Wiring diagram pages list

Pin configuration MCM

Signal ID	J1 pin	Interface type	Input / Output	Description
A1	1	CAN0 High	Bus	Maximum speed 1Mbps/wake
A2	2	CAN0 Low	Bus	Maximum speed 1Mbps/wake
A3	3	Type 7	Out	LDO, Failure mode
A4	4	Type 7	Out	LDO
A5	5	Type 7	Out	LDO
A6	6	Type 8	Out	LDO
A7	7	Type 8	Out	LDO
A8	8	GND	In	
A9	9	Vbat	In	
A10	10	Type 8	Out	LDO
A11	11	Type 10	Out	HDO
A12	12	Type 9B	Out	HDO
A13	13	Type 9B	Out	HDO
A14	14	Type 9A	Out	HDO
A15	15	Type 9A	Out	HDO
A16	16	Type 9A	Out	HDO, Failure mode
A17	17	Type 10	Out	HDO, Failure mode
A18	18	Type 9A	Out	HDO
A19	19	Type 13	Out	C3O
A20	20	Network ID 1	In	
A21	21	Network ID 2	In	
A22	22	EOL enable	In	
A23	23	Network ID 3	In	
A24	24	Type 11	Out	HLDO
A25	25	Type 11	Out	HLDO
A26	26	Type 5	In	HDI
A27	27	CAN2 High	Bus	Maximum speed 1Mbps/wake
A28	28	CAN2 Low	Bus	Maximum speed 1Mbps/wake
A29	29	GND	In	
A30	30	Vbat	In	

Signal ID	J1 pin	Interface type	Input / Output	Description
B1	1	Type 1	In	LDI, HDI
B2	2	Type 1	In	LDI, HDI, Failure mode
B3	3	Type 2	In	HDI
B4	4	Type 4a	In	HDI, Interrupt/Wake
B5	5	Type 3	In	LDI, Interrupt/Wake
B6	6	Type 4a	In	HDI Failure mode, Interrupt/Wake
B7	7	RS232 TxD	Bus	Maximum speed 115,2kbps
B8	8	RS232 RxD	Bus	Maximum speed 115,2kbps
B9	9	Type 1	In	LDI, HDI
B10	10	Type 1	In	LDI, HDI
B11	11	Type 1	In	LDI, HDI
B12	12	RS232 GND	In	
B13	13	Type 1	In	LDI, HDI
B14	14	Type 1	In	LDI, HDI
B15	15	Type 4B	In	Interrupt/Wake
B16	16	Type 1	In	LDI, HDI
B17	17	Type 1	In	LDI, HDI
B18	18	GND	In	
B19	19	MasterID Supply	In	
B20	20	NC		
B21	21	Type 1	In	LDI, HDI
B22	22	Type 1	In	LDI, HDI
B23	23	Type 1	In	LDI, HDI
B24	24	RS232 CTS	In	
B25	25	Type 6	In	HAI
B26	26	Type 6	In	HAI
B27	27	RS232 RTS	Out	
B28	28	Type 12	Out	HDO 5V
B29	29	Type 9	Out	HDO
B30	30	NC		

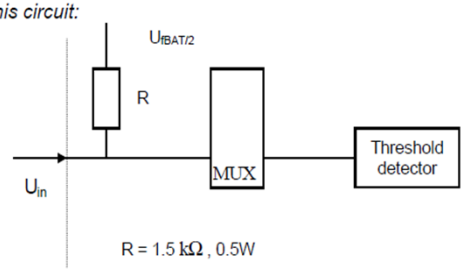
Wiring diagram pages list

Pin configuration MCM

Interface Circuit type 1, General purpose digital input

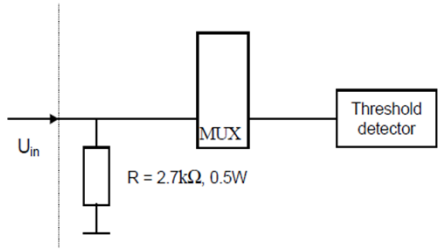
The input can be used as a general input circuit interfacing to switches closing to ground and to battery (LDI/HDI). It can also be used to interface with resistive switches and sensors.

DC model of this circuit:



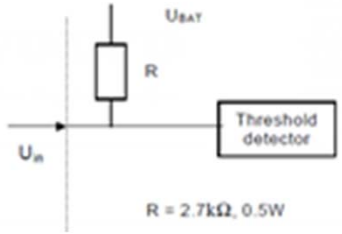
Input circuit type 2, High side digital input

DC model of input circuit type 2. The input is used to interface with switches closing to battery voltage (HDI).



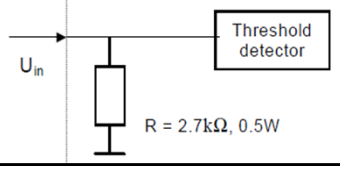
Input circuit type 3, Low side digital input, interrupt

DC model of input circuit type 3. The input is used to interface with switches closing to ground voltage (LDI).



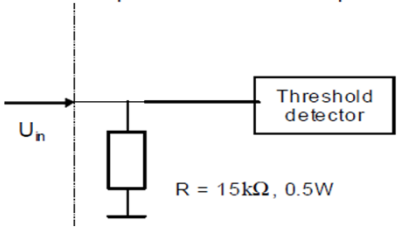
Input circuit type 4a, High side digital input, interrupt

DC model of input circuit type 4. The input is used to interface with switches closing to battery voltage (HDI)



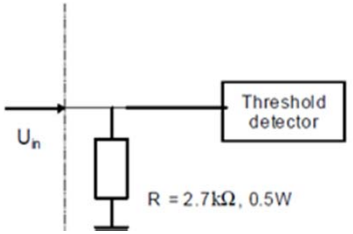
Input circuit type 4b, High side digital input, interrupt

The input is used to wake up the CECM from sleep mode.



Input circuit type 5, High side digital input

DC model of input circuit type 5. the inputs is used to interface with switches closing to battery voltage

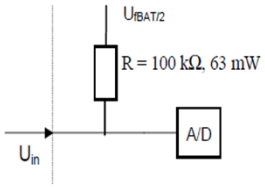


Wiring diagram pages list

Pin configuration MCM

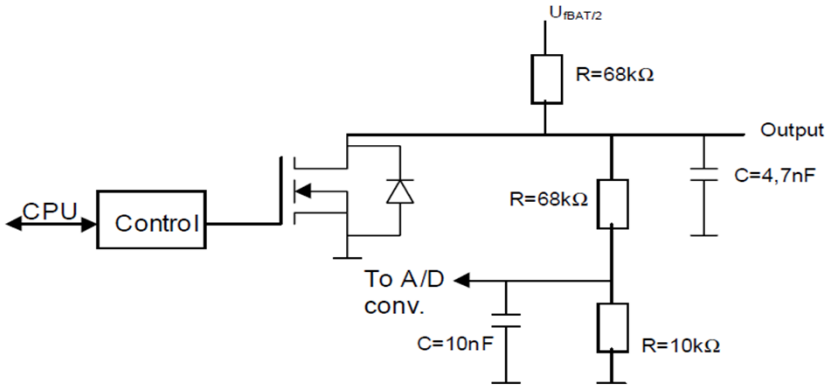
Input circuit type 6, Analogue input

The circuit is used as interface to variable voltage sources such as potentiometers and analogue sensors (HAI).
DC model of input circuit type 6:



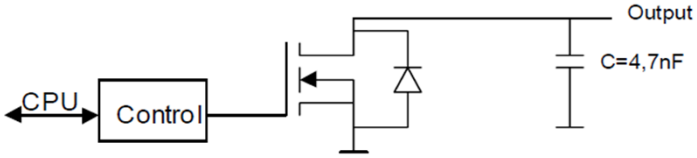
Output circuit type 7, LDO.

The figure below gives a schematic overview of the output type 7.



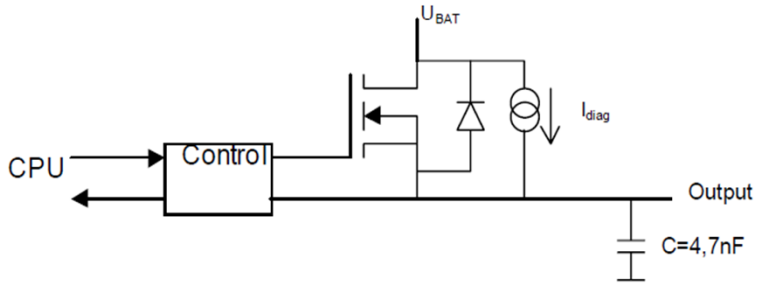
Output circuit type 8, LDO.

The figure below gives a schematic overview of the output type 8.



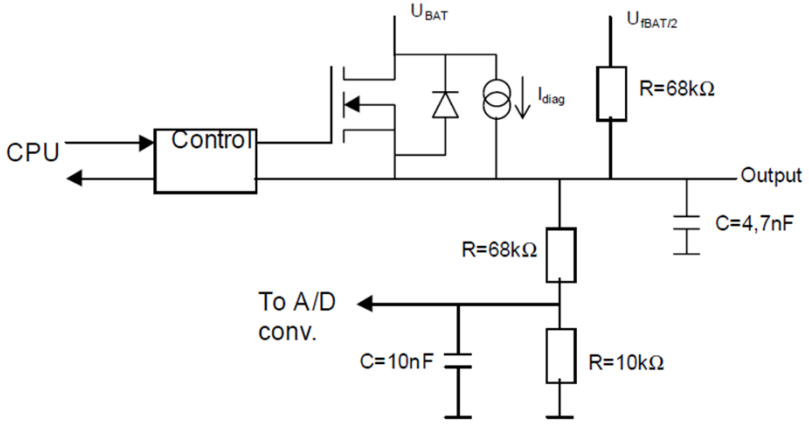
Output circuit type 9 a/b, HDO.

The figure below gives a schematic overview of the output type 9 a/b.



Output circuit type 10, HDO.

The figure below gives a schematic overview of the output type 10.

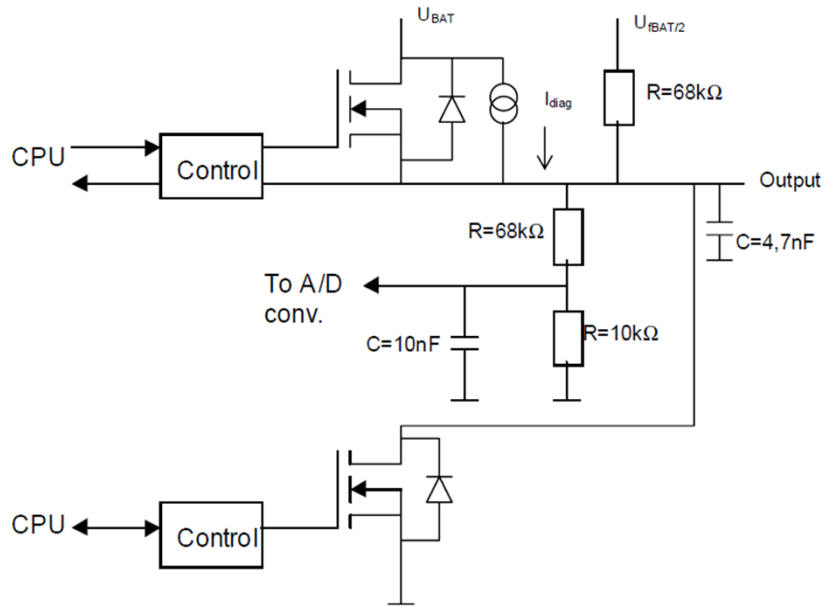


Wiring diagram pages list

Pin configuration MCM

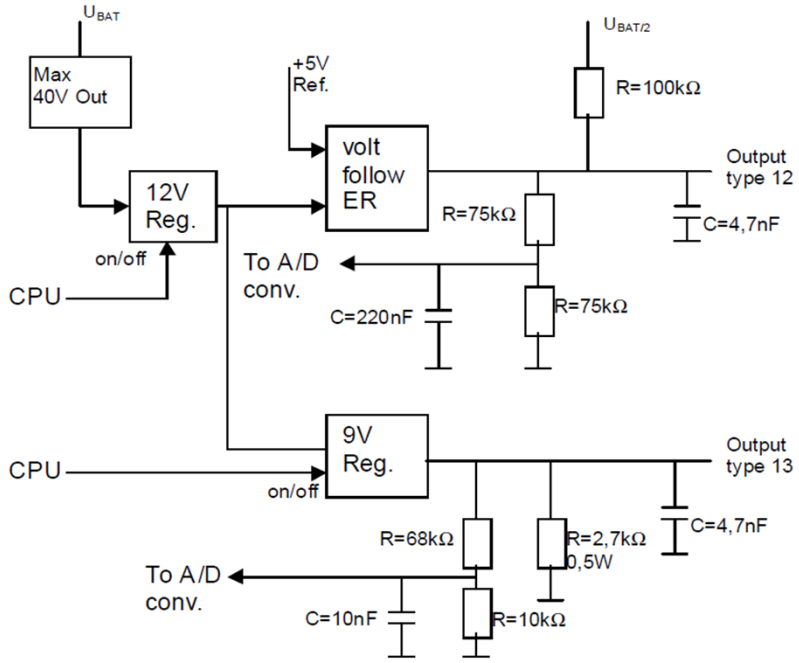
Output circuit type 11, L/HDO, PWM_{out}.

The figure below gives a schematic overview of the output type 11.



Output circuit type 12, HDO, 5V output and type 13, HDO.

The figure below gives a schematic overview of the output type 12 and 13.



Wiring diagram pages list

Pin configuration I/O-A+

Signal ID	J1 pin	Interface type	Input / Output	Description	Max current average	Max current peak
J1-1	1	4c	Out	HDO, LDO, HLDO, HPO	1A	1A
J1-2	2	1a, 1b, 1c	In	HDI, LDI, HLDI, RES, RES32K, AI5V, RAI, CNTR1, CNTR2	*	*
J1-3	3	4c	Out	HDO, LDO, HLDO, HPO	1A	1A
J1-4	4	4c	Out	HDO, LDO, HLDO, HPO	1A	1A
J1-5	5	1a, 1b, 1c	In	HDI, LDI, HLDI, RES, RES32K, AI5V, RAI, CNTR1, CNTR2	*	*
J1-6	6	GND	In	Analog GND	*	*
J1-7	7	4c	Out	HDO, LDO, HLDO, HPO	1A	1A
J1-8	8	Network ID	In	NI	*	*
J1-9	9	Network ID	In	NI	*	*
J1-10	10	4c	Out	HDO, LDO, HLDO, HPO	1A	1A
J1-11	11	Network ID	In	NI	*	*
J1-12	12	Network ID	In	NI	*	*
J1-13	13	4c	Out	HDO, LDO, HLDO, HPO		
J1-14	14	Network ID	In	NI	*	*
J1-15	15	Network ID		NI	*	*
J1-16	16	4b	Out	HDO, LDO, HLDO, HPO, LPO		
J1-17	17	1a, 1c	In	HDI, LDI, HLDI, RES, RES32K, AI5V, RAI, CNTR1	*	*
J1-18	18	GND	In	GND	*	*
J1-19	19	4b	Out	HDO, LDO, HLDO, HPO, LPO	1A	1A
J1-20	20	1a, 1c	In	HDI, LDI, HLDI, RES, RES32K, AI5V, RAI	*	*
J1-21	21	1a	In	HDI, LDI, HLDI, RES, RES32K, AI5V, RAI	*	*

Signal ID	J1 pin	Interface type	Input / Output	Description	Max current average	Max current peak
J2-6	6	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-7	7	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-8	8	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-9	9	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-10	10	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-11	11	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-12	12	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-13	13	1a	In	HDI, LDI, HLDI, RAI	*	*
J2-14	14	GND	Out	Analog GND	*	*
J2-15	15	3a, 5	Out	HDO, REFCTL	50mA	50mA

Wiring diagram pages list

Pin configuration I/O-B+

Signal ID	J1 pin	Interface type	Input / Output	Description	Max current average	Max current peak
J1-1	1	4d	Out	HDO, LDO, HLDO, HPO, LPO	16A	20A
J1-2	2	*	*	*	*	*
J1-3	3	4d	out	HDO, LDO, HLDO, HPO, LPO	16A	20A
J1-4	4	3c	Out	HDO	10A	20A
J1-5	5	GND	*	*	*	*
J1-6	6	GND	Out	Analogue GND	*	*
J1-7	7	3c	Out	HDO	10A	20A
J1-8	8	NI	*	*	*	*
J1-9	9	NI	*	*	*	*
J1-10	10	3c	Out	HDO	10A	20A
J1-11	11	NI	*	*	*	*
J1-12	12	NI	*	*	*	*
J1-13	13	3c	Out	HDO	10A	20A
J1-14	14	NI	*	*	*	*
J1-15	15	NI	*	*	*	*
J1-16	16	3c	Out	HDO	10A	20A
J1-17	17	GND	*	*	*	*
J1-18	18	GND	*	*	*	*
J1-19	19	3c	Out	HDO	10A	20A
J1-20	20	1a	In	HDI, LDI, HLDI, RAI	*	*
J1-21	21	1a	In	HDI, LDI, HLDI, RAI	*	*

Signal ID	J1 pin	Interface type	Input / Output	Description	Max current average	Max current peak
J2-1	1	4d	Out	HDO, LDO, HLDO, HPO, LPO	10A	20A
J2-2	2	GND	*	*	*	*
J2-3	3	GND	*	*	*	*
J2-4	4	4d	Out	HDO, LDO, HLDO, HPO, LPO	10A	20A
J2-5	5	1a, 2b, 6	In	HDI, LDI, HLDI, RAI, AI5V, RES, RES32K, CNTR, wake-up	*	*
J2-6	6	1a, 2b, 6	In	HDI, LDI, HLDI, RAI, AI5V, RES, RES32K, CNTR, wake-up	*	*
J2-7	7	4c	In	HDO, LDO, HLDO, HPO	10A	20A
J2-8	8	1a,1b,1c	In	HDI, LDI, HLDI, RAI, AI5V, RES, RES32K	*	*
J2-9	9	1a,1b,1c	In	HDI, LDI, HLDI, RAI, AI5V, RES, RES32K	*	*
J2-10	10	4c	Out	HDO, LDO, HLDO, HPO	10A	20A
J2-11	11	1b, 1c	In	AI5V, RES, RES32K	*	*
J2-12	12	1b, 1c	In	AI5V, RES, RES32K	*	*
J2-13	13	3e	Out	HDO, LDO, HLDO	10A	20A
J2-14	14	GND	Out	Analogue GND	*	*
J2-15	15	5	Out	REFMEA	< 50 mA	*

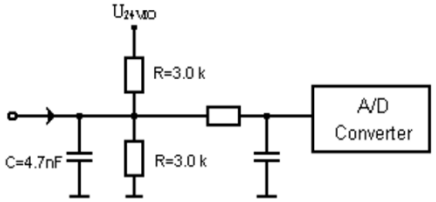
Wiring diagram pages list

Pin configuration I/O-A+ and I/O-B+

Interface circuit 1a

The input can be used for both digital and analogue signals that have U_{24VIO} as reference. The circuit shall sink 8 mA when connected to U_{24VIO} or source 8 mA when connected to GND. The input shall be converted from analog voltage to digital 10 bit resolution with scaling relative to U_{24VIO}.
The input shall be regarded as a power line according to "Volvo Technical Regulation 15 79 908, EMC Requirements".

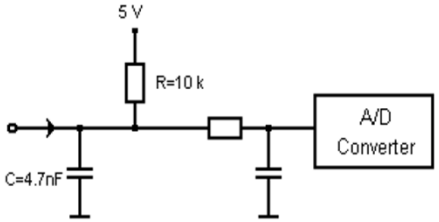
Model of the input circuit:



Interface circuit 1b

The input is used for resistive sensors. The circuit shall supply 5 V through a resistor of 10 kΩ. When used to measure temperature, the output current to the sensor shall then be minimised to avoid internal power dissipation in the sensor.

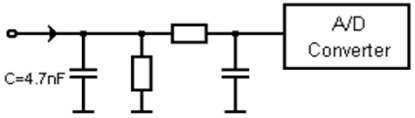
Model of the input circuit:



Interface circuit 1c

The input can be used for both digital and analogue signals.
The total input resistance ,R_{tot} = R // $R_{A/D}$, shall be 100 kΩ < R_{tot} < 500 kΩ.

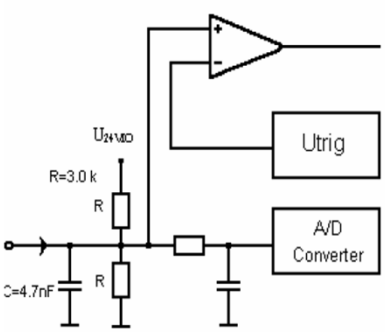
Model of the input circuit:



Interface circuit 2b

Pulse input circuit. The input can be used for both digital and analogue signals and as pulse counter input with fixed trigger level. The circuit shall sink or source 8 mA at U24VIO = 28 V when connected to U24VIO or GND.

Model of input circuit:



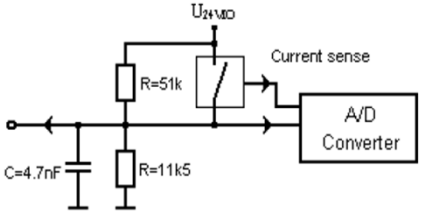
Interface circuit 3a

Model of high side output stage circuit same as interface circuit 3b in Chapter 2.3.1.5.2, but without PWM capability and no biasing resistors for open circuit detection.

Interface circuit 3c

High side output circuit. The switch provides current sense signal to an A/D converter. To detect open circuit when the switch is open the interface shall sink approximately 2 mA when connected to U_{24VIO} = 28V or source approximately 0.5 mA when connected to GND. The voltage shall be converted to digital 10 bit resolution with scaling relative to U_{24VIO}. The interface shall not be regarded as a power line according to "Volvo Technical Regulation 15 79 908, EMC Requirements".

Model of the output circuit:



Wiring diagram pages list

Pin configuration I/O-A+ and I/O-B+

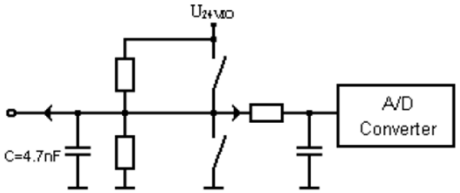
Interface circuit 3e

Model of high side, low side output stage. This circuit is similar to circuit 4b but without PWM drive capabilities.

Interface circuit 4b

Totem pole output stage may be used as high side, low side or high/low switch. Capable of low frequency PWM driving high side or low side switch but not both synchronously Open circuit voltage shall be approximately 9,2 V / $U_{24VIO=28V}$. When the switch is open the interface shall sink approximately 2 mA if connected to $U_{24VIO=28V}$ or source 0.5 mA when connected to GND. The voltage shall be converted to digital 10 bit resolution with scaling relative to U_{24VIO}. The interface shall not be regarded as a power line according to "Volvo Technical Regulation 15 79 908, EMC Requirements".

Model of the output circuit:



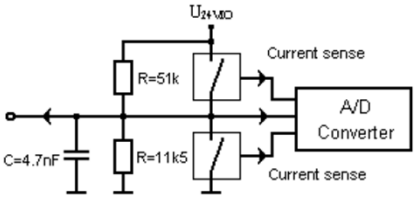
Interface circuit 4c

Model of high side, low side output stage. This circuit is similar to circuit 4b but without low side PWM drive capabilities.

Interface circuit 4d

Totem pole output stage may be used as high side, low side or high/low switch. Capable of low frequency PWM driving high side or low side switch but not both synchronously. Both switches provide current sense signal to an A/D converter. To detect open circuit when the switches are open the interface shall sink approximately 2 mA when connected to $U_{24VIO = 28V}$ or source approximately 0.5 mA when connected to GND. The voltage shall be converted to digital 10 bit resolution with scaling relative to U_{24VIO}. The interface shall not be regarded as a power line according to "Volvo Technical Regulation 15 79 908, EMC Requirements".

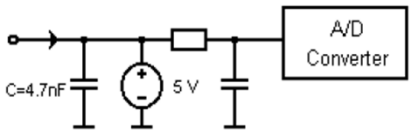
Model of the output circuit:



Interface circuit 5

Model of a 5 V reference voltage supply for potentiometers and pressure sensors.
Supply current 20 mA, current limited to < 50 mA.

Model of the output circuit:



Interface circuit 6

The pin is used for interrupt the ECU. Same interface as circuit 1a. The application software can initiate the interrupt function. The pin is used for waking-up the ECU from sleep mode.

Wiring diagram pages list

Radiator fans drive junction box