

# Danfoss Adapter Driver Board DFA2-C3

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**SURE GRIP**  
CONTROLS INC.

## Caterpillar ECM Compatible Driver Board with Range Adjustable Output

### Applications

- Configured for Joystick Type Control Inputs (JM/JL Series Joysticks, Proportional Slider Modules)
- PWM Output Specifically Designed to Interface to Caterpillar ECM's

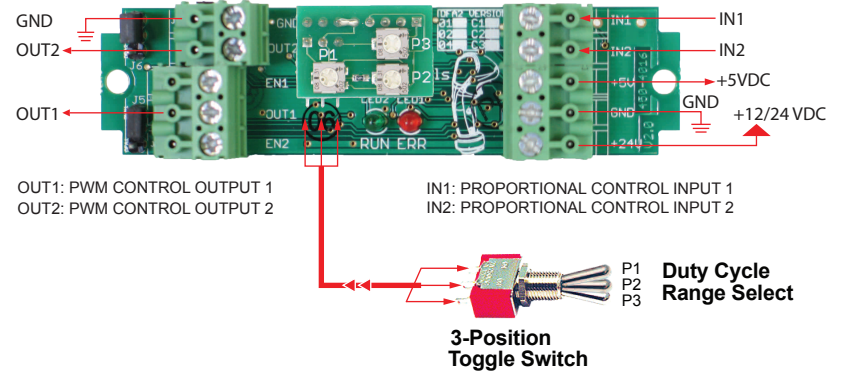
### Features

- Wide Supply Range +6V to +28V
- Power Supply and Control Input Protection
- Option Board Allows User to Select between Three Adjustable Duty Cycle Output Ranges on One Output

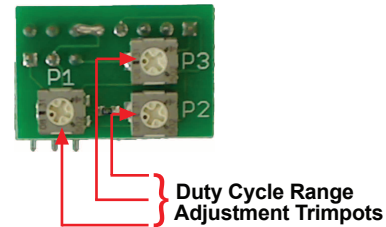
### Adjustable Output

The DFA2-C3 Option Board enables the setup of three different PWM Duty Cycle Ranges on OUT1 selected by a three position switch. The range is adjusted by trimpots P1 – P3 that correspond to the position of the select switch.

**Danfoss Adapter Driver Board (Part# DFA2-C3)**



**DFA2 Option Board**



**DFA2-C3 Configuration**

DFA2 Connection	Parameter	Function	Operating Range			Unit	
			Min	Typ	Max		
<b>Power Supply:</b>							
+12/24VDC	Supply Voltage	DFA Supply Voltage	6	12, 24	28	V	
+5VDC	Input Control Device Supply Voltage	Joystick Supply Voltage	4.75	5	5.25	V	
GND	Common Ground	DFA Ground, Input Control Device Ground					
<b>Control Inputs:</b>							
			$V_{IN(MIN)}$	$V_{IN(NEUTRAL)}$	$V_{IN(MAX)}$		
IN1	Control Input 1	Analog Proportional Input 1	0.5 (+/-0.05)	2.5	4.5 (+/-0.05)	V	
IN2	Control Input 2	Analog Proportional Input 2	0.5 (+/-0.05)	2.5	4.5 (+/-0.05)	V	
<b>Control Outputs:</b>							
			<b>Range</b>	<b>Duty Cycle</b>	<b>Duty Cycle</b>	<b>Duty Cycle</b>	
				OUT(MIN) +/-2.5	OUT(NEUTRAL) +/-2.5	OUT(MAX) +/-2.5	
OUT1	Control Output 1	PWM Control Output 1	Max	5	50	95	
			Typ	20	50	80	
			Min	30	50	70	
OUT2	Control Output 2	PWM Control Output 2		20	50	80	Duty Cycle (%)
<b>Enable Outputs:</b>							
			<b>Off</b>			<b>On</b>	
EN1	Valve Enable Output 1	N/A					
EN2	Valve Enable Output 2	N/A					

## DFA-C3 Electrical Specifications

Symbol	Parameter	Min	Typ	Max	Unit	Notes
<b>DFA Power Supply:</b>						
$V_S$	Supply Voltage	6	12 or 24	28	V	Reverse Polarity and Transient Protected (†)
$I_{SQ}$	Quiescent Supply Current	25	27 or 30	35	mA	
<b>Input Control Device Power Supply:</b>						
$V_{OUT}$	Input Control Device Supply Voltage	4.75	5	5.25	V	
$I_{OUT}$	Input Control Device Supply current	2		30	mA	
<b>Control Signal Inputs:</b>		Min	Neutral	Max		
$V_{IN1,IN2}$	Control Signal Input Voltage	0.5 (+/-0.05)	2.5	4.5 (+/-0.05)	V	Inputs Transient Protected
$V_{IL(OFF)}$	Low Safety Shut-down Input Voltage		<= 0.25		V	Input Under Voltage, Cycle Power to Reset
$V_{IH(OFF)}$	High Safety Shut-down Input Voltage		>= 4.75		V	Input Over Voltage, Cycle Power to Reset
<b>Control Signal Outputs:</b>		Min	Neutral	Max		
$V_{OUT1}$	PWM Control Signal Output Duty Cycle Range at $V_{PEAK} = V_S$	5 (+/-2.5)	50 (+/-2.5)	95 (+/-2.5)	Duty Cycle (%)	
$V_{OUT2}$	PWM Control Signal Output Duty Cycle Range at $V_{PEAK} = V_S$	20 (+/-2.5)	50 (+/-2.5)	80 (+/-2.5)	Duty Cycle (%)	
$f_{OUT1,OUT2}$	PWM Output Frequency		500 (+/-5%)		Hz	Fixed PWM Frequency of 500Hz
$I_{OUT1,OUT2}$	Control Signal Output Current			10	mA	
<b>Enable Signal Outputs:</b>						
$V_{EN1,EN2}$	Enable Signal Output Voltage					N/A
$I_{EN1,EN2}$	Enable Signal Output Current					N/A
<b>Environmental Specifications:</b>						
Operating Temperature Range		-40 to +70			°C	

(†) Input transient protected up to +/- 48.4VDC @ 11.3A for pulse widths ≤ 1ms.