

2000

Electric Equipment of New shuttle Series 2000 Train for Saitama New Urban Transit Co., Ltd.

Recently, Saitama New Urban Transit Co., Ltd. has manufactured the series 2000 train to increase the carrying capacity to cope with the increasing number of passengers. The new series train will replace the current series 1000 train which has been operating for more than 20 years.

The series 2000 train is constructed of converter, inverter, and induction motor which are made of new technologies. The series is manufactured of six cars formation, and has two units configured as three cars a single unit.

Each unit has one converter, one inverter and three motors connected in parallel to provide compactness of the equipments. Moreover, this guarantees advantageous system in unit price and maintenance.

TOYO DENKI SEIZO K.K. has delivered the main control unit (C/I), traction motor, auxiliary power unit, power collection equipment, and master controller for the series 2000 train.

This report describes in details.

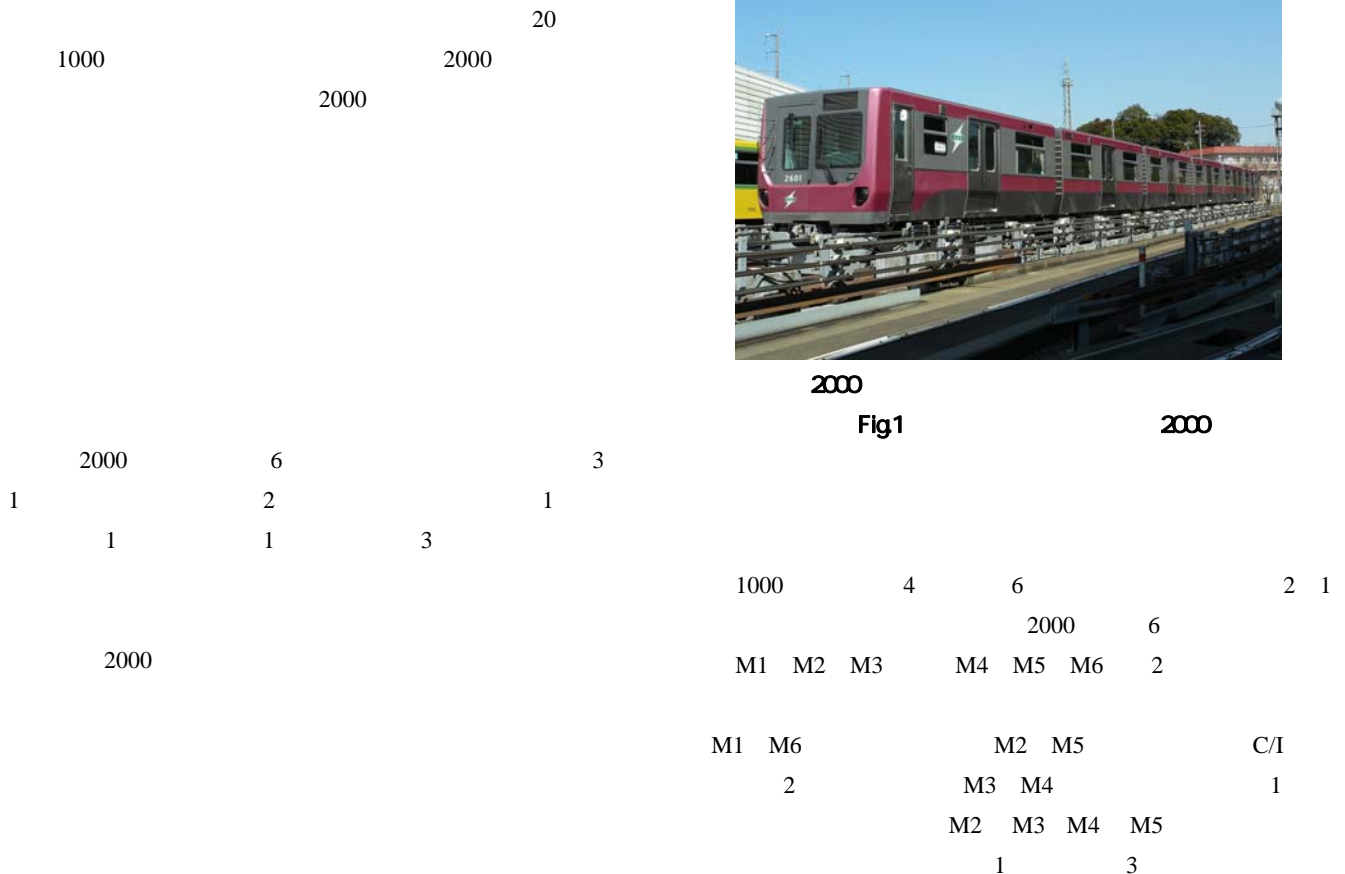
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2000

Fig1

2000



M1 M5 M6
M6 M5

70km/h

ATO

1000 2000

Table 1 Features of

	2000	1000
(mm)	8000	
(mm)	7550	
(mm)	2480	2300
(mm)	3240	3190
		SS
	11.8t	10.8t
	11 11.1t	10.5t
	52 49	59
	68 66	70
	600V 50Hz 3	
	2	3
	125kW	100kW
	6	
	6	6
	3	2
	60km/h (70km/h)	60km/h
	0.97m/s ² (3.5km/h/s)	
	0.97m/s ² (3.5km/h/s) 1.25m/s ² (4.5km/h/s)	
	3 5	3 4
1	DC100V() 5kW	DC100V() 4kW
2	3 200V 25kVA 2	3 200V 16kVA 3
	40Ah	30Ah
	2	3
	C1000	C400
	2	6
	ATC	

2000

C/I

1

3

1

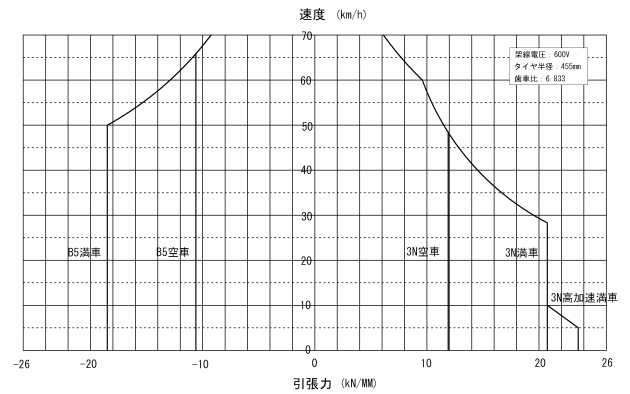


Fig.2 Powering Regenerative break
Characteristic curve

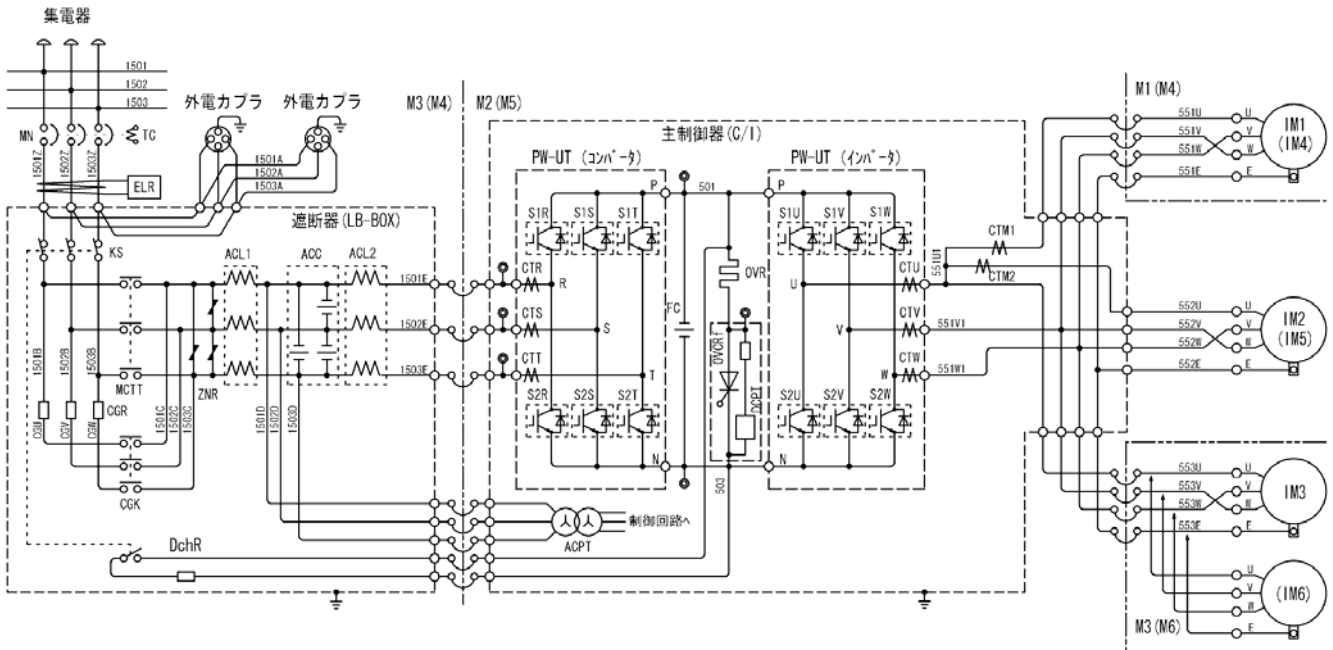


Fig.3 Traction power circuit schematics

- 4.1 **RG697-A-M**
- Cov-UT
 - FC
 - IGBT
 - ATO
 - Inv-UT
 - FC
 - Inv-UT



Fig.4 Main controller

Table 2 Specification of converter

	1	IGBT	2	PWM
		1700V	1200A	1S1P6A
				1.5kHz
		400	600V	3 50Hz
				5
				95
				DC900V
				650A

- 4.1.1 125kW 3 IGBT

- 4.1.2 1 3

PWM

9 1

1000

2000



Fig5 Circuit breaker

Table 3 Specification of Inverter

	IGBT	2	PWM
	1700V	1200A	1S1P6A
		DC900V	
		AC700V	
		400A	

4.3

S4389-A-M

100V

600V

200V

100V

ATC

Table 5 Specification of Auxiliary power supply

		550V	3	50Hz
1				5kW
				DC100V
				50A
2				25kVA
			3	200V
				72A
				F

4.2

SA138-A-M

C/I

Table 4 Specification of circuit breaker

	600V	3	50Hz
	800A		
	600V	3	50Hz
	800A		
	600V	3	50Hz
	330A		

4.4

TDK6450-A

ATC

2

1

1

2

3

