

MITSUBISHI

Controller: ZAPI AC-2 TRACTION INVERTER 48V 350A
Program version: AC2R00.16
Zapi's serial number from:

Rev. 9
Date 15.02.2005

CONNECTION TYPE: 2	TRUCK TYPES:											NOTE
	RB14XE	RB14K	RB16KC/KN	RB16K	RB20K	RB25KH					DEFAULT	
MAIN MENU/ PARAMETER CHANGE:												
ACCELER. DELAY I	2	2	2	2	2	2					2	
ACCELER. DELAY II	2	2	2	2	2	2					2	
ACCELER. DELAY III	1	1	1	1	1	1					1	
RELEASE BRAKING I	5	5	5	5	5	5					5	
RELEASE BRAKING II	5	5	5	5	5	5					5	
RELEASE BRAKING III	6	6	6	6	6	6					6	
INVERSE BRAKING I	6	6	6	6	6	6					6	
INVERSE BRAKING II	6	6	6	6	6	6					6	
INVERSE BRAKING III	7	7	7	7	7	7					7	
PEDAL BRAKING I	8	8	8	8	8	8					8	
PEDAL BRAKING II	8	8	8	8	8	8					8	
PEDAL BRAKING III	8	8	8	8	8	8					8	
SPEED LIMIT BRK.	0	0	0	0	0	0					0	
MAX SPEED FORW I	70	70	70	70	70	70					70	
MAX SPEED FORW II	90	90	90	90	90	90					90	
MAX SPEED FORW III	100	100	100	100	100	100					100	
MAX SPEED BACK I	70	70	70	70	70	70					70	
MAX SPEED BACK II	90	90	90	90	90	90					90	
MAX SPEED BACK III	100	100	100	100	100	100					100	
FREQUENCY CREEP	0,3	0,3	0,3	0,3	0,3	0,3					0,3	
MAXIMUM CURRENT I	9	9	9	9	9	9					9	
MAXIMUM CURRENT II	9	9	9	9	9	9					9	
MAXIMUM CURRENT III	9	9	9	9	9	9					9	
AUXILIARY TIME	2	2	2	2	2	2					2	
CONFIG MENU/ SET OPTIONS:												
HOUR COUNTER	RUN	RUN	RUN	RUN	RUN	RUN					RUN	
BATTERY CHECK	ON	ON	ON	ON	ON	ON					ON	
CUTBACK MODE	ABS	ABS	ABS	ABS	ABS	ABS					ABS	
HYDRO KEY ON	OFF	OFF	OFF	OFF	OFF	OFF					OFF	
STOP ON RAMP	OFF	OFF	OFF	OFF	OFF	OFF					OFF	
AUX OUTPUT#1	BRA	BRA	BRA	BRA	BRA	BRA					BRA	
PEDAL BRAKING	DIG	DIG	DIG	DIG	DIG	DIG					DIG	
SET TEMPERATURE	ANA	ANA	ANA	ANA	ANA	ANA					ANA	
ADJUSTMENTS:												
SET BATTERY TYPE	48	48	48	48	48	48					48	
ADJUST BATTERY	B V	B V	B V	B V	B V	B V					B V	set measured battery voltage
THROTTLE 0 ZONE	7	7	7	7	7	7					7	
THROTTLE X POINT	63	63	63	63	63	63					63	
THROTTLE Y POINT	36	36	36	36	36	36					36	
ADJUSTMENT #04	120	120	120	120	120	120					120	
ADJUSTMENT #03	35	35	35	35	35	35					35	
ADJUSTMENT #02	6	6	6	6	6	6					3	
ADJUSTMENT #01	6	6	6	6	6	6					3	
ALARM/ZAPI MENU/ HARDWARE SETTING:												
SAT FREQUENCY	60	60	60	60	75	75					60	
BRAKING MODUL	80	80	80	80	85	85					80	
MAXSLIP LOW FREQ	3,5	3,5	3,5	3,5	3	3					3,5	

7 PEDAL BRAKING

- ANALOG: the mechanical brake pedal has a switch and a potentiometer installed. When the accelerator is released and the pedal brake is pushed the inverter performs an electrical braking whose intensity is proportional to the brake pedal potentiometer. The minimum intensity is established by the "Release braking" parameter, when the brake pedal is slightly pressed (brake switch close but brake potentiometer at the minimum). The maximum intensity is established by the "Pedal braking" parameter when the brake pedal is fully pressed (brake potentiometer at the maximum). In the middle positions, the electrical braking intensity is a linear function between minimum and maximum intensity.
- DIGITAL: The truck does not have a potentiometer installed on the mechanical brake pedal, but only a microswitch; when the accelerator pedal is released and the brake pedal is pushed (brake switch closed), the inverter performs an electrical braking following "Pedal braking" parameter.

8 SET TEMPERATURE

- DIGITAL: a digital (ON/OFF) motor thermal sensor is connected to F6 input.
- ANALOG: an analog motor thermal sensor is connected to F6 (the curve can be customized on a customer request).
- NONE: no motor thermal sensor switch is connected.

SUBMENU "ADJUSTEMENT"

- 1 SET POT BRK MIN: records the minimum value of braking pedal potentiometer when the braking pedal switch is closed; the procedure is similar to the "Program Vacc" function (see chapter 5.4). This procedure must be carried out only if the "Pedal braking" option is programmed as "Analog".
- 2 SET POT BRK MAX: records the maximum value of braking pedal potentiometer when the braking pedal is fully pressed; the procedure is similar to the "Program Vacc" function (see chapter 5.4). This procedure must be carried out only if the "Pedal braking" option is programmed as "Analog".
- 3 SET BATTERY TYPE: selects the nominal battery voltage;
- 4 ADJUST BATTERY: fine ajustement of the battery voltage measured by the controller.
- 5 ADJUSTMENT #04: this parameter determines the motor temperature level at which the "Motor temperature" alarm is signalled. The range is from 70°C to 160°C with 10°C steps. This parameter must be adjusted only if the "Set temperature" (menu "Set option") parameter is programmed "Analog".

mitsubishi

Controller:

ZAPI AC-2 PUMP INVERTER 48V 350A

Rev. 11

Date 15.02.05

Program version:

ACRO0.16

Zapi's serial number from:

CONFIG MENU

SET MODEL

NOT AVAILABLE

SET OPTIONS

hour counter	RUNNING
BATTERY CHECK	OFF
SET TEMPERATURE	ANALOG

ADJUSTMENTS

SET BATTERY TYPE	V	48
ADJUST BATTERY	V	BATTERY VOLTAGE
THROTTLE 0 ZONE	%	11
THROTTLE X POINT	%	63
THROTTLE Y POINT	%	36
ADJUSTMENT #04	°	120
ADJUSTMENT #03	°	55

MAIN MENU

PARAMETER CHANGE

ACCELER. DELAY	0	1	2	3	4	5	6	7	8	9
DECELER. DELAY	0	1	2	3	4	5	6	7	8	9
MAX SPEED UP	Hz	110								
MIN SPEED UP	Hz	0								
MAXIMUM CURRENT	0	1	2	3	4	5	6	7	8	9

MITSUBISHI

Controller: ZAPI EPS AC 48V 40A (50A)
Program version: EPS AC ST RO 1.02-1.03
Zapi's serial number from:

Rev. 6
Date 15.02.05

CONFIG MENU

SET MODEL

CONNECTED TO	(6)
SYSTEM CONFIG	0

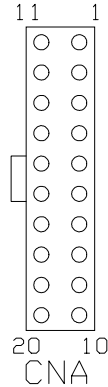
SET OPTIONS

HOUR COUNTER	RUNNING
MICRO CHECK	PRESENT
ENCODER CONTROL	OFF
FEEDBACK DEVICE	OPTION #1
LIMIT DEVICE	OFF
DIRECTION GAUGE	OPTION #1
AUTO INPUT ACTIV	1
AUX FUNCTION	0

ADJUSTMENTS

ADJUSTMENT #01		0	
SET CURRENT		0	
ADJUSTMENT #02		100,0	
ADJUSTMENT #03	%	(106,6)	FACTORY ADJUSTED
ADJUSTMENT #04	%	(113,3)	FACTORY ADJUSTED
SET BATTERY TYPE	V	48	
SET SAT. FREQ.	Hz	100,0	
OVERSAT FREQ.	Hz	1	
MAXIMUM SLIP	Hz	5,00	
ZERO SP POT	V	2,5	
SET STEER 0-POS.	mV	2500	
SET MIN FB POT	V	0,4	
SET MAX FB POT	V	4,4	
AUX VOLTAGE #1	mV	2500	AUTO ADJUSTED

8.2 CNA CONNECTOR



TAB. A CONN. CODE	
1	NPOT
2	PPOT
3	CANH
4	CANH
5	FWD
6	VCC
7	GND
8	GND
9	PPOC
10	QLS
11	CPOT
12	K3
13	CANL
14	CANL
15	REV
16	CHA
17	CHB
18	INDIC
19	PPOC2
20	DLS

- | | | |
|---|------|--|
| 1 | NPOT | This is the lower voltage connection for the steer feedback potentiometer. It's internally connected to GND through a 470 Ohms resistance. |
| 2 | PPOT | This is the higher voltage connection for the steer feedback potentiometer. It's internally connected to a 5Vdc reference through a 470 Ohms resistance . |
| 3 | CANH | This is the high reference of the CAN interface. |
| 4 | CANH | Same of pin #3. Pin #3 and #4 are internally connected together. |
| 5 | FWD | A request to travel in the Drive Unit direction must provide a signal on this input, either at battery positive or battery negative. Either level may be selected configuring Jumper J2. |
| 6 | VCC | Optional encoder supply. When an encoder is used it may be supplied through this pin. The output voltage is selected through the jumper J8 (see. 5). |
| 7 | GND | This is internally connected to ground (battery minus) reference. It may be used for the GND reference of the optional encoder or for the stepper motor (manual command device). |
| 8 | GND | This is internally connected to ground (battery minus) reference. It may be used for the GND reference of the steer angle direction Led gauge. |
| 9 | PPOC | Not Used. This is the higher voltage connection for a handwheel set point potentiometer. This steering option requires modifications on the logic card and cannot be carried out when a tachogenerator or a stepper motor card is chosen. This pin is internally connected to a 5Vdc reference through a 470 Ohms resistance. |

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