

Vx Omni Subsea Multiphase Flowmeter

Power and Communication

Communication protocol

The heart of the Vx Omni* subsea multiphase flowmeter is the data acquisition flow computer mark 5 (DAFC Mk5), which consists of three microcontroller boards: the power module, transmitter interface module, and baseboard module, which includes the communication interfaces. The Vx Omni flowmeter's preferred protocol for control system integration is Modbus.

Electrical interfaces

For the communication between the Vx Omni flowmeter and subsea control module (SCM), the following connector brands can be used: Diamould* electrical connectors, Siemens (Tronic), and Teledyne (ODI).

The table to the right shows the pin-out configuration for the 12-pin connector—the standard OneSubsea® offering.

Communication Protocol Options
Ethernet with Modbus TCP (according to The Subsea Instrumentation Interface Standardisation (SIIS) level 3)
RS-422 with Modbus TCP (according to IWIS)
RS-485 with Modbus RTU
RS-422 with Modbus RTU
CANbus with CANopen (according to SIIS level 2)

Electrical Interfaces					
ODI or Diamould Connector Pin Number	Tronic Pin Number	Channel	Modbus TCP SIIS level 3 signal description intelligent seabed device (ISD) side	Modbus TCP RS-422—IWIS Signal Description ISD Side	Modbus RTU RS-485 Signal Description ISD Side
12	1	A	24-V DC IN	24-V DC IN	24-V DC IN
11	2	A	0-V DC IN	0-V DC IN	0-V DC IN
10	3	B	24-V DC IN	24-V DC IN	24-V DC IN
9	4	B	0-V DC IN	0-V DC IN	0-V DC IN
8	5	B	RX+	RX+	RS485B Data+
7	6	B	RX-	RX-	RS485A Data-
6	7	A	RX+	RX+	RS485B Data+
5	8	A	RX-	RX-	RS485A Data-
4	9	B	TX+	TX+	RS485B Data+
3	10	B	TX-	TX-	RS485A Data-
2	11	A	TX+	TX+	RS485B Data+
1	12	A	TX-	TX-	RS485A Data-

The Vx Omni flowmeter standard connector is in pin-out configuration.

Different configurations are available for different connectors (4 pin, 7 pin, 12 pin), but this has an impact on delivery schedule.

Power consumption

Acceptable input voltage range at the Vx Omni flowmeter's subsea connector(s) is 20- to 35-V DC.

The table to the right shows the power consumption for different scenarios.

Power Consumption	
General	
Inrush current and duration	<1.5A at 24-V DC, 5-ms duration
System level (during gamma detector thermal transient period)	
Active or master DAFC	26 W max. at 24-V DC
Passive or slave DAFC	17 W max. at 24-V DC
Max. total power consumption	43 W at 24-V DC
System level (after gamma detector reached thermal stabilization)	
Active or master DAFC	21 W max. at 24-V DC
Passive/slave DAFC	15 W max. at 24-V DC
Max. total power consumption	36 W at 24-V DC
Optional	
AquaWatcher* water analysis sensor input	13 W at 24-V DC (in addition to the system level consumption)
SIIS level 2 communication	3 W at 24 V-DC (in addition to the system level consumption)