

The logo for Intelligent Manager features a stylized lowercase 'i' in a teal color with a small sphere and a curved line above it, resembling an orbit. To the right of this icon, the word 'intelligent' is written in a black serif font, and the word 'Manager' is written in a larger, bold, teal sans-serif font below it.

# **intelligent Manager**

## **Commissioning Manual**

**Version 1.0**

## **Power Proportional Division**

Model names and specifications or the like are subject to change without prior notice for further improvement, so be sure to confirm the following catalogues and engineering data.

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# 1 Configuring the Power proportional division

## 1.1 Overview

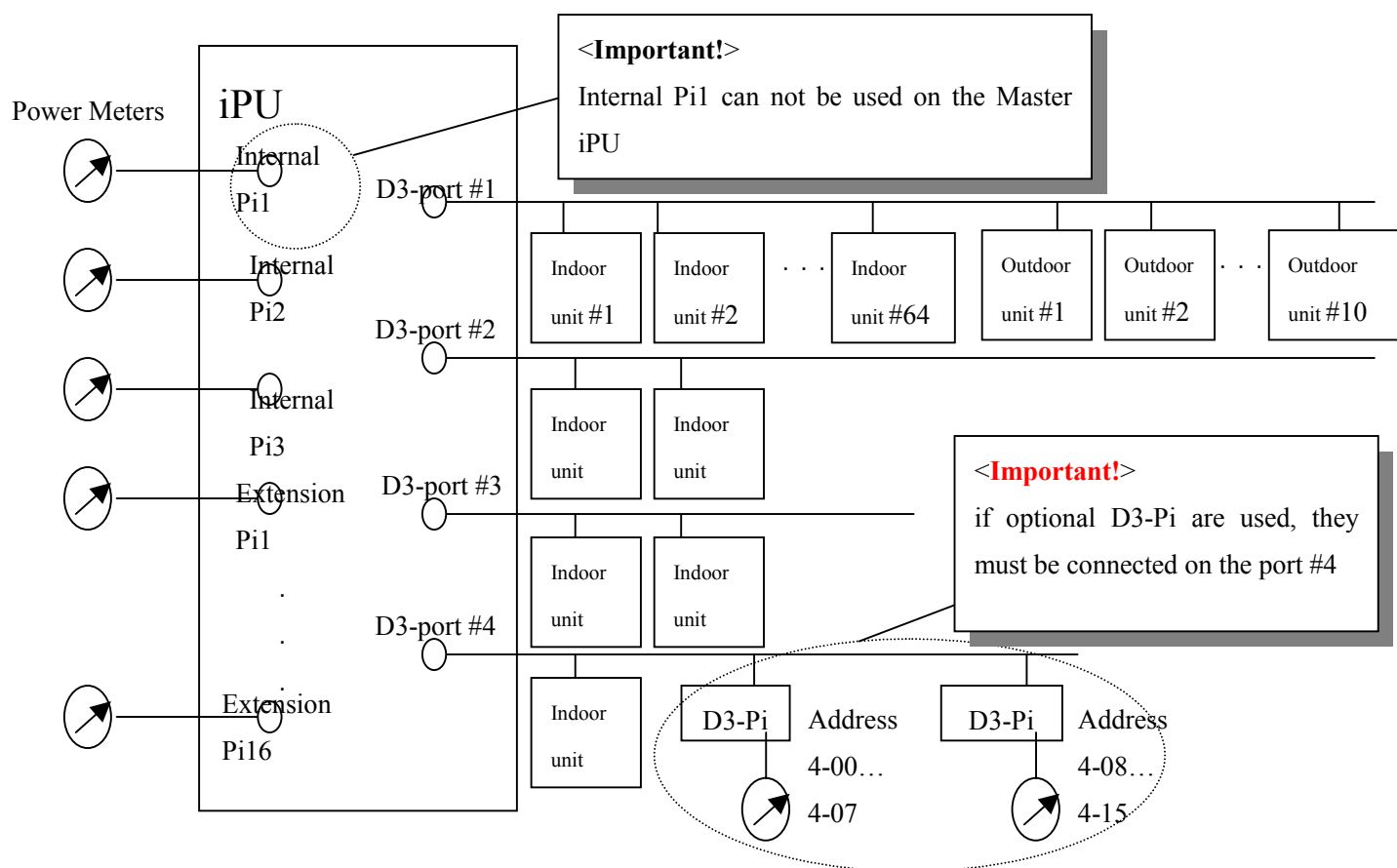
**Note** In this chapter, the term **division** stands for **power proportional division**.

This function divides the power used by outdoor units between the connected indoor units and equipment.

The power consumption of the outdoor units is measured on Pulse Input management points.

The relative power consumption of the indoor units is calculated from their operation time and mode, level-headed with model related coefficients.

The figure below illustrates the wiring capacity and constraints for the division function:



Although most of the division configuration is carried out by using the dedicated engineering tool, some configuration steps are performed during the configuration of the intelligent Manager system:

- in Step 1 for intelligent Manager system and management point attributes: this step should have been already performed in Step 1,
- in Step 2 for division scheduling: for operational execution, the days and hours where division is performed must be set up; this step can be performed later when configuring the intelligent Manager application in Step 2.

## 1.2 Setting up the iPU connections

### Setting up the Pulse input units (Pi)

To set the measurement of the pulse input in accordance with the intelligent Manager software computation function, the following steps must be performed:

- Set the pulse constant,
- Set the pulse meter initial value.

## 1.3 Configuring the division:

The remainder of this chapter reviews the settings required for the division. Please refer to the related documentation for detailed explanation.

### 1.3.1 Setting up the intelligent Manager system

When setting up the intelligent Manager system in Step 1, some attributes must have specific values:

- Power supply,
  - Check the **UPS** box,
- **iPU Option Info**,
  - check the **Power Proportional Division** box,
- calculation result backup frequency,
  - in the **Time to Save frame**, enter time at which backup time is perform (up to four times a day; default value is midnight),
- iPU attributes and DIII-Net ports,
  - See wiring diagram a the beginning of the chapter,

### 1.3.2 Registering the management points

When registering the management points in Step 1, some attributes must have specific values:

- Indoor units:
  - Check the **Power Proportional Division** box,
- Internal Pulse Input:
  - Value Multiplier: must be set to **1**,
  - Unit Rate: must be set to **1** or **10**,
  - Signal Length: must be set to **100ms**.

### 1.3.3 Using the division engineering tool

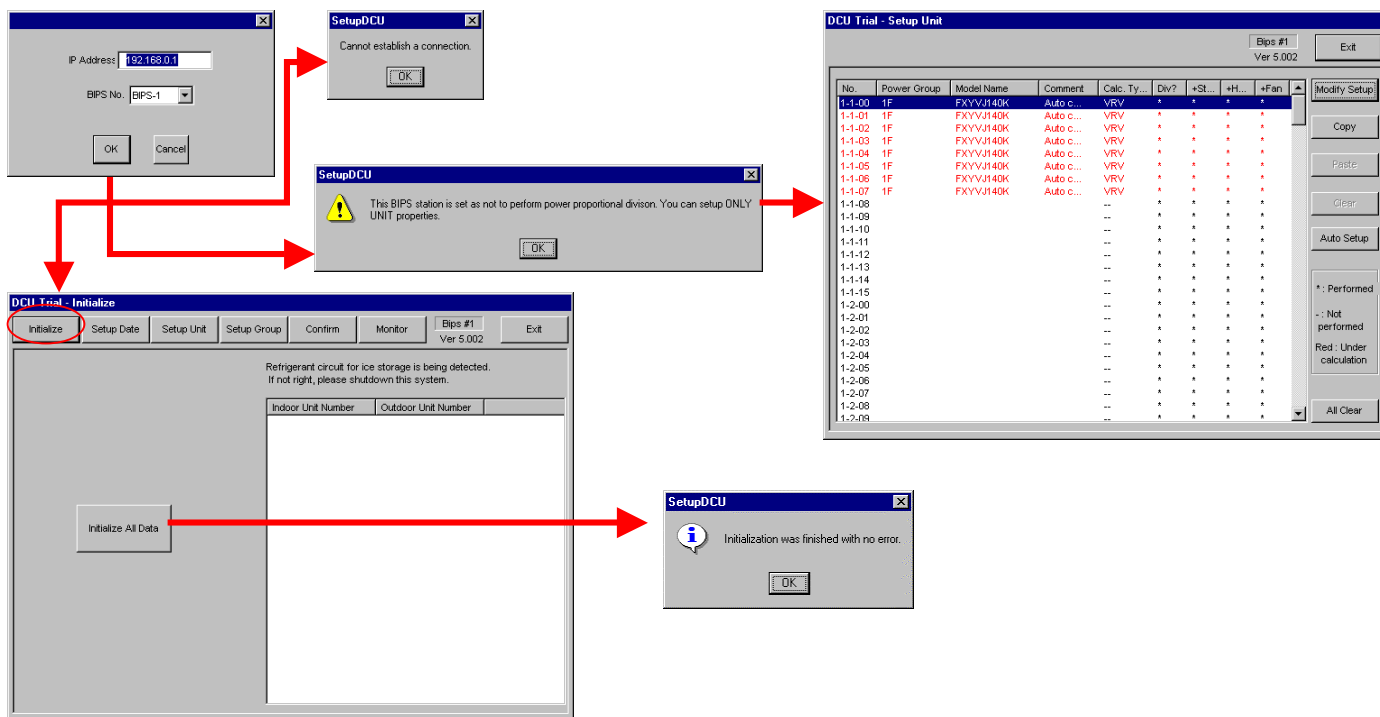
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**Note** Repeat the following procedure for each iPU

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The procedure below performs steps for configuring of the division environment, executing the division calculation and checking the result.

### 1.3.3.1 Starting and connecting the engineering tool



Use Microsoft Windows Explorer to access the bin\ folder of intelligent Manager and double-click on the **SetupDCU.exe** module to start the engineering tool. Then perform as follows:

- Enter the IP address of the master iPU,
- Select which iPU you want to configure (iPU 1= master, iPU 2-4= sub-iPUs),
- Click the Ok button; the main screen displays with the top menu,
- Perform the division engineering stages as explained below by clicking the top menu buttons.
- 

**Caution** Always connect to the master iPU. Never connect directly to a sub-iPU.

### 1.3.3.2 Initializing the engineering data

Click the **Initialize Data** button of the top menu. The **Data Initialization** screen displays.

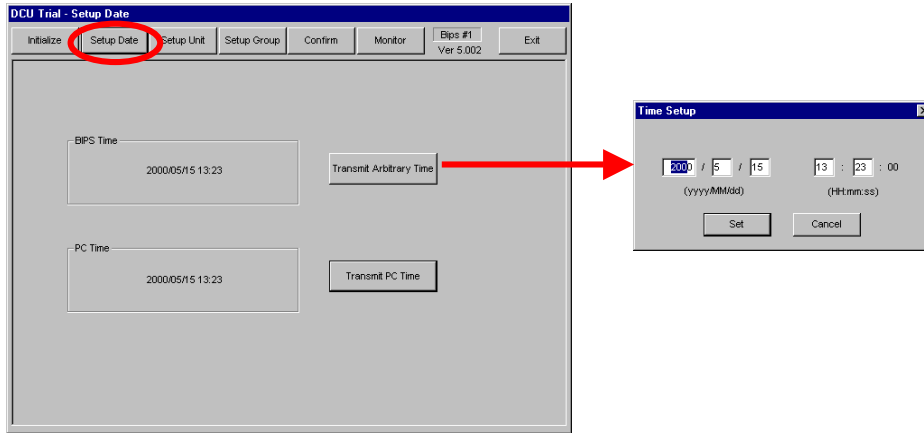
This procedure automatically scans the installed indoor and outdoor units and recognizes their addresses.

When engineering the system for the first time, click the **Initialize All Data** button.

**Caution** Clicking the **Initialize All Data** button will reset all the previously created division configuration data. This button should be used precociously.

**Note** The list on the right side of the window is intended only for ice-storage equipment. Normal A/C equipment is not to be displayed in this list.

### 1.3.3.3 Adjusting the iPU time



Click the **SetupTime** button of the top menu. The **Setup Time** screen displays.

This procedure adjusts the iPU time either from the PC time, or from an arbitrary entered time:

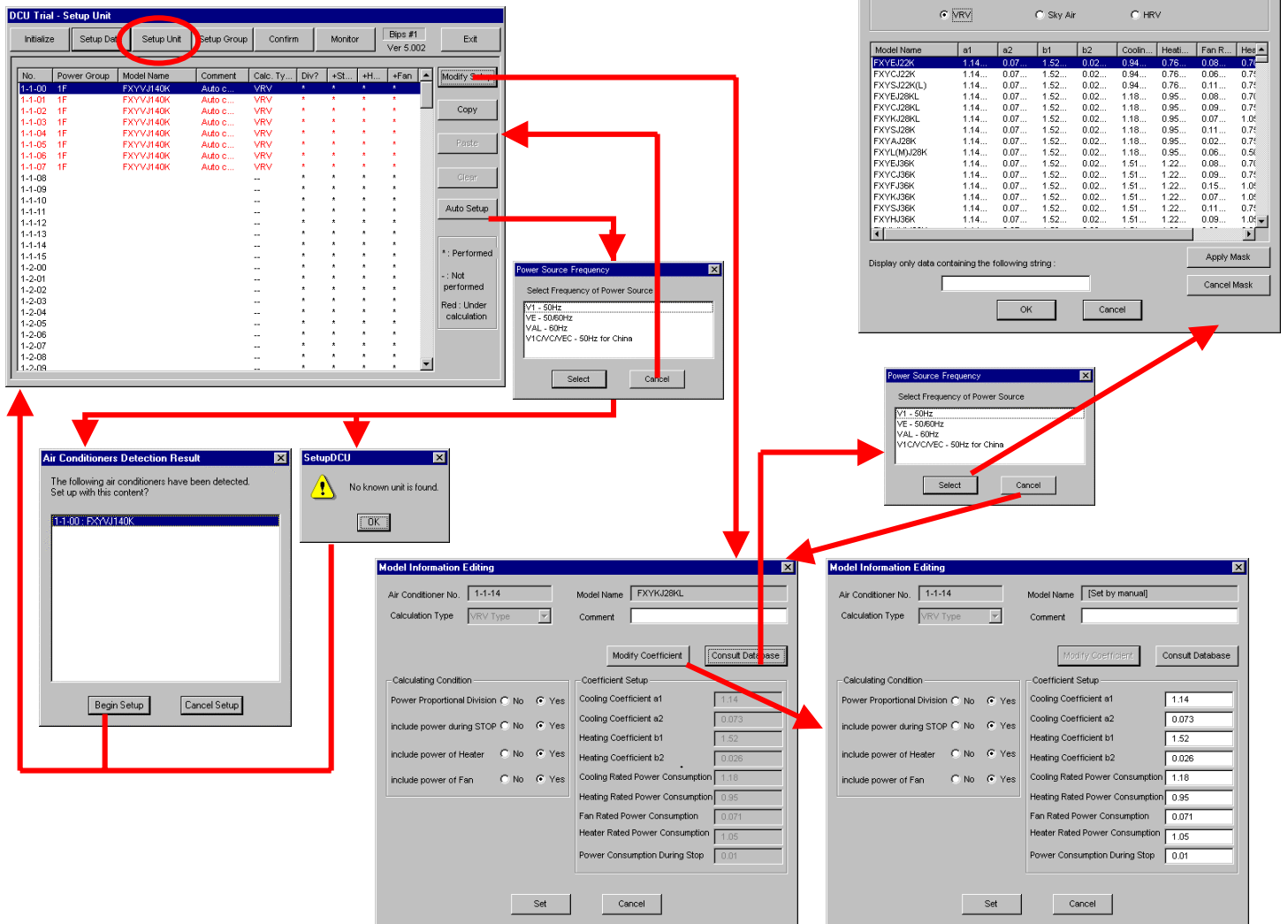
- Click the Transfer PC Time button
- or
- Click the Transfer Arbitrary Time button; the **Time Setup** dialogue displays,
    - Enter the date and time,
    - Click the OK button; the **Time Setup** dialogue closes,
  - End of time procedure.

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**Important** A substantial modification of the time in the iPU may affect the stability of the automatic control functions: schedule, etc.

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### 1.3.3.4 Setting up the units



Click the **Setup Units** button of the top menu. The **Units Setup** screen displays.

This procedure automatically browses the model knowledge data base (provided with intelligent Manager ) to set the division coefficients of the detected units according to their model. Moreover, manual setup is possible for tuning or for units which model is not in the database.

**Important** As the power frequency must be selected before setting up the units (either automatically or manually), a dialogue box displays for this purpose. Please refer to the actual site conditions to select the relevant value.

**Caution** The power frequency cannot be changed after selection. In case of wrong selection, exit completely from the engineering tool and restart.

#### 1.3.3.4.1 Setting up Automatically

- Click the **Automatic Setup** button; the engineering tool browses the data base and displays the result of the search in the **Detection Result** dialogue box,
- Click the **Begin Setup**; the tool affects the data base coefficients to the detected units,

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**Note** As the coefficients can not be overwritten, click beforehand the Clear button to reset them if necessary.

---

#### 1.3.3.4.2 Setting up Manually

If some units models were not detected, they can be set up individually:

- Select the unit from the list,
- Click the **Modify Setup** button; the Manual Setup dialogue displays,
- Enter the coefficients of the unit;
  - If coefficients of an existing model are to be reused:
    - Click the Browse Database button; the All Products List dialogue displays,
    - Select a model,
    - Click the Ok button; the product list closes and the coefficients are displayed in their fields
  - Click the **Setup Coefficients** button; the unit name is automatically replaced by the **Manual Input** label,
  - Enter or modify the coefficients of this unit,
- Select the options for division when:
  - operating,
  - Idling (see note below),
  - Heating mode,
  - Fan only mode,
- Select the calculation method option (please refer to the relevant technical documentation when necessary):
  - VRV (normal),
  - HRV (Heat Reclaim Ventilation)
  - General Purpose Adapter,
- End of manual setup procedure.

---

**Caution** Entering invalid coefficients may affect the reliability of the division calculation..

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**Note** If the **Idling** option is checked, the power consumed during **Stop** state is added to the calculation result. But if not checked, it is stored individually as "power during **Stop** state".

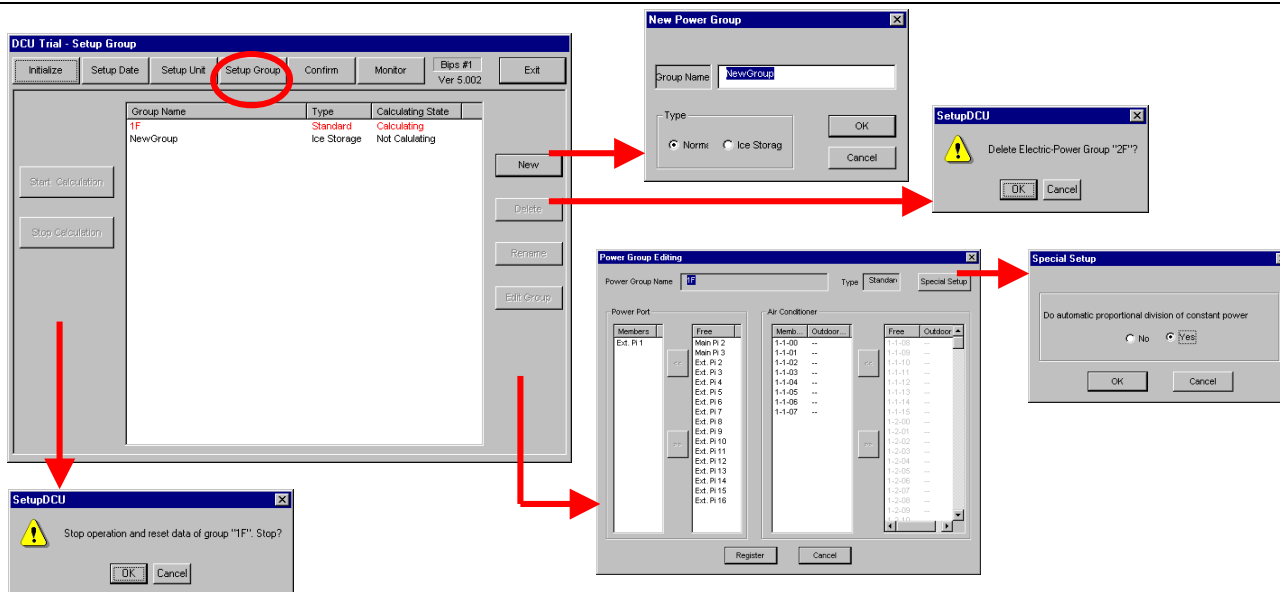
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### 1.3.3.5 Setting up the power groups

This procedure performs configuration of groups of units related to the same division power source.

Click the **Setup Groups** button of the top menu. The **Groups Setup** screen displays.

**Important** Only the points connected to the targeted IPU can be registered in its power groups.



- If necessary, create a group:
  - Click the **Create Group** button; the **Group Name Setup** dialogue displays,
  - Select the type of group (intelligent Manager makes use only of the Normal type and does not support ice-storage type), enter the name of the group, then click the **Ok** button; the dialogue closes,
- Select a group from the list, then click the **Edit Group** button; the **Power Group Edition** dialogue displays,
  - Select ports from the **Available** and **Registered** Power Ports list and click the << and >> buttons to add and remove them in this group,
  - Select units from the **Available** and **Registered** Indoor Units list and click the << and >> buttons to add and remove them in this group (unconnected units are grayed out and can not be selected),
  - Select the **Special Setup** option, whether or not to perform automatic power division for equipment with constant consumption type (HRV, General Purpose Adapter):
    - Click the **Special Setup** button, the **Special Setup** dialogue displays,
    - Select the **Yes** or **No** option,
  - Click the **Register** button; the **Power Group Edition** dialogue closes,
- End of group configuration.
- 

**Note** Availability of power groups is as follows: internal=1-3, extension=1-16. Moreover, with the additional DIII board, 16 pi points are available (a/c address is 4-00 to 4-15 of DIII-port #3)

### 1.3.3.6 Calculating the power groups data

Click the **Start/** and **Stop** calculation buttons

**Caution** When stopping the calculation of a power group, the calculated data of the last day will be cleared when starting the next calculation.

**Note** The groups under calculation are displayed in red color.

### 1.3.3.7 Checking the calculation result

This procedure allows inspection of the calculation result of a power group items.

Click the **Confirm** button of the top menu.

The 'DCU Trial - Confirm' window has the following menu items: Initialize, Setup Date, Setup Unit, Setup Group, **Confirm**, Monitor, Bips #1, Ver 5.002, and Exit. The 'Confirm' button is circled in red.

The 'Calculated Power' window shows the following data:

| Indoor Unit      | Daytime    | Nighttime  | Exception Period |
|------------------|------------|------------|------------------|
| 1-1-01           | 2000/05/01 | 2000/05/14 |                  |
| Daytime          | 53.811 kWh | 0.000 kWh  | 0.000 kWh        |
| Nighttime        | 0.000 kWh  | 0.000 kWh  | 0.000 kWh        |
| Exception Period | 0.000 kWh  | 0.000 kWh  | 0.000 kWh        |

The 'Retrieve Present Value' window shows the following data:

| Indoor Unit | Daytime   | Nighttime | Total     |
|-------------|-----------|-----------|-----------|
| 1-1-00      | 0.000 kWh | 0.000 kWh | 0.000 kWh |
| Nighttime   | 0.000 kWh | 0.000 kWh | 0.000 kWh |
| Total       | 0.000 kWh | 0.000 kWh | 0.000 kWh |

The 'Verification Data' window shows the following table:

| No.    | Model Name | Mode    | Set Temp. | Temp. | Op. Time | ThermoCN | Rate | Amount |
|--------|------------|---------|-----------|-------|----------|----------|------|--------|
| 1-1-00 | PXYVJ40K   | Heating | 22        | 0     | 0        | 0        | 0    | 0      |
| 1-1-01 | PXYVJ40K   | Cooling | 25        | 0     | 0        | 0        | 0    | 0      |
| 1-1-02 | PXYVJ40K   | Cooling | 25        | 0     | 0        | 0        | 0    | 0      |
| 1-1-03 | PXYVJ40K   | Cooling | 25        | 0     | 0        | 0        | 0    | 0      |
| 1-1-04 | PXYVJ40K   | Cooling | 28        | 0     | 0        | 0        | 0    | 0      |
| 1-1-05 | PXYVJ40K   | Cooling | 28        | 0     | 0        | 0        | 0    | 0      |
| 1-1-06 | PXYVJ40K   | Cooling | 28        | 0     | 0        | 0        | 0    | 0      |
| 1-1-07 | PXYVJ40K   | Heating | 27        | 0     | 0        | 0        | 0    | 0      |

The 'Indoor Unit Temporary Consumed Power' window shows the following table:

| No.    | Temporary | Up Cntr(Ba) | Stat Cntr(B) | Fan Up Cntr | Fan Stat Cntr | ThermoCN |
|--------|-----------|-------------|--------------|-------------|---------------|----------|
| 1-1-00 | 611.244   | 0           | 43           | 0           | 36            | 42       |
| 1-1-01 | 14.448    | 0           | 43           | 0           | 42            | 0        |
| 1-1-02 | 14.448    | 0           | 43           | 0           | 42            | 0        |
| 1-1-03 | 14.448    | 0           | 43           | 0           | 42            | 0        |
| 1-1-04 | 14.448    | 0           | 43           | 0           | 42            | 0        |
| 1-1-05 | 14.448    | 0           | 43           | 0           | 42            | 0        |
| 1-1-06 | 14.448    | 0           | 43           | 0           | 42            | 0        |
| 1-1-07 | 14.448    | 0           | 43           | 0           | 42            | 0        |

The 'Outdoor Unit Temporary Consumed Power' window shows the following table:

| No.        | Temporary Power for Air-Con | Temporary Power for Ice Storage |
|------------|-----------------------------|---------------------------------|
| Ext. Pt. 1 | 0                           | 309                             |

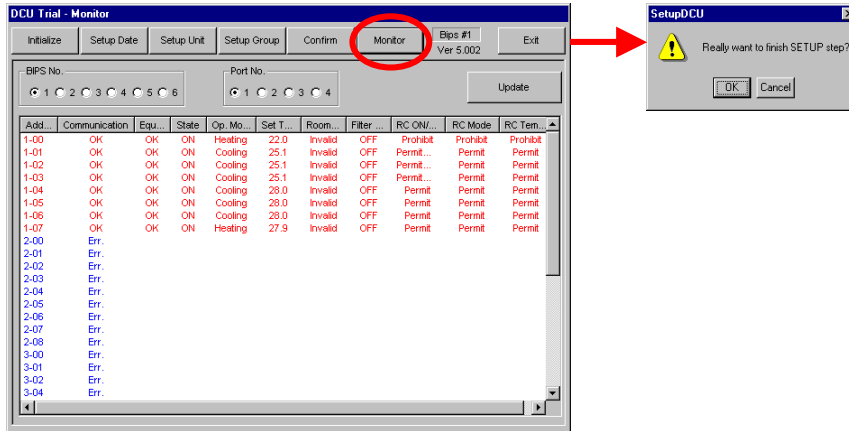
This procedure performs configuration of groups of units related to the same division power source.

Click the **Setup Groups** button of the top menu. The **Groups Setup** screen displays.

**Note** The **Total** of Indoor Unit in **Present Calculated Value** is the total amount of power consumed since the start of calculation.

**Note** The values of **Indoor Unit Data**, **Outdoor Unit Data** and **Pulse Data** are internal information intended for developers only. Therefore, they should be used only to confirm result increasing.

### 1.3.3.8 Other trial functions



#### 1.3.3.8.1 Monitoring air-conditioners

#### 1.3.3.8.2 Adjusting Pulse Input Measurement

### 1.3.4 Configuring the division schedule

When setting up the system options of intelligent Manager application in Step 3, some attributes of the scheduling for operational division exclusion must have specific values:

- In the calendar: the special days when division is performed (no exclusion at all during each of these days),
- for every day of the week : division exclusion option and period.

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**Caution** If an exclusion schedule is set, the amount of consumed power is not equal to the amount of input pulse. This is because indoor units consume power during division exclusion periods.

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## 2 Notes

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