Vapor Bus International
A Wabtec company

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CLASS ™

SPECIFICATIONS AND I/O

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1.0 GENERAL

CLASS™ SPECIFICATIONS

Temperature

Operating Temperature Range (Full Performance): -30ºC to +60ºC

Operating Temperature Range (Degraded Performance): -40ºC to -30ºC, +60ºC to +75ºC

Storage Temperature Range: -40ºC to +80ºC

(Degraded Performance Operating Temperature is defined as the temperature range over which the unit may be powered up and operational without damage but may not meet all specified performance ratings).

Humidity

Relative Humidity: ≤ 95% (Non-Condensing)

Voltage

Supply Voltage: +11 VDC to +30 VDC (Nominal: +12 or +24 VDC)

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2.0 TABLE 1 - VEHICLE I/O (J1)

Wire Designation	Source/ Destination	Signal Requirements	J1
POWER			
PWR	On/Off Switch	+11 to +30 VDC when Bus is ON	18
		0 VDC when Bus is OFF	
GND	Bus	Vehicle Ground	24
[*Optiona*l] **SWPW**	Bus	+18 to +29 VDC when CLASS™ is to be ON	21
		0 VDC when CLASS™ is to be OFF	
[*Optiona*l] **On12**	On/Off Switch	+12 VDC (Nominal) when CLASS™ is to be ON	22
		0 VDC when CLASS™ is to be OFF	
[*Optional*] **On24**	On/Off Switch	+24 VDC (Nominal) when CLASS™ is to be ON	23
		0 VDC when CLASS™ is to be OFF	
INPUTS			
DFO	Baseplate	High (+12-24V) when Door IS Fully Open	1
		Low (GND or OPEN) when Door is NOT Fully Open	
/DFO	Baseplate	High (+12-24V or OPEN) when Door is NOT Fully Open	2
		Low (GND) when Door IS Fully Open	
DAI	Bus	High (+12-24V) to ACTIVATE “Drunk Alarm” mode (when door is NOT enabled)	3
		Low (GND or OPEN) to DEACTIVATE “Drunk Alarm” mode (when door is NOT enabled)	
/DAI	Bus	High (+12-24V or OPEN) to DEACTIVATE “Drunk Alarm” mode (when door is NOT enabled)	4
		Low (GND) to ACTIVATE “Drunk Alarm” mode (when door is NOT enabled)	
DNC	Baseplate	High (+12-24V) when door is open LESS than 5 º	5
		Low (GND or OPEN) when door is open GREATER than 5 º	
/DNC	Baseplate	High (+12-24V or OPEN) when door is open GREATER than 5 º	6
		Low (GND) when door is open LESS than 5 º	
ENA	Baseplate / Green Light	High (+12-24V) when door IS enabled (unlocked)	7
		Low (GND or OPEN) when door is NOT enabled	

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Wire Designation	Source/ Destination	Signal Requirements	J1
/ENA	Baseplate / Green Light	High (+12-24V or OPEN) when door is NOT enabled	8
		Low (GND) when door IS enabled (unlocked)	
[*Optional*] **K1C**	Door Open Request Polarity	High (+12-24V) when door open request requires SOURCE	19
		Low (GND) when door open request requires SINK	
K2C	Baseplate	Active signal from bus fully closed switch or sensor – polarity depends on bus. Used to interrupt fully closed signal to bus [Related to IN3 (5º)] Note: typically not used for A.O.S.C. doors due to lock mechanism.	15
OUTPUTS			
/STA	Status Light	High (OPEN) when status light is to be OFF	9
		Low (GND) when status light is to be ON	
/DAO	Bus	High (OPEN) when a sensor does NOT detect a target (When activated by IN2 or /IN2)	10
		Low (GND) when CLASS™ is in Idle state and a sensor detects a target (When activated by IN2 or /IN2)	
/RCY	Bus	High (OPEN) when CLASS™ does NOT request a RE-open	11
		Low (GND) when CLASS™ requests a RE-open	
/OPN	Bus	High (OPEN) when CLASS™ does NOT request a door open	12
		Low (GND) when CLASS™ requests a door open	
OPN	Bus	High (+12-24V) when CLASS™ requests a door open	13
		Low (OPEN) when CLASS™ requests a door open	
RCY	Bus	High (+12-24V) when CLASS™ requests a door RE-open	14
		Low (OPEN) when CLASS™ does NOT request a door RE-open	
/TGT	Bus or Light	High (OPEN) when a target is NOT detected on any sensor	17
		Low (GND) when a target IS detected on any sensor	
[*Optional*] **K1-O**	Bus	[K1-C] when door open request is INACTIVE (if N.C. configuration)	20
		OPEN when door open request is ACTIVE (if N.C. configuration)	
K2NC	Bus	OPEN when CLASS™ Fully Closed is INACTIVE (door is open)	16
		CLOSED (to K2-C) when CLASS™ Fully Closed is ACTIVE (CLASS™ is in Idle state)	

Notes:

1. Inputs (Pins 1-8): for each XXX and /XXX pair, either XXX or /XXX is used, not both.

2. [Optional] indicates optional components are required – contact Vapor for further information.

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TABLE 2 – SENSORS (J4, J5, J6)

Signal	Source	Wire Color	J4 (LPS) & J6 (RPS)	J5 (MSU)
Power	CLASS™	Red	1	6
Ground	CLASS™	Black	3	4
Send	CLASS™	Green or Orange*	2	5
Echo	CLASS™	White or Brown*	4	3
Shield	CLASS™	Shield	5	2

*Sensor cable may be Red, Black, Orange, Brown, Shield **or** Red, Black, Green, White, Shield

TABLE 3 – TEST (J3)

Signal	Source	J3
Send	CLASS™	1,4,5
LPS Echo	CLASS™	2
MSU Echo	CLASS™	3
RPS Echo	CLASS™	6
Ground	CLASS™	7,8

TABLE 3 – RS-232 (J2)

Signal	Source	J2
RCV	External	2
XMIT	CLASS™	3
Ground	CLASS™	5, 8
/PSEN	External	4

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3.0 MATING CONNECTORS

Mates to	Qty	Description	Mfg	Mfg P/N	Function	Pin Crimper	Pin Extractor
J1	1	Housing, 24 Pos	AMP	770587-1	Power & I/O	AMP 90711-2	AMP 189727-1
	24	Contact, Female (22-18)	AMP	770988-3			
J4, J5, J6	1	Housing, 6 Pos	AMP	172168-1	Sensors	AMP 90710-2	AMP 189727-1
	5	Contact, Female (22-16)	AMP	770986-3			
	1	Strain Relief Hood	AMP	794423-1			
J3	1	Housing, 8 Pos	AMP	770579-1	Test	AMP 90710-2	AMP 189727-1
	8	Contact, Female (22-26)	AMP	770986-3			
	1	Strain Relief Hood	AMP	794370-1			
J2	1	Modular Plug, 8 Pin, RJ45			RS-232		
J7	1	Housing, 3 Pos	AMP	172166-1	CAN	AMP 90710-2	AMP 189727-1
	3	Contact, Female (22-26)	AMP	770986-3			

4.0 INDICATORS

Indicator	Color	When Indicator is ON:
SYSTEM	Red	Power is ON
	Orange (Slow Flashing)	System is running (Calibration is complete)
	Orange (Rapid Flashing)	Problem detected (BIT failure)
LPS	Green	LPS is Sending
	Orange	LPS has detected a target
MSU	Green	MSU is Sending
	Orange	MSU has detected a target
RPS	Green	RPS is Sending
	Orange	RPS has detected a target

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