

APPENDIX C

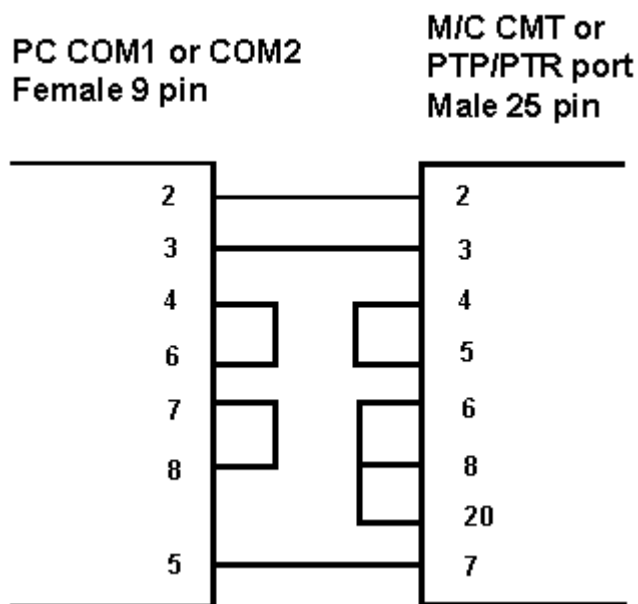
CABLE OF DATA COMMUNICATION

This is used as a link between the **COM1** or **COM2** port of the computer and the **CMT** or **PTP/PTR** port of the machine controller.

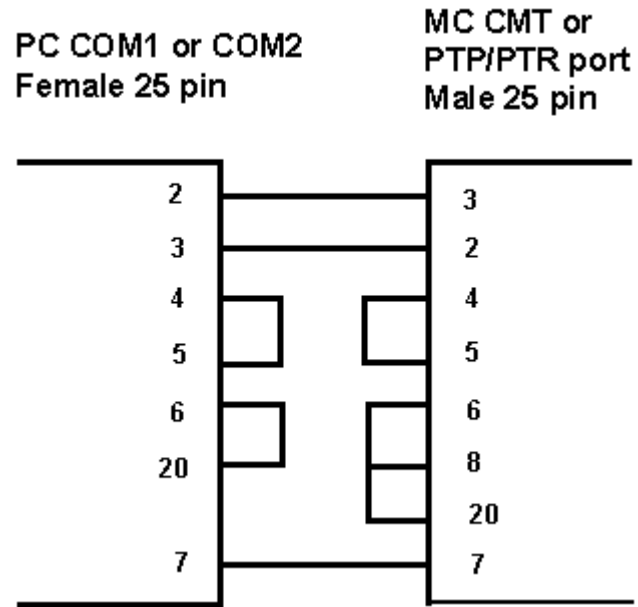
1. Software Handshaking (Xon/Xoff) :

The data communication cable which is specified below is for software handshaking (Xon/Xoff).

At one end of the cable is a 9 pin female D type connector which is connected to the serial port of the computer. At the other end of the cable is a 25 pin male D type connector which is connected to the **CMT** or **PTP/PTR** port of the machine controller. A wiring diagram of the connectors is shown below.



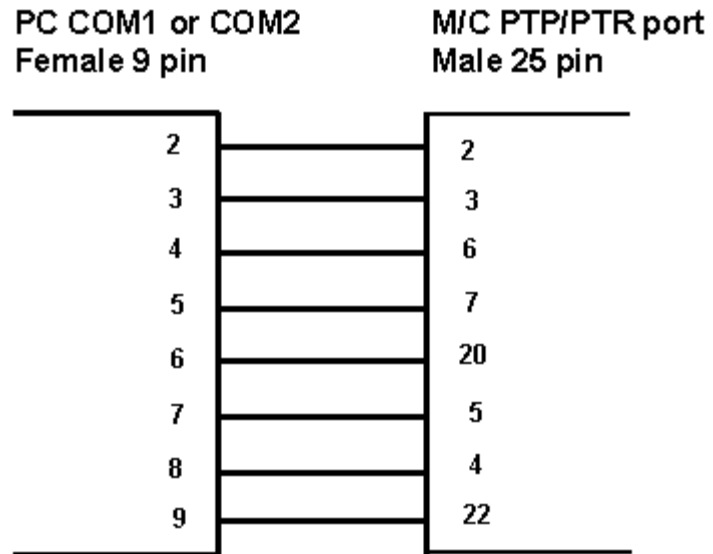
Note : If the serial port of the computer is a 25 pin male D type connector, the 9 pin connector of the cable must be changed to a 25 pin female D type connector. The wiring connection is shown below.



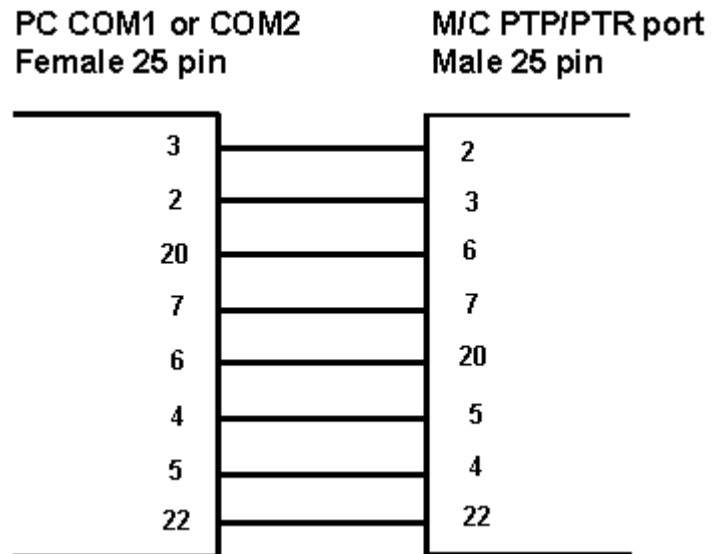
2. Hardware Handshaking (CTS/RTS)

The data communication cable which is specified below is for hardware handshaking (CTS/RTS).

At one end of the cable is a 9 pin female D type connector which is connected to the serial port of the computer. At the other end of the cable is a 25 pin male D type connector which is connected to the **CMT** or **PTP/PTR** port of the machine controller. A wiring diagram of the connectors is shown below.



Note : If the serial port of the computer is a 25 pin male D type connector, the 9 pin connector of the cable must be changed to a 25 pin female D type connector. The wiring connection is shown below.



3. Mazak Micro Disk

Use the Mazak Micro Disk Cable for the data transfer between the computer and Mazak Micro Disk.

MACHINE PARAMETERS FOR DATA COMMUNICATION

The machines are controlled by different types of MAZATROL controllers.

Data Length: 8
Parity: No parity
Stop Bit: 2

MACHINING CENTRES:

M PLUS, M32

G1 = 0 Baud rate 19200.
G1 = 1 Baud rate 9600.
G1 = 2 Baud rate 4800.
G1 = 3 Baud rate 2400.
G1 = 4 Baud rate 1200.
G1 = 5 Baud rate 600.
G1 = 6 Baud rate 300.
G1 = 7 Baud rate 110.

M1, (L), and M2 The baud rate is fixed to 4800.

TURNING CENTRES:

T PLUS ,T32 (DV1)

I1 = 0 Baud rate 19200.
I1 = 1 Baud rate 9600.
I1 = 2 Baud rate 4800.
I1 = 3 Baud rate 2400.
I1 = 4 Baud rate 1200.
I1 = 5 Baud rate 600.
I1 = 6 Baud rate 300.
I1 = 7 Baud rate 110.

T2, T3, T4 The baud rate is fixed to 4800.

GANTRY ROBOTS:

Mac-GL	Parameter
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101 = 6	Baud rate 9600.
101 = 5	Baud rate 4800.
101 = 4	Baud rate 2400.

CMTSP = 0000 0000 MAC programs

CMTSP = 0000 1001 Macro routines

2. PARAMETERS FOR USING PTP/PTR PORT

The default setting of the computer communication is normally as follows: 8 data bit, no parity, 2 stop bit. If you cannot change your computer communication setting you must set up NC parameters identical to those of the computer, including the Baud rate, as shown below, otherwise the data communication will be invalid.

2.1 MACHINING CENTRES

MAZATROL M PLUS <TAPE>

G1	= 0	Baud rate 19200.
	= 1	Baud rate 9600.
	= 2	Baud rate 4800.
	= 3	Baud rate 2400.
	= 4	Baud rate 1200.
	= 5	Baud rate 600.
	= 6	Baud rate 300.
	= 7	Baud rate 110.
G2	= 1	Stop bit 1.
	= 2	Stop bit 1.5.
	= 3 *	Stop bit 2.
G3	= 0	Even Parity.
	= 1	Odd Parity.
G4	= 0 *	Parity check invalid.
	= 1	Parity check valid.
G5	= 0	Character length 5.
	= 1	Character length 6.
	= 2	Character length 7.
	= 3 *	Character length 8.
G9	= 0	CR code not used.
	= 1 *	CR code used.
G10	= 1	Control Line (RTS/CTS).
	= 2	No control.
	= 3 *	Control Code (DC1 -DC4) Xon/Xoff
G11	= 0	DC3 Code without Parity.
	= 1 *	DC3 Code with Parity.
G12	= 0	Neither DC2 nor DC4 is output.
	= 1	Only DC2 is not output.
	= 2	Only DC4 is not output.
	= 3 *	Both DC2 and DC4 are output.
G13	= 5	PTP/PTR Reply waiting time in seconds.

* indicates setting.

MAZATROL M32

O40 Bit 1 = 1 PTR/PTP.

G29 = 1 Control Line.
= 2 No Control.
= 3 * Control Code (Xon/Xoff)

G19 = 0 Baud rate 19200.
= 1 Baud rate 9600.
= 2 * Baud rate 4800.
= 3 Baud rate 2400.
= 4 Baud rate 1200.
= 5 Baud rate 600.

G20 = 1 Stop bit 1.
= 2 Stop bit 1.5.
= 3 * Stop bit 2.

G21 = 0 Even Parity.
= 1 Odd Parity.

G22 = 0 * Parity check invalid.
= 1 Parity check valid.

G23 = 0 Character length 5.
= 1 Character length 6.
= 2 Character length 7.
= 3 * Character length 8.

G27 = 0 CR code not use.
= 1 * CR code used.

G29 = 1 Control Line (RTS/CTS).
= 2 No control.
= 3 * Control Code (DC1 -DC4) (Xon/Xoff)

G30 = 0 DC3 Code without Parity.
= 1 * DC3 Code with Parity.

G40 = 0 No punch out.
= 1 Only DC2 punch out.
= 2 Only DC4 punch out.
= 3 * Punch out DC2 and DC4.

G42 = 5 PTP/PTR Reply Waiting time in seconds.

* indicates setting

MAZATROL M2

Y03 Bit 0 = 1 To use PTR port.

Bit 1 = 1 To use PTP port.

OP2 Bit 0 = 0 * ISO code.
 Bit 0 = 1 EIA code.

OP16 = 204 Stop bits 2, No parity, Character length 8.

Bit 3 = 0 Character length 5.

Bit 2 = 0

Bit 3 = 0 Character length 6.

Bit 2 = 1

Bit 3 = 1 Character length 7.

Bit 2 = 0

Bit 3 = 1 Character length 8.

Bit 2 = 1

Bit 7 = 0 Stop bit 1.

Bit 6 = 1

Bit 7 = 1 Stop bit 1.5.

Bit 6 = 0

Bit 7 = 1 Stop bit 2.

Bit 6 = 1

Bit 4 = 1 Parity check valid.

Bit 4 = 0 Parity check invalid.

Bit 5 = 1 Even Parity.

Bit 5 = 0 Odd Parity.

OP23 = 16 * Baud rate 4800.

= 32 Baud rate 2400.

= 64 Baud rate 1200.

= 128 Baud rate 600.

= 256 Baud rate 300.

= 512 Baud rate 150.

Handshaking Method Fixed control code.

* indicates setting

2.2 TURNING CENTRES

MAZATROL T PLUS (DV2)

I1 = 0 Baud rate 19200.

= 1 Baud rate 9600.

= 2 Baud rate 4800.

= 3 Baud rate 2400

= 4 Baud rate 1200.

= 5 Baud rate 600.

- = 6 Baud rate 300.
- = 7 Baud rate 110.

- I2 = 1 Stop bit 1.
- = 2 Stop bit 1.5.
- = 3 * Stop bit 2.

- I3 = 0 * Parity check invalid.
- = 1 Odd Parity check valid.
- = 2 Even Parity check valid.

- I5 = 0 Data length 5.
- = 1 Data length 6.
- = 2 Data length 7.
- = 3 * Data length 8.

- I6 = 1 Control Line (RTS/CTS).
- = 2 No control.
- = 3 * Control Code (DC1 - DC4) (Xon/Xoff)

- I7 = 0 DC3 code without parity.
- = 1 DC3 code with parity.

- I8 = 5 PTP/PTR Reply Waiting time in seconds.

- I9 = 0 No punch out.

- = 1 Only DC2 punch out.
- = 2 Only DC4 punch out.
- = 3 * Punch out DC2 and DC4.

- I11 = 0 CR code not use.

- = 1 * CR code used.

- I58 = 01111100 Program end M code.
- Bit 2 = 1 M199.
- Bit 3 = 1 M198.
- Bit 4 = 1 M99.
- Bit 5 = 1 M30.
- Bit 6 = 1 M02.

* indicates setting

MAZATROL T32 (DV2)

- I1 = 0 Baud rate 19200.
- = 1 Baud rate 9600.
- = 2 Baud rate 4800.
- = 3 Baud rate 2400
- = 4 Baud rate 1200.
- = 5 Baud rate 600.

- = 6 Baud rate 300.
- = 7 Baud rate 110.

- I2 = 1 Stop bit 1.
- = 2 Stop bit 1.5.
- = 3 * Stop bit 2.

- I3 = 0 * Parity check invalid.
- = 1 Odd Parity check valid.
- = 2 Even Parity check valid.

- I5 = 0 Data length 5.
- = 1 Data length 6.
- = 2 Data length 7.
- = 3 * Data length 8.

- I6 = 1 Control Line (RTS/CTS).

- = 2 No control.
- = 3 * Control Code (DC1 - DC4).

- I7 = 0 DC3 code without parity.
- = 1 * DC3 code with parity.

- I8 = 5 PTP/PTR Reply Waiting time in seconds.

- I9 = 0 No punch out.
- = 1 Only DC2 punch out.
- = 2 Only DC4 punch out.
- = 3 * Punch out DC2 and DC4.

- I11 = 0 CR code not use.
- = 1 * CR code used.

- I58 = 01111100 Program end M code.
- Bit 2 = 1 M199.
- Bit 3 = 1 M198.
- Bit 4 = 1 M99.
- Bit 5 = 1 M30.
- Bit 6 = 1 M02.

* indicates setting

MAZATROL T2/T3

A15 = 206 Stop bits 2, No parity, Character length 8.

- Bit 3 = 0 Character length 5.
- Bit 2 = 0
- Bit 3 = 0 Character length 6.
- Bit 2 = 1

Bit 3 = 1 Character length 7.
Bit 2 = 0
Bit 3 = 1 Character length 8.
Bit 2 = 1

Bit 7 = 0 Stop bit 1.
Bit 6 = 1
Bit 7 = 1 Stop bit 1.5.
Bit 6 = 0
Bit 7 = 1 Stop bit 2.
Bit 6 = 1

Bit 4 = 0 Parity check invalid.
Bit 4 = 1 Parity check valid.

Bit 5 = 0 Odd Parity.
Bit 5 = 1 Even Parity.

A16 Bit 1 = 0
Bit 0 = 1 DC3 Code with Parity.
Bit 0 = 0 DC3 Code without Parity.
Bit 1 = 1 Control Line (RTS/CTS).
Bit 1 = 0 Control Code (DC1 - DC4).

A18 = 0 Baud rate 4800.
 = 1 Baud rate 110.
 = 2 Baud rate 300.
 = 3 Baud rate 600.
 = 4 Baud rate 1200.
 = 5 Baud rate 2400.
 = 6 * Baud rate 4800.
 = 7 Baud rate 9600.
 = 8 Baud rate 19200.

A20 = 1 * ISO code.
 = 0 EIA code.

A29 = 1 Program End M Code : M30, 99, 198, 199.

A29 = 0 Program End M Code : M30, 99, 198, 199.

A30 Bit 0 = 1 Serial PTR.
Bit 1 = 1 Serial PTP.
Bit 2 = 1 Parallel PTR.
Bit 3 = 1 Parallel PTP.

* indicates setting

IMAC (Quick Turn 6G or 6T)

H040 = 1 Baud rate 9600 bps.

- = 2 Baud rate 4800 bps.
- = 3 Baud rate 2400 bps.
- = 4 Baud rate 1200 bps.
- = 5 Baud rate 600 bps.
- = 6 Baud rate 200 bps.

H041 = 1 Stop bit 1.

- = 2 Stop bit 1.5.
- = 3* Stop bit 2

H042 = 0 Even parity.

= 1 Odd parity.

H043 = 0* Horizontal parity check invalid.

= 1 Horizontal parity check valid.

H044 = 0 Character length 5.

- = 1 Character length 6.
- = 2 Character length 7.
- = 3* Character length 8.

H049 = 1 RTS/CTS handshake procedure.

- = 2 No control (free transmission).
- = 3* DC control handshake procedure.