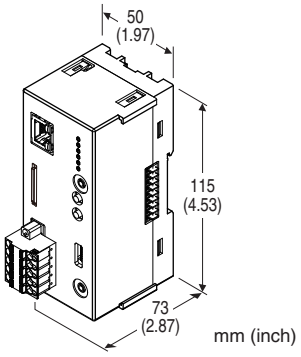
Web Data Logger DL8

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.
• Type E is added with 'Expanded Communication' functions of SLMP client, HTTPS, and FTPS protocols.



MODEL: DL8–[1]–R[2]

ORDERING INFORMATION

• Code number: DL8–[1]-R[2]
Specify a code from below for each of [1] and [2].
(e.g. DL8-D-R/Q)
• Specify the specification for option code /Q
(e.g. /C01)

[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
E: Modbus/TCP (Ethernet) (Server/client)
SLMP Client, Web server (HTTP, HTTPS), reporting by e-mail, FTP server/client, FTPS 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.)

[2] OPTIONS

blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating

RELATED PRODUCTS

R8 series remote I/O modules
(model: R8-SS2, R8-SS4NJ, R8-SS4N, R8-SST8, R8-SV2, R8-SV4N, R8-FS16N, R8-TS2, R8-RS4N, R8-CT4E, R8-YS2, R8-YS2NJ, R8-YST4N, R8-YV4N, R8-PA4, R8-PA4F, R8-PC4A, R8-DA4A, R8-DAM16A, R8-DAT16A2, R8-DC4A, R8-DC4A2, R8-DC4C, R8-DCT4D, R8-DCM16A, R8-DCM16ALZ, R8-DCM16ALK, R8-DCM16ALH, R8-DCM32B2, R8-DCT16A2, R8-PS1)
• PC Configurator cable (model: MCN-CON or COP-US)
• PC configurator software (model: DLCFG)
• PC configurator software (model: R8CFG)
• Local certification authority creator (model: LCA-DL8)
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(B21SEI
(NSD6-004GH(A00SDI, 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)
Unit side connector: MSTB2,5/5-GF-5,08AU
Cable side connector: TFKC2,5/5-STF-5,08AU
(Applicable wire size: 0.2 - 2.5 mm^2, stripped length 10 mm)

Recommended solderless terminal
AI0,25-10YE 0.25 mm^2 (Phoenix Contact)
AI0,34-10TQ 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
Housing material: Flame-resistant resin (gray)
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); (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 Ethernet LNK: OFF
Internal bus error: OFF
SD card writing 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, SLMP, HTTP, HTTPS, FTP, FTPS, 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 (@ internal power max. current 1.6 A)
Internal power supply (power supply for I/O module):
• DC power supply: 5 V DC
• Current capacity: 1.6 A
Excitation supply output (excitation for I/O module)
•DC: 24 V DC ±10 %
•Operational current: 7 A
(From power supply (exitation supply) connector, via connector for internal bus, supplied to each I/O module. Power output current consumption must be under operational current.)
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

EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

COMPATIBLE BROWSING DEVICE

■ Software requirement

Functional checked environment

PC

•OS:

Windows 7 (32-bit/64-bit), Windows 8.1 (32-bit/64-bit)), Windows 10 (32-bit/64-bit)

•Browser:

Internet Explorer 11

Microsoft Edge 89.0

Chrome 89.0

Firefox 81.0

Tablet

•OS:

iPad (iPadOS 14.4); Android terminal (Android 10.0)

•Browser:

iOS: Safari; Android: Chrome

Smart phone

•OS

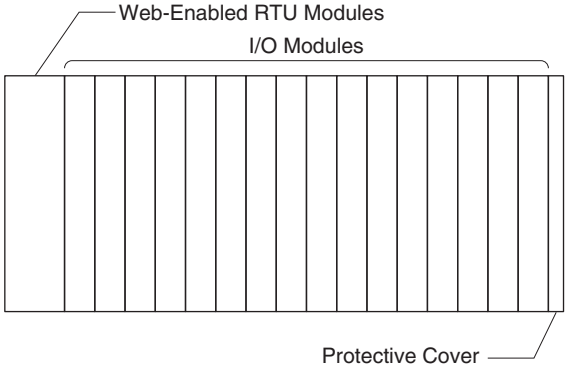
iPhone (iOS 14.4); Android terminal (Android 10.0)

•Browser:

iOS:Safari; Android: Chrome

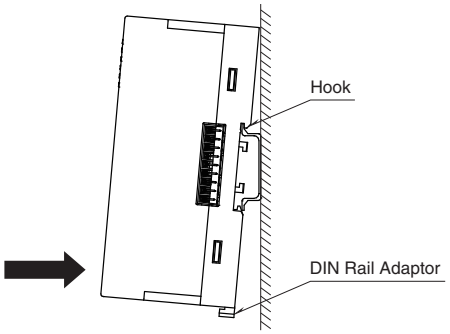
BASIC CONFIGURATIONS

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.

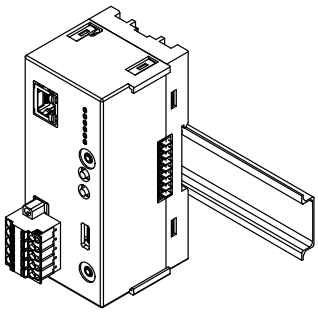


■ **HOW TO MOUNT THE MODULE ON DIN RAIL**

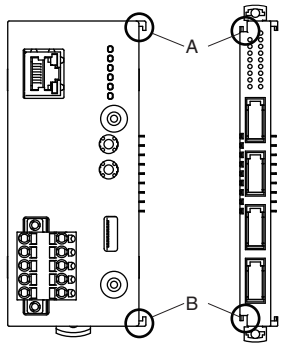
• **Web-Enabled RTU Modules**



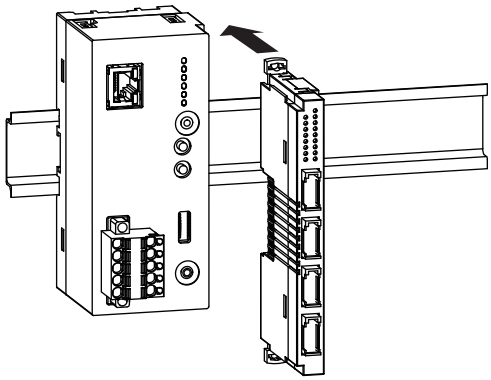
Position the upper hook at the rear on the DIN rail and push in the lower. When removing the module, push down the DIN rail adaptor utilizing a minus screwdriver and pull.



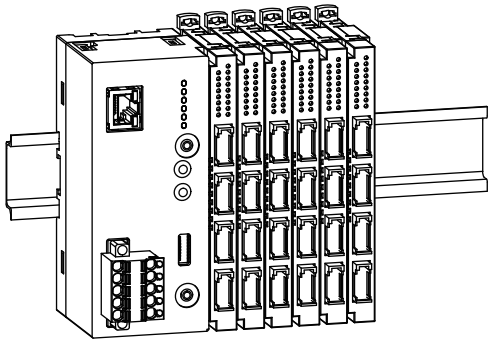
• I/O Module



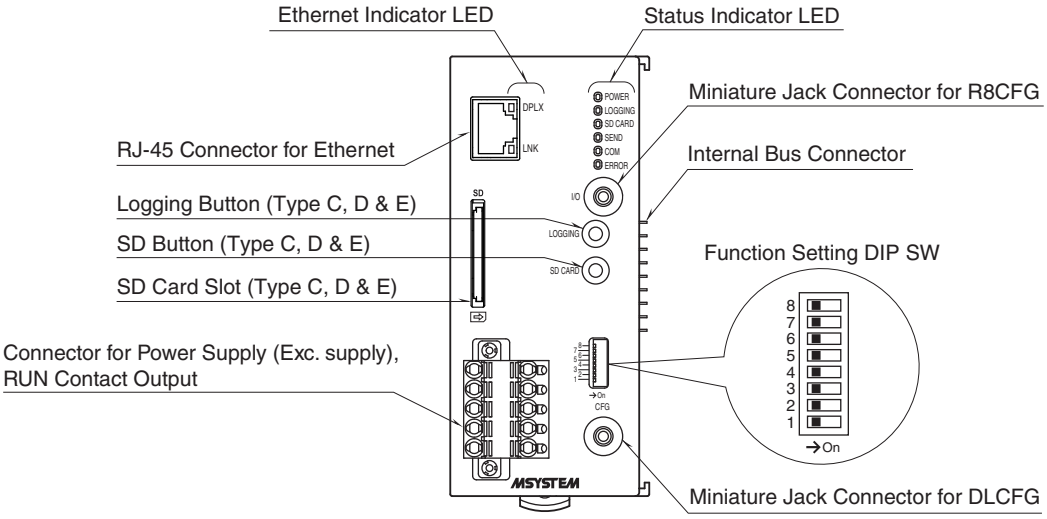
Confirm that the locking clamps of the I/O module are set.
Insert the module in parallel to the next one while aligning the grooves of both modules (A & B in the above figure).
Maintain it perpendicularly to the rail.



More I/O modules can be added in the same manner.



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 & E)
SD CARD	Green	ON during SD card mounted Blinking at reading/writing SD card (Type C, D & E)
SEND	Green	Blinking at e-mailing
COM	Green	Blinking at communication (except Modbus/TCP master & SLMP Client)
ERROR	Red	ON at error • R8 I/O module reading error • SD card access error • SD card insufficient capacity

■ ETHERNET INDICATOR LED

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

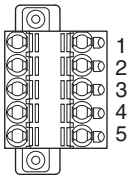
CONNECTION DIAGRAMS

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

Printed-circuit board connector (Phoenix Contact)

Unit side connector: MSTBV2,5/5-GF-5,08AU

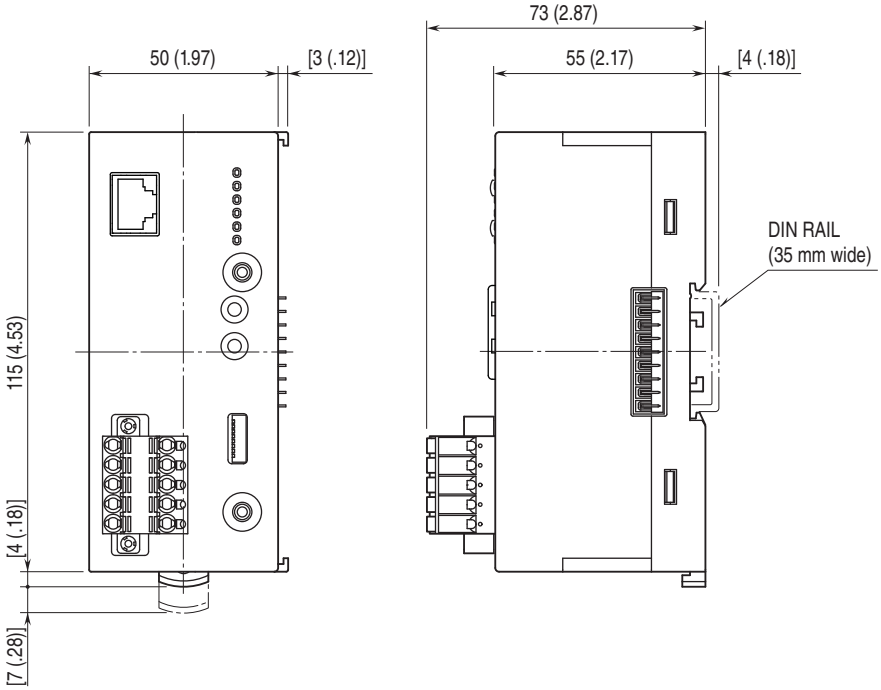
Cable side connector: TFKC2,5/5-STF-5,08AU



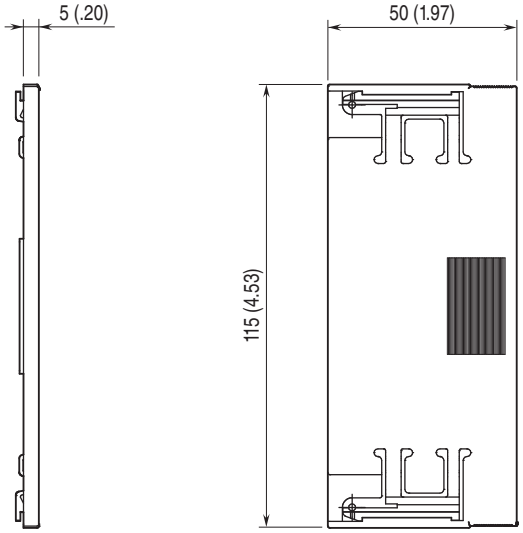
No.	ID	FUNCTION
1	24V	Power supply (exc. supply) 24 V DC
2	0V	Power supply (exc. supply) 0 V DC
3	RUN	RUN contact output
4	RUN	RUN contact output
5	FE	Power supply (exc. supply) earth

EXTERNAL DIMENSIONS unit: mm [inch]

■UNIT

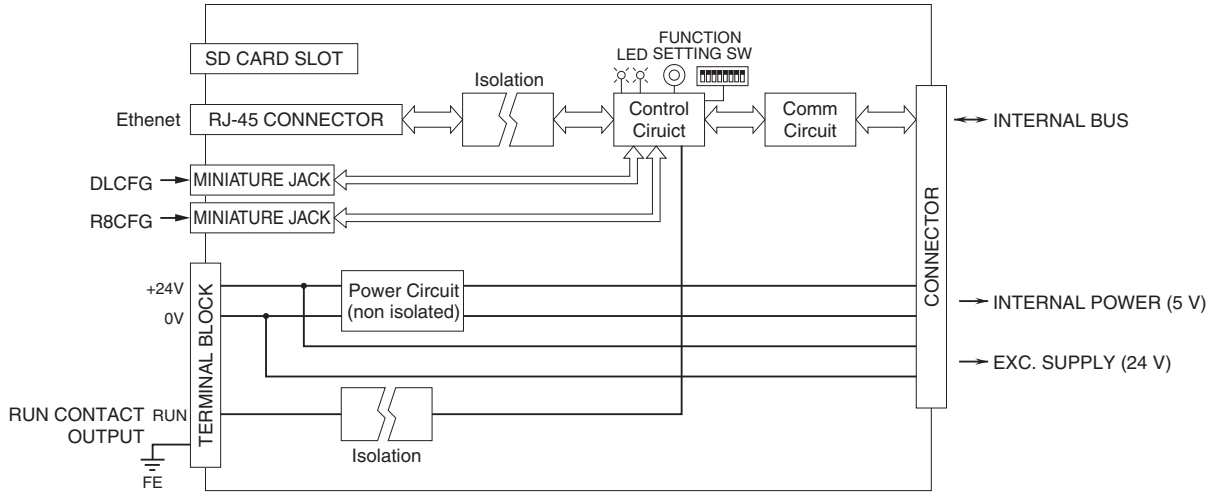


■PROTECTIVE COVER



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.
Number of connections 4

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.

SLMP Client:
DL8 allows I/O expansion by connecting with the SLMP-compatible CPU unit of Mitsubishi programmable-controller MELSEC; and collectively handles data from measuring points in multiple locations.

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)
* For pulse input, only 32 bit data is available. It is not available for the products using 16 bit data (model: R3-PA16 etc.).

ALARM OUTPUT (Type B, C, D & E)

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 & E)

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 & E)

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 & E)

The recorded data is uploaded to an FTP server and FTPS server (Type E) 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 1.6.x or later)
1 or 2 sec (Interval time: 1 or 10 min. or 1 hr.)
5, 10 or 30 sec. (Interval time: 10 min. or 1 hr.)
1, 2, 5, 10, 15, 20 or 30 min. (Interval time: 1 day)
•Sampling rate (Firmware version 1.2.x or later)
1 or 2 sec (Interval time: 1 or 10 min. or 1 hr.)
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 & E)

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 & E)

Reading and deleting files in the SD card by an FTP client and an FTPS client (Type E) are ailable.
Compatible FTP client
•Explorer
•FFFTP 4.4
•Web browser
Internet Explorer version 11
Firefox version 75.0
Compatible FTPS client
•FFFTP 4.4

I/O MAPPING (Type D & E)

Multiplex Data Transmission for remote I/O and IP telemeter is available by registering DI-to-DO or AI-to-AO mapping information.

USER DEFINED BROWSER VIEW (Type D & E)

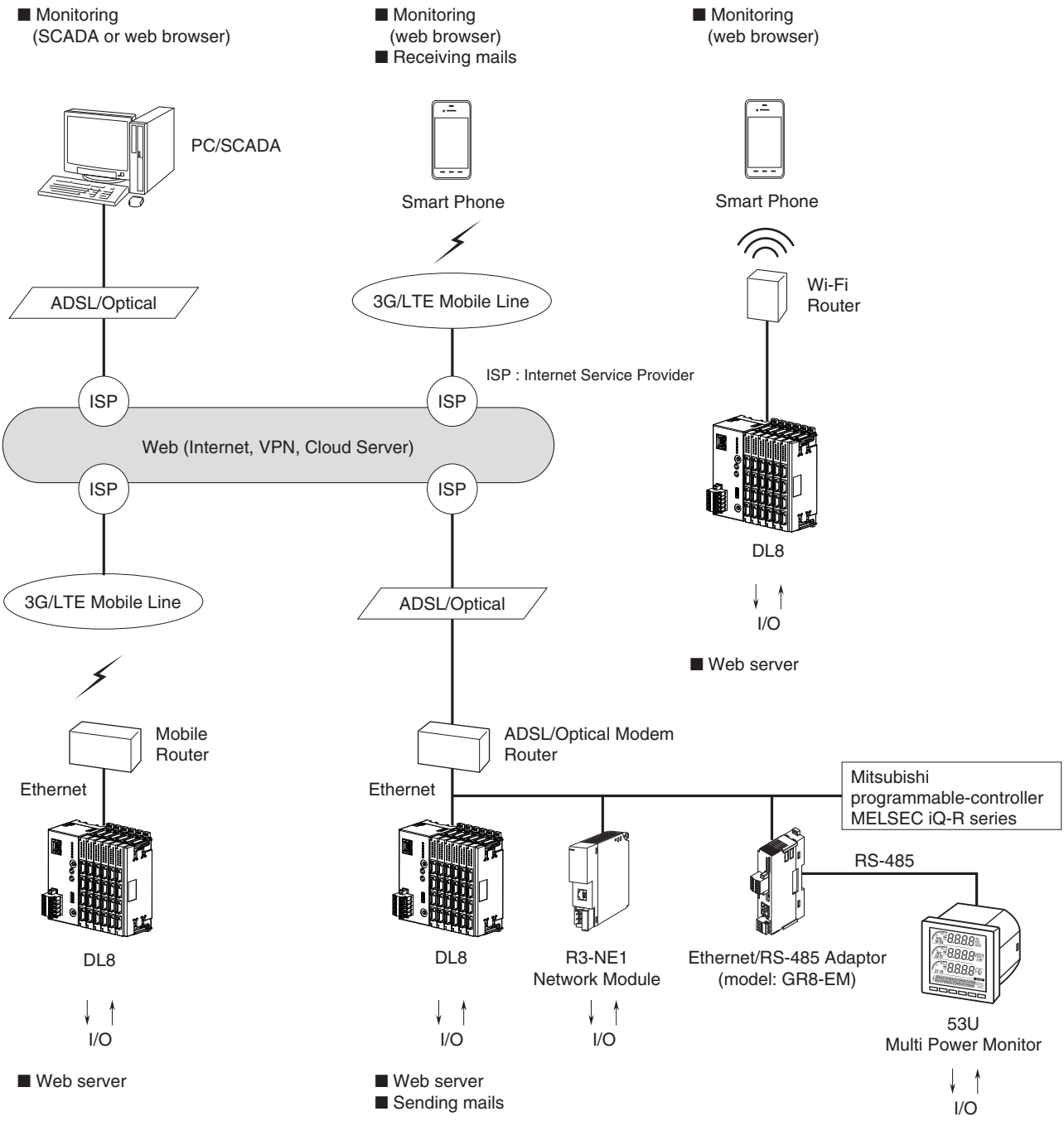
The browser view is user-definable.
Development tools for HTML file are not available by M-System. Provide by customer.

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.



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.