

§ Advanced Module Required

⊖ External HF Starter Required

‡ STT® or Advanced Module Required

Δ Tandem Controller Required

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

Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)		
							V		
							kW		
All	All	GMAW CV	STD CV		5	Pinch	10 – 45	V	
		GMAW Power	Power Mode®		40	Pinch	0.1 – 23	kW	
Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)		
GMAW	0.030	GMAW CV	CV	CO ₂	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 ₂	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	RapidArc®	Argon Mix	12	UltimArc®	60 – 1200	ipm (1.52 – 30.48 m/min)
					Argon Mix	13		60 – 1200	ipm (1.52 – 30.48 m/min)
					Argon Mix	411		100 – 600	ipm (2.54 – 15.24 m/min)
					Argon Mix	272		75 – 1200	ipm (1.91 – 30.48 m/min)
					Argon Mix	550		75 – 1200	ipm (1.91 – 30.48 m/min)
		GMAW STT®	Synergic STT®(‡)	CO ₂	Argon Mix	324	UltimArc®, Hot Start	100 – 225	ipm (2.54 – 5.72 m/min)
					Argon Mix	325		100 – 225	ipm (2.54 – 5.72 m/min)
					CO ₂	304		Peak, Background, Tailout, Hot Start	100 – 300
		GMAW AC STT®	Synergic AC STT®(§)	CO ₂	Argon Mix	305	Balance, UltimArc®	100 – 300	ipm (2.54 – 7.62 m/min)
					Argon Mix	380		50 – 200	ipm (1.27 – 5.08 m/min)
	Argon Mix				381	50 – 200		ipm (1.27 – 5.08 m/min)	
	0.040	GMAW CV	CV	CO ₂	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	RapidArc®	Argon Mix	140	UltimArc®	60 – 1200	ipm (1.52 – 30.48 m/min)
					Argon Mix	141		60 – 1200	ipm (1.52 – 30.48 m/min)
					Argon Mix	412		75 – 600	ipm (1.91 – 15.24 m/min)
					Argon Mix	273		75 – 800	ipm (1.91 – 20.32 m/min)
					Argon Mix	551		75 – 800	ipm (1.91 – 20.32 m/min)
		GMAW STT®	Synergic STT®(‡)	CO ₂	Argon Mix	326	UltimArc®, Hot Start	90 – 225	ipm (2.29 – 5.72 m/min)
					Argon Mix	327		90 – 225	ipm (2.29 – 5.72 m/min)
					CO ₂	306		Peak, Background, Tailout, Hot Start	90 – 225
		GMAW AC STT®	Synergic AC STT®(§)	CO ₂	Argon Mix	307	Balance, UltimArc®	90 – 225	ipm (2.29 – 5.72 m/min)
					Argon Mix	382		45 – 185	ipm (1.14 – 4.7 m/min)
	0.045	GMAW CV	CV	CO ₂	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	RapidArc®	Argon Mix	22	UltimArc®	50 – 800	ipm (1.27 – 20.32 m/min)
					Argon Mix	18		75 – 800	ipm (1.91 – 20.32 m/min)
					Argon Mix	413		75 – 600	ipm (1.91 – 15.24 m/min)
					Argon Mix	274		100 – 800	ipm (2.54 – 20.32 m/min)
					Argon Mix	552		100 – 800	ipm (2.54 – 20.32 m/min)
		GMAW STT®	Synergic STT®(‡)	CO ₂	Argon Mix	328	UltimArc®, Hot Start	90 – 200	ipm (2.29 – 5.08 m/min)
					Argon Mix	329		90 – 200	ipm (2.29 – 5.08 m/min)
					CO ₂	308		Peak, Background, Tailout, Hot Start	90 – 225
		GMAW AC STT®	Synergic AC STT®(§)	CO ₂	Argon Mix	309	Balance, UltimArc®	90 – 225	ipm (2.29 – 5.72 m/min)
					Argon Mix	384		40 – 170	ipm (1.02 – 4.32 m/min)
	0.052	GMAW CV	CV	CO ₂	24	Pinch	50 – 750	ipm (1.27 – 17.78 m/min)	
				Argon Mix	25		50 – 700	ipm (1.27 – 17.78 m/min)	
GMAW Pulse		Pulse	RapidArc®	Argon Mix	26	UltimArc®	50 – 700	ipm (1.27 – 17.78 m/min)	
				Argon Mix	27		60 – 750	ipm (1.52 – 19.05 m/min)	
				Argon Mix	414		75 – 500	ipm (1.91 – 12.7 m/min)	
				Argon Mix	275		75 – 600	ipm (1.91 – 15.24 m/min)	
				Argon Mix	553		75 – 600	ipm (1.91 – 15.24 m/min)	
GMAW STT®		Synergic STT®(‡)	CO ₂	Argon Mix	330	UltimArc®, Hot Start	75 – 175	ipm (1.91 – 4.45 m/min)	
				Argon Mix	331		75 – 175	ipm (1.91 – 4.45 m/min)	
				CO ₂	310		Peak, Background, Tailout, Hot Start	90 – 150	ipm (2.29 – 3.81 m/min)
1/16		GMAW CV	CV	Argon Mix	107	Pinch	50 – 650	ipm (1.27 – 16.51 m/min)	
				Argon Mix	108		50 – 500	ipm (1.27 – 12.7 m/min)	

§ Advanced Module Required

⊖ External HF Starter Required

‡ STT® or Advanced Module Required

Δ Tandem Controller Required

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

GMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)				
	Stainless	0.030	GMAW CV	CV		Argon Mix	61	Pinch	100 – 1200	ipm (2.54 – 30.48 m/min)		
He Ar CO ₂						63	100 – 1200		ipm (2.54 – 30.48 m/min)			
GMAW Pulse				Pulse	He Ar CO ₂	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)	
						He Ar CO ₂		430		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 ₂	33		75 – 1200	ipm (1.91 – 30.48 m/min)		
		GMAW Pulse				Pulse	He Ar CO ₂		34	UltimArc®	75 – 1200	ipm (1.91 – 30.48 m/min)
							Argon Mix		36		60 – 1200	ipm (1.52 – 30.48 m/min)
		GMAW STT®		Precision Pulse™	Argon Mix	421	UltimArc®	100 – 600	ipm (2.54 – 15.24 m/min)			
					He Ar CO ₂	431		100 – 700	ipm (2.54 – 17.78 m/min)			
					Rapid X™(‡)	Argon Mix		282	UltimArc®	100 – 800	ipm (2.54 – 20.32 m/min)	
						He Ar CO ₂		364		UltimArc®, Hot Start	100 – 300	ipm (2.54 – 7.62 m/min)
NonSynergic STT®(‡)		Argon Mix	344	Peak, Background, Tailout, Hot Start	100 – 300	ipm (2.54 – 7.62 m/min)						
		He Ar CO ₂	345		100 – 300	ipm (2.54 – 7.62 m/min)						
0.040		GMAW STT®		Synergic STT®(‡)	Argon Mix	366	UltimArc®, Hot Start	100 – 300	ipm (2.54 – 7.62 m/min)			
					He Ar CO ₂	367		100 – 250	ipm (2.54 – 6.35 m/min)			
					NonSynergic STT®(‡)	Argon Mix		346	Peak, Background, Tailout, Hot Start	100 – 300	ipm (2.54 – 7.62 m/min)	
						He Ar CO ₂		347		100 – 300	ipm (2.54 – 7.62 m/min)	
0.045	GMAW CV	CV		Argon Mix	41	Pinch	75 – 800	ipm (1.91 – 20.32 m/min)				
				He Ar CO ₂	43		75 – 800	ipm (1.91 – 20.32 m/min)				
				GMAW Pulse	Pulse		He Ar CO ₂	44	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
							Argon Mix	46		50 – 800	ipm (1.27 – 20.32 m/min)	
	GMAW STT®		Precision Pulse™	Argon Mix	423	UltimArc®	50 – 400	ipm (1.27 – 10.16 m/min)				
				He Ar CO ₂	433		60 – 400	ipm (1.52 – 10.16 m/min)				
				Rapid X™(‡)	Argon Mix		284	UltimArc®	100 – 800	ipm (2.54 – 20.32 m/min)		
					He Ar CO ₂		368		UltimArc®, Hot Start	90 – 200	ipm (2.29 – 5.08 m/min)	
	NonSynergic STT®(‡)	Argon Mix	369	Peak, Background, Tailout, Hot Start	90 – 200	ipm (2.29 – 5.08 m/min)						
		He Ar CO ₂	348		90 – 225	ipm (2.29 – 5.72 m/min)						
1/16	GMAW CV	CV		Argon Mix	51	Pinch	50 – 515	ipm (1.27 – 13.08 m/min)				
				He Ar CO ₂	56		50 – 635	ipm (1.27 – 16.13 m/min)				
Metal Core	0.035	GMAW AC Pulse	Rapid Z™(§)	Argon Mix	472	UltimArc®	75 – 900	ipm (1.91 – 22.86 m/min)				
				Argon Mix	473		70 – 700	ipm (1.78 – 17.78 m/min)				
	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)
								Argon Mix	87		75 – 800	ipm (1.91 – 20.32 m/min)
					Rapid X™(‡)	Argon Mix		294	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
	Argon Mix	83	Pinch	50 – 600		ipm (1.27 – 15.24 m/min)						
	0.052	GMAW Pulse		Pulse		Argon Mix	84	UltimArc®	50 – 600	ipm (1.27 – 15.24 m/min)		
			Argon Mix			88	60 – 800		ipm (1.52 – 20.32 m/min)			
			Rapid X™(‡)			Argon Mix	295		UltimArc®	60 – 650	ipm (1.52 – 16.51 m/min)	
						Argon Mix	85			Pinch	50 – 450	ipm (1.27 – 11.43 m/min)
	1/16	GMAW Pulse	Pulse		Argon Mix	86	UltimArc®	50 – 450	ipm (1.27 – 11.43 m/min)			
					Argon Mix	89		60 – 450	ipm (1.52 – 11.43 m/min)			
					Rapid X™(‡)	Argon Mix		296	UltimArc®	75 – 450	ipm (1.91 – 11.43 m/min)	
Argon Mix						296		75 – 450		ipm (1.91 – 11.43 m/min)		
Stainless Metal Core EC4XX	0.045	GMAW Pulse	Rapid X™(‡)	Argon Mix	290	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)				

§ Advanced Module Required

⊖ External HF Starter Required

‡ STT® or Advanced Module Required

Δ Tandem Controller Required

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

	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	GMAW	Aluminum 4XXX	0.035	GMAW CV	CV	Argon	148	Pinch	150 – 750
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)
GMAW AC Pulse			AC Pulse (§)	Argon	391	UltimArc®	125 – 700	ipm (3.18 – 17.78 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)
GMAW AC Pulse			AC Pulse (§)	Argon	393	UltimArc®	100 – 500	ipm (2.54 – 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)	
GMAW AC Pulse		AC Pulse (§)	Argon	394	UltimArc®	100 – 400	ipm (2.54 – 10.16 m/min)		
Aluminum 5XXX		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)
		GMAW AC Pulse	AC Pulse (§)	Argon	396	UltimArc®	125 – 800	ipm (3.18 – 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)
		GMAW AC Pulse	AC Pulse (§)	Argon	398	UltimArc®	85 – 600	ipm (2.16 – 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)		
GMAW AC Pulse	AC Pulse (§)	Argon	399	UltimArc®	100 – 400	ipm (2.54 – 10.16 m/min)			
SiBr	0.035	GMAW Pulse	Pulse	Argon	192	UltimArc®	80 – 1200	ipm (2.03 – 30.48 m/min)	
		GMAW STT®	Synergic STT®(‡)	Argon	335	UltimArc®	140 – 450	ipm (3.56 – 11.43 m/min)	
	0.040	GMAW STT®	Synergic STT®(‡)	Argon	336	UltimArc®	120 – 350	ipm (3.05 – 8.89 m/min)	
	0.045	GMAW Pulse	Pulse	Argon	191	UltimArc®	50 – 600	ipm (1.27 – 15.24 m/min)	
GMAW STT®		Synergic STT®(‡)	Argon	337	UltimArc®	90 – 300	ipm (2.29 – 7.62 m/min)		
Cu	0.035	GMAW Pulse	Pulse	Argon Helium	198	UltimArc®	100 – 700	ipm (2.54 – 17.78 m/min)	
	0.045	GMAW Pulse	Pulse	Argon Helium	196	UltimArc®	75 – 500	ipm (1.91 – 12.7 m/min)	
NiCr	0.035	GMAW Pulse	Pulse	Ar/ Ar He	501	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	503	UltimArc®	75 – 600	ipm (1.91 – 15.24 m/min)	
	1/16	GMAW Pulse	Pulse	Ar/ Ar He	505	UltimArc®	75 – 350	ipm (1.91 – 8.89 m/min)	
NiCu	0.035	GMAW Pulse	Pulse	Ar/ Ar He	507	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	509	UltimArc®	75 – 600	ipm (1.91 – 15.24 m/min)	
	1/16	GMAW Pulse	Pulse	Ar/ Ar He	511	UltimArc®	50 – 350	ipm (1.27 – 8.89 m/min)	
NiFe-CI	0.035	GMAW Pulse	Pulse	Ar/ Ar He	513	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	515	UltimArc®	75 – 600	ipm (1.91 – 15.24 m/min)	
Ni-1	0.035	GMAW Pulse	Pulse	Ar/ Ar He	519	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	521	UltimArc®	75 – 600	ipm (1.91 – 15.24 m/min)	
	1/16	GMAW Pulse	Pulse	Ar/ Ar He	523	UltimArc®	50 – 300	ipm (1.27 – 7.62 m/min)	
Ni-CI	0.035	GMAW Pulse	Pulse	Ar/ Ar He	525	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	527	UltimArc®	75 – 500	ipm (1.91 – 12.7 m/min)	
FCAW	Flux Core	All	FCAW-S	Self Shield CV	NA	6	Pinch	10 – 45	V
			FCAW-G	Gas Shield CV		7	Pinch	10 – 45	V
	Cored Wire	0.045	FCAW-G	CV	CO ₂	90	Pinch	175 – 600	ipm (4.45 – 15.24 m/min)
					Argon Mix	91		175 – 600	ipm (4.45 – 15.24 m/min)
		0.052	FCAW-G	CV	CO ₂	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 ₂	189	Pinch	125 – 400	ipm (3.18 – 10.16 m/min)
		Argon Mix	190		125 – 400	ipm (3.18 – 10.16 m/min)			

§ Advanced Module Required

⊖ External HF Starter Required

Δ Tandem Controller Required

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

‡ STT® or Advanced Module Required

SMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	NA	NA		DCEP SMAW	Soft	NA	1	Arc Force, Hot Start
Crisp					NA	2	Arc Force, Hot Start	15 – 555 A
Pipe					NA	4	Arc Force	50 – 250 A
DCEN SMAW				SMAW DC- (§)	NA	379	Arc Force, Hot Start	15 – 350 A
AC SMAW				AC SMAW (§)	NA	374	Arc Force, Hot Start, Frequency	15 – 350 A

GTAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	NA	NA		DCEN GTAW	Touch Start TIG	Ar / He	3	Hot Start
Touch Start TIG Pulse					Ar / He	8	Frequency, Background, Hot Start	5 – 555 A
HF TIG (⊖)					Ar / He	375	Hot Start	5 – 450 A
HF TIG Pulse (⊖)					Ar / He	376	Frequency, Background, Hot Start	5 – 450 A
AC GTAW				Touch Start AC TIG (§)	Ar / He	377	AC Frequency, AC Balance, DC Offset, Hot Start	10 – 350 A
				HF Start AC TIG (§)	Ar / He	378	AC Frequency, AC Balance, DC Offset, Hot Start	10 – 350 A

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

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 (2.54 – 25.4 m/min)
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)	
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)	
0.040		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)	

GMAW-HyperFill	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	Steel	0.035	GMAW	HyperFill		Argon Mix	601	
0.040		GMAW	HyperFill		Argon Mix	602		100 – 480 ipm (2.54 – 12.19 m/min)