System GSK PLC-less control system

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Feature (Simple sequence function (GFB) is incorporated)

◆ GFB is regularly mounted on nut runner controller

Various actuators can be managed and the sequence-less configuration of device is enabled by mounting GFB on nut runner controller

GFB (Giken Function Block)
The behavior of cylinder etc. can be set without PLC by using the setting software of system GSK for GIKEN’s original circuit block.

◆ Various signals of solenoid valve etc. are controlled from actuator

Nut runner control
Positioning control
Control of other signals
Solenoid valve control
Number of I/O points 96 points
Number of blocks 10,000 blocks

System GSK
Nut runner controller
Sequencer for control
Cylinder
Cylinder
Operating unit
Operating unit

Existing system
Nut runner
Cylinder
Cylinder
Operating unit
Operating unit

Not necessary
Number of I/O points per I/O board
Input: 24 points  Output: 24 points
Two I/O boards can be attached to system GSK.
* For the standard model, only one I/O board is attached.
The second board is an option.
### System GSK system configuration

- **Controller**
  - Motor cable
  - Control power supply DC24V
  - Drive power supply AC200V
  - Encoder cable (Resolver)
  - Encoder sensor cable
- **Interface**
  - Control power supply DC24V
  - Setting PC
  - Display
  - ID controller
  - Printer
  - I/O cable
- **I/O terminal**
  - Actuator: Socket lifting
  - Actuator: Locate pin lifting
  - Proximity switch: Palette confirmation
  - Solenoid valve
  - Actuator: Palette transfer
  - Actuator: Guide slide

### Model configuration

- **Interface**

#### GSK-IF SG 2 – N1

1. Corresponding communication specification
   - SG: System GSK (I/O)
2. Number of I/O boards
   - Blank: One I/O board
   - 2: Two I/O boards
3. Corresponding series symbol
   - N1: Standard

#### Model list

<table>
<thead>
<tr>
<th>Model</th>
<th>I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSK-IFSG-N1</td>
<td>One I/O board</td>
</tr>
<tr>
<td>GSK-IFSG2-N1</td>
<td>Two I/O boards</td>
</tr>
</tbody>
</table>

*The controller can use GSK, GKL, and Positioning GSK that way.*
## Name of each section

### Interface

**[I/O terminal] SYS-FA60-TB**

- I/O count per I/O board: Input: 24 points, Output: 24 points

**[I/O terminal] SYS-FA60-TB**

- Standard

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### I/O cable/terminal model

#### System GSK I/O cable

**I/O cable model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Cable length [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS-FA60-0.5M</td>
<td>0.5m</td>
</tr>
<tr>
<td>SYS-FA60-1M</td>
<td>1.0m</td>
</tr>
<tr>
<td>SYS-FA60-2M</td>
<td>2.0m</td>
</tr>
<tr>
<td>SYS-FA60-3M</td>
<td>3.0m</td>
</tr>
</tbody>
</table>

*60-pin flat cable

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### System GSK I/O terminal

**I/O terminal model**

<table>
<thead>
<tr>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS-FA60-TB</td>
</tr>
</tbody>
</table>

*The shape will be changed without notice. For the latest shape and dimensions, please contact our company.*

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### Table: Connector model

<table>
<thead>
<tr>
<th>Port NO.</th>
<th>Name</th>
<th>Connector model</th>
<th>Opponent’s connector housing</th>
<th>Opponent’s connector pin</th>
<th>Communication method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN2</td>
<td>Control power supply input port</td>
<td>734-144 (WAGO)</td>
<td>734-104 (WAGO)</td>
<td>–</td>
<td>DC24V</td>
<td></td>
</tr>
<tr>
<td>CN4</td>
<td>Port for connecting setting PC</td>
<td>UBB-48-D14T4O</td>
<td>–</td>
<td>–</td>
<td>USB communication</td>
<td>Cable model: GK-SET-1.8M</td>
</tr>
<tr>
<td>CN5</td>
<td>Port for connecting controller/PC</td>
<td>M822/3-S-AF-3M</td>
<td>–</td>
<td>–</td>
<td>RS485</td>
<td></td>
</tr>
<tr>
<td>CN7</td>
<td>Port for connecting display</td>
<td>1-1827876-4</td>
<td>1-1827864-1 (TE Connectivity)</td>
<td>1827570-2 (TE Connectivity)</td>
<td>–</td>
<td>Cable model: GSK-DIS-10M</td>
</tr>
<tr>
<td>CN8</td>
<td>Port for connecting I/O controller</td>
<td>1-1827876-4</td>
<td>1-1827864-4 (TE Connectivity)</td>
<td>1827570-2 (TE Connectivity)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>CN10</td>
<td>Port for connecting I/O controller</td>
<td>1-1827876-3</td>
<td>1-1827864-3 (TE Connectivity)</td>
<td>1827570-3 (TE Connectivity)</td>
<td>–</td>
<td>Cable model: GSK-PRN-1.5M</td>
</tr>
<tr>
<td>CN11</td>
<td>Battery</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Battery model OJ410 / Panasonic Battery included</td>
</tr>
<tr>
<td>CN12</td>
<td>SD card slot</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>SD/MMC to SD/MMC lens supported: SD card model: GK-SO-320</td>
</tr>
<tr>
<td>CN13</td>
<td>Port for connecting I/O cable</td>
<td>8330-060-170-F</td>
<td>(KEL)</td>
<td>–</td>
<td>–</td>
<td>Standard model is equipped with only one port</td>
</tr>
<tr>
<td>CN14</td>
<td>Port for connecting I/O cable</td>
<td>8330-060-170-F</td>
<td>(KEL)</td>
<td>–</td>
<td>–</td>
<td>For the second sheet, optional I/O port: SYS-IO24 is separately required</td>
</tr>
</tbody>
</table>
Setting software

To carry out various settings of GSK, a PC in which setting software is installed is required. Various settings, communication status with upper device, tightening result, and tightening waveform can be confirmed with setting software.

### Setting software model

<table>
<thead>
<tr>
<th>Setting software model</th>
<th>Language</th>
<th>Controller type</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-GSK-SET-SOFT-J</td>
<td>Japanese</td>
<td>System GSK</td>
</tr>
<tr>
<td>S-GSK-SET-SOFT-E</td>
<td>English</td>
<td>System GSK</td>
</tr>
</tbody>
</table>

Supported OS win7/8/8.1/10

The setting cable is common to all setting software.

### Hierarchy of setting software

- **Main menu**
  - 1. Setting read
  - 2. Setting write
  - 3. Setting
  - 4. Setting (transmission)
  - 5. Quality control
  - 6. Print
  - 7. PO monitor

- **Common setting**
  - 1. Common setting
  - 2. Language setting
  - 3. Screen number setting
  - 4. Calendar setting

- **Positioning setting**
  - 1. Positioning setting
  - 2. Cylinder name setting
  - 3. XY point setting
  - 4. Timer setting

- **Nut runner setting**
  - 1. Nut runner setting
  - 2. Manual setting
  - 3. Auto setting
  - 4. Inverse selection

- **Program setting**
  - 1. Program setting
  - 2. Unit settings
  - 3. Program setting
  - 4. Axis setting

- **System GSK setting**
  - 1. System GSK setting
  - 2. System GSK setting
  - 3. System GSK setting

### Setting screen

**[Main menu]**

Initial screen that is displayed when the setting software is activated.

**[Setting menu]**

Screen for carrying out various settings.

**[Rate Setting]**

Screen for setting the rotation for matching a bolt with a socket.

**[SOCT Setting]**

Screen for setting the details of used nut runner.

**[PRE.T Setting]**

Screen for setting bolt setting status to seating (temporary tightening).

**[REV.T Setting]**

Screen for setting seizure judgment after temporary tightening of bolt.

**[REA.T Setting]**

Screen for setting the final tightening For the type of final tightening, two types: torque method and angle method are available. ※For the final tightening setting, up to No. 10 can be set.

**[Auto setting]**

Setting screen that automatically creates the tightening setting by inputting necessary items in case of full auto setting With the sampling setting, detailed setting is enabled by actually tightening a workpiece.
System GSK PLC-less control system

**Online**
Screen for saving the tightening result in PC by making a connection to controller.

**Tightening history**
Screen for importing the data saved in the controller in PC.
※Maximum number of saved items in tightening history per axis: 5,000 items

**Alarm history**
Screen for importing the alarm data saved in the controller in PC.
※Maximum number of saved items in alarm history per axis: 16 items

**I/O monitor**
Screen for checking the I/O status with upper link.

**Torque sensor zero point adjustment**
Screen for checking the zero point of current torque sensor.

**Self diagnosis**
Screen for checking each version of currently configured parts.

**Screw No. array setting**
Screen for setting the screw No. array to be displayed on the display (GSK-D1 / GK-D1 series).
※Maximum number of programs

<table>
<thead>
<tr>
<th>Max number of axes</th>
<th>Number of programs</th>
<th>Number of steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>16</td>
<td>220</td>
</tr>
<tr>
<td>30</td>
<td>50</td>
<td>70</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
<td>220</td>
</tr>
</tbody>
</table>

**Tightening waveform**
Screen for importing the tightening waveform in PC.

**Monitor**
Screen for checking the input/output status with the I/O board of the I/F.

**GFB configuration**
Screen for setting the basic setting (ladder) of GFB.

**GFB input condition configuration**
Screen for setting the input conditions of GFB.