In This Chapter...

Introduction............................................................................................................. 6–2
DirectLOGIC PLCs Password Protection ................................................................. 6–2
PLC Communication Cables & Wiring Diagrams.................................................... 6–5
  AutomationDirect PLCs RS-232C Serial:............................................................ 6–7
  AutomationDirect PLCs RS-422A/RS-485A:......................................................... 6–10
  Direct LOGIC Universal Isolated Network Adapter, p/n FA-ISOCON: ................. 6–16
  Direct LOGIC Universal Converter, p/n F2-UNICON:......................................... 6–17
  RS-422A/RS-485A Multi-Drop Wiring Diagram Examples ................................. 6–18
  Allen-Bradley: .................................................................................................... 6–22
  GE: ....................................................................................................................... 6–27
  GE VersaMax Micro: ............................................................................................. 6–27
  Mitsubishi: ............................................................................................................ 6–27
  Omron: ................................................................................................................ 6–29
  Modicon ModBus RS-232: ................................................................................... 6–30
  Modicon Micro Series: ......................................................................................... 6–30
  Modicon ModBus with RJ45: .............................................................................. 6–30
  Siemens: ............................................................................................................. 6–31
Introduction

The C-more family of touch panels is capable of communicating with a wide variety of Programmable Logic Controllers. C-more is capable of communicating over RS232, RS422 and RS485 serial networks as well as Ethernet networks. It communicates with all AutomationDirect PLC’s utilizing various protocols. C-more also communicates with other brands of PLCs by their different protocols. The table on the next page lists all of the various PLCs and protocols that can be configured. The page after the protocol table lists the various serial communication cables that are available to purchase. The rest of this chapter is devoted to show the pin to pin connections of all the available cables plus wiring diagrams that the user can refer to in order to construct their own cables, along with wiring diagrams of cables that are not available for purchase. To simplify RS422/RS485 wiring schemes, we have included wiring diagrams showing connections for available terminal connectors such as our ZIPLink Communication Adapter Module, p/n ZL-CMA15, used for example with our DL-06 and D2-260 PLCs and C-more D-Sub 15-pin to Terminal Block Adapter p/n EA-COMCON-3.

If you have difficulty determining whether the particular PLC and/or protocol you are using will work with the C-more series of touch panels, please contact our technical support group at 770-844-4200

DirectLOGIC PLCs Password Protection

**NOTE:** Many DirectLogic PLCs support multi-level password protection of the ladder program. This allows password protection while not locking the communication port to an operator interface. The multilevel password can be invoked by creating a password with an upper case “A” followed by seven numeric characters (e.g. A1234567). Please refer to the specific PLC user manual for further details.
# Chapter 6: PLC Communications

## PLC Protocol & Cables

<table>
<thead>
<tr>
<th>Model</th>
<th>Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity3000</td>
<td>P3000 Serial</td>
</tr>
<tr>
<td>CLICK</td>
<td>Modbus (CLICK)</td>
</tr>
<tr>
<td>DL05/DL06 all</td>
<td>K-Sequence, Direct, Direct, Direct, Direct</td>
</tr>
<tr>
<td>H0-ECOM/H0-ECOM100</td>
<td>LOGIC Ethernet</td>
</tr>
<tr>
<td>DL105 all</td>
<td>K-Sequence</td>
</tr>
<tr>
<td>DL205 D2-230</td>
<td>K-Sequence</td>
</tr>
<tr>
<td>DL205 D2-240</td>
<td>K-Sequence, Direct, Direct</td>
</tr>
<tr>
<td>DL205 D2-250/D2-250-1/D2-260</td>
<td>K-Sequence, Direct, Direct</td>
</tr>
<tr>
<td>DL205 D2-240/D2-250-1/D2-260 Using DCM</td>
<td>Direct, Direct, Modbus (Koyo addressing)</td>
</tr>
<tr>
<td>DL205 H2-ECOM/H2-ECOM100</td>
<td>Direct, LOGIC Ethernet</td>
</tr>
<tr>
<td>AutomationDirect</td>
<td></td>
</tr>
<tr>
<td>DL305 D3-330/D330P (Requires the use of a Data Communications Unit)</td>
<td>Direct, Direct, Direct, Direct, Direct, Direct, Direct, Direct, Direct</td>
</tr>
<tr>
<td>DL305 D3-340</td>
<td></td>
</tr>
<tr>
<td>DL305 D3-350</td>
<td>Direct, Direct</td>
</tr>
<tr>
<td>DL305 D3-350 DCM</td>
<td>Direct, Direct</td>
</tr>
<tr>
<td>DL405 D4-430</td>
<td>K-Sequence</td>
</tr>
<tr>
<td>DL405 D4-440</td>
<td>K-Sequence</td>
</tr>
<tr>
<td>DL405 D4-450</td>
<td>K-Sequence</td>
</tr>
<tr>
<td>DL405 All with DCM</td>
<td>Direct, Modbus (Koyo addressing)</td>
</tr>
<tr>
<td>DL405 H4-ECOM/H4-ECOM100</td>
<td>Direct, LOGIC Ethernet</td>
</tr>
<tr>
<td>H2-WinPLC (Think &amp; Do) Live V5.2 or later and Studio any version</td>
<td>Think &amp; Do Modbus RTU (serial port)</td>
</tr>
<tr>
<td>H2-WinPLC (Think &amp; Do) Live V5.5.1 or later and Studio V7.2.1 or later</td>
<td>Think &amp; Do Modbus TCP/IP (Ethernet port)</td>
</tr>
<tr>
<td>GS Drives</td>
<td>GS Drives Serial</td>
</tr>
<tr>
<td>SOLO Temperature Controllers</td>
<td>GS Drives TCP/IP (GS-EDRV)</td>
</tr>
</tbody>
</table>

PLC Compatibility Table continued on the next page.
## PLC Protocol & Cables (cont’d)

<table>
<thead>
<tr>
<th>Model</th>
<th>Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Allen-Bradley</strong></td>
<td></td>
</tr>
<tr>
<td>MicroLogix 1000, 1100, 1200, 1400, 1500, SLC 5-01/02/03</td>
<td>DH485/AIC/AIC+</td>
</tr>
<tr>
<td>MicroLogix 1000, 1100, 1200, 1400 and 1500</td>
<td>DF1 Half Duplex; DF1 Full Duplex</td>
</tr>
<tr>
<td>SLC 5-03/04/05</td>
<td></td>
</tr>
<tr>
<td>ControlLogix™, CompactLogix™, FlexLogix™</td>
<td></td>
</tr>
<tr>
<td>PLC-5</td>
<td></td>
</tr>
<tr>
<td>ControlLogix, CompactLogix, FlexLogix - Tag Based</td>
<td>DF1 Half Duplex; DF1 Full Duplex</td>
</tr>
<tr>
<td>ControlLogix, CompactLogix, FlexLogix - Generic I/O Messaging</td>
<td>EtherNet/IP Server</td>
</tr>
<tr>
<td>ControlLogix, CompactLogix, FlexLogix - Tag Based</td>
<td></td>
</tr>
<tr>
<td>MicroLogix 1100, 1400 and SLC 5/05, via native Ethernet port</td>
<td>EtherNet/IP Client</td>
</tr>
<tr>
<td>MicroLogix 1000, 1100, 1200, 1400, 1500, SLC 5-03/04/05, all via ENI adapter</td>
<td></td>
</tr>
<tr>
<td><strong>GE</strong></td>
<td></td>
</tr>
<tr>
<td>90/30, 90/70, Micro 90, VersaMax Micro</td>
<td>SNPX</td>
</tr>
<tr>
<td><strong>Mitsubishi</strong></td>
<td></td>
</tr>
<tr>
<td>FX Series</td>
<td></td>
</tr>
<tr>
<td>Q02, Q02H, Q06H, Q12H, Q25H</td>
<td></td>
</tr>
<tr>
<td>Q, QnA Serial</td>
<td>Q CPU</td>
</tr>
<tr>
<td>Q, Qn Ethernet</td>
<td>QnA Serial</td>
</tr>
<tr>
<td><strong>Modicon</strong></td>
<td></td>
</tr>
<tr>
<td>984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU: 311-xx, 411-xx, 512-xx, 612-xx</td>
<td>Modbus RTU</td>
</tr>
<tr>
<td>Other devices using Modicon Modbus addressing</td>
<td>Modbus RTU; Modbus TCP/IP</td>
</tr>
<tr>
<td><strong>Omron</strong></td>
<td></td>
</tr>
<tr>
<td>C200 Adapter, C500</td>
<td>Host Link</td>
</tr>
<tr>
<td>CJ1/CS1 Serial</td>
<td>FINs</td>
</tr>
<tr>
<td>CJ1/CS1 Ethernet</td>
<td></td>
</tr>
<tr>
<td><strong>Siemens</strong></td>
<td></td>
</tr>
<tr>
<td>S7-200 CPU, RS-485 Serial</td>
<td>PPI</td>
</tr>
<tr>
<td>S7-200 CPU, S7-300 CPU, S7-1200 CPU; Ethernet</td>
<td>Ethernet ISO over TCP</td>
</tr>
</tbody>
</table>
PLC Communication Cables & Wiring Diagrams

<table>
<thead>
<tr>
<th>Purchased Cable Description</th>
<th>Cable Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutomationDirect Productivity Series, CLICK, DirectLogic PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 &amp; H2-WINPLC (RS-232C)</td>
<td>EA-2CBL</td>
</tr>
<tr>
<td>DirectLogic (VGA Style) 15-pin port DL06, D2-250 (250-1), D2-260 (RS-232C)</td>
<td>EA-2CBL-1</td>
</tr>
<tr>
<td>DirectLogic PLC RJ-11 port, D3-340 (RS-232C)</td>
<td>EA-3CBL</td>
</tr>
<tr>
<td>DirectLogic DL405 PLC 15-pin D-sub port, DL405 (RS-232C)</td>
<td>EA-4CBL-1</td>
</tr>
<tr>
<td>DirectLogic PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM’s (RS-232C)</td>
<td>EA-4CBL-2</td>
</tr>
<tr>
<td>Allen-Bradley MicroLogix 1000, 1100, 1200, 1400, 1500 (RS-232C)</td>
<td>EA-MLOGIX-CBL</td>
</tr>
<tr>
<td>Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix, MicroLogix DF1 port (RS-232C)</td>
<td>EA-SLC-232-CBL</td>
</tr>
<tr>
<td>Allen-Bradley PLC-5 DF1 port (RS-232C)</td>
<td>EA-PLC5-232-CBL</td>
</tr>
<tr>
<td>Allen-Bradley MicroLogix, SLC 5-01/02/03, PLC5 DH485 port (RS-232C)</td>
<td>EA-DH485-CBL</td>
</tr>
<tr>
<td>GE 90/30, 90/70, Micro 90, VersaMax Micro 15-pin D-sub port (RS-422A)</td>
<td>EA-90-30-CBL</td>
</tr>
<tr>
<td>MITSUBISHI FX Series 25-pin port (RS-422A)</td>
<td>EA-MITSU-CBL</td>
</tr>
<tr>
<td>MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)</td>
<td>EA-MITSU-CBL-1</td>
</tr>
<tr>
<td>OMRON Host Link C200 Adapter, C500 (RS-232C)</td>
<td>EA-OMRON-CBL</td>
</tr>
</tbody>
</table>

**NOTE 1:** The above list of pre-made communications cables may be purchased. See further in this chapter for wiring diagrams of additional user constructed cables. This chapter also includes wiring diagrams for the pre-made cables.

**NOTE 2:** EZTouch serial PLC communication cables are compatible with C-more touch panels.
Chapter 6: PLC Communications

PLC Communication Cables & Wiring Diagrams

Part No. EA-4CBL-1

Part No. EA-4CBL-1

Part No. EA-MLOGIX-CBL

Part No. EA-SLC-232-CBL

Part No. EA-PLC5-232-CBL

Part No. EA-DH485-CBL

Part No. EA-90-30-CBL

Part No. EA-MITSU-CBL

Part No. EA-MITSU-CBL-1

Part No. EA-OMRON-CBL
PLC Communication Cables & Wiring Diagrams (cont’d)

The following series of wiring diagrams show the connectors and wiring details for the communication cables that are used between the C-more touch panels and various PLC controllers. Part numbers are included with the pre-made cables that can be purchased from AutomationDirect. The information presented will allow the user to construct their own cables if so desired.

**EA-2CBL**

![Wiring Diagram](image)

**AutomationDirect PLCs RS-232C Serial:**

**EA-2CBL-1**

![Wiring Diagram](image)
AutomationDirect PLCs RS-232C Serial (cont’d):

Direct Logic PLC RJ11 port: D3-340
RS-232C (p/n EA-3CBL)

1 = RXD
2 = TXD
3 = do not use
4 = Sig ground

To PLC RJ11 Port

Wiring Diagram

1 = Frame GND
2 = TXD (232C)
3 = RXD (232C)
4 = do not use
5 = Logic GND
6 = do not use
7 = do not use
8 = do not use

RS-232C (p/n EA-3CBL)

To C-more Touch Panel PLC Port

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.
AutomationDirect PLCs RS-232C Serial (cont’d):

EA-4CBL-1

Direct Logic PLC 15-pin D-sub port: DL405, RS-232C (p/n EA-4CBL-1)

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

EA-4CBL-2

Direct Logic PLC 25-pin D-sub port: DL405, D3-350, DL305 DCU, and all DCMs, RS-232C (p/n EA-4CBL-2)

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.
AutomationDirect PLCs RS-422A/RS-485A:
When using the RS-422A/RS-485A capabilities of the C-more PLC communications port, the termination resistor is placed between the RXD– and RXD+ terminals on the PLC side of the connection between the touch panel and PLC. The Termination Resistor value is based on the characteristic impedance of the cable being used. To enable the built-in 120 Ohm Termination Resistor, jumper pin 13 to pin 9 (RXD+) on the C-more 15-pin PLC communications port.

 DIRECT LOGIC DL-06, D2-250, D2-250-1, D2-260 (all Port 2)
RS-422A

Wiring Diagram

| 15 = CTS-  | 14 = CTS+ |
| 13 = RXD-  | 12 = RTS- |
| 11 = RTS+  | 10 = RXD+ |
| 9 = TXD-   | 8 = RXD+  |
| 7 = Sig GND| 6 = TXD-  |
| 5 = do not use| 4 = do not use |
| 3 = do not use| 2 = do not use |
| 1 = do not use| 1 = Frame GND |

Note: Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

NOTE: The RS-422 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram example on page 6-18 if more than one PLC will be connected to a panel.
AutomationDirect PLCs RS-422A/RS-485A (cont’d):

**User Constructed**

![Wiring Diagram](image)

To PLC 25-Pin Port

DirectLOGIC D4-430/D4-440/D4-450 Port 1 and D3-350 Port 2

To C-more Touch Panel PLC Port

RS-422A

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frame GND</td>
<td>do not use</td>
</tr>
<tr>
<td>2</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>3</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>4</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>5</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>6</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>7</td>
<td>0 V</td>
<td>do not use</td>
</tr>
<tr>
<td>8</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>9</td>
<td>RXD+ (RS422)</td>
<td>RXD+(RS422)</td>
</tr>
<tr>
<td>10</td>
<td>RXD– (RS422)</td>
<td>RXD–(RS422)</td>
</tr>
<tr>
<td>11</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>12</td>
<td>TXD– (RS422)</td>
<td>TXD–(RS422)</td>
</tr>
<tr>
<td>13</td>
<td>TXD+ (RS422)</td>
<td>TXD+(RS422)</td>
</tr>
<tr>
<td>14</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>15</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>16</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>17</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>18</td>
<td>RT S+</td>
<td>RT S+(RS422)</td>
</tr>
<tr>
<td>19</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>20</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>21</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>22</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>23</td>
<td>CTS–</td>
<td>CTS–(RS422)</td>
</tr>
<tr>
<td>24</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>25</td>
<td>do not use</td>
<td>do not use</td>
</tr>
</tbody>
</table>

Note: Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

**User Constructed**

![Wiring Diagram](image)

To PLC 25-Pin Port

DirectLOGIC D4-450 Port 3

RS-422A

To C-more Touch Panel PLC Port

RTS and CTS are not present on this port.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frame GND</td>
<td>do not use</td>
</tr>
<tr>
<td>2</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>3</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>4</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>5</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>6</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>7</td>
<td>0 V</td>
<td>do not use</td>
</tr>
<tr>
<td>8</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>9</td>
<td>RXD+ (RS422)</td>
<td>RXD+(RS422)</td>
</tr>
<tr>
<td>10</td>
<td>RXD– (RS422)</td>
<td>RXD–(RS422)</td>
</tr>
<tr>
<td>11</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>12</td>
<td>TXD– (RS422)</td>
<td>TXD–(RS422)</td>
</tr>
<tr>
<td>13</td>
<td>TXD+ (RS422)</td>
<td>TXD+(RS422)</td>
</tr>
<tr>
<td>14</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>15</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>16</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>17</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>18</td>
<td>RT S+</td>
<td>RT S+(RS422)</td>
</tr>
<tr>
<td>19</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>20</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>21</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>22</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>23</td>
<td>CTS–</td>
<td>CTS–(RS422)</td>
</tr>
<tr>
<td>24</td>
<td>do not use</td>
<td>do not use</td>
</tr>
<tr>
<td>25</td>
<td>do not use</td>
<td>do not use</td>
</tr>
</tbody>
</table>

Note: Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

**NOTE:** The RS-422 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram example on page 6-18 if more than one PLC will be connected to a panel.
Chapter 6: PLC Communications

AutomationDirect PLCs RS-422A/RS-485A (cont’d):

**Direct LOGIC DL-06, D2-260 (both Port 2)**

RS-485A

**User Constructed**

Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent.

**NOTE:** The RS-485 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram example on page 6-18 if more than one PLC will be connected to a panel.
AutomationDirect PLCs RS-422A/RS-485A (cont’d):

**DirectLOGIC ZIPLink ZL-CMA15L Adapter Module to EA-COMCON-3 Terminal Block Adapter**

RS-485A – PLC D2-260 or DL06 only – Port 2

<table>
<thead>
<tr>
<th><strong>Wiring Diagram</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>+5V</td>
</tr>
<tr>
<td>SIGNAL GND</td>
</tr>
<tr>
<td>RS-422/485 RX–</td>
</tr>
<tr>
<td>RS-422/485 TX–</td>
</tr>
<tr>
<td>RS-422/485 RX+</td>
</tr>
<tr>
<td>RS-422/485 TX+</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Note:** Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

**DirectLOGIC ZIPLink ZL-CMA15L Adapter Module to EA-COMCON-3 Terminal Block Adapter**

RS-422A – PLC D2-250 (-1), D2-260 or DL06 – Port 2

<table>
<thead>
<tr>
<th><strong>Wiring Diagram</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>+5V</td>
</tr>
<tr>
<td>SIGNAL GND</td>
</tr>
<tr>
<td>RS-422/485 RX–</td>
</tr>
<tr>
<td>RS-422/485 TX–</td>
</tr>
<tr>
<td>RS-422/485 RX+</td>
</tr>
<tr>
<td>RS-422/485 TX+</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Note:** Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent.

**NOTE:** The RS-422 and RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-18 if more than one PLC will be connected to a panel.
AutomationDirect PLCs RS-422A/RS-485A (cont’d):

**Productivity3000 PAC RS485 Port to EA-COMCON-3 Terminal Block Adapter**

![Wiring Diagram](image)

*Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent.*

**AutomationDirect Productivity PAC RS-485**

![Wiring Diagram](image)

*Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent. Use 120 ohm resistors as termination resistors (Term.)*

**NOTE:** The RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-18 if more than one PLC will be connected to a panel.
AutomationDirect PLCs RS-422A/RS-485A (cont’d):

Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent. Use 120 ohm resistors as termination resistors (Term.).

NOTE: The RS-422 and RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-18 if more than one PLC will be connected to a panel.
Direct LOGIC Universal Isolated Network Adapter, p/n FA-ISOCON:

FA-ISOCON Universal Isolated Network Adapter
RS-422A to RS-232C – PLC DL05 or D2-240 – Port 2 only

Wiring Diagram

Note: Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.
Direct LOGIC Universal Converter, p/n F2-UNICON:

F2-UNICON Universal Converter
RS-422A to RS-232C – PLC DL05 or D2-240 – Port 2 only

Wiring Diagram

Ground the shield only at the equipment end where the F2-UNICON is located.

Note: Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

Note: When using multiple PLCs connected to one C-more touch panel, only jumper the Term terminal to the RD+ terminal when the panel is the last device at one end of the network.
Chapter 6: PLC Communications

RS-422A/RS-485A Multi-Drop Wiring Diagram Examples

DL06 and DL205 used for illustration purposes

**DirectLogic DL06 PLC**
(example device communicating across RS-422 connection)

**DirectLogic DL205 PLC**
(example device communicating across RS-422 connection)

Notes:
1. We recommend Belden 8103 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)

**Typical RS-422 Multi-Drop Wiring Diagram**
using DirectLogic pin numbers to illustrate
RS-422A/RS-485A Multi-Drop Wiring Diagram Examples (cont’d)

DL06 and DL205 used for illustration purposes

DirectLogic
DL06 PLC
(example device communicating across RS-422 connection)

Cable Adapter
(ZL-CMA15L shown)

Shielded Cable

Notes: 1. We recommend Belden 8103 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)

Typical RS-422 Multi-Drop Wiring Diagram (cont’d)
using DirectLogic pin numbers to illustrate

* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more Touch Panel 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable impedance.
Chapter 6: PLC Communications

RS-422A/RS-485A Multi-Drop Wiring Diagram Examples (cont’d)

DL06 and DL205 used for illustration purposes

DirectLogic
DL06 PLC
(example device communicating across RS-422 connection)

Port 2

DirectLogic
DL205 PLC
(example device communicating across RS-422 connection)

Cable Adapter
(ZL-CMA15L shown)

Shielded Cable

Notes: 1. We recommend Belden 9842 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)

To DL06 PLC port 2
(example RS-485 connection)

To D2-250-1 PLC port 2
(example RS-485 connection)

Typical RS-485 Multi-Drop Wiring Diagram
using DirectLogic pin numbers to illustrate

* Termination resistors required at both ends of the network to match the impedance of the cable (between 100 and 500 ohms).
RS-422A/RS-485A Multi-Drop Wiring Diagram Examples (cont’d)

DL06 and DL205 used for illustration purposes

Direct Logic
DL06 PLC
(example device communicating across RS-422 connection)

(Cable Adapter
(ZL-CMA15L shown)

Shielded Cable

Notes: 1. We recommend Belden 9842 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)

C-more
Touch Panel

Typical RS-485 Multi-Drop Wiring Diagram (cont’d)

using DirectLogic pin numbers to illustrate

* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more touch panel 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable impedance.
Allen-Bradley:

EA-MLOGIX-CBL

Allen-Bradley MicroLogix™ 1000/1100/1200/1400/1500
RS-232C (p/n EA-MLOGIX-CBL)

To AB MicroLogix RS-232 communication channel

1 = do not use
2 = Sig GND
3 = RXD
4 = do not use
5 = Logic GND
6 = do not use
7 = TXD
8 = do not use

Mini Din 8-pin Male

Wiring Diagram

TXD 3
RXD 2
GND 5

shield

15-pin D-sub (male)

15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

EA-SLC-232-CBL

To PLC 9-Pin Port

Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix,
FlexLogix, MicroLogix, DF1, RS-232C (p/n EA-SLC-232-CBL)

9-pin D-sub (female)

Wiring Diagram

TXD 3
RXD 2
GND 5

shield

15-pin D-sub (male)

15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

EA-PLC5-232-CBL

To PLC 25-Pin Port

Allen-Bradley PLC5 DF1
RS-232C (p/n EA-PLC5-232-CBL)

25-pin D-sub (male)

Wiring Diagram

TXD 2
RXD 3
GND 7

shield

15-pin D-sub (male)

15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.
Allen-Bradley (cont’d):

Allen-Bradley SLC500™, 5/01, /02, /03 DH-485
Point-to-Point
RS-485A (p/n EA-DH485-CBL)

Wiring Diagram

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TXD/RXD+</td>
</tr>
<tr>
<td>2</td>
<td>TXD/RXD-</td>
</tr>
<tr>
<td>3</td>
<td>do not use</td>
</tr>
<tr>
<td>4</td>
<td>Signal GND</td>
</tr>
<tr>
<td>5</td>
<td>LE</td>
</tr>
<tr>
<td>6</td>
<td>do not use</td>
</tr>
<tr>
<td>7</td>
<td>Signal GND</td>
</tr>
<tr>
<td>8</td>
<td>do not use</td>
</tr>
</tbody>
</table>

Note: Use the above wiring diagram if you need to make your own cable. We recommend Belden 9842 shielded cable or equivalent.

Allen-Bradley SLC500™, 5/01, /02, /03 DH-485/AIC to Multiple C-more Touch Panels
RS-485A (using C-more cable p/n EA-DH485-CBL)

Note: The above diagram shows connecting multiple C-more touch panels to an Allen-Bradley DH485/AIC network using the AB DH485 Link Coupler, p/n 1747-AIC. Select the "Allen-Bradley DH485/AIC SLC500 MicroLogix" driver in the C-more Programming Software when starting the project. Also, set the AB channel configuration for DH485.
Allen-Bradley (cont’d):

Allen-Bradley SLC500™ 5/03 DH-485/AIC to Multiple **C-more** Touch Panels
(using **C-more** cables p/n EA-MLOGIX-CBL, EA-SLC-232-CBL)

Note: The above diagram shows connecting multiple **C-more** touch panels to an Allen-Bradley DH485/AIC network using the AB AIC+ Advanced Interface Converter, p/n 1761-NET-AIC. Select the “Allen-Bradley DH485/AIC SLC500 MicroLogix” driver in the **C-more** Programming Software when starting the project. Also, set the AB channel configuration for DH485.
Allen-Bradley (cont’d):

Multiple Allen-Bradley PLCs connected to multiple **C-more** Touch Panels
(using AB Ethernet Network Interface p/n 761-NET-ENI with EtherNet/IP protocol)

- Allen-Bradley SLC 5/03 Modular PLC Controller
- Allen-Bradley MicroLogix 1000 PLC Controller
- Allen-Bradley MicroLogix 1500 PLC Controller
- C-more Touch Panel

- AB mini DIN to D-shell cable p/n 1761-CBL-AP00
- AB 1761-NET-ENI
- Ethernet Hub or Switch 10/100 Base-T
- Ethernet/IP Network
- AB mini DIN to mini DIN cable p/n 1761-CBL-AM00
- AB 1761-NET-ENI
- C-more Touch Panel

---

Allen-Bradley (cont’d):

To PLC 25-Pin Port

Allen Bradley PLC5 DF1 RS-422

To C-more PLC Port

Wiring Diagram

Notes:
1. Polarities must be swapped.
2. Handshaking is turned off
3. Use the above wiring diagram if you need to make your own cable. We recommend using 8103 shielded cable or equivalent.
4. Refer to the PLC-5 Programmable Controllers User Manual Switch Setting Reference for details on switch settings to define the controller’s serial port electrical interface.
Chapter 6: PLC Communications

GE:

GE VersaMax Micro Port 1
RS-232C

1 = RTS
2 = CTS
3 = RXD
4 = TXD
5 = DCD
6 = DTR
7 = +5V
8 = GND

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

Mitsubishi:

Mitsubishi FX Series 25-pin D-sub port, RS-422A (p/n EA-MITSU-CBL)

13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use
8 = do not use
7 = Signal GND
6 = do not use
5 = do not use
4 = Signal GND
3 = SD+ (RS422)
2 = RD+ (RS422)
1 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend Belden 8103 shielded cable or equivalent.
Mitsubishi (cont’d):

**EA-MITSU-CBL-1**

Mitsubishi FX Series 8-pin MINI-DIN, RS-422A (p/n EA-MITSU-CBL-1)

Wiring Diagram

1 = RD– (RS-422)  
2 = RD+ (RS-422)  
3 = Sig GND  
4 = SD– (RS-422)  
5 = do not use  
6 = do not use  
7 = SD+ (RS-422)  
8 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

**User Constructed**

Mitsubishi Q02 / Q02H / Q06H / Q12H / Q25H Serial Driver  
and QnA Serial Driver with Direct Connection to  
the Serial Port on Q00 and Q01 CPU’s  
RS-232C

Wiring Diagram

1 = RXD (232C)  
2 = TXD (232C)  
3 = Logic GND  
4 = do not use  
5 = do not use  
6 = do not use

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

**User Constructed**

Mitsubishi Q / QnA Serial PLC  
QJ71C24N  
RS-232C

Wiring Diagram

1 = CD  
2 = RXD  
3 = TXD  
4 = DTR  
5 = Signal GND  
6 = DSR  
7 = RS  
8 = CS  
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.
Chapter 6: PLC Communications

Omron:

Omron Host Link (C200 Adapter, C500), RS-232C (p/n EA-OMRON-CBL)

Wiring Diagram

To PLC
25-Pin Port

To C-more Touch Panel PLC Port

13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use
8 = do not use
7 = Signal GND
6 = do not use
5 = RTS
4 = RXD
3 = TXD
2 = do not use
1 = do not use

25 = do not use
24 = do not use
23 = do not use
22 = do not use
21 = do not use
20 = do not use
19 = do not use
18 = do not use
17 = do not use
16 = do not use
15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

TXD 2
RXD 3
GND 7
RTS 4
CTS 5

To Peripheral Port Cable

Omron Host Link CQM1 using CQM1-CIF02 Peripheral Port Connecting Cable
RS-232C

Wiring Diagram

To PLC
9-Pin Port

To C-more Touch Panel PLC Port

1 = do not use
2 = TXD
3 = RXD
4 = RTS
5 = CTS

15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

1 = do not use
2 = RXD
3 = TXD
4 = do not use
5 = Signal GND

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

User Constructed

Omron FINS (CQM1, CPM1, CPM2, C200, CJ1 & CS1)
RS-232C

Wiring Diagram

To PLC
9-Pin Port

To C-more Touch Panel PLC Port

1 = do not use
2 = RXD
3 = TXD
4 = do not use
5 = Signal GND

15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

User Constructed

Omron Host Link (C200 Adapter, C500), RS-232C (p/n EA-OMRON-CBL)

Wiring Diagram

To PLC
25-Pin Port

To C-more Touch Panel PLC Port

13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use
8 = do not use
7 = do not use
6 = do not use
5 = Logic GND
4 = do not use
3 = RXD (232C)
2 = TXD (232C)
1 = Frame GND

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.
Chapter 6: PLC Communications

Modicon ModBus RS-232:

To PLC 9-Pin Port

To C-more Touch Panel PLC Port

Wiring Diagram

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

Modicon Micro Series:

To PLC 9-Pin Port

To C-more Touch Panel PLC Port

Wiring Diagram

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

Modicon ModBus with RJ45:

To PLC RJ45 Port

To C-more Touch Panel PLC Port

Wiring Diagram

Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.
Siemens:

To PLC 9-Pin Port

9-pin D-sub (male)

1 = Logic Com
2 = Logic Com
3 = RS485 Sig B
4 = do not use
5 = Logic Com
6 = +5 VDC
7 = +24 VDC
8 = RS485 Sig A
9 = do not use

To C-more Touch Panel PLC Port

15-pin D-sub (male)

15 = do not use
14 = do not use
13 = Termination
12 = SD– (RS485)
11 = SD+ (RS485)
10 = RD– (RS485)
9 = RD+ (RS485)

RS-485 Wiring Diagram

RS-485 Signal B
RS-485 Signal A
Logic Common
Shield

Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect L19954 shielded cable or equivalent.