WARWICK®
WARWICK INSTRUMENTS

MASS FLOW DEVIC
EC-500 Serie

EtherCAT.

>>>>> Flow >>

FLOW ➡

WARWICK®
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MASS FLOW DEVICE
PB-700 Series

PROFI BUS

>>>>> Flow >>>>>

ZERO

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MULTI-2   KB
FLO: 80.00   %
SET: 80.01   %
VLV: 63.42   %

TOLZ: 600   %
              0:07:45
OR:N F:% V:%   R 10

MASS FLOW DEVICE
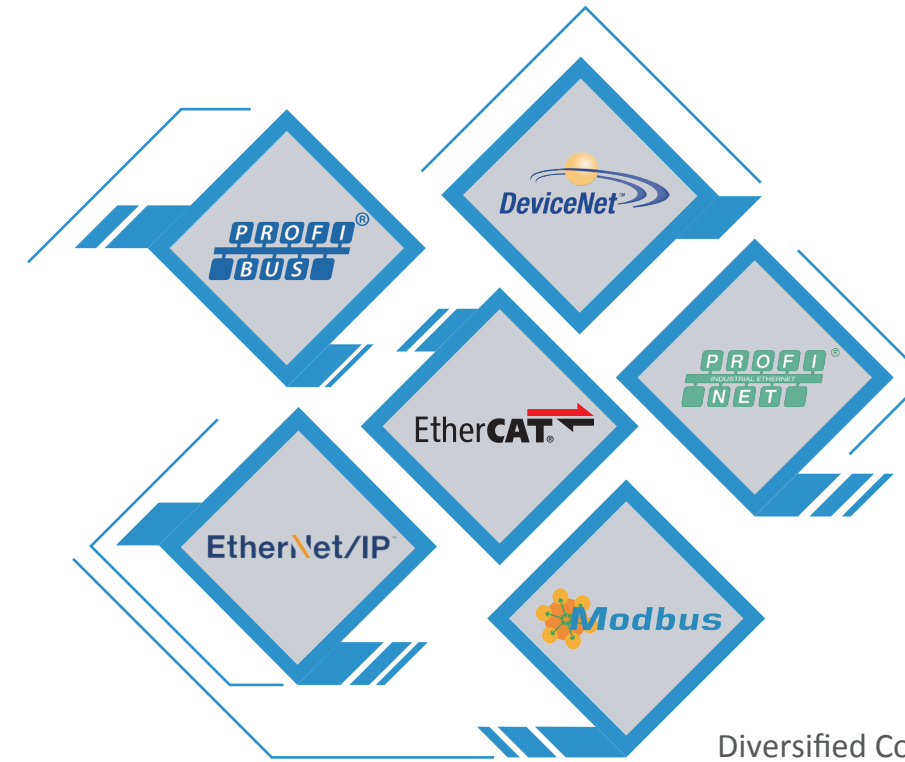DG-900 Series

Diversified Communication Protocols

Warwick Instruments has unique expertise in the field of gas mass flow measurement and control, and is diligent to provide customers with advanced and reliable technologies and integrated solutions. By supplying customized and completed services in fields such as semiconductor, PV solar, automotive industries, clean energy, medical equipment, environmental monitoring, biochemistry and life sciences, we satisfy our customer to meet the requirements of precision gas control and processes management, which help them to maintain competiveness to the rapidly iterative market and enhanced customer expectation.

Headquartered in the garden city of Zhuhai, Warwick has an independent production base in Zhongshan City with service capacity covering the whole country and Southeast Asia. The highly technical core team with decades of experience know well the profession demand and have rich filed service experience.

Adhering to the spirits of "deep in technology, excellent at product, and loyal to customer", Warwick carry forward the great vision of craftsman, stay rigorous, stay focus and make perfection. We are committed to become the first choice supplier to high tech instruments and critical industries.
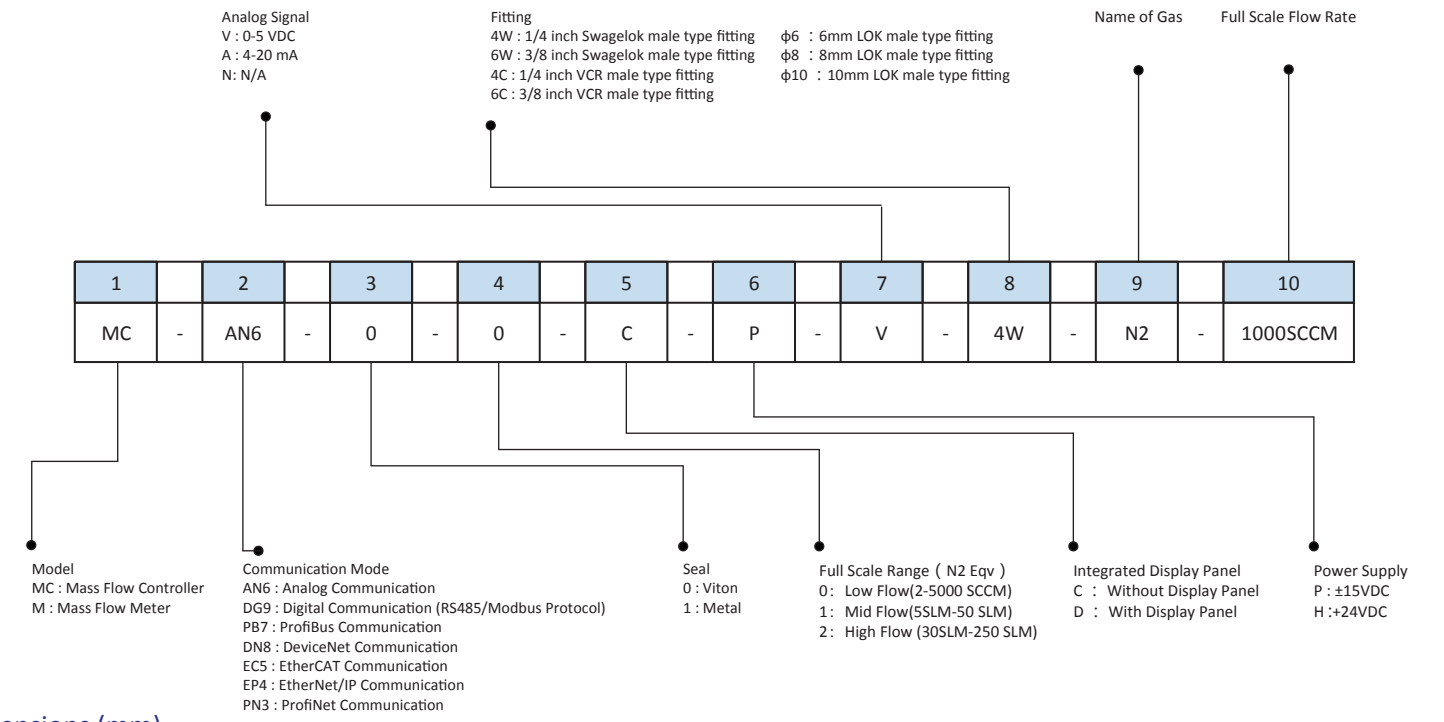
Specifications :

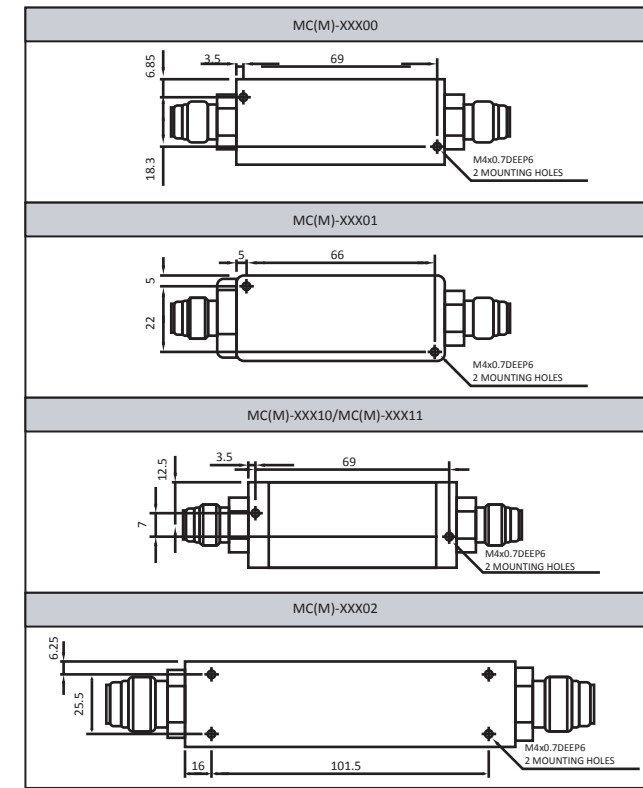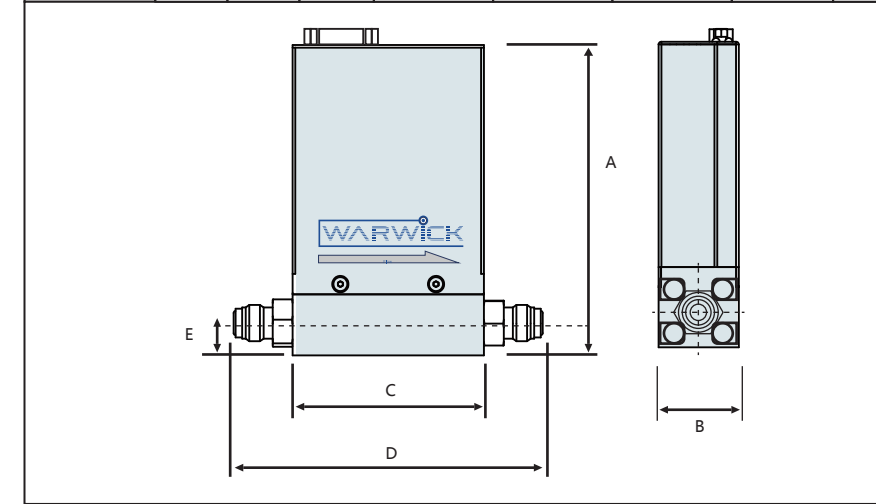| Model	AN-600 Series	DG-900 Series	PB-700 Series	DN-800 Series	EC-500 Series	EP-400 Series	PN-300 Series
Performance							
Full Scale Range (N2 Eqv)	LOW: 2-5000 SCCM / MID: 5SLM-50 SLM / HIGH: 30SLM-250 SLM						
Control Range	Single Gas: 2-100% F.S.			MGMR: 5-100% F.S.			
Response Time	LOW/MID： ≤ 1.0sec to within ±1% F.S. / HIGH： ≤ 3.0sec to within ±2% F.S.						
Accuracy	LOW/MID: ≤ ±1% F.S. HIGH: ≤ ±2% F.S.	LOW/MID: ≤ ±1% S.P.(25%-100% of Full Scale) / ≤ ±0.5% F.S.(2%-25% of Full Scale) / HIGH: ≤ ±2 % S.P.(25%-100% of Full Scale) / ≤ ±0.25% F.S.(2%-25% of Full Scale)						
Linearity	LOW/MID: ≤ ±0.5% F.S.			HIGH: ≤ ±1% F.S.			
Repeatability	≤ ± 0.2% F.S.						
Operating Differential Pressure	LOW: 0.05-0.28 MPa②	MID: 0.07-0.28 MPa (5SLM-23SLM) / 0.14-0.28 MPa (23SLM-50SLM)		HIGH: 0.14-0.28 MPa (30SLM-150SLM) / 0.20-0.30 MPa (150SLM-250SLM)			
Maximum Operating Pressure	0.48 MPa						
Proof Pressure	Max 1.03 MPa						
Leak Integrity	Viton: Max 1*10-7Pa.m3/sec(He)		Metal: Max 1*10-11Pa.m3/sec(He)				
Operation Temperature	5-45 DegC						
Mechanical Parts							
Control Valve Type	Normally Closed						
Seal	Viton/ Metal						
Material	Stainless Steel 316L, PTFE						
Fitting	1/4" VCR or 1/4" Swagelok Compatible / 3/8" VCR or 3/8" Swagelok Compatible						
Mounting Posture	Any position						
Weight	LOW: 0.9kg (Viton) 1.0kg (Metal)	MID: 0.9kg (Viton) 1.2kg (Metal)		HIGH: 2.2kg (Viton)			
Surface Finish	Viton: ≤5RA		Metal: TC,≤5RA				
Electrical Configuration							
Electrical Signal	0-5VDC: 9P-DSub *1	0-5VDC: 9P-DSub *1 RS485: RJ11 *2	ProfiBus-DP : Bus : 9P-DSub (F) *1 Power : 9P-DSub (M) *1	DeviceNet : 5-Pin M12 *1 RJ11 *1	EtherCAT: RJ45 *2 5-Pin M8 *1	EtherNet/IP: RJ45 *2 5-Pin M8 *1	ProfiNet: RJ45 *2 5-Pin M8 *1
Power Supply	+15VDC ±2% at 50mA / - 15VDC ±2% at 250mA maximum / +24VDC ±15% at 240mA maximum						
Power Consumption	3.5W - 4.5W						
Option							
Integrated Control Panel	With OLED screen, Flow rate reading, controlling and totalizing						
Multi-Gas & Multi-Range	N2 Eqv Full-scale Flow: Multi-0:10SCCM; Multi-1:30SCCM; Multi-2:100SCCM; Multi-3:300SCCM;Multi-4:1000SCCM; / Multi-5:3SLM; Multi-6:5SLM; Multi-7:10SLM;Multi-8:30SLM; Multi-9:50SLM						

① For 1-100% control range, please consult with sale Rep.

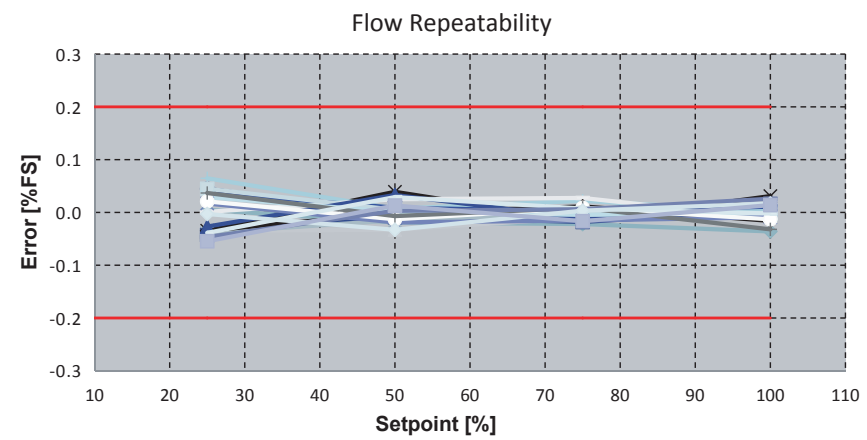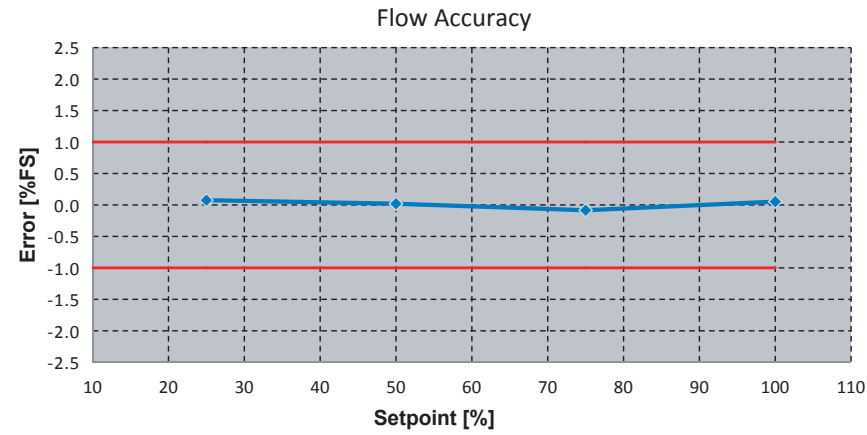② For Ultra-Low operating differential pressure, please consult with sale Rep.

Product Guide :

Analog Signal
V : 0-5 VDC
A : 4-20 mA
N: N/A

Fitting
4W : 1/4 inch Swagelok male type fitting
6W : 3/8 inch Swagelok male type fitting
4C : 1/4 inch VCR male type fitting
6C : 3/8 inch VCR male type fitting

φ6 : 6mm LOK male type fitting
φ8 : 8mm LOK male type fitting
φ10 : 10mm LOK male type fitting

Name of Gas

Full Scale Flow Rate

1	2	3	4	5	6	7	8	9	10
MC	- AN6	- 0	- 0	- C	- P	- V	- 4W	- N2	- 1000SCCM

Model
MC : Mass Flow Controller
M : Mass Flow Meter

Communication Mode
AN6 : Analog Communication
DG9 : Digital Communication (RS485/Modbus Protocol)
PB7 : ProfiBus Communication
DN8 : DeviceNet Communication
EC5 : EtherCAT Communication
EP4 : EtherNet/IP Communication
PN3 : ProfiNet Communication

Seal
0 : Viton
1 : Metal

Full Scale Range（N2 Eqv）
0 : Low Flow(2-5000 SCCM)
1 : Mid Flow(5SLM-50 SLM)
2 : High Flow (30SLM-250 SLM)

Integrated Display Panel
C ： Without Display Panel
D ： With Display Panel

Power Supply
P : ±15VDC
H :+24VDC

Dimensions (mm)

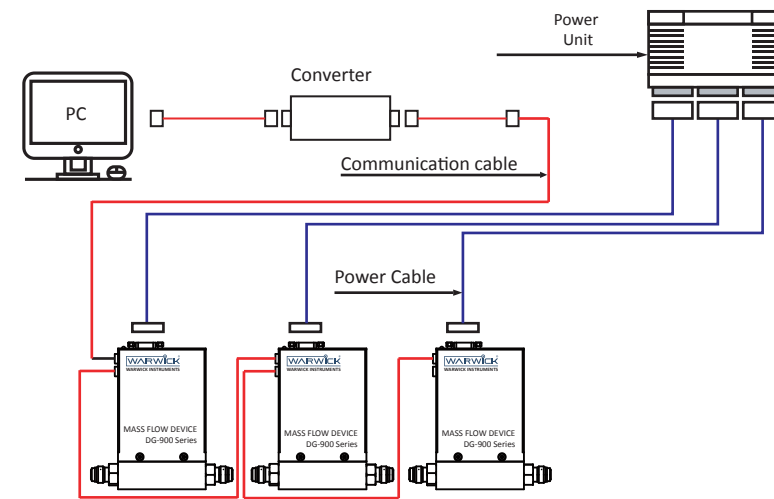| Model	A	B	C	D				E
				1/4"VCR	1/4"LOK	3/8"VCR	3/8"LOK	
MC(M)-XXX00	123.5	32	76	124	128.3 (112.3)	\	\	12.7
MC(M)-XXX01	123.5	32	76	124	128.3 (112.3)	\	\	15
MC(M)-XXX10	126.4	32	76	124	129 (112.5)	\	\	12.7
MC(M)-XXX11	126.4	32	76	124	129 (112.5)	\	\	12.7
MC(M)-XXX02	151.4	38	133.3	\	\	187.4	189.8 (173)	20

MC(M)-XXX00

MC(M)-XXX01

MC(M)-XXX10/MC(M)-XXX11

MC(M)-XXX02

Flow Accuracy & Repeatability Demonstration:

Flow Accuracy

Y-axis: Error [%FS] (2.5 to -2.5)
X-axis: Setpoint [%] (10 to 110)

Flow Repeatability

Y-axis: Error [%FS] (0.3 to -0.3)
X-axis: Setpoint [%] (10 to 110)

DG-900 SERIES DIGITAL（RS485）MODEL:

Power Unit
Converter
PC
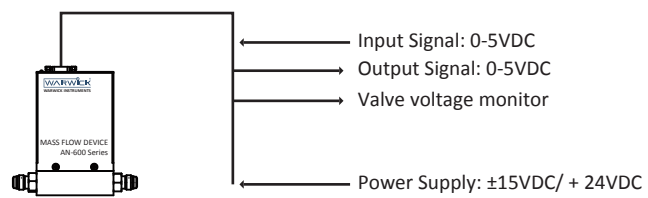Communication cable
Power Cable
MASS FLOW DEVICE DG-900 Series

RS485 Interface Pin 1

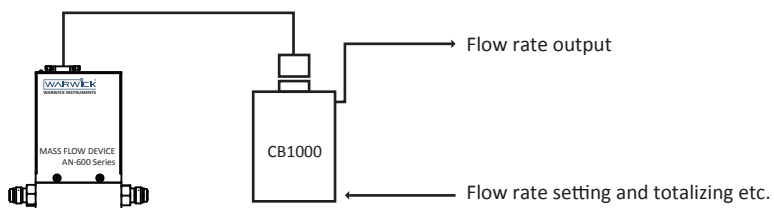| Pin	Signal Name
1	No Connected
2	No Connected
3	RS485B
4	RS485A
5	No Connected
6	No Connected

- Baud rates from 9,6 KBaud up to 38.4 KBaud
- ±15VDC or +24VDC voltage supply
- Vendor specified RS485 ASCII command set
- Modbus-RTU transmission mode with broadcast support
- RS485 2W-cabling with dual RJ11 modular jack connector to support daisy chain connection
- Station-address and Baud rate setting by Modbus or using configuration tool via RS485
- Connection of max.125 instruments to 1 bus
- Support integrated OLED panel for tool-less unit control and configuration.

AN-600 SERIES ANALOG MODEL:
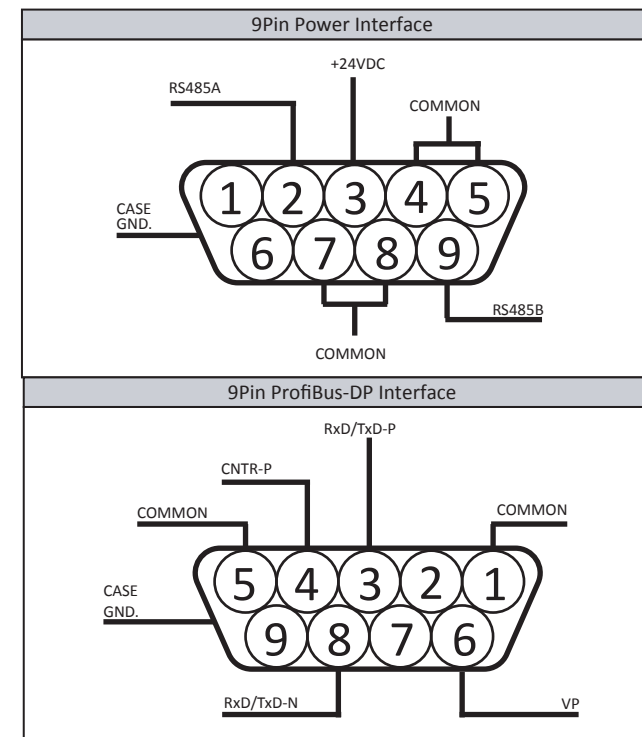
Using an external power source:

- Input Signal: 0-5VDC
- Output Signal: 0-5VDC
- Valve voltage monitor
- Power Supply: ±15VDC/ + 24VDC

MASS FLOW DEVICE AN-600 Series

Using CB1000 Control Unit:

- Flow rate output
- Flow rate setting and totalizing etc.

MASS FLOW DEVICE AN-600 Series
CB1000

9Pin Power Interface (±15VDC)	9Pin Power Interface (+24VDC)
OUTPUT 0 - 5VDC, +15VDC, COMMON, VALVE OPEN/CLOSE, -15VDC, CASE GND.	OUTPUT 0 - 5VDC, +24VDC, COMMON, VALVE OPEN/CLOSE, CASE GND.
1 2 3 4 5 / 6 7 8 9	1 2 3 4 5 / 6 7 8 9
SET PT. 0-5VDC, COMMON, VALVE TEST PT. 0-5VDC	SET PT. 0-5VDC, COMMON, VALVE TEST PT. 0-5VDC

- Easy to control, simple structure, high response speed
- ±15 VDC or +24 VDC supply voltage
- Extremely low zero drift rate satisfies demand of precise manufacturing
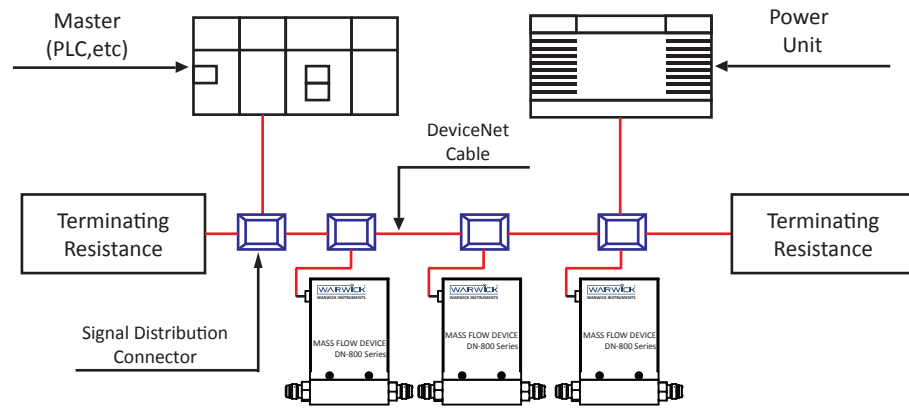- Support integrated OLED panel for tool-less unit control and configuration.
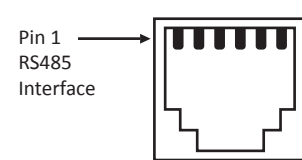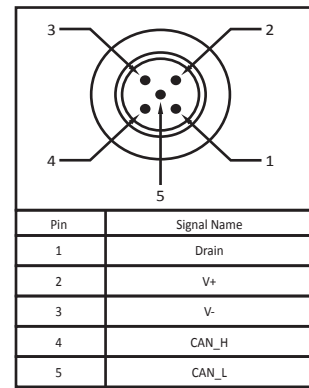
PB-700 SERIES PROFIBUS-DP MODEL:

9Pin Power Interface

RS485A, +24VDC, COMMON
CASE GND.
1 2 3 4 5 / 6 7 8 9
COMMON, RS485B

9Pin ProfiBus-DP Interface

RxD/TxD-P
CNTR-P
COMMON, COMMON
CASE GND.
5 4 3 2 1 / 9 8 7 6
RxD/TxD-N, VP

MASS FLOW DEVICE PB-700 Series

- Baud rates from 9,6KBaud up to 12MBaud
- +24 VDC supply voltage
- Parameter-data setting by means of a configuration tool is supported
- Connection to PROFIBUS-DP by means of 9P-DSub connector
- PROFIBUS DP slaves, using SPC3-chip, automatcally adapt to baudrates determined by the master station-address setting by DIP switch on instrument
- Connection of max. 127 instruments to 1 bus
- Support integrated OLED panel for tool-less unit control and configuration.
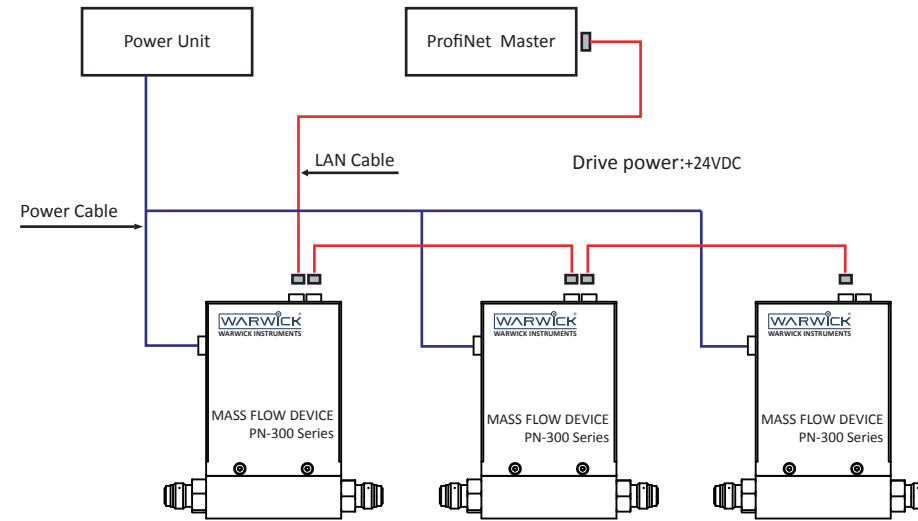
DN-800 SERIES DEVICENET MODEL:

Master (PLC,etc)

Power Unit

DeviceNet Cable

Terminating Resistance

Terminating Resistance

Signal Distribution Connector

MASS FLOW DEVICE DN-800 Series

FLOW

DeviceNet 5-Pin M12 Interface

Pin 1 → RS485 Interface

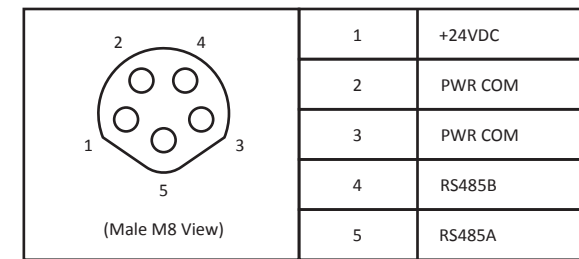| Pin	Signal Name
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

Pin	Signal Name
1	No Connected
2	No Connected
3	RS485B
4	RS485A
5	No Connected
6	No Connected

- Baud rates from 125 KBaud up to 500 KBaud
- +24VDC power supply
- Powering through M12 DeviceNet interface
- Connection of max. 64 instruments to 1 bus
- Support integrated OLED panel for tool-less unit control and configuration.
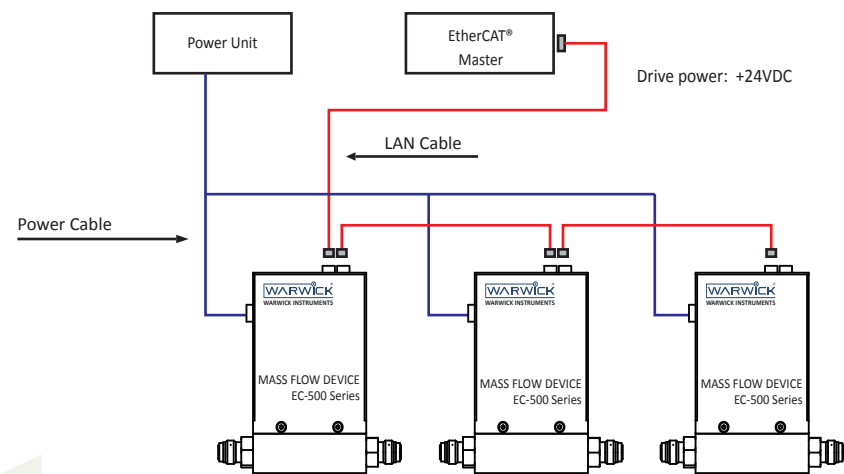
PN-300 SERIES PROFINET MODEL:

Power Unit

ProfiNet Master

LAN Cable

Drive power:+24VDC

Power Cable

MASS FLOW DEVICE PN-300 Series

MASS FLOW DEVICE PN-300 Series

MASS FLOW DEVICE PN-300 Series

MASS FLOW DEVICE PN-300 Series

FLOW

ProfiNet Power Interface

Pin	Signal Name
1	+24VDC
2	PWR COM
3	PWR COM
4	RS485B
5	RS485A

(Male M8 View)
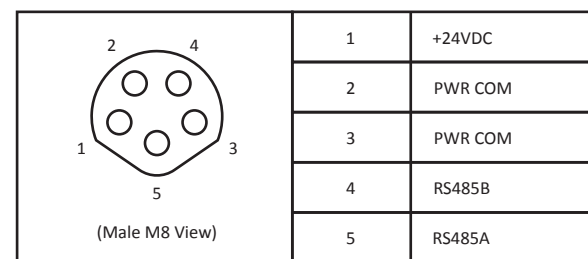
- +24 VDC power supply
- Supports PROFINET isochronous real-tme (RT & IRT)
- Network topology: tree, star, ring and daisy-chain
- Baud rates from 10 Mbps, 100 Mbps
- Max. nodes: unlimited
- Support integrated OLED panel for tool-less unit control and configuration
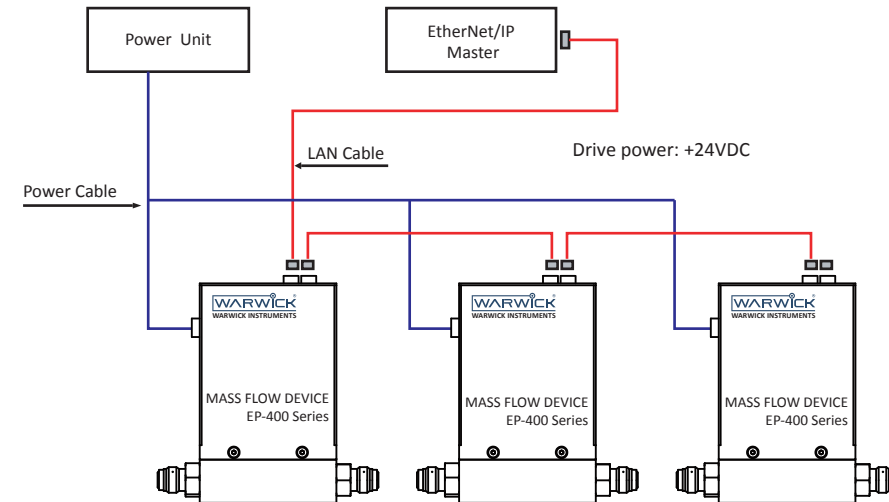
EC-500 SERIES ETHERCAT MODEL:

Power Unit

EtherCAT® Master

Drive power: +24VDC

LAN Cable

Power Cable

MASS FLOW DEVICE EC-500 Series

MASS FLOW DEVICE EC-500 Series

MASS FLOW DEVICE EC-500 Series

MASS FLOW DEVICE EC-500 Series

FLOW

EtherCAT Power Interface

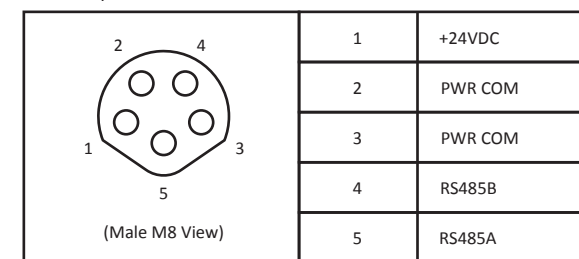| Pin	Signal Name
1	+24VDC
2	PWR COM
3	PWR COM
4	RS485B
5	RS485A

(Male M8 View)

- Support CAN application layer over EtherCAT(CoE)
- Support ETG5003_202x MFC Device Profile
- Second address (station alias) configurable with 3 rotary switches in the range 0 - 4095 (0xFFF)
- Configurable Process Data (PDO) settings
- Support integrated OLED panel for tool-less unit control and configuration

EP-400 SERIES ETHERNET/IP MODEL:

Power Unit

EtherNet/IP Master

LAN Cable

Drive power: +24VDC

Power Cable

MASS FLOW DEVICE EP-400 Series

MASS FLOW DEVICE EP-400 Series

MASS FLOW DEVICE EP-400 Series

MASS FLOW DEVICE EP-400 Series

FLOW

EtherNet/IP Power Interface

Pin	Signal Name
1	+24VDC
2	PWR COM
3	PWR COM
4	RS485B
5	RS485A

(Male M8 View)

- +24 VDC power supply
- Network topology: tree, star, ring and daisy-chain
- Baud rates from 10 Mbps, 100 Mbps
- Support Device Level Ring (DLR)
- Max. nodes: unlimited
- Support integrated OLED panel for tool-less unit control and configuration

WARWICK INSTRUMENTS

Deep in Technology · Excellent at Product · Loyal to Customer

WARWICK INSTRUMENTS CO., LTD