Contrans I - Instruction Manual for Freelance 2000

Contrans I,

I.S. isolation,
Electrical isolation,
Load increase,
Transmitter-
Power Supply

the signal matching.

Contrans I

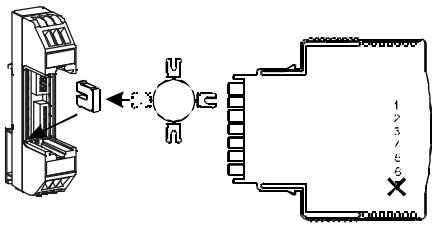
the family with

Contrans I,

the plugable function.

Click !

Plant security,



with function coding.

Signal matching

Freelance 2000

with methodic.

Chapter 1 - Glossary

Contrans I - an interface programme with a wide functional spectrum beginswith signal matching and ends with signal multiplication..

As the functionality ofprogrammable logic controllers and distributed controlsystems increase, so does the requirement for electrical isolation, intrinsically safe isolation.

Contrans I drasticallyreduces the costs during project planing,commissioning and servicing, compared with conventional signal processing components.

With this new systemconcept the electronic compartment (function module)and the junction box (standard connectionbase) have been designedseparately.

During installation, wiring is connected using the standard basewhich is snapped onto the DIN mounting rail.The function module is plugged into the prewired standardbase. The well-arranged and systematic terminal assignment helps to avoid wiring errors. Whenever servicing is needed, the module is simply pulled out and the replacement plugged in.
It is not necessary to disconnect the wiring.
One error source is thereby eliminated. Special knowledge and tools are notrequired.

For the signal matching of I/O-boards of the distributed controlsystem Freelance 2000, 16 channel backplanes which snap onto the DIN rail, have been designed.
The power supply is fed centrally and can be installed as an redundancy power supply.
The standard system cables with plugs on both ends makes it possible to plug the Contrans I modules directly to I/O-boards.

Therefore : **plug & safe**

wiring expense is brought down to a minimum, no engineeringof signal matching is required and installation times are cut. Also the documentationeffort is drastically reduced.

Benefits :

For the using of Contrans I in combination to Freelance 2000 :
- Reduction of the Freelance I/O board variety (only four standard types are needed).
- Using Contrans I ascross wiring/fieldterminations.

Chapter 2 - General

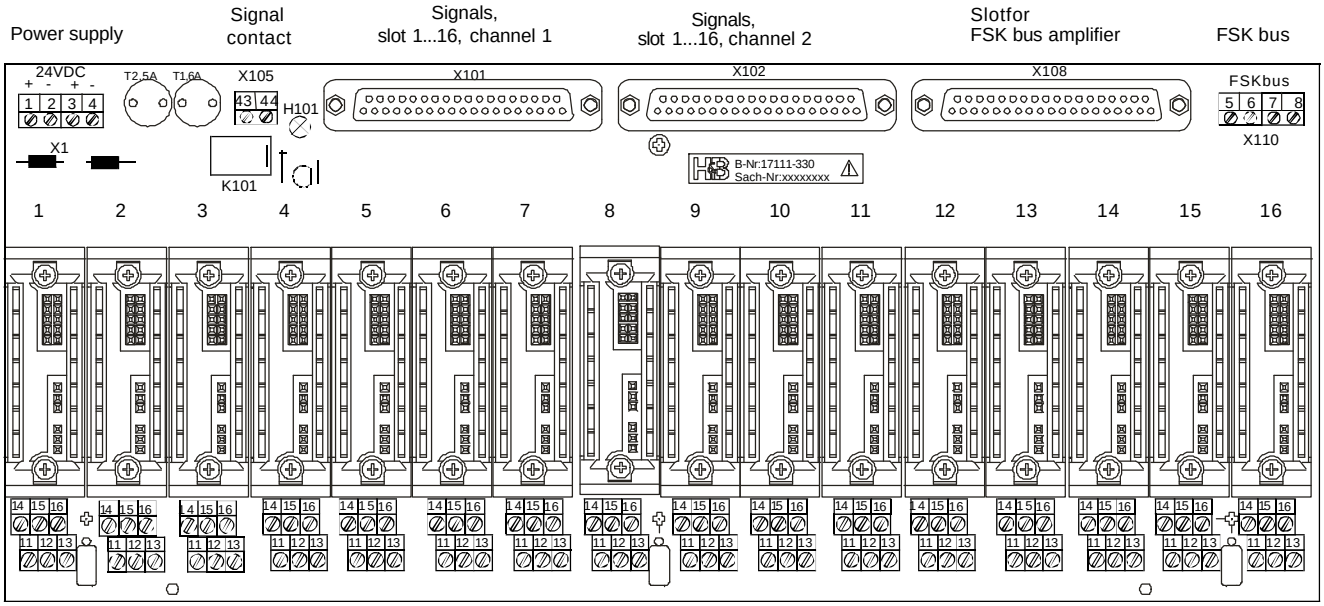
2.1. Backplanes
2.1.1 BackplaneV17111-321, -322, -351

Backplane, 16 way V17111-3_ _
For installing 16 Contrans I modules
Signal processing up to 32 Ex or non Ex signals
Redundant power supply with signal contakt
Separate fusing for modules and signal circuits
Simple design of FSK bus trough pluggable bus amplifier

System connection	
Signales	**X101 / X102 (slot 1...16, terminal 3...6)**
Socket / type	37 pin SUB D
Rated voltage	<= 30 V AC/DC (functional extra low voltage with safe electrical isolation to VDE 0100 Teil 410/IEC 364-4-41)
FSK bus	**X 110 (terminal 5...8)**
Socket / type	screw terminals for max. 2.5 mm² line cross section
FSK bus amplifier	X108 (slot 1...16, terminal 7,9)
Socket / type	37 pin SUB D
Connector / type	FSK bus amplifier V17191-16 /-32 (optional)
Power supply	**X1 (teminal 1...4)**
Socket / type	screw terminals for max. 2.5 mm² line cross section
Rated voltage	18.5...30 V DC (see rated voltage of the CI modules)
Voltage drop through redundant supply diodes	1.4 V
wrong polarity protecti	yes
fusing power supply modules	T 2.5 A
fusing power supply signals	T 1.6 A
Fuse monitoring	Failure of one or both fuses is signalled by the opening of the relay contact
Signal contact	**X105 (terminal 43, 44 - no contact from relais)**
Socket / type	screw terminals for max. 2.5 mm² line cross section
Switching capacity	<= 10 W, 10 VA, cos Phi >= 0.7
Switching current	<= 0.5 A UC
Switching voltage	<= 50 V UC
Field connection	
Signales	Slot 1...16, terminal 11...16
Slot - V17111-321	Screw terminals for max. 2.5 mm² line cross section (color grey)
Slot - V17111-322	Pluggable screw terminals for max. 2.5 mm² line cross section (color grey)
Slot - V17111-351	Screw terminals for max. 2.5 mm² line cross section (color blue)
Connector - V17111-322	Type of connector MSTB 2.5 / 3-ST (for max. 2.5 mm² line cross section)
Rated voltage	250 V AC (375 V peak value to EN 50020 for Ex application)
General data	
Safe electrical isolation to EN 61010 / EN 50020 (Ex)	System connection - field connection, modul slot - modul slot
Isolation	
System connection - field connection	3.7 kV
modul slot - modul slot (field connection)	3.7 kV
Per modul slot (field connection), terminals 11,14, 15 - 12, 13, 16	1.35 kV
Max. ambient temperature limits	-20...+60 °C for horizontal mounting, -20... +55 °C for vertikal mounting
Relative humidity	< 85%, 3K3 to IEC 721, part 3-3, no condensation
Type of protection to EN 60529 / DIN VDE 0470 part 1	IP 00 (the backplane must be so installed that at least IP 20 is guaranteed)
Mounting type	Can be snap-fitted onto 35mm standard rails to DIN EN 50022
Mounting location	Outside hazardous areas (attention to VDE 0165 in case Ex application)
Mounting orientation	horizontal or vertical
Weight	600 g

V17111-321, -322, -351

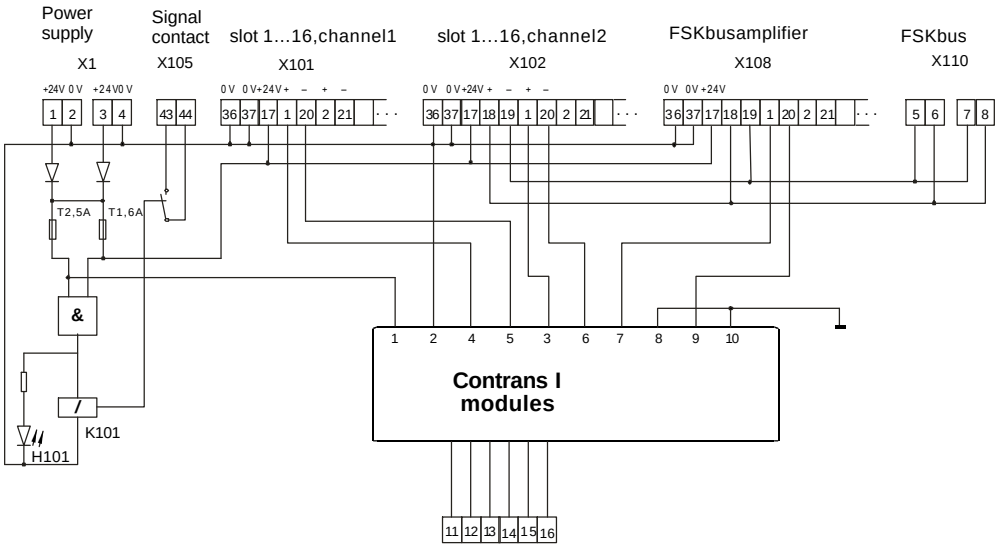
System connection



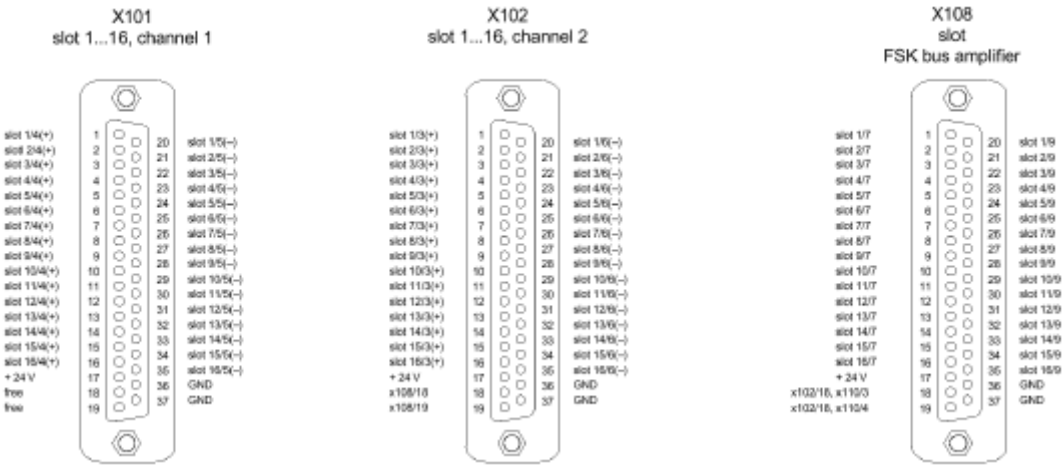
Signals, slot1...21

Field connection

System connection



Field connection



Chapter 2 - General

2.1. Backplanes
2.1.2 BackplaneV17111-320

Technical data

Upper connection level (to control system)

Connection	3 x 37-pin SUB D jacks: X101: signal output for high impedance or signal input for isolating drivers X102: signal output for low impedance X108: bus amplifier V17191-16 slot for HART-compatible CI modules Pairs of test jacks for output current and FSK point to point communication are assigned channel by channel	
Power supply	rated voltage:	19.2...30 V DC, see rated voltage of CI modules
	voltage drop through redundant supply diodes:	1.4 V
	wrong polarity protection:	yes
	fusing	Contrans I modules: T2.5 A, control system side: T1.6 A
	Connection technique	cage clamp spring terminal for max. 2.5 mm^2 line cross section
	Fuse monitoring	failure of one or both fuses is signalled by the opening of the relay contact and the extinction of the LED
	Signal contact	rating: max. switching capacity 10 W, 10 VA, $\cos\varphi \geq 0.7$ max. switching current 0.5 A UC max. switching voltage 50 V UC
Input/output load	X101: Loop powered supply active, Ex and non-Ex: $R_B \leq 350\ \Omega$ Switch amplifier active, Ex and non-Ex: $R_E \leq 135\ \Omega$, if SPS output HART-compatible Switch amplifier active, Ex and non-Ex: $R_E \leq 385\ \Omega$, if SPS output not HART-compatible X102: Loop powered supply active, Ex and non-Ex: $R_B \leq 50\ \Omega$ Switch amplifier active, Ex and non-Ex: $R_B \leq 10\ \Omega$ Test jack: $\leq 2\ \Omega$	
FSK bus	bus amplifier V17191-16 on jack X108; connection via cage clamp spring terminal $\leq 2.5\ mm^2$ or via test jack on bus amplifier point-to-point communication via test jacks (available for every channel)	

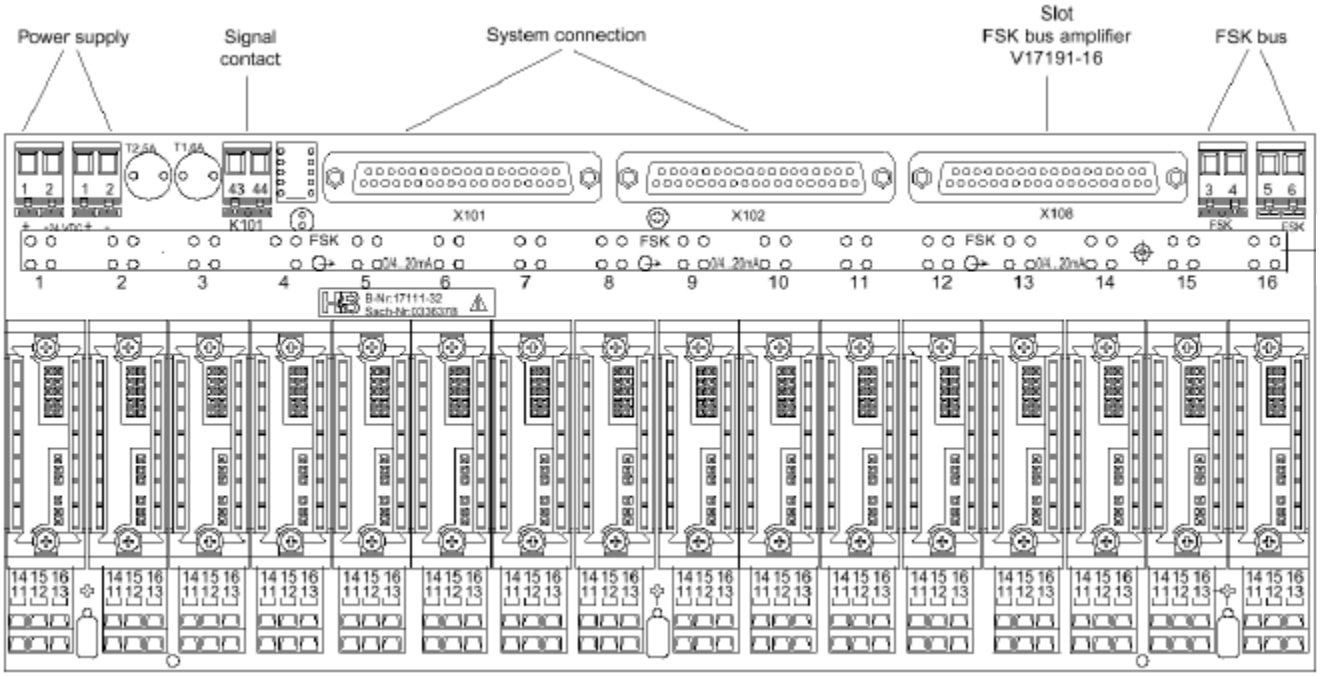
Lower connection level (to field)

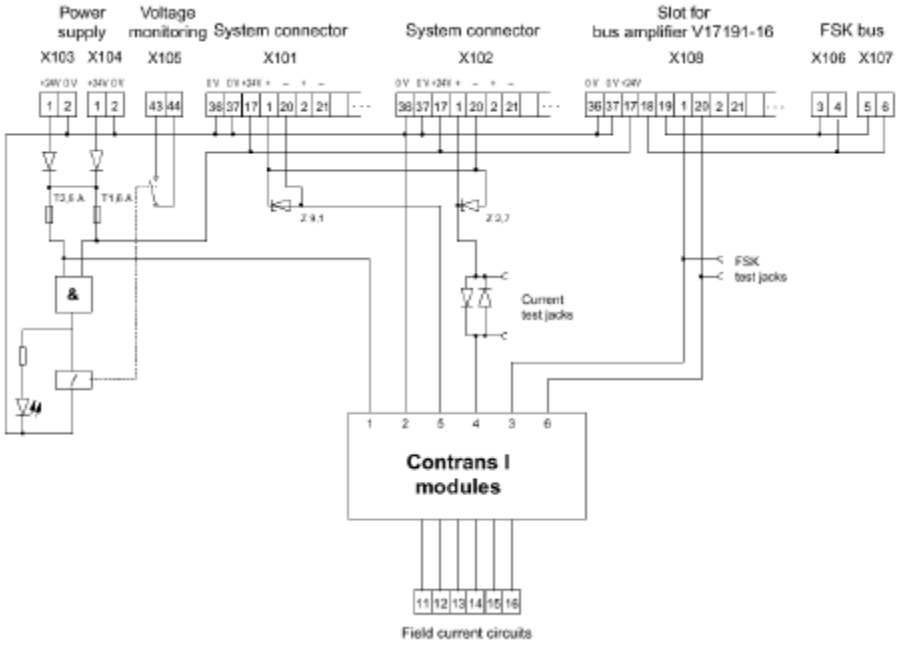
Connection slot 1...16	terminals 11...16 per slot, identical with single socket
Connection technique	6-pin double-tiered terminal (cage clamp spring)
Rated terminal cross section	0.08...2.5 mm^2/AWG 26-14, single copper wiring, stranded, with wire end ferrule (max. 1.5 mm^2)
Rated voltage	250 V AC (375 V peak value to EN 50020 for Ex application)
Safe electrical isolation to EN 61010 (for Ex application to EN 50020)	system side – field side slot – slot

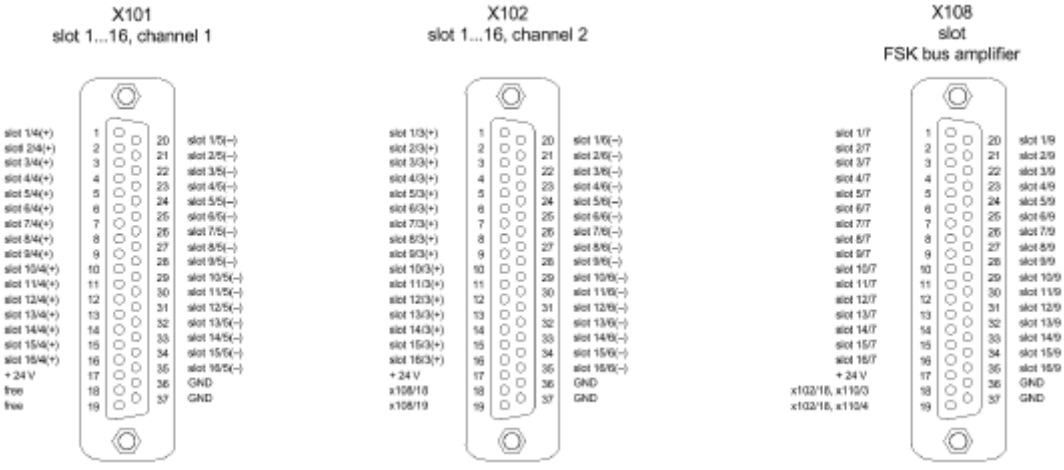
General data

Mounting type	can be snap-fitted onto 35 mm standard rails to DIN EN 50022	
Mounting location	outside hazardous areas (attention to VDE 0165 in case Ex application)	
Mounting orientation	horizontal or vertical	
Type of protection to EN 60529/ DIN VDE 0470 Part 1	IP 00 (the backplane must be so installed that at least IP 20 is guaranteed.)	
Test voltages to EN 61010	3.7 kV	control system – field side
	1.35 kV	terminals 11, 14, 15 (channel 1) – 12, 13, 16 (channel 2)
	3.7 kV	slot – slot (field side)
Ambient conditions	operating temperature	–20...+60 °C for horizontal mounting –20...+55 °C for vertical mounting
	relative humidity	< 85 %, 3K3 to IEC 721, Part 3-3, no condensation
Dimensions (W × H × D, complemented): 323 mm × 132.5 mm × 105 mm		
Weight (without modules)	approx. 600 g	

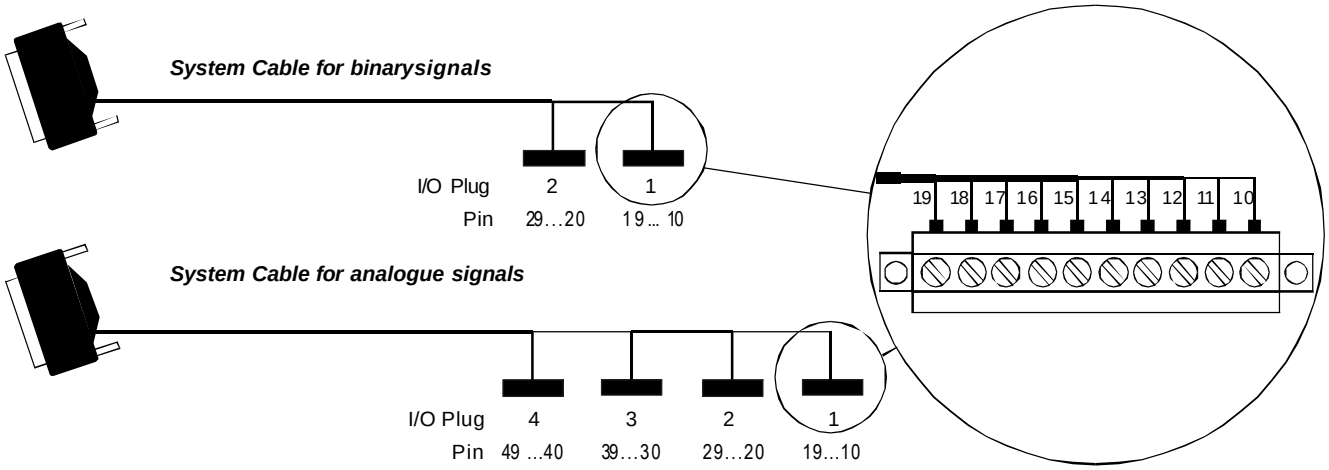
V17111-320


Power supply
Signal contact
System connection
Slot FSK bus amplifier V17191-16
FSK bus
X101
X102
X108
FSK

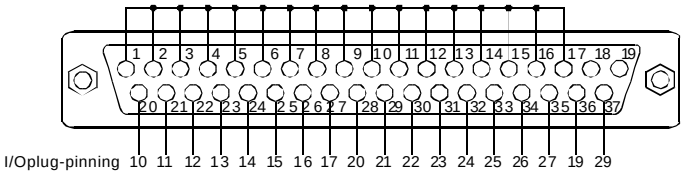

Power supply
Voltage monitoring
System connector
System connector
Slot for bus amplifier V17191-16
FSK bus
X103 X104 X105 X101 X102 X108 X106 X107
Current test jacks
FSK test jacks
Contrans I modules
Field current circuits


X101
slot 1...16, channel 1
X102
slot 1...16, channel 2
X108
slot
FSK bus amplifier

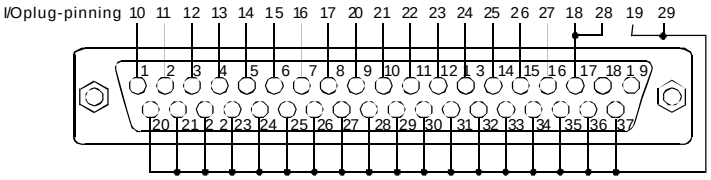
2.2 System Cables



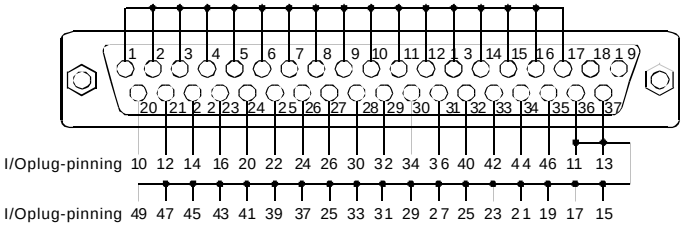
System Cable forbinarysignals
Part no.: 0336331
for Freelance I/O board : DDI 01



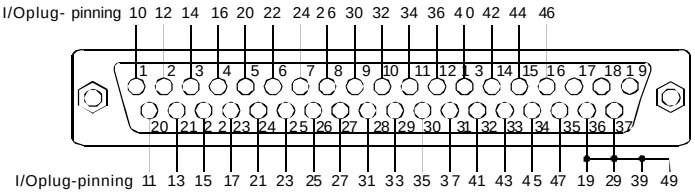
System Cable forbinarysignals
Part no.: 0336332
for Freelance I/O board : DDO 01



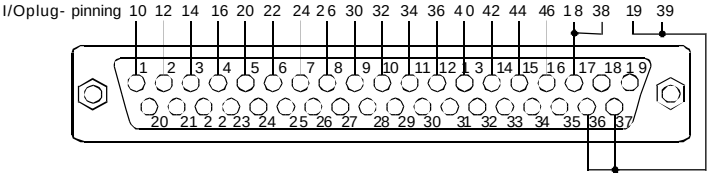
System Cable foranalogue inputsignals (1)
Part no.: 0336333
for Freelance I/O board : DAI 01



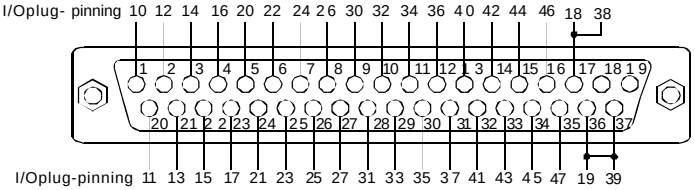
System Cable foranalogue inputsignals (2)
Part no.: 0336334
for Freelance I/O board : DAI 01



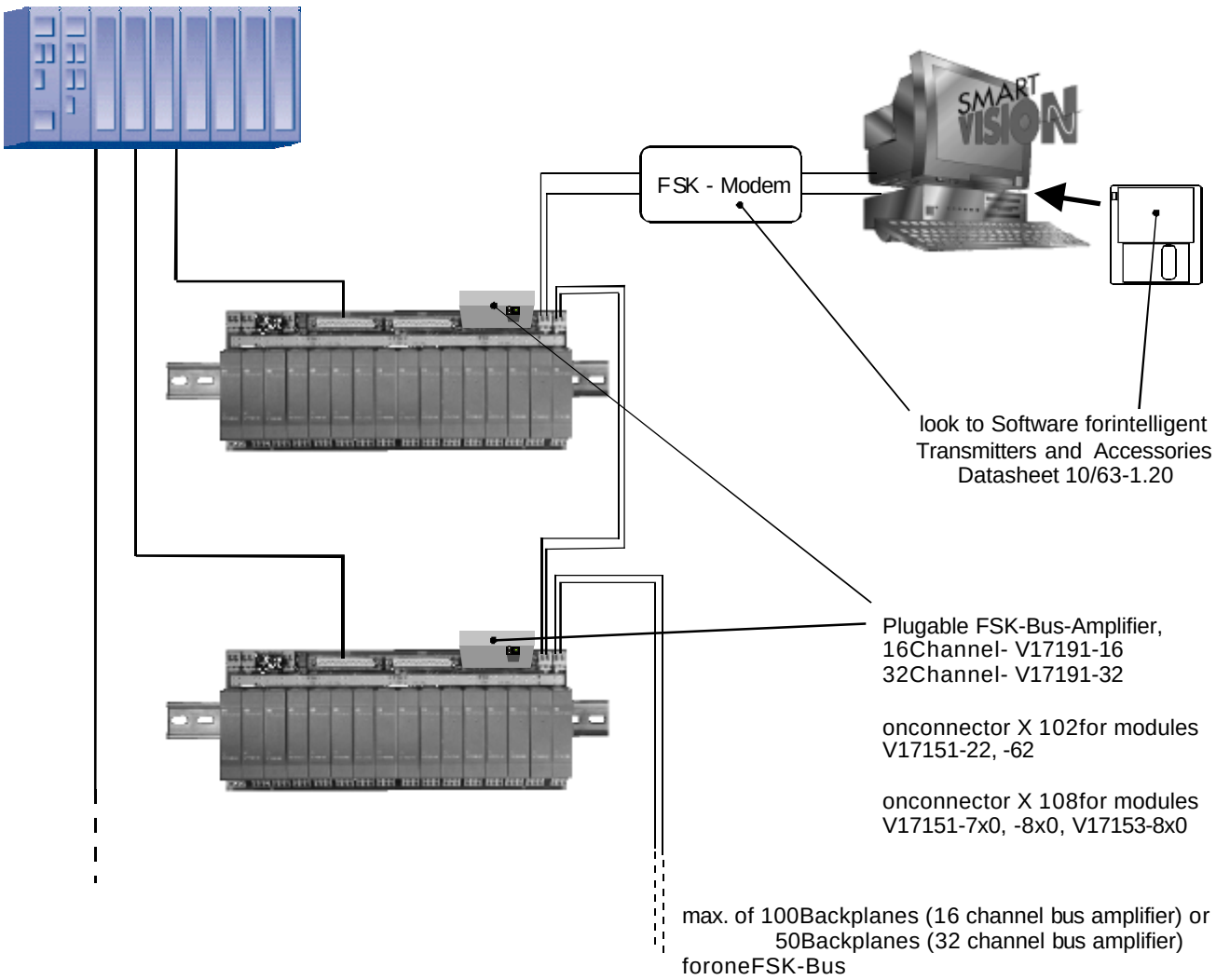
System Cable foranalogue output signals (1)
Part no.: 0336335
for Freelance I/O board : DAO 01



System Cable foranalogue output signals (2)
Part no.: 9700140
for Freelance I/O board : DAO 01



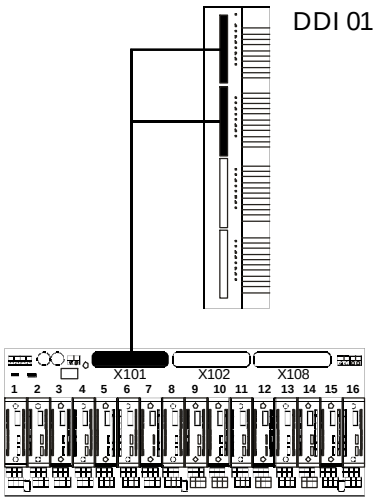
2.3 HART,FSK-Bus



Chapter 3 - Digital Input

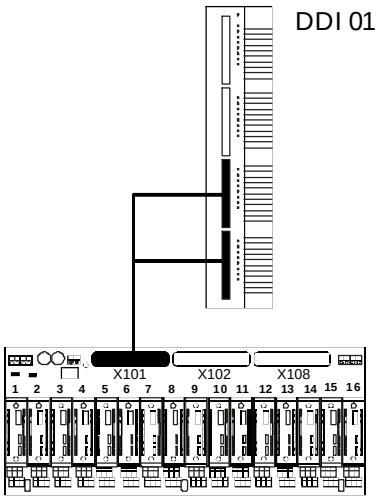
3.1 Digital Input, 16 Channels

3.1.1 Interconnection andChannelAssignmentfor Channel 0 ... 15



Contrans I Backplane	*Freelance DDI01*
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel10
Slot12	Channel 11
Slot13	Channel12
Slot14	Channel13
Slot15	Channel14
Slot16	Channel15

3.1.2 Interconnection andChannelAssignmentfor Channel 16...31



Contrans I Backplane	*Freelance DDI01*
Slot1	Channel16
Slot2	Channel17
Slot3	Channel 18
Slot4	Channel19
Slot5	Channel20
Slot6	Channel21
Slot7	Channel22
Slot8	Channel23
Slot9	Channel24
Slot10	Channel25
Slot11	Channel26
Slot12	Channel27
Slot13	Channel28
Slot14	Channel29
Slot15	Channel30
Slot16	Channel31

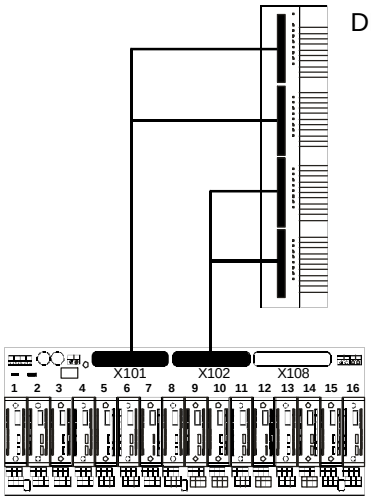
3.1.3 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Field Contact Powering	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Intrinsically Safe	Failure monotoring (short circuit/wire break)	Failure signaling (short circuit/wire break)	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17191-12	x			1 of 2	16	x						x	x			x					
V17131-13	x			1 of 2	16	x	x	x		x		x	x			x					
V17131-16	x			1 of 2	16	x	x	x		x		x	x			x					
V17131-51	x			1	16	x	x	x	x	x		x	x	x		x					
V17131-54	x			1	16	x	x	x	x	x		x	x	x		x					
V17133-11		x		1 of 2	16		x	x				x	x			x					

Chapter 3 - Digital Input

3.2 Digital Input, 16 Channels with failuresignaling

3.2.1 Interconnection andChannelAssignmentfor Channel 0 ... 31



Contrans I Backplane	***Freelance DDI01***
Signals :	
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel10
Slot12	Channel 11
Slot13	Channel12
Slot14	Channel13
Slot15	Channel14
Slot16	Channel15

Contrans I Backplane	
FailureSignals :	
Slot1	Channel16
Slot2	Channel17
Slot3	Channel 18
Slot4	Channel19
Slot5	Channel20
Slot6	Channel21
Slot7	Channel22
Slot8	Channel23
Slot9	Channel24
Slot10	Channel25
Slot11	Channel26
Slot12	Channel27
Slot13	Channel28
Slot14	Channel29
Slot15	Channel30
Slot16	Channel31

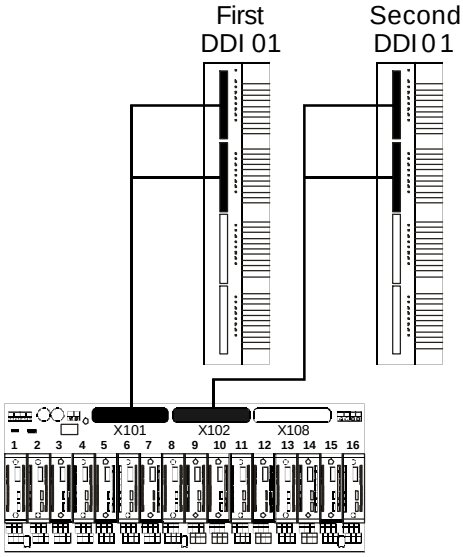
3.2.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Field Contact Powering	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Intrinsically Safe	Failure monotoning (short circuit/wire break)	Failure signaling (short circuit/wire break)	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17131-52	x			1	16	x	x	x	x	x	x	x	x	x		2x					
V17131-55	x			1	16	x	x	x	x	x	x	x	x	x		2x					

Chapter 3 - Digital Input

3.3 Digital Input, 16 Channels and Redundancy

3.3.1 Interconnection andChannelAssignmentfor Channel 0 ... 15andtheredundancyof Channel 0 ... 15



Contrans I Backplane	***Freelance FirstDDI 01***
Signals :	
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel 10
Slot12	Channel 11
Slot13	Channel 12
Slot14	Channel 13
Slot15	Channel 14
Slot16	Channel 15

Contrans I Backplane	***Freelance Second DDI 01***
RedundantSignals :	
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel 10
Slot12	Channel 11
Slot13	Channel 12
Slot14	Channel 13
Slot15	Channel 14
Slot16	Channel 15

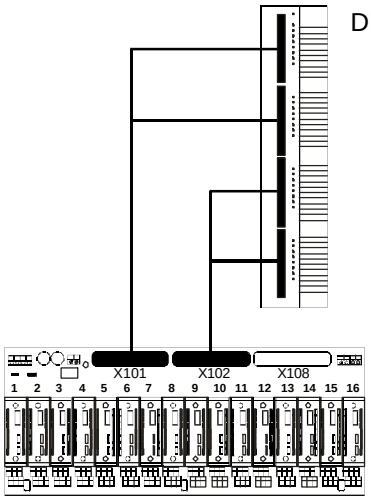
3.3.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Field Contact Powering	Electrical Isolation Input / Output	Electrical Isolation Channel to Channel	Intrinsically Safe	Failure monitoring (short circuit/wire break)	Failure signaling (short circuit/wire break)	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17131-52	x		x	1	16	x	x	x	x	x		x	x	x		2x					
V17131-55	x		x	1	16	x	x	x	x	x		x	x	x		2x					

Chapter 3 - Digital Intput

3.4 Digital Intput, 32 Channels

3.4.1 Interconnection andChannelAssignmentfor Channel 0 ... 31



Contrans I Backplane		***Freelance DDI01***
Slot1, Channel 1	----------	Channel 0
Channel 2	----------	Channel 16
Slot2, Channel 1	----------	Channel 1
Channel 2	----------	Channel 17
Slot3, Channel 1	----------	Channel 2
Channel 2	----------	Channel 18
Slot4, Channel 1	----------	Channel 3
Channel 2	----------	Channel 19
Slot5, Channel 1	----------	Channel 4
Channel 2	----------	Channel 20
Slot6, Channel 1	----------	Channel 5
Channel 2	----------	Channel 21
Slot7, Channel 1	----------	Channel 6
Channel 2	----------	Channel 22
Slot8, Channel 1	----------	Channel 7
Channel 2	----------	Channel 23
Slot9, Channel 1	----------	Channel 8
Channel 2	----------	Channel 24
Slot10,Channel1	----------	Channel 9
Channel 2	----------	Channel 25
Slot11,Channel1	----------	Channel 10
Channel 2	----------	Channel 26
Slot12,Channel1	----------	Channel 11
Channel 2	----------	Channel 27
Slot13,Channel1	----------	Channel 12
Channel 2	----------	Channel 28
Slot14,Channel1	----------	Channel 13
Channel 2	----------	Channel 29
Slot15,Channel1	----------	Channel 14
Channel 2	----------	Channel 30
Slot16,Channel1	----------	Channel 15
Channel 2	----------	Channel 31

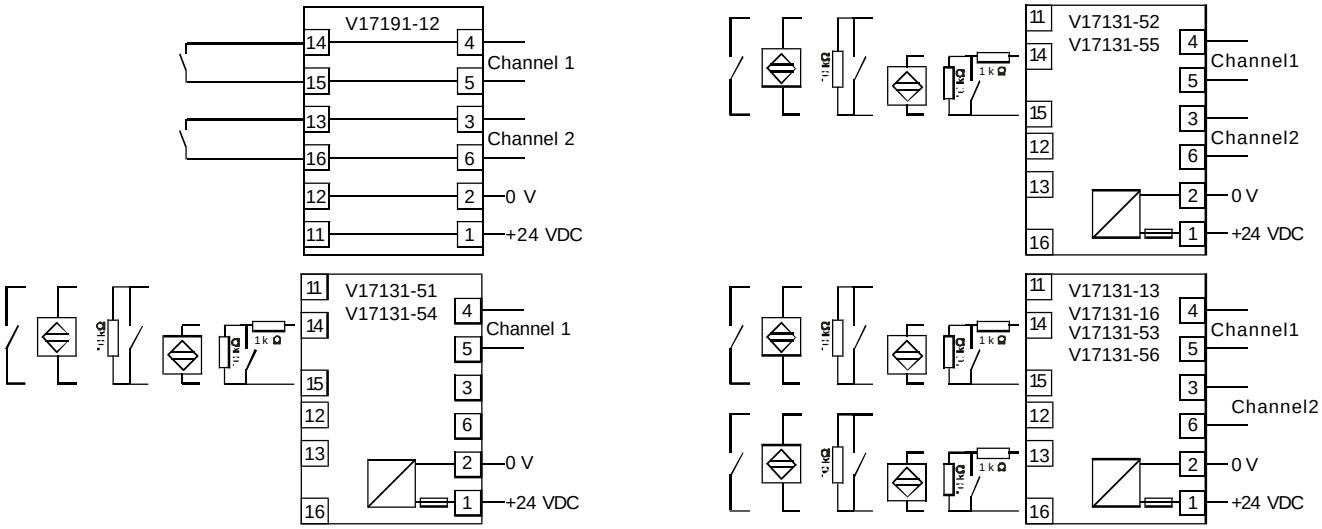
3.4.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Field Contact Powering	Electrical Isolation Input / Cutput	Electrical Isolation Chanel to Channel	Intrinsically Safe	Failure monotoring (short circuit/wire break)	Failure signaling (short circuit/wire break)	Backplane V ' 7111-321	Backplane V ' 7111-322	Backplane V ' 7111-351	Backplane V ' 7111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17191-12	**x**			2	32	**x**						**x**	**x**			**2x**					
V17131-13	**x**			2	32	**x**	**x**	**x**		**x**		**x**	**x**			**2x**					
V17131-16	**x**			2	32	**x**	**x**	**x**		**x**		**x**	**x**			**2x**					
V17131-53	**x**			2	32	**x**	**x**	**x**	**x**	**x**		**x**	**x**	**x**		**2x**					
V17131-56	**x**			2	32	**x**	**x**	**x**	**x**	**x**		**x**	**x**	**x**		**2x**					
V17133-11		**x**		2	32		**x**	**x**				**x**	**x**			**2x**					

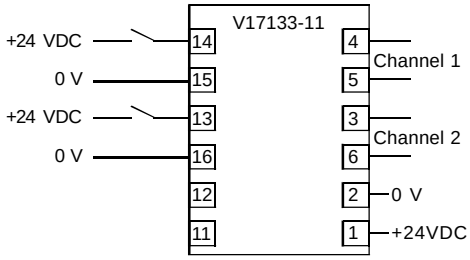
Chapter 3 - Digital Input

3.5 FunctionalDrawings

3.5.1 Digital Inputs SystemPowered



3.5.2 Digital Inputs Field Powered

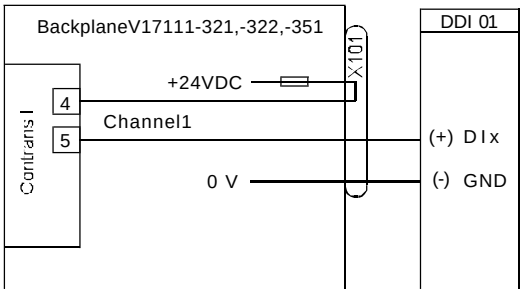


For detailedInformation aboutthefunctionalityoftheContransI Modules,seeCatalogue17.1

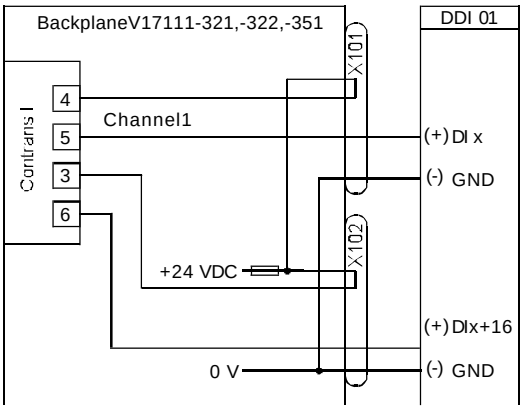
Chapter 3 - Digital Input

3.6 Wiring Diagrams ofDigital Inputs

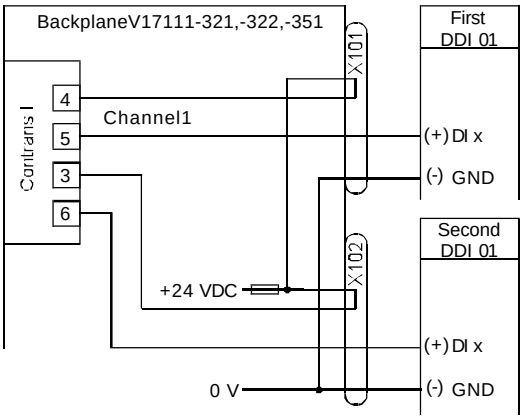
3.6.1 Digital Input, 16 Channels



3.6.2 Digital Input, 16 Channels withfailuresignalingor 32 Channels



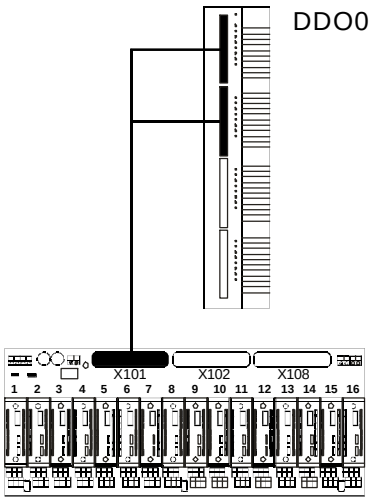
3.6.3 Digital Input, 16 Channels with Redundancy



Chapter 4 - Digital Output

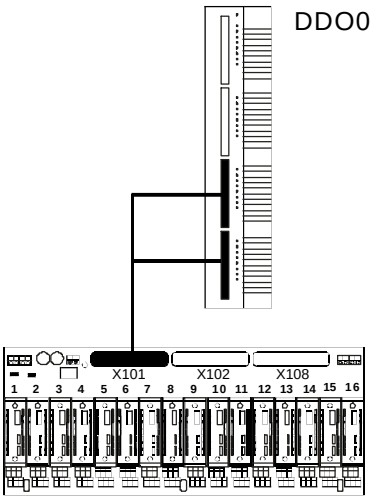
4.1 DigitalOutput, 16 Channels

4.1.1 Interconnection andChannelAssignmentfor Channel 0 ... 15



Contrans I Backplane	***Freelance DDI01***
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel10
Slot12	Channel 11
Slot13	Channel12
Slot14	Channel13
Slot15	Channel14
Slot16	Channel15

4.1.2 Interconnection andChannelAssignmentfor Channel 16...31



Contrans I Backplane	***Freelance DDI01***
Slot1	Channel16
Slot2	Channel17
Slot3	Channel 18
Slot4	Channel19
Slot5	Channel20
Slot6	Channel21
Slot7	Channel22
Slot8	Channel23
Slot9	Channel24
Slot10	Channel25
Slot11	Channel26
Slot12	Channel27
Slot13	Channel28
Slot14	Channel29
Slot15	Channel30
Slot16	Channel31

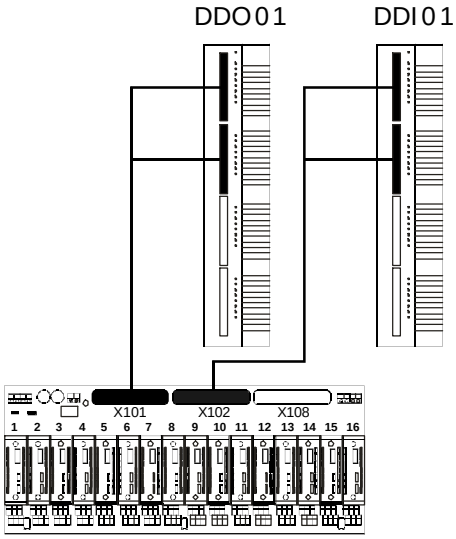
4.1.3 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Electrical Isolation Input / Output	Electrical Isolation Channel to Channel	Intrinsically Safe	Failure monitoring (short circuit)	Failure signaling (short circuit)	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17132-5x	x			1	16	x	x	x	x		x	x	x			x				
V17133-21		x		1 of 2	16	x	x				x	x				x				
V17133-510		x		1 of 2	16	x	x				x	x	x			x				

Chapter 4 - Digital Output

4.2 DigitalOutput, 16 Channels and Failure Signaling

4.2.1 Interconnection andChannelAssignmentfor the Channels 0 ... 15



Contrans I Backplane	***Freelance DDO01***
OutputSignals :	
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel10
Slot12	Channel 11
Slot13	Channel12
Slot14	Channel13
Slot15	Channel14
Slot16	Channel15

Contrans I Backplane	***Freelance DDI 01***
FailureSignaling:	
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel 10
Slot12	Channel 11
Slot13	Channel 12
Slot14	Channel 13
Slot15	Channel 14
Slot16	Channel 15

4.2.2 ContransIModules, Backplanes andSystem Cables

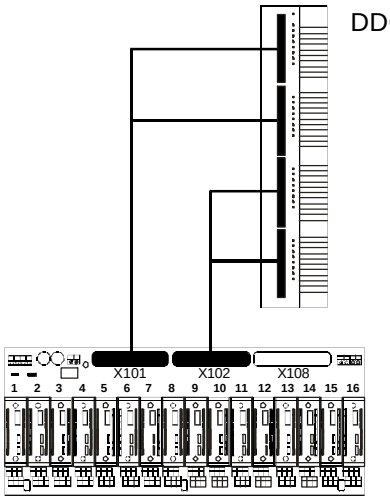
Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Intrinsically Safe	Failure monotoring (short circuit)	Failure signaling (short circuit)	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17132-5x	x			1	16	x	x	x	x	x	x	x	x		x	x				

Important note: please do not mix up the system cables !
- Systemcable 0336331 for DigitalInputs (X102 -> DDI 01)
- Systemcable 0336332 for DigitalOutputs(X101 -> DDO 01)

Chapter 4 - Digital Output

4.3 Digital Output, 32 Channels

4.3.1 Interconnection and Channel Assignment for Channel 0 ... 31



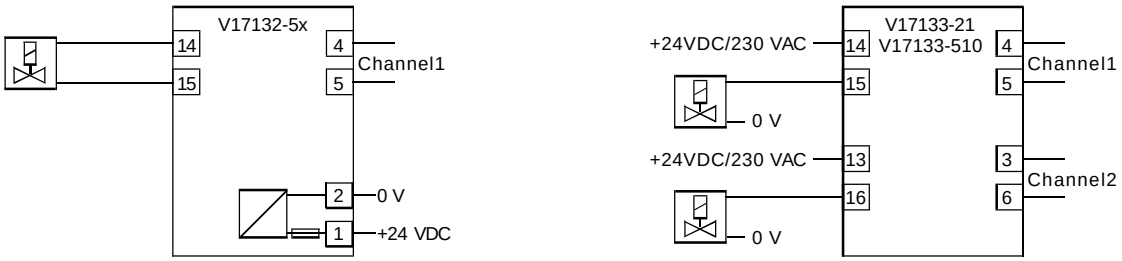
Contrans I Backplane		***Freelance DDO01***
Slot1, Channel 1	----------	Channel 0
Channel 2	----------	Channel 16
Slot2, Channel 1	----------	Channel 1
Channel 2	----------	Channel 17
Slot3, Channel 1	----------	Channel 2
Channel 2	----------	Channel 18
Slot4, Channel 1	----------	Channel 3
Channel 2	----------	Channel 19
Slot5, Channel 1	----------	Channel 4
Channel 2	----------	Channel 20
Slot6, Channel 1	----------	Channel 5
Channel 2	----------	Channel 21
Slot7, Channel 1	----------	Channel 6
Channel 2	----------	Channel 22
Slot8, Channel 1	----------	Channel 7
Channel 2	----------	Channel 23
Slot9, Channel 1	----------	Channel 8
Channel 2	----------	Channel 24
Slot10, Channel1	----------	Channel 9
Channel 2	----------	Channel 25
Slot11, Channel1	----------	Channel 10
Channel 2	----------	Channel 26
Slot12, Channel1	----------	Channel 11
Channel 2	----------	Channel 27
Slot13, Channel1	----------	Channel 12
Channel 2	----------	Channel 28
Slot14, Channel1	----------	Channel 13
Channel 2	----------	Channel 29
Slot15, Channel1	----------	Channel 14
Channel 2	----------	Channel 30
Slot16, Channel1	----------	Channel 15
Channel 2	----------	Channel 31

4.3.2 Contrans I Modules, Backplanes and System Cables

Contrans I Modules	System Powered	Field Powered	Redundancy	Channel / Module	Channel / Backplane	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Intrinsically Safe	Failure monotoring (short circuit)	Failure signaling (short circuit)	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140
V17133-21		**x**		2	32	**x**	**x**				**x**	**x**				**2x**				
V17133-510		**x**		2	32	**x**	**x**				**x**	**x**	**x**			**2x**				

Chapter 4 - Digital Output

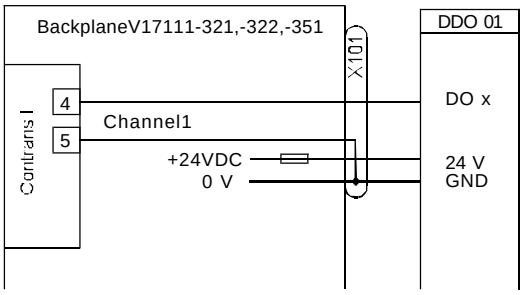
4.4 FunctionalDrawingsof Digital Outputs



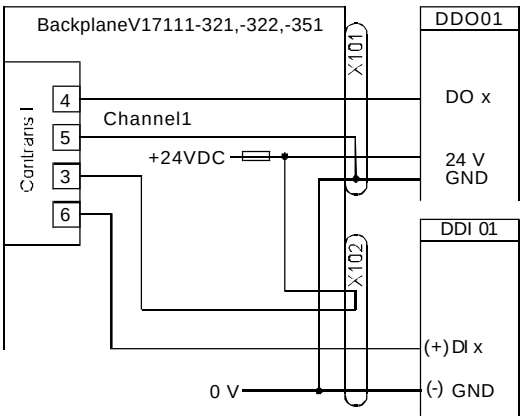
For detailedInformation aboutthefunctionalityoftheContransI Modules,seeCatalogue17.1

4.5 Wiring Diagrams ofDigital Outputs

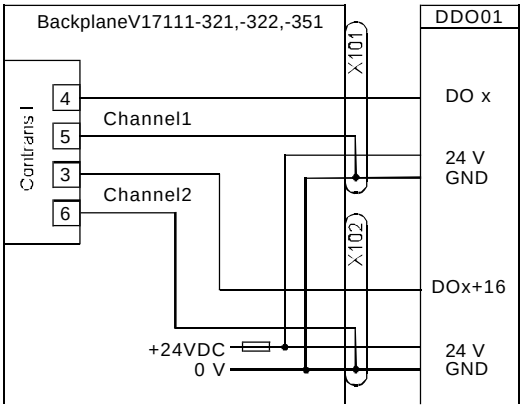
4.5.1 Digital Output, 16 Channels



4.5.2 Digital Output, 1 6 Channelswith failure signaling



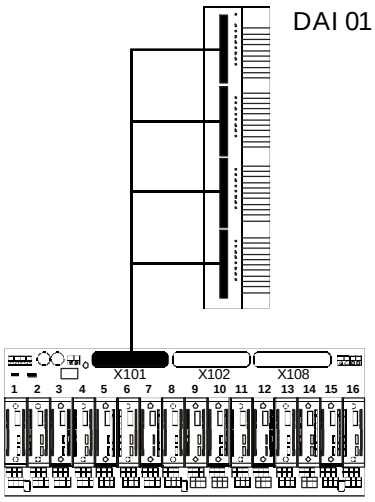
4.5.3 DigitalOutput, 32 Channels



Chapter 5 - Analogue Input

5.1 Analogue Input, 16Channels

5.1.1 Interconnection andChannelAssignmentfor Channel 0 ... 15



Contrans I Backplane	*Freelance DAI01*
Slot1	Channel 0
Slot2	Channel 1
Slot3	Channel 2
Slot4	Channel 3
Slot5	Channel 4
Slot6	Channel 5
Slot7	Channel 6
Slot8	Channel 7
Slot9	Channel 8
Slot10	Channel 9
Slot11	Channel10
Slot12	Channel 11
Slot13	Channel12
Slot14	Channel13
Slot15	Channel14
Slot16	Channel15

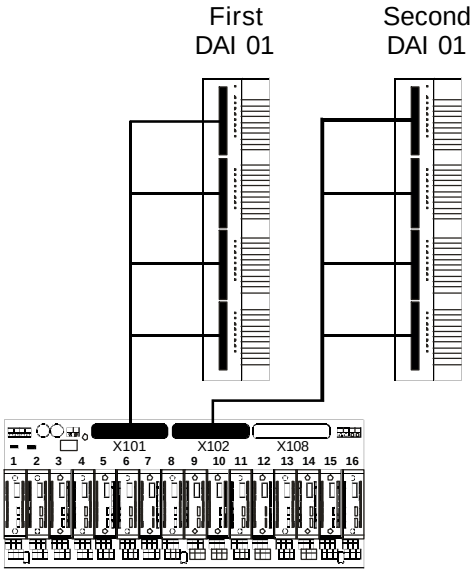
5.1.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	4 ... 20 mA Input	RTD Input	TC Input; 0 ... 5 kOhm	Input -25 ... +25mA or -12.5 ... +12.5V	Input short circuit proofed	Channel / Module	Channel / Backplane	LCI-Programmable	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Electrical Isolation Signal to HART	Intrinsically Safe	HART communication	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140	FSK-Bus Amplifier at X 102	FSK-Bus Amplifier at X 108
V17191-12	x		x					1 of 2	16							x	x					x				
V17151-100	x		x				x	1	16						x	x	x						x			
V17151-11	x		x				x	1	16		x	x				x	x					x					
V17151-210	x		x				x	1	16		x	x				x	x						x				
V17151-220	x		x				x	1	16		x	x			x	x	x						x			x	
V17151-320	x		x				x	1	16		x	x	x		x	x	x						x				x
V17151-51	x		x				x	1	16		x	x		x		x	x	x				x					
V17151-52	x		x				x	1	16		x	x		x	x	x	x	x				x				x	
V17151-610	x		x				x	1	16		x	x		x		x	x	x					x				
V17151-620	x		x				x	1	16		x	x		x	x	x	x	x					x			x	
V17151-720	x		x				x	1	16		x	x	x	x	x	x	x	x					x				x
V17152-310	x			x	x			1	16	x	x	x				x	x						x				
V17152-61 _	x			x				1	16		x	x		x		x	x	x					x				
V17152-620	x			x	x			1	16	x	x	x		x		x	x	x					x				
V17191-12		x	x					1 of 2	16							x	x						x				
V17151-210		x	x				x	1	16		x	x				x	x						x				
V17151-413		x	x				x	1 of 2	16		x	x				x	x						x				
V17151-420		x	x				x	1	16		x	x	x		x	x	x						x				x
V17151-430		x				x		1	16	x	x	x				x	x						x				
V17151-610		x	x				x	1	16		x	x		x		x	x	x					x				
V17151-820		x	x				x	1	16		x	x	x	x	x	x	x	x					x				x

Chapter 5 - Analogue Input

5.2 Analogue Input, 32Channels

5.2.1 Interconnection andChannelAssignmentfor Channel 0 ... 32



Contrans I Backplane	***Freelance First DAI 01***	***Freelance Second DAI 01***
Slot1, Channel 1	Channel 0	
Channel 2		Channel 0
Slot2, Channel 1	Channel 1	
Channel 2		Channel 1
Slot3, Channel 1	Channel 2	
Channel 2		Channel 2
Slot4, Channel 1	Channel 3	
Channel 2		Channel 3
Slot5, Channel 1	Channel 4	
Channel 2		Channel 4
Slot6, Channel 1	Channel 5	
Channel 2		Channel 5
Slot7, Channel 1	Channel 6	
Channel 2		Channel 6
Slot8, Channel 1	Channel 7	
Channel 2		Channel 7
Slot9, Channel 1	Channel 8	
Channel 2		Channel 8
Slot10,Channel 1	Channel 9	
Channel 2		Channel 9
Slot11,Channel 1	Channel 10	
Channel 2		Channel 10
Slot12,Channel 1	Channel 11	
Channel 2		Channel 11
Slot13,Channel 1	Channel 12	
Channel 2		Channel 12
Slot14,Channel 1	Channel 13	
Channel 2		Channel 13
Slot15,Channel 1	Channel 14	
Channel 2		Channel 14
Slot16,Channel 1	Channel 15	
Channel 2		Channel 15

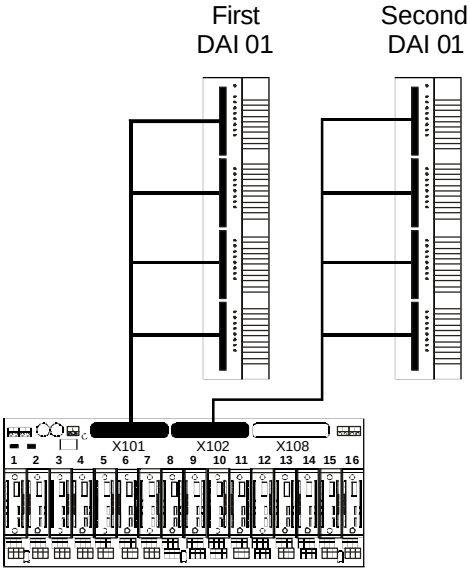
5.2.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	4 ... 20 mA Input	RTD Input	TC Input, 0 .... 5 kOhm	Input -25 ... +25mA or -12.5 ... +12.5V	Input short circuit proofed	Channel / Module	Channel / Backplane	LCI-Programmable	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Electrical Isolation Signal to HART	Intrinsically Safe	HART communication	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140	FSK-Bus Amplifier at X 102	FSK-Bus Amplifier at X 108
V17191-12	**x**		**x**					2	16							**x**	**x**					**2x**				
V17151-140	**x**		**x**				**x**	2	16						**x**	**x**	**x**						**2x**				
V17151-13	**x**		**x**				**x**	2	16		**x**	**x**				**x**	**x**					**2x**						
V17151-340	**x**		**x**				**x**	2	16		**x**	**x**	**x**		**x**	**x**	**x**						**2x**				**x**
V17151-740	**x**		**x**				**x**	2	16		**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**					**2x**				**x**
V17191-12		**x**	**x**					2	16							**x**	**x**						**2x**				
V17151-413		**x**	**x**				**x**	2	16		**x**	**x**				**x**	**x**						**2x**				
V17151-440*****		**x**	**x**				**x**	1	16		**x**	**x**	**x**		**x**	**x**	**x**						**2x**				**x**
V17151-840		**x**	**x**				**x**	1	16		**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**					**2x**				**x**

* : Available withNLrequest !

Chapter 5 - Analogue Input

5.3 Analogue Input, 16Channelsand Redundancy
5.3.1 Interconnection andChannelAssignmentfor Channel 0 ... 15



ContransI Backplane	***Freelance First DAI01***	***Contrans I Backplane***	***Freelance Second DAI01***
Output Signals :		***RedundantSignals :***	
Slot 1	Channel 0	Slot 1	Channel 0
Slot 2	Channel 1	Slot 2	Channel 1
Slot 3	Channel 2	Slot 3	Channel 2
Slot 4	Channel 3	Slot 4	Channel 3
Slot 5	Channel 4	Slot 5	Channel 4
Slot 6	Channel 5	Slot 6	Channel 5
Slot 7	Channel 6	Slot 7	Channel 6
Slot 8	Channel 7	Slot 8	Channel 7
Slot 9	Channel 8	Slot 9	Channel 8
Slot 10	Channel 9	Slot 10	Channel 9
Slot 11	Channel 10	Slot 11	Channel10
Slot 12	Channel 11	Slot 12	Channel 11
Slot 13	Channel 12	Slot 13	Channel12
Slot 14	Channel 13	Slot 14	Channel13
Slot 15	Channel 14	Slot 15	Channel14
Slot 16	Channel 15	Slot 16	Channel15

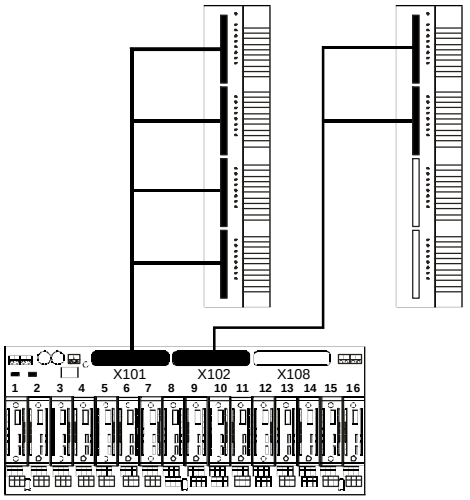
5.3.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	4 ... 20 mA Input	RTD Input	TC Input; 0 .... 5 kOhm	Input -25 ... +25mA or -12.5 ... +12.5V	Input short circuit proofed	Channel / Module	Channel / Backplane	LCI-Programmable	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Electrical Isolation Signal to HART	Intrinsically Safe	HART communication	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140	FSK-Bus Amplifier at X 102	FSK-Bus Amplifier at X 108
V17151-210	x		x				x	1	16		x	x							x				2x				
V17151-220	x		x				x	1	16		x	x			x				x				2x				x
V17151-350	x		x				x	1	16		x	x	x		x	x	x						2x				x
V17151-610	x		x				x	1	16		x	x		x					x				2x				
V17151-620	x		x				x	1	16		x	x		x	x				x				2x				x
V17151-750	x		x				x	1	16		x	x	x	x	x	x	x	x					2x				x
V17152-310	x			x	x			1	16	x	x	x							x				2x				
V17152-61 _	x			x				1	16		x	x		x					x				2x				
V17152-620	x			x	x			1	16	x	x	x		x					x				2x				
V17151-210		x	x				x	1	16		x	x							x				2x				
V17151-413		x	x				x	1 of 2	16		x	x							x				2x				
V17151-430		x				x		1	16	x	x	x							x				2x				
V17151-610		x	x				x	1	16		x	x		x					x				2x				

Chapter 5 - Analogue Input

5.4 Analogue Input, 16Channelswith Events

5.4.1 Interconnection andChannelAssignmentfor Channel 0 ... 15



ContransI Backplane	***Freelance First DAI01***	***Contrans I Backplane***	***Freelance DDI 01***
Output Signals :		***Event Signals:***	
Slot 1	Channel 0	Slot 1	Channel 0
Slot 2	Channel 1	Slot 2	Channel 1
Slot 3	Channel 2	Slot 3	Channel 2
Slot 4	Channel 3	Slot 4	Channel 3
Slot 5	Channel 4	Slot 5	Channel 4
Slot 6	Channel 5	Slot 6	Channel 5
Slot 7	Channel 6	Slot 7	Channel 6
Slot 8	Channel 7	Slot 8	Channel 7
Slot 9	Channel 8	Slot 9	Channel 8
Slot 10	Channel 9	Slot 10	Channel 9
Slot 11	Channel 10	Slot 11	Channel10
Slot 12	Channel 11	Slot 12	Channel 11
Slot 13	Channel 12	Slot 13	Channel12
Slot 14	Channel 13	Slot 14	Channel13
Slot 15	Channel 14	Slot 15	Channel14
Slot 16	Channel 15	Slot 16	Channel15

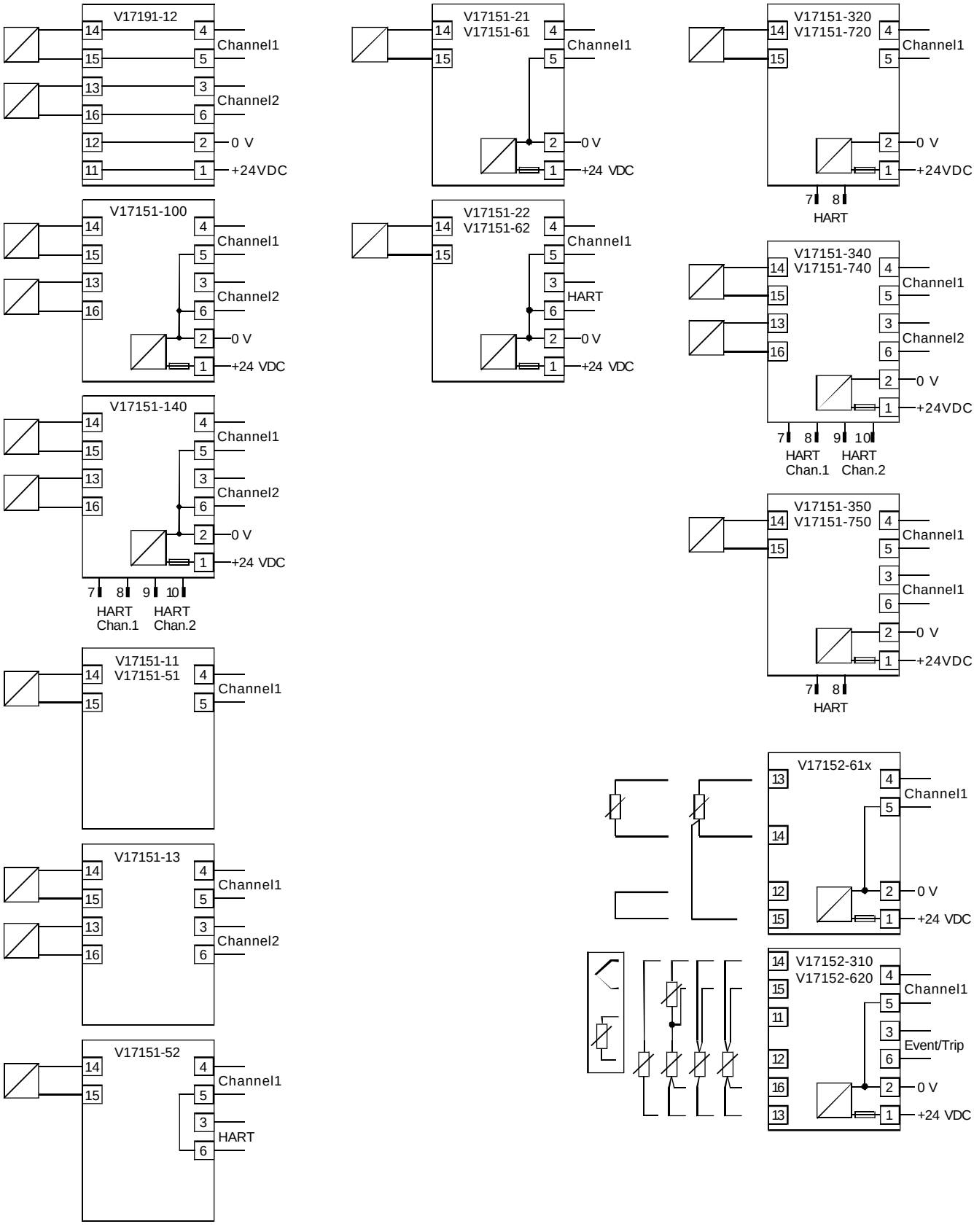
5.4.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	System Powered	Field Powered	4 ... 20 mA Input	RTD Input	TC Input, 0 ... 5 kOhm	Input -25 ... +25mA or -12.5 ... +12.5V	Input short circuit proofed	Channel / Module	Channel / Backplane	LCI-Programmable	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Electrical Isolation Signal to HART	Intrinsically Safe	HART communication	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140	FSK-Bus Amplifier at X102	FSK-Bus Amplifier at X103
V17152-310	x			x	x			1	16	x	x	x				x	x			x			x				
V17152-61_	x			x				1	16		x	x		x		x	x	x		x			x				
V17152-620	x			x	x			1	16	x	x	x		x		x	x	x		x			x				
V17151-430		x				x		1	16	x	x	x				x	x			x			x				

Chapter 5 - Analogue Input

5.5 FunctionalDrawingsofAnalogue Inputs

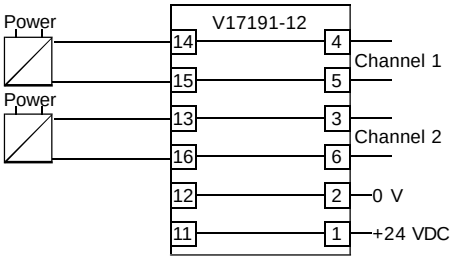
5.5.1 System Powered

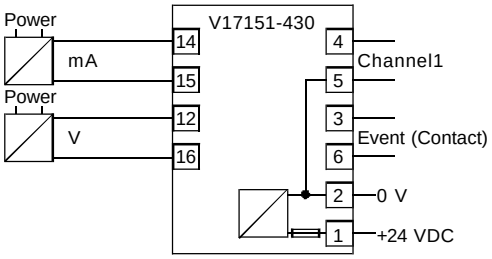


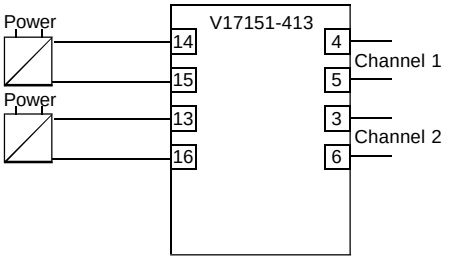
For detailedInformation aboutthefunctionalityoftheContransI Modules,seeCatalogue17.1

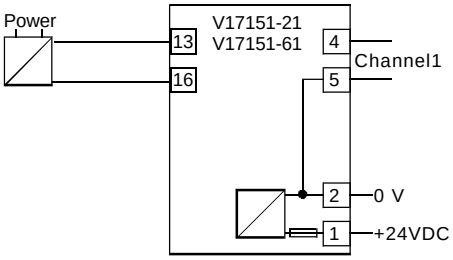
Chapter 5 - Analogue Input

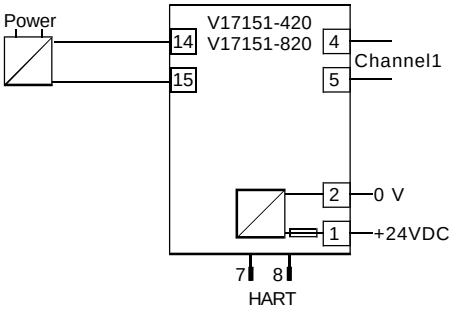
5.5 FunctionalDrawingsofAnalogue Inputs
5.5.2 Field Powered

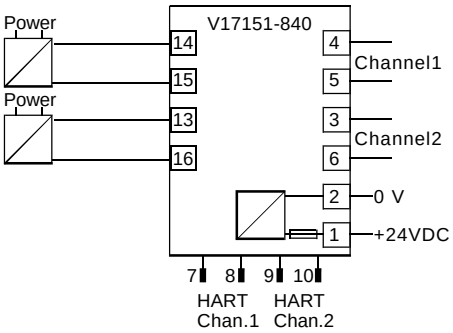










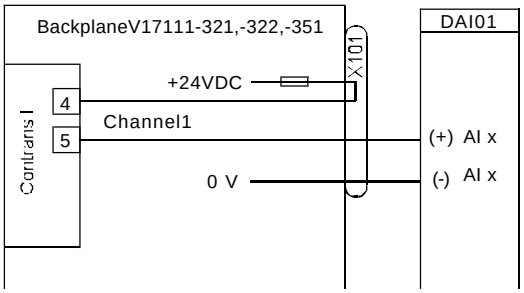


For detailedInformation aboutthefunctionalityoftheContransI Modules,seeCatalogue17.1

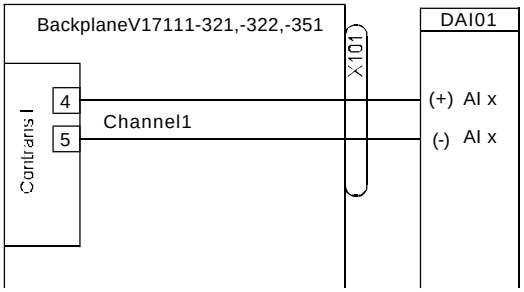
Chapter 5 - Analogue Input

5.6 Wiring Diagrams ofAnalogueInputs

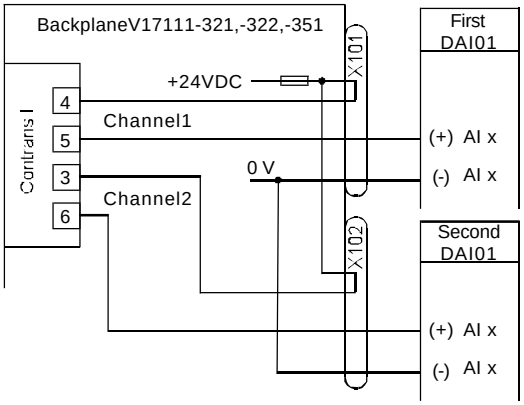
5.6.1 Analogue Input, 16Channelswith passive Contrans I Modules



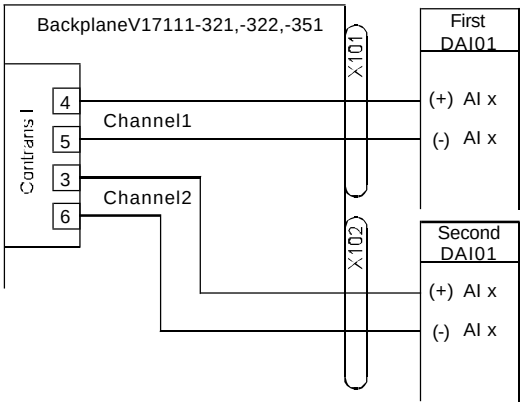
5.6.2 Analogue Input, 16Channelswith active Contrans I Modules



5.6.3 Analogue Input, 32Channelswith passive Contrans I Modules



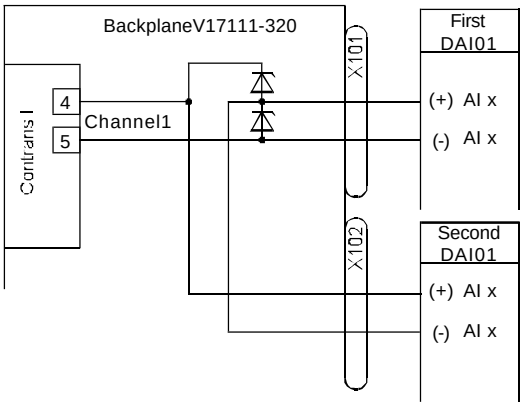
5.6.4 Analogue Input, 32Channelswith active Contrans I Modules



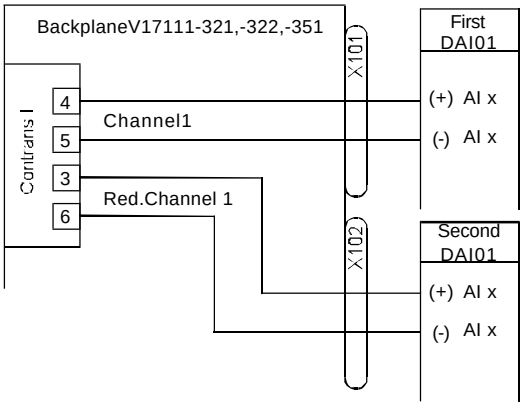
Chapter 5 - Analogue Input

5.6 Wiring Diagrams ofAnalogueInputs

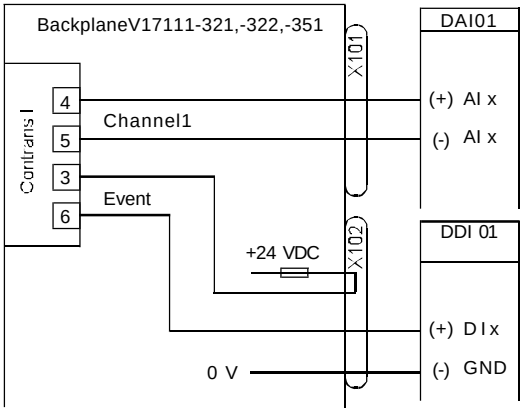
5.6.5 Analogue Input, 16Channelswith Redundancy(1)



5.6.6 Analogue Input, 16Channelswith Redundancy(2)



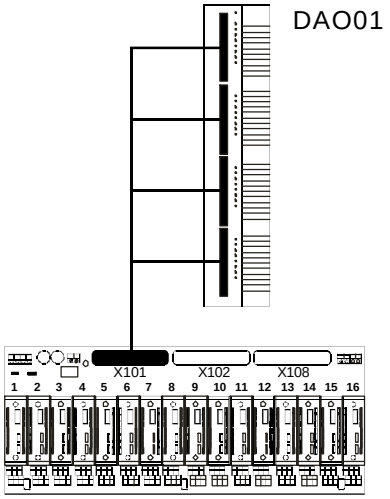
5.6.7 Analogue Input, 16Channelswith Events



Chapter 6 - AnalogueOutput

6.1 Analogue Output, 16Channels

6.1.1 Interconnection andChannelAssignmentfor Channel 0 ... 15



Contrans I Backplane	***Freelance DAO01***
Slot1----------	Channel 0
Slot2----------	Channel 1
Slot3----------	Channel 2
Slot4----------	Channel 3
Slot5----------	Channel 4
Slot6----------	Channel 5
Slot7----------	Channel 6
Slot8----------	Channel 7
Slot9----------	Channel 8
Slot10 ----------	Channel 9
Slot11 ----------	Channel10
Slot12 ----------	Channel 11
Slot13 ----------	Channel12
Slot14 ----------	Channel13
Slot15 ----------	Channel14
Slot16 ----------	Channel15

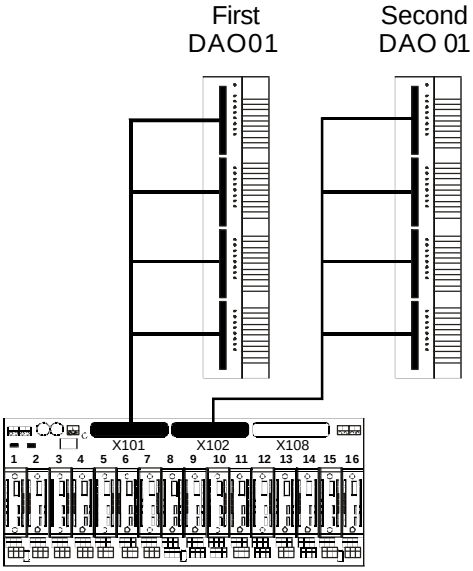
6.1.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	Output short circuit proofed	Channel / Module	Channel / Backplane	Load increasing	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Electrical Isolation Signal to HART	Intrinsically Safe	HART communication	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140	FSK-Bus Amplifier at X 102	FSK Bus Amplifier at X 103
V17153-11	x	1	16		x	x				x	x								x		
V17153-210	x	1	16	x	x	x				x	x							x			
V17153-220	x	1	16	x	x	x			x	x	x							x		x	
V17153-420	x	1	16	x	x	x	x		x	x	x								x		x
V17153-51	x	1	16		x	x		x		x	x	x						x			
V17153-52	x	1	16		x	x		x	x	x	x	x						x		x	
V17153-610	x	1	16	x	x	x		x		x	x	x						x			
V17153-620	x	1	16	x	x	x		x	x	x	x	x						x		x	
V17153-820	x	1	16	x	x	x	x	x	x	x	x	x							x		x

Chapter 6 - AnalogueOutput

6.2 Analogue Output, 32Channels

6.2.1 Interconnection andChannelAssignmentfor 2 times Channel 0 ... 15



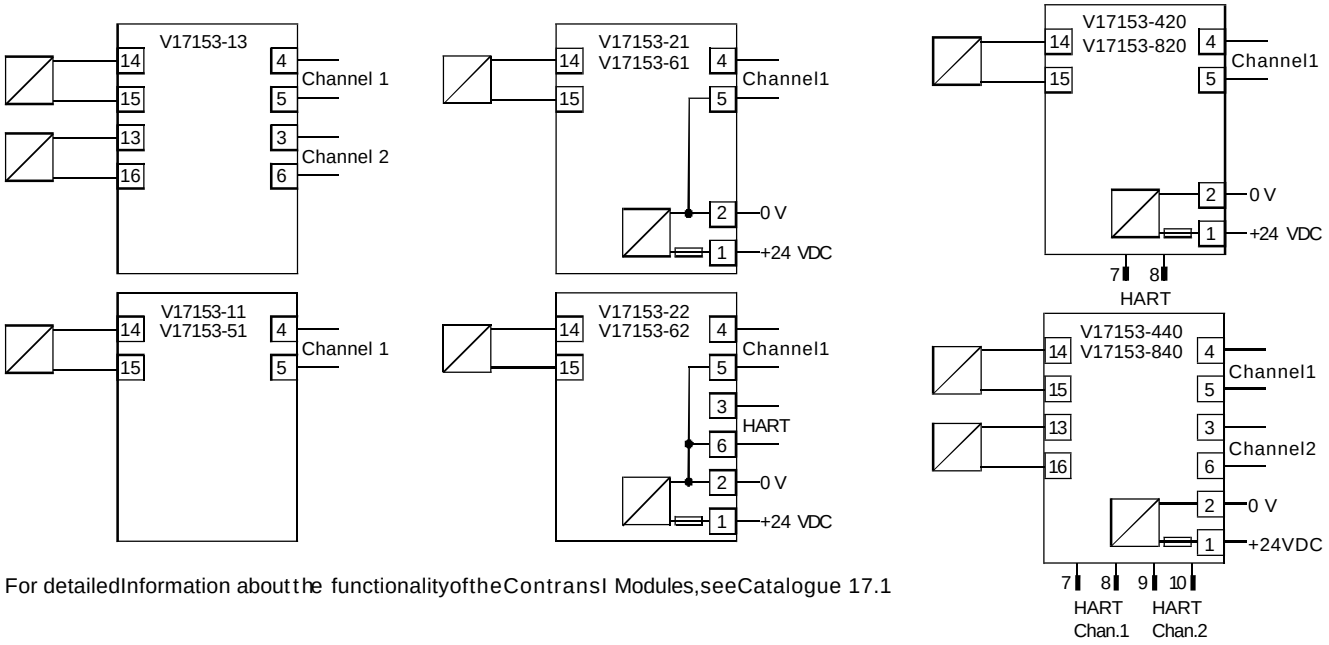
ContransI Backplane	***Freelance First DAO01***	***Contrans I Backplane***	***Freelance Second DAO01***
Output Signals :		***RedundantSignals :***	
Slot 1	Channel 0	Slot 1	Channel 0
Slot 2	Channel 1	Slot 2	Channel 1
Slot 3	Channel 2	Slot 3	Channel 2
Slot 4	Channel 3	Slot 4	Channel 3
Slot 5	Channel 4	Slot 5	Channel 4
Slot 6	Channel 5	Slot 6	Channel 5
Slot 7	Channel 6	Slot 7	Channel 6
Slot 8	Channel 7	Slot 8	Channel 7
Slot 9	Channel 8	Slot 9	Channel 8
Slot 10	Channel 9	Slot 10	Channel 9
Slot 11	Channel 10	Slot 11	Channel 10
Slot 12	Channel 11	Slot 12	Channel 11
Slot 13	Channel 12	Slot 13	Channel 12
Slot 14	Channel 13	Slot 14	Channel 13
Slot 15	Channel 14	Slot 15	Channel 14
Slot 16	Channel 15	Slot 16	Channel 15

6.2.2 ContransIModules, Backplanes andSystem Cables

Contrans I Modules	Output short circuit proofed	Channel / Module	Channel / Backplane	Load increasing	Electrical Isolation Input / Output	Electrical Isolation Chanel to Channel	Electrical Isolation Signal to HART	Intrinsically Safe	HART communication	Backplane V17111-321	Backplane V17111-322	Backplane V17111-351	Backplane V17111-320	System Cable 0336331	System Cable 0336332	System Cable 0336333	System Cable 0336334	System Cable 0336335	System Cable 9700140	FSK-Bus Amplifier at X 102	FSK Bus Amplifier at X 108
V17153-13	x	1	32		x	x				x	x								2x		
V17153-440*	x	1	32	x	x	x	x		x	x	x								2x		x
V17153-840	x	1	32	x	x	x	x	x	x	x	x	x							2x		x

* : Available with NL request !

6.3 FunctionalDrawingsofAnalogue Outputs

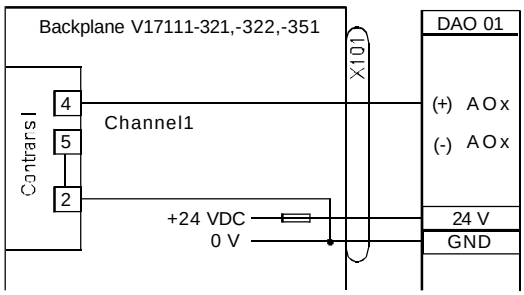


For detailedInformation aboutthe functionalityoftheContransI Modules,seeCatalogue 17.1

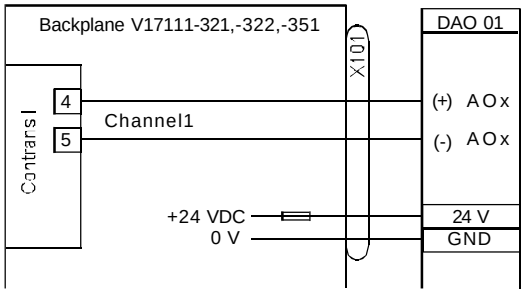
Chapter 6 - AnalogueOutput

6.4 Wiring Diagrams ofAnalogueOutputs

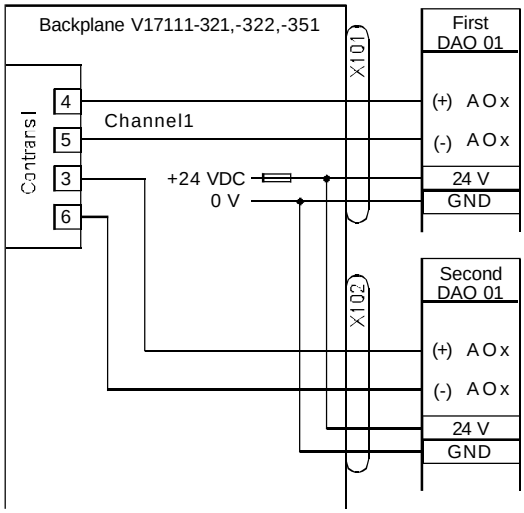
6.4.1 Analogue Output, 16Channels with System Cable 0336335



6.4.2 Analogue Output, 16Channels with System Cable 9700140



6.4.3 Analogue Output, 32Channels with System Cables 9700140



For detailedInformation aboutthe functionalityoftheContransI Modules,seeCatalogue 17.1