

Energy-Saving Control System for Hydraulic Units

Energy-saving effect can be obtained by adding this system to an existing unit and carrying out simple adjustments.



System Configuration

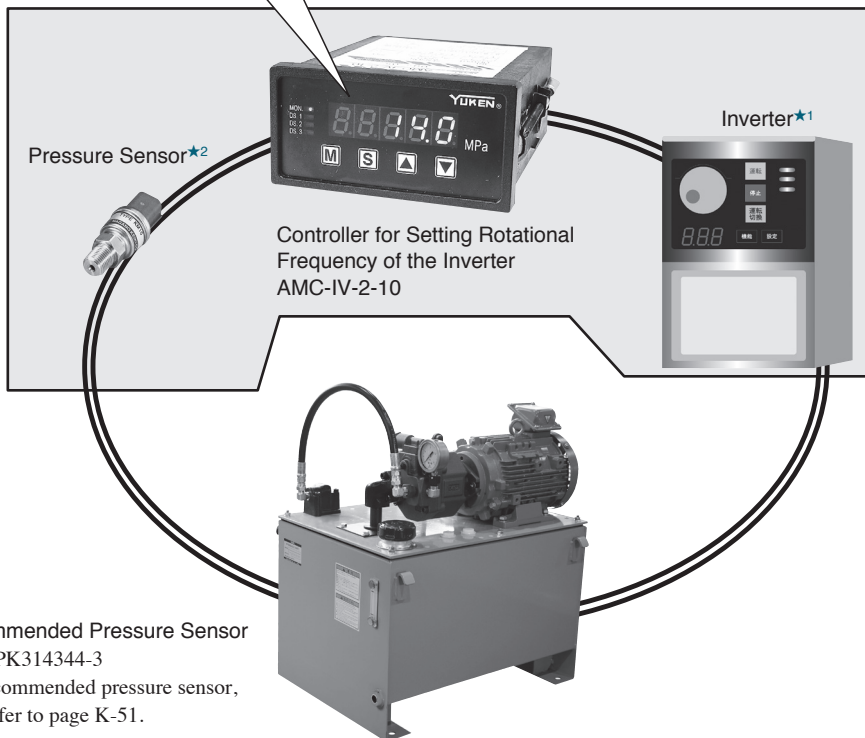
Use the hydraulic pump and electric motor of the current equipment, add the controller for setting rotational frequency of the inverter, the pressure sensor, and the inverter, and only carry out simple adjustments.

Due to adopt the select indication system, it is possible to indicate the five descriptions below.

- ① Input for pressure sensor (indicate pressure)
- ② Output for inverter
- ③ Simple power calculation value
- ④ Sequence input/output code
- ⑤ Alarm output code

★1. Recommended Inverter

A product which performance higher than the sensorless vector control type should be used.



★2. Recommended Pressure Sensor
 · 1501-PK314344-3
 As of recommended pressure sensor,
 please refer to page K-51.

Existing Hydraulic Unit
 Equipped with Variable Displacement Piston Pump and
 Induction Motor : 0.75 - 7.5 kW

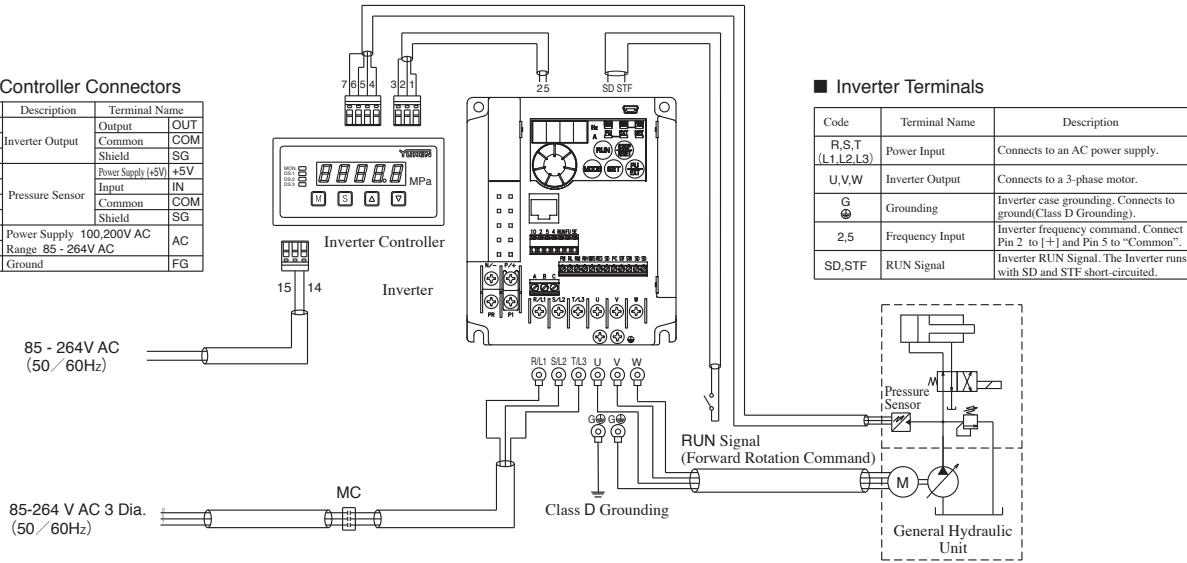
Inverter Connection Example

Controller Connectors

No.	Description	Terminal Name
1	Output	OUT
2	Inverter Output	Common
3	Shield	SG
4	Power Supply (+5V)	+5V
5	Pressure Sensor	IN
6	Input	Common
7	Shield	SG
14	Power Supply 100,200V AC	AC
15	Range 85 - 264V AC	AC
16	Ground	FG

Inverter Terminals

Code	Terminal Name	Description
R,S,T (L1,L2,L3)	Power Input	Connects to an AC power supply.
U,V,W	Inverter Output	Connects to a 3-phase motor.
G	Grounding	Inverter case grounding. Connects to ground(Class D Grounding).
2,5	Frequency Input	Inverter frequency command. Connect Pin 2 to [+] and Pin 5 to "Common".
SD,STF	RUN Signal	Inverter RUN Signal. The Inverter runs with SD and STF short-circuited.

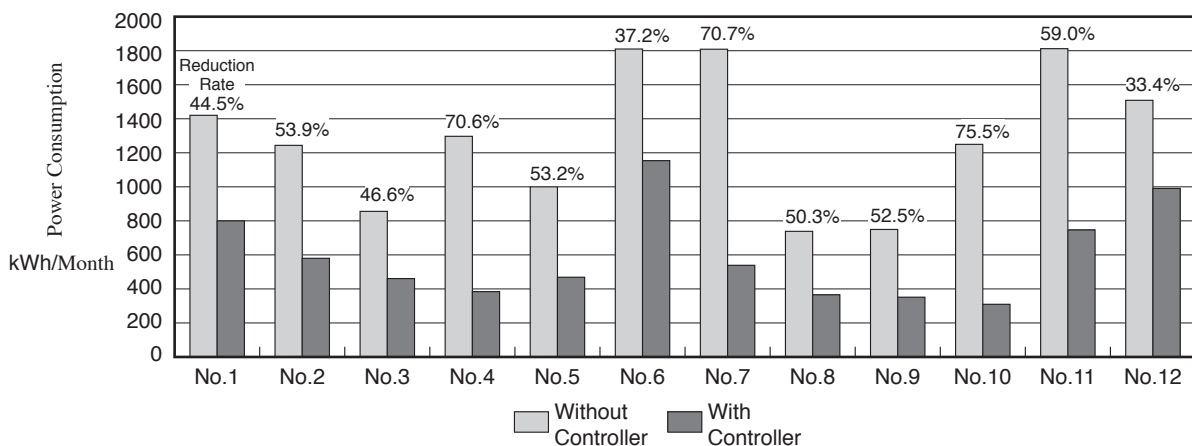


Example of Reduction Rate of Power Consumption

Machining Line for Automobile Parts

Operating Condition ① Operating Time / Day : 24 h Operating Days / Month : 22Days Total Operating Time / Month : 528 h
 ② Operating Time / Day : 18 h Operating Days / Month : 22Days Total Operating Time / Month : 396 h

NO.	Name of Machines	Hydraulic Pump			Electric Motor kW	Operating Condition	Cycle Time S	Power Consumption kWh/Month		Reduction Power kWh/Month	Reduction Rate %
		Type	Geometric Displacement of Pump cm ³ /rev	Pressure Setting MPa				Without Controller	With Controller		
1	Transfer Machine	Vane	100	3.5	7.5	①	76	1,424	790	634	44.5
2	Transfer Machine	Vane	100	3.6	7.5	①	76	1,243	573	670	53.9
3	Transfer Machine	Vane	100	2.6	7.5	②	77	849	453	396	46.6
4	Transfer Machine	Vane	75	3.4	5.5	①	77	1,300	382	918	70.6
5	Transfer Machine	Vane	75	3.2	5.5	②	59	999	468	531	53.2
6	Washing Machine	Vane	100	3.5	7.5	①	58	1,809	1,136	673	37.2
7	Gear Cutting Machine	Piston	63	4.0	5.5	①	16	1,811	530	1,281	70.7
8	Gear Cutting Machine	Piston	36.9	4.0	5.5	②	32	723	359	364	50.3
9	Gear Cutting Machine	Piston	36.9	4.0	5.5	②	42	735	349	386	52.5
10	Gear Cutting Machine	Vane	30	5.5	5.5	①	22	1,250	306	944	75.5
11	Gear Cutting Machine	Piston	36.9	5.2	5.5	①	46	1,811	742	1,069	59.0
12	Gear Cutting Machine	Vane	31.8	4.0	7.5	①	34	1,498	997	501	33.4
Total								15,452	7,085	8,367	54.1



■ Controller for Setting Rotational Frequency of the Inverter

● Specifications

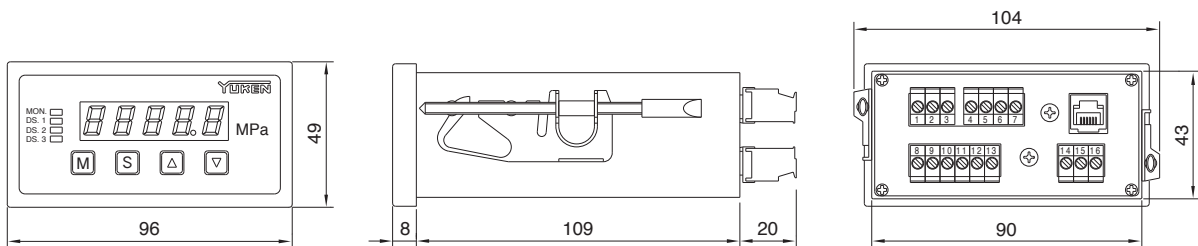
Descriptions	Model Numbers	AMC-IV-2-10
Output Voltage for Inverter		3 Ranges Selectable (0 - +5 V, +1 - +5 V, +0.5 - +4.5 V)
Input Voltage for Pressure Sensor		3 Ranges Selectable (0 - +5 V, +1 - +5 V, +0.5 - +4.5 V)
Power Supply for Pressure Sensor		+5 V Max. 0.5 W
Sequence Input Signal	AC Photocoupler Input Resistance to limit the Current 3.3 kΩ	
	Name	IN1 IN2 INC
	Description	RUN Alarm Reset Input Common
Sequence Output Signal	Open Collector Output (Photocoupler Insulated) Max. Supply Voltage 35 V · 50 mA	
	Name	OUT1 IN2 OUTC
	Description	Low Rotational Frequency Alarm Output Common
Voltage for Power Supply		85 - 264 V AC 50/60 Hz
Power Consumption		Less than 6 VA
Ambient Temperature		0 - 50°C
Mass		0.3 kg

● Model Number Designation

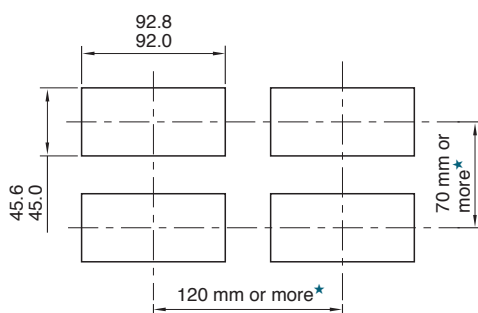
AMC-IV	-2	-10
Series Number	Function Category	Design Number
AMC-IV : Controller for Setting Rotational Frequency of the Inverter	2 : High-Function Type	10

- ★1. This energy-saving system has no model numbers as for system itself, so when ordering this system, please indicate the model numbers of the controller for setting rotational frequency of the inverter and those of the pressure sensor.
- ★2. Also available with the simple model (with auto-tuning function) that is easy to set up. For details, please contact us separately.

AMC-IV-2-10



Panel Cutout Dimensions



★The value for using several controllers.

Detail of Terminal Block

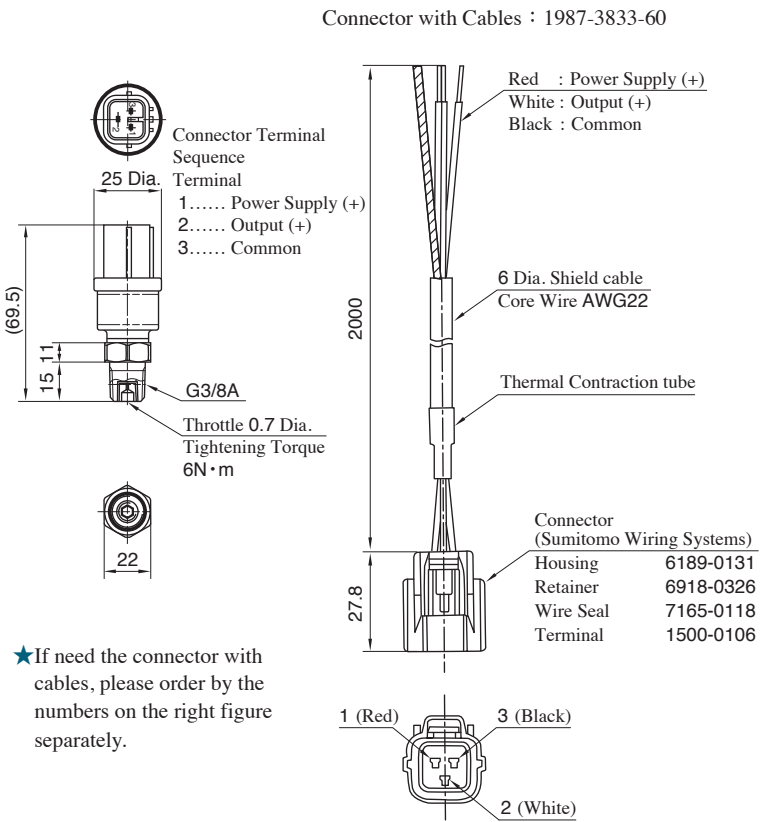
No.	Terminal Name	No.	Terminal Name
1	Output	11	Low Inverter Frequency Signal
2	Inverter Output	12	Sequence Output
	Common	COM	Alarm
3	Shield	SG	Output Common
4	Power Supply	+5V	AC
5	Pressure Sensor	IN	Power Supply Range 85 - 264 [V] AC
6	Common	COM	Power Supply 100·200 [V] AC
7	Shield	SG	Ground
8	Sequence Input	RUN	IN1
9	Alarm Reset	IN2	
10	Input Common	INC	

■ Pressure Sensor

1501-PK314344-3

Specifications

Model Numbers	1501-PK314344-3
Descriptions	
Rated Pressure Range	0 - 35 MPa
Allowable Max. Pres.	52.5 MPa
Output Range	0.5 - 4.5 V (Supply Voltage 5.00 V)
Supply Voltage	5.0±0.5 V DC (Output is proportional to supply voltage.)
Current Consumption	10 mA or less
Load Resistance	10 kΩ or more
Load Capacity	1000 pF or less
Output Impedance	10 Ω or less
Insulation Resistance	100 MΩ or more (50 V DC)
Voltage Resistance	150 V AC (1 min)
Precision	±1.0 % F.S. (23±2°C) ±3.0 % F.S. (Temperature Compensated Range)
Response Time	1 ms or less
Operating Temperature Range	-40 - +120°C
Temperature Compensated Range	-30 - +120°C
Vibration-Proof	147 m/s ² (33.3 - 200 Hz)
Shock-Proof	490 m/s ² (11 ms or less)
Dust-Proof / Water-Proof	IP 65
Approx. Mass	80 g



★If need the connector with cables, please order by the numbers on the right figure separately.