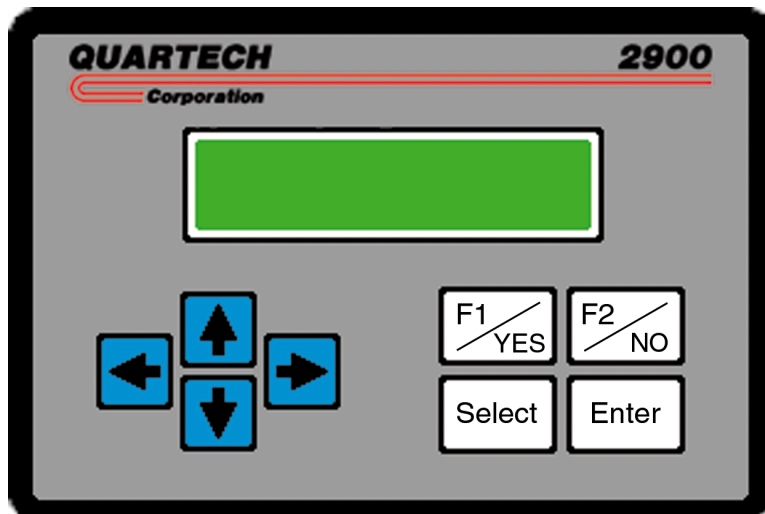
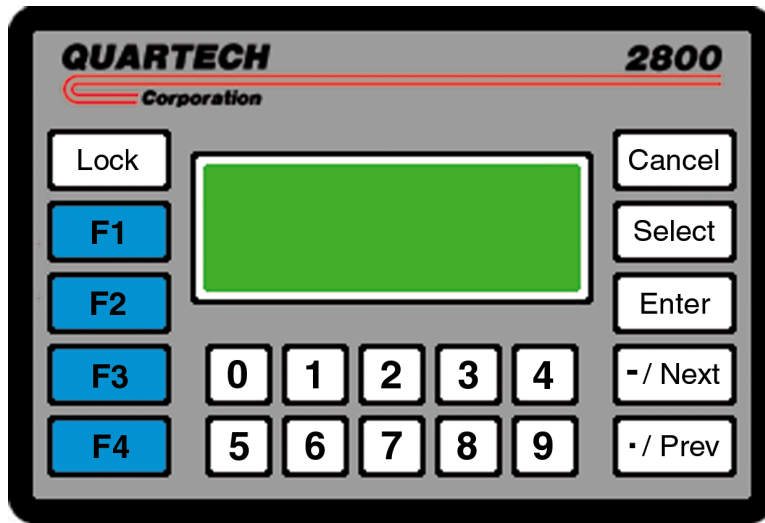


The 2800 and 2900 Operator Interface Terminals (OIT) share a common software package, a common panel cutout and have a near identical list of communication drivers. This manual provides important information necessary for connecting either unit to a particular brand or model of Programmable Controller.



PLC Communication Drivers	Page
Allen-Bradley PLC-5, DF1	2
Allen-Bradley SLC500, DF1	3
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Allen-Bradley PLC-5 DF1

The PLC-5 DF1 interface uses RS-232 signal levels and is intended for point to point communications, i.e., only a single peripheral device may be connected to the DF1 port.

ScreenMaker 2000 Port setup: Baud rate: 9600 bps or 19200 bps
 Interface type: RS-232 or RS-485
 A single Dialogue File address is assigned and must be an Integer type file.
 Element 0 is the Command Word.
 Element 1 is Screen Trigger one.
 Element 2 is Screen Trigger two.

Byte format: 8 data bits, 1 stop bit, no parity

PLC-5 processor configuration

Use Allen-Bradley programming software to configure the PLC-5 processor as shown below.
 The baud rate may be 9600bps as long as it matches the OIT setting.

System Mode (DF1 Point to Point) Channel 0 Configuration			
Diag. file:	0	System mode char.:	S
Remote mode change:	DISABLED	User mode char.:	U
Mode attention char.:	\0x1b	Baud Rate:	19200
		Parity:	NONE
Baud Rate:	19200	Stop bits:	1
Stop bits:	1	Control line:	NO HANDSHAKING
Control line:	NO HANDSHAKING	Duplicate Detect:	OFF
Duplicate Detect:	OFF	Error Detect:	CRC
ACK Timeout (20 ms):	500	NAK Retries:	3
		ENQ Retries:	3

The following schematic shows the cable connections required between the OIT and the PLC-5 DF1 port. This cable is available from Quartech in a standard length of ten feet. Cables up to fifty feet in length may be ordered.

Allen-Bradley PLC-5 DF1 Quartech Part Number: 2139-10

PLC-5		2800/2900	
25 Pin Male D-Type		15 Pin Female D-Type	
RXD	3 <))))))))))))))))))))))<	TXD	2
TXD	2 <))))))))))))))))))))))<	RXD	3
SC	7 <))))))))))))))))))))))<	SC	7
RTS	4 <)), , +))))<	RTS	4
CTS	5 <)) - .))<	CTS	5
DSR	6 <)), , Drain Wire)<	FG	1
DCD	8 <)) 1		
DTR	20 <)) -		

Allen-Bradley SLC500 DF1

The SLC500 DF1 interface uses RS-232 signal levels and is intended for point to point communications, i.e., only a single peripheral device may be connected to the DF1 port.

ScreenMaker 2000 Port setup: Baud rate: 9600 bps or 19200 bps
 Interface type: RS-232 or RS-485
 A single Dialogue File address is assigned and must be an Integer type file.
 Element 0 is the Command Word.
 Element 1 is Screen Trigger one.
 Element 2 is Screen Trigger two.

Byte format: 8 data bits, 1 stop bit, no parity

SLC500 processor configuration

Use Allen-Bradley programming software to configure the SLC500 processor as shown below.
 The baud rate may be 9600bps as long as it matches the OIT setting.

System Mode Channel 0 Configuration			
Baud Rate:	19200	Parity:	NONE
Duplicate Detect:	DISABLED	Error Detect:	CRC
ACK Timeout [x20 ms]:	500	NAK Retries:	3
		ENQ Retries:	3
Control Line:	NO HANDSHAKING	Embedded Response:	ENABLED

The following schematic shows the cable connections required between the OIT and the SLC500 DF1 port. This cable is available from Quartech in a standard length of ten feet. Cables up to fifty feet in length may be ordered.

Allen-Bradley SLC500 DF1

Quartech Part Number: 2136-10

SLC500		2800/2900	
9 Pin Female D-Type		15 Pin Female D-Type	
RXD	2 >))))))))))))))))))<	TXD	2
TXD	3 >))))))))))))))))))<	RXD	3
SC	5 >))))))))))))))))))<	SC	7
RTS	7 >)), +)))))<	RTS	4
CTS	8 >)) - .)))))<	CTS	5
DCD	1 >)), Drain Wire)<	FG	1
DTR	4 >)) 1		
DSR	6 >)) -		

Allen-Bradley MicroLogix
 Quartech Part Number: 2147-01

MicroLogic Cable		2800/2900	
9 Pin Male D-Type		15 Pin Female D-Type	
RXD	3 <))))))))))<	2	TXD
TXD	2 <))))))))))<	3	RXD
SC	5 <))))))))))<	7	SC
		4	RTS
		5	CTS
	Drain Wire))<	1	FG

Allen-Bradley DH485 Interface

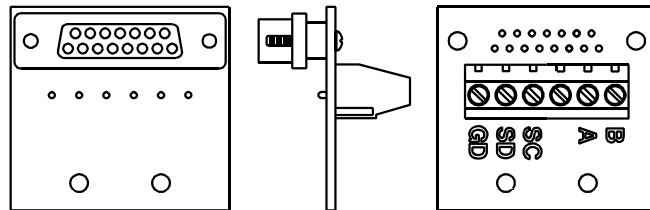
The SLC500 DH-485 interface uses RS-485 signal levels. The OIT can communicate on the DH485 network along with other Quartech products, programmers, and any other devices that strictly follows the DH485 protocol. The OIT must be assigned to a host PLC which is the PLC that its Dialogue File is located in. The OIT can also display data from other PLCs within the network.

ScreenMaker 2000 port setup: Baud rate: 9600 bps or 19200 bps
 PLC Node: 0-31, OIT Node: 0-31, OIT Max poll address
 A single Dialogue File address is assigned and must be an Integer type file.
 Element 0 is the Command Word.
 Element 1 is Screen Trigger one.
 Element 2 is Screen Trigger two.

Byte format: 8 data bits, 1 stop bit, even parity

When connecting multiple devices on the network an Allen-Bradley 1747-AIC Isolated Link Coupler should be used between the SLC500 processor and the physical network. The OIT is connected to the network through the Quartech 9108 Network Link Adapter.

**Model 9108
 Network Link Adapter**



When connecting a single OIT to a SLC500 processor a direct connection through the eight pin phone jack on the front of the processor may be preferable. The schematic on the next page shows the cable connections required between the OIT and the SLC500 DH485 port. This cable is available from Quartech in a standard length of ten feet. Cables up to one hundred feet in length may be ordered.

Allen-Bradley SLC500 DH485
 Quatech Part Number: 2145-10

SLC500		2800/2900	
8 Pin RJ45		15 Pin Female D-Type	
RxTxB	1 <)))))))))))))))))) <	RxTxB	12
RxTxA	2 <)))))))))))))))))) <	RxTxA	13
SC	7 <)))))))))))))))))) <	SC	7
Send/Rec	5 <)))))))))))))))))) <	Send/Rec	8
		+)))) <	4
		.)))) <	5
	Drain Wire) <	FG	1

DH485 Network Basics

The DH485 Data Link network uses a multiple master, token passing protocol. For this protocol, the devices on the network form a logical ring; that is, the devices assume an ordered sequence, with the last device in the sequence followed by the first. Each device knows the node address of the device following it (its successor). The physical ordering of the devices on the network is irrelevant and independent of the logical ordering.

Each device on the network has the responsibility of periodically granting an opportunity for new devices to enter the network. Any time there exists a gap between a given device address and its successor's address, that device must periodically issue a "solicit successor" message to each potential node address between itself and its successor. The solicit successor message allows an opportunity for a new device to enter the network.

A total of 32 devices may share the DH485 Data Link network. When only a few devices are sharing the network the soliciting time can become considerable. To reduce unnecessary soliciting, a maximum poll address may be assigned in the OIT and most other devices designed for use on the network. The OIT, and other devices utilizing this feature, will send a "solicit successor" message only to those device addresses that are in the gap between itself and its successor, and have an address less than or equal to its maximum poll address. Use of the maximum poll address can relieve the device with the highest node address from the burden of soliciting a large number of unused node addresses.

Choosing Device Node Addresses

It is imperative that each device on the network is assigned a unique node address. For best performance start node addresses at zero and increase sequentially, with no gaps between successive addresses. It is not important which device is assigned which address. The device with the highest address on the network should have its maximum poll address set equal to its own address.

For example: A DH485 network might include one SLC500, one programmer, and one OIT. Assigned node addresses could be as shown below.

- ▶ OIT node address = 00
- ▶ Programmer node address = 01
- ▶ SLC500 node address = 02. Max. poll address = 02.

Fuji Electric N Series

The N Series PLC interface uses RS-485 signal levels and is intended for point to point communications, i.e., only a single peripheral device may be connected to the PLC port.

ScreenMaker 2000 Port setup: Command Word Address: Internal Bits (M Type), one word
 Screen Trigger Address: Data Register (D Type), two contiguous words

Communication format: 8 data bits, 1 stop bit, odd parity, 19200bps.

The following schematic shows the cable connections required between the OIT and the N Series PLC port. This cable is available from Quartech in a standard length of ten feet. Cables up to two hundred feet in length may be ordered.

Fuji Electric N Series

Quartech Part Number: 2152-10

N Series		2800/2900		
8 Pin RJ485		15 Pin Female D-Type		
TXD+	3 <))))))))))))))))))<	12	RXDB	
TXD-	4 <))))))))))))))))))<	13	RXDA	
RXD+	5 <))))))))))))))))))<	14	TXDB	
RXD-	6 <))))))))))))))))))<	6	TXDA	
SC	8 <))))))))))))))))))<	7	SC	
		+))))<	4	RTS
		.))))<	5	CTS
		Drain Wire))))<	1	FG

GE Fanuc Series Ninety

The Series Ninety PLC interface uses RS-485 signal levels. Although a single master, multiple slave network is possible the OIT does not support it.

ScreenMaker 2000 Port setup: Baud rate: 9600 bps or 19200 bps
Command Word Address: Internal Relay (%M Type), one word
Screen Trigger Address: Data Register (%R Type), two contiguous words

Byte format: 8 data bits, 1 stop bit, odd parity

The following schematic shows the cable connections required between the OIT and the SNP port. This cable is available from Quartech in a standard length of ten feet. Cables up to two hundred feet in length may be ordered.

GE Fanuc Series 90 Quartech Part Number: 2150-10

Series 90		2800/2900			
15 Pin Male D-Type		15 Pin Female D-Type			
SDB	13	<))))))))))))))))))<	12	RXDB	
SDA	12	<))))))))))))))))))<	13	RXDA	
RDB	11	<))))))))))))))))))<	14	TXDB	
RDA	10	<)))0))))))))))))))<	6	TXDA	
	9	<))) -			
SC	7	<))))))))))))))))))<	7	SC	
CTSB	8	<))) ,	+))))<	4	RTS
RTSB	14	<))) -	.))))<	5	CTS
CTSA	6	<))) ,			
RTSA	15	<))) -			
FG	1	<))) Drain Wire			

Idec Micro 3 Series

The Micro 3 Series PLC interface varies based on the model. Also both point to point communications and network communications are available.

ScreenMaker 2000 Port setup: PLC Type: Micro 3 RS-485, Micro 3C RS-232, Data Link RS-485
 Host PLC node address: 0 through 1F hexadecimal
 Command Word Address: Internal Relay (M Type), one word
 Screen Trigger Address: Data Register (D Type), two contiguous words

Communication format: 7 data bits, 1 stop bit, even parity, 9600 bps.

The following schematics show cable connections required between the OIT and the various Micro 3 ports. Both cables are available from Quartech in a standard length of ten feet. 2154 cables up to two hundred feet in length may be ordered. 2155 cables up to fifty feet in length may be ordered.

Idec Micro 3C

Quartech Part Number: 2154-10

	Micro 3C 8 Pin Mini DIN		2800/2900 15 Pin Female D-Type
RXD	4 <)))))))))))))))))) <	2	TXD
TXD	3 <)))))))))))))))))) <	3	RXD
SC	6 <))))))))))0)))))) <	7	SC
SC	7 <)))))))))) - +)))) <	4	RTS
		5	CTS
	Drain Wire)))) <	1	FG

Idec Micro 3

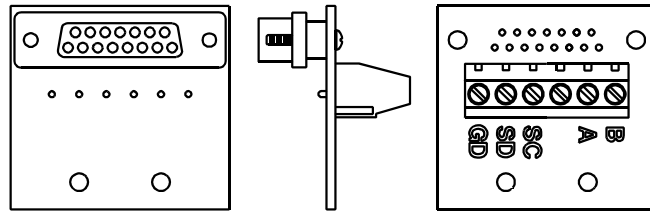
Quartech Part Number: 2155-10

	Micro 3 8 Pin Mini DIN		2800/2900 15 Pin Female D-Type
RxTxA	2 <)))))))))))))))))) <	13	RxTxA
TxTxB	1 <)))))))))))))))))) <	12	RxTxB
SC	7 <)))))))))))))))))) <	7	SC
		4	RTS
		5	CTS
	Drain Wire)))) <	1	FG

The Idec Micro 3 series PLCs can be connected in a single master multiple slave network using the Data Link interface. In this configuration multiple Micro 3 PLCs can be connected to a single OIT. One PLC must be assigned as the host, meaning the Command Word and Screen Triggers are located in it. The OIT will be capable of reading and writing data to the other PLCs on the network.

The OIT is connected to the network through the Quartech 9108 Network Link Adapter.

**Model 9108
Network Link Adapter**



**Data Link Terminals
Micro3C or FL2A-LC1**

Quartech 9108



Transmission Lines

The Data Link network is designed to be wired in a point-to-point fashion. All devices are wired in-line, one after another, forming a single trunk line. Drop lines off the main trunk line are not recommended and may degrade or prevent network operation. As the trunk line length increases two factors become increasingly important. These factors are line resistance and line capacitance. In most applications the use of line terminating resistors will improve or allow satisfactory performance. Two terminating resistors are required for a network regardless of the number of devices in the network. One terminating resistor is connected at each end of the network. The OIT includes a terminating resistor that is switched into to the circuit by closing a DIP switch accessible through the cover. Refer to the Hardware Manual for the particular OIT to identify which DIP switch is assigned. If the OIT is at either end of the network the switch should be closed. Devices which are not at either physical end of the network must not have termination resistors switched into the circuit.

Micro 3C Note: Set the protocol selector switch to position 2 (Loader Port). The front port and Data Link port can then be used simultaneously.

The FX Series interface uses signal levels is intended point to point communications, i.e., only a single peripheral device may be connected to the FX port.

Command Word Address: Internal Coil (M Type), one word
 Screen Trigger Address: Data Register (D Type), two contiguous words

7 data bits, 1 stop bit, even parity, 9600bps.

The following shows the connections required the OIT the FX port. This is

Mitsubishi FX Series
 Quartech Part Number: 2148-10

FX Series		2800/2900	
25 Pin Male D-Type		15 Pin Female D-Type	
TX+	3 <))))))))))))))))))))))<	12	RXDB
TX-	16 <))))))))))))))))))))))<	13	
RX+	2))))))))))))))))))))))))		TXDB
RX-	<))))))))))))))))))))))<	6	TXDA
SC	8 <))))))))))))))))))))))<	7	
DCC	20))) ,	+))))	RTS
PWE	<))) -	.)))))<	CTS
	4 <))) ,	Drain Wire))))<	1
DCC	7))) -		
	17 <))) ,		
+5VDC	24))) -		

Omron Host Link

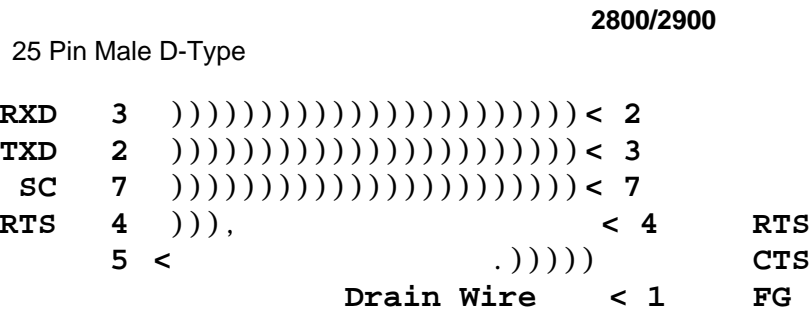
Host Link uses RS-232 RS-422 signal The RS-232 port is intended for point to point be connected to the port. A single master, multiple slave

ScreenMaker 2000 Port setup: Interface type: RS-232 or RS-422
 Baud rate: 9600 bps or 19200 bps
 Command Word Address: Internal Bits (HR Type), one word

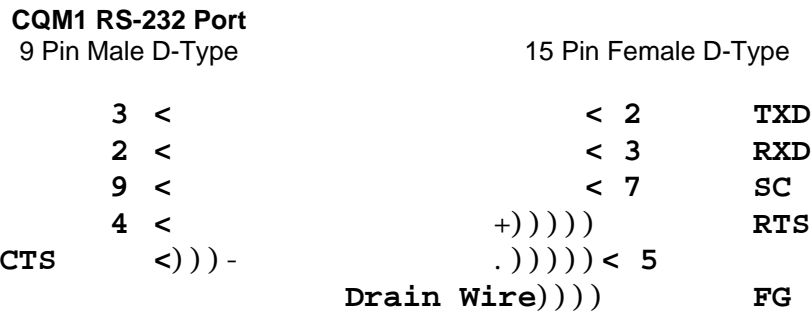
Byte format: 7 data bits, 2 stop bit, even parity

following schematic the cable required between OIT and LK201 Host port. This cable is available from Quartech in a standard length of ten feet. Cables up to fifty feet in length may be ordered.

Omron Host Link Quartech Part Number: 2132-10



Quartech Part Number: 2158-10



CQM1 lot number manufactured prior July, 1995 at 2400bps use one bit. These have or earlier. To allow the 2800 or 2900 to communicate with these processors set the node address

Toshiba EX100

The Toshiba EX100 is a non standard interface intended for point to point communications, i.e., only a single peripheral device may be connected to the port. This driver is compatible with Toshiba models EX100, EX250, EX500, M20, and M40. It is also compatible with the Cutler-Hammer D500 processor.

ScreenMaker 2000 Port setup: Command Word Address: Internal Relays (RW Type), one word
 Screen Trigger Address: Data Register (D Type), two contiguous words

Interface type: Custom, 4800 bps, 8 data bits, 1 stop bit, even parity.

The following schematic shows the cable connections required between the OIT and the Toshiba programming port. This cable is available from Quartech in a standard length of ten feet. Cables up to twenty five feet in length may be ordered.

Toshiba EX100
 Quartech Part Number: 2159-0

Toshiba Port	2800/2900	
8 Pin Male Connector	15 Pin Female D-Type	
SC A4 <)))))))))))))))))) <	11	SC
RXD A3 <)))))))))))))))))) <	6	TXDA
TXD B3 <))))))))))))))))))0) <	13	RXDA
	+) Y 4.7K Z) -	
+5 B4 <)))))))))3))))))))) <	15	+5
	.) Y 4.7K Z)0) <	RXDB
	+) Y 2.7K Z) -	
	.)))))))))) <	10
	+))))) <	4
	.)))))) <	5
Drain Wire))))) <	1	FG

The T1 interface RS-232 or signal levels on the m configuration. single master slave network be configured using the RS-485 One PLC be as the meaning the Word and Triggers are in it. The OIT will be capable reading and data to PLCs on network. The and 2900 using the Computer

ScreenMaker 2000 Port setup: Interface type: RS-232 or RS-485
 Baud rate: 9600 bps or 19200 bps
 Byte format: 8 data bits, 1 stop bit, odd or no parity
 Screen Trigger Address: Data Register (D Type), two contiguous words

This is available Quartech in standard length ten feet. up to feet in may be

Toshiba T1
 Quartech Part Number: 2160-10

				2800/2900	
	8 Pin Male Mini DIN				
RXD	8))))))))))))))))))	<	2	
TXD	6))))))))))))))))))	<	3	
SC	5))))))))))))))))))	<	7	
RTS	4)),	<	4	RTS
	7	< .))))			CTS
		Drain Wire	<	1	FG

Yaskawa, MP930 Memobus Interface

The MP930 interface uses RS-232 signal levels and is intended for point to point communication, i.e., only a single peripheral device may be connected to the MP930 port. The OIT will be capable of reading and writing data to all MW and MI address locations. The 2800 and 2900 communicate using the T-Series Computer Link ASCII protocol.

ScreenMaker 2000 Port setup: Node address: 1 through 247
 Baud rate: 9600 bps or 19200 bps
 Command Word Address: (MW Type), one word
 Screen Trigger Address: (MW Type), two contiguous words

Byte format: 8 data bits, 1 stop bit, even parity

The following schematic shows the cable connections required between the OIT and the MP930 port 2 . This cable is available from Quartech in a standard length of ten feet. Cables up to fifty feet in length may be ordered.

Yaskawa MP930 Port 2
 Quartech Part Number: 2164-10

MP930 Port 2		2800/2900	
9 Pin Male D-Type		15 Pin Female D-Type	
RXD	3 (<)))))))))))))) <	2	TXD
TXD	2 (<)))))))))))))) <	3	RXD
SC	7 (<)))))))))))))) <	7	SC
RTS	4 (<)), +))))) <	4	RTS
CTS	5 (<)) - .))))) <	5	CTS
DSR	6 (<)),		
DTR	9 (<)) -		

NOTES:

The OIT can directly address locations MW00000 through MW32767, and ML00000 through ML32767. Address type MB is accessed using the Bit Status Field or Bit Status function key designation.

Up to four OITs can be connected to a single MP930 port using the Quartech Model 8517 Multiplexer.