FIRELEC Migration Solution

PROVOX™ > DeltaV™

DM Series - Using DIA

Analog Inputs

CONTENTS

1. INTRODUCTION

The purpose of this document is to guide the user of a 10 series PROVOX™ system with the safe, efficient and easy way to migrate toward a DeltaV™ system.

FIRELEC has developed an economical migration solution (**FMS-PVXDM-DV-2**) allowing to protect the existing wiring investment as the user convert from an existing PROVOX™ system toward the DeltaV™ system.

The **FMS-PVXDM-DV-2** solution is a set of migration adapters installed in place of the existing I/O cards in the 10 series PROVOX™ files, allowing to migrate easily PROVOX™ I/Os toward a new DeltaV™ system, keeping the I/O wiring in place.

The process I/Os connected with the existing I/O field termination assemblies (FTAs) are kept in place and connected to the migration adapters using the existing front flat cables.
The migration adapters are connected to the DeltaV™ I/O cards using suitable cables provided with each type of migration adapter and DeltaV™ I/O card.

1.1. Key advantages of the FMS-PVXDM-DV-2 solution

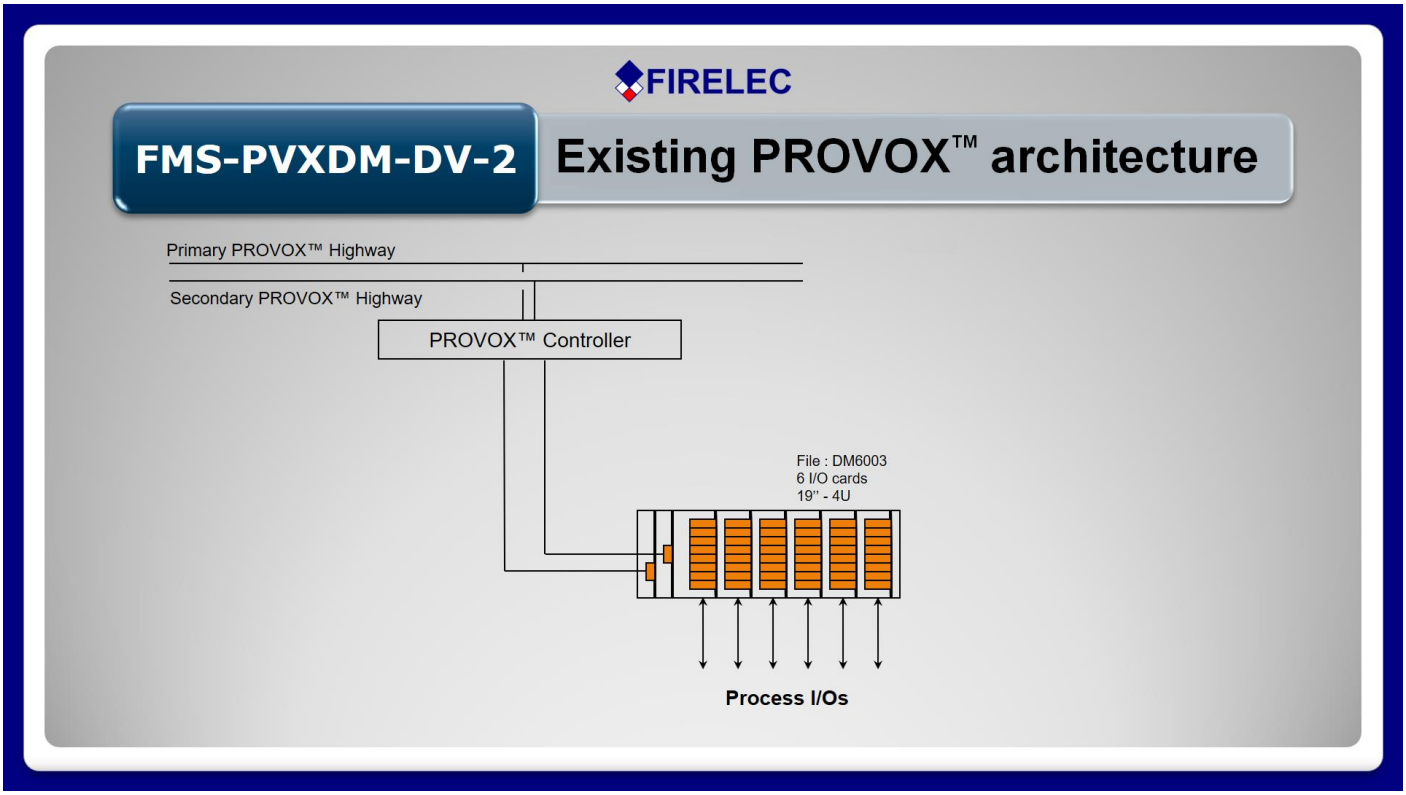
FMS-PVXDM-DV-2 solution protects the wiring investment as the user converts from the 10 series PROVOX™ system toward the DeltaV™ system of Emerson Process Management with following advantages :

FMS-PVXDM-DV-2 is a pre-engineered solution, ready to work without any technical rework or limitation regarding the existing capabilities of the PROVOX™ system to be migrated.

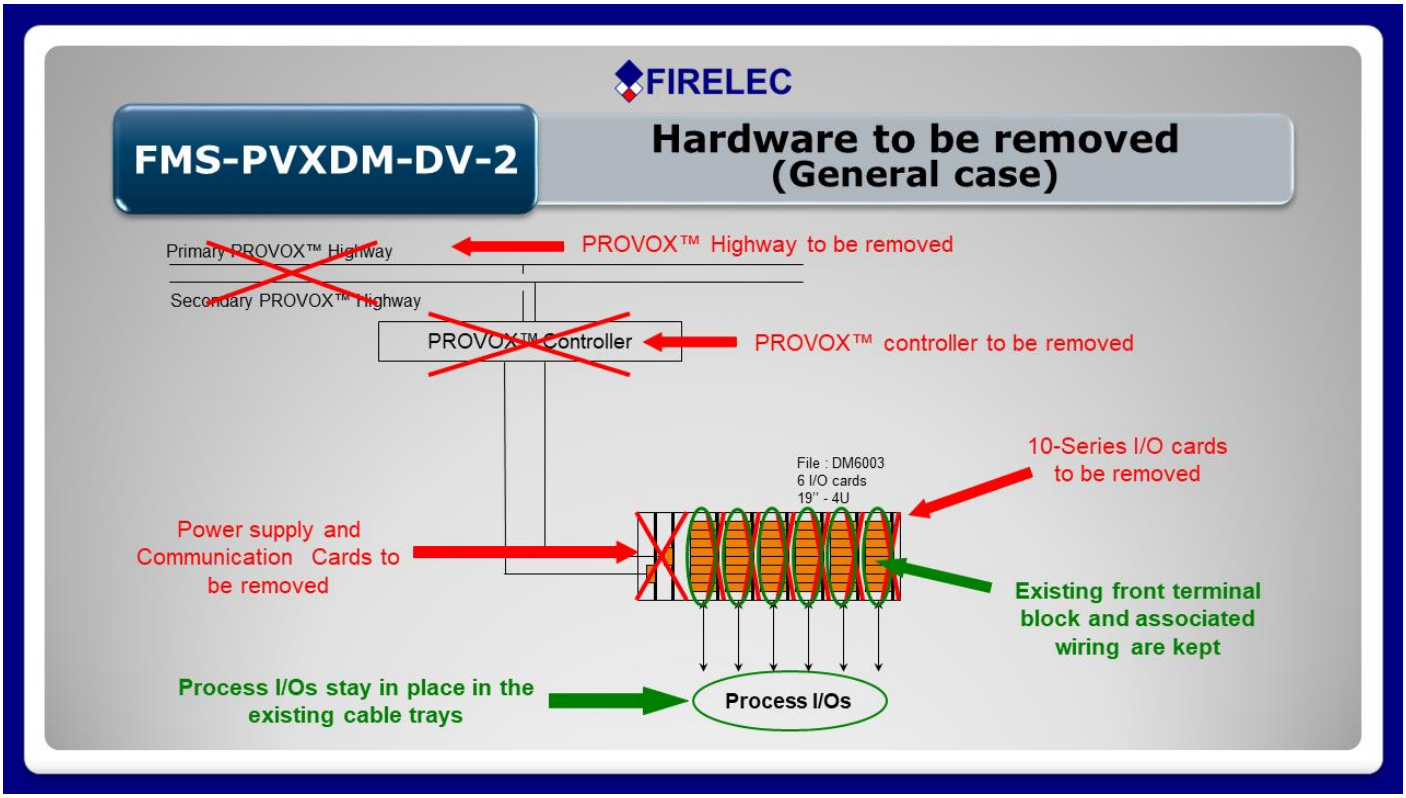
- As the instrument wiring is not disturbed, the instrument checkout during start-up is reduced to the minimum
- The DeltaV™ system's configuration allows for the engineering conversion to be done efficiently. The speed at which **FMS-PVXDM-DV-2** solution can be implemented ensures to reduce the process downtime to the minimum.
- All existing documentations (electrical and loop drawings, maintenance procedures, ...) remain unchanged as the I/O labelling is strictly the same on new migration adapters than on previous PROVOX™ I/O field termination assemblies removed.

1.2. Description of the FMS-PVXDM-DV-2 solution

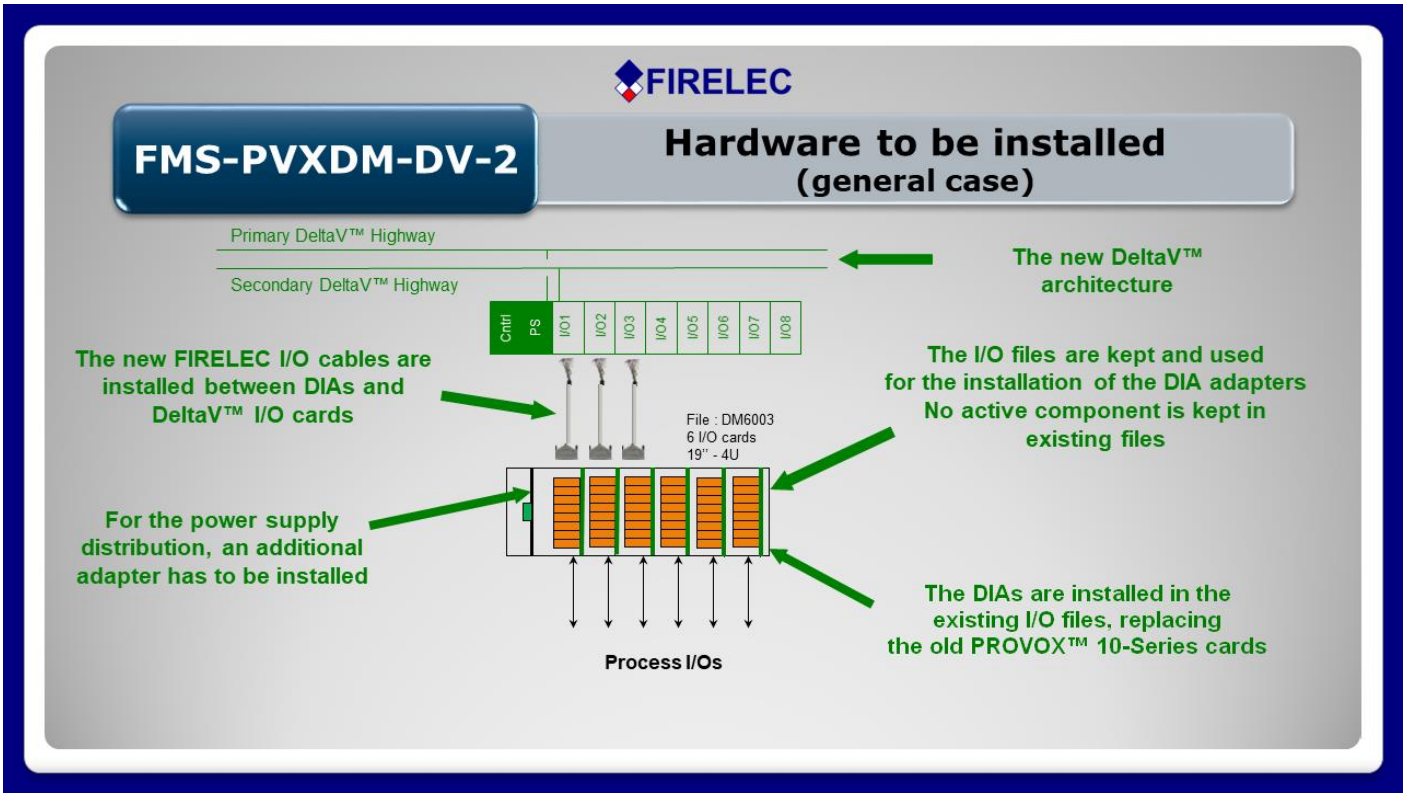
1.2.1. Existing PROVOX™ architecture



1.2.1.Existing PROVOX™ Hardware to be removed (general case)



1.2.2. New DeltaV™ architecture (general case)

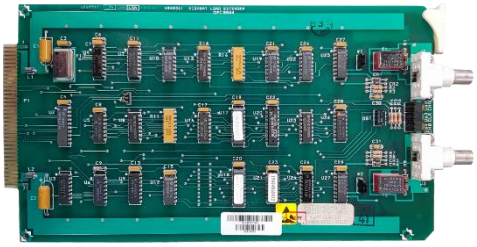


2. POWER SUPPLY

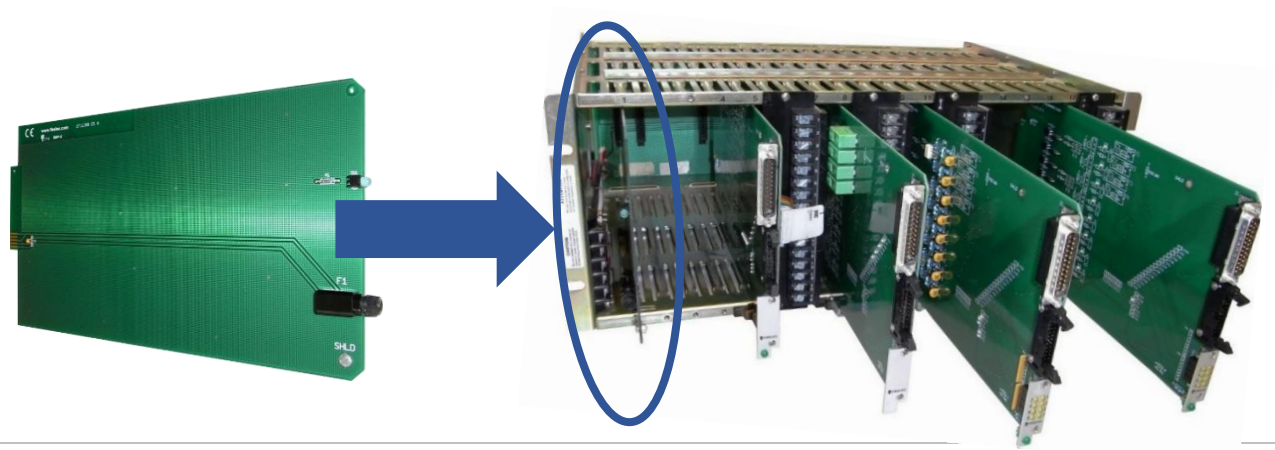
2.1. DM6003X1-GAX (Parallel Buffer) or DH6001X1-GAX (Serial Buffer)

This card ensured previously the power supply of I/O cards of the file and the parallel or serial communication with the I/O driver located in the PROVOX™ controller. Now, this card and its functionalities is not necessary anymore. It is to be replaced by a “bypass” card providing the 24vdc distribution to the migration adapters (DIAs) located in the file.

Existing PROVOX™ architecture
I/O file and communication card
I/O file
DM6003

Power distribution and communication Card
Parallel Buffer DM6003X1-GAX - PN : 31B1834X012 or **Serial Buffer DH6001X1-GAX** - PN : 38A8362X012
 

New FIRELEC DIA : DIA-PWS-01-1
Description
Power supply distribution adapter (No active component - Only bypass functionnality)



3. ANALOG INPUTS

3.1. DM6311 -A1 and -A2

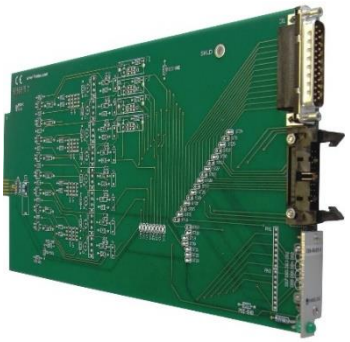
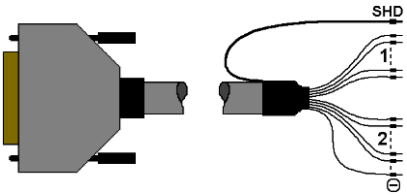
3.1.1. Description and connection

8 channels - Analog input -A1 : 1-5V ; -A2 : 0-10V

Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6311-A1 and -A2 - PN : 39A6178X012 and 39A6178X022	PN : 36A3885X012
-**A1** : Analog input - 1-5V -**A2** : Analog input - 0-10V	AI Single ended
	

New FIRELEC DIA : DIA-AI-02-1 (8 channels)
Description
8 channels - Analog input adapter - Voltage input

3.1.2. Solution : FMS-PVXDM-DV-2-AI1-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI1-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-02-1 installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI1-A1**	**2 x VE4003S7B1 or** **2 x SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

3.2. DM6312 A1 and -A2

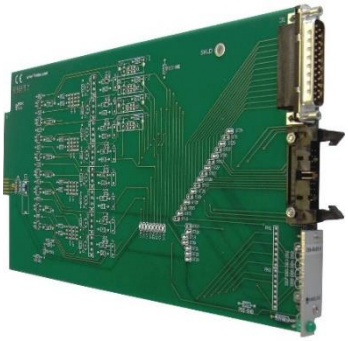
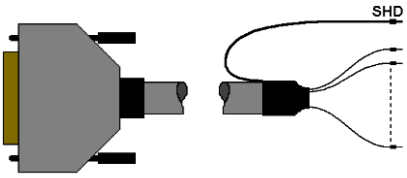
3.2.1. Description and connection

4 channels - Isolated Analog input -A1 : 1-5V ; -A2 : 0-10V

Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6312-A1 and -A2 - PN : 39A8568X012 - 39A8568X022	PN : 36A3886X052
-A1 : Isolated Analog input - 1-5V **-A2 :** Isolated Analog input - 0-10V	AI Isolated
	

New FIRELEC DIA : DIA-AI-03-1 (4 channels)
Description
4 channels - Analog input adapter for isolated signal

3.2.2. Solution : FMS-PVXDM-DV-2-AI2-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI2-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-03-1 installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI2-A1**	**VE4003S7B1 or SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

3.3. DM6321 - A1

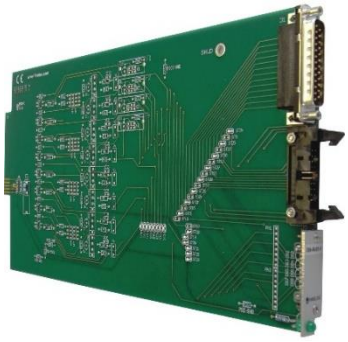
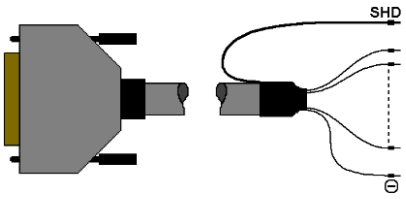
3.3.1. Description and connection

8 channels - Analog input -A1 : 4-20mA

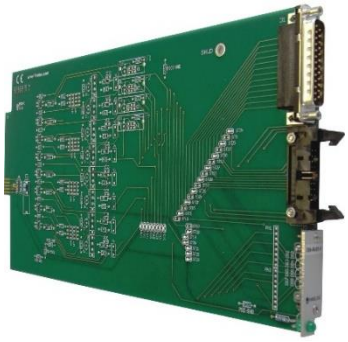
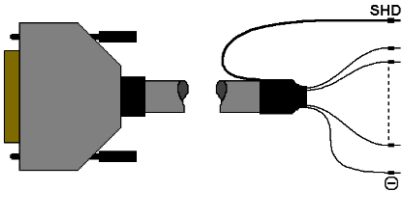
Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6321-A1 - PN : 39A6178X012	Option **-B1** : **Without** power supply PN : 36A3885X022 Option **-B2** : **With** transmitter power supply PN : 36A3887X012
-A1 : Analog input - 4-20mA	AI Single ended
	

New FIRELEC DIA : DIA-AI-01-1 (8 channels) for existing PROVOX™ 2 or 4 wire Field Termination Assembly – Option B1 or B2
Description
8 channels - Analog input adapter for 2 or 4 wire transmitters
Important remark : *The eight 250 ohm resistors located on the FTA have to be removed (to be easily cutted)*

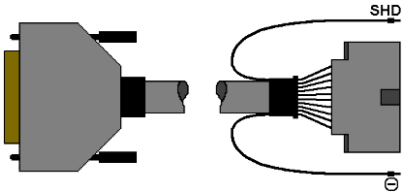
3.3.2. Solution : FMS-PVXDM-DV-2-AI3-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI3-A1**	**VE4003S2B1** Analog Input card, 8 channels, 4-20 mA, 2 wires, Hart, Terminal block
		

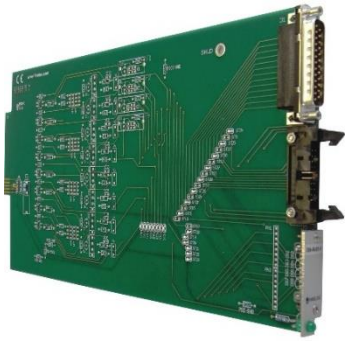
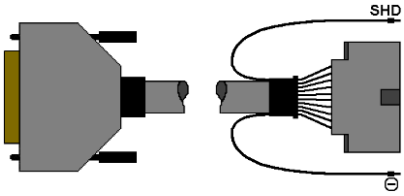
3.3.3. Solution : FMS-PVXDM-DV-2-AI3-A2

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A2		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI3-A2**	**VE4033S2B1 or SE4033S2B1** Analog Input card, 8 channels, 4-20 mA, Redundant, Hart, 2W Terminal block
		

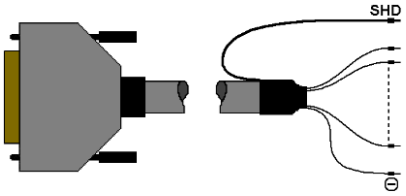
3.3.1.Solution : FMS-PVXDM-DV-2-AI3-A3

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A3		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI3-A3**	**VE4003S2B4 or SE4003S2B4** Analog Input card, 8 channels, 4-20 mA, Hart, 16 pin Mass Termination
		

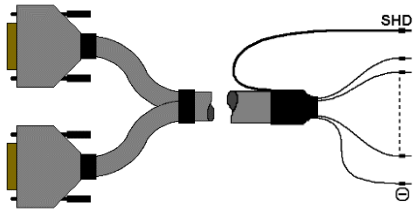
3.3.1.Solution : FMS-PVXDM-DV-2-AI3-A4

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A4		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI3-A4**	**VE4003S2B5 or SE4003S2B5** Analog Input card, 8 channels, 4-20 mA, Hart, 24 pin Mass Termination
		

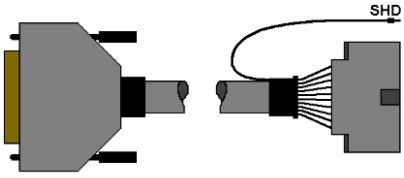
3.3.2.Solution : FMS-PVXDM-DV-2-AI3-A5

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A5		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI3-A5** CH 1 to 8 : Cable option A CH 9 to 16 : Cable option B	**1/2 x VE4003S2B6 or 1/2 x SE4003S2B6** Analog Input card, 16 channels, 4-20 mA, 2 wires, Terminal block
		

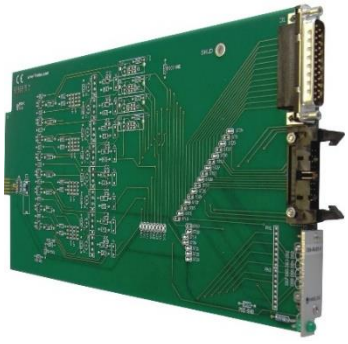
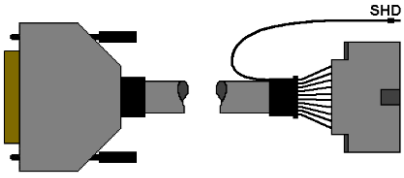
3.3.1.Solution : FMS-PVXDM-DV-2-AI3-A6

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A6		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly (existing PROVOX™ cards to be replaced have to be side by side	**CBL-1381**	**VE4003S2B6 or SE4003S2B6** Analog Input card, 16 channels, 4-20 mA, 2 wires, Terminal block
		

3.3.2.Solution : FMS-PVXDM-DV-2-AI3-A7

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A7		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-1314** CH 1 to 8 : J3 CH 9 to 16 : J4	**½ VE4003S2B11** **½ SE4003S2B11** Analog Input Plus card, 16 channels, 4-20 mA, Hart, 48 pin Mass Termination
		

3.3.1.Solution : FMS-PVXDM-DV-2-AI3-A8

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI3-A8		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-01-1 (2 or 4 wire) installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-1314** CH 1 to 8 : J3 CH 9 to 16 : J4	**½ VE4033S2B11 or** **½ SE4033S2B11** 2 x Analog Input Plus card, 16 channels, 4-20 mA, Hart, Red. 48 pin Mass Termination
		

3.4. DM6322

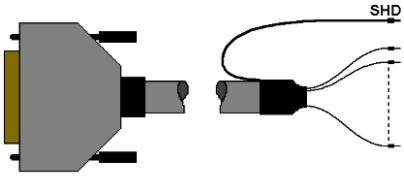
3.4.1. Description and connection

4 channels - Isolated Analog input -A1 : 4-20mA

Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6322-A1 - PN : 39A8568X012	PN : 36A3886X062
Isolated Analog input - 4-20mA	AI Isolated
	

New FIRELEC DIA : DIA-AI-03-1 (4 channels)
Description
4 channels - Analog input adapter for isolated signals (1-5V)

3.4.2. Solution : FMS-PVXDM-DV-2-AI4-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI4-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-03-1 installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI4-A1**	**VE4003S7B1 or SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

3.5. DM6331

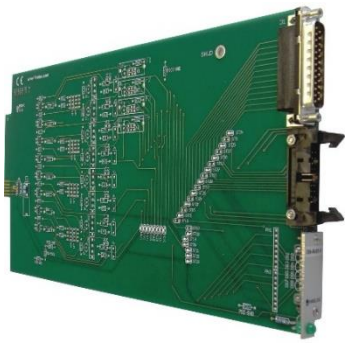
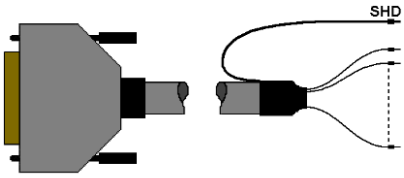
3.5.1. Description and connection

4 channels - Isolated RTD Input 3 wires

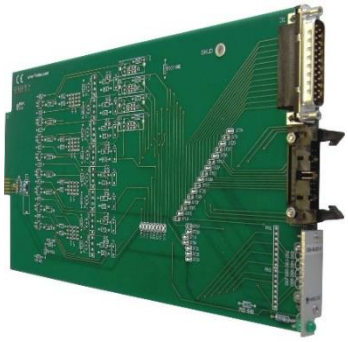
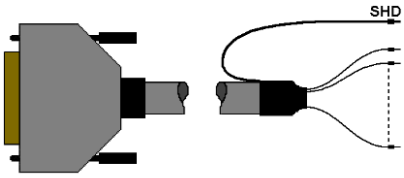
Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6331-A1 - PN : 39A7234X012 **DM6331-A2** - PN : 39A7234X022 **DM6331-A4** - PN : 39A7234X042 **DM6331-A5** - PN : 39A7234X052 **DM6331-A6** - PN : 39A7234X062 **DM6331-A7** - PN : 39A7234X032	PN : 36A3885X032
-A1 : Isolated RTD input -50°F +200°F / -46°C +93°C **-A2 :** Isolated RTD input -100°F +500°F / 38°C 260°C **-A4 :** Isolated RTD input 0°F +300°F / -18°C 149°C **-A5 :** Isolated RTD input -330°F +140°F / -201°C +60°C **-A6 :** Isolated RTD input -100°F +600°F / -73°C 316°C **-A7 :** Isolated RTD input 0°F +1000°F / -18°C +538°C	AI RTD
	

New FIRELEC DIA : DIA-AI-04-1 (4 channels)
Description
4 channels - Analog input adapter for RTDs

3.5.2. Solution : FMS-PVXDM-DV-2-AI5-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI5-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-04-1 installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI5-A1**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

3.5.1. Solution : FMS-PVXDM-DV-2-AI5-A2

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI5-A2		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-04-1 installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI5-A2** CH 1 to 4 : Cable option A CH 5 to 8 : Cable option B	**½ SE4003S6B1** RTD Input, 8 channels RTD Terminal Block
		

3.6. DM6341

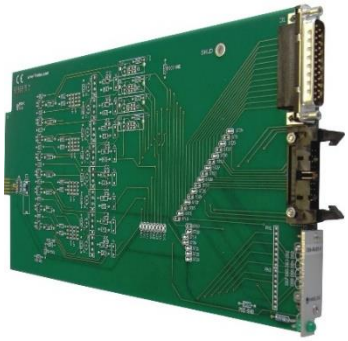
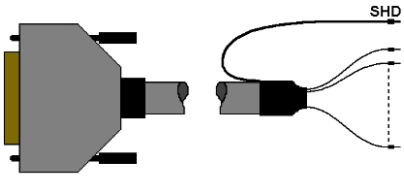
3.6.1. Description and connection

4 channels - Isolated mV Input / -10mV to 70mV

Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6341-A1 - PN : 39A8567X012	PN : 36A3886X132
Isolated mV Input / -10mV to 70mV	AI Isolated mV
	

New FIRELEC DIA : DIA-AI-03-1 (4 channels)
Description
4 channels - Analog input adapter for mV inputs

3.6.2. Solution : FMS-PVXDM-DV-2-AI6-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI6-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-03-1 installed in the existing I/O file type DM6003 and connected to the existing Field Termination Assembly	**CBL-PVXDM-DV-2-AI6-A1**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

3.7. DM6351 DM6352 DM6353 DM6354 DM6355

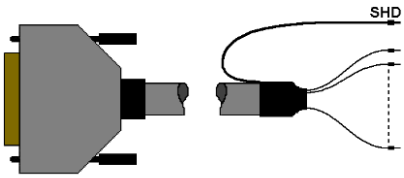
3.7.1. Description and connection

4 channels - Isolated Thermocouple Type J, K, T, E, R

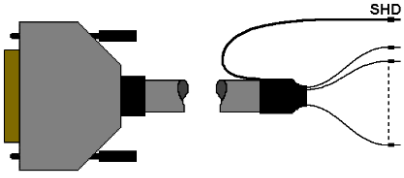
Existing PROVOX™ architecture	
I/O file and communication card	
I/O file	
DM6003	
	
I/O Card	**Field Termination Assembly**
DM6351-A1 -A2 (TC J) - PN : 39A8567X022 and X032 **DM6352-A1 -A2 (TC K)** - PN : 39A8567X042 and X052 **DM6353-A1 (TC T)** - PN : 39A8567X062 **DM6354-A1 (TC E)** - PN : 39A8567X072 **DM6355-A1 (TC R)** - PN : 39A8567X082	PN : 36A3886X012 PN : 36A3886X022 PN : 36A3886X032 PN : 36A3886X042 PN : 36A3886X112
DM6351-A1 : 0°F +1400°F / -18°C +760°C **DM6351-A2 :** -60°F +640°F / -51°C +338°C **DM6352-A1 :** 0°F +2300°F / -18°C +1260°C **DM6352-A2 :** 0°F +1000°F / -18°C +538°C **DM6353-A1 :** -300°F +600°F / -185°C +316°C **DM6354-A1 :** -100°F +1600°F / -73°C +871°C **DM6355-A1 :** 0°F +3200°F / -18°C +1760°C	
	

New FIRELEC DIA : DIA-AI-05-1 (4 channels)
Description
4 channels - Analog input adapter for Tc

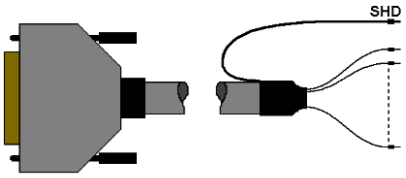
3.7.2. Solution : FMS-PVXDM-DV-2-AI7-A1

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A1		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC J)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A1**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

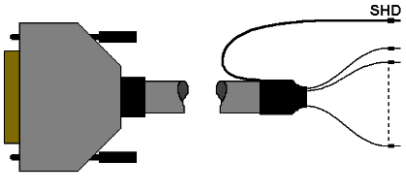
3.7.1. Solution : FMS-PVXDM-DV-2-AI7-A2

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A2		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC K)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A2**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

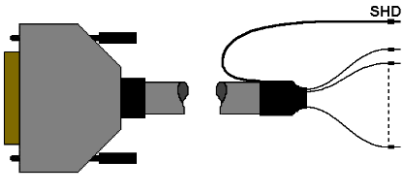
3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A3

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A3		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC T)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A3**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

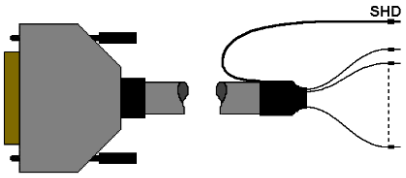
3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A4

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A4		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC E)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A4**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

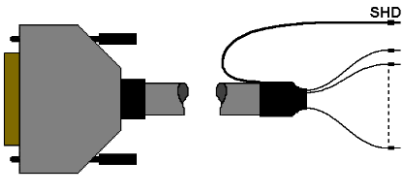
3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A5

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A5		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC R)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A5**	**VE4003S7B1** **SE4003S7B1** Isolated Input, 4 channels (Thermocouple, mV, V, RTD)
		

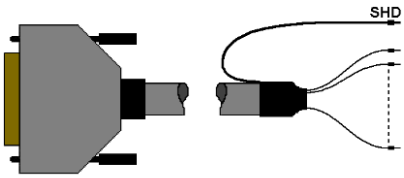
3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A6

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A6		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC J)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A6** CH 1 to 4 : Cable option A CH 5 to 8 : Cable option B	**½ VE4003S5B1 or** **½ SE4003S5B1** Thermocouple Card: 8 Channels Thermocouple Terminal Block
		

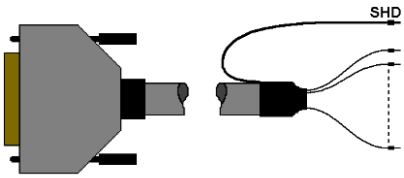
3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A7

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A7		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC K)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A7** CH 1 to 4 : Cable option A CH 5 to 8 : Cable option B	**½ VE4003S5B1 or** **½ SE4003S5B1** Thermocouple Card: 8 Channels Thermocouple Terminal Block
		

3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A8

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A8		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC T)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A8** CH 1 to 4 : Cable option A CH 5 to 8 : Cable option B	**½ VE4003S5B1 or** **½ SE4003S5B1** Thermocouple Card: 8 Channels Thermocouple Terminal Block
		

3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A9

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A9		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC E)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A9** CH 1 to 4 : Cable option A CH 5 to 8 : Cable option B	**½ VE4003S5B1 or** **½ SE4003S5B1** Thermocouple Card: 8 Channels Thermocouple Terminal Block
		

3.7.1.Solution : FMS-PVXDM-DV-2-AI7-A10

New DeltaV™ architecture - FMS-PVXDM-DV-2-AI7-A10		
Interface unit	**Cable**	**DeltaV™ card**
DIA-AI-05-1 installed in the existing I/O file type DM6003	**(TC R)** compensation cable (four shielded twisted pairs) **CBL-PVXDM-DV-2-AI7-A10** CH 1 to 4 : Cable option A CH 5 to 8 : Cable option B	**½ VE4003S5B1 or** **½ SE4003S5B1** Thermocouple Card: 8 Channels Thermocouple Terminal Block