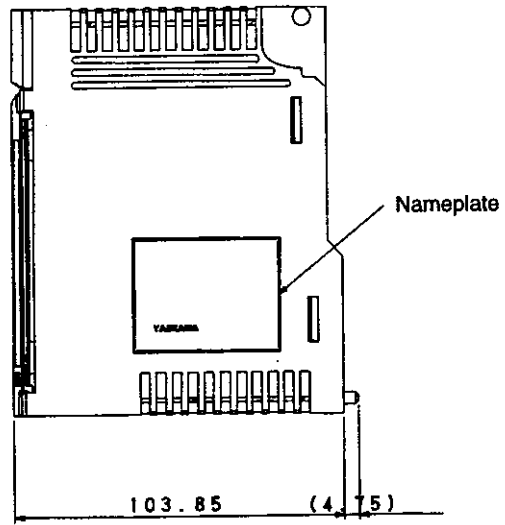
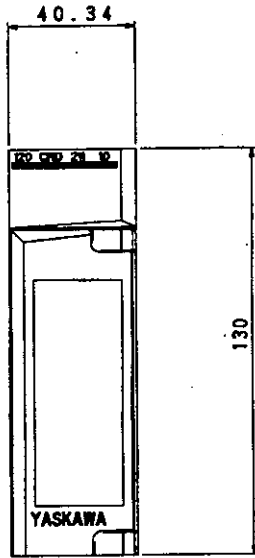
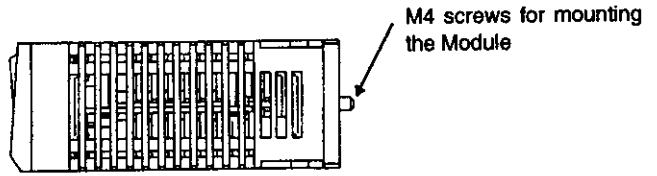
Appendix

External Appearance of the Uniwire Module

A

An illustration of the external appearance of the Uniwire Interface Module is shown on the following page.

Uniwire Interface Module: Model JAMSC-120CRD21110



Unit: mm
Approximate Mass: 300 g

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MEMOCON GL120, GL130

Uniwire Interface Module

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