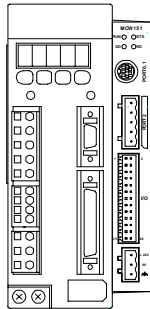# OMRON

Models
R88A-MCW151-E
R88A-MCW151-DRT-E
Motion Control Option Board

INSTRUCTION SHEET

Thank you for purchasing this OMRON product. Read this instruction sheet thoroughly and familiarise yourself with the functions and characteristics of the product before using it. To ensure safe and correct use of this Unit, also read the following manuals:

Cat. no. I203-E2-1   MCW151 Operation Manual
Cat. no. I531-E2-2   OMNUC W Series User's Manual.

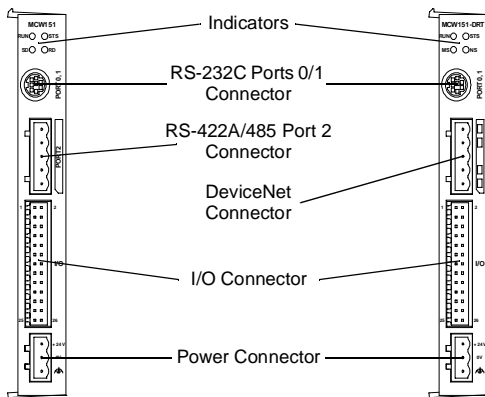Keep this instruction sheet for future reference.
OMRON MANUFACTURING OF THE NETHERLANDS B.V.
© OMRON Corporation 2002   All Rights Reserved

⚠ **DANGER** Do not attempt to take the Unit apart and do not touch any internal parts while the power is being supplied. Doing either of these may result in electrical shock, and serious or fatal injury.

⚠ **WARNING** The MC Unit must be used with a Servo Driver with software version 14 or later.

■ Nomenclature

MCW151-E   MCW151-DRT-E

Indicators
RS-232C Ports 0/1 Connector
RS-422A/485 Port 2 Connector
DeviceNet Connector
I/O Connector
Power Connector

■ Unit Specifications

Storage temperature	-20 to +75 °C
Ambient temperature	0 to +55 °C
Ambient humidity	10 to 90 % RH (non-condensing)
EMC compliance	EN 61000-6-2 / 1999 EN 55011, class A, group 1 / 1998
Current consumption	10 mA from the Servo Driver 0.2 A from the external supply
Weight	200 g (typical)
Output power supply	5VDC, max 160 mA (to external encoder)

■ Dimensions
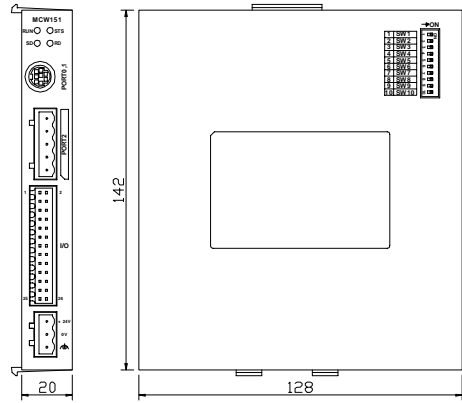
■ Notes on Mounting

The MC Unit needs to be attached to the right side of the R88D-WT Servo Driver.

■ Indicators

Motion control

Indicator	Color	Status	Meaning
RUN	Green	ON	The MC Unit is operating normally.
		OFF	The MC Unit did not start properly or is not powered on.
		Flashing with STS	An error occurred in the communication with the Servo Driver.
STS	Red	ON	The axis has been disabled. The Servo Enable is not ON.
		OFF	The axis is enabled.
		Flashing alone	A motion error has occured. The Servo Driver has been disabled.
		Flashing with RUN	An error occurred in the communication with the Servo Driver.

RS-422A/485 (MCW151-E only)

Indicator	Color	Status	Meaning
SD	Green	ON	Transmitting data.
		OFF	No communication.
RD	Green	ON	Receiving data.
		OFF	No communication.

DeviceNet (MCW151-DRT-E only)

Indicator	Color	Status	Definition	Meaning
MS	Green	ON	Device Operational	Normal operating status.
		Flashing	Device in Standby	Reading switch settings.
	Red	ON	Unrecoverable Fault	Unit hardware error: Watchdog timer error.
		Flashing	Minor Fault	Switch settings incorrect.
	---	OFF	No Unit Power	Unit power is not supplied, waiting for initial processing to start, or the Unit is being reset.
NS	Green	ON	Link OK. Online, Connected.	Network is operating normally (communications established).
		Flashing	Online, Not connected	Network is operating normally, but communications have not yet been established.
	Red	ON	Critical Link Failure	A fatal communications error has occured. Network communications are not possible.
		Flashing	Connection Timeout	Communications timeout.
	---	OFF	No Fieldbus Power / Not Online	Checking for node address duplication on the Master, switch settings are incorrect, or fieldbus power is not supplied.

■ External Switches

Switches	Function
	MCW151-DRT-E: Pin (6 - 1): Slave node address (NA) (0 - 63) Pin (10, 9):Baud rate setting 　(OFF,OFF)　　125 kbps 　(OFF,ON)　　250 kbps 　(ON,OFF)　　500 kbps Pin 7: I/O slave messaging mode 　(OFF)　　Mode I 　(ON)　　Mode II **MCW151-E:** General-purpose switches
	Int. switch SW2 (MCW151-E only): Pin (2, 1): Serial Communication port 2 　(OFF, OFF)　RS-422A 　(ON, ON)　　RS-485 Pin 3: Serial Comm. Termination port 2 　(OFF)　　Termination disabled 　(ON)　　Termination enabled **Int. switch SW3:** Pin (1,2,3): Termination encoder channels (A,B,Z) 　(OFF)　　Termination disabled 　(ON)　　Termination enabled

■ I/O Connector

Wiring Instructions:
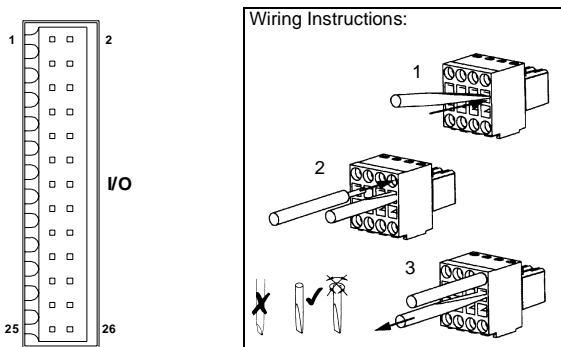
Connector: Weidmuller B2L 3.5/26 SN SW

Pin	Symbol	Description	Pin	Symbol	Description
1	A+	Encoder phase A+(I/O)	2	A-	Encoder phase A-(I/O)
3	B+	Encoder phase B+(I/O)	4	B-	Encoder phase B-(I/O)
5	Z+	Encoder phase Z+(I/O)	6	Z-	Encoder phase Z-(I/O)
7	0V_ENC	Encoder 0V common	8	5V_ENC	Encoder 5V supply(O)
9	I0 / R0	(Registration) Input 0	10	FG	Frame Ground
11	I2	Input 2	12	I1 / R1	(Registration) Input 1
13	I4	Input 4	14	I3	Input 3
15	I6	Input 6	16	I5	Input 5
17	0V_IN	Inputs 0V common	18	I7	Input 7
19	O8	Output 8	20	O9	Output 9
21	O10	Output 10	22	O11	Output 11
23	O12	Output 12	24	O13	Output 13
25	0V_OP	Outputs 0V common	26	24V_OP	Outputs 24V supply(I)

■ DeviceNet Connector (MCW151-DRT-E only)

Pin	Symbol	Description
1 (red)	V+	Power line, positive voltage
2 (white)	CAN-H	Communication line, high
3 (-)	Shield	Shield
4 (blue)	CAN-L	Communication line, low
5 (black)	V-	Power line, negative voltage

Connector: Phoenix MSTB 2.5/5-ST-5.08 (included in package)

■ Power Connector

Pin	Description	Description
1	+24 V	Power Supply 24V
2	0 V	Power Supply 0V
3	FG	Frame Ground

Connector: Phoenix MSTB 2.5/3-ST-5.08 (included in package)

■ RS-232C Connector

Connector: mini-DIN (8-pin)

Pin	Symbol	Description	Port
2	RS-1	Request to send	1
3	SD-0	Send data	0
4	SG-0	Signal ground	0
5	RD-0	Receive data	0
6	SD-1	Send data	1
7	SG-1	Signal ground	1
8	RD-1	Receive data	1

Connection to Personal Computer (IBM PC/AT or Compatible)

Computer				MC Unit	
	Signal	Pin		Pin	Signal
RS-232C Inter-face	RD	2		3	SD-0
	SD	3		4	SG-0
	GND	5		5	RD-0
	RS	7		Shell	FG
	CS	8			
	FG	Shell			

(MC Unit side: RS-232C Inter-face)
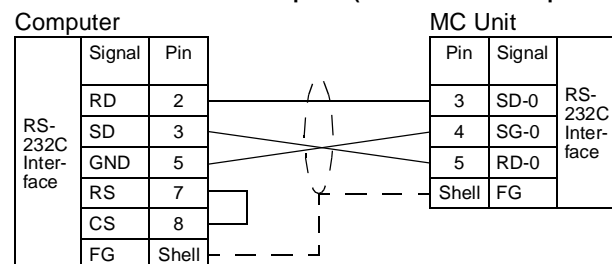
■ RS-422A / 485 Connector (MCW151-E only)

Pin	Symbol	Description
1	RD-	Receive data (-)
2	RD+	Receive data (+)
3	FG	Frame Ground
4	SD-	Send data (-)
5	SD+	Send data (+)

Connector: Phoenix MSTB 2.5/5-ST-5.08 (included in package)

■ Pheripherals

Device	Description
Motion Perfect	MC Unit configuration software (version 2.0 or up).
Configuration Cable R88A-CCM002P4	Connection cable for Personal Computer to Port 0.
Splitter Cable R88A-CCM001P5-E	Splitter cable for serial ports 0 and 1.

■ Quick Start

1. Configure the MC Unit by setting the switches (if applicable) for resp. DeviceNet, RS-422A/485 selection and the termination resistors for RS-422A/485 and encoder signals.
2. Mount the Unit onto the Servo Driver.
3. Connect all cables. Connect the programming cable to a Personal Computer running Motion Perfect.
4. Turn MC Unit and Servo Driver power ON.
5. Check that RUN LED is ON.
6. Check configuration and wiring by using jogging or another quick check. Download and run the application programs.

OMRON