

INSTRUCTION MANUAL
FOR
MC SERIES

COMMUNICATION (Options C, C5)

... Objective Models ...

MCD-130 SERIES, MCD-150 SERIES
MCD-530 SERIES, MCD-550 SERIES
MCR-100 SERIES, MCR-200 SERIES

This manual describes the communications of MC series (Option: C and C5).
See each instruction manual for the operations besides the communication.

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- MCD-130, MCD-530 series

- 《 Setting command 》

• Main setting	17
• Temperature alarm [A1] setting	18
• Temperature alarm [A2] setting	19
• Proportional band [P] setting	20
• Integral time [I] setting	20
• Derivative time [D] setting	21
• Anti-reset windup [ARW] setting	21
• Heater burnout alarm setting	22
• Manual operation output setting	22
• Main control output proportional cycle setting	23
• Sub control output proportional cycle setting	23
• Sub control output proportional band setting	24
• Main control output differential setting	25
• Sub control output differential setting	25
• Output high limit setting	26
• Output low limit setting	26

- 《 Changing command 》

• Setting value Lock/Unlock designation	27
• Auto/Manual control change	28
• Remote/Local status change	29
• Auto-tuning Performance/Cancellation change	30

- 《 Reading command 》

• Reading for Main setting value	31
• Reading for Temperature alarm [A1] setting value	32
• Reading for Temperature alarm [A2] setting value	33
• Reading for Proportional band [P] setting value	34
• Reading for Integral time [I] setting value	35
• Reading for Derivative time [D] setting value	36
• Reading for Anti-reset windup setting value	37
• Reading for Heater burnout alarm setting value	38
• Reading for Manual operation output setting value	39
• Reading for Main control output proportional cycle setting value	40
• Reading for Sub control output proportional cycle setting value	41
• Reading for Sub control output proportional band setting value	42
• Reading for Main control output differential setting value	43
• Reading for Sub control output differential setting value	44
• Reading for Output high limit setting value	45
• Reading for Output low limit setting value	46

- 《 Action status reading command 》

• Reading for Setting value Lock/Unlock changing status	47
• Reading for Auto/Manual control changing status	48
• Reading for Remote/Local setting changing status	49
• Reading for Auto-tuning Performance/Cancellation changing status	50
• Reading for Control output manipulating value	51
• Reading for Alarm output status	52
• Reading for Input value from the sensor	53

● MCD-150, MCD-550 series

《 Setting command 》

- Main setting 17
- Temperature alarm [A1] setting 18
- Proportional band [P] setting 20
- Integral time [I] setting 20
- Derivative time [D] setting 21
- Anti-reset windup [ARW] setting 21
- Manual operation output setting 22
- Output high limit setting 26
- Output low limit setting 26

《 Changing command 》

- Setting value Lock/Unlock designation 27
- Auto/Manual control change 28
- Auto-tuning Performance/Cancellation change 30

《 Reading command 》

- Reading for Main setting value 31
- Reading for Temperature alarm [A1] setting value 32
- Reading for Proportional band [P] setting value 34
- Reading for Integral time [I] setting value 35
- Reading for Derivative time [D] setting value 36
- Reading for Anti-reset windup setting value 37
- Reading for Manual operation output setting value 39
- Reading for Output high limit setting value 45
- Reading for Output low limit setting value 46

《 Action status reading command 》

- Reading for Setting value Lock/Unlock changing status 47
- Reading for Auto/Manual control changing status 48
- Reading for Auto-tuning Performance/Cancellation changing status 50
- Reading for Control output manipulating value 51
- Reading for Alarm output status 52
- Reading for Input value from the sensor 53

- MCR-100, MCR-200 series

- 《 Setting command 》

• Main setting	17
• Temperature alarm [A1] setting	18
• Temperature alarm [A2] setting	19
• Proportional band [P] setting	20
• Integral time [I] setting	20
• Derivative time [D] setting	21
• Anti-reset windup [ARW] setting	21
• Manual operation output setting	22
• Main control output proportional cycle setting	23
• Sub control output proportional cycle setting	23
• Sub control output proportional band setting	24
• Main control output differential setting	25
• Sub control output differential setting	25
• Output high limit setting	26
• Output low limit setting	26

- 《 Changing command 》

• Setting value Lock/Unlock designation	27
• Auto/Manual control change	28
• Auto-tuning Performance/Cancellation change	30

- 《 Reading command 》

• Reading for Main setting value	31
• Reading for Temperature alarm [A1] setting value	32
• Reading for Temperature alarm [A2] setting value	33
• Reading for Proportional band [P] setting value	34
• Reading for Integral time [I] setting value	35
• Reading for Derivative time [D] setting value	36
• Reading for Anti-reset windup setting value	37
• Reading for Manual operation output setting value	39
• Reading for Main control output proportional cycle setting value	40
• Reading for Sub control output proportional cycle setting value	41
• Reading for Sub control output proportional band setting value	42
• Reading for Main control output differential setting value	43
• Reading for Sub control output differential setting value	44
• Reading for Output high limit setting value	45
• Reading for Output low limit setting value	46

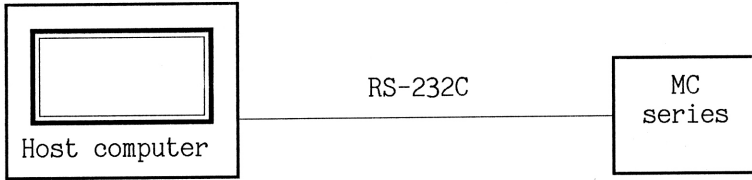
- 《 Action status reading command 》

• Reading for Setting value Lock/Unlock changing status	47
• Reading for Auto/Manual control changing status	48
• Reading for Auto-tuning Performance/Cancellation changing status	50
• Reading for Control output manipulating value	51
• Reading for Alarm output status	52
• Reading for Input value from the sensor	53

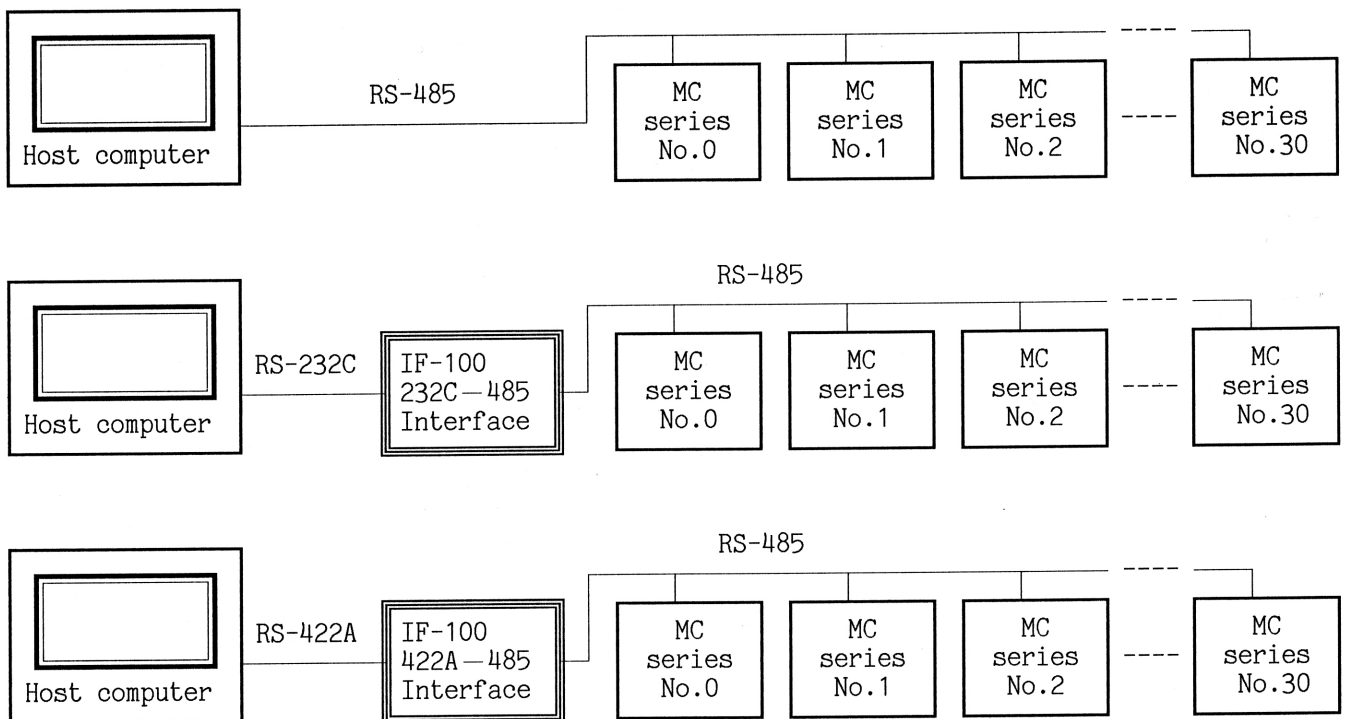
1. System configuration and specifications

1.1 System configuration

(1) RS-232C [Option code: C] Option C is not available to the MCR-100, 200 series.



(2) RS-485 Multi-drop connection [Option code: C5]



1.2 Specifications

Communication system	Half-duplex
Data transfer rate	2400bps (300, 600, 1200 and 4800bps) selectable by changing the pin position at the internal assembly
Synchronous system	Start-stop
Code form	ASCII
Error detection	Parity check, Checksum
Error correction	Command request repeat system
Data format	Start bit : 1 Data bit : 7 Parity bit: Even parity Stop bit : 1

Start bit	Data bit	Parity bit	Stop bit
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1.3 Communication interface

(1) RS-232C (Option code: C)

Connection example between the host computer and the MCD-100 series is as follows:

- Characteristic, Based on EIA RS-232C

Connection

Signal	Abbreviation	Direction	Terminal No.
Transmit data	Tx	Output	34
Receive data	Rx	Input	35
Signal ground or Common return	COM	—	36

Cable length, maximum 10m

Adaptable connector and cable (below table or the equivalent)

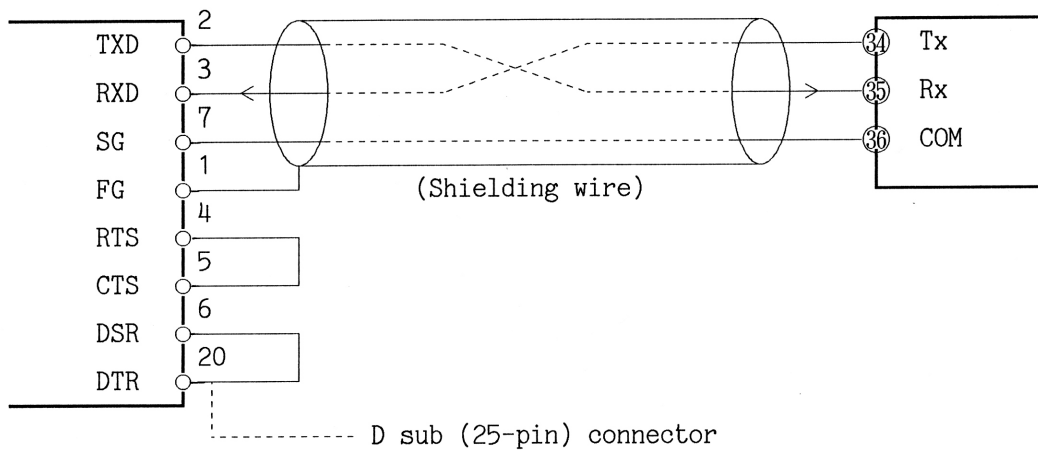
Parts	Maker	Model
D sub-connector	Japan Aviation Electronics	DB-25PFT-N
Connector cover	Ind. Ltd.	DB-C2-J9
Cable	Onamba Co., Ltd.	OTSC-2PVB-7/0.32TA

Connectable unit: 1

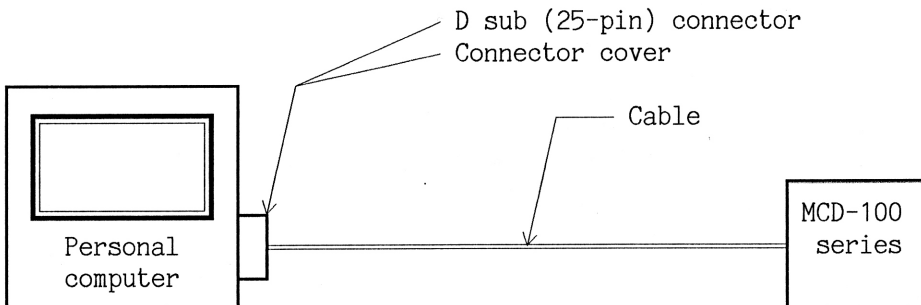
Connection method

(Host computer)

(MCD-100 series)



- In case of the MCD-500 series, the terminal numbers are as follows:
 ㉑ for Tx (Y_A), ㉒ for Rx (Y_B) and ㉓ for COM (COM).
 Refer to the Instruction manual in detail.
- Option C is not available to the MCR series.



(2) RS-485 (Option code: C5)

Connection example to the host computer, IF-100-C5 and the MCD-100 series is as follows:

- Characteristic, Based on EIA RS-485

Connection

Signal	Abbreviation	Direction	Terminal No.
Inverted output	Y _A	Input, Output	38
Ainverted output	Y _B	Input, Output	39
Signal ground or Common return	COM	—	40

Cable length, RS-232C, maximum 10m

RS-422A, maximum 1km

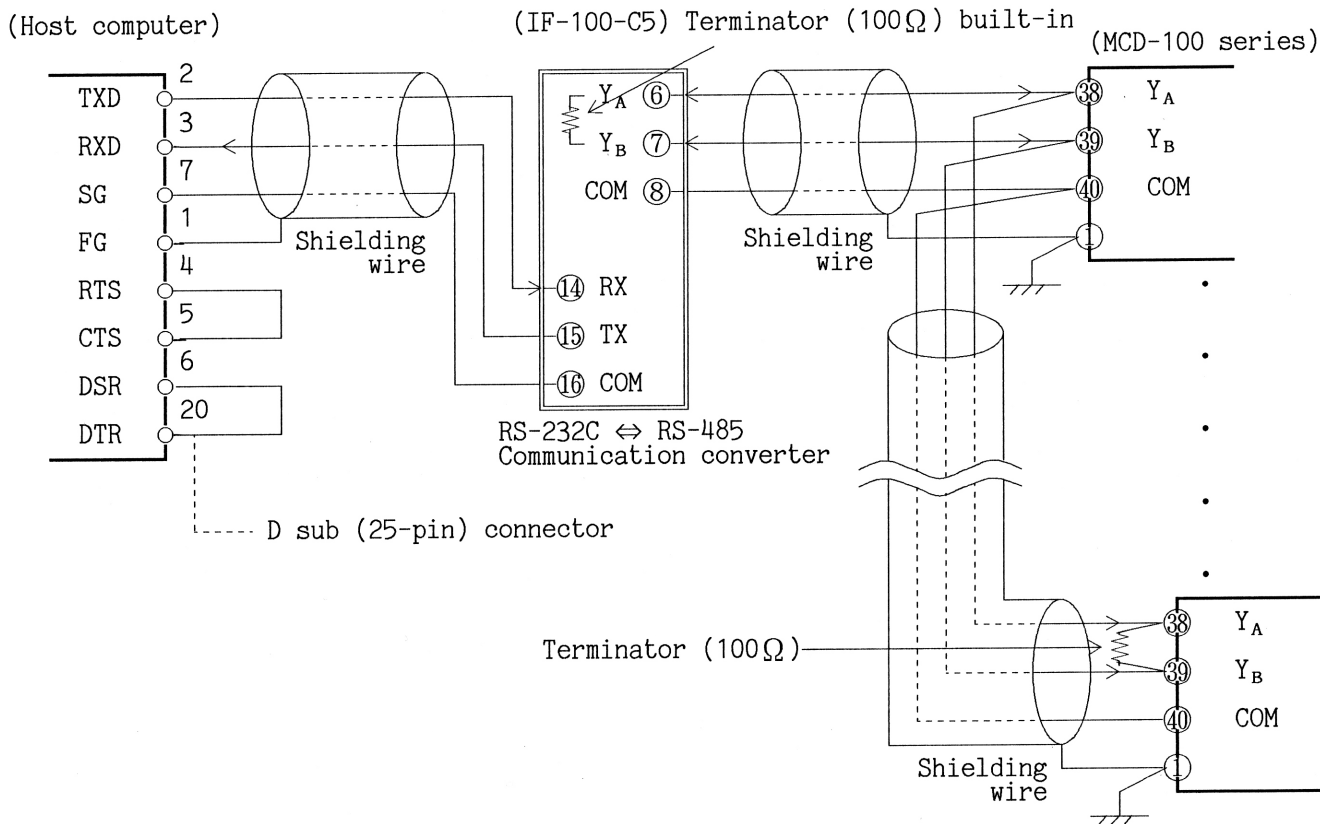
RS-485, maximum 1km

Adaptable connector and cable (below table or the equivalent)

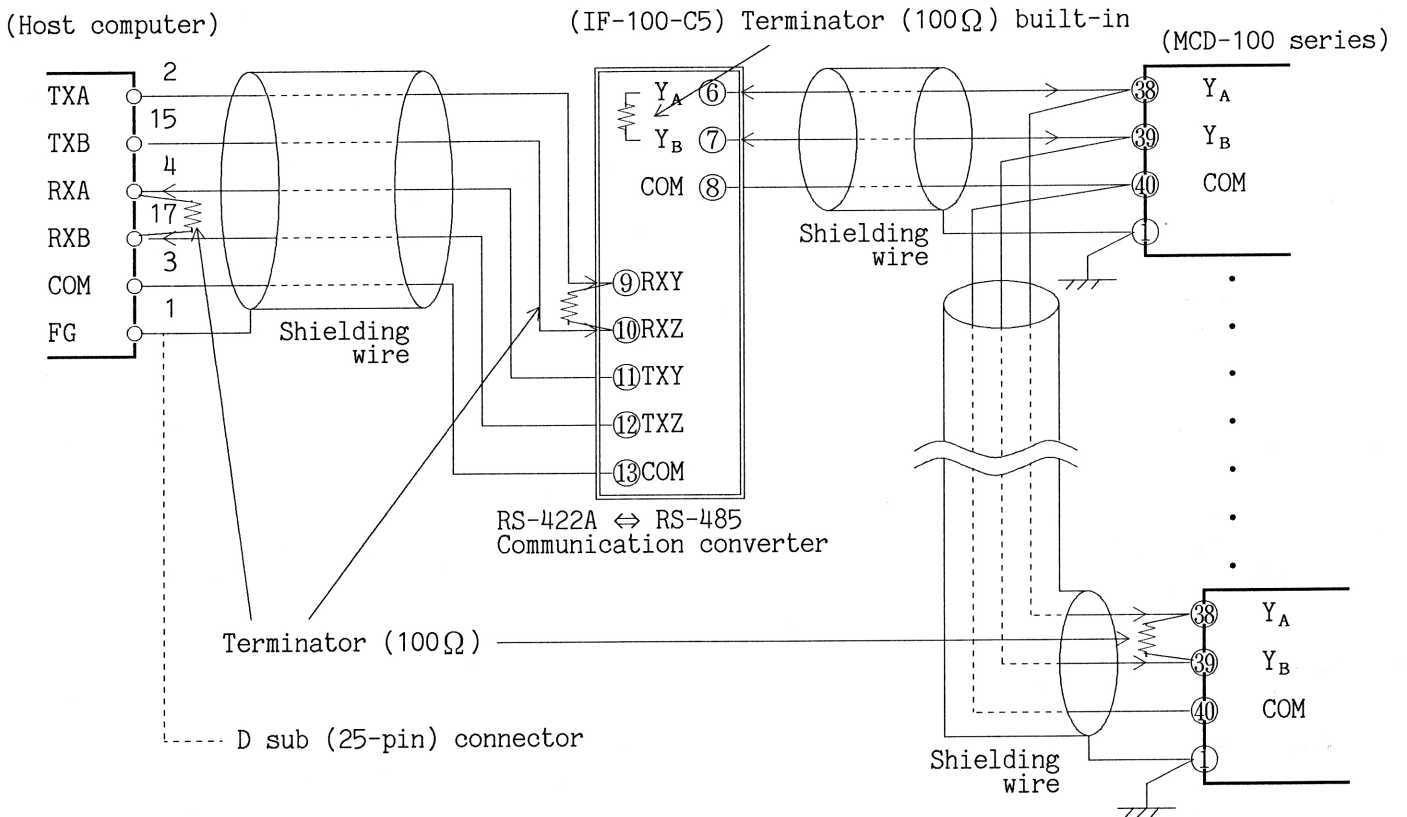
Parts	Maker	Model
D sub-connector	Japan Aviation Electronics	DB-25PFT-N
Connector cover	Ind. Ltd.	DB-C2-J9
Cable	Onamba Co., Ltd.	OTSC-2PVB-7/0.32TA

Connectable units 31

Connection method [RS-232C ↔ RS-485]



Connection method [RS-422A ⇔ RS-485]



- In case of the MCD-500 series, the terminal numbers are as follows:
 ③① for Tx (Y_A), ③② for Rx (Y_B) and ③③ for COM (COM).
 - In case of the MCR-100, 200 series, the terminal numbers are as follows:
 ①⑦ for Y_A, ①⑧ for Y_B and ①⑨ for COM.
- Refer to each Instruction manual in detail.

- As for the shielding wire
 - Connect the shielding wire **only one side** to FG or ground terminal so as not to flow the current into the shielding wire.
 - The FG or ground terminal must be grounded.
 - If both sides of the wire are connected to the FG or ground terminal, the circuit is made between the wire and ground, and the **noise may easily occur by the current.**
- As for the terminator (terminal resistor)
 - The more the communication line becomes long, sometimes, the less communication performs since the transfer waveform becomes wrong owing to the echo. To prevent this, connect the terminator.
 - The place to connect should be the physical terminal of the communication cable.
- Our made Communication converter [IF-100-C5] is to be provided on separately sold.