

ControlWave Micro

ControlWave Micro is a high performance RTU/PLC ideally suited for remote area installations in harsh environments. It offers very low power consumption, a wide operating temperature range and compact footprint. The wide variety of flexible modular I/O and up to 11 serial and two Ethernet communication ports make ControlWave Micro extremely adaptable to virtually any in-plant or remote measurement and control application.



CWM

(PC 853)

MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT
A		Base Housing (Note 4)		A
10	420DS-5L	None	UL	0
		3 slot panel mount base PSSM, CPU & 1 slot for I/O, No Comm Exp	UL	1
		4 slot panel mount base PSSM, CPU & 2 slots for Exp Comm or I/O	UL	2
		8 slot panel mount base PSSM, CPU, 2 slots for Exp Comm or I/O and 4 slots dedicated to I/O modules	UL	3
B		I/O Expansion Base (Note 4)		B
20	420DS-5L	None	UL	0
		2 I/O slot panel mount exp base, Up to 2 I/O modules	UL	1
		4 I/O slot panel mount exp base, Up to 4 I/O modules	UL	2
		8 I/O slot panel mount exp base, Up to 8 I/O modules	UL	3
CC		CPU Module (Slot #2) (Note 2)		CC
30	420DS-5L	None	UL	00
		Micro 33 CPU With Gas Calcs		
	420DS-5L	33MHz CPU/2M SR,64M SDR,16M Flash 0 - ENET & 2 - RS 232, & 1 RS 485	UL	01
		Micro 33 CPU Without Gas Calcs		
	420DS-5L	33MHz CPU/2M SR,64M SDR,16M Flash 0 - ENET & 2 - RS 232, & 1 RS 485	UL	02
		Micro 150 CPU With Gas Calcs		
	420DS-5L	150MHzCPU/2M SR, 64M SDR, 16M Flash 0 - ENET & 2 - RS 232 & 1 RS 485	UL	04
		150MHzCPU/1M SR, 64M SDR, 16M Flash 1 - ENET & 2 - RS 232 & 1 RS 485	UL	05
		150MHzCPU/2M SR, 64M SDR, 16M Flash 2 - ENET & 1 - RS 232 & 1 RS 485	UL	06
	420DS-5L	Micro 150 CPU Without Gas Calcs		
		150MHzCPU/2M SR, 64M SDR, 16M Flash 1 - ENET & 2 - RS 232 & 1 RS 485	UL	07
	420DS-5L	150MHzCPU/2M SR, 64M SDR, 16M Flash 2 - ENET & 1 - RS 232 & 1 RS 485	UL	08
Micro Distributed I/O Expansion CPU				
420DS-5L	Comm CPU 1 - ENET & 2 - RS 232, & 1 RS 485	UL	09	
Model Number: CWM - A - B - CC - DD - E - F - G - HH - JJ - KK - LL - MM - NN - OO - PP - QQ - RR - SS - TT - UU - VV - WW - X				
Note 1: One I/O Expansion Base allowed with 12-24 V System Controller. Up to 6 I/O modules maximum with 6-				
Note 2: 6-18V System Controller I/O Limit - Up to 6 I/O modules maximum (2 isolated I/O modules maximum).				
Note 3: RS 485 port is non-isolated.				
Note 4: Unused I/O slots 3-14 of configured ControlWave Micro model include blank I/O module fronts.				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT
DD		Embedded Application		DD
39	CWMICRO:SM	None	UL	00
		Station Manager Application (Note 4)	UL	01
		Station Manager XT Application (Note 4)	UL	02
E		Internal Power Supply Module (Slot#1) (Note 1)		E
40	420DS-5L	None	UL	0
		6 - 18 V input power System Controller With display interface, with wet-end interface	UL	1
		12 - 24 V Syst. Cont., w/o key lock & WD With display interface, no wet-end interface	UL	2
		12 - 24 V Syst. Cont., with key lock & WD With display interface, no wet-end interface	UL	3
F		Approval		F
45	420DS-5L	Without CE approval	UL	0
		CE approval; CE foil shield and labels	UL/CE	1
G		Display (Keypad buttons)		G
50	420DS-5L	None	UL	0
		Display - 4 line X 20 character 2 buttons. Also includes 2' display cable	UL	1
		Display/Keypad - 4 line X 20 character 25 button keypad. Also includes 2' cable	UL	2
HH & JJ		I/O & COMM Slot #3 & #4 (Note 3)		HH & JJ
60 & 70	420DS-5L	Comm Expansion Module		
		None	UL	00
		2 Port Comm module, isolated RS 485 1 - RS232 & 1 - Isolated RS 485	UL	01
		2 Port Comm module Dial-line modem, 1 - RS232 & 1 - Isolated RS 485 (Note 4)	UL	04
		4 Port Comm 2 - RS232, 2 - isolated RS 485	UL	05
<p>Note 1: 6-18V System Controller I/O Limit - Up to 6 I/O modules maximum (2 isolated I/O modules maximum).</p> <p>Note 2: NA</p> <p>Note 3: Blank I/O slot cover are supplied for unused slots in configured model.</p> <p>Note 4: Station Manager Application suitable for U.S. Market Only. Station Manager XT Version requires CWXFC Firmware 1.59 or CWGFC Firmware 2.29 or greater for external measurement.</p>				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT		
HH & JJ		I/O & COMM Slot #3 & #4		HH & JJ		
		Local Termination I/O Modules				
60 & 70	420DS-5L	Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	UL	06		
		Isolated, Mixed 12 DI, 4 DO with LEDs Isolated, Int. or Ext. sourced dry contact	UL	07		
		16 DI with LEDs (24 VDC Input) Isolated, Int. or Ext. sourced dry contact	UL	08		
		16 DI with LEDs (12 VDC Input), Ext. sourced	UL	09		
		8 DI with LEDs (120 - 240 VAC Input) Isolated externally sourced voltage input	N/A	10		
		16 DO with LEDs; 1/2 Amp Open source output	UL	11		
		8 DO with LEDs (120 - 240 VAC Output) (Note 1) 6A Relay @ 120 VAC externally sourced	N/A	12		
		6 AI (Note 2) Externally sourced 1-5 V or 4-20 mA	UL	13		
		Mixed 6 AI, 2 AO (Note 2) Externally sourced 1-5 V or 4-20 mA	UL	14		
		Isolated AI, 8 inputs (180V CM), Int or Ext sourced 1-5 V or 4-20 mA	UL	15		
		6 TC, B, R, S, J, E, K, T, C, N, \pm 10 mV	UL	16		
		4 RTD, 2, 3, or 4 wire platinum RTD	UL	17		
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	UL	18		
		4 HSC with LEDs, Hi / Low Speed Counters	UL	19		
		8 HART/BTI (Note 3) HART, BTI, AI, AO. Int/Ext sourced AIs	UL	20		
		Mixed 6 DIO, 4 AI, 2 HSC with LEDs Dry contact DI, Ext. sourced 1-5V or 4-20mA	UL	21		
		Mixed 6 DIO, 4 AI, 2 HSC, 1 AO with LEDs Dry contact DI, Ext. sourced 1-5V or 4-20mA	UL	22		
		<p>Note 1: 8 Point 120VAC DI & DO Card cannot be used in the first slot of the I/O Expansion Chassis. 120VAC DI & DO modules are not class 1, Div 2 approved.</p> <p>Note 2: The externally sourced AIs on the mixed I/O cards require external wiring for the 24V device power. Terminal block connections for distributed field power are provided on the I/O card for AOs only.</p> <p>Note 3: Not supported in I/O Expansion chassis. Pass-through to AMS not supported. Maximum of two HART modules may be installed in a ControlWave Micro chassis, with 6 - 18V Internal Power Supply module. Order additional HART/BTI modules as spares when using 24V Power Supply module.</p>				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT	
HH & JJ		I/O & COMM Slot #3 & #4		HH & JJ	
60 & 70		Remote Termination I/O Modules with Remote Terminal Blocks (No Fuses)			
	420DS-5L	Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	N/A	23	
		16 DI with LEDs Isolated, Int. or Ext. sourced dry contact	N/A	24	
		16 DO with LEDs, .5 Amp Open source output	N/A	25	
		6 AI (Note 1), Externally sourced 1-5 V or 4-20 mA	N/A	26	
		Mixed 6 AI, 2 AO Externally sourced 1-5 V or 4-20 mA	N/A	27	
		Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA	N/A	28	
		6 TC, B, R, S, J, E, K, T, C, N, \pm 10 mV	N/A	29	
		4 RTD, 2, 3, or 4 wire platinum RTD	N/A	30	
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	N/A	31	
		4 HSC with LEDs, Hi / Low Speed Counters	N/A	32	
		8 HART/BTI HART, BTI, AI, AO. Int/Ext sourced AIs (Note 1)	N/A	33	
			Remote Termination I/O Modules with Remote Terminal Blocks (With Fuses)		
		420DS-5L	16 DI with LEDs Isolated, Int. or Ext. sourced dry contact	N/A	37
			16 DO with LEDs, .5 Amp Open source output	N/A	38
	6 AI Externally sourced 1-5 V or 4-20 mA		N/A	39	
	Mixed 6 AI, 2 AO (Note 1) Externally sourced 1-5 V or 4-20 mA		N/A	40	
	Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA		N/A	41	
	Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA		N/A	44	
	8 HART/BTI (Note 1) HART, BTI, AI, AO. Int/Ext sourced AIs		N/A	46	
	Mixed 6 DIO, 4 AI, 2 HSC, With LEDS Dry contact DI, Ext. sourced 1-5V or 4-20 mA		N/A	47	
	Mixed 6 DIO, 4 AI, 2 HSC, 1 AO, With LEDS Dry contact DI, Ext. sourced 1-5V or 4-20 mA		N/A	48	
	16 DI With 120VAC Remote Terminal Block (NO FUSES)		N/A	60	
	16 DO With 120VAC Remote Terminal Block 6Amp RELAY (NO FUSES)		N/A	61	

Note 1: Not supported in I/O Expansion chassis. Pass-through to AMS not supported. Maximum of two HART modules may be installed in a ControlWave Micro chassis, with 6 - 18V Internal Power Supply module. Order additional HART/BTI modules as spares when using 24V Power Supply module.

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT
60 & 70	420DS-5L	Remote Termination I/O Module Spares without Remote Terminal Blocks		
		Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	N/A	62
		16 DI with LEDs Isolated, Int. or Ext. sourced dry contact	N/A	63
		16 DO with LEDs, .5 Amp Open source output	N/A	64
		6 AI (Note 1), Externally sourced 1-5 V or 4-20 mA	N/A	65
		Mixed 6 AI, 2 AO (Note 1) Externally sourced 1-5 V or 4-20 mA	N/A	66
		Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA	N/A	67
		6 TC, B, R, S, J, E, K, T, C, N, ± 10 mV	N/A	68
		4 RTD, 2, 3, or 4 wire platinum RTD	N/A	69
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	N/A	70
		4 HSC with LEDs, Hi / Low Speed Counters	N/A	71
		8 HART/BTI (Note 2) HART, BTI, AI, AO. Int/Ext sourced AIs	N/A	72
		Mixed 6 DIO, 4 AI, 2 HSC, With LEDS Dry contact DI, Ext. sourced 1-5V or 4-20 mA	N/A	73
		Mixed 6 DIO, 4 AI, 2 HSC, 1 AO, With LEDS Dry contact DI, Ext. sourced 1-5V or 4-20 mA	N/A	74
		Note 1: The externally sourced AIs on the mixed I/O cards require external wiring for the 24V device power. Terminal block connections for the field power are provided on the I/O card for AOs only.		
Note 2: Not supported in I/O Expansion chassis. Pass-through to AMS not supported. Maximum of two HART modules may be installed in a ControlWave Micro chassis.				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT		
KK & LL		I/O Slot #5 & #6		KK & LL		
	420DS-5L	None	N/A	00		
80 & 90	420DS-5L	Local Termination I/O Modules				
		Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	UL	06		
		Isolated, Mixed 12 DI, 4 DO with LEDs Isolated, Int. or Ext. sourced dry contact	UL	07		
		16 DI with LEDs (24 VDC Input) Isolated, Int. or Ext. sourced dry contact	UL	08		
		16 DI with LEDs (12 VDC Input), Ext. sourced	UL	09		
		8 DI with LEDs (120 - 240 VAC Input) Isolated externally sourced voltage input	N/A	10		
		16 DO with LEDs, 1/2 Amp Open source output	UL	11		
		8 DO with LEDs (120 - 240 VAC Output)				
		6A Relay @ 120 VAC externally sourced (Note 1)	N/A	12		
		6 AI, Externally sourced 1-5 V or 4-20 mA (Note 2)	UL	13		
		Mixed 6 AI, 2 AO				
		Externally sourced 1-5 V or 4-20 mA (Note 2)	UL	14		
		Isolated AI, 8 inputs (180 V CM) Int or Ext sourced 1-5 V or 4-20 mA	UL	15		
		6 TC, B, R, S, J, E, K, T, C, N ± 10 mV	UL	16		
		4 RTD, 2, 3, or 4 wire platinum RTD	UL	17		
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	UL	18		
		4 HSC with LEDs, Hi / Low Speed Counters	UL	19		
		8 HART/BTI HART I, B II, AI, AO. INT/EXT sourced AIS (Note 3)	UL	20		
		Mixed 6 DIO, 4 AI, 2 HSC, with LEDs Dry contact DI, Ext. sourced 1-5V or 4-20mA	UL	21		
		Mixed 6 DIO, 4 AI, 2 HSC, 1 AO, with LEDs Dry contact DI, Ext. sourced 1-5V or 4-20mA	UL	22		
		<p>Note 1: 8 Point 120VAC DI & DO Card cannot be used in the first slot of the I/O Expansion Chassis. 120VAC DI & DO modules are not class 1, Div 2 approved.</p> <p>Note 2: The externally sourced AIs on the mixed I/O cards require external wiring for the 24V device power. Terminal block connections for the field power are provided on the I/O card for AOs only.</p> <p>Note 3: Not supported in I/O Expansion chassis. Pass-through to AMS not supported. Maximum of two HART modules may be installed in a ControlWave Micro chassis.</p>				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT	
KK & LL		I/O Slot #5 & #6		KK & LL	
80 & 90		Remote Termination I/O Modules with Remote Terminal Blocks (No Fuses)			
	420DS-5L	Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	N/A	23	
		16 DI with LEDs, Isolated, Int. or Ext. sourced dry contact	N/A	24	
		16 DO with LEDs, .5 Amp Open source output	N/A	25	
		6 AI, Externally sourced 1-5 V or 4-20 mA (Note 1)	N/A	26	
		Mixed 6 AI, 2 AO Externally sourced 1-5 V or 4-20 mA (Note 1)	N/A	27	
		Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA	N/A	28	
		6 TC; B, R, S, J, E, K, T, C, N, \pm 10 mV	N/A	29	
		4 RTD; 2, 3, or 4 wire platinum RTD	N/A	30	
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	N/A	31	
		4 HSC with LEDs, Hi / Low Speed Counters	N/A	32	
		8 HART/BTI HART, BTI, AI, AO. Int/Ext sourced AIs (Note 2)	N/A	33	
			Remote Termination I/O Modules with Remote Terminal Blocks (With Fuses)		
		420DS-5L	16 DI with LEDs, Isolated, Int. or Ext. sourced dry contact	N/A	37
	16 DO with LEDs, .5 Amp Open source output		N/A	38	
	6 AI, Externally sourced 1-5 V or 4-20 mA (Note 1)		N/A	39	
	Mixed 6 AI, 2 AO Externally sourced 1-5 V or 4-20 mA (Note 1)		N/A	40	
	Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA		N/A	41	
	Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA		N/A	44	
	8 HART/BTI HART, BTI, AI, AO. Int/Ext sourced AIs (Note 2)		N/A	46	
	Mixed 6 DIO, 4 AI, 2 HSC, With LEDs Dry contact DI, Ext. sourced 1-5V or 4-20 mA		N/A	47	
	Mixed 6 DIO, 4 AI, 2 HSC, 1 AO, With LEDs Dry contact DI, Ext. sourced 1-5V or 4-20 mA		N/A	48	
	16 DI With 120VAC Remote Terminal Block (NO FUSES)		N/A	60	
	16 DO With 120VAC Remote Terminal Block 6Amp RELAY (NO FUSES)		N/A	61	

Note 1: The externally sourced AIs on the mixed I/O cards require external wiring for the 24V device power. Terminal block connections for the field power are provided on the I/O card for AOs only.

Note 2: Not supported in I/O Expansion chassis. Pass-through to AMS not supported. Maximum of two HART modules may be installed in a ControlWave Micro chassis.

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ControlWave Micro (Cont.)

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT
MM - VV		COM & I/O Slot #7 through #16		MM - VV
100 - 170 175 - 178	420DS-5L	None	N/A	00
		Local Termination I/O Modules		
	420DS-5L	Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	UL	06
		Isolated, Mixed 12 DI, 4 DO with LEDs Isolated, Int. or Ext. sourced dry contact	UL	07
		16 DI with LEDs (24 VDC Input) Isolated, Int. or Ext. sourced dry contact	UL	08
		16 DI with LEDs (12 VDC Input), Ext. sourced	UL	09
		8 DI with LEDs (120 - 240 VAC Input) Isolated externally sourced voltage input	UL	10
		16 DO with LEDs, 1/2 Amp Open source output	UL	11
		8 DO with LEDs (120-240 VAC Output)		
		6A Relay @ 120 VAC externally sourced (Note 1)	UL	12
		6 AI, Externally sourced 1-5 V or 4-20 mA (Note 2)	UL	13
		Mixed 6 AI, 2 AO		
		Externally sourced 1-5 V or 4-20 mA (Note 2)	UL	14
		Isolated AI, 8 inputs (180 V CM)		
		Int or Ext sourced 1-5 V or 4-20 mA	UL	15
		6 TC, B, R, S, J, E, K, T, C, N, ± 10 mV	UL	16
		4 RTD, 2, 3, or 4 wire platinum RTD	UL	17
		Isolated AO, 4 outputs		
		Int or Ext sourced 1-5 V or 4-20 mA	UL	18
		4 HSC with LEDs, Hi / Low Speed Counters	UL	19
		Mixed 6 DIO, 4 AI, 2 HSC, with LEDS Dry contact DI, Ext. sourced 1-5V or 4-20mA	UL	21
		Mixed 6 DIO, 4 AI, 2 HSC, 1 AO, with LEDS Dry contact DI, Ext. sourced 1-5V or 4-20mA	UL	22
Note 1: 8 Point 120VAC DI & DO Card cannot be used in the first slot of the I/O Expansion Chassis. 120VAC DI & DO modules are not class 1, Div 2 approved.				
Note 2: The externally sourced AIs on the mixed I/O cards require external wiring for the 24V device power. Terminal block connections for the field power are provided on the I/O card for AOs only.				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT	
MM - VV		COM & I/O Slot #7 through #16		MM - VV	
100 - 170 175 - 178		Remote Termination I/O Modules with Remote Terminal Blocks (No Fuses)			
	420DS-5L	Mixed 12 DI, 4 DO with LEDs Non-Isolated internally sourced dry contact	N/A	23	
		16 DI with LEDs, Isolated, Int. or Ext. sourced dry contact	N/A	24	
		16 DO with LEDs, .5 Amp Open source output	N/A	25	
		6 AI, Externally sourced 1-5 V or 4-20 mA (Note 1)	N/A	26	
		Mixed 6 AI, 2 AO Externally sourced 1-5 V or 4-20 mA (Note 1)	N/A	27	
		Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA	N/A	28	
		6 TC, B, R, S, J, E, K, T, C, N, \pm 10 mV	N/A	29	
		4 RTD, 2, 3, or 4 wire platinum RTD	N/A	30	
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	N/A	31	
		4 HSC with LEDs, Hi / Low Speed Counters	N/A	32	
			Remote Termination I/O Modules with Remote Terminal Blocks (With Fuses)		
	420DS-5L	16 DI with LEDs, Isolated, Int. or Ext. sourced dry contact	N/A	37	
		16 DO with LEDs, .5 Amp Open source output	N/A	38	
		6 AI, Externally sourced 1-5 V or 4-20 mA (Note 1)	N/A	39	
		Mixed 6 AI, 2 AO Externally sourced 1-5 V or 4-20 mA (Note 1)	N/A	40	
		Isolated AI, 8 inputs (180 V CM), Int or Ext sourced 1-5 V or 4-20 mA	N/A	41	
		Isolated AO, 4 outputs Int or Ext sourced 1-5 V or 4-20 mA	N/A	44	
		Mixed 6 DIO, 4 AI, 2 HSC, With LEDs Dry contact DI, Ext. sourced 1-5V or 4-20 mA	N/A	47	
		Mixed 6 DIO, 4 AI, 2 HSC, 1 AO, With LEDs Dry contact DI, Ext. sourced 1-5V or 4-20 mA	N/A	48	
		16 DI With 120VAC Remote Terminal Block (NO FUSES)	N/A	60	
		16 DO With 120VAC Remote Terminal Block 6Amp RELAY (NO FUSES)	N/A	61	
	Note 1: The externally sourced AIs on the mixed I/O cards require external wiring for the 24V device power. Terminal block connections for the field power are provided on the I/O card for AOs only.				

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MODEL & SEG	SPEC SHEET	DESCRIPTION	APPROVAL	SELECT
WW		Remote Terminal Cable Selection		WW
180	420DS-5L	Number of ControlWave Micro Remote I/O Modules		
		None	N/A	00
		1 Remote I/O Module	N/A	01
		2 Remote I/O Module	N/A	02
		3 Remote I/O Module	N/A	03
		4 Remote I/O Module	N/A	04
		5 Remote I/O Module	N/A	05
		6 Remote I/O Module	N/A	06
		7 Remote I/O Module	N/A	07
		8 Remote I/O Module	N/A	08
		9 Remote I/O Module	N/A	09
		10 Remote I/O Module	N/A	10
		11 Remote I/O Module	N/A	11
		12 Remote I/O Module	N/A	12
		13 Remote I/O Module	N/A	13
14 Remote I/O Module	N/A	14		
X		Remote Termination Length Selection		X
190	420DS-5L	None	N/A	0
		18 inch Cable	N/A	1
		39 inch Cable	N/A	2
		6.5 foot Cable	N/A	3
		13 foot Cable	N/A	4

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