

Introduction

Connection Choices:

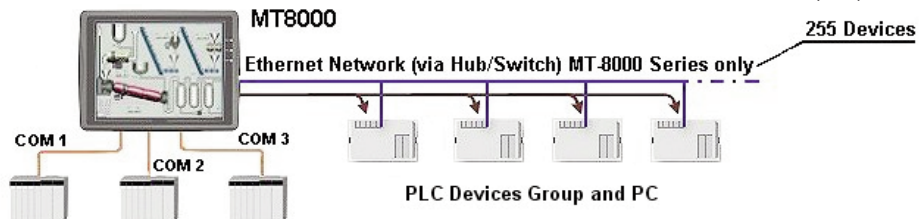
The **EasyView** family of touch terminals can control combinations of many different manufacturers Programmable Controllers (PLC's, PAC,s) as well as Instrumentation Systems, Variable Speed Drives, or simple Field I/O, Sensors and Actuators. Communication is via RS232, RS422, RS485(2W) or RS485(4W) serial links, as well as Ethernet on the MT-8000 series.

The family of EasyView touch terminals provide the following interface options:

MT-505:

One single serial device connection, RS232, RS422, RS485(2W) or RS485(4W).

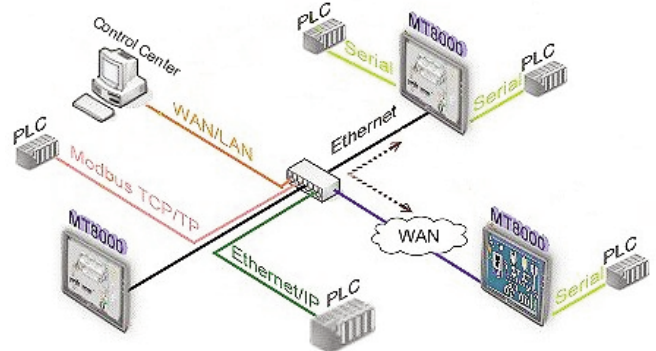
MT-6000 series: 3 simultaneous different serial device connections, RS232, RS422, RS485(2W) or RS485(4W).



MT-8000 series: 3 simultaneous different serial device connections, RS232, RS422, RS485(2W) or RS485(4W), plus an Ethernet device network of further devices, remote touch terminals and PC's.

Complex Ethernet Networks:

EasyView touch terminals cannot connect directly to a device family or fieldbus serial network which contains multiple Masters, such as Allen-Bradley DH+, or where a PC is connected for remote programming. For the MT-505/6000 series you may wish to consider data mapping through one master PLC as network interface, but generally this function is provided by the Ethernet connection on the MT-8000 series.



Extended Addressing Mode:

Some serial device drivers feature an extended addressing mode, that allows an **EasyView** touch terminal to Master control an RS422/485 network of multidrop connected Slave devices sharing the same driver. All devices must utilise the same settings and protocols. Some PLCs, however, do not support multidrop or do not include node address information.

Supported Drivers include:

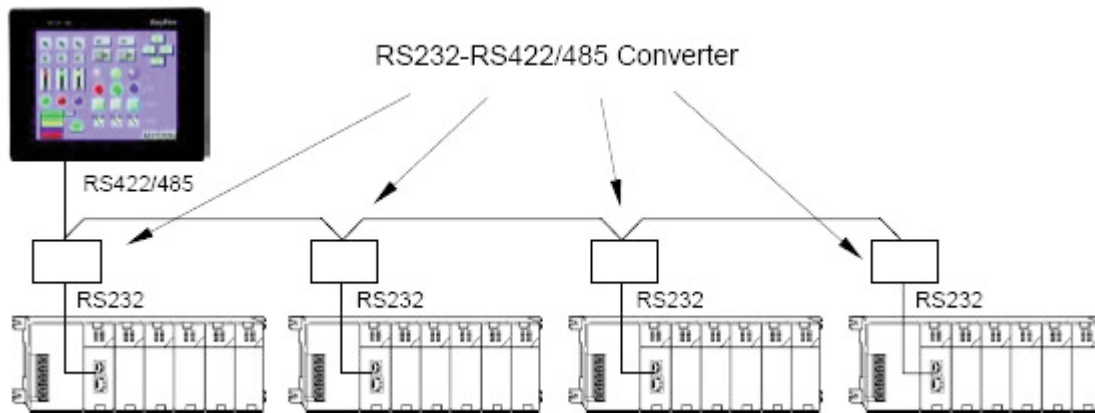
Device Manufacturer	Model	Driver
OMRON	CPM / CQM / C200H	Host Link
Modicon	Compact(A/E984) / Momentum / Quantum	Modbus RTU / RTU Extended
Koyo(AutomationDirect)	All DirectLogic ports set for Modbus	Modbus RTU
Mitsubishi	FX series	ComputerLink via BD communications module
Idec	Micro3 / OpenNet	Idec DataLink
Facon	FB series	Fatek protocol
LG	Master-K / GLOFA	LG Cnet (except K10S/30S/60S)
Delta	DVP series	DVP protocol
Telemecanique	TSX series	UniTelWay
Toshiba	VF-S11 / T series / S2E	T2 LINK port,

The range of devices for **EasyView** touch terminals is expanding. Consult web site for latest list of drivers.

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Extended Addressing Mode (con't):

Where only an RS232 port is provided, often found with simple Modbus devices, it is necessary to convert each RS232 port to RS422/485 for multidrop connection. The **F2-UNICON** or isolated **FA-ISOCON** are ideal for this task.



Isolating I/O channels in PLC equipment greatly improved the reliability of industrial control systems, and likewise we recommend isolating communications channels in order to avoid data corruption due to sporadic electrical noise and potential differences between control panels due to poor site earthing and local fault currents.

Cabling Options:

The remainder of this chapter describes each manufacturer's family of devices, and offers communication cable options for different scenarios. It does not cover every possible connection arrangement, and the simple rule is that HMI communication settings must always match those of the PLC or device connected. It is always best to test a new project connection with a simple screen object before constructing complex project screens. It takes just one faulty screen object to halt terminal operation each time that screen object is accessed.

Single Point-to-Point Serial connections:

RS232: is for connection between PLC port, or PLC port adapter, and one HMI within the same control panel.

Multiple HMI's may then share the same PLC connection via Ethernet (unlimited MT8000 series) or fast 115k baud serial link (upto three MT500 series). Maximum cable length depends on baud rate of transmission, and proximity to noise sources (**5m at 19,200 baud. 50m at 9600 baud. 2500pf max total line capacitance**).

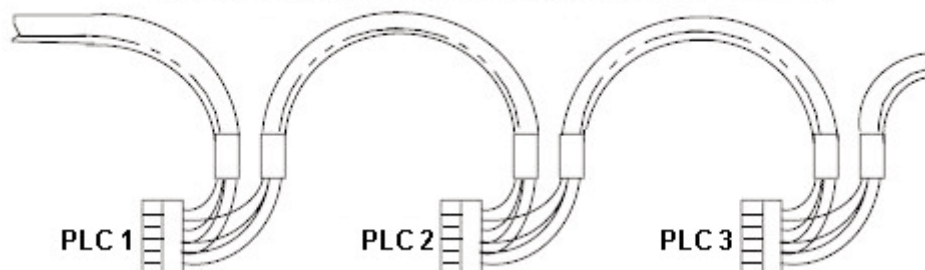
Noise immunity depends on adequate screening of the cable, earthing of PLC and HMI to the same star earth block, and equi-potential bonding between control panels.

Remote HMI location, and connection of HMI to multi-drop PLC networks.

RS422: is a twin-twisted pair connection with the highest noise immunity, ideal for fast serial HMI connection up to 1200m as data can be transmitted and received simultaneously.

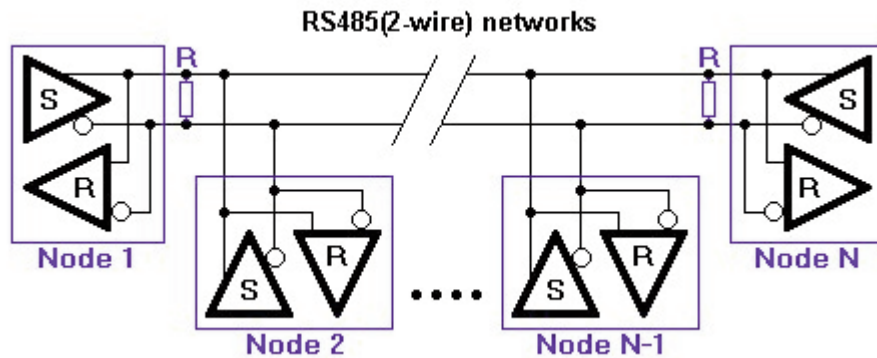
Input sensitivity of line receivers is low, for the highest noise immunity, and up to 9 PLC slave ports may share one HMI network, if the particular device driver supports Extended Addressing Mode. The HMI will be the master and all PLCs must be set for slave communication only.

RS485(4-wire): is identical in wiring and function to RS422, but each line receiver has a higher sensitivity and input impedance than RS422. Up to 31 PLC slave ports may share one HMI network. The pay-off is a lower noise immunity than RS422. Correct screening and equi-potential bonding between control panels is essential.

Typical RS422 and RS485(4-wire) network connections

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RS485(2-wire): is a single twisted pair connection with high noise immunity, ideal for extending the distance between HMI and PLC up to 1200m. Line drivers and receivers share the same lines, so that PLC's are polled "One at a time" by the HMI, and each addressed PLC responds. Turn around delays are required for some PLC types.



Ethernet:

Certain MT-8000 series PLC drivers are now available for connection to PLC Ethernet ports and adaptors, via direct cross-over cable connection, or Industrial Hub and Switch networks using a mixture of local patch cables and trunk fibre optics. At the time of writing the following Ethernet drivers are available in the MT-8000 series:

Allen-Bradley - CompactLogix, ControlLogix, FlexLogix

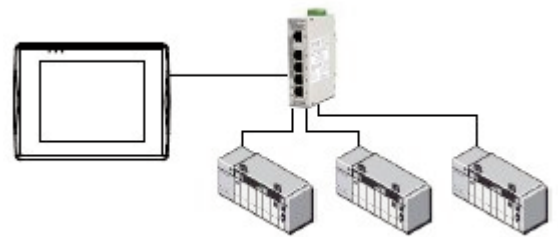
Allen-Bradley - DF1 Ethernet

Mitsubishi QJ71MT91 Modbus TCP/IP Ethernet

Generic Modbus TCP/IP Ethernet

OMRON CJ1 / CS1 Ethernet

Yokogawa FA-M3 Ethernet



Serial HMI Communication Ports:

MT-505:

DB9-S socket	1	2	3	4	5	6	7	8	9
RS232					Gnd	Tx			Rx
RS485(2W)	Data-	Data+			Gnd				
RS485(4W)	Rx-	Rx+	Tx-	Tx+	Gnd				

MT-6000 / 8000 series:

DB9-P plug	1	2	3	4	5	6	7	8	9
RS232(COM1)		Rx	Tx		Gnd		RTS	CTS	
RS232(COM2)				Tx	Gnd	Rx			

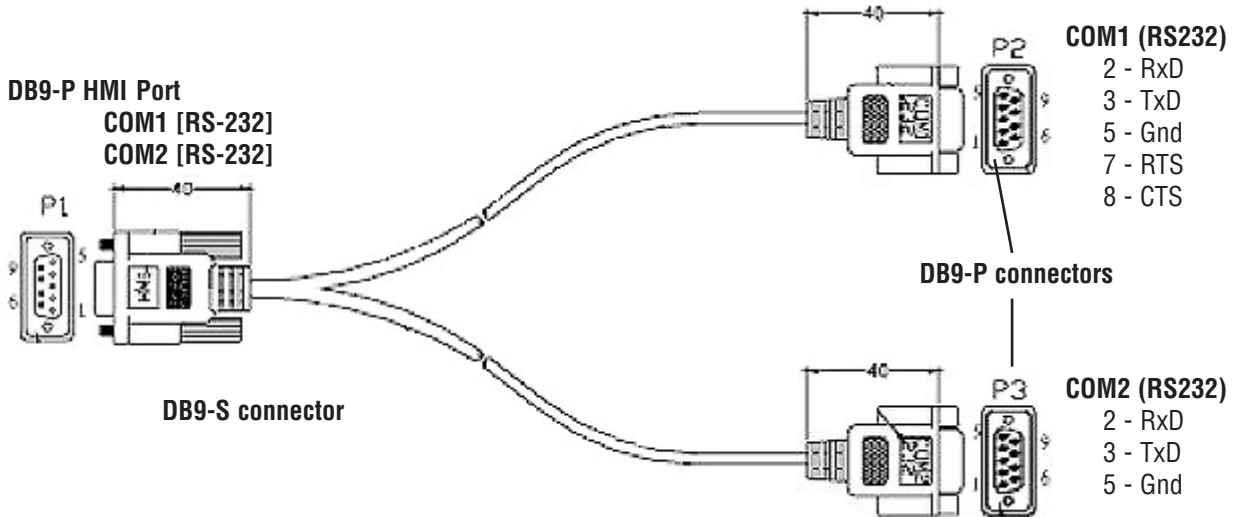
DB9-S socket	1	2	3	4	5	6	7	8	9
COM1 RS485(4W)	Rx-	Rx+	Tx-	Tx+	Gnd				
COM3 RS485(2W)	Data-	Data+			Gnd				
COM 3 RS232					Gnd		Tx	Rx	

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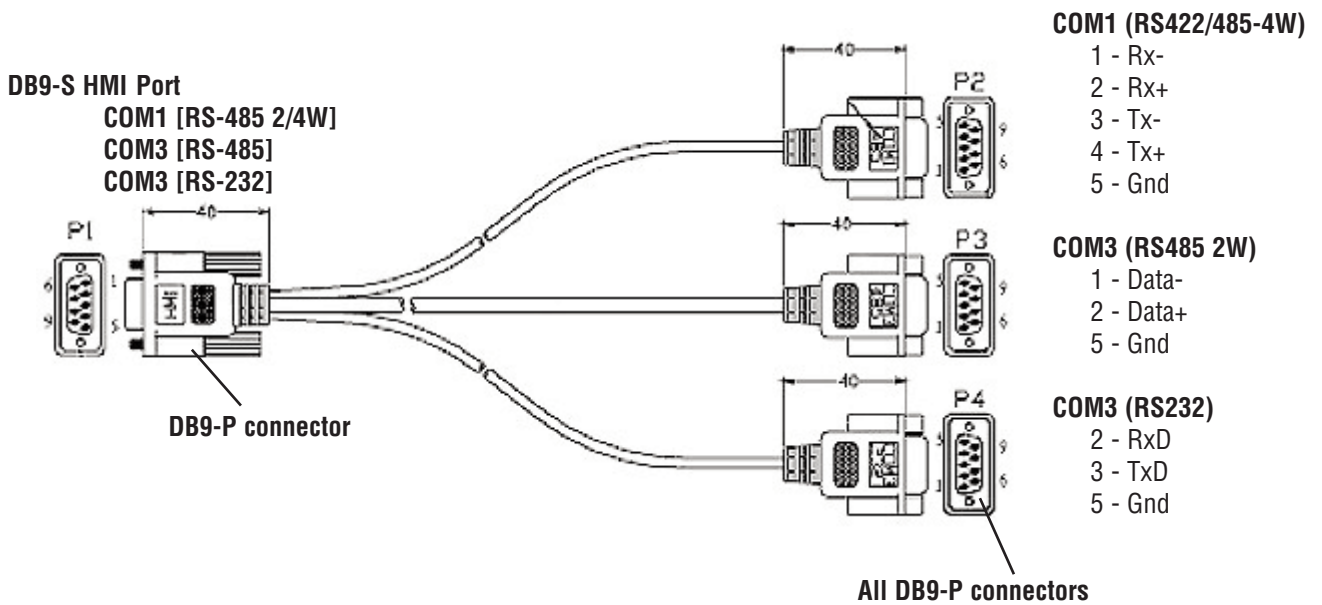
Port Splitter cables for MT-6000 and MT-8000 series:

MT-6000 / 8000 series touch terminals can communicate with up to three serial devices, or networks, simultaneously, and the following Port Splitter cables allow our standard pre-built cables to be used when connecting multiple devices to either of the HMI serial ports.

MT8CBL-RZ232 Port Splitter cable:



MT8CBL-RZ485 Port Splitter cable:



The Modbus RTU Server driver allows an **EasyView** touch terminal to become a Slave on an Industry standard Modbus device network, to be used as a status display or settings device.

Individual default HMI communications settings with PLC choices, and the PLC address ranges covered by each PLC driver are tabulated at the end of each separate section.