M-SYSTEM OFFERS

IoT SOLUTIONS TO SUPPORT

HOSPITAL

FACILITY MANAGEMENT SYSTEMS

We have more confidence of our medical facilities.

We reduced expenses with energy saving.

We saved time for walk-round checks.

We can respond quickly to equipment trouble.

M-SYSTEM CO., LTD.
www.m-system.com
Introduction of IoT has begun at hospitals.

Message from Chairman

All conditions for the IoT to help manage hospital facilities have been established with a remarkable spread of communication technology using open networks combined with newly developed compact radio equipment that can be easily used. As a result, the areas of IoT applications are rapidly expanding at large hospitals. This brochure introduces carefully selected specific application examples in an easy-to-understand form on and after the next page. We are sure that these will serve as useful hints to solve your current problems, if any. Please have a look at them.

Shigeru Miyamichi
Chairman of the Board
M-System Co., Ltd.
Case Examples of Products Introduced

FCC Part 15 compliant wireless module

900 MHz ISM Band
Multi-hop Wireless System
WL40F Series

The WL40F Series uses 900 MHz radio waves that have excellent wraparound and propagation characteristics with long-distance reachability, transmitted in a multi-hop system (in relay mode via child units).

• Free communication charges.
• No license fees.
• Reaching a long line-of-sight distance, up to 1 km (0.62 mile) (*2).

(*1) This device is approved for use only in the US.
(*2) Be sure to conduct a signal strength site survey before introducing the WL40F Series.

Wireless I/O
Model: WL40W1F

Parent

Wireless Gateway
Model: WL40EW2F

Child

Web Data Logger
Model: DL30 - JAPANESE VERSION ONLY

The Web Data Logger is a data logger of onsite-installation type incorporating versatile functions, including a remote monitoring function, data logging function, and event reporting function, available through a website screen as well as a report creation function.

Basic functions
• Simple web server (e.g., for a trend screen)
• Data logging
• Email function
• FTP function
• Modbus/TCP communications function
• PLC communications function
• Report (daily, monthly, and annual report) creation function
• Various calculation inputs
• User defined views
• Scheduling
• I/O mapping

Tablet Recorder
Model: TR30-G

The Tablet Recorder is a data recorder that displays collected and accumulated trend data on a website screen using a tablet or PC via an IP network, such as a Wi-Fi network.

Basic functions
• Trend data/Event data recording (e.g., for a trend screen)
• Simple web server
• FTP function
• Modbus/TCP communications function
• Various calculation inputs

Web Data Logger
Model: DL8

The Web Data Logger is an Internet-of-things (IoT) terminal incorporating versatile functions, including a remote monitoring function, data logging function, and event reporting function, available through a website screen.

Basic functions
• Simple web server (e.g., for a trend screen)
• Data logging
• Email function
• FTP function
• Modbus/TCP communications function
• I/O mapping

See the following case examples on page 7.

Case 13
Case 14
Case 15
Case 16
Case 1: IoT solution for synthetic air (3)

There is no replacement of the old phone-line telemetering system we now have and we have to continue paying a monthly fee. Is there any solution in this IoT age?

Remote monitoring is possible with the DL30, with email alerts over the Internet. It can also generate a daily report. A fixed communications fee is reasonable.

Synthetic air is artificial air without impurities, mixed with medical oxygen and nitrogen.

Case 2: Centralized monitoring of gas supply facility

It’s time-consuming to go and check the pressure of the medical gas being supplied to each room in various places in the hospital.

An I/O module installed in each room realizes remote monitoring, even from the nurses’ station, through a touch panel.

Case 3: Remaining quantity monitoring of medical gas

The medical gas supply to the hospital is critical, but walk-around checks are time-consuming.

The WL40F Series (1) automatically sends email to the office to tell us the remaining quantity.

This device is approved for use only in the US.

Case 4: Remote monitoring of CO2 incubator (4)

We are worried about newly introduced incubators’ trouble during our absence.

The DL30 can send reports if there are any temperature, humidity, or CO2 concentration anomalies, and we have succeeded in the remote monitoring of the incubators in operation.

The CO2 incubator is a device that cultures cells at a high CO2 concentration.

(1) This device is approved for use only in the US.

(4) The CO2 incubator is a device that cultures cells at a high CO2 concentration.
**Case 5**

**Anomaly reports on bio equipment for in-vitro fertilization**

New government guidelines demand for a function to automatically report equipment anomalies. We need an economical solution to retrofit existing equipment as well.

The **DL8** is a perfect solution with an email reporting function as a standard feature. We have no problem of adding the compact unit for existing equipment. Its cost performance is outstanding!

**Before**

**After**

**Case 6**

**Anomaly reports on pure water equipment for artificial dialysis**

Pure water is processed and stored at night, but it's troublesome if the equipment breaks down while no one is observing.

With the **DL8** to monitor the equipment, we are able to immediately know about failures and respond to them quickly.

**Before**

**After**

**Case 7**

**Anomaly reports on refrigeration equipment**

The cold room needs to be strictly controlled at 2°C to 5°C, and we have to make walk-around checks constantly.

The **DL8** is used to monitor temperature remotely over the smartphone, reducing the number of walk-around checks as well. The **DL8** makes reports by email in times of anomalies.

**Before**

**After**

**Case 8**

**Temperature monitoring of infusion refrigeration unit**

We like to have temperature of the infusion refrigeration unit monitored, along with door opening/closing alarms.

The **TR30-G** is used for temperature monitoring and recording. The mail alert function is very effective to prevent the door from being left opened.

**Before**

**After**
Remote monitoring of well water purification equipment

Before

It's time-consuming to look around the remote well water facility, and we can't respond to trouble in a timely manner.

We can receive email reports on anomalies and monitor the operation of the facility with the DL8. No network wiring is needed by using the WL40F wireless I/O (*1).

After

We would be relieved if we could get email reports on anomalous chlorine concentration. In fact, however, we have to visit on-site to check it.

The TR30-G makes chlorine concentration records and email reports on anomalies with ease. Now we can see a trend graph from anywhere and anytime.

Management of drainage facility

Before

Our drainage facility is far away, and it's time-consuming to make inspections and get data. It's important that the pH level of drainage wouldn't exceed the reference value.

After

We wanted to accommodate the pH recorder in the monitoring panel of the neutralizing equipment, but it was too big.

The 71VR1 is in 96×96 mm format (3.78-inch) with a short depth. I was able to accommodate it into the monitoring panel.
**Case 13**

Monitoring of power demand

Before: We were afraid of the penalty for exceeding the contract demand as a result of an inadvertent energy use.

After: We adopted EDMC, which has enabled demand monitoring over smartphone, and now we don't need to worry about excessive power consumption.

**Case 14**

Visualization of electric power

Before: We knew the total power consumption, but didn't have details in various parts of the hospital. We didn't know where to start saving power.

After: We could visualize the power usage on each floor and for each piece of equipment by using the Multi Power Monitoring Unit. We've found a lot of energy saving hints.

**Case 15**

Energy saving plan with LED tubes

Before: It would be great to substitute the conventional lights with LED tubes to reduce power consumption, but we cannot carry out renovations because the hospital has to have 24-hour, uninterrupted service.

After: We successfully replaced the conventional lights with M-System's LED Tubes with no extra work. Replacement was easy because they can be installed in the same way we used to replace fluorescent lights. We started saving energy right away.

**Case 16**

Monitoring of gas demand

Before: We were in trouble. The gas consumption exceeded the contract gas demand, so we were billed for the excess. We could have prevented this expense if we were able to see the gas demand.

After: We adopted the GDMC, so now we can monitor gas demand in real time. We have been able to take preventive measures because we can predict excessive consumption.
Case Examples of Products Introduced

**Paperless Recorder**
Compact size of 96-mm (3.78-inch) square.
Model: 71VR1
See Case 12

**Web-enabled Power Demand Monitor**
Power demand monitoring over the smartphone or tablet.
Model: EDMC
See Case 13
Limited to Japanese market

**LED Tubes**
Direct replacement of existing fluorescent lamps using the existing lamp holder. No modification, rewiring or component replacement needed.
Model: LS Series
See Case 15
Limited to Japanese market

**Web-enabled Gas Demand Monitor**
Gas demand monitoring over the smartphone or tablet.
Model: GDMC
See Case 16
Limited to Japanese market

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M-System’s website provides full of product information with convenient tools.
www.m-system.com

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**Specification information search**
You can search data sheets, instruction manuals, etc., and compare the specifications of desired models by entering the model numbers or keywords. You can also narrow your search from the product category.

**Product introduction per category**
Introduces M-System’s all products classified by category.

**Search from application areas**
M-System introduces application examples of products classified by application area.

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Your local representative:

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Specifications are subject to change without notice. When ordering, use the latest data sheets available at M-System web site: www.m-system.com