

Δ Tandem Controller Required

\* Range is limited by power source rating, module rating, or feeder configuration

Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
All	All	GMAW CV	STD CV		5	Pinch	10 - 45 V	
		GMAW Power	Power Mode®		40	Pinch	0.1 - 40 kW	
Steel	0.030	GMAW CV	CV	CO <sub>2</sub>	93	Pinch	75 - 1200 ipm (1.91 - 30.48 m/min)	
				Argon Mix	94		75 - 1200 ipm (1.91 - 30.48 m/min)	
		GMAW Pulse	Pulse	Argon Mix	95	UltimArc®	65 - 1200 ipm (1.65 - 30.48 m/min)	
	0.035	GMAW CV	CV	CO <sub>2</sub>	10	Pinch	50 - 1200 ipm (1.27 - 30.48 m/min)	
				Argon Mix	11		50 - 1200 ipm (1.27 - 30.48 m/min)	
		GMAW Pulse	Pulse	Argon Mix	12		60 - 1200 ipm (1.52 - 30.48 m/min)	
			RapidArc®	Argon Mix	13	UltimArc®	60 - 1200 ipm (1.52 - 30.48 m/min)	
			Precision Pulse™	Argon Mix	411		100 - 600 ipm (2.54 - 15.24 m/min)	
	0.040	GMAW CV	CV	CO <sub>2</sub>	138	Pinch	50 - 1200 ipm (1.27 - 30.48 m/min)	
				Argon Mix	139		50 - 1200 ipm (1.27 - 30.48 m/min)	
		GMAW Pulse	Pulse	Argon Mix	140		60 - 1200 ipm (1.52 - 30.48 m/min)	
			RapidArc®	Argon Mix	141	UltimArc®	60 - 1200 ipm (1.52 - 30.48 m/min)	
	0.045	GMAW CV	CV	CO <sub>2</sub>	20	Pinch	50 - 800 ipm (1.27 - 20.32 m/min)	
				Argon Mix	21		50 - 800 ipm (1.27 - 20.32 m/min)	
		GMAW Pulse	Pulse	Argon Mix	22		50 - 800 ipm (1.27 - 20.32 m/min)	
			RapidArc®	Argon Mix	18	UltimArc®	75 - 800 ipm (1.91 - 20.32 m/min)	
	0.052	GMAW CV	CV	CO <sub>2</sub>	24	Pinch	50 - 750 ipm (1.27 - 19.05 m/min)	
				Argon Mix	25		50 - 700 ipm (1.27 - 17.78 m/min)	
		GMAW Pulse	Pulse	Argon Mix	26		50 - 700 ipm (1.27 - 17.78 m/min)	
			RapidArc®	Argon Mix	27	UltimArc®	60 - 750 ipm (1.52 - 19.05 m/min)	
	1/16	GMAW CV	CV	Argon Mix	107	Pinch	50 - 450 ipm (1.27 - 11.43 m/min)	
		GMAW Pulse	Pulse	Argon Mix	108	UltimArc®	50 - 500 ipm (1.27 - 12.7 m/min)	
	Stainless	0.030	GMAW CV	CV	Argon Mix	61	Pinch	100 - 1200 ipm (2.54 - 30.48 m/min)
					He Ar CO <sub>2</sub>	63		100 - 1200 ipm (2.54 - 30.48 m/min)
GMAW Pulse			Pulse	He Ar CO <sub>2</sub>	64	UltimArc®	90 - 1200 ipm (2.29 - 30.48 m/min)	
				Argon Mix	66		80 - 1200 ipm (2.03 - 30.48 m/min)	
			Precision Pulse™	Argon Mix	420	UltimArc®	100 - 800 ipm (2.54 - 20.32 m/min)	
0.035		GMAW CV	CV	Argon Mix	31	Pinch	75 - 1200 ipm (1.91 - 30.48 m/min)	
				He Ar CO <sub>2</sub>	33		75 - 1200 ipm (1.91 - 30.48 m/min)	
		GMAW Pulse	Pulse	He Ar CO <sub>2</sub>	34	UltimArc®	75 - 1200 ipm (1.91 - 30.48 m/min)	
				Argon Mix	36		60 - 1200 ipm (1.52 - 30.48 m/min)	
			Precision Pulse™	Argon Mix	421	UltimArc®	100 - 600 ipm (2.54 - 15.24 m/min)	
0.045		GMAW CV	CV	Argon Mix	41	Pinch	75 - 800 ipm (1.91 - 20.32 m/min)	
				He Ar CO <sub>2</sub>	43		75 - 800 ipm (1.91 - 20.32 m/min)	
		GMAW Pulse	Pulse	He Ar CO <sub>2</sub>	44	UltimArc®	75 - 800 ipm (1.91 - 20.32 m/min)	
				Argon Mix	46		50 - 800 ipm (1.27 - 20.32 m/min)	
			Precision Pulse™	Argon Mix	423	UltimArc®	50 - 400 ipm (1.27 - 10.16 m/min)	
1/16		GMAW CV	CV	Argon Mix	51	Pinch	50 - 600 ipm (1.27 - 15.24 m/min)	
		GMAW Pulse	Pulse	Argon Mix	56	UltimArc®	50 - 700 ipm (1.27 - 17.78 m/min)	
Metal Core		0.045	GMAW CV	CV	Argon Mix	81	Pinch	100 - 700 ipm (2.54 - 17.78 m/min)
	GMAW Pulse		Pulse	Argon Mix	82	UltimArc®	50 - 700 ipm (1.27 - 17.78 m/min)	
			RapidArc®	Argon Mix	87		75 - 800 ipm (1.91 - 20.32 m/min)	
	0.052	GMAW CV	CV	Argon Mix	83	Pinch	50 - 600 ipm (1.27 - 15.24 m/min)	
		GMAW Pulse	Pulse	Argon Mix	84	UltimArc®	50 - 600 ipm (1.27 - 15.24 m/min)	
			RapidArc®	Argon Mix	88		60 - 800 ipm (1.52 - 20.32 m/min)	
	1/16	GMAW CV	CV	Argon Mix	85	Pinch	50 - 450 ipm (1.27 - 11.43 m/min)	
		GMAW Pulse	Pulse	Argon Mix	86	UltimArc®	50 - 450 ipm (1.27 - 11.43 m/min)	
		RapidArc®	Argon Mix	89		60 - 450 ipm (1.52 - 11.43 m/min)		

Δ Tandem Controller Required

\* Range is limited by power source rating, module rating, or feeder configuration

	Type		Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
<b>GMAW</b>	<b>Aluminum 4XXX</b>	0.035		GMAW CV	CV	Argon	148	Pinch	150 - 750	ipm (3.81 - 19.05 m/min)
				GMAW Pulse	Pulse	Argon	149	UltimArc®	125 - 800	ipm (3.18 - 20.32 m/min)
				CC Pulse	Argon	150	125 - 800		ipm (3.18 - 20.32 m/min)	
		GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	98	Frequency	125 - 800	ipm (3.18 - 20.32 m/min)		
		3/64		GMAW CV	CV	Argon	71	Pinch	125 - 700	ipm (3.18 - 17.78 m/min)
				GMAW Pulse	Pulse	Argon	72	UltimArc®	85 - 600	ipm (2.16 - 15.24 m/min)
				CC Pulse	Argon	69	85 - 600		ipm (2.16 - 15.24 m/min)	
		GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	99	Frequency	85 - 500	ipm (2.16 - 12.7 m/min)		
		1/16		GMAW CV	CV	Argon	73	Pinch	75 - 375	ipm (1.91 - 9.53 m/min)
	GMAW Pulse			Pulse	Argon	74	UltimArc®	75 - 350	ipm (1.91 - 8.89 m/min)	
	CC Pulse			Argon	79	75 - 350		ipm (1.91 - 8.89 m/min)		
	GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	100	Frequency	80 - 400	ipm (2.03 - 10.16 m/min)			
	<b>Aluminum 5XXX</b>	0.035		GMAW CV	CV	Argon	151	Pinch	175 - 750	ipm (4.45 - 19.05 m/min)
				GMAW Pulse	Pulse	Argon	152	UltimArc®	150 - 800	ipm (3.81 - 20.32 m/min)
				CC Pulse	Argon	153	150 - 800		ipm (3.81 - 20.32 m/min)	
				GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	101	Frequency	140 - 800	ipm (3.56 - 20.32 m/min)
		3/64		GMAW CV	CV	Argon	75	Pinch	125 - 750	ipm (3.18 - 19.05 m/min)
				GMAW Pulse	Pulse	Argon	76	UltimArc®	85 - 700	ipm (2.16 - 17.78 m/min)
				CC Pulse	Argon	70	85 - 700		ipm (2.16 - 17.78 m/min)	
				GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	102	Frequency	100 - 600	ipm (2.54 - 15.24 m/min)
		1/16		GMAW CV	CV	Argon	77	Pinch	125 - 500	ipm (3.18 - 12.7 m/min)
				GMAW Pulse	Pulse	Argon	78	UltimArc®	100 - 500	ipm (2.54 - 12.7 m/min)
				CC Pulse	Argon	80	100 - 450		ipm (2.54 - 11.43 m/min)	
				GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	103	Frequency	75 - 350	ipm (1.91 - 8.89 m/min)
	<b>SIBr</b>			GMAW Pulse	Pulse	Argon	192	UltimArc®	80 - 1200	ipm (2.03 - 30.48 m/min)
				GMAW Pulse	Pulse	Argon	191	UltimArc®	50 - 600	ipm (1.27 - 15.24 m/min)
	<b>Cu</b>			GMAW Pulse	Pulse	Argon Helium	198	UltimArc®	100 - 700	ipm (2.54 - 17.78 m/min)
				GMAW Pulse	Pulse	Argon Helium	196	UltimArc®	75 - 500	ipm (1.91 - 12.7 m/min)
	<b>NiCr</b>			GMAW Pulse	Pulse	Ar/ Ar He	501	UltimArc®	75 - 800	ipm (1.91 - 20.32 m/min)
				GMAW Pulse	Pulse	Ar/ Ar He	503	UltimArc®	75 - 600	ipm (1.91 - 15.24 m/min)
				GMAW Pulse	Pulse	Ar/ Ar He	505	UltimArc®	75 - 350	ipm (1.91 - 8.89 m/min)
	<b>NiCu</b>			GMAW Pulse	Pulse	Ar/ Ar He	507	UltimArc®	75 - 800	ipm (1.91 - 20.32 m/min)
				GMAW Pulse	Pulse	Ar/ Ar He	509	UltimArc®	75 - 600	ipm (1.91 - 15.24 m/min)
	<b>NiFe-CI</b>			GMAW Pulse	Pulse	Ar/ Ar He	511	UltimArc®	50 - 350	ipm (1.27 - 8.89 m/min)
				GMAW Pulse	Pulse	Ar/ Ar He	513	UltimArc®	75 - 800	ipm (1.91 - 20.32 m/min)
	<b>Ni-1</b>			GMAW Pulse	Pulse	Ar/ Ar He	515	UltimArc®	75 - 600	ipm (1.91 - 15.24 m/min)
GMAW Pulse				Pulse	Ar/ Ar He	519	UltimArc®	75 - 800	ipm (1.91 - 20.32 m/min)	
GMAW Pulse				Pulse	Ar/ Ar He	521	UltimArc®	75 - 600	ipm (1.91 - 15.24 m/min)	
<b>Ni-CI</b>			GMAW Pulse	Pulse	Ar/ Ar He	523	UltimArc®	50 - 300	ipm (1.27 - 7.62 m/min)	
			GMAW Pulse	Pulse	Ar/ Ar He	525	UltimArc®	75 - 800	ipm (1.91 - 20.32 m/min)	
			GMAW Pulse	Pulse	Ar/ Ar He	527	UltimArc®	75 - 500	ipm (1.91 - 12.7 m/min)	
<b>FCAW</b>	<b>Flux Core</b>	All	FCAW-S	Self Shield CV	NA	6	Pinch	10 - 45	V	
			FCAW-G	Gas Shield CV	NA	7	Pinch	10 - 45	V	
	<b>Cored Wire</b>	0.045		FCAW-G	CV	CO <sub>2</sub>	90	Pinch	175 - 600	ipm (4.45 - 15.24 m/min)
				Argon Mix	91	175 - 600	ipm (4.45 - 15.24 m/min)			
				FCAW-G	CV	CO <sub>2</sub>	187	Pinch	150 - 500	ipm (3.81 - 12.7 m/min)
				Argon Mix	188	150 - 500	ipm (3.81 - 12.7 m/min)			
				FCAW-G	CV	CO <sub>2</sub>	189		125 - 400	ipm (3.18 - 10.16 m/min)
Argon Mix	190	125 - 400	ipm (3.18 - 10.16 m/min)							
<b>SMAW</b>	NA	NA	DCEP SMAW	SMAW Soft	NA	1	Arc Force, Hot Start	15 - 900	A	
				SMAW Crisp	NA	2	Arc Force, Hot Start	15 - 900	A	
				SMAW Pipe	NA	4	Arc Force	50 - 250	A	
<b>GTAW</b>	NA	NA	DCEN GTAW	Touch Start TIG	Ar / He	3	Hot Start	5 - 900	A	
				Touch Start TIG Pulse	Ar / He	8	Frequency, Background, Hot Start	5 - 800	A	

Δ Tandem Controller Required

\* Range is limited by power source rating, module rating, or feeder configuration

CAG	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	NA	NA	CAG	Arc Gouge	Compressed Air	9		60 - 900 A

GMAW-Tandem	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	Steel	0.035	GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	400	UltimArc®, Phase Angle	100 - 1000 ipm
Sync Pulse Trail				Argon Mix	401	UltimArc®	100 - 800 ipm	(2.54 - 20.32 m/min)
HotWire Pulse Trail				Argon Mix	460		80 - 900 ipm	(2.03 - 22.86 m/min)
0.040		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	402	UltimArc®, Phase Angle	150 - 800 ipm	(3.81 - 20.32 m/min)
			Sync Pulse Trail	Argon Mix	403	UltimArc®	150 - 800 ipm	(3.81 - 20.32 m/min)
			HotWire Pulse Trail	Argon Mix	461		80 - 800 ipm	(2.03 - 20.32 m/min)
0.045		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	404	UltimArc®, Phase Angle	100 - 700 ipm	(2.54 - 17.78 m/min)
			Sync Pulse Trail	Argon Mix	405	UltimArc®	100 - 700 ipm	(2.54 - 17.78 m/min)
			HotWire Pulse Trail	Argon Mix	462		75 - 800 ipm	(1.91 - 20.32 m/min)
0.052		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	406	UltimArc®, Phase Angle	100 - 800 ipm	(2.54 - 20.32 m/min)
			Sync Pulse Trail	Argon Mix	407	UltimArc®	100 - 800 ipm	(2.54 - 20.32 m/min)
			HotWire Pulse Trail	Argon Mix	463		50 - 800 ipm	(1.27 - 20.32 m/min)
1/16		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	408	UltimArc®, Phase Angle	100 - 500 ipm	(2.54 - 12.7 m/min)
			Sync Pulse Trail	Argon Mix	409	UltimArc®	100 - 500 ipm	(2.54 - 12.7 m/min)
			HotWire Pulse Trail	Argon Mix	464		50 - 500 ipm	(1.27 - 12.7 m/min)