Web Data Logger DL8

WEB-ENABLED REMOTE TERMINAL UNIT

Functions and features
• Remote monitoring of equipment and plants by using modern communication infrastructure
• Monitoring and logging of a wide variety of signals including temperature, pressure, voltage, discrete signal status
• Flexible I/O types and scalable points by combining built-in R8 Series I/O modules
• Type A has basic 'Browsing' function with web browser.
• Type B is added with 'Reporting' function by e-mails.
• Type C is added with 'Recording' function with SD card.
• Type D is added with 'Advanced' functions of peer-to-peer connection of I/O signals and customized web browser view.

50 (1.97)
115 (4.53)
73 (2.87)
mm (inch)

MODEL: DL8–[1]–R

ORDERING INFORMATION

• Code number: DL8–[1]-R
Specify a code from below for [1].
 (e.g. DL8-D-R)

[1] MODULE TYPE

A: Modbus/TCP (Ethernet) (Server/client)
Web server
B: Modbus/TCP (Ethernet) (Server/client)
Web server, reporting by e-mail, FTP client
C: Modbus/TCP (Ethernet) (Server/client)
Web server, reporting by e-mail, FTP server/client, data logger
D: Modbus/TCP (Ethernet) (Server/client)
Web server, reporting by e-mail, FTP server/client, data logger, I/O mapping, user-defined Web browser view

POWER INPUT
DC power
R: 24 V DC

(Operational voltage range: ±10 %; ripple 10 %p-p max.)

RELATED PRODUCTS
R8 Series remote I/O modules
(model: R8-SS2, R8-SS4NJ, R8-SS4N, R8-SV2, R8-SV4N, R8-TS2, R8-RS4N, R8-YS2, R8-YV4N, R8-PA4, R8-DA4A, R8-DAM16A, R8-DC4A, R8-DC4A2, R8-DC4C, R8-DCM16A)
• PC Configurator cable (model: MCN-CON or COP-US)
• PC configurator software (model: DLCFG)
• PC configurator software (model: R8CFG)
Software downloadable at M-System's web site.
• SD card
An SD card is necessary to store data.
Use the specified model number of memory card.
Available for purchase from M-System. Consult M-System.
 - Hagiwara Solutions NSD6-004GH
 (NSDA-004GL ... discontinued)

PACKAGE INCLUDES...
• Protective cover
• Ferrite core

GENERAL SPECIFICATIONS
Connection
•**Power supply (exc. supply), RUN contact output:**
 Tension clamp terminal (Front Twin connection)
 PWB connector: MSTB2.5/5-GF-5.08AU
 Cable connector: TFKC2.5/5-STF-5.08AU
 (Applicable wire size: 0.2 - 2.5 mm^2, stripped length 10 mm)
  Recommended solderless terminal
 AI0,25-6BU 0.25 mm^2 (Phoenix Contact)
 AI0,34-8TQ 0.34 mm^2 (Phoenix Contact)
 AI0,5-10WH 0.5 mm^2 (Phoenix Contact)
 AI0,75-10GY 0.75 mm^2 (Phoenix Contact)
 AI1-10RD 1.0 mm^2 (Phoenix Contact)
 AI1,5-10BK 1.5 mm^2 (Phoenix Contact)
 AI2,5-10BU 2.5 mm^2 (Phoenix Contact)
•**Ethernet:** RJ-45 connector
•**Internal bus, internal power, exc. supply:** Connector
Max. number of I/O modules: 16
(Max. consumption current of I/O modules: 1.6 A)
Isolation: Ethernet to internal bus or internal power or power supply (exc. supply) to RUN contact output to FE
(No isolation between discrete input/output and power supply of the I/O modules when used with the DL8.)
Calendar clock: Year (4 digits), month, date, day, hour, minute, second
Status indicator LED: POWER, LOGGING, SD CARD, SEND, COM, ERROR
RUN contact output: Photo MOSFET relay (no polarity);

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(OFF in error detected)

•Peak load voltage: 50 V max.

•Continuous load current: 50 mA max.

•Peak load current: 300 mA max. (≤0.1 sec.)

•Operation

 Power down: OFF

 Firmware operating: ON

 Error in EthernetLNK: OFF

 Internal bus controller error: OFF

 (Run contact output is applicable for Type C with the DL8 firmware version 1.4.x or later.)

ETHERNET COMMUNICATION

Communication Standard: IEEE 802.3u

Transmission: 10BASE-T, 100BASE-TX

Baud rate: 10/100 Mbps (Auto Negotiation function)

Protocol: TCP/IP, Modbus/TCP, HTTP, FTP, SMTP, SNTP

Transmission media: 10BASE-T (STP, Category 5), 100BASE-TX (STP, Category 5e)

Max. length of fieldbus segment: 100 meters

Ethernet indicator LED: DPLX, LNK

IP address: 192.168.0.1 (factory setting)

INSTALLATION

Power consumption

•**DC**: Approx. 12 W 24 V DC (@ output current max. 1.6 A)

Internal power

•**DC**: 5 V DC

•**Operational current**: 1.6 A

Excitation supply output

•**DC**: 24 V DC ±10 %

•**Operational current**: 7 A

 (Power output current consumption must be under 7 A)

Operating temperature: -10 to +55°C (14 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: DIN rail

Weight: 190 g (0.42 lb)

PERFORMANCE

Battery: Vanadium-lithium secondary battery (undetachable)

Calendar clock accuracy: Monthly deviation 2 minutes at 25°C

Battery backup: Approx. 2 months

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute (Ethernet to internal bus or internal power or power supply (exc. supply) to RUN contact output to FE)

STANDARDS & APPROVALS

CE conformity:

EMC Directive (2004/108/EC)

 EMI EN 61000-6-4: 2007/A1: 2011

 EMS EN 61000-6-2: 2005

COMPATIBLE BROWSING DEVICE

■ Software requirement

PC

•OS:

Windows Vista, Windows 7 (32bit/64bit), Windows 8.1 (32bit/64bit)

•Browser:

Internet Explorer 10, Internet Explorer 11

Firefox 13.0.1 or later

Chrome 26.0.1410.43m or later

Tablet

•OS:

iPad (iOS5 or later); Android terminal (Android4.0 or later)

•Browser:

iOS: Safari; Android: Chrome

Smart phone

•OS

iPhone (iOS5 or later); Android terminal (Android4.0 or later)

•Browser:

iOS:Safari; Android: Chrome

BASIC CONFIGURATIONS

The modules' addresses can be set freely from 0 to 31 regardless the mounting location. However, be sure not to use duplicated addresses. A 4-point analog I/O module occupies 2 addresses. E.g. when R8-SV4N is set to address 5, Input 1 and Input 2 are assigned to address 5, Input 3 and Input 4 are assigned to address 6. In this case, do not set other I/O modules to address 6.
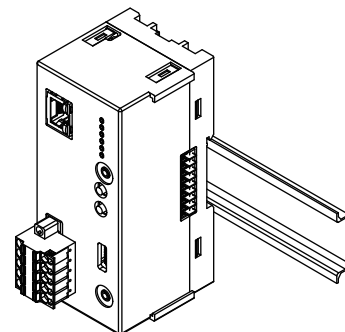
Web-Enabled RTU Modules

I/O Modules

Protective Cover
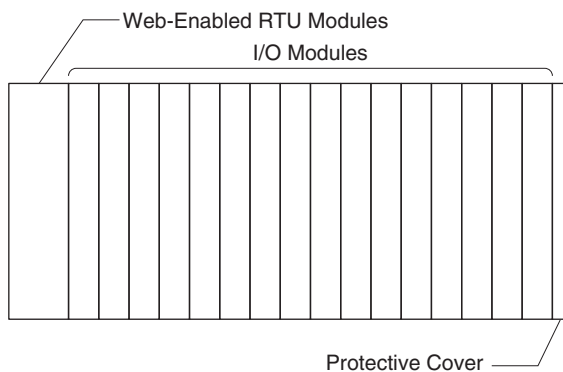
■ **HOW TO MOUNT THE MODULE ON DIN RAIL**
• **Web-Enabled RTU Modules**

Hook
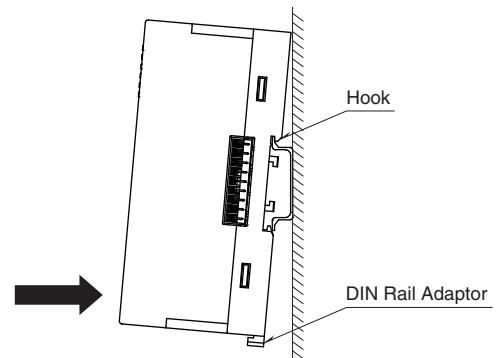
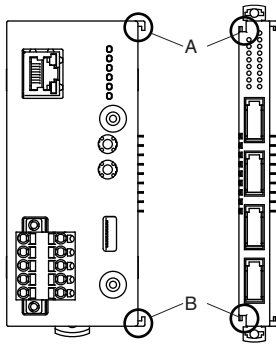DIN Rail Adaptor

Position the upper hook at the rear on the DIN rail and push in the lower. When removing the module, push down the DIN rail adaptor utilizing a minus screwdriver and pull.

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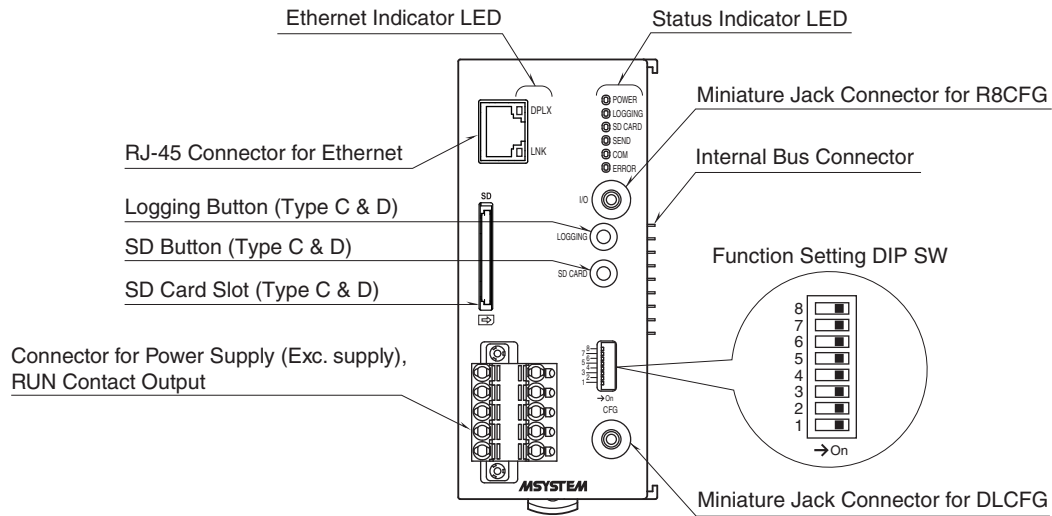
• I/O Module

Confirm that the locking clamps of the I/O module are set.
Insert the module in parallel to the next one while aligning the grooves of
both modules (A & B in the above figure).
Maintain it perpendicularly to the rail.
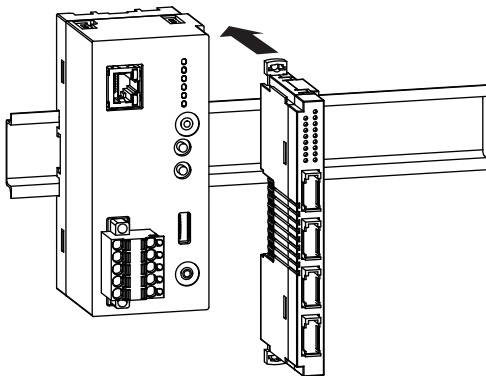
More I/O modules can be added in the same manner.

MODEL: DL8
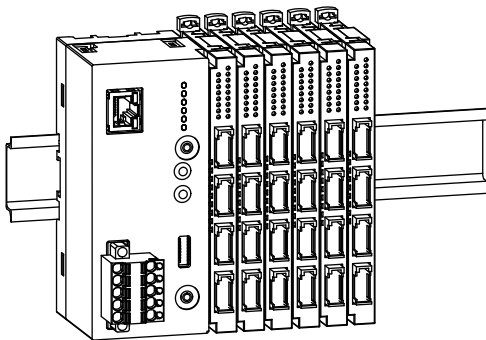
EXTERNAL VIEW

■ STATUS INDICATOR LED

LED	Color	Function
POWER	Green	ON at device operating normally
		Blinking at Ethernet LINK error
		Blinking before obtaining DHCP address
LOGGING	Green	ON at logging (Type C & D)
SD CARD	Green	ON during SD card mounted
		Blinking at reading/writing SD card
		(Type C & D)
SEND	Green	Blinking at e-mailing
COM	Green	Blinking at communication
		(except Modbus/TCP master)
ERROR	Red	ON at error

■ ETHERNET INDICATOR LED

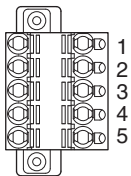| LED	Color	Function
DPLX	Amber	ON at full duplex
LNK	Green	ON at link

CONNECTION DIAGRAMS

■ POWER SUPPLY (EXC. SUPPLY), RUN CONTACT OUTPUT CONNECTOR TERMINAL ASSIGNMENT

Printed-circuit board connector (Phoenix Contact)

Header:　　　　　　MSTB2,5/5-GF-5,08AU

Plug component:　TFKC2,5/5-STF-5,08AU

No.	ID	FUNCTION
1	24V	Power supply (exc. supply) 24 V DC
2	0V	Power supply (exc. supply) 0 V DC
3	RUN	RUN contact output
4	RUN	RUN contact output
5	FE	Power supply (exc. supply) earth

EXTERNAL DIMENSIONS unit: mm (inch)
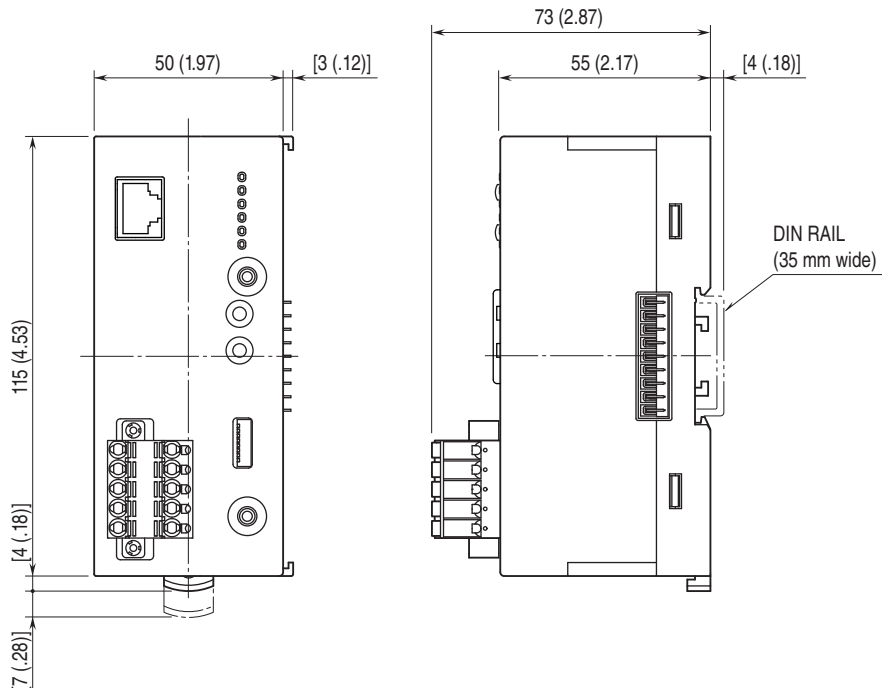
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

COMMUNICATION

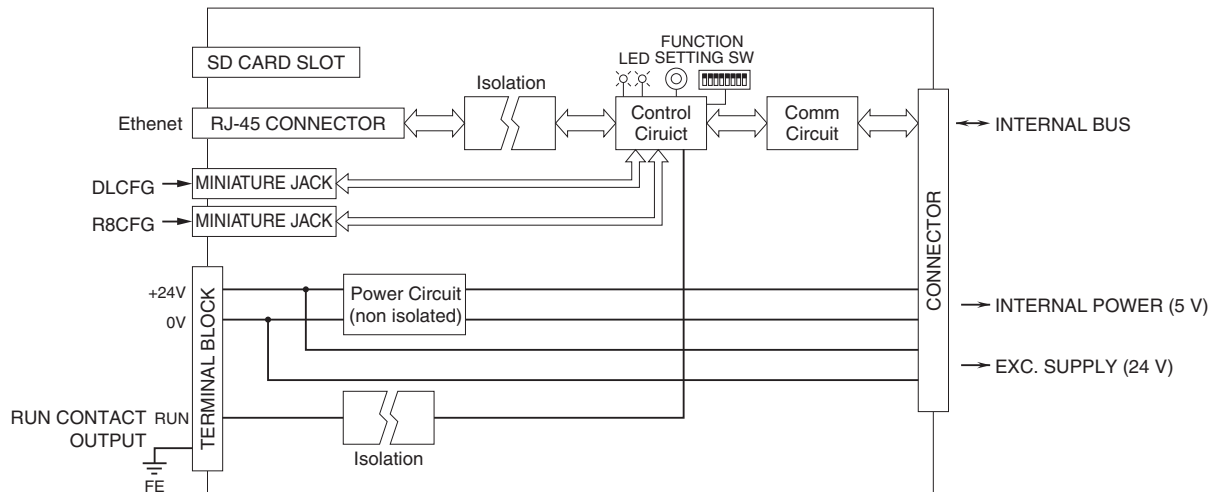**IP:**
DHCP client is supported. Manual setting of IP address, subnet mask, default gateway and DNS server available too.

Modbus/TCP slave:
Remote observation system via SCADA etc.

Modbus/TCP master:
I/O expansion with remote I/O, e.g. R3 or R7 series, is available. Measuring points in multiple locations can be handled collectively.

Web server function (Direct):
This unit can be a Web server, and 'Data,' 'Trend' and 'Event Log' views are available from remote location.

Web server function (Cloud):
This unit can be an FTP client, and upload the Web files to a cloud server.
Users can browse the cloud server.
Multiple users can access it at once without extra load at the unit. (only browsing, operation not available.)

Analog input: 32 points
Discrete input: 64 points
Pulse input: 32 points
Diescrete output: 64 points
Analog output: 32 points (firmware version of the unit: 1.4.x or later)

ALARM OUTPUT (Type B, C & D)

Event can trigger an alarm contact at a discrete output module.
•Transition of analog input zone
•Transition of pulse input zone
•Status change of discrete input
•Count up of discrete input

EVENT REPORTING E-MAIL (Type B, C & D)

Reporting e-mail function available at event or designated time.
Encrypted communication is supported. (SMTP over SSL).
The DL8 turns a designated Do ON after transmitting the report.
· Number of e-mail attention: 32
· Number of event report text: 32
· Number of regular report text: 1
· Channel status: AI, DI, PI, DO, AO status attachable to e-mail
(DO and AO are available with firmware version of the unit 1.4.x or later)
· Output at transmitting failure: 1 point

LOGGING (Type C & D)

Log files in text format are stored into an SD card. The number of logs depends on the free space of the SD card. Log file: System log, event log, e-mail report log, channel log

FTP CLIENT (Type B, C & D)

The recorded data is uploaded to an FTP server in CSV format in specified interval time.
User can define the CSV file.
•Number of channel: Max. 32 (Selectable within AI, DI, DI (counter), PI, DO, AO)
(AO is selectable with firmware version of the unit 1.4.x or later)
•Sampling rate (Firmware version 1.2.x or later)
 1 or 2 sec (Interval time: 1 or 10 min. or 1 hr.)
 1, 2, 5, 10 or 30 sec. (Interval time: 10 min. or 1 hr.)
 1, 2, 5, 10 or 30 min. (Interval time: 1 day)
•Sampling rate (Firmware version 1.1.x or earlier)
 1, 2, 5, 10 or 30 sec. (Interval time: 1 hr.)
 1, 2, 5, 10 or 30 min. (Interval time: 1 day)
Note: To confirm the firmware version, use the configurator software, model: DLCFG.

TREND DATA STORING (Type C & D)

The logged data is written into the SD card in CSV format.
User can define the CSV file.
•Number of channels: Max. 32 (Selectable within AI, DI, DI (counter), PI, DO, AO)
(DO and AO are selectable with firmware version of the unit 1.4.x or later)
•AI sampling: Momentary, average, peak (max.), peak (min.)
•Logging rate:
 Second: 1, 2, 5, 10, 20, 30 sec.
 Minute: 1, 2, 5, 10, 15, 20, 30 min.
 (15 min. is selectable with firmware version 1.5.x or later)
 On the hour: 0 to 23 o'clock (1 or more times available; specify time delay for each set time)
 Day start time and days to log are available.
•Recordable up to the SD card size.
 Automatically deleted.
 (Auto delete is available with firmware version of the unit 1.4.x or later)
•Recording period (as a guide)
 Approx. 180 days
 (logging rate: 1 sec, 32 channels, only trend storing)

FTP SERVER (Type C & D)

Reading and deleting files in the SD card by an FTP client is available.

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Compatible FTP client
•Explorer
•Web browser
 Internet Explorer version 10 and 11
 Firefox version 13.0.1 or later

I/O MAPPING (Type D)

Remote I/O connection is available by registering DI-to-DO
or AI-to-AO mapping information.

USER DEFINED BROWSER VIEW (Type D)

The browser view is user-definable.
Development tools for HTML file are not available by M-System. Provide by customer.

OTHER FUNCTIONS

Configuration: Configurable with the dedicated software
model: DLCFG
Time zone: Selectable between –12:00 and +13:00
(Time zone setting by minutes is not available for the DL8
Ver.1.3 or earlier versions.)

SYSTEM CONFIGURATION EXAMPLES

Devices other than the DL8 in below provided by the user.

■ Monitoring
  (SCADA or web browser)
■ Receiving mails
■ Collecting data

■ Monitoring
  (web browser)
■ Receiving mails

■ Monitoring
  (web browser)

PC/SCADA

Smart Phone

Smart Phone

ADSL/Optical

3G/LTE Mobile Line

Wi-Fi
Router

ISP

ISP

ISP : Internet Service Provider

Web (Internet, VPN, Cloud Server)

ISP

ISP

DL8

3G/LTE Mobile Line

ADSL/Optical

I/O

■ Web server

Mobile
Router

ADSL/Optical Modem
Router

Ethernet

Ethernet

RS-485

DL8

DL8

R3-NE1 Ethernet
Interface Module

72EM2-M4 Ethernet
Communication Adaptor

I/O

I/O

I/O

53U
Multi Power Monitor

■ Web server
■ Sending mails
■ Storing data
■ Data transfer

■ Web server
■ Sending mails

I/O

ISP: Internet Service Provider
3G (3rd Generation): Third generation of mobile telecommunications technology
LTE (Long-Term Evolution): Enhancement of the third generation

Note : An E-mail account for a mail server is required to use e-mailing function.

⚠ Specifications are subject to change without notice.

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