HIOKI

INSTRUCTION MANUAL

# 3639-20

# PULSE LOGGER

HIOKI E. E. CORPORATION

# Contents

# Introduction

Thank you for purchasing the HIOKI 3639-20 PULSE LOGGER. To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

# Inspection

When you receive the product, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

### Accessories

9629 CONNECTION CABLE (for measurement)
9632 CONNECTION CABLE (for alarm output)
Instruction Manual
LR03 alkaline battery X 4
(built into this product, for monitor)

Testing monitor batteries installed in the unit may possibly be weak. Replace batteries before extended measurement usage.

# Safety Notes


**This product is designed to conform to IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the product. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from product defects.**

This manual contains information and warnings essential for safe operation of the product and for maintaining it in safe operating condition. Before using the product, be sure to carefully read the following safety notes.

### Safety Symbols

- The ⚠ symbol printed on the product indicates that the user should refer to a corresponding topic in the manual (marked with the ⚠ symbol) before using the relevant function.
- In the manual, the ⚠ symbol indicates particularly important information that the user should read before using the product.

⎓ Indicates DC (Direct Current).

The following symbols in this manual indicate the relative importance of cautions and warnings.


Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.

⚠CAUTION

Indicates that incorrect operation presents a possibility of injury to the user or damage to the product.

## Accuracy

We define measurement tolerances in terms of dgt. (digit) values, with the following meanings:

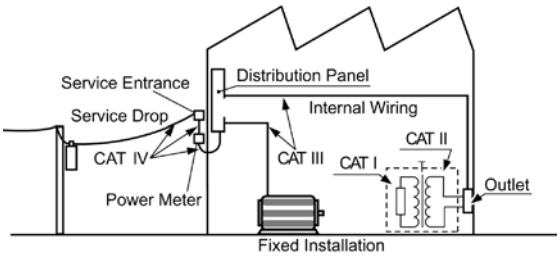
| | |
|---|---|
| dgt. | (resolution)<br>The smallest displayable unit on a digital measuring product, i.e., the input value that causes the digital display to show a "1". |

## Measurement categories (Overvoltage categories)

This product complies with CAT I safety requirements.
To ensure safe operation of measurement products, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT I to CAT IV, and called measurement categories. These are defined as follows.

| | |
|---|---|
| CAT Ⅰ | Secondary electrical circuits that are connected to a wall outlet through a transformer or similar device. |
| CAT Ⅱ | Primary electrical circuits in equipment connected to a wall outlet via a power cord (portable tools, household appliances, etc.) |
| CATⅢ | Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders between the distribution panel and outlets. |
| CATⅣ | The circuit from the service drop to the service entrance, then to the power meter and to the primary overcurrent protection device. |

Higher-numbered categories correspond to electrical environments with greater momentary energy. So a measurement device designed for CAT III environments can endure greater momentary energy than a device designed for CAT II.
Using a measurement product in an environment designated with a higher-numbered category than that for which the product is rated could result in a severe accident, and must be carefully avoided. Never use a CAT I measuring product in CAT II, III, or IV environments. The measurement categories comply with the Overvoltage Categories of the IEC60664 Standards.



# Notes on Use

Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

**WARNING**

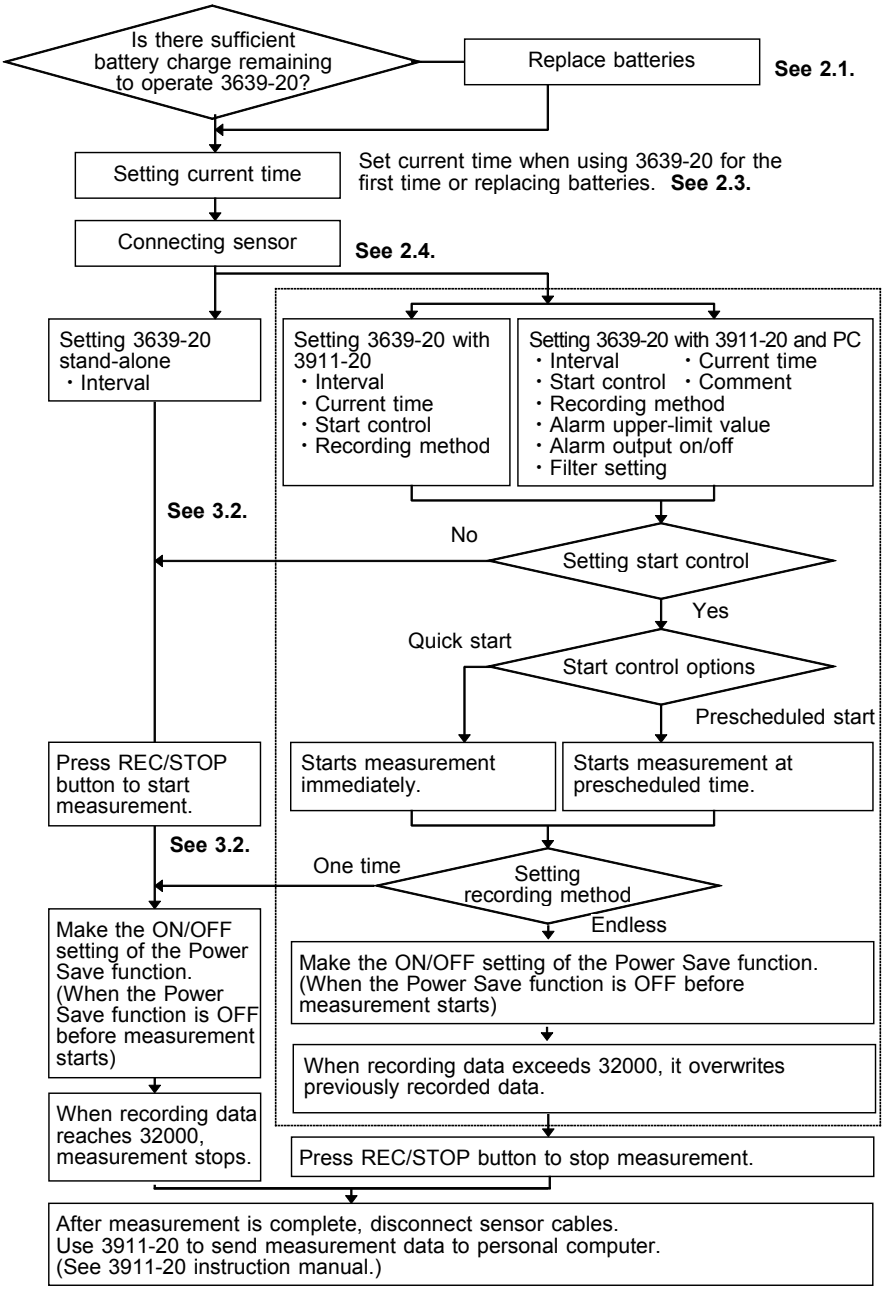
- **The maximum input voltage is 45 V DC. Attempting to measure voltage in excess of the maximum input could destroy the product and result in personal injure or death.**
- **To avoid electric shock, do not allow the product to get wet, and do not use it when your hands are wet.**

**CAUTION**

- Before using the product the first time, verify that it operates normally to ensure that the no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.
- Before using the product, make sure that the insulation on the cables is undamaged and that no bare conductors are improperly exposed. Using the product in such conditions could cause an electric shock. Replace the test leads and probes with the specified Hioki Model 9629 or 9632.
- To avoid damaging the product, do not drop it or subject it to intense shock.
- This product is not designed to be entirely water- or dust-proof. To avoid damage, do not use it in a wet or dusty environment.
- Do not store or use the product where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the product may be damaged and insulation may deteriorate so that it no longer meets specifications.
- If the protective functions of the product are damaged, either remove it from service or mark it clearly so that others do not use it inadvertently.
- Adjustments and repairs should be made only by technically qualified personnel.

Use only the specified connection cable. Using a non-specified cable may result in incorrect measurements due to poor connection or other reasons.

# Measurement Flow Chart and Reference Guide

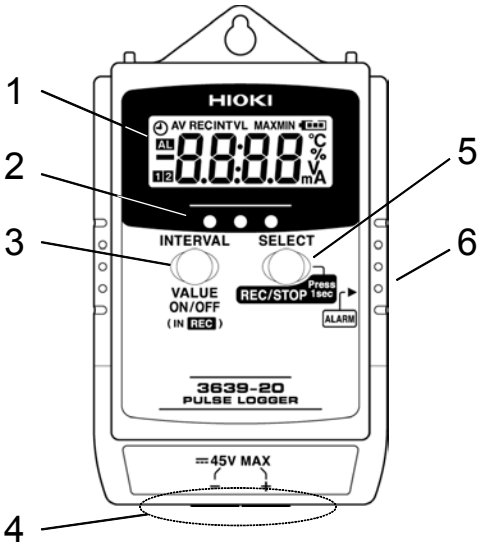


# Chapter 1
# Product Outline

The 3639-20 PULSE LOGGER counts and records the pulses of pulse signals (mechanical contact inputs of switches, relays, etc., or voltage inputs from 1.5 V to 45 V) at a specified interval. It can be used for a wide variety of devices that deliver pulse signals, such as rain gauges, flow meters, and the like. As data is stored in a nonvolatile memory, it is not lost even if the batteries run out or are removed for replacement.

3639-20 PULSE LOGGER cannot be set with 3910-20 COMMUNICATION BASE.
Use 3911-20 COMMUNICATION BASE to set 3639-20.

# 1.1 Name and Functions of Parts




| | |
|---|---|
| 1. LCD | Displays measurement value and settings. |
| 2. Optical data transfer ports | Enables optical data transfer to 3911-20. |
| 3. INTERVAL button | Calls up interval setting display to set interval. |
| | Make the ON/OFF setting of the Power Save function.<br>(When the Power Save function is OFF before measurement starts) |
| 4. Connection terminal | Connects 9629 CONNECTION CABLE. |
| 5. REC/STOP button | Pressing more than 1 second initiates or stops recording. |
| (SELECT) button | Interval is selected in interval setting display. |
| 6. Alarm output terminal | Connects 9632 CONNECTION CABLE and outputs alarm signal (open drain output).<br>(When it was set up in alarm output on. |

# 1.2 Interval and Maximum Recording Time

Interval and maximum recording time are as follows.
Maximum recording time is limited by battery charge condition.
The number of data that can be recorded on one single product of 3639-20 PULSE LOGGER is 32,000.

| INTVL | Maximum Recording Time |
|---|---|
| 1 s | 8 h 53 min 20 s |
| 2 s | 1 day 20 h 26 min 40 s |
| 5 s | 1 day 20 h 26 min 40 s |
| 10 s | 3 day 16 h 26 min 40 s |
| 15 s | 5 day 13 h 20 min |
| 20 s | 7 day 9 h 46 min 40 s |
| 30 s | 11 day 2 h 40 min |
| 1 min | 22 day 5 h 20 min |
| 2 min | 44 day 10 h 40 min |
| 5 min | 111 day 2 h 40 min |
| 10 min | 222 day 5 h 20 min |
| 15 min | 333 day 8 h |
| 20 min | 444 day 10 h 40 min |
| 30 min | 666 day 6 h |
| 60 min | 1333 day 8 h |
| 1 day | 32000 day |

# 1.3 Battery Life

The service life of the batteries used in the 3639-20 varies depending on the recording interval, power save function setting, measurement-value display during recording, temperature and humidity, and the like. The table below gives the approximate battery service lives with an average pulse count of 5 or less per second, and at 23±5℃.

| | During Recording (when measured at the no-voltage contacts) | | | Standby for Recording Start (Power Save Function) |
|---|---|---|---|---|
| Power Save Function | ON | OFF | | |
| Recording Interval | -- | 1 sec | 10 min. or more | |
| Battery Life | 15 days or longer | 4 months or longer | 6 months or longer | 15 days or longer |

# Chapter 2
# Set Up

## 2.1 Replacing the Battery


- **To avoid electric shock when replacing the batteries, first disconnect the connection cable from the object to be measured.**
- **During battery replacement, use caution not to put any foreign materials such as a metal object into the product to avoid damage to the product.**
- **Before using the product after replacing the batteries, replace the cover and screw.**
- **Do not mix old and new batteries, or different types of batteries. Also, be careful to observe battery polarity during installation. Otherwise, poor performance or damage from battery leakage could result.**
- **Handle and dispose of batteries in accordance with local regulations.**

**⚠CAUTION** When exchanging the batteries, the circuit may sometimes short circuit due to static electricity. As far as possible, do not touch the base board with bare hands.

The installation of new batteries ensures more than six months of recording (with the Power Save function turned ON, the recording interval set to 10 seconds or longer, no-voltage contact input with an average pulse count of 5 or less per second, and at 23± 5℃.

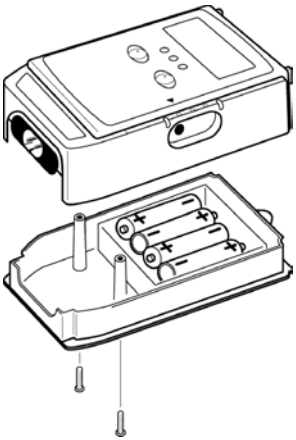
## Display of remaining battery power

| | |
|---|---|
|  | The indicator of the remaining battery power disappears successively from the right as the remaining power expires. |
|  | • Indicates the time remaining until battery replacement<br>• Recording cannot be started.<br>• If the indicator looks like this during measurement, the measurement will be interrupted. |

## Replacing the Battery

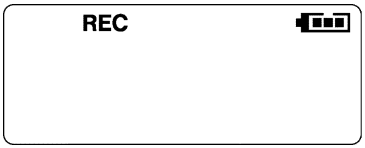
**(1)** Remove back cover screw to remove cover. Verify polarity and install four new LR03 alkaline batteries.

**(2)** Fit cover properly and tighten screw.

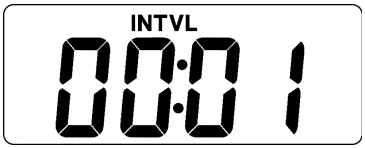


## 2.2 Power Save Function

If no recording session is under way, the screen display is automatically turned off approximately 15 seconds after the last key entry (Sleep). However, the recording-interval setup screen will not enter the Sleep state, even in the absence of key operation.




During recording
(Power Save function set to ON)




Recording-Interval
Setup Screen

The Power Save function mode is set to ON in the initial settings. If the Power Save function is disabled, the battery service life will be approximately 15 days. For the setting procedure for the Power Save function, refer to the "3911-20 COMMUNICATION BASE Instruction Manual" and the Measurement Guide.

When the Power Save function is set to ON (enabled) before measurement starts, the measurement-value display turns off 15 seconds after measurement starts, and the unit automatically enters the Power Save function. To turn on the measurement-value display again, press any key. The measurement-value display turns on, then turns off after 15 seconds, and the unit automatically enters the Power Save function again.

When the Power Save function is set to OFF (disabled) before measurement starts, pressing the INTERVAL button turns the Power Save function ON/OFF. When the measurement-value display is on, the Power Save function is set to OFF. When the measurement-value display is off, the Power Save function is set to ON. For an extended measurement operation, set the Power Save function to ON (measurement-value display turned off).

## 2.3 Setting Current Time

When replacing 3639-20 PULSE LOGGER batteries or using 3639-20 stand-alone (with manual operation) for the first time, connect with 3911-20 and set current time.

See how to set current time in 3911-20 COMMUNICATION BASE instruction manual.

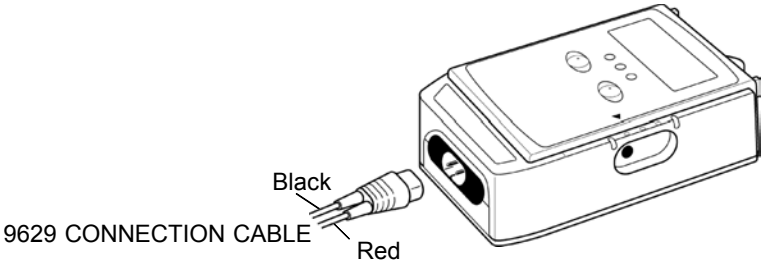
# 2.4 Connecting Sensor Cable

**WARNING**

- **The maximum input voltage is 45 V DC. Attempting to measure voltage in excess of the maximum input could destroy the product and result in personal injure or death.**

### Connecting the CONNECTION CABLE

The 3639-20 PULSE LOGGER is capable of measuring one channel of pulse signals with the 9629 CONNECTION CABLE connected. To ensure correct measurement, insert the CONNECTION CABLE as far as it will go.



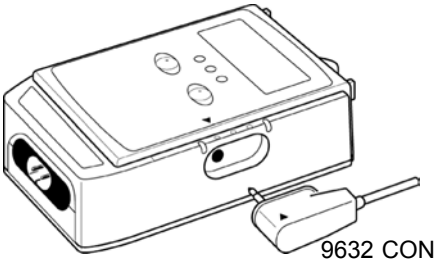

The 9629 CONNECTION CABLE can be cut to any desired length for use. If the cable was cut, use it after stripping the covering with a wire stripper or another appropriate tool.

To input a voltage to the 3639-20, connect the red conductor to the positive (+) side of the pulse-generating device, and connect the black conductor to the negative (-) side. If the conductors are inversely connected, measurement cannot be conducted.

For connection between the 9629 CONNECTION CABLE and the pulse-generating device, refer to the operation manual of the pulse-generating device.

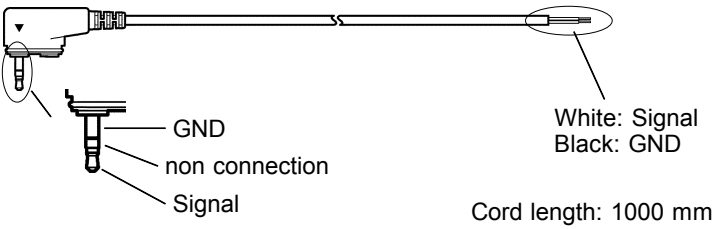
## Connecting 9632 CONNECTION CABLE

Connecting 9632 CONNECTION CABLE to alarm output terminal. When connecting connection cable, securely insert connection cable to unit as designated by triangle mark ▲ on connection terminal.
Improper connection results in failure to output accurate signal.



9632 CONNECTION CABLE

## 9632 CONNECTION CABLE



# Chapter 3
# Settings

## 3.1 Setting Items

Logger stand-alone manual settings and settings in combination with 3911-20 COMMUNICATION BASE with measurement conditions stored in memory loaded from personal computer.

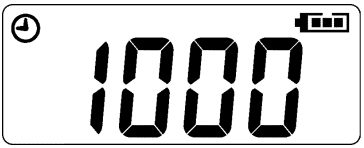
| | 3639-20 | 3639-20 +3911-20 | 3639-20 +3911-20 +PC |
|---|---|---|---|
| 1. Start recording | Valid | Valid | Valid |
| 2. Stop recording | Valid | --- | --- |
| 3. Interval setting | Valid | Valid | Valid |
| 4. Current time setting | --- | Valid | Valid |
| 5. Start control | --- | Valid | Valid |
| 6. Recording method setting | --- | Valid | Valid |
| 7. Comments | --- | --- | Valid |
| 8. Filter Setting | --- | --- | Valid |
| 9. Alarm Setting | --- | --- | Valid |

・The settings Comments, Filter Setting, and Alarm Setting are available only when the three products of the PC, the 3911-20, and the 3639-20 are interconnected.

### 1. Start recording

Start manual recording by pressing logger REC/STOP button for 1 second or initiate by prescheduled start set using 3911-20 COMMUNICATION BASE.
When time scheduled start is engaged, ⏲ appears in display.

If the INTERVAL button is pressed while ⏲ is displayed, the measurement-value display can be turned on/off. When measurement is to be conducted for an extended period, set the measurement-value display to OFF in advance.




・Recording cannot be started if the battery power is low ( indication). Moreover, if the battery power becomes too low during recording ( indication), recording will be interrupted.

### 2. Stop recording

To stop recording, turn on the measurement-value display, then hold down the REC/STOP button on the 3639-20 for 1 second.
Or recording stops automatically when data is full when set to recording method: one time.

### 3. Interval setting

Set interval with logger alone or using 3911-20.
(1/2/5/10/15/20/30 s, 1/2/5/10/15/20/30/60 min, 1 day)
Default setting is 1 sec.

### 4. Current time setting

To set current time, see 3911-20 COMMUNICATION BASE instruction manual.

### 5. Start control

Set specific recording date and time using 3911-20 to engage time scheduled start. When time scheduled start is engaged, ◴appears in display.
When the Power Saving function is set to OFF before measurement starts, pressing the INTERVAL button turns the Power Saving function ON/OFF. When the measurement-value display is on, the Power Saving function is set to OFF. When the measurement-value display is off, the Power Saving function is set to ON. For an extended measurement operation, set the Power Saving function to ON (measurement-value display turned off).

### 6. Recording method setting

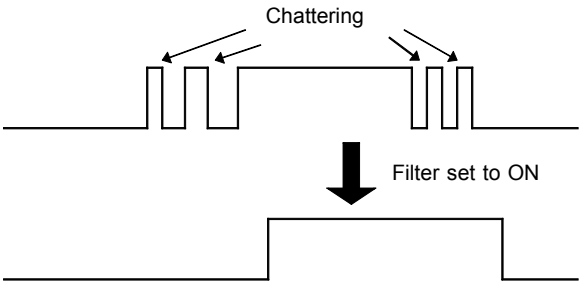
Set recording method using 3911-20.
Choose either one time or endless recording method.
Default setting is one time.
One time: Ends recording when data reaches 32000.
Endless : Overwrites previously recorded data when data exceeds 32000.

### 7. Comments

The settings Comments is available only when the three products of the PC, the 3911-20, and the 3639-20 are interconnected.
Set comments entered by personal computer to logger using 3911-20. When sorting collected recording data, comments are helpful.

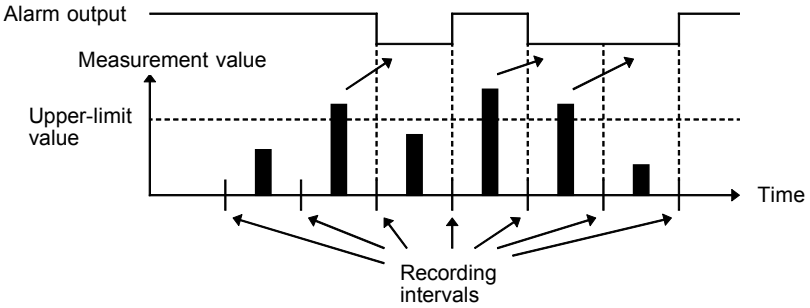
## 8. Filter setting

The filter setting can be made when the 3639-20, the 3911-20, and the PC are interconnected. Either "Mechanical-contact input" or "Electronic-contact input" can be selected for the filter. Default setting is Mechanical-contact input.
In the case of the mechanical contacts of a relay or switch, noise referred to as "chattering" may be heard when signals are switched over. When the filter is set to "Mechanical-contact input," noise components such as those of the mechanical-contact chattering can be eliminated (see the figure). If "Electronic-contact input" is selected, the chattering cannot be eliminated. In the case illustrated below, the measurement value will be 1 if "Mechanical-contact input" is selected, or 5 if "Electronic-contact input" is selected.




## 9. Alarm setting

The Alarm Setting can be made when the 3639-20, the 3911-20, and the PC are interconnected. Default setting is the alarm output set to OFF.
The product issues an alarm signal if a measurement value exceeds the preset upper-limit value. Decision of an alarm and its output are made at each individual recording interval. An alarm once issued will continue to be output until the measurement value has fallen below the preset upper-limit value (see the figure below). "AL" remains displayed on the screen while the alarm signal is being output.



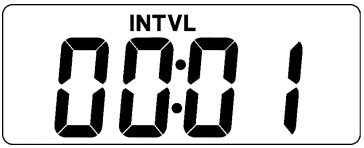

- As the alarm-signal output terminals form an open-drain output, the signaling side and the GND side are internally short-circuited when signals are output. In other cases, they remain open. When an external power supply is provided, a relay or sequencer can be controlled through the use of alarm signals. Maximum rating: 30 VDC, 200 mADC (permissible loss: 200 mW).

If an alarm is issued immediately before a measurement session is terminated, the alarm will continue to be output even after termination of the measurement. The display of "AL" and the alarm output will be turned off at the start of the next recording session.

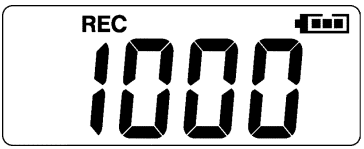
## 3.2 Manual Setting

3639-20 PULSE LOGGER stand-alone manual operation settings are shown below.

(1) Interval setting
Press INTERVAL button to switch measurement value display to interval setting display. (**INTVL** appears.)
Press SELECT button to designate interval.
Press INTERVAL button to complete setting.




(2) Starting and ending recording
Press REC/STOP button for 1 second to clear last recorded data and start recording. (**REC** appears.)
Press REC/STOP button for 1 second to stop recording.
When memory is full, recording automatically stops when recording method: one time is selected.
Recording cannot be started if the battery power is low ( indication). Moreover, if the battery power becomes too low during recording ( indication), recording will be interrupted.
When the measurement value display is on, the displayed values are updated at every recording interval. At the outset of a measurement session, 0 will be displayed.



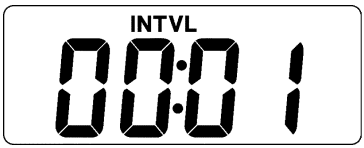
(3) Power save function ON/OFF
When the Power Saving function is set to OFF before measurement starts, pressing the INTERVAL button turns the Power Saving function ON/OFF. When the measurement-value display is on, the Power Saving function is set to OFF. When the measurement-value display is off, the Power Saving function is set to ON. For an extended measurement operation, set the Power Saving function to ON (measurement-value display turned off).

## 3.3 Setting by 3911-20

### Preparation

(1) If the LCD of this unit remains off (Sleep state), briefly press the INTERVAL button or SELECT button of the 3639-20 to display the LCD.
When logger LCD shows **REC** mark or ⏲, press REC/STOP button for more than 1 second to stop recording.
During sleeping, recording, or waiting time before recording start time, data transfer cannot be established with 3911-20.

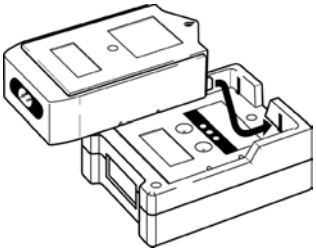
(2) Press logger INTERVAL button to display interval setting display. (**INTVL** appears.)



### Connection and setting

(1) Connect 3911-20 with logger.

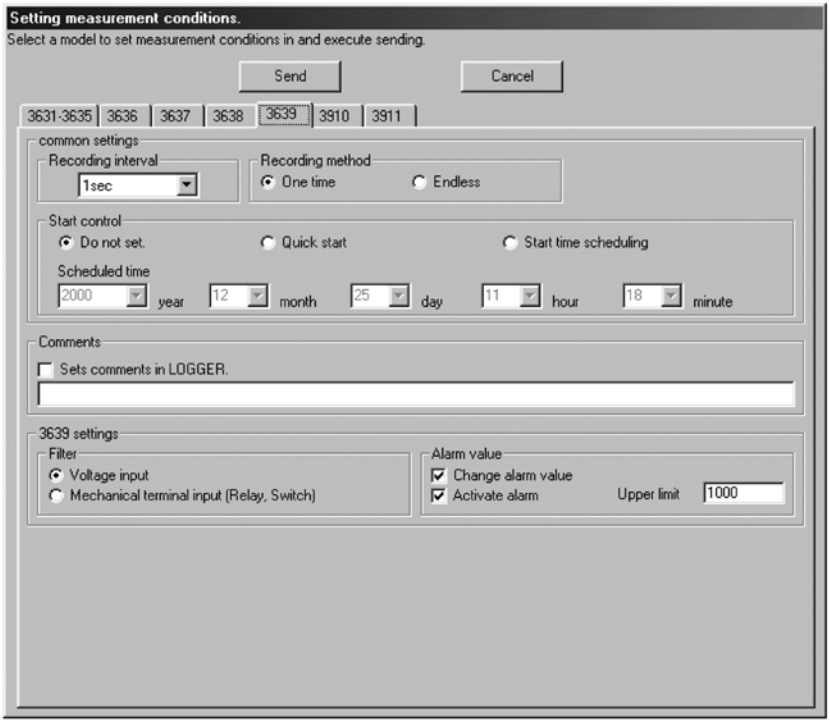
(2) Press 3911-20 SEND button for more than 1 second to send data settings to logger.
If an error is issued and the data cannot be transferred, refer to Chapter 5. Maintenance and Service: "Troubleshooting" in the 3911-20 Instruction Manual.



- Previously recorded logger data is erased when recording is resumed. Be sure to load data to be saved to 3911-20 or to personal computer before recording.
- At any other time even when interval setting display is not shown, except during recording and waiting for recording, communication with 3911-20 is available. However communication is disabled when logger is set to sleep.

3639-20 settings in application software COMMUNICATION UTILITY for 3911-20 packaged with 3911-20 are as follows.

Go to 'Communication' on the menu bar in COMMUNICATION UTILITY for 3911-20 and select 'Setting measurement condition'. When measurement condition setting window is open, select '3639-20 setting items' to set settings.




- The settings of Comments, Filter Setting, and Alarm Setting can be made only on the 3639-20 and are available only when the 3639-20, the 3911-20, and the PC are interconnected.
- The settings common to all models are made in "Setting Items of the 3911-20." In this case, the settings can be made with the 3639-20 and the 3911-20 interconnected.

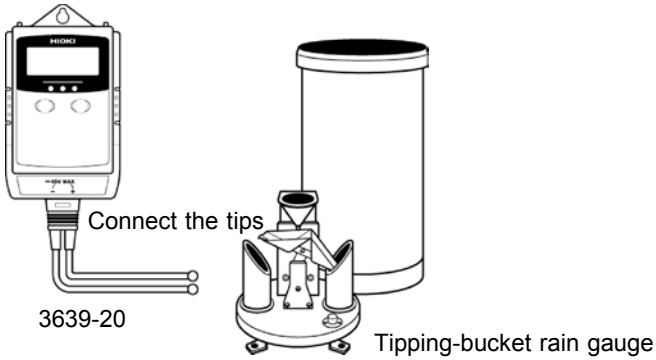
# 3.4 Application Example

## 3.4.1 Connecting the Product to a Rain Gauge

The following shows the procedure for connecting the 3639-20 PULSE LOGGER to a rain gauge for the measurement of precipitation.

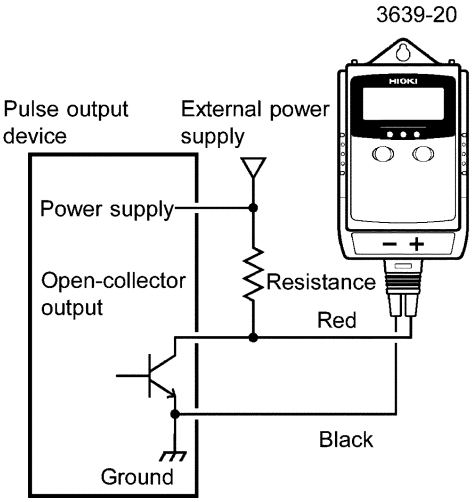
(1) If the product is being used for the first time or the batteries have just been replaced, set the current time.
(2) Connect the 3639-20, 3911-20, and PC, and set the filter to "For mechanical contacts" (default setting) using the application software.
To output an alarm signal, set Alarm Output to ON and specify an upper-limit value (default setting: Alarm Output OFF).
(3) Make other settings (recording interval, etc.) as necessary.
(4) Connect the rain gauge to the 3639-20. The 9629 CONNECTION CABLE can be cut to any desired length. If the cable is cut, remove the sheath using a wire stripper prior to use. Regarding connection of the rain gauge and the 3639-20, refer to the operation manual for the rain gauge.
(5) Start measurement.
The 3639-20 is not waterproof. Therefore, place the unit inside the rain gauge or at a location where it is protected from the rain.
(6) Upon completion of measurement, use the 3911-20 to transfer the recorded data to the PC (see the "3911-20 Instruction Manual").

(7) Rain gauges are generally classified into two types: those with 0.5 mm per pulse and those with 1 mm per pulse. If a 1-mm-type rain gauge is used, the acquired value represents the precipitation (mm). If a 0.5-mm-type rain gauge is employed, the precipitation (mm) is obtained by dividing the acquired value by 2 (scaling). Scaling is performed by the software supplied with the 3911-20.



## 3.4.2 Connecting the Product to an Open-Collector (Open-Drain) Output Device

Some flowmeters and wattmeters feature open-drain or open-collector pulse output. In such a case, connect the product as shown in the diagram. Insert a resistor between the external power supply and open-collector output. Make sure the resistor can turn on (allow a current to flow through) the transistor used in the open collector. For an open-drain pulse output, follow the same procedure.



# Chapter 4
# Specifications

## 4.1 Measurement Specifications

| | |
|---|---|
| Input | Pulse input: 1 channel<br>• No-voltage contact input (switches, relays, etc.)<br>Counts when the terminals change from shorted (short-circuited) to open<br>• Voltage input H: +1.5 V to +45 V; L: +0.0 V to +0.2 V (logic undefined for the range from +0.2 V to +1.5 V)<br>Counts when the voltage level changes to H |
| Measurement accuracy | Within ±1 dgt., Guaranteed accuracy period: 1 year |
| Clock accuracy | Within ±100 ppm (Relative to an error of ±100 μs per second and 23±5℃) |
| Display of measurement range | 9999 counts/interval<br>* "OFF" displayed for 10,000 counts or more (internal data also OFF) |
| Filter | For mechanical contacts: Pulse width of 20 ms or more, pulse spacing of 40 ms or more (frequency of 25 Hz or less)<br>For electronic contacts: Frequency of 10 kHz or less |

## 4.2 Functional Specifications

| | |
|---|---|
| Display | Measurement-value display (monitored values updated at the preset recording intervals), recording status (recording/waiting for preset time), recording interval (if preset), state of batteries (remaining-battery-power indicator: 4 steps), reservation start mark, alarm setting |
| Recording capacity | 32,000 pieces of data |
| Start of recording | Manual start, reserved-time start |
| End of recording | Manual stop, memory full |
| Recording interval | 1/2/5/10/15/20/30 sec., 1/2/5/10/15/20/30/60 min., 1 day |
| Recording method | One time: Stopped when the memory becomes full<br>Continuous: The oldest data is overwritten when the memory becomes full. |

| | |
|---|---|
| Settings | By key entry on the product:<br>Recording interval, manual start, manual stop, measurement-value display on/off<br>Using PC software:<br>Current time, recording interval, start of recording, comments, switching of input filter, alarm output on/off, alarm upper-limit value |
| Alarm output | Provided (open-drain output, 30 VDC, 200 mADC, 200 mW of permissible loss)<br>If a measurement value exceeds the preset upper-limit value, an alarm is decided at every interval and issued. |
| Waterproofing | None |

# 4.3 Other Specifications

| | |
|---|---|
| Backup | Data backup provided (data not lost due to dead batteries or removal of batteries for replacement) |
| Interface | Optical communication using an infrared light.<br>Optional 3911-20 COMMUNICATION BASE required. |
| Power supply | LR03 alkaline battery X 4 (1.5 VDC X 4) |
| Battery life | About six months or longer (with the power save function set to ON and the recording interval set to 10 s, at 23±5℃, and with an average pulse count of 5 or less per second) |
| Maximum rated power | 0.1 VA |
| Dimensions | Approx. 57.5W X 86.5H X 30.0D mm (excluding projections)/ 2.26"W X 3.41"H X 1.18"D |
| Mass | Approx. 130 g (4.6 oz) (including batteries) |
| Location for use | Indoors, altitude up to 2000 m (6562 feet) |
| Operate temperature and humidity range | 0 to 50℃, 80% RH or less (no condensation)<br>(32 to 122°F) |
| Storage temperature and humidity range | -10 to 60℃, 80% RH or less (no condensation)<br>(14 to 140°F) |
| Guaranteed accuracy period | 1 year |
| Accessories | 9629 CONNECTION CABLE<br>9632 CONNECTION CABLE<br>LR03 alkaline battery X 4<br>Instruction Manual |
| Options | 3911-20 COMMUNICATION BASE |
| Standards Applying | EMC EN 61326<br>Safety EN 61010 Measurement category I (anticipated transient overvoltage 330 V), Pollution Degree 2 |

# Chapter 5
# Maintenance and Service

## Cleaning

To clean the product, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.
Wipe LCD lightly with the soft cloth which dried.

## Service

If the product seems to be malfunctioning, confirm that the batteries are not discharged, and that the connection cables is not open circuited before contacting your dealer or Hioki representative. Pack the product carefully so that it will not be damaged during shipment, and include a detailed written description of the problem. Hioki cannot be responsible for damage that occurs during shipment.

## Error Messages

The following error may be displayed on the LCD of the main instrument as shown below.

| Error message | Meaning |
|---|---|
| Err 1 | ROM error |
| Err2 | RAM error |
| Err9 | Adjustment data error |

When this occurs, repair or check the device. Contact your dealer or Hioki representative.

HIOKI

# DECLARATION OF CONFORMITY

Manufacturer's Name: HIOKI E.E. CORPORATION

Manufacturer's Address: 81 Koizumi, Ueda, Nagano 386-1192, Japan

Product Name: PULSE LOGGER

Model Number: 3639-20

The above mentioned product conforms to the following product specifications:

Safety: EN61010-1:2001

EMC: EN61326-1:2006
ClassB equipment
Portable test and measurement equipment

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 2004/108/EC, but is not applicable to the Low Voltage Directive 2006/95/EC.

HIOKI E.E. CORPORATION

15 April 2008

M. Tanaka

Mitsuyoshi Tanaka

Director of Quality Assurance

3639A999-03

**HIOKI 3639-20 PULSE LOGGER**

Instruction Manual

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