HYBRID HYDRAULIC UNIT
SUPER UNIT
HYBRID HYDRAULIC UNIT

Exceeds standard of high efficiency motor regulation

Launch of new model with high pressure/high flow rate
(Equipped with 37 kW equivalent IPM motor)

Maximum operating pressure: 28 MPa
Maximum flow rate: 300 L/min, 220 L/min

Unique Offer from DAIKIN!!
Unparalleled energy-saving and high-accuracy servo-based pump PQ control system
- An extensive lineup of pump control systems covering a wide range of applications including presses and industrial machinery -
Flow rate/pressure combinations other than those given in the model list below are also available. Please consult us when considering adoption.

**SUPER UNIT (Analog Command Input, High-accuracy Type) Pressure/Flow Rate Model List**

<table>
<thead>
<tr>
<th>Maximum discharge rate</th>
<th>Maximum operating pressure</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>330 L/min</td>
<td>18 MPa</td>
<td>SUT00S20018 400 V</td>
</tr>
<tr>
<td>300 L/min</td>
<td>21 MPa</td>
<td>SUT00D20021 200 V</td>
</tr>
<tr>
<td>260 L/min</td>
<td>25 MPa</td>
<td>S-SUT00D20025 400 V</td>
</tr>
<tr>
<td>220 L/min</td>
<td>28 MPa</td>
<td>S-SUT00D20025 400 V</td>
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<tr>
<td>200 L/min</td>
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<td>S-SUT00D20025 400 V</td>
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<tr>
<td>150 L/min</td>
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<td>S-SUT00D20025 400 V</td>
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<tr>
<td>130 L/min</td>
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<td>S-SUT00D20025 400 V</td>
</tr>
<tr>
<td>80 L/min</td>
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<td>S-SUT00D20025 400 V</td>
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<tr>
<td>50 L/min</td>
<td></td>
<td>S-SUT00D20025 400 V</td>
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<tr>
<td>30 L/min</td>
<td></td>
<td>S-SUT00D20025 400 V</td>
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</table>

**SUPER UNIT (High-functionality Type) Pressure/Flow Rate Model List**

<table>
<thead>
<tr>
<th>Maximum discharge rate</th>
<th>Maximum operating pressure</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 L/min</td>
<td>7 MPa</td>
<td>SUT00S11007 200 V</td>
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<tr>
<td>80 L/min</td>
<td>10 MPa</td>
<td>SUT00D8021 200 V</td>
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<td>60 L/min</td>
<td>16 MPa</td>
<td>SUT00D6021 200 V</td>
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<tr>
<td>40 L/min</td>
<td>21 MPa</td>
<td>SUT00D4021 200 V</td>
</tr>
<tr>
<td>30 L/min</td>
<td></td>
<td>SUT00D4021 200 V</td>
</tr>
<tr>
<td>15 L/min</td>
<td></td>
<td>SUT00D4021 200 V</td>
</tr>
</tbody>
</table>

**Note 1** All models allow selection of the input type as the analog command input type or 8-PQ digital command input type using a parameter. (Factory default is the analog command input type.)

**Note 2** All models are tankless units with a split type controller (electrical components).

**Note 3** When a discharge rate higher than 300 L/min is required, it can be achieved by combining multiple SUPER UNITS. Please consult us for detailed information.

**Note 4** The models shown enclosed by a dashed line are planned to be developed sequentially. Please consult us for detailed information.
Note 1: All models are 16-PQ control type units. The communications type and analog command input type (single pump type only) can be selected as optional models.

Note 3: When a discharge rate higher than 300 L/min is required, it can be achieved by combining multiple SUPER UNITs. Please consult us for detailed information.

Note 2: All models are tankless units with a split type controller (electrical components).

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<table>
<thead>
<tr>
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<td></td>
<td>17.6</td>
<td>200</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note 1: All models are tankless motor pump type units. The input type can be selected either as the analog command input type or 5-PQ (6-PQ) digital command input type using a parameter.

Note 2: The numbers in the PQ chart No. column in the above table correspond to the figure numbers in the "PQ characteristic chart" later in this catalog.

Note 3: Please refer to P30 "List of Electrical Components" for the electrical components that need to be arranged separately for each of the models indicated above.

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List of SUPER UNIT Models
**Nomenclature**

<table>
<thead>
<tr>
<th>SUT</th>
<th>00</th>
<th>S</th>
<th>300</th>
<th>28</th>
<th>40</th>
<th>Y</th>
<th>A</th>
<th>R</th>
<th>※※※※</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
<td>f</td>
<td>g</td>
<td>h</td>
<td>i</td>
<td>j</td>
</tr>
</tbody>
</table>

**Model No.**
- SUT : SUT series
- S-SUT : S-SUT series

**Tank capacity**
- 00 : Motor pump type (tankless)

**Pump type**
- S : Single pump type
- D : Double pump type

**Pump discharge rate**
- 30 : 30 L/min
- 50 : 50 L/min
- 80 : 80 L/min
- 130 : 130 L/min
- 150 : 150 L/min
- 200 : 200 L/min
- 220 : 220 L/min
- 260 : 260 L/min
- 300 : 300 L/min
- 330 : 330 L/min

**Maximum operating pressure**
- 18 : 17.6 MPa
- 21 : 20.6 MPa
- 25 : 25.0 MPa
- 28 : 28.0 MPa

**Design No.**
- 40 : Design No.
  - Incremented at model changes

**Power supply voltage**
- AC 200 V specifications
- AC 400 V specifications

**Functional option code**
- A : Analog command input type, with discharge block with safety valve
- B : Analog command input type, with discharge block without safety valve
- L : Analog command input type, with discharge block without safety valve

**Motor terminal box (viewed from pump side)**
- No designation : Terminal box at the right side (standard)
- R : Terminal box at the left side
- U : Terminal box at the top

**Non-standard code**
- "N" + non-standard number designated for each specification
- Non-standard No. : Specifications such as the 10V input specification or with suction flange
- C**** Equipped with communications function
  - Protocol: Modbus
  - Port: RS232C
- RS485 can also be supported. Please consult us.
- Refer to Page 06 for details on the communications function.
- No designation: Standard (5V input specification, separate arrangement of controller’s electrical components, etc.)

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1. 200/400 V cited as power supply voltage specifications are nominal voltages. Refer to the specification tables and separately provided model drawings for details on the operating range.
2. The terminal box at the top of motor is only available with SUT000D30028 and SUT002D22028.
The analog command input/high-accuracy type SUPER UNITs have operating ranges extended to include high pressure and high flow rate ranges, enabling PQ control with even greater accuracy than conventional SUPER UNITs (high-functionality type).

Achieving stable servo control in response to analog input voltages over a range from low pressure (1%)/flow rate (1%) to the maximum pressure/flow rate. The double pump type units enable low-pressure/high-flow-rate control in the combination flow mode, and high-pressure holding (continuous) control over a prolonged period in the individual flow mode.

Superior energy-saving hydraulic systems suited to applications with industrial machinery such as presses and general industrial machines while offering high performance, easy operation and reasonable prices.

As an alternative to directly specifying command values for pressure and flow rate with analog voltage inputs, the operation conditions can be selected easily by using 3-bit ON/OFF digital signals that can call eight different preset pressure/flow rate patterns. (8-PQ type: Selectable using a parameter)

Energy savings at least 60% greater than conventional fixed displacement pump systems
(The energy-saving effect varies depending on the operation conditions.)

- Significant reduction of running costs with a small investment.
  - Contributes to improvement of production efficiency at a reasonable price.

600-t press machine

- Pump model: Fixed-displacement pump → SUT00D8025
- Average power consumption: 21.5 kW → 13.9 kW
- Effect of reduced power consumption: $6,350 (¥635,000) / year

* Electricity rate: $0.16 (¥16) / kWh, Annual operating hours: 5,220 hours / year

Oil cooler downsized by suppressing oil temperature rise

- Fewer oil changes by restricting hydraulic oil deterioration.
  - Further, downsizing the hydraulic oil tank and oil cooler reduces the amount of hydraulic oil and cooling water used.

High Accuracy with Simple Operation

High-accuracy servo control according to analog pressure (P) / flow rate (Q) voltage commands

- Easy to use, just like conventional proportional valves.
  - The servo-controlled pump adjusts the pressure and flow rate in accordance with the load.
- Highly accurate control with respect to pressure/flow rate command values, with a linearity of 1% F.S. maximum and hysteresis of 1% F.S. maximum.

Example with double pump type (SUT00D15021-10-B)

<table>
<thead>
<tr>
<th>Pressure command PI [V]</th>
<th>Flow rate command QI [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>200</td>
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<td>5</td>
<td>25</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

Linearity: 1% F.S. ± 1% F.S.
Minimum control pressure: 1% F.S. or higher
Low flow rate control: Minimum control flow rate: 1% F.S. or higher

High flow rate control: Minimum control flow rate: 1% F.S. or higher

Example with single pump type (SUT00D15021-10-A)

<table>
<thead>
<tr>
<th>Pressure command PI [V]</th>
<th>Flow rate command QI [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>25</td>
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<td>5</td>
<td>25</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
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</tbody>
</table>

Linearity: 1% F.S. ± 1% F.S.
Minimum control pressure: 1% F.S. or higher
Low flow rate control: Minimum control flow rate: 1% F.S. or higher

High flow rate control: Minimum control flow rate: 1% F.S. or higher

Average power consumption: 21.5 kW
Average power consumption: 13.9 kW
Main Features and Functions

Features

Sustained High-pressure Holding Control

Sustained high-pressure control with energy savings by selecting the pump flow rate

- Double pump type units enable selection of combination or independent flow rate using a dedicated solenoid valve to achieve sustained high-pressure control, switching between a low pressure with high flow rate and a high pressure with low flow rate as often required for presses and other equipment.
- The solenoid valve can be switched autonomously by the SUPER UNIT or from the machine, according to the parameter setting.

Faster Shipping Adjustment

Simple adjustment to start a trial run on the machine, meaning a shorter adjustment time

- The SUPER UNIT can be easily adjusted without requiring special skills for setting/adjusting complicated parameters of servo systems. The unit runs stably even with the default settings so the machine can reach the trial run stage in a short time.

Economical replacement of conventional hydraulic systems with servo-controlled pump systems

- Conventional hydraulic systems with proportional valves can be economically replaced with next-generation energy-saving high-accuracy servo-controlled pump systems, where the pump discharge rates and pressures are servo-controlled by using analog command input type SUPER UNITs.
- Even hydraulic systems that do not incorporate proportional valves can be replaced with energy-saving hydraulic systems that can achieve stable control with a simple pressure/flow rate adjustment.
- The command input method can be selected by parameter setting, as the analog command input type (0 to 5 V or 0 to 10 V) or the 8-PQ pattern input type using 3-bit digital ON/OFF input signals. (Factory default is the analog command input type.)

Improving the Working Environment

Reduced noise during operation

- Noise while holding a high pressure is reduced by lowering the rotational speed of the pump to the minimum level required to hold the pressure.
- Shockless control of pressures and flow rates can be achieved by ramping the command voltages during acceleration/deceleration of the pressure and flow rate. This gives smooth machine operation with less impact noise, helping to improve your working environment.

Ambient air temperature rise reduced by restricting oil temperature rise

- Temperature rise of the hydraulic oil raises the ambient temperature, which leads to a poor working environment. The energy-saving SUPER UNIT restricts hydraulic oil temperature rise to the minimum, helping to maintain a comfortable working environment.

Exceeds Standard of High Efficiency Motor Regulation

Incorporating a motor dedicated to servo-based rotational speed control

- Exceeds standard of high efficiency motor regulations eliminates complicated formalities both in Japan and when exporting the machine.
- Since no induction motor is used, the maximum discharge rate of the pump does not fluctuate depending on the power supply frequency, making it unnecessary to adjust the machines’ maximum speed for each shipping destination.

American UL Standard Compliant

- In addition to the European CE standards, some models also comply with the American UL standards. It is possible to export the products around the world, including North America. (SUT00D22028-30YL)
Functions

Communication Function

Remote Setting of Operating Conditions

- Operating condition setting of the SUPER UNIT possible from a distance
  - Various settings such as acceleration/deceleration time and pressure switch settings, as well as the pressure and flow rate, can be set remotely. This makes it possible to control the hydraulic pressure operating conditions in synchrony with the control of the machine.

IoT-ready

Managing the pressure and flow rate from a machine

- The information that the SUPER UNIT outputs during machine operation, such as pressure and flow rate, can be displayed on the monitor at a machine.
- By continuously collecting data from the SUPER UNIT, it is possible to determine machining faults, diagnose machine failures, and utilize the data for predictive maintenance.

Maintenance/Management Function Software

Editing/Saving Parameter Settings

- Equipped with RS232C communications port as default, DAIKIN’s maintenance/waveform measurement software (Hybrid-Win) provided
- The software tool Hybrid-Win, which can manage default parameter settings, read the alarm history, and save parameter data, allows easy maintenance and management of the SUPER UNIT simply by preparing a personal computer (Windows 7/8) and a communications cable (RS232C/USB conversion cable).

Displaying and Recording Waveform Graphs during SUPER UNIT Operation

- During service work or adjustment for test runs, the pressure and flow rate commands at the SUPER UNIT and the result of pressure and flow rate control can be monitored and displayed in the form of graphs using Hybrid-Win software. The waveforms can also be saved in the PC. This speeds up adjustment of SUPER UNIT parameters and troubleshooting.

Collecting Data for Predictive Maintenance (*1)

- Periodically collecting, monitoring and analyzing those data on the results of SUPER UNIT control using the RS232C communications port opens up the possibility of new approaches to maintenance and management such as predictive maintenance.

Note: A personal computer with Windows 7/8 operating system and an RS232C/USB conversion cable are necessary.

Communications cables (3-core soldered cables PM-CM02-15 for 1.5 m and PM-CM02-30 for 3 m) are available as options (to be ordered separately).

Note: Hybrid-Win is a software tool to provide functions for editing or saving parameters and measuring waveforms of a SUPER UNIT, and runs on a personal computer connected to the SUPER UNIT using a communications cable.

Hybrid-Win and its instruction manual are available free of charge from the website (http://www.daikinpmc.com/) after registering as a member.

(*1) Please consult us for detailed information on predictive maintenance.
Example Hydraulic Press Circuit

Circuit at the machine side

SUPER UNIT flow rate selection block
(Separately installed type) (*1)

Safety valve (*2)

SUPER UNIT system

SUPER UNIT controller

PI pressure command
Qf flow rate command

Motor pump

Main cylinder (upper die)

Circuit Configuration Examples (Double pump specifications)

(*1) There are two types of flow rate selection circuit, the type built into the pump discharge block and the separately installed type.

(*2) A safety valve needs to be incorporated in hydraulic circuits at the pump discharge side for safety.
**System block diagram for SUT00D flow rate selection specifications**

- **Power supply**: 3-phase AC 380 to 400 V 50/60 Hz
- **Pressure command voltage**: (P) DC0 to +10 V
- **Flow rate command voltage**: (Q) DC0 to +10 V
- **Pressure monitor voltage**: (P0) DC0 to +10 V
- **Flow rate monitor voltage**: (Q0) DC −10 to +10 V
- **Combination/independent pump selection signal (DI5)**
- **Combination/independent pump selection solenoid valve, DC 24 V control voltage**
- **Fan power supply**: 1-phase AC 215 to 245 V 50/60 Hz

**Circuit at the machine side**

- **Solenoid turned ON/OFF at the machine side**: ON for combination flow (DI5 at the controller turned ON at the same time)
  (Forced switching by external signal)

**SUPER UNIT**

**SUPER UNIT Controller section**

- **Maintenance software (Hybrid-Win)**
- **RS232C**
- **Pressure sensor**
- **Discharge port P1**
- **To machine side circuit**
  (safety valve incorporated at the machine side)
- **Flow rate selection block**
  (separately installed type, 25 MPa)

**SUPER UNIT system**

- **Super UNIT controller**
- **Pi pressure command**
- **Qi flow rate command**
- **Rotary encoder**
- **High-pressure pump**
- **Low-pressure pump**
- **SUPER UNIT flow rate selection block**
  (separately installed type) (*1)
- **Motor pump section**
- **Pressure sensor**
- **Thermistor**
- **Encoder**
- **Cooling fan**
- **T3** (Plugged)
- **Suction port T1**
- **T2**
- **PL**
- **PM**

**Machine side**

- **Pressure command voltage**
- **Flow rate command voltage**
- **Pressure monitor voltage**
- **Flow rate monitor voltage**
- **Combination/independent pump selection signal (DI5)**
- **Combination/independent pump selection solenoid valve, DC 24 V control voltage**
- **Flow rate selection block**
  (separately installed type, 25 MPa)

**Machine side**

- **Fan power supply**: 1-phase AC 215 to 245 V 50/60 Hz
- **Pressure sensor**
- **Discharge port P1**
- **To machine side circuit**
  (safety valve incorporated at the machine side)
- **Flow rate selection block**
  (separately installed type) (*1)
- **Motor pump section**
- **Pressure sensor**
- **Thermistor**
- **Encoder**
- **Cooling fan**
- **T3** (Plugged)
- **Suction port T1**
- **T2**
- **PL**
- **PM**

**Machine side**

- **Pressure command voltage**
- **Flow rate command voltage**
- **Pressure monitor voltage**
- **Flow rate monitor voltage**
- **Combination/independent pump selection signal (DI5)**
- **Combination/independent pump selection solenoid valve, DC 24 V control voltage**
- **Flow rate selection block**
  (separately installed type, 25 MPa)

**Maintenance software (Hybrid-Win)**

- **RS232C**
- **Pressure sensor**
- **Discharge port P1**
- **To machine side circuit**
  (safety valve incorporated at the machine side)
- **Flow rate selection block**
  (separately installed type, 25 MPa)

**SUPER UNIT**

- **Controller section**
- **IPM motor**
- **Thermistor**
- **Encoder**
- **Cooling fan**
- **T3** (Plugged)
- **Suction port T1**
- **T2**
- **PL**
- **PM**

**SUPER UNIT Motor pump section**

- **Pressure sensor**
- **Thermistor**
- **Encoder**
- **Cooling fan**
- **T3** (Plugged)
- **Suction port T1**
- **T2**
- **PL**
- **PM**
## Specifications by Product (Single pump 200 V/400 V specifications)

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<tr>
<th>Item</th>
<th>200 V specifications</th>
<th>400 V specifications</th>
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<td>Maximum flow rate [L/min]</td>
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<td>20.6, 17.6, 17.6, 20.6, 17.6, 20.6, 17.6, 20.6, 17.6</td>
</tr>
<tr>
<td>Operating pressure adjustment range [MPa]</td>
<td>0.18 to 17.6, 0.21 to 20.6, 0.18 to 17.6, 0.25 to 24.5, 0.18 to 17.6, 0.21 to 20.6, 0.18 to 17.6, 0.21 to 20.6, 0.18 to 17.6</td>
<td>69, 78, 69, 70, 103, 70, 103, 104, 103, 118</td>
</tr>
<tr>
<td>Operating flow rate adjustment range [L/min]</td>
<td>0.3 to 30, 0.5 to 50, 0.8 to 80, 0.5 to 50, 1.5 to 150, 0.5 to 50, 0.8 to 80, 1.3 to 130, 1.5 to 150, 2.0 to 200</td>
<td>1.3 to 130, 1.5 to 150, 2.0 to 200</td>
</tr>
<tr>
<td>Pump type</td>
<td>Single geared pump</td>
<td>Single geared pump</td>
</tr>
<tr>
<td>Motor pump [kg]</td>
<td>76, 44, 44.0</td>
<td>74.1, 44.0</td>
</tr>
<tr>
<td>Motor rated input current [A]</td>
<td>23.1, 25.3, 27.7, 27.7</td>
<td>74.1, 44.0</td>
</tr>
<tr>
<td>Motor rated input current [V]</td>
<td>5.6, 20.8, 24.9, 16.6</td>
<td>55, 30, 30, 30</td>
</tr>
<tr>
<td>Leak current [mA]</td>
<td>11.3, 23.2, 33.8, 20.1</td>
<td>34.8, 52</td>
</tr>
<tr>
<td>Motor cooling fan power</td>
<td>1-phase AC 200 V ±10% (50 Hz/60 Hz)</td>
<td>1-phase AC 215 to 245 V (50 Hz/60 Hz)</td>
</tr>
<tr>
<td>Motor power [kW]</td>
<td>1.3 to 130, 1.3 to 130</td>
<td>1.3 to 130, 1.3 to 130</td>
</tr>
<tr>
<td>Controller input power</td>
<td>3-phase AC 200 to 220 V (50 Hz/60 Hz)</td>
<td>1.3 to 130, 1.3 to 130</td>
</tr>
<tr>
<td>Controller rated input current [A]</td>
<td>3-phase AC 200 to 220 V (50 Hz/60 Hz)</td>
<td>1.3 to 130, 1.3 to 130</td>
</tr>
<tr>
<td>Permissible power supply voltage fluctuation range</td>
<td>-15% to +10%</td>
<td>-20% to +10%</td>
</tr>
<tr>
<td>Required power supply capacity [kVA]</td>
<td>11.3, 23.2, 33.8, 20.1</td>
<td>34.8, 52</td>
</tr>
<tr>
<td>Analog command input voltage DC [V]</td>
<td>0 to +5</td>
<td>0 to +10</td>
</tr>
<tr>
<td>Non-standard specifications</td>
<td>Safety valve incorporating</td>
<td>Safety valve incorporating</td>
</tr>
<tr>
<td></td>
<td>Incorporated</td>
<td>Incorporated</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Incorporated</td>
<td>Incorporated</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Incorporated</td>
<td>Incorporated</td>
</tr>
</tbody>
</table>

(*1) Even if the unit is used within the permissible power voltage fluctuation range, the PQ output characteristics may deteriorate if the power voltage fluctuates to the negative side. Also note that power voltage fluctuation to the positive side may cause alarms, due to overloading of regenerative operation, depending on the operation conditions. You are therefore recommended to use the unit in an environment with limited power voltage fluctuation as far as possible.

(*2) Representative values when using a noise filter recommended by DAIKIN. Protection against noise, in accordance with DAIKIN’s recommendations, may be required depending on the operating environment.

(*3) With 5 V analog command input voltage specifications, the voltage can be adjusted from 0 to 5 V using parameter VMAX. With 10 V specifications, the voltage can be adjusted from 0 to 10 V, so it can also be operated with 5 V inputs.

(*4) With models without a safety valve in the discharge block, incorporate a safety valve in the hydraulic circuit at the machine side. Use the unit with the safety valve set at the maximum operating pressure + 2 MPa.
### Specifications by Product (Double pump 200 V/400 V specifications)

#### 200 V specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>SUT00D</th>
<th>SUT00D</th>
<th>S-SUT00D</th>
<th>SUT00D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>SUT00D</td>
<td>SUT00D</td>
<td>S-SUT00D</td>
<td>SUT00D</td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>17.6</td>
<td>20.6</td>
<td>17.6</td>
<td>11.0</td>
</tr>
<tr>
<td>Combination [MPa]</td>
<td>17.6</td>
<td>20.6</td>
<td>17.6</td>
<td>11.0</td>
</tr>
<tr>
<td>Independent [MPa]</td>
<td>20.6</td>
<td>25.0</td>
<td>28.0</td>
<td>20.6</td>
</tr>
<tr>
<td>Maximum flow rate</td>
<td>30.0</td>
<td>80.0</td>
<td>130.0</td>
<td>200.0</td>
</tr>
<tr>
<td>Combination [L/min]</td>
<td>30.0</td>
<td>80.0</td>
<td>130.0</td>
<td>200.0</td>
</tr>
<tr>
<td>Independent [L/min]</td>
<td>16.3</td>
<td>38.4</td>
<td>47.9</td>
<td>70.9</td>
</tr>
<tr>
<td>Operating pressure adjustment range [MPa]</td>
<td>0.21 to 20.8</td>
<td>0.25 to 25</td>
<td>0.3 to 28</td>
<td>0.21 to 20.8</td>
</tr>
<tr>
<td>Operating flow rate adjustment range [L/min]</td>
<td>0.3 to 30</td>
<td>0.8 to 80</td>
<td>1.3 to 130</td>
<td>1.5 to 150</td>
</tr>
</tbody>
</table>

#### Power supply

<table>
<thead>
<tr>
<th>Pump type</th>
<th>3-phase AC 200 to 220 V (50 Hz/60 Hz)</th>
<th>3-phase AC 380 to 440 V (50 Hz/60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor cooling fan power (W)</td>
<td>27.5</td>
<td>58.4</td>
</tr>
<tr>
<td>Controller input power (kVA)</td>
<td>11.3</td>
<td>23.2</td>
</tr>
<tr>
<td>Permissible power supply voltage fluctuation range</td>
<td>300%</td>
<td>300%</td>
</tr>
<tr>
<td>Required power supply capacity [kVA]</td>
<td>20.5</td>
<td>32.8</td>
</tr>
</tbody>
</table>

#### Motor

<table>
<thead>
<tr>
<th>Rated value</th>
<th>[kW]</th>
<th>[Nm]</th>
<th>[N]</th>
<th>[m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor pump capacity</td>
<td>14</td>
<td>56.0</td>
<td>130</td>
<td>141</td>
</tr>
<tr>
<td>Suction flange/block</td>
<td>Incorporate</td>
<td>Incorporated</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Safety valve (%)*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Analog command input voltage DC [V]

| DC [V] | 0 to +10 |

#### Specifications

1. Even if the unit is used within the permissible power voltage fluctuation range, the PQ output characteristics may deteriorate if the power voltage fluctuates to the negative side. Also note that power voltage fluctuation to the positive side may cause alarms, due to overloading of regenerative operation, depending on the operation conditions. You are therefore recommended to use the unit in an environment with limited power voltage fluctuation as far as possible.

2. Please refer to “List of Electrical Components” for the electrical components required.

3. Solenoid valve model: KSOB-G02-9AP-40-N-H7 (200 V ± 10%)

4. Solenoid valve model: KSOB-B01B-40-10VP-20-EN (200 V ± 10%)

5. Not equipped with a solenoid valve for flow rate selection (Arrange a separately installed type flow rate selection block or provide a flow rate selection mechanism in the hydraulic circuit at the machine side.)

6. Representative values when using a noise filter recommended by DAIKIN. Protection against noise, in accordance with DAIKIN’s recommendations, may be required depending on the operating environment.

7. With 5 V analog command input voltage specifications, the voltage can be adjusted from 0 to 5 V using parameter VMAX. With 10 V specifications, the voltage can be adjusted from 0 to 10 V, so it can also be operated with 5 V inputs.

8. With models without a safety valve in the discharge block, incorporate a safety valve in the hydraulic circuit at the machine side. Use the unit with the safety valve set at the maximum operating pressure + 2 MPa.
### Common Specifications

(30 L/min to 200 L/min, single/double pump, 200 V/400 V specifications)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>Analog input (1</em>) (2ch)</em>*</td>
<td>Pressure command Pi 5 V specifications: 0 to +5 V / 0 to PMAX 10 V specifications: 0 to +10 V / 0 to PMAX Flow rate command Qi 5 V specifications: 0 to +5 V / 0 to QMAX 10 V specifications: 0 to +10 V / 0 to QMAX</td>
</tr>
<tr>
<td><em><em>Analog output (1</em>) (2ch)</em>*</td>
<td>Pressure monitor Po 5 V specifications: 0 to +5 V / 0 to QMAX 10 V specifications: 0 to +10 V / 0 to QMAX Flow rate monitor Qo 5 V specifications: −5 to +5 V / −QMAX to +QMAX 10 V specifications: −10 to +10 V / −QMAX to +QMAX</td>
</tr>
<tr>
<td><strong>Digital input signal (2) (8ch)</strong></td>
<td>DI1 Stop/start signal (control stop signal) DI3, DI4, DI6 PQ number selection signal for 8-PQ type (3-bit) DI5 Pump capacity selection input (for flow rate selection specifications) DI2, 7, 8 (Unassigned)</td>
</tr>
<tr>
<td><strong>Digital output signal (3) (7ch)</strong></td>
<td>DO1 Photo-coupler insulation, open collector, DC +24 V, 30 mA maximum, minus common DO3 Ready to operate signal DO4 Overload warning output (OFF: normal, ON: Warning) DO5 to 7 (Unassigned)</td>
</tr>
<tr>
<td><strong>Contact output (alarm) (1ch)</strong></td>
<td>Dry contact: DC 30 V, 1 channel, 500 mA maximum</td>
</tr>
<tr>
<td><strong>Paint color</strong></td>
<td>Motor pump No paint, only fan cover is in black Controller Ivory white (Munsell code 5Y7.5/1)</td>
</tr>
<tr>
<td><strong>Oil used (4)</strong></td>
<td>Oil type General petroleum-based hydraulic oil / Wear-resistant hydraulic oil Oil temperature 0 to 60°C (Recommended operating temperature range: 15 to 50°C) Viscosity grade ISO VG32 to 68 Viscosity range 15 to 400 mm²/s Contamination Within NAS class 9</td>
</tr>
<tr>
<td><strong>Operating environment</strong></td>
<td>Atmosphere Indoors (not to be directly exposed to sunlight) Not to be subject to corrosive gases, inflammable gases, oil mist or dust Altitude 1000 m maximum Ambient humidity 85% RH maximum (no dew condensation) Ambient temperature Motor pump 0 to 40°C (no freezing) Controller 0 to 55°C (no freezing) Installation orientation Motor pump To be secured on the base for the hydraulic unit on the machine. To be installed in the horizontal orientation. Controller To be installed inside an electrical cabinet (IP54). To be installed in the vertical orientation (with the main power supply terminals at the bottom).</td>
</tr>
<tr>
<td><strong>Protection grade</strong></td>
<td>Controller IP00 Motor (*5) IP44</td>
</tr>
<tr>
<td><strong>Storage environment</strong></td>
<td>Storage temperature Motor pump −20 to +70°C (no condensation) Controller −20 to +60°C (no condensation) Storage humidity Motor pump 85% RH maximum (no dew condensation)</td>
</tr>
<tr>
<td><strong>Startup time</strong></td>
<td>5 seconds maximum (at ambient temperature of 15°C)</td>
</tr>
<tr>
<td><strong>Power supply grounding type</strong></td>
<td>TN</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>(a) Install a no-fuse breaker on the main power supply to protect electrical circuits from overcurrent, in the event of short circuits for example. (b) Be sure to connect the ground terminals of the controller and motor pump. (c) Frequently turning the controller’s power supply ON/OFF will substantially shorten the controller’s service life. It is advisable to start and stop the motor by turning the digital input (DI1) ON/OFF.</td>
</tr>
</tbody>
</table>

---

### Performance Specification

<table>
<thead>
<tr>
<th>Item</th>
<th>200 V specifications</th>
<th>400 V specifications</th>
<th>400 V specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUT005 / SUT007</td>
<td>SUT018 / SUT007</td>
<td>S-SUT007</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>S3018, S5021, S5025, S8018, S13018, S15018</td>
<td>S5021, S8018, S13018, S13021, S15018, S20018</td>
<td>S20021</td>
</tr>
<tr>
<td></td>
<td>D3021, D8021, D15021, D20021, D30028</td>
<td>D8021, D13021, D15021, D22028</td>
<td>D20021</td>
</tr>
</tbody>
</table>

Note: The data given above are the representative performance values, not guaranteed values.

1. Time required to reach 95% of the commanded value in response to a command to change the flow rate from 0 to the maximum with no load applied.
2. Time required to reach 95% of the commanded value in response to a command to change the pressure from 0 to the maximum.

The volumetric load capacity condition is 2 m of 3/4 high-pressure hose with SUT005S3018 to SUT005S13021, and 2 m of 1B high-pressure hose with SUT005S20018.
About Continuous and Short-time Rating Range

Analog command input/high-accuracy type SUPER UNITs can run continuously within the continuous rating range given in the pressure - flow rate characteristic charts (see P-Q charts on pages 14 to 18). Note, however, that the range of operation can be extended to within the short-time rating range for up to 20 seconds (or 60 seconds for the 400 V single pump type), provided it does not exceed a 20% duty cycle.

**Example with Single Pump Type**
SUT00S20018-20YL-N0340

**Example with Double Pump Type**
SUT00D13021-10-B-N0321

### Continuous Rating

- Continuous operation is possible when the mean hydraulic power obtained based on the pressure and flow rate during operation of 1 cycle is lower than the hydraulic power for the continuous rating range in the figure above and also the root-mean-square of the load pressure is within the maximum pressure for the continuous rating range.

  (With the double pump type unit shown in the figure above with independent flow selected, continuous operation with the pressure held at 20.6 MPa is possible. However, for cycles that include pressure holding for 3 minutes or longer, a bleed off circuit equivalent to the capacity of a single pump running at 150 min⁻¹ must be provided at the pump discharge side to cool the pump.)

### Short-time Rating

- Operation possible for 20 seconds (or 60 seconds with 400 V single pump type)

### Reference

#### How to obtain the mean hydraulic power and root-mean-square pressure (example for single pump type)

When load pressure in each process within 1 cycle is $P_n$ ($n = 1, 2, \ldots, n$), flow rate is $Q_n$ ($n = 1, 2, \ldots, n$), and time is $t_n$ ($n = 1, 2, \ldots, n$),

- Mean hydraulic power $= (P_1 \times Q_1/60 \times t_1 + P_2 \times Q_2/60 \times t_2 + \ldots + P_n \times Q_n/60 \times t_n) / (t_1 + t_2 + \ldots + t_n)$
- Root-mean-square of load pressure $= \text{SQR}((P_1^2 \times t_1 + P_2^2 \times t_2 + \ldots + P_n^2 \times t_n) / (t_1 + t_2 + \ldots + t_n))$

(Note, however, that if the pump runs above the rated pump rotational speed of 1800 min⁻¹ to provide the control flow rate of $Q_n$, with the load pressure $P_n$, $P_n$ needs to be converted to the value when the pump is running at 1800 min⁻¹.)

When the pump capacity of the SUPER UNIT is $Q_n$ [cm³], the pump rotational speed $N_n$ is $N_n = Q_n \times 10^3 / N_p$.

Therefore, converted pressure $P_n = P_n \times (N_p/1800)$

Note 1: The procedure for obtaining the mean hydraulic power and root-mean-square pressure with flow-rate-selection specifications (double pump type) is basically the same as above. Please consult us for detailed information.

Note 2: SQR above represents square root operation (\(\sqrt{\quad}\)). For the continuous rating hydraulic powers for each model, see the pressure - flow rate characteristic charts (P-Q characteristic charts) given in the instruction manual provided separately.
Example with Double Pump Type (SUT00D15021-10-B)

PI-PO static characteristics

QI-QO static characteristics

Example Output Characteristics for Flow Rate Selection Specifications (SUT00D8021-30-B)

Note 1: Since the PQ characteristics vary depending on the model, refer to the appropriate PQ characteristic chart for the detailed output characteristics of each model.

Note 2: When the combination flow is selected (DI5 = ON), the pressure does not rise above 17.5 MPa even if the pressure command voltage (Pi) is increased as shown in the graph above.
Pressure – Flow Rate Characteristics (Single pump type)

200 V Single Pump

PQ chart - 1

SUT00S3018-30-A
Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 30 [L/min]
Command voltage = 5 [V]

PQ chart - 2

SUT00S5021-30-A
Maximum operating pressure = 20.6 [MPa]
Maximum flow rate = 50 [L/min]
Command voltage = 5 [V]

PQ chart - 3

SUT00S8018-30-A
Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 80 [L/min]
Command voltage = 5 [V]

PQ chart - 4

SUT00S5025-10-L-N0432
Maximum operating pressure = 24.5 [MPa]
Maximum flow rate = 50 [L/min]
Command voltage = 5 [V]

PQ chart - 5

SUT00S15018-10-A
Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 150 [L/min]
Command voltage = 5 [V]
Pressure – Flow Rate Characteristics (Single pump specifications)

### 400 V Single Pump

**PQ chart - 6**

- **SUT00S021-40YA-N0265**
  - Maximum operating pressure = 20.6 [MPa]
  - Maximum flow rate = 50 [L/min]
  - Command voltage = 10 [V]

**PQ chart - 7**

- **SUT00S018-40YA**
  - Maximum operating pressure = 17.6 [MPa]
  - Maximum flow rate = 80 [L/min]
  - Command voltage = 10 [V]

**PQ chart - 8**

- **SUT00S13018-40YA-N0218**
  - Maximum operating pressure = 17.6 [MPa]
  - Maximum flow rate = 150 [L/min]
  - Command voltage = 10 [V]

**PQ chart - 9**

- **SUT00S13021-40YA-N0286**
  - Maximum operating pressure = 20.6 [MPa]
  - Maximum flow rate = 130 [L/min]
  - Command voltage = 10 [V]

**PQ chart - 10**

- **SUT00S15018-40YA**
  - Maximum operating pressure = 17.6 [MPa]
  - Maximum flow rate = 200 [L/min]
  - Command voltage = 10 [V]

**PQ chart - 11**

- **SUT00S20018-40YL-N0340**
  - Maximum operating pressure = 17.6 [MPa]
  - Maximum flow rate = 200 [L/min]
  - Command voltage = 10 [V]
Pressure – Flow Rate Characteristics (Double pump specifications)

200 V Double Pump

PQ chart - 12

SUT00D3021-30-B-N0436
Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 30/18.3 [L/min]
Command voltage = 10 [V]

PQ chart - 13

SUT00D8021-40-B-N0323
Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 80/38.4 [L/min]
Command voltage = 10 [V]

PQ chart - 14

SUT00D13021-40-B-N0321
Maximum operating pressure = 20.6/20.6 [MPa]
Maximum flow rate = 130/47.9 [L/min]
Command voltage = 10 [V]

PQ chart - 15

SUT00D15021-40-B-N0365
Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 150/70.9 [L/min]
Command voltage = 10 [V]

PQ chart - 16

SUT00D20021-40-L
Maximum operating pressure = 11.0/25.0 [MPa]
Maximum flow rate = 200/56 [L/min]
Command voltage = 10 [V]

PQ chart - 17

SUT00D30028-30-L
Maximum operating pressure = 14.0/28.0 [MPa]
Maximum flow rate = 300/56 [L/min]
Command voltage = 10 [V]
**Pressure – Flow Rate Characteristics (Double pump specifications)**

### 400 V Double Pump

#### PQ chart - 18

![Flow rate vs. Pressure Diagram](PQ_chart_18.png)

**SUT00D8021-40YB-N0324**
- Maximum operating pressure: 17.6/20.6 [MPa]
- Maximum flow rate: 80/38.4 [L/min]
- Command voltage: 10 [V]

#### PQ chart - 19

![Flow rate vs. Pressure Diagram](PQ_chart_19.png)

**SUT00D13021-40YB-N0322**
- Maximum operating pressure: 14.0/28.0 [MPa]
- Maximum flow rate: 130/47.9 [L/min]
- Command voltage: 10 [V]

#### PQ chart - 20

![Flow rate vs. Pressure Diagram](PQ_chart_20.png)

**SUT00D15021-40YB-N0358**
- Maximum operating pressure: 17.6/20.6 [MPa]
- Maximum flow rate: 150/70.9 [L/min]
- Command voltage: 10 [V]

#### PQ chart - 21

![Flow rate vs. Pressure Diagram](PQ_chart_21.png)

**S-SUT00D20021-40YL**
- Maximum operating pressure: 11.0/25.0 [MPa]
- Maximum flow rate: 200/56.0 [L/min]
- Command voltage: 10 [V]

#### PQ chart - 22

![Flow rate vs. Pressure Diagram](PQ_chart_22.png)

**S-SUT00D8025-40YL**
- Maximum operating pressure: 15.0/25.0 [MPa]
- Maximum flow rate: 80/40.0 [L/min]
- Command voltage: 10 [V]

#### PQ chart - 23

![Flow rate vs. Pressure Diagram](PQ_chart_23.png)

**S-SUT00D13025-40YL**
- Maximum operating pressure: 15.0/25.0 [MPa]
- Maximum flow rate: 130/37.3 [L/min]
- Command voltage: 10 [V]
**400 V Double Pump**

**PQ chart - 24**

- **S-SUT00D20025-40YL**
  - Maximum operating pressure: 16.5/25.0 [MPa]
  - Maximum flow rate: 200/56.0 [L/min]
  - Command voltage: 10 [V]

**PQ chart - 25**

- **SUT00D22028-30YL**
  - Maximum operating pressure: 14.0/28.0 [MPa]
  - Maximum flow rate: 220/63.2 [L/min]
  - Command voltage: 10 [V]
External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

200 V 30 L/min 17.6 MPa
SUT00S3018-30-A

200 V/400 V 50 L/min 20.6 MPa
200 V/400 V 80 L/min 17.6 MPa
SUT00S5021-40-A
SUT00S8018-40-A
SUT00S5021-40YA-N0265
SUT00S8018-40YA

200 V 30 L/min 17.6 MPa
SUT00S3018-30-A

200 V/400 V 50 L/min 20.6 MPa
200 V/400 V 80 L/min 17.6 MPa
SUT00S5021-40-A
SUT00S8018-40-A
SUT00S5021-40YA-N0265
SUT00S8018-40YA

Table 1: Specifications of Motor Pump

<table>
<thead>
<tr>
<th>Model code</th>
<th>Power supply specifications</th>
<th>Pump specifications</th>
<th>L</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Suction port</th>
<th>Drain port</th>
<th>Pressure sensor orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUT00S3018-30-A</td>
<td>200 V</td>
<td>Single</td>
<td>75</td>
<td>80</td>
<td>145</td>
<td>80</td>
<td>Rc1</td>
<td>Rc3/4</td>
<td>None</td>
</tr>
<tr>
<td>SUT00S5021-40-A</td>
<td>200 V</td>
<td>Single</td>
<td>74</td>
<td>87</td>
<td>152</td>
<td>87</td>
<td>Rc3/4</td>
<td>Rc3/4</td>
<td>None</td>
</tr>
<tr>
<td>SUT00S8018-40-A</td>
<td>200 V</td>
<td>Single</td>
<td>74</td>
<td>87</td>
<td>152</td>
<td>87</td>
<td>Rc3/4</td>
<td>Rc3/4</td>
<td>None</td>
</tr>
<tr>
<td>SUT00S5021-40YA-N0265</td>
<td>400 V</td>
<td>Single</td>
<td>74</td>
<td>87</td>
<td>152</td>
<td>87</td>
<td>Rc1</td>
<td>Rc3/4</td>
<td>Front</td>
</tr>
<tr>
<td>SUT00S8018-40YA</td>
<td>400 V</td>
<td>Single</td>
<td>74</td>
<td>87</td>
<td>152</td>
<td>87</td>
<td>Rc3/4</td>
<td>Rc3/4</td>
<td>Front</td>
</tr>
</tbody>
</table>

(*) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the motor side.

---

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan. In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.
**200 V 50 L/min 24.5 MPa**

SUT00S5025-40-L-N0432

*The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan. In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.*

---

<table>
<thead>
<tr>
<th>Model code</th>
<th>Power supply specifications</th>
<th>Pump specifications</th>
<th>Suction port</th>
<th>Discharge port</th>
<th>Drain port</th>
<th>Pressure sensor orientation</th>
<th>Suction flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUT00S5025-40-L-N0432</td>
<td>200 V</td>
<td>Single</td>
<td>Rc1-1/4</td>
<td>R1</td>
<td>Bottom</td>
<td>Incorporated</td>
<td></td>
</tr>
</tbody>
</table>

*(1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.*
External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

200 V 150 L/min 17.6 MPa
400 V 130 L/min 17.6 MPa, 130 L/min 20.6 MPa, 150 L/min 17.6 MPa

SUT00S15018-40-A
SUT00S13018-40YA-N0218
SUT00S13021-40YA-N0286
SUT00S15018-40YA

400V 200L/min 17.6MPa
SUT00S20018-20YL-N0340

(*) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.
**External Dimension Diagrams** (Motor pump 200 V/400 V double pump type)

**200 V 30 L/min 20.6 MPa**

SUT00D3021-30-B-N0436

*The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan. In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.*
**External Dimension Diagrams** (Motor pump 200 V/400 V double pump type)

200 V 80 L/min 20.6 MPa
400 V 80 L/min 17.6 MPa

SUT00D8021-40-B-N0323
SUT00D8021-40YB-N0324

---

200 V 130 L/min 20.6 MPa
400 V 130 L/min 20.6 MPa

SUT00D13021-40-B-N0321
SUT00D13021-40YB-N0324

---

(*) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the pump side.

(*1) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the pump side.
200 V 200 L/min 20.6 MPa
400 V 200 L/min 20.6 MPa, 130 L/min 25 MPa

SUT00D20021-40-L
S-SUT00D20021-40YL
S-SUT00D13025-40YL

400 V 80 L/min 25 MPa
S-SUT00D8025-40YL

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.

In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.
External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

400 V 200 L/min 25 MPa
S-SUT00D20025-40YL

400 V 220 L/min 28 MPa
200 V 300 L/min 28 MPa
SUT00D22028-30YL
SUT00D30028-30-L

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.
In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.
External Dimension Diagrams (Double pump)

MEMO

- The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.

- In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.

**Pressure sensor orientation (**1) indicates the orientation of the pressure sensor viewed from the pump side.

**Power supply specifications**

- **Model code**
  - SUT00D20025-40YL
  - SUT00D30028-30-L

**Pump specifications**

- **Power supply**
  - 400 V 220 L/min 28 MPa
  - 200 V 300 L/min 28 MPa

**Model code**

- **Discharge port PH**
  - Rc1
- **Discharge port PL**
  - Rc1
- **Suction port**
  - Rc1-1/2

**Power supply**

- **Model code**
  - Rc1-1/4
  - Rc3/4
  - Rc1-1/2
  - Rc1

**Pressure sensor orientation (**1) indicates the orientation of the pressure sensor viewed from the pump side.

**Incorporated**

- **Suction flange**
  - Top
  - Double

**Double pump**

- **Pressure sensor orientation (**1)**
  - 400 VSUT00D22028-30YL

**View A-A**

- **Pressure sensor orientation (**1)**
  - S-SUT00D20025-40YL

**Note:** All dimensions are approximate, and tolerances vary. Always consult the manufacturer’s specifications for exact dimensions.
### External Dimension Diagrams (Controller 200 V/400 V single/double pump type)

#### Specifications

- **Power Supply**
  - 200 V: 30 to 200 L/min 17.6 MPa, 20.6 MPa, 24.5 MPa (Single/double pump)
  - 400 V: 50 to 200 L/min 17.6 MPa, 20.6 MPa, 24.5 MPa (Single/double pump)

#### Model Codes

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Power Supply Specifications</th>
<th>Pump Specifications</th>
<th>H1</th>
<th>H2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUT00S3018-30-A</td>
<td>200 V</td>
<td>Single</td>
<td>377</td>
<td>326</td>
</tr>
<tr>
<td>SUT00S5021-40-A</td>
<td>200 V</td>
<td>Single</td>
<td>379</td>
<td>328</td>
</tr>
<tr>
<td>SUT00S8018-40-A</td>
<td>200 V</td>
<td>Single</td>
<td>379</td>
<td>328</td>
</tr>
<tr>
<td>SUT00S5025-40-L-N0432</td>
<td>400 V</td>
<td>Single</td>
<td>377</td>
<td>361</td>
</tr>
<tr>
<td>SUT00S15018-40-A</td>
<td>400 V</td>
<td>Single</td>
<td>379</td>
<td>328</td>
</tr>
<tr>
<td>SUT00D20021-40-L</td>
<td>400 V</td>
<td>Double</td>
<td>377</td>
<td>326</td>
</tr>
<tr>
<td>SUT00D15021-40-B-N0365</td>
<td>400 V</td>
<td>Double</td>
<td>379</td>
<td>328</td>
</tr>
<tr>
<td>SUT00D20021-40YL</td>
<td>400 V</td>
<td>Double</td>
<td>377</td>
<td>326</td>
</tr>
<tr>
<td>SUT00D15021-40YB-N0358</td>
<td>400 V</td>
<td>Double</td>
<td>379</td>
<td>328</td>
</tr>
</tbody>
</table>

#### Diagrams

- **View A-A (bottom face)**
- **Cooling fan**
- **Exhaust air**
- **Controller nameplate**
- **I/O terminal block**
- **M6 screw (for ground connection)**

#### Notes

- The controller needs to be mounted vertically on a wall inside the electrical cabinet, with a clearance of at least 100 mm secured above and below and a clearance of at least 30 mm for wiring and maintenance at the left and right.
400 V 200 L/min 17.6 MPa (Single pump)

SUT00S20018-40YL-N0340

400 V 30 to 200 L/min 17.6 MPa, 20.6 MPa, 24.5 MPa (Single/double pump)

200 V 30 to 200 L/min 17.6 MPa, 20.6 MPa, 24.5 MPa (Single/double pump)

(for ground connection)

M6 screw

Controller nameplate

I/O terminal block

M3 screws

Monitor display (Normally showing the pressure in MPa)

Setting keys (four keys)

Pressure in MPa

Product nameplate

400 V 80 L/min 25 MPa, 130 L/min 25 MPa (Double pump)

S-SUT00D8025-40YL

S-SUT00D13025-40YL

SUT00D20021-40YL

SUT00D15021-40YB-N0358

SUT00D13021-40YB-N0322

SUT00D8021-40YB-N0324

SUT00D20021-40-L

SUT00D15021-40-B-N0365

SUT00D13021-40-B-N0321

SUT00D8021-40-B-N0323

SUT00D3021-30-B-N0436

* The controller needs to be mounted vertically on a wall inside the electrical cabinet, with a clearance of at least 100 mm secured above and below and a clearance of at least 30 mm for wiring and maintenance at the left and right.
The controller needs to be mounted vertically on a wall inside the electrical cabinet, with a clearance of at least 100 mm secured above and below and a clearance of at least 30 mm for wiring and maintenance at the left and right.
**List of Electrical Components**

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Power Supply</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUT00D20025-40YL</td>
<td>400 V</td>
<td>High Pressure/High Flow Rate/Analog Command Input/High-accuracy Type</td>
</tr>
<tr>
<td>SUT00D22028-30YL</td>
<td>200 V</td>
<td>Double pump</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300 L/min, 28 MPa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 V, 220 L/min, 28 MPa</td>
</tr>
</tbody>
</table>

**Controller**

- φ4-8 holes for fixing bolts
- M3 screws
- Monitor display
- Controller nameplate
- 550 x 7.5 mm
- (6) 415 x 11398 x 17 (17)
- 60 x 4-8 holes for fixing bolts
- 260 x 3805
- 260 x 270
- (For grounding)
- Cover mounting screws (4-M4)
- Wiring section cover
- Setting keys (four keys)
- (Controller 400 V double pump type)
- Normally showing the pressure in MPa
- Vent

**External Dimension Diagrams (Controller)**

- View A-A (bottom face)
- Opening for wiring
- Cooling fan
- Suction air
- Exhaust air
- 137 x 236.5

**Specifications**

- Model code
- Power supply
- Specifications

**Electrical Components**

- Noise filter
- Encoder harness
- Fuse
- Surge protector
- Ring core
- DC reactor
- Pressure sensor
- Ferrite core
- Resistance
- Harness

**SUPER UNIT nomenclature**

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Model code for set order</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUT00S3018-30-A</td>
<td>SUT00S3018-30-A</td>
</tr>
<tr>
<td>SUT00S5021-40-A</td>
<td>SUT00S5021-40-A</td>
</tr>
<tr>
<td>SUT00S8018-40-A</td>
<td>SUT00S8018-40-A</td>
</tr>
<tr>
<td>SUT00S20018-40YL-N0340</td>
<td>SUT00S20018-40YL-N0340</td>
</tr>
<tr>
<td>SUT00S15018-40-A</td>
<td>SUT00S15018-40-A</td>
</tr>
<tr>
<td>SUT00S13018-40YA-N0218</td>
<td>SUT00S13018-40YA-N0218</td>
</tr>
<tr>
<td>SUT00S13021-40YA-N0286</td>
<td>SUT00S13021-40YA-N0286</td>
</tr>
<tr>
<td>SUT00S13021-40YB-N0321</td>
<td>SUT00S13021-40YB-N0321</td>
</tr>
<tr>
<td>SUT00D3021-30-B-N0436</td>
<td>SUT00D3021-30-B-N0436</td>
</tr>
<tr>
<td></td>
<td>SUT00D13021-40-B-N0321</td>
</tr>
<tr>
<td>SUT00D15021-40-B-N0365</td>
<td>SUT00D15021-40-B-N0365</td>
</tr>
<tr>
<td></td>
<td>SUT00D13021-40YB-N0322</td>
</tr>
<tr>
<td>SUT00D15021-40YB-N0358</td>
<td>SUT00D15021-40YB-N0358</td>
</tr>
</tbody>
</table>

**Electrical Components provided with the product**

- Transformer
- Relay
- Motor
- Power switch
- Terminals

**Electrical components provided with the SUPER UNIT**

- Noise filter
- Transformer
- Relay
- Motor
- Power switch
- Terminals

**Noise filter**

- PM-SNF04 can be ordered in place of PM-SNF02.

**Regenerative resistors**

- 1 kW specifications. When using the unit for applications with high regenerative capacity, select resistors with a higher capacity.

**List of Electrical Components**

- The list shows the model code and quantity for each of the electrical components that are contained in each set, and the quantity for each of the electrical components that are contained in each S-SUT model code.

**SUPER UNIT**

- List of Electrical Components
- External Dimension Diagrams (Controller)
- Specifications
- Model code for set order
- Power supply
- Specifications
- Electrical components provided with the product
- Noise filter
- Transformer
- Relay
- Motor
- Power switch
- Terminals
**Electric Wiring Diagram**

Diagram showing electrical connections and components for a SUPER UNIT controller with a 200 V Double Pump Type SUT00D13021. Diagram includes various components such as motors, sensors, and controllers, with labeled connections for power supply, signal lines, and alarms. Notes on the components indicate requirements for compliance with European CE standards and the need to order certain components separately. Diagram also highlights the use of ring cores, pressure sensors, and flow rate monitors among other elements.
Electric Wiring Diagram (Example with 400 V Double Pump Type SUT00D13021)
8-PQ Control

High-pressure/high-flow-rate/high-accuracy type SUPER UNITs control the pressure and flow rate according to analog input voltages. There is also the 8-PQ control system where control is possible by switching digital signals (DC 24 V) ON and OFF.

When analog input voltages cannot be provided at the machine side, the control method can be changed from the analog command input type to the 8-PQ control type, where combinations of 3-bit digital ON/OFF signals (DC 24 V) are input from a PLC (*1) at the machine side, using a parameter.

With the 8-PQ control type, pressure/flow rate settings are preset as numerical values using 8 parameters and the pressure and flow rate are specified by turning on the digital signal corresponding to the parameter number that holds the desired pressure/flow rate setting. (The 16-PQ control type is also available with some models.)

(*1) PLC: Programmable Logic Controller

(*2) For details on selection of the control method, please refer to the instruction manual provided separately.
The following table shows the settings and details of parameters given in “Control Method Selection Procedure for Analog Command Input Type SUPER UNITs (SUT/S-SUT)”.

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Expression</th>
<th>Name</th>
<th>Initial value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P31</td>
<td>CM_S</td>
<td>Command input target selection</td>
<td>0</td>
<td>Pressure/flow rate command input target selection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0: Analog input</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Cannot be set (reserved by system)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2: Digital input (8-pattern PQ type (8-PQ))</td>
</tr>
<tr>
<td>P41</td>
<td>–</td>
<td>PQ selection 0 (PQ_0)</td>
<td>0</td>
<td>- Double pump type (*1)</td>
</tr>
<tr>
<td>P42</td>
<td>–</td>
<td>PQ selection 1 (PQ_1)</td>
<td>0</td>
<td>PH*: High-pressure (independent) side pressure setting</td>
</tr>
<tr>
<td>P43</td>
<td>–</td>
<td>PQ selection 2 (PQ_2)</td>
<td>0</td>
<td>QH*: High-pressure (independent) side flow rate setting</td>
</tr>
<tr>
<td>P44</td>
<td>–</td>
<td>PQ selection 3 (PQ_3)</td>
<td>0</td>
<td>PL*: Low-pressure (combination) side pressure setting</td>
</tr>
<tr>
<td>P45</td>
<td>–</td>
<td>PQ selection 4 (PQ_4)</td>
<td>0</td>
<td>QL*: Low-pressure (combination) side flow rate setting</td>
</tr>
<tr>
<td>P46</td>
<td>–</td>
<td>PQ selection 5 (PQ_5)</td>
<td>0</td>
<td>PC*: Pump selection condition (enabled when using the autonomous selection function)</td>
</tr>
<tr>
<td>P47</td>
<td>–</td>
<td>PQ selection 6 (PQ_6)</td>
<td>0</td>
<td>- Single pump type</td>
</tr>
<tr>
<td>P48</td>
<td>–</td>
<td>PQ selection 7 (PQ_7)</td>
<td>0</td>
<td>PL*: Low-pressure (combination) side pressure setting</td>
</tr>
<tr>
<td>H47</td>
<td>DI_L</td>
<td>Pump combination flow signal selection</td>
<td>1</td>
<td>Combination/Independent selection logic for digital input signal DI5</td>
</tr>
<tr>
<td>H54</td>
<td>P_C_</td>
<td>Pump autonomous selection enable</td>
<td>0</td>
<td>ON/OFF setting</td>
</tr>
<tr>
<td>H56</td>
<td>CS_P</td>
<td>Independent flow selection pressure offset</td>
<td>1.0</td>
<td>0: Combination when DI5 = OFF, independent when DI5 = ON</td>
</tr>
<tr>
<td>P36</td>
<td>CS_P</td>
<td>Independent flow selection pressure offset</td>
<td>1.0</td>
<td>1: When DI5 = ON, independent when DI5 = OFF</td>
</tr>
<tr>
<td>P37</td>
<td>CS_N</td>
<td>Independent flow selection pressure offset</td>
<td>100</td>
<td>Pressure condition setting for autonomous combination ⇒ independent pump selection</td>
</tr>
<tr>
<td>P38</td>
<td>CD_P</td>
<td>Combination pump selection pressure offset</td>
<td>1.0</td>
<td>Switching (to independent flow under the following conditions)</td>
</tr>
<tr>
<td>H52</td>
<td>CS_T</td>
<td>Independent flow hold time</td>
<td>0.3</td>
<td>“PL*” + “CS_P” = Control pressure</td>
</tr>
<tr>
<td>H53</td>
<td>CD_T</td>
<td>Combination flow hold time</td>
<td>0.3</td>
<td>Setting the time to maintain independent flow by disabling</td>
</tr>
<tr>
<td>H55</td>
<td>SD_T</td>
<td>Pump combination flow hold time at startup</td>
<td>0.1</td>
<td>independent pump selection immediately after combination ⇒ independent pump selection</td>
</tr>
<tr>
<td>H47</td>
<td>DI_L</td>
<td>Pump combination flow signal selection</td>
<td>1</td>
<td>Time to maintain combination flow after starting the pumps from the stopped state or standby state</td>
</tr>
</tbody>
</table>

Note 1: “*” in PH*, QH*, PL* and QL* in the above table represents a PQ number from “0” to “7”.

For setting the pressure/flow rate for each of eight PQ patterns

For digital input

For autonomous selection setting conditions

8-PQ control

(Please refer to the instruction manuals for the analog command input type and for the 8-PQ control type.)
Example Control

* The following shows example waveforms while controlling the pressure and flow rate on press machine a SUPER UNIT incorporated.

**Example with S-SUT00D20025-12YL (P_{max} = 25 \text{ MPa} \text{ (independent)}, Q_{max} = 200 \text{ L/min} \text{ (combination)}, 400 \text{ V specifications})**

![Example Timing Chart for Cylinder Operation and Signals on a Press Machine](image)

**Example with SUT00D15021-10-B \text{ (P}_{max} = 20.7 \text{ MPa} \text{ (independent)}, Q_{max} = 150 \text{ L/min} \text{ (combination)}, 200 \text{ V specifications})**

![Example Timing Chart for Cylinder Operation and Signals on a Press Machine](image)
Example Timing Chart for Cylinder Operation and Signals on a Press Machine

Example Press Operation (Down-Press-Up) in 8-PQ Control (SUT00D15021, 200 V Specifications)

The following shows an operation example using five setting patterns by setting the pressure and flow rate for each process for PQ numbers 0 to 4, corresponding to PQ setting charts 1 to 5. (In this example, the selection of combination/independent flow is controlled from the machine using an external signal (DI5).)

- Selecting combination flow
- Selecting independent flow

8-PQ Setting Example with SUT00D15021-10-B-N0365
Up to eight patterns of the flow rate for combination flow (QL*), pressure for combination flow (PL*), flow rate for independent flow (QH*) and pressure for independent flow (PH*) can be set using parameters. The PQ settings shown in the charts to the right are the example setting patterns applied to each of the operating ranges in the figures above.
Example Timing Chart for Cylinder Operation and Signals on a Press Machine

Example of 8-PQ Function: Example Timing Chart with SUT00S/S-SUT00S (Single Pump, 8-PQ Type)

Note: The analog command input type is selected by the default parameter settings of SUT/S-SUT before shipment. (Parameter P31 (command input target selection) is set to "0: Analog input".)

To achieve shockless control on a machine, the flow rate, pressure, response time and other settings need to be adjusted according to the machine.

Digital Selection Signals and PQ Numbers

<table>
<thead>
<tr>
<th>Pattern No.</th>
<th>DI-3</th>
<th>DI-4</th>
<th>DI-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>PQ0</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>PQ1</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>PQ2</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>PQ3</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>PQ4</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>PQ5</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>PQ6</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>PQ7</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
</tbody>
</table>

(To select the 8-PQ type, the setting of "P31" needs to be changed from "0: Analog input" to "2: Digital input".)

PQ Numbers and Example Pressure/Flow Rate Settings

<table>
<thead>
<tr>
<th>Pattern No.</th>
<th>PL* (MPa)</th>
<th>QL* [L/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>PQ0</td>
<td>0.5</td>
<td>0.0</td>
</tr>
<tr>
<td>PQ1</td>
<td>16.0</td>
<td>10.0</td>
</tr>
<tr>
<td>PQ2</td>
<td>12.0</td>
<td>8.0</td>
</tr>
<tr>
<td>PQ3</td>
<td>16.0</td>
<td>7.0</td>
</tr>
<tr>
<td>PQ4</td>
<td>16.0</td>
<td>6.0</td>
</tr>
<tr>
<td>PQ5</td>
<td>16.0</td>
<td>8.0</td>
</tr>
<tr>
<td>PQ6</td>
<td>17.6</td>
<td>50.0</td>
</tr>
<tr>
<td>PQ7</td>
<td>16.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Note: The analog command input type is selected by the default parameter settings of SUT/S-SUT before shipment. (Parameter P31 (command input target selection) is set to "0: Analog input").

The setting of parameter P31 needs to be changed to "2: Digital input (8-PQ)". (The setting change takes effect upon restarting the power.)

To achieve shockless control on a machine, the flow rate, pressure, response time and other settings need to be adjusted according to the machine.
Example of 8-PQ Function: Example Timing Chart with SUT00D13021 (Double Pump, 8-PQ Type, Flow Rate Selection by External Signal)

Digital Selection Signals and PQ Numbers

<table>
<thead>
<tr>
<th>DI-3</th>
<th>DI-4</th>
<th>DI-6</th>
<th>Pattern No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
<td>PQ0</td>
</tr>
<tr>
<td>on</td>
<td>off</td>
<td>off</td>
<td>PQ1</td>
</tr>
<tr>
<td>off</td>
<td>on</td>
<td>off</td>
<td>PQ2</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>on</td>
<td>PQ3</td>
</tr>
<tr>
<td>off</td>
<td>on</td>
<td>on</td>
<td>PQ4</td>
</tr>
<tr>
<td>off</td>
<td>on</td>
<td>on</td>
<td>PQ5</td>
</tr>
<tr>
<td>on</td>
<td>on</td>
<td>on</td>
<td>PQ6</td>
</tr>
<tr>
<td>on</td>
<td>on</td>
<td>on</td>
<td>PQ7</td>
</tr>
</tbody>
</table>

Note: To achieve shockless control on a machine, the flow rate, pressure, response time and other settings need to be adjusted according to the machine.

Note: This example shows operation of SUT00D13021 (200 V specifications) with 8-PQ type and flow rate selection by external signal (DI5) selected.

Flow rate selection by the 8-PQ function can also be used in the autonomous selection mode. For details on the 8-PQ control, please refer to the instruction manual provided separately.
Maintenance/Management Tool (Hybrid-Win)

Hybrid-Win is a software tool that connects your personal computer running Windows 7/8 to a SUPER UNIT through communications (RS232C) to enable editing/saving of SUPER UNIT parameters and measurement of waveforms that result from the pressure/flow rate control. Hybrid–win and its instruction manual are available from the website (http://www.daikinpmc.com) after registering as a member. A personal computer and an RS232C/USB conversion cable are necessary.

Start-up Window of Hybrid-Win

Hybrid-Win can also be used for maintenance of other hybrid products from DAIKIN such as ECORICH products and oil cooling units. The startup window has the [Parameter transfer], [Simple measurement], [Trigger measurement], [Wave form measurement] and [Alarm history] buttons as shown in the figure to the left to provide access to the major functions of Hybrid-Win. Some basic functions are covered here. (Please refer to the instruction manual provided separately for details.)

1 : [Parameter transfer]
2 : Waveform measurement: [Simple measurement]
3 : Waveform measurement: [Wave form measurement]
4 : [Trigger measurement]
5 : [Alarm history]

Loading Parameters from SUPER UNIT (Parameter Transfer)

Clicking the “From Unit to PC” button transfers parameter data from the Super Unit to the personal computer and displays the parameters on the Hybrid-Win window shown to the left. The parameters can be edited and saved in this window.

1 : [From Unit to PC] button

Measuring Waveforms of SUPER UNIT

Click the [Communication start] button and select four data types to be displayed. Clicking the [Measurement start] button starts the measurement and the waveforms are displayed on the software screen as shown in the figure to the left over an extended period (90 seconds, when the sampling time is set to 15 ms for example) until the [measure stop] button is clicked. The waveform data can also be saved in the Excel graph format.

1 : [Communication start] button
2 : Selecting data to be displayed
3 : [Measure start] button

Zooming the Measured Waveforms In/Out

By checking “2Axis” for data types to be displayed, the chart can be zoomed along each of the vertical axes as shown in the figure to the left. The figure to the left shows the waveforms with the command pressure (voltage) and current pressure (voltage) assigned to the left axis, the command rotating speed (voltage) and current rotating speed (voltage) assigned to the right axis, and both axes zoomed using the “Vertical” and “Vertical 2” [+] buttons. It is also possible to zoom the chart along the horizontal axis (time). This function can be used for monitoring waveforms on the screen while the SUPER UNIT is running and saving some significant waveforms as Excel data.

1 : Selecting data type to be displayed as “2Axis”
2 : “Vertical” zoom in/out buttons
3 : “Vertical 2” zoom in/out buttons
A personal computer and an RS232C/USB conversion cable are necessary.

Hybrid-Win and its instruction manual are available from the website (http://www.daikinpmc.com) after registering as a member.

Hybrid-Win is a software tool that connects your personal computer running Windows 7/8 to a SUPER UNIT through pressure/flow rate control.

- **Zooming the Measured Waveforms In/Out**
- **Measuring Waveforms of SUPER UNIT**
- **Startup Window of Hybrid-Win**
- **Parameter Transfer**
- **Simple measurement**
- **Trigger measurement**
- **Alarm history**

### Window Displayed by Clicking ⑥ [Trigger measurement]

This window appears when the [Communication start] button is clicked after the [Trigger measurement] button in the start window to enable selection of the sampling time, four data types to be measured and trigger conditions. When the trigger conditions are satisfied after clicking the [Measurement start] button, the measurement starts and the waveforms are displayed as an Excel graph upon completing the measurement. (When Excel is selected as the file saving format) When the sampling time is set to 20 ms for example, measurement is possible for 5.1 seconds. It is also possible to save the data in the CSV format.

1. [Communication start] button
2. Selecting “Measurement data”
3. “Trigger condition setting”
4. [Measurement start] button

### Measurement Results when Excel File Selected as the Target with ① [Simple measurement] or ⑥ [Trigger measurement]

When Excel file is selected as the file saving format with the [Simple measurement] or [Trigger measurement] function, Excel window as shown in the figure to the left automatically appears upon completing the measurement to show the measurement data in a graph. The graph can be adjusted for better visibility by correcting/modifying its time axis and vertical axes using Excel, and saved as Excel data.

### Example of Measured Waveforms after being Edited in Excel

When Excel file is selected as the file saving format with the [Simple measurement] or [Trigger measurement] function, the waveforms are displayed in an Excel graph automatically upon completing the measurement. The figure to the left shows an example after editing the displayed waveforms for better visibility.

### Alarm Window Displayed by Clicking ⑦ [Alarm history]

The window displays details on the latest 10 alarms. Information on the alarms including the alarm number and the total operating time at the occurrence of the alarm can be checked in the table as shown in the figure to the left. The data can also be saved as Excel data or in other formats.

1. [Excel output] button
2. Alarm number
3. Total operating time (after shipment)
### External/Installation Dimension Diagrams for Electrical Components

#### DC reactor

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Diagram</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-SNL03</td>
<td><img src="image1" alt="Diagram" /></td>
<td>Height: 55 mm Width: 140 mm Depth: 80 mm</td>
</tr>
<tr>
<td>PM-SNL04</td>
<td><img src="image2" alt="Diagram" /></td>
<td>Height: 95 mm Width: 140 mm Depth: 50 mm</td>
</tr>
<tr>
<td>PM-SNL05</td>
<td><img src="image3" alt="Diagram" /></td>
<td>Height: 86 mm Width: 120 mm Depth: 50 mm</td>
</tr>
<tr>
<td>PM-SNL06</td>
<td><img src="image4" alt="Diagram" /></td>
<td>Height: 6 mm Width: 140 mm Depth: 20 mm</td>
</tr>
<tr>
<td>PM-SNL07</td>
<td><img src="image5" alt="Diagram" /></td>
<td>Height: 5 mm Width: 140 mm Depth: 20 mm</td>
</tr>
<tr>
<td>PM-SNL08</td>
<td><img src="image6" alt="Diagram" /></td>
<td>Height: 4 mm Width: 140 mm Depth: 20 mm</td>
</tr>
</tbody>
</table>

#### Noise filter

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Diagram</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-SNF01</td>
<td><img src="image7" alt="Diagram" /></td>
<td>Height: 50 mm Width: 50 mm Depth: 12 mm</td>
</tr>
<tr>
<td>PM-SNF02</td>
<td><img src="image8" alt="Diagram" /></td>
<td>Height: 54 mm Width: 50 mm Depth: 12 mm</td>
</tr>
<tr>
<td>PM-SNF03</td>
<td><img src="image9" alt="Diagram" /></td>
<td>Height: 80 mm Width: 50 mm Depth: 12 mm</td>
</tr>
<tr>
<td>PM-SNF04</td>
<td><img src="image10" alt="Diagram" /></td>
<td>Height: 58 mm Width: 50 mm Depth: 12 mm</td>
</tr>
<tr>
<td>PM-SNF05</td>
<td><img src="image11" alt="Diagram" /></td>
<td>Height: 60 mm Width: 50 mm Depth: 12 mm</td>
</tr>
<tr>
<td>PM-SNF06</td>
<td><img src="image12" alt="Diagram" /></td>
<td>Height: 120 mm Width: 50 mm Depth: 12 mm</td>
</tr>
<tr>
<td>PM-SNF07</td>
<td><img src="image13" alt="Diagram" /></td>
<td>Height: 150 mm Width: 50 mm Depth: 12 mm</td>
</tr>
</tbody>
</table>

#### Regenerative resistance

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Diagram</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-RB02</td>
<td><img src="image14" alt="Diagram" /></td>
<td>Length of lead wire: 320 mm Height: 25 mm</td>
</tr>
<tr>
<td>PM-RB04</td>
<td>30 Ω 500 W</td>
<td></td>
</tr>
<tr>
<td>PM-RB06</td>
<td>10 Ω 500 W</td>
<td></td>
</tr>
<tr>
<td>PM-RB08</td>
<td>68 Ω 500 W</td>
<td></td>
</tr>
<tr>
<td>PM-RB09</td>
<td>6 Ω 2,000 W</td>
<td></td>
</tr>
<tr>
<td>PM-RB10</td>
<td>15 Ω 2,000 W</td>
<td></td>
</tr>
</tbody>
</table>
### HYBRID HYDRAULIC UNIT

**Super Unit**

- **High Pressure - High Flow Rate**
- **Analog Command Input - High Accuracy**

Unparalleled energy-saving and high-accuracy servo-based pump PQ control system

Unique Offer from DAIKIN!!

- An extensive lineup of pump control systems covering a wide range of applications including presses and industrial machinery -

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**Contents in this catalog are subject to change for improvement without prior notice.**

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<table>
<thead>
<tr>
<th>Features</th>
<th>Specifications</th>
<th>Functions</th>
<th>Circuit Configuration</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Pressure</td>
<td>High Flow Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Command Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Specifications**

- Maximum Operating Pressure: 28 MPa
- Launch of new model with high pressure/high flow rate (Equipped with 37 kW equivalent IPM motor)
- Maximum Flow Rates: 300 L/min, 220 L/min

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**About Continuous and Short-time Rating Range**

- Pressure – Flow Rate Characteristics
- Pressure – Flow Rate Characteristics (Double pump)
- External Dimension Diagrams (Single pump)
- External Dimension Diagrams (Double pump)

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**Examples**

- Command Voltage - Control
- Pressure / Control Flow Rate Characteristic Examples
- About Continuous and Short-time Rating Range
- Pressure – Flow Rate Characteristics (Single pump)
- External Dimension Diagrams (Double pump)

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**External Dimension Diagrams**

- External Dimension Diagrams for Electrical Components
- Example Control Pressure – Flow Rate Characteristics

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**Maintenance Tool**

- (Hybrid-Win)
- External/Installation Dimension Diagrams for Electrical Components

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**Electric Wiring Diagrams**

- 8-PQ control
- Timing Chart of a Press
- Electric Wiring Diagram

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**External Dimension Diagrams**

- External Dimension Diagrams for Electrical Components
- Example Control Pressure – Flow Rate Characteristics

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**List of Electrical Components**

- External Dimension Diagrams
- External Dimension Diagrams (Single pump)
- External Dimension Diagrams (Double pump)

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**Home Page**