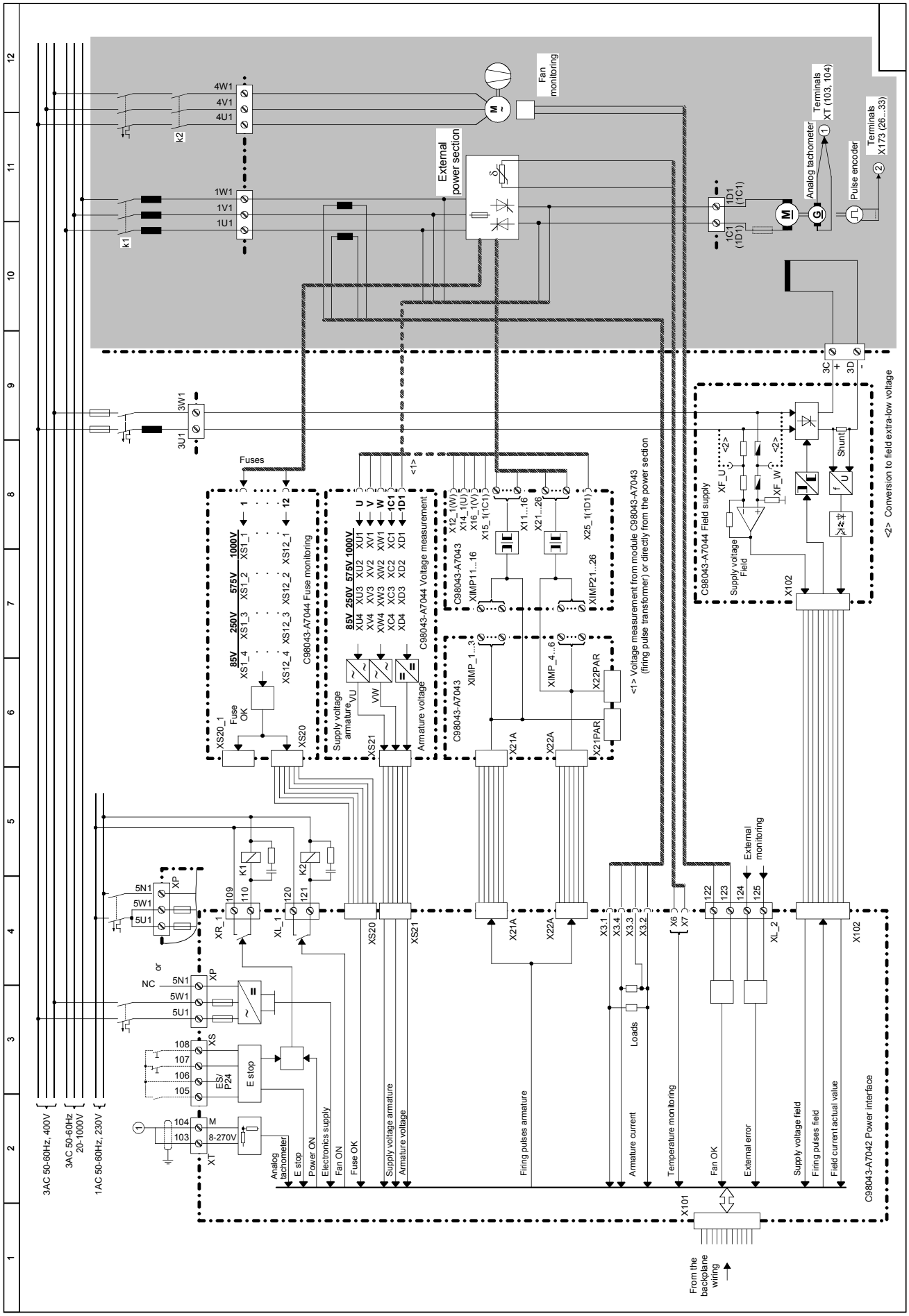
4W1
4V1
4U1
k2
1W1
1V1
1U1
k1
3W1
3U1
Fuses
External power section
Fan monitoring
Analog tachometer
Terminals XT (103, 104)
Pulse encoder
Terminals X173 (26...33)
1D1 (1C1)
1C1 (1D1)
3C
3D
Shunt
<2> Conversion to field extra-low voltage
C98043-A7044 Field supply
Supply voltage Field
XF_U
XF_W
X102
C98043-A7044 Fuse monitoring
XS20_1
Fuse OK
XS20
XS12_1
XS12_2
XS12_3
XS12_4
XS1_1
XS1_2
XS1_3
XS1_4
85V 250V 575V 1000V
C98043-A7044 Voltage measurement
Supply voltage armature
Armature voltage
XS21
XU1
XV1
XW1
XC1
XD1
XU2
XV2
XW2
XC2
XD2
XU3
XV3
XW3
XC3
XD3
XU4
XV4
XW4
XC4
XD4
<1> Voltage measurement from module C98043-A7043 (firing pulse transformer) or directly from the power section
C98043-A7043
X12_1(W)
X14_1(U)
X16_1(V)
X15_1(1C1)
X25_1(1D1)
X11...16
X21...26
XIMP11...16
XIMP21...26
XIMP_1...3
XIMP_4...6
X22PAR
X21PAR
X21A
X22A
5N1
5W1
5U1
XP
XR_1
XL_1
K1
K2
109
110
120
121
NC
or
XS
108
107
106
105
ES/ P24
E stop
104
103
M
8-270V
XT
Analog tachometer
E stop
Power ON
Electronics supply
Fan ON
Fuse OK
Supply voltage armature
Armature voltage
Firing pulses armature
Armature current
Loads
Temperature monitoring
Fan OK
External error
Supply voltage field
Firing pulses field
Field current actual value
C98043-A7042 Power interface
X101
X6
X7
X3.1
X3.4
X3.3
X3.2
122
123
124
125
External monitoring
XL_2
From the backplane wiring
3AC 50-60Hz, 400V
3AC 50-60Hz 20-1000V
1AC 50-60Hz, 230V

Fig. 6.2.1b

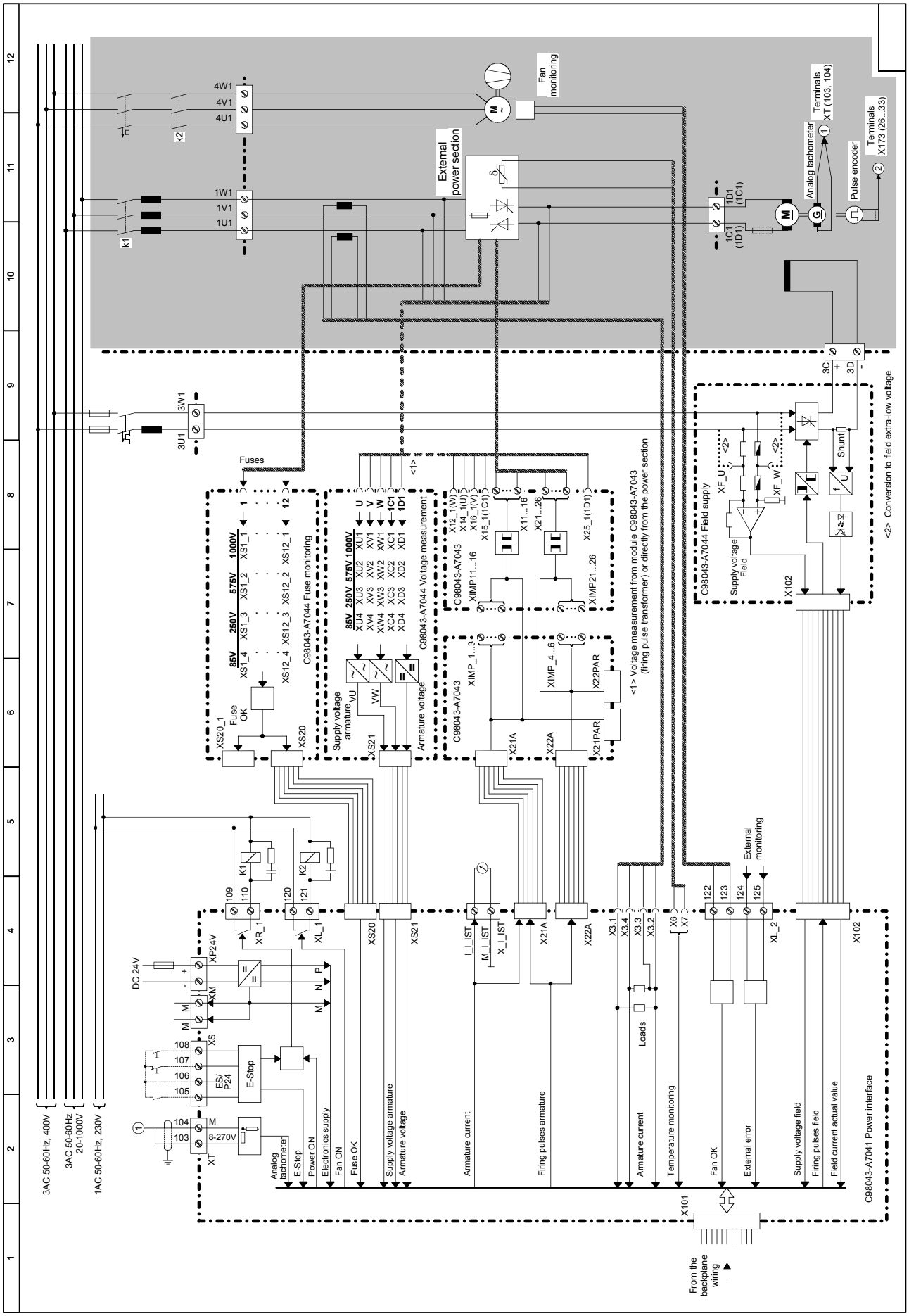

Fig. 6.2.1c with electronics power supply option, 24 V DC

6.3 Connection of the external power section

All the necessary connections to the power section are shown in the following figs. 6.3.1 to 6.3.4.

Fig. 6.3.1
- Four-quadrant drive (parameterized as a four-quadrant drive – U825=4 when supplied from the factory
- Measurement of the line voltage and armature voltage via the Faston connections on the firing pulse transfer module (when supplied from the factory)

Fig. 6.3.2
- Four-quadrant drive (parameterized as a four-quadrant drive – U825=4 when supplied from the factory)
- Measurement of the system voltage and armature voltage directly from the power section via cables that must be additionally laid

Fig. 6.3.3:
- Single-quadrant drive (parameterization via parameter U825 = 1)
- Measurement of the system voltage and armature voltage via the Faston connections on the firing pulse transfer module (state as delivered) In order to measure the armature voltage it is necessary to make a connection to 1D1 on the power section.

Fig. 6.3.4:
- Single-quadrant drive (parameterization via parameter U825 = 1)
- Measurement of the system voltage and armature voltage directly from the power section via cables that must be additionally laid

See Chapter 6.4 for possible ways of positioning the two troughs and dismantling the device.

WARNING

The following electrical cables between the power section (system voltage) and the electronics must be protected against short-circuits:
Secondary sides of the firing transmission, voltage measurement, fuse monitoring.

All these cables (that lead to the supply voltage) must be laid in a such a way as to preclude short circuits or with short-circuit protection.
The effective currents in the specified cables are smaller than 0.5 A.

Method 1: Short-circuit protected cables that burn internally but whose insulation does not split.

Method 2: Protect the cables as close as possible to the power section with fuses.
The fuses must have the necessary cutout capability.

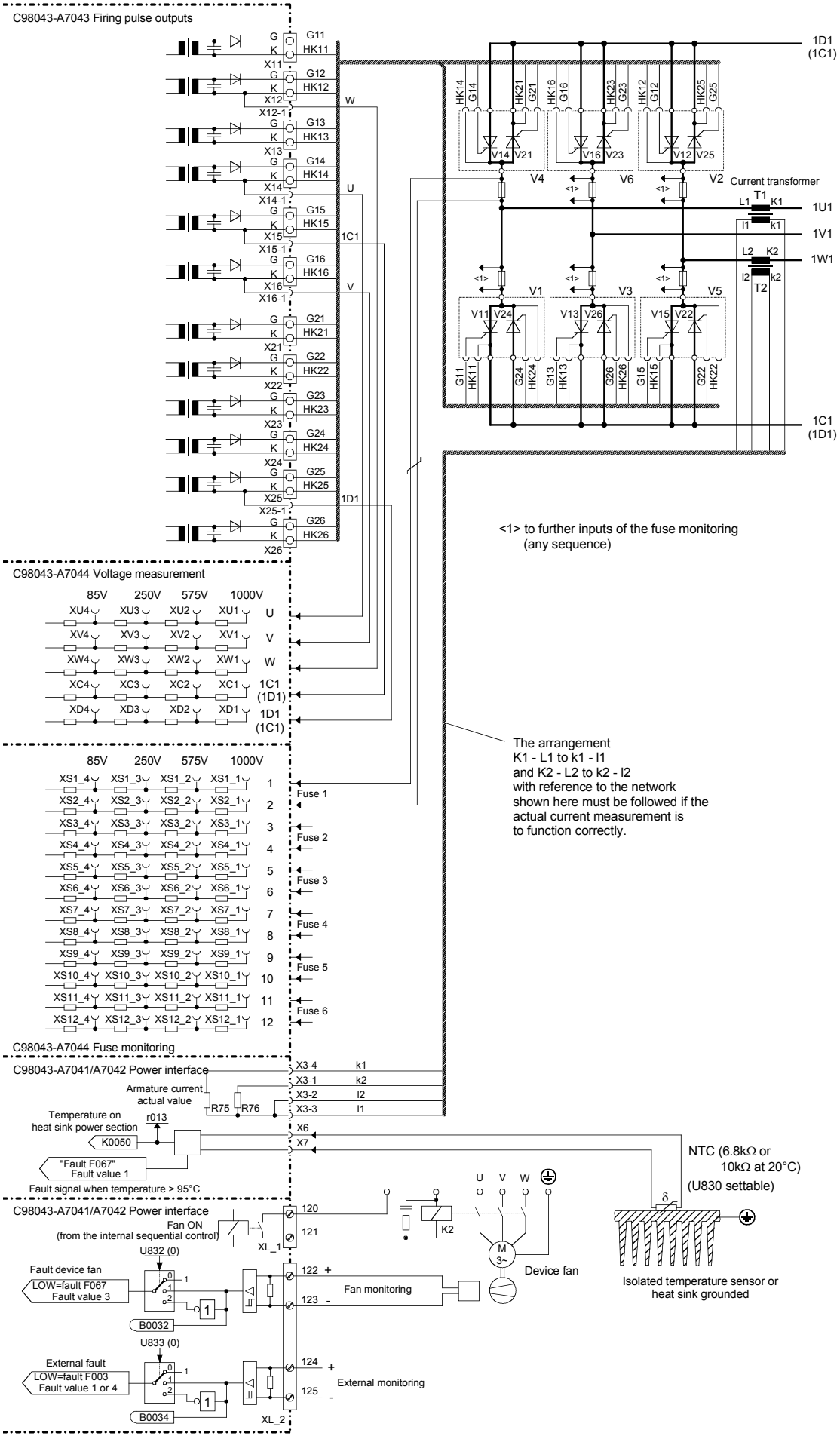
C98043-A7043 Firing pulse outputs
G11 HK11 X11
G12 HK12 X12
X12-1
G13 HK13 X13
G14 HK14 X14
X14-1
G15 HK15 X15
X15-1
G16 HK16 X16
X16-1
G21 HK21 X21
G22 HK22 X22
G23 HK23 X23
G24 HK24 X24
G25 HK25 X25
X25-1
G26 HK26 X26
W
U
1C1
V
1D1
1D1 (1C1)
1C1 (1D1)
1U1
1V1
1W1
Current transformer
T1
T2
V1 V2 V3 V4 V5 V6
V14 V21
V16 V23
V12 V25
V11 V24
V13 V26
V15 V22
<1> to further inputs of the fuse monitoring (any sequence)
C98043-A7044 Voltage measurement
85V 250V 575V 1000V
XU4 XU3 XU2 XU1 U
XV4 XV3 XV2 XV1 V
XW4 XW3 XW2 XW1 W
XC4 XC3 XC2 XC1 1C1 (1D1)
XD4 XD3 XD2 XD1 1D1 (1C1)
The arrangement K1 - L1 to k1 - l1 and K2 - L2 to k2 - l2 with reference to the network shown here must be followed if the actual current measurement is to function correctly.
XS1_4 XS1_3 XS1_2 XS1_1 1 Fuse 1
XS2_4 XS2_3 XS2_2 XS2_1 2
XS3_4 XS3_3 XS3_2 XS3_1 3 Fuse 2
XS4_4 XS4_3 XS4_2 XS4_1 4
XS5_4 XS5_3 XS5_2 XS5_1 5 Fuse 3
XS6_4 XS6_3 XS6_2 XS6_1 6
XS7_4 XS7_3 XS7_2 XS7_1 7 Fuse 4
XS8_4 XS8_3 XS8_2 XS8_1 8
XS9_4 XS9_3 XS9_2 XS9_1 9 Fuse 5
XS10_4 XS10_3 XS10_2 XS10_1 10
XS11_4 XS11_3 XS11_2 XS11_1 11 Fuse 6
XS12_4 XS12_3 XS12_2 XS12_1 12
C98043-A7044 Fuse monitoring
C98043-A7041/A7042 Power interface
X3-4 k1
X3-1 k2
X3-2 l2
X3-3 l1
Armature current actual value
R75 R76
Temperature on heat sink power section
r013
K0050
"Fault F067" Fault value 1
Fault signal when temperature > 95°C
X6
X7
NTC (6.8kΩ or 10kΩ at 20°C)
(U830 settable)
C98043-A7041/A7042 Power interface
Fan ON (from the internal sequential control)
U832 (0)
XL_1
120
121
K2
U V W
M 3~
Device fan
Fault device fan
LOW=fault F067 Fault value 3
B0032
122 +
123 -
Fan monitoring
Isolated temperature sensor or heat sink grounded
U833 (0)
External fault
LOW=fault F003 Fault value 1 or 4
B0034
124 +
125 -
External monitoring
XL_2

Fig. 6.3.1

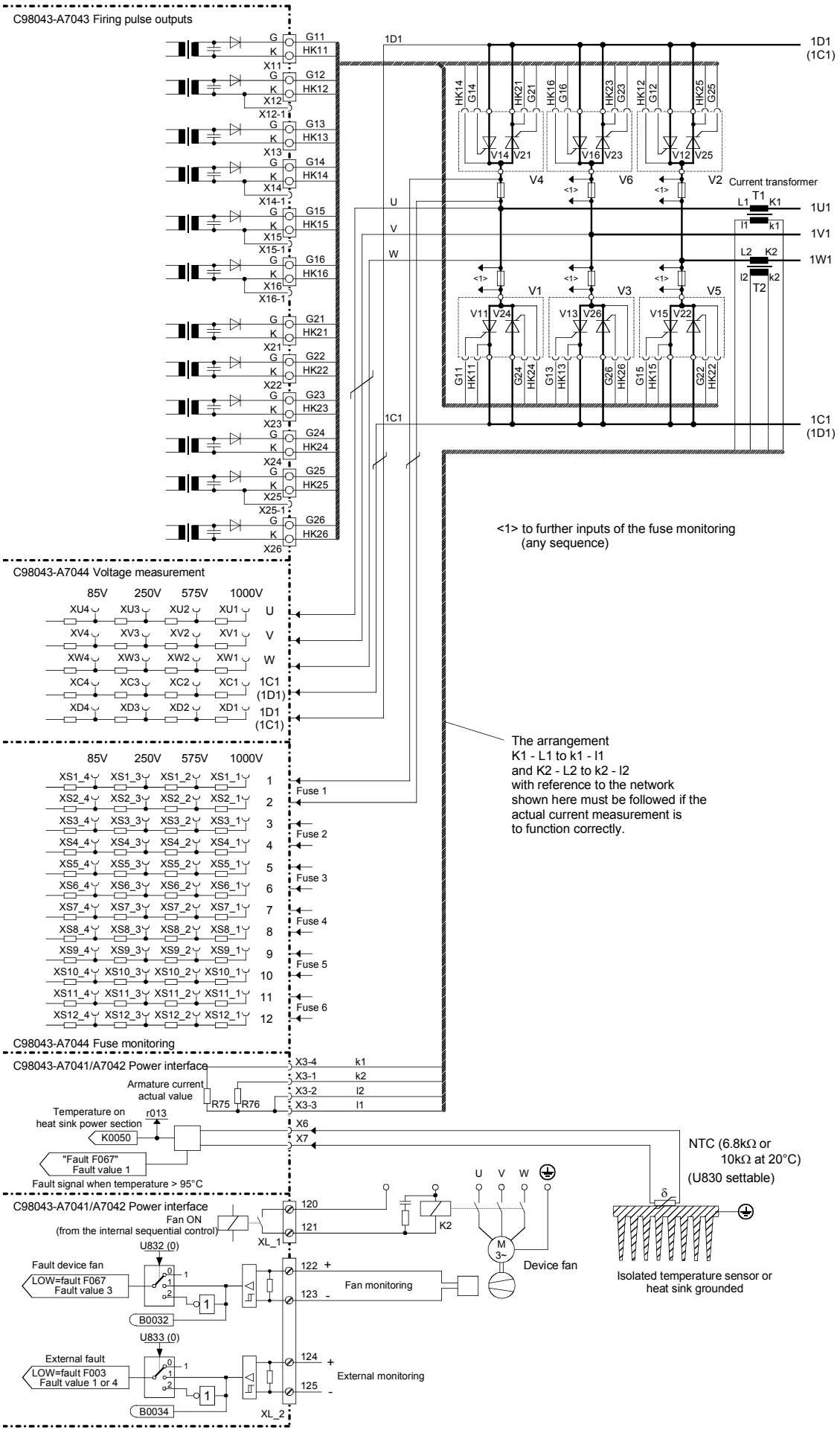
C98043-A7043 Firing pulse outputs
G11 HK11 X11
G12 HK12 X12
X12-1
G13 HK13 X13
G14 HK14 X14
X14-1
G15 HK15 X15
X15-1
G16 HK16 X16
X16-1
G21 HK21 X21
G22 HK22 X22
G23 HK23 X23
G24 HK24 X24
G25 HK25 X25
X25-1
G26 HK26 X26
1D1
1C1
U
V
W
V4
V6
V2
V1
V3
V5
Current transformer
T1
T2
1U1
1V1
1W1
1D1 (1C1)
1C1 (1D1)
<1> to further inputs of the fuse monitoring (any sequence)
C98043-A7044 Voltage measurement
85V 250V 575V 1000V
XU4 XU3 XU2 XU1 U
XV4 XV3 XV2 XV1 V
XW4 XW3 XW2 XW1 W
XC4 XC3 XC2 XC1 1C1 (1D1)
XD4 XD3 XD2 XD1 1D1 (1C1)
The arrangement K1 - L1 to k1 - I1 and K2 - L2 to k2 - I2 with reference to the network shown here must be followed if the actual current measurement is to function correctly.
Fuse 1
Fuse 2
Fuse 3
Fuse 4
Fuse 5
Fuse 6
C98043-A7044 Fuse monitoring
C98043-A7041/A7042 Power interface
X3-4 k1
X3-1 k2
X3-2 I2
X3-3 I1
Armature current actual value
R75 R76
Temperature on heat sink power section
r013
K0050
"Fault F067" Fault value 1
Fault signal when temperature > 95°C
X6
X7
NTC (6.8kΩ or 10kΩ at 20°C) (U830 settable)
C98043-A7041/A7042 Power interface
Fan ON (from the internal sequential control)
XL_1
120
121
K2
U832 (0)
Fault device fan
LOW=fault F067 Fault value 3
B0032
122 +
123 -
Fan monitoring
Device fan
U833 (0)
External fault
LOW=fault F003 Fault value 1 or 4
B0034
124 +
125 -
External monitoring
XL_2
Isolated temperature sensor or heat sink grounded

Fig. 6.3.2

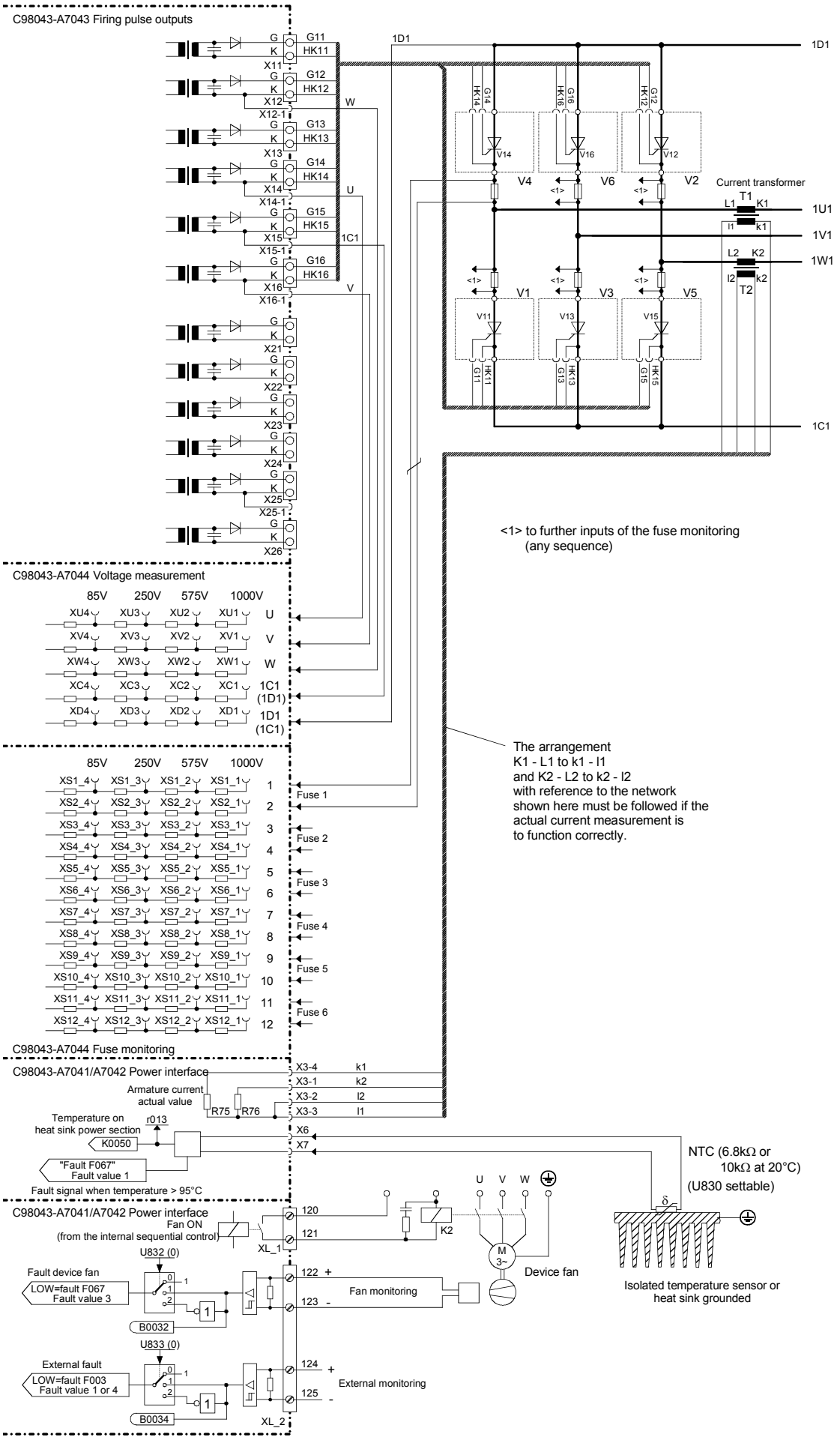
C98043-A7043 Firing pulse outputs
G
K
G11
HK11
X11
G12
HK12
X12
X12-1
G13
HK13
X13
G14
HK14
X14
X14-1
G15
HK15
X15
X15-1
G16
HK16
X16
X16-1
X21
X22
X23
X24
X25
X25-1
X26
W
U
1C1
V
1D1
V14
V16
V12
V4
V6
V2
V1
V3
V5
V11
V13
V15
<1>
Current transformer
T1
L1
K1
1U1
I1
k1
1V1
L2
K2
1W1
I2
k2
T2
1C1
<1> to further inputs of the fuse monitoring
(any sequence)
C98043-A7044 Voltage measurement
85V
250V
575V
1000V
XU4
XU3
XU2
XU1
U
XV4
XV3
XV2
XV1
V
XW4
XW3
XW2
XW1
W
XC4
XC3
XC2
XC1
1C1
(1D1)
XD4
XD3
XD2
XD1
1D1
(1C1)
XS1_4
XS1_3
XS1_2
XS1_1
1
Fuse 1
XS2_4
XS2_3
XS2_2
XS2_1
2
XS3_4
XS3_3
XS3_2
XS3_1
3
Fuse 2
XS4_4
XS4_3
XS4_2
XS4_1
4
XS5_4
XS5_3
XS5_2
XS5_1
5
Fuse 3
XS6_4
XS6_3
XS6_2
XS6_1
6
XS7_4
XS7_3
XS7_2
XS7_1
7
Fuse 4
XS8_4
XS8_3
XS8_2
XS8_1
8
XS9_4
XS9_3
XS9_2
XS9_1
9
Fuse 5
XS10_4
XS10_3
XS10_2
XS10_1
10
XS11_4
XS11_3
XS11_2
XS11_1
11
Fuse 6
XS12_4
XS12_3
XS12_2
XS12_1
12
The arrangement
K1 - L1 to k1 - I1
and K2 - L2 to k2 - I2
with reference to the network
shown here must be followed if the
actual current measurement is
to function correctly.
C98043-A7044 Fuse monitoring
C98043-A7041/A7042 Power interface
X3-4
k1
X3-1
k2
X3-2
I2
X3-3
I1
Armature current
actual value
R75
R76
Temperature on
heat sink power section
r013
K0050
X6
X7
"Fault F067"
Fault value 1
Fault signal when temperature > 95°C
NTC (6.8kΩ or
10kΩ at 20°C)
(U830 settable)
C98043-A7041/A7042 Power interface
Fan ON
(from the internal sequential control)
120
121
XL_1
K2
U
V
W
M
3~
Device fan
U832 (0)
Fault device fan
LOW=fault F067
Fault value 3
122 +
123 -
Fan monitoring
B0032
Isolated temperature sensor or
heat sink grounded
U833 (0)
External fault
LOW=fault F003
Fault value 1 or 4
124 +
125 -
External monitoring
B0034
XL_2

Fig. 6.3.3

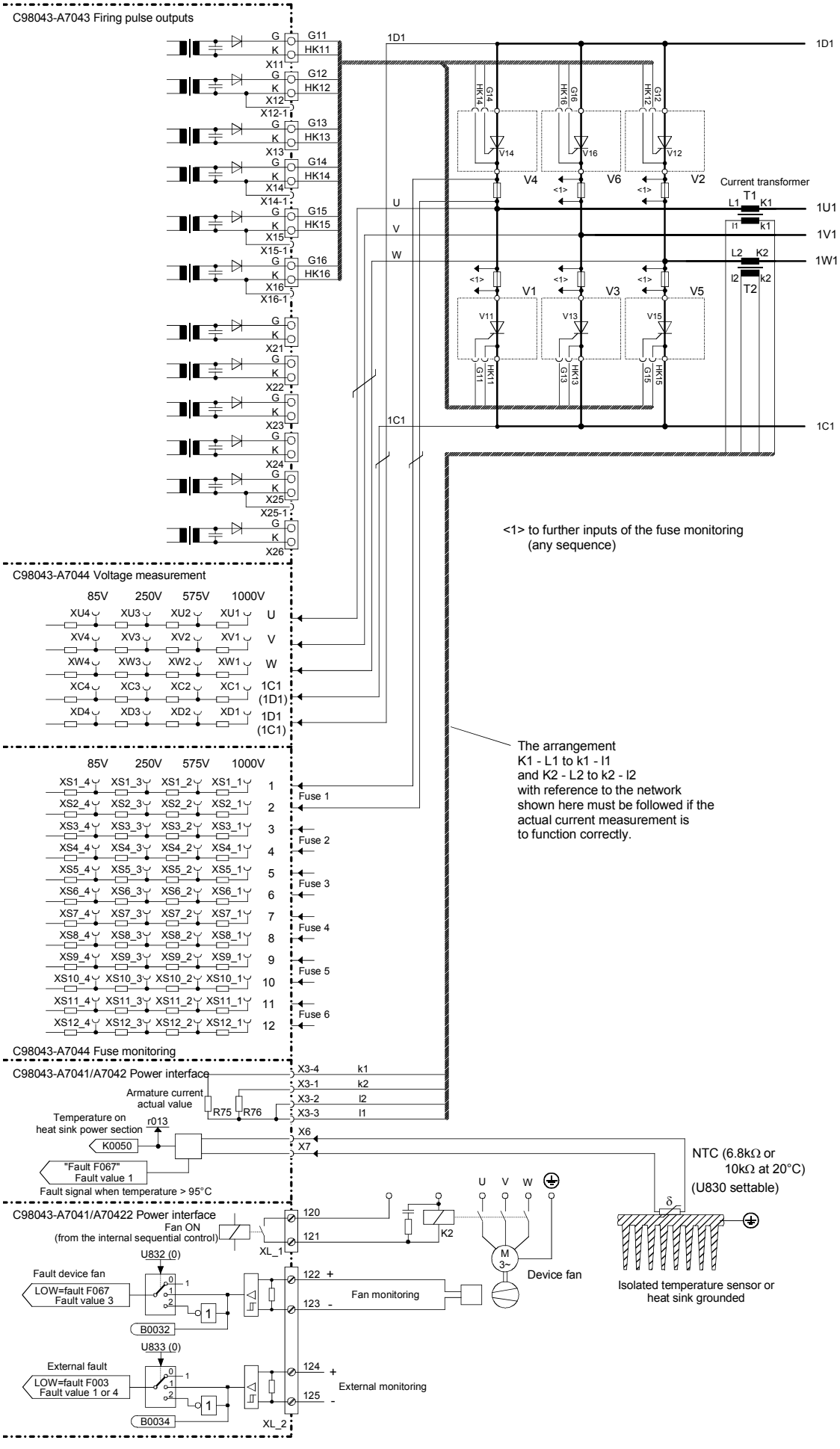
C98043-A7043 Firing pulse outputs
G11 HK11 X11
G12 HK12 X12 X12-1
G13 HK13 X13
G14 HK14 X14 X14-1
G15 HK15 X15 X15-1
G16 HK16 X16 X16-1
X21 X22 X23 X24 X25 X25-1 X26
1D1
1C1
U
V
W
V14 V16 V12 V4 V6 V2
V11 V13 V15 V1 V3 V5
Current transformer
T1 L1 K1 I1 k1
T2 L2 K2 I2 k2
1U1
1V1
1W1
<1> to further inputs of the fuse monitoring (any sequence)
C98043-A7044 Voltage measurement
85V 250V 575V 1000V
XU4 XU3 XU2 XU1 U
XV4 XV3 XV2 XV1 V
XW4 XW3 XW2 XW1 W
XC4 XC3 XC2 XC1 1C1 (1D1)
XD4 XD3 XD2 XD1 1D1 (1C1)
The arrangement K1 - L1 to k1 - I1 and K2 - L2 to k2 - I2 with reference to the network shown here must be followed if the actual current measurement is to function correctly.
XS1_4 XS1_3 XS1_2 XS1_1 1 Fuse 1
XS2_4 XS2_3 XS2_2 XS2_1 2
XS3_4 XS3_3 XS3_2 XS3_1 3 Fuse 2
XS4_4 XS4_3 XS4_2 XS4_1 4
XS5_4 XS5_3 XS5_2 XS5_1 5 Fuse 3
XS6_4 XS6_3 XS6_2 XS6_1 6
XS7_4 XS7_3 XS7_2 XS7_1 7 Fuse 4
XS8_4 XS8_3 XS8_2 XS8_1 8
XS9_4 XS9_3 XS9_2 XS9_1 9 Fuse 5
XS10_4 XS10_3 XS10_2 XS10_1 10
XS11_4 XS11_3 XS11_2 XS11_1 11 Fuse 6
XS12_4 XS12_3 XS12_2 XS12_1 12
C98043-A7044 Fuse monitoring
C98043-A7041/A7042 Power interface
X3-4 k1
X3-1 k2
X3-2 I2
X3-3 I1
Armature current actual value
R75 R76
Temperature on heat sink power section
r013
K0050
"Fault F067" Fault value 1
Fault signal when temperature > 95°C
X6
X7
NTC (6.8kΩ or 10kΩ at 20°C) (U830 settable)
C98043-A7041/A70422 Power interface
Fan ON (from the internal sequential control)
XL_1
120
121
K2
U V W
M 3~
Device fan
U832 (0)
Fault device fan
LOW=fault F067 Fault value 3
B0032
122 +
123 -
Fan monitoring
Isolated temperature sensor or heat sink grounded
U833 (0)
External fault
LOW=fault F003 Fault value 1 or 4
B0034
124 +
125 -
External monitoring
XL_2

Fig. 6.3.4

6.4 Dismantle capability

See also Chapter 5.2

The SIMOREG DC-MASTER Control Module is mounted in two troughs.

The front trough contains the power interface module and the electronics box with the electronics module CUD1 (C98043-A7001) and the terminal expansion CUD2 (ordering option K01) (C98043-A7006) as an option, and further supplementary modules such as technology modules or interface modules.

The rear trough contains the firing pulse transmission module (C98043-A7043) and the module with the voltage measurement, fuse monitoring, and field supply (C98043-A7044). The two modules can be separated mechanically so that parts of it can be mounted in the proximity of the power section.

The two troughs can be mounted one on top of the other or separately.

Here are a few examples:

1. Rear and front troughs mounted one on top of the other or separately, modules C98043-A7043 and C98043-A7044 not separated (Fig. 6.4.1)

Connection (connectors / terminals	Cable	Length	Comments
X21A (torque direction 1)	Ribbon cable 26-way	max. 10m *)	Shield if >1m
X22A (torque direction 2)	Ribbon cable 26-way	max. 10m *)	Shield if >1m
XS20 (fuse monitoring)	Ribbon cable 10-way	max. 10m *)	Shield if >1m
XS21 (voltage measurement)	Ribbon cable 10-way	max. 10m *)	Shield if >1m
X102 (field)	Ribbon cable 20-way	max. 10m *)	Shield if >1m
Current transformer (X3)	Single wires (stranded) twisted pairs	max. 10m *)	Shield if >2m
Heat sink temperature (X6, X7)	Single wires (stranded) twisted	max. 10m *)	Shield if >1m
Firing pulse (X11...X16, X21...X26)	Single wires (short-circuit-proof cables) twisted pairs	max. 3m *)	Do not shield !
Fuse monitoring (XS1_1...XS1_12 etc.)	Single wires (short-circuit-proof cables) laid in pairs (for each monitored fuse)	max. 10m *)	
Voltage measurement (XU1,XV1,XW1,XC1,CD1 etc.)	Single wires (short-circuit-proof cables) U,V,W twisted C,D twisted	max. 3m *)	Connection of voltage measurement see also Chapter . 6.3

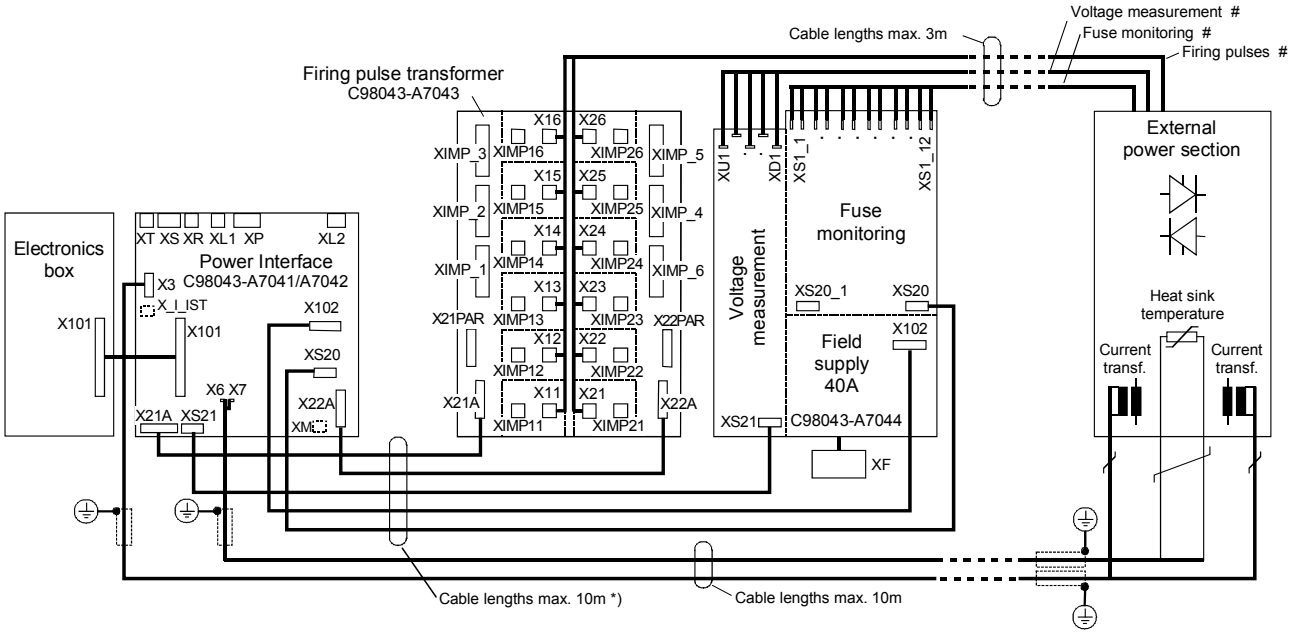

Fig. 6.4.1

#...short-circuit-proof cable laying

*) The SIMOREG CM is supplied with the front and rear trough mounted one on top of the other. Ribbon cables are already installed for this assembly type.

See Chapter 2.3 for other cable lengths

2. Rear and front trough mounted one on top of the other or separately, module C98043-A7043 and separated (firing pulse transformer mounted with power section), module C98043-A7044 not separated (Fig. 6.4.2)

Mechanical conversion see Chapter 5

Connection (connectors / terminals)	Cable	Length	Comments
X21A (torque direction 1)	Ribbon cable 26-way	max. 10m *)	Shield if >1m
X22A (torque direction 2)	Ribbon cable 26-way	max. 10m *)	Shield if >1m
XS20 (fuse monitoring)	Ribbon cable 10-way	max. 10m *)	Shield if >1m
XS21 (voltage measurement)	Ribbon cable 10-way	max. 10m *)	Shield if >1m
X102 (field)	Ribbon cable 20-way	max. 10m *)	Shield if >1m
Current transformer (X3)	Single wires (stranded) twisted pairs	max. 10m *)	Shield if >2m
Heat sink temperature (X6, X7)	Single wires (stranded) twisted	max. 10m *)	Shield if >1m
Control firing pulse transformer (XIMP_1 - XIMP11...16) (XIMP_6 - XIMP21...26)	2x LiyCY 8x2x0.5(or 1)mm^2 or	max. 10m *)	Apply shield on both sides
	Single wires (stranded) twisted pairs	max. 3m *)	Shield if >1m
Firing pulse (X11...X16, X21...X26)	Single wires (short-circuit-proof cables) twisted pairs	max. 3m *)	Do not shield !
Fuse monitoring (XS1_1...XS1_12 etc.)	Single wires (short-circuit-proof cables) laid in pairs (for each monitored fuse)	max. 10m *)	
Voltage measurement (XU1,XV1,XW1,XC1,CD1 etc.)	Single wires (short-circuit-proof cables) U-V-W twisted, C-D twisted	max. 3m *)	Connection of voltage measurement see also Chapter 6.3

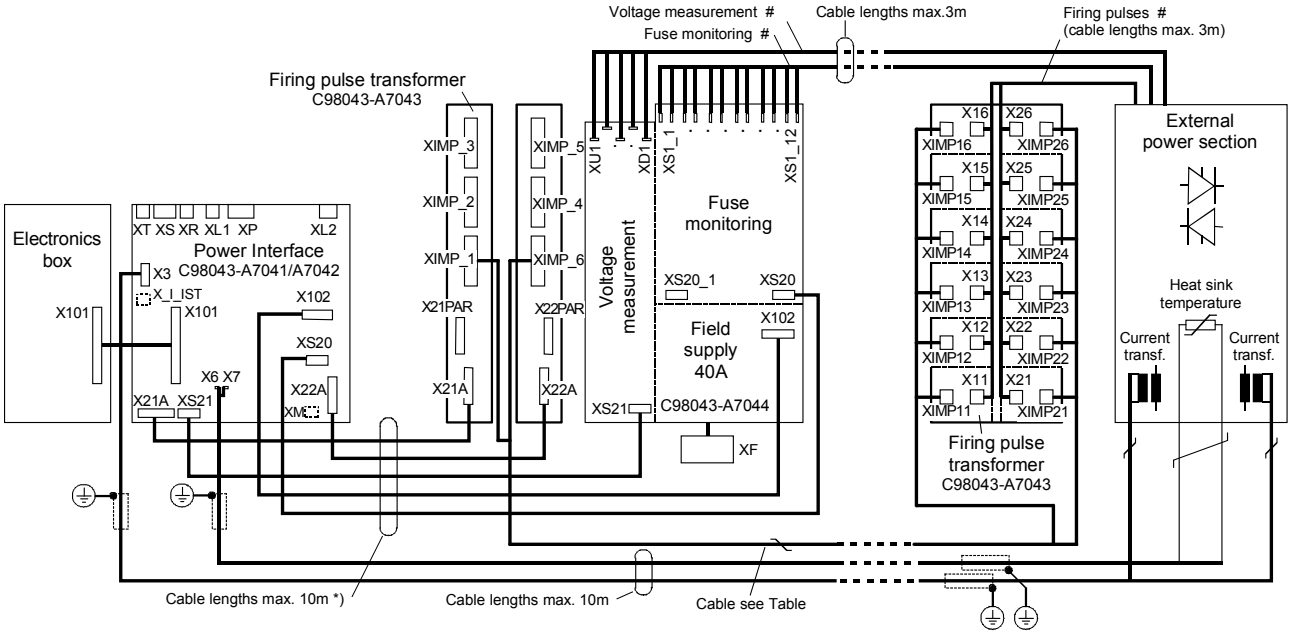

Fig. 6.4.2

#...short-circuit-proof cable laying

*) The SIMOREG CM is supplied with the front and rear trough mounted one on top of the other. Ribbon cables are already installed for this assembly type.

See Chapter 2.3 for other cable lengths

3. Rear and front trough mounted one on top of the other or separately, modules C98043-A7043 C98043-A7044 separated (firing pulse transformer, voltage measurement, and fuse monitoring mounted with power section), field supply remains in trough (Fig. 6.4.3)

Mechanical conversion see Chapter 5

Connection (connectors / terminals)	Cable	Length	Comments
X21A (torque direction 1)	Ribbon cable 26-way	max. 10m *)	Shield if >1m
X22A (torque direction 2)	Ribbon cable 26-way	max. 10m *)	Shield if >1m
XS20 (fuse monitoring)	Ribbon cable 10-way	max. 10m *)	Shield if >1m
XS21 (voltage measurement)	Ribbon cable 10-way	max. 10m *)	Shield if >1m
X102 (field)	Ribbon cable 20-way	max. 10m *)	Shield if >1m
Current transformer (X3)	Single wires (stranded) twisted pairs	max. 10m *)	Shield if >2m
Heat sink temperature (X6, X7)	Single wires (stranded) twisted	max. 10m *)	Shield if >1m
Control firing pulse transformer (XIMP_1 - XIMP11...16) (XIMP_6 - XIMP21...26)	2x LiyCY8x2x0.5 (or1) mm^2 or Single wires (stranded) twisted pairs	max. 10m *)	Apply shield on both sides
		max. 3m *)	Shield if >1m
Firing pulse (X11...X16, X21...X26)	Single wires (short-circuit-proof cables) twisted pairs	max. 3m *)	Do not shield !
Fuse monitoring (XS1_1...XS1_12 etc.)	Single wires (short-circuit-proof cables) laid in pairs (for each monitored fuse)	max. 10m *)	
Voltage measurement (XU1,XV1,XW1,XC1,CD1 etc.)	Single wires (short-circuit-proof cables) U-V-W twisted, C-D twisted	max. 3m *)	Connection of voltage measurement see also Chapter 6.3

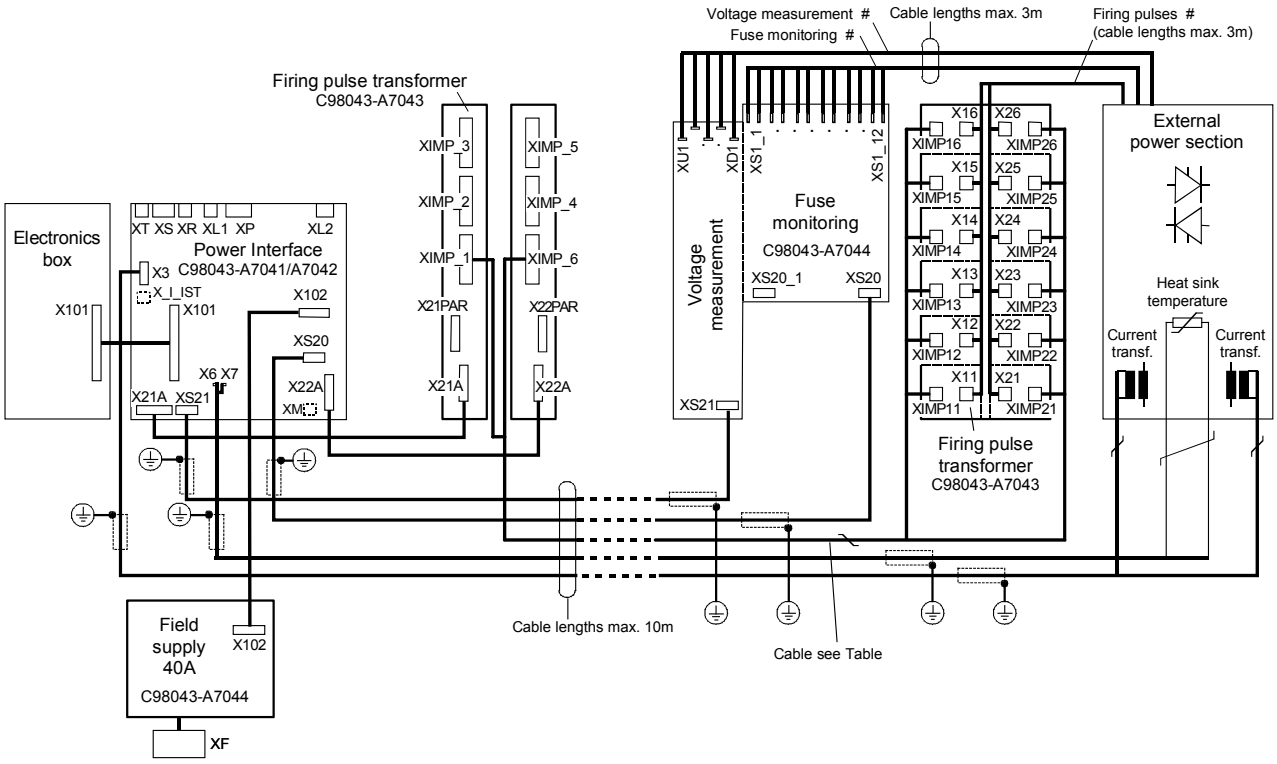

Fig. 6.4.3

#...short-circuit-proof cable laying

*) The SIMOREG CM is supplied with the front and rear trough mounted one on top of the other. Ribbon cables are already installed for this assembly type.
See Chapter 2.3 for other cable lengths

4. Parallel connection of power sections with shared control electronics

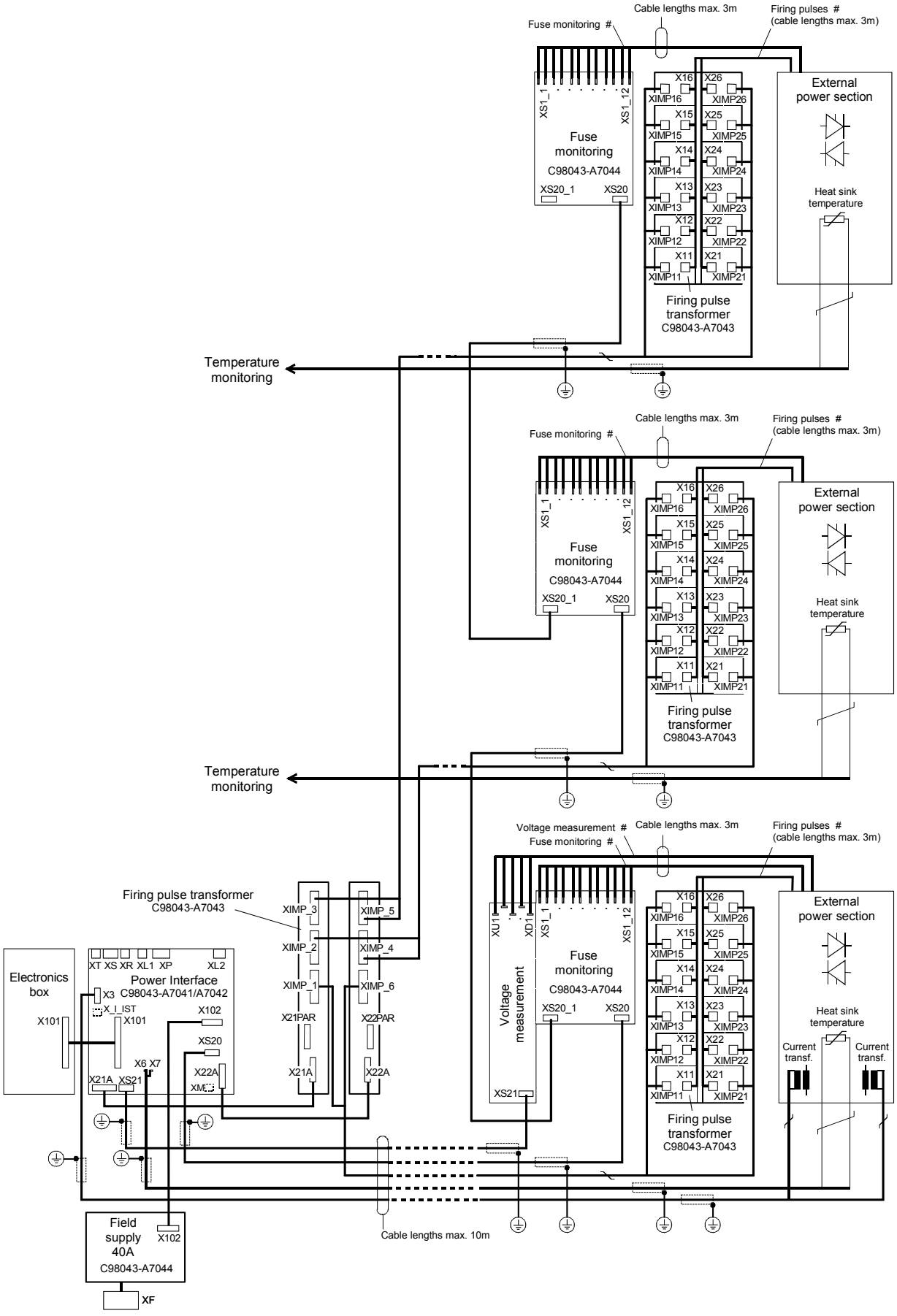

Bild 6.4.4

#... short-circuit-proof cable laying