

Tylan Mass Flow Controller Specifications

Model	FC-260	FC-261	FC-262	FC-280	FC-2900/01/02	FC-2910/11/12	FC-2900M/01M/02M	FC-2920/21	FC-2925/26
Full-scale range* (N2)	10 SCCM - 5 slpm	6 - 20 slpm	30 - 200 slpm	10 sccm - 30 slpm	10 sccm - 10 slpm	11 slm - 30 slpm	10 sccm - 30 slpm	30 - 200 slpm	201 - 1000 slpm
Turndown Ratio	50:1	50:1	25:1	50:1	50:1	50:1	50:1	25:1	20:1
Control Range	2 - 100 %	2 - 100 %	4 - 100 %	2 - 100 %	2 - 100 %	2 - 100 %	2 - 100 %	4 - 100 %	5 - 100 %
Response Time(0-100 %)	6 sec	12 sec.	30 sec.	1 sec	1 sec	1 sec	1 sec	6 sec	6 sec
Step Response Time	3 sec	10 sec.	30 sec.	400 to 800 ms	500 ms	500 ms	500 ms	3 sec	2.5 sec
Settling Time(0-100 %)	12 sec.	20 sec.	30 sec.	1.5 sec	1.5 sec	1.5 sec	1.5 sec	5 sec	6 sec
Accuracy	± 1.0%	± 1.0%	± 2.0%	± 1.0%	± 1.0%	± 1.0%	± 1.0%	± 2.0%	± 2.0% up to 300 slpm ± 3.0% up to 1000 slpm
Linearity	±0.5%	±0.5%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
Repeatability	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%
Pressure Coefficient	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi
Temperature Coefficient	±0.1%/°C	±0.1%/°C	±0.1%/°C	±0.1%/°C	±0.05%/°C	±0.05%/°C	±0.05%/°C	±0.05%/°C	±0.05%/°C
Attitude Sensitivity	Insensitive to attitude	Insensitive to attitude	Insensitive to attitude	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°
Warm-up Time	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes
Power Consumption	4.0 watt @ 15VDC	4.0 watt @ 15VDC	4.0 watt @ 15VDC	3.0 watt max	3.3 watt @ 15VDC	3.3 watt @ 15VDC	3.3 watt @ 15VDC	5.1 watt @ 15VDC	3.3 watt @ 15VDC
Supply Voltage	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC
Input/Output Signal	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC
Supply Current	190 mA max (220 mA max @±18VDC)	190 mA max (220 mA max @±18VDC)	190 mA max (220 mA max @±18VDC)	110 mA max (125 mA max @±18VDC)	110 mA max (125 mA max @±18VDC)	110 mA max (125 mA max @±18VDC)	110 mA max (125 mA max @±18VDC)	170 mA max (200 mA max @±18VDC)	110 mA max (125 mA max @±18VDC)
Input Impedance	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)
Minimum Load Impedance	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms
Input/Output Signal(optional)					4 - 20 mA (2901 only)	4 - 20 mA (2911 only)	4 - 20 mA (2901M only)	4 - 20 mA (2921 only)	4 - 20 mA (2926 only)
Supply Current					130 mA max (150 mA max @±18VDC)	130 mA max (150 mA max @±18VDC)	130 mA max (150 mA max @±18VDC)	190 mA max (220 mA max @±18VDC)	130 mA max (150 mA max @±18VDC)
Input Impedance					250 ohms	250 ohms	250 ohms	250 ohms	250 ohms
Maximum Load Impedance					250 ohms	250 ohms	250 ohms	250 ohms	250 ohms
Connection Type	Card Edge	Card Edge	Card Edge	Card Edge	Card Edge : 2900 15 pin "D" : 2901 9PIN "D" : 2902	Card Edge : 2910 15 pin "D" : 2911 9PIN "D" : 2912	Card Edge : 2900 15 pin "D" : 2901 9PIN "D" : 2902	Card Edge : 2920 15 pin "D" : 2921	Card Edge : 2925 15 pin "D" : 2926
Valve (> 1 million cycles)	Normally Open Thermal	Normally Open Thermal	Normally Open Thermal	Normally Closed Solenoid	N.C & N.O Solenoid	N.C & N.O Solenoid	N.C & N.O Solenoid	Normally Closed Solenoid	N.C Pilot operated Bellows/Valve
Materials	316SS	316SS	316SS	316SS, 420SS, PFA teflon	316SS & 446SS,	316SS & 446SS,	316SS & 446SS	316SS, 420SS, PFA teflon	316SS, AM350SS, 446SS
Seals	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Nickel 200	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®
Leak Integrity	5 X 10 -9 atm cc/sec Helium	5 X 10 -9 atm cc/sec Helium	5 X 10 -9 atm cc/sec Helium	5 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -10 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium
Valve Through-Leak	<4% Full scale	<4% Full scale	<4% Full scale	<2% Full scale	<2% Full scale for N.C. <4% Full scale for N.O.	<2% Full scale for N.C. <4% Full scale for N.O.	<2% Full scale for N.C. <4% Full scale for N.O.	<4% Full scale	<4% Full scale
Fittings	2S (1/8" Swg) 4S (1/4" Swg) 4V (1/4" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	2S (1/8" Swg) 4S (1/4" Swg) 6S (3/8" Swg) 2V (1/8" VCR) 4V (1/4" VCR) 6V (3/8" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	4V (1/4" VCR)	6S (3/8" Swg) 6V (3/8" VCR)	6S (3/8" Swg) 8S (1/2" Swg) 12S (3/4" SWG) 6V (3/8" VCR) 8V (1/2" VCR) 12V (3/4" VCR)
Weight	1.1lb (500 g)	2.1lb (954 g)	5.0lb (2.27Kg)	2.1lb (954 g)	2.1lb (954 g)	2.1lb (954 g)	2.5lb (1.15Kg)	5.0lb (2.27Kg)	5.5lb (2.5Kg)
Temperature Range	5 - 43 °C	5 - 43 °C	5 - 43 °C	0 - 50 °C	0 - 50 °C	0 - 50 °C	0 - 50 °C	5 - 50 °C	0 - 50 °C
Humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity
Max Operating Pressure	150 psig	150 psig	150 psig	150 psig	150 psig	150 psig	150 psig	150 psig	150 psig
Differential Pressure	10-40 psid	15-40 psid	30-60 psid	10-40 psid (to 5 slpm) 15-40psid (6-30 slm)	10-40 psid	15-40 psid	10-40 psid (to 5 slpm) 15-40 psid (6-30 slm)	20-50 psid (30 to 99 slm) 40-60 psid (100 to 150 slm) 30-60 psid (150 to 200 slm)	30-60 psid (to 300 slpm) 40-80 psid (301 to 1000 slm)

Tylan Mass Flow Meter Specifications

Spec	Model	FM-360	FM-361	FM-362	FM-380	FM-3900/01/02	FM-3910/11/12	FM-3900M/01M/02M	FM-3920/21	FM-3925/26
Full-scale (N2)		10 SCCM - 5 slpm	6 - 20 slpm	30 - 200 slpm	10 sccm - 30 slpm	10 sccm - 10 slpm	11 slm - 10 slpm	10 sccm - 30 slpm	30 - 200 slpm	201 - 1000 slpm
Response Time		6 sec	6 sec	10 sec	2 sec	1 sec	1 sec	1 sec	3 sec	2.5 sec
Accuracy		± 1.0%	± 1.0%	± 2.0%	± 1.0%	± 1.0%	± 1.0%	± 1.0%	± 2.0%	± 2.0% up to 300 slpm ± 3.0% up to 1000 slpm
Linearity		±0.5%	±0.5%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
Repeatability		±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%
Pressure Coefficient		± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi	± 0.007% / psi
Temperature Coefficient		±0.1%/°C	±0.1%/°C	±0.1%/°C	±0.1%/°C	±0.05%/°C	±0.05%/°C	±0.05%/°C	±0.05%/°C	±0.05%/°C
Attitude Sensitivity		Insensitive to attitude	Insensitive to attitude	Insensitive to attitude	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°	< 0.25% @ 90°
Warm-up Time		30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes
Power Consumption		1.5 watt @ 15VDC	1.5 watt @ 15VDC	1.5 watt @ 15VDC	1.0 watt max	1.2 watt @ 15VDC	1.2 watt @ 15VDC	1.2 watt @ 15VDC	1.0 watt @ 15VDC	1.2 watt @ 15VDC
Supply Voltage		±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC	±12 VDC to ±18 VDC
Input/Output Signal		0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC
Supply Current		25 mA max (30 mA max @±18VDC)	25 mA max (30 mA max @±18VDC)	25 mA max (30 mA max @±18VDC)	35 mA max (40 mA max @±18VDC)	35 mA max (40 mA max @±18VDC)	35 mA max (40 mA max @±18VDC)	35 mA max (40 mA max @±18VDC)	35 mA max (45 mA max @±12VDC)	35 mA max (40 mA max @±18VDC)
Input Impedance		500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	500K ohms (minimum)	Not Applicable
Minimum Load Impedance		2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms	2000 ohms
Input/Output Signal(optional)						4 - 20 mA (3901 Only)	4 - 20 mA (3911 Only)	4 - 20 mA (3901M Only)	4 - 20 mA (3921 Only)	4 - 20 mA (3926 Only)
Supply Current					55 mA max (65 mA max @±18VDC)	55 mA max (65 mA max @±18VDC)	55 mA max (65 mA max @±18VDC)	55 mA max (65 mA max @±18VDC)	55 mA max (65 mA max @±18VDC)	55 mA max (65 mA max @±18VDC)
Maximum Load Impedance					250 ohms	250 ohms	250 ohms	250 ohms	250 ohms	250 ohms
Connection Type		Card Edge	Card Edge	Card Edge	Card Edge : 3900 15 pin "D" : 3901 9PIN "D" : 3902	Card Edge : 3910 15 pin "D" : 3911 9PIN "D" : 3912	Card Edge : 3900M 15 pin "D" : 3901M 9PIN "D" : 3902M	Card Edge : 3920 15 pin "D" : 3921	Card Edge : 3925 15 pin "D" : 3926	
Materials		316SS	316SS	316SS	316SS, 420SS, PFA teflon	316SS & 446SS,	316SS & 446SS,	316SS & 446SS	316SS, 420SS, PFA teflon	316SS, AM350SS, 446SS
Seals		Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®	Nickel 200	Viton®, Kalrez® or Nephorene®	Viton®, Kalrez® or Nephorene®
Leak Integrity		5 X 10 -9 atm cc/sec Helium	5 X 10 -9 atm cc/sec Helium	5 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -10 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium	1 X 10 -9 atm cc/sec Helium
Fittings		2S (1/8" Swg) 4S (1/4" Swg) 4V (1/4" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	2S (1/8" Swg) 4S (1/4" Swg) 6S (3/8" Swg) 2V (1/8" VCR) 4V (1/4" VCR) 6V (3/8" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	4S (1/4" Swg) 4V (1/4" VCR) 6S (3/8" Swg) 6V (3/8" VCR)	4V (1/4" VCR)	6S (3/8" Swg) 6V (3/8" VCR)	6S (3/8" Swg) 8S (1/2" Swg) 12S (3/4" SWG) 6V (3/8" VCR) 8V (1/2" VCR) 12V (3/4" VCR)
Weight		1.01lb (454 g)	2.0lb (907 g)	4.75lb (2.15Kg)	1.8lb (810 g)	1.8lb (810 g)	1.8lb (810 g)	2.1lb (954 g)	4.75lb (2.15Kg)	5.0lb (2.27Kg)
Temperature Range		5 - 43 °C	5 - 43 °C	5 - 43 °C	0 - 50 °C	0 - 50 °C	0 - 50 °C	0 - 50 °C	5 - 50 °C	0 - 50 °C
Humidity		0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity	0-95% relative humidity
Max Operating Pressure		500 psig	500 psig	500 psig	500 psig	500 psig	500 psig	500 psig	500 psig	500 psig
Differential Pressure		0.5 psid at F.S	0.5 psid at F.S	0.5 psid at F.S	0.5 psid at F.S	2 psid at F.S	2 psid at F.S	2 psid at F.S	2 psid at F.S	5 psid at F.S

*** Note :**

Standard Pressure is defined as 760 mmHg(14.7 psia).
 Standard Temperature is defined as 0°C, 1 atm
 PSIA - pounds per square inch absolute
 PSID - pounds per square inch differential
 PSIG - pounds per square inch gauge
 SLPM - standard liters per minute
 SCCM - standard cubic centimeter per minute