

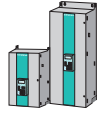
# SIMOREG 6RA70 DC MASTER SIMOREG CM



6/2	Application
6/2	Design
6/3	Technical Data
6/3	Standards
6/4	Block diagram
6/6	Options

# SIMOREG 6RA70 DC MASTER

## SIMOREG CM



### Application



Fig. 6/1  
SIMOREG CM

An important application for the SIMOREG CM converter is in the retrofitting and modernization of DC drives in existing systems.

In the field of DC drives, many systems exist that are older than 5 or 10 years and that still use analog technology.

On retrofitting or updating these systems, the motor, mechanical components and power section are retained and only the closed-loop control section is replaced by a 6RA70 Control Module. This is an extremely economical way to obtain a modern DC drive with the complete functional scope of the well-proven, fully digital converters of the SIMOREG DC MASTER series.

It is easily adapted to the configuration of the existing components by setting parameters.

The 6RA70 Control Module contains a power section for supplying the field with a rated current of up to 40 A.

## 6

### Design

The 6RA70 Control Module is characterized by its compact, space-saving design. The compact construction makes it especially easy to service since individual components are easily accessible. The electronics box contains the basic electronics as well as any supplementary boards.

To support optimum utilization of the installation possibilities in the system, the 6RA70 Control Module can be separated in its depth. Furthermore, the PCBs for firing pulse generation and distribution as well as for fuse monitoring and voltage measurement are designed to be removed and mounted either partially or completely outside the unit directly on the power section and connected to the basic unit via cables.

All 6RA70 Control Modules are equipped with a PMU simple operator panel in the door of the unit. The PMU consists of a five-digit, seven-segment display, three LEDs as status indicators and three parameterization keys. The PMU also features connector X300 with a USS interface in compliance with the RS232 or RS485 standard.

The panel provides all the facilities required during start-up for making adjustments or settings and displaying measured values.

The optional OP1S converter operator panel can be mounted either in the converter door or externally, e.g. in the cubicle door. For this purpose, it can be connected up by means of a 5 m long cable. Cables of up to 200 m in length can be used if a separate 5 V supply is available. The OP1S is connected to the SIMOREG CM unit via connector X300.

The OP1S can be installed as an economic alternative to control cubicle measuring instruments which display physical measured quantities.

The OP1S features an LCD with 4 x 16 characters for displaying parameter names in plain text. English, German, French, Spanish and Italian can be selected as the display languages.

The OP1S can store parameter sets for easy downloading to other devices.

The converter can also be parameterized via the serial interface of the basic unit by means of a generally available PC and appropriate software. This PC interface is used for start-up, for maintenance during shutdown and for diagnosis during operation and is, therefore, a service interface. Upgrades of the converter software that is stored in Flash memory can also be loaded via this interface.

The field is supplied by a single-phase, semi-controlled dual pulse bridge connection B2HZ. The power section for the field is constructed with galvanically isolated thyristor modules; the heat sink is therefore at floating potential.



### Type 6RA7000-0MV62-0

<b>Measurable rated supply voltage armature</b>	<b>V</b>	85 / 250 / 575 / 1000
<b>Rated supply voltage electronics supply</b>	<b>V</b>	2-ph. AC 380 (-25 %) to 460 (+15 %); $I_n = 1$ A or 1-ph. AC 190 (-25 %) to 230 (+15 %); $I_n = 2$ A (-35 % for 1 min)
<b>Rated supply voltage field <sup>1)</sup></b>	<b>V</b>	2-ph. AC 400 (+15 % / -20%) 2-ph. AC 460 (+10 %)
<b>Rated frequency</b>	<b>Hz</b>	The converters automatically adjust to the connected line frequency within a frequency range of 45 to 65 Hz <sup>2)</sup>
<b>Rated DC voltage field <sup>1)</sup></b>	<b>V</b>	Max. 325 / 373
<b>Rated DC current field</b>	<b>A</b>	<b>40</b>
<b>Operational ambient temperature</b>	<b>°C</b>	0 to +60
<b>Storage and transport temperature</b>	<b>°C</b>	-25 to +70
<b>Control stability</b>		$\Delta_n = 0.006$ % of the rated motor speed, valid for pulse encoder operation <u>and</u> digital setpoint $\Delta_n = 0.1$ % of the rated motor speed, valid for analog tacho and analog setpoint <sup>3)</sup>
<b>Environmental class</b>	<b>EN 60721-3-3</b>	3K3
<b>Degree of protection</b>	<b>EN 60529</b>	IP 00
<b>See dimension drawing on Page</b>		9/16
<b>Weight approx.</b>	<b>kg</b>	15

## Standards

<b>DIN VDE 0106 Part 100</b>	Protection against electric shock; location of actuators near live parts.
<b>DIN VDE 0110 Part 1</b>	Insulation coordination for electrical equipment in low-voltage installations. Pollution Severity 2 for boards and power section. Only non-conductive pollution is permissible. Temporary conductivity must however be accepted due to condensation. *Dewing is not permitted because the components are only approved for Humidity Class F*
<b>EN 60146 T1-1 / DIN VDE 0558 T11</b>	Semiconductor converters General requirements and line-commutated converters
<b>DIN EN 50178 / DIN VDE 0160</b>	Regulations for the equipment of electrical power installations with electronic equipment.
<b>EN 61800-3</b>	Variable-speed drives, Part 3, EMC product standard including special test procedures
<b>DIN IEC 60 068-2-6 acc. to degree of severity 12 (SN29010 Part 1)</b>	Mechanical stress

1) The field supply voltage can be less than the rated supply voltage field (set with Parameter P078.002; input voltages of up to 85 V are permissible). The output voltage is reduced accordingly. The specified output DC voltage can be guaranteed up to under-voltages 5 % below the supply voltage (rated supply voltage field).

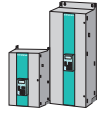
2) Adaptation to the line frequency within a frequency range of 23 Hz to 110 Hz via separate parameterization is available on request.

3) Conditions:  
The control stability (PI control) is referred to the rated motor speed and applies when the SIMOREG converter is warm. The following conditions are applicable:

- Temperature changes of  $\pm 10$  °C
- Line voltage changes corresponding to +10% / 5% of the rated input voltage
- Temperature coefficient of temperature-compensated tacho-generators 0.15 % per 10 °C (applies only to analog tacho-generator)
- Constant setpoint (14-bit resolution)

# SIMOREG 6RA70 DC MASTER

## SIMOREG CM



### Block diagram

### SIMOREG CM

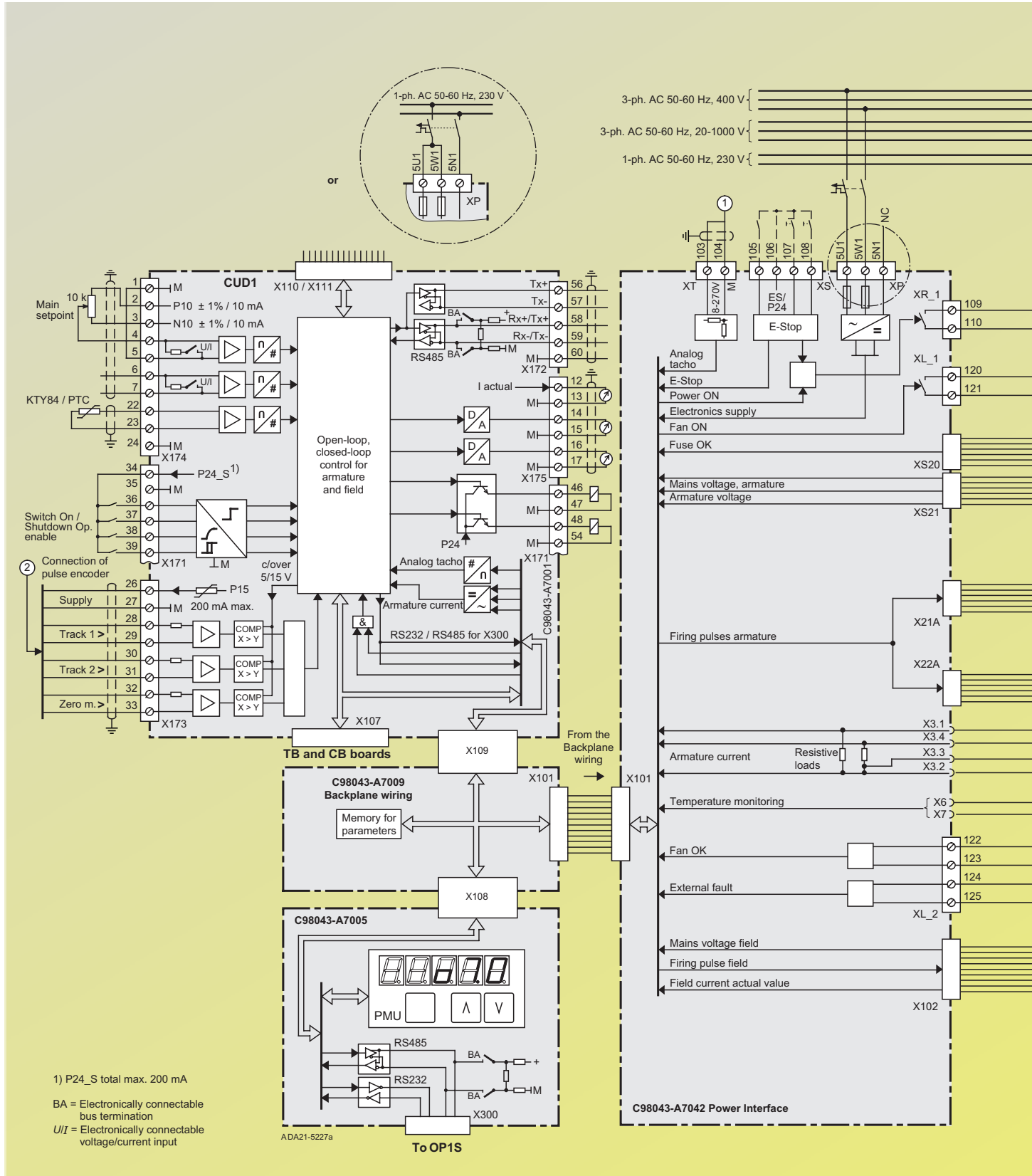
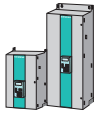
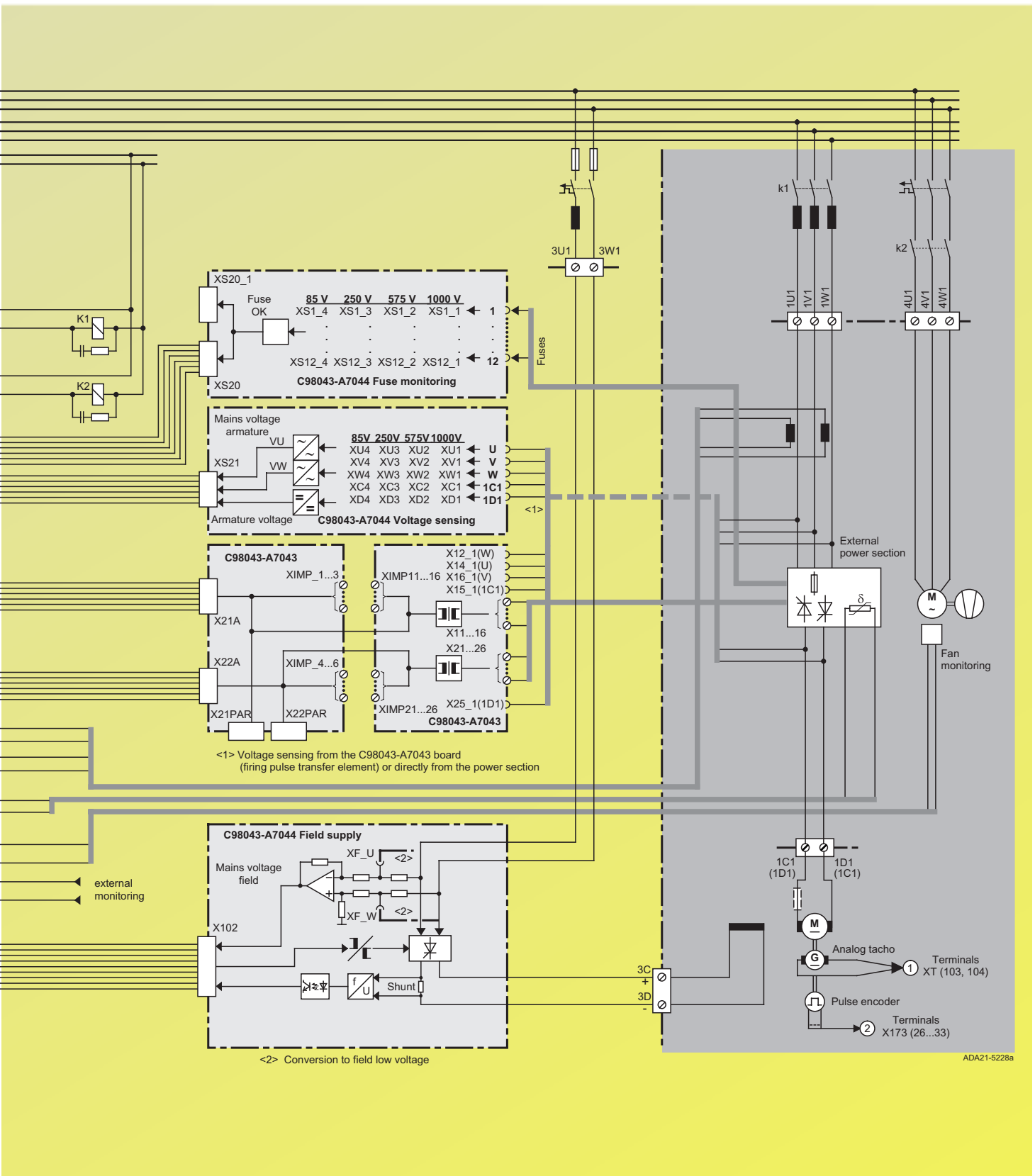


Fig. 6/2



# SIMOREG 6RA70 DC MASTER SIMOREG CM

## Block diagram



# SIMOREG 6RA70 DC MASTER

## SIMOREG CM



### Options

The SIMOREG CM can be subdivided into several modules. These modules can be mounted separately.

Sets of preassembled cables are available as options for interconnecting the separate modules of the CM unit.

This allows fast, flexible adaptation to system requirements.

Description	Connection	Cable length	Order No.:
<b>Supplementary housing</b> Rear housing part including accessories for the mounting of the firing pulse transfer module and/or fuse monitoring module in a parallel connection	–	–	<b>6RY1705-0CM00</b>
<b>Set of unassembled parts</b> Screws, dowel pins and snap-on devices for the external mounting of module parts	–	–	<b>6RY1707-0CM00</b>
<b>Preassembled ribbon cable set</b> 2 off 26-core ribbon cable, shielded 2 off 10-core ribbon cable, shielded 1 off 20-core ribbon cable, shielded	From X21A, X22A on FBG -A7042- to X21A, X22A on FBG -A7043- From XS20, XS21 on FBG -A7042- to XS20, XS21 on FBG -A7044- From X102 on FBG -A7042- to X102 on FBG -A7044-	3 m 10 m	<b>6RY1707-0CM01</b> <b>6RY1707-0CM02</b>
<b>Preassembled cable set for current transformer</b> 2 off 2-core twisted-pair cable	From X3 on FBG -A7042- to the current transformers	2 m 10 m	<b>6RY1707-0CM03</b> <b>6RY1707-0CM04</b>
<b>Preassembled cable set for heat sink temperature sensing</b> 1 off 2-core shielded cable	From X6 and X7 on FBG -A7042- to temperature sensor on KK	10 m	<b>6RY1707-0CM05</b>
<b>Preassembled cable set for firing pulse cables</b> Bridging set for 12 off 2-core twisted-pair cable	From XIMP11 through XIMP16 and XIMP21 through XIMP26 to the thyristors	3 m	<b>6RY1707-0CM06</b>
<b>Preassembled cable set for the fuse monitoring system</b> 6 off 2-core twisted-pair cable	From XS1_ through XS12_ (according to the voltage: 85 V, 250 V, 575 V or 1000 V) to the fuses	10 m	<b>6RY1707-0CM07</b>
<b>Preassembled cable set for voltage measurement</b> 1 off 3-core twisted-pair cable U-V-W  1 off 2-core twisted-pair cable C-D	From XU., XV., XW. (according to the voltage: 85 V, 250 V, 575 V or 1000 V) to the supply voltage terminals From XC., XD. (according to the voltage: 85 V, 250 V, 575 V or 1000 V) to the armature voltage terminals	3 m	<b>6RY1707-0CM08</b>
<b>Preassembled cable set for activation of the firing pulse transfer devices</b> 12 off 2-core twisted-pair cable	From XIMP1, XIMP4 or XIMP2, XIMP5 or XIMP3, XIMP6 on FBG through A7043- (side panels) on the firing pulse transfer modules (single boards) with Terminals X11 through X16 and X21 through X26	1 m	<b>6RY1707-0CM13</b>
2 off 12-core shielded cable	From XIMP1, XIMP4 and/or XIMP2, XIMP5 and/or XIMP3, XIMP6 on FBG -A7043- to external firing pulse transfer devices	10 m	<b>6RY1707-0CM10</b>
<b>Preassembled cable set for cradle in-line mounting</b> 2 off 26-core ribbon cable 2 off 10-core ribbon cable 1 off 20-core ribbon cable	From X21A, X22A on FBG -A7042- to X21A, X22A on FBG -A7043- From XS20, XS21 on FBG -A7042- to XS20, XS21 on FBG -A7044- From X102 on FBG -A7042- to X102 on FBG -A7044-	–	<b>6RY1707-0CM11</b>