1.2.1 Basic units with central extensions

With the 40 and 50 series, it is possible to increase the number of inputs / outputs of the basic unit by adding up to 6 local extension units of either type, digital or analog (refer to figures 1a and 1b).

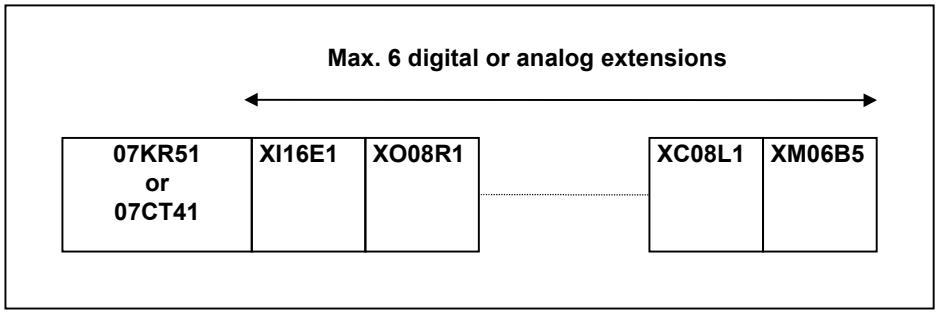


Figure 1-1: A basic unit with central extensions at a local interface for I/O modules

1.2.2 Basic units with CS31 system bus

With the 50 and 90 series it is possible to increase the number of inputs / outputs of the basic unit by adding remote units. The basic unit controlling the system is called the MASTER basic unit. The maximum bus length is **500 m** without an amplifier and **2000 m** with 3 amplifiers (1 NCB or NCBR unit enables bus amplification for 500 m).

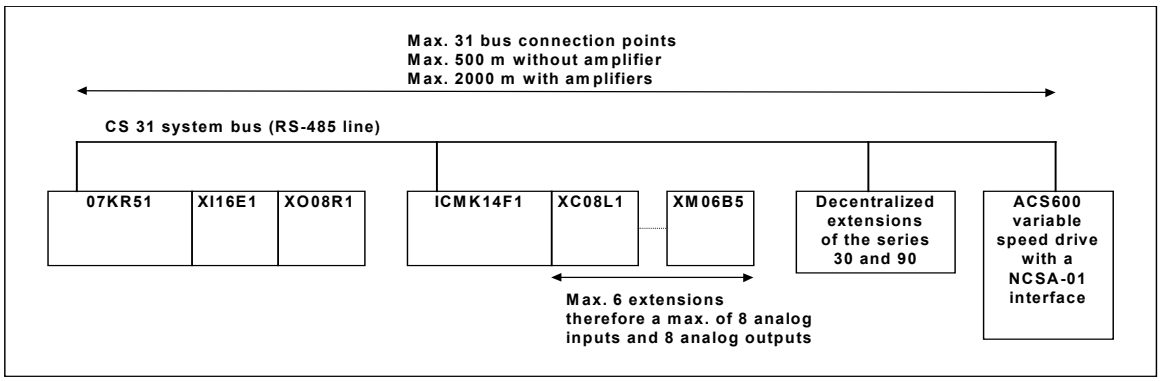


Figure 1-2 : Basic unit with central extensions and additional CS31 system bus (decentralized extensions)

Products	Description	Order No.
Central extensible remote units with CS31 system bus connection	**For basic units of the 50 and 90 series**	
ICMK 14 F1, 24 V DC	Central extensible remote unit with CS31 system bus with 8 isolated inputs 24 V DC and 6 relay outputs 250 V AC / 2 A 24 V DC power supply	1SBP260050R1001
ICMK 14 F1, 120/230 V AC	Central extensible remote unit with CS31 system bus with 8 isolated inputs 24 V DC and 6 relay outputs 250 V AC / 2 A 24 V DC power supply output to power inputs 120 / 230 V AC power supply	1SBP260051R1001
ICMK 14 N1, 24 V DC	Central extensible remote unit with CS31 system bus with 8 isolated inputs 24 V DC and 6 transistor outputs 24 V DC / 0.5 A 24 V DC power supply	1SBP260052R1001
Central extensions without CS31 system bus connection	**For basic units of the series 40, 50 and central extensible remote units with CS31 system bus connection (ICMK 14 ..)**	
XI 16 E1	Digital Extension with 16 isolated inputs 24 V DC external 24 V DC power supply	1SBP260100R1001
XO 08 R1	Digital extension with 8 relay outputs, 250 V / 2 A external 24 V DC power supply	1SBP260101R1001
XC 08 L1	Digital extension with 8 channels configurable as inputs or transistor outputs 24 V DC / 0.5 A external 24 V DC power supply	1SBP260102R1001
XK 08 F1	Digital extension with 4 isolated inputs 24 V DC and 4 relay outputs 250 V / 2 A external 24 V DC power supply	1SBP260104R1001
XO 16 N1	Digital extension with 16 transistor outputs 24 V DC / 0.5 A external 24 V DC power supply	1SBP260105R1001
XO 08 Y1	Digital extension with 8 transistor outputs 24 V DC / 2 A external 24 V DC power supply	1SBP260108R1001
XO 08 R2	Digital extension with 4 NO[1)] relay outputs 250 V AC / 2 A and 4 NO/NC[2)] relay outputs 250 V AC / 3 A external 24 V DC power supply 1) NO = Normally open 2) NC = Normally closed	1SPB260109R1001
XM 06 B5	Analog extension with 4 configurable inputs (current, voltage, Pt 100, Pt 1000, NI1000 and Balco500) and 2 configuable outputs (current, voltage) resolution 12 bits, external 24 V DC power supply	1SBP260103R1001
XE 08 B5	Analog extension with 8 configurable inputs (current, voltage, Pt 100, Pt 1000, NI1000 and Balco500) resolution 12 bits, external 24 V DC power supply	1SBP260106R1001
XTC 08	Display extension with 8 channels (4 figures + sign + selected channel) external 24 V DC power supply	1SBP260107R1001
30 series plug-in base		
ECZ	Plug-in base for mounting series 30 remote units with CS31 system bus connection	FPR 370 0001 R0001

2.7.2 Specifications of the digital central extensions

The digital extension modules are powered with 5 V DC by the basic unit or extensible remote unit to which they are connected.

Warning: The extensions must not be connected or disconnected under power!

	XI 16 E1	XO 08 R1	XC 08 L1	XK 08 F1	XO 08 Y1	XO 08R2	XO 16 N1
Weight	220 g	220 g	220 g	220 g	220 g	220 g	220 g
Integrated digital inputs							
- Number of inputs	16	-	8 configurable	4	-	-	-
- Isolation of the inputs	1500 V AC	-	1500 V AC	1500 V AC	-	-	-
- Input type	PNP	-	PNP	PNP/NPN	-	-	-
- Input voltage:							
Nominal value	24 V DC	-	24 V DC	24 V DC	-	-	-
Signal at 0 (IEC 1131-2)	0 bis + 5 V		0 bis + 5 V	0 bis + 5 V			
Signal at 1 (IEC 1131-2)	+ 15 to + 30 V		+ 15 to + 30 V	+ 15 to + 30 V			
- Input current at 24 V DC	4 mA	-	4 mA	7 mA	-	-	-
- Input delay	5 ms	-	5 ms	5 ms	-	-	-
- Cable lengths:							
unshielded	300 m	-	300 m	300 m	-	-	-
shielded	500 m	-	500 m	500 m	-	-	-
Integrated outputs							
- Number of outputs	-	8 relays	8 transistors	4 relays	8 transistors	4 NO[1] + 4 NO/NC[2] relays	16 transistors
- Isolation of the outputs	-	1500 V AC 1 min	1500 V AC 1 min	1500 V AC 1 min	1500 V AC 1 min	1500 V AC 1 min	1500 V AC 1 min
- Total load current at 24 V DC							
resistive load / inrush current	-	2 A / 5 A	0.5 A	2 A / 5 A	2 A	NO[1]: 2A/5A; NO/NC[2]: 3A/7A	0.5 A
L / R = 20 ms		2 A	0.5 A / 0.5 Hz	2 A	2 A / 0.3 Hz	2 A	0.5 A / 0.5 Hz
L / R = 30 ms		1 A	0.5 A / 0.3 Hz	1 A	2 A / 0.2 Hz	1 A	0.5 A / 0.3 Hz
L / R = 40 ms		0.6 A	0.5 A / 0.2 Hz	0.6 A	2 A / 0.15 Hz	0.6 A	0.5 A / 0.2 Hz
L / R = 60 ms		0.35 A	0.5 A / 0.1 Hz	0.35 A	2 A / 0.10 Hz	0.35 A	0.5 A / 0.1 Hz
per output pair					2.5 A		
UL derating					1.5 A		
Load current, 24 to 230 V AC	-	2 A (AC-1) 0.5 A (AC-15	-	2 A (AC-1) 0.5 A (AC-15)	-	NO[1]: 2 A / 0.5 A; NO/NC[2]: 3 A / 0.5 A	-
- Total load current	-	8 x 2 A	8 x 0,5 A	4 x 2 A	10 A	4 x 2 A / 4 x 3 A	16 x 0,5 A
- Output leakage current	-		< 200 µA		< 200 µA		< 200 µA
- Minimum load	-	10 mA at 12 V DC	12 V	10 mA at 12 V DC	7 V	10 mA at 12 V DC	12 V

1) NO = normally open
2) NC = normally closed

	XI 16 E1	XO 08 R1	XC 08 L1	XK 08 F1	XO 08 Y1	XO 08 R2	XO 16 N1
Integrated output (continued)							
- Breaking capacity under 120 V AC (Code B300) (Contact rating UL)	-	2 A		2 A		NO[1] 2A / NO/NC[2] 3A	
- Breaking capacity under 250 V AC (Code B300) (Contact rating UL)	-	2 A (1.5 A according to UL)		2 A (1.5 A according to UL)			
- Number of groups		2 (4+4)		1			
- Switching frequency:	-						
for resistive loads		< 1 Hz	100 Hz	< 1 Hz		< 1 Hz	100 Hz
for inductive loads		< 0.2 Hz		< 0.2 Hz		< 0.2 Hz	
for lamps		< 0.2 Hz		< 0.2 Hz		< 0.2 Hz	
- Max. number of switching cycles:							
for AC-1	-	1 million	-	1 million	-	1 million	-
for AC-15		100 000		100 000		100 000	
- Short-circuit and overload protection	-	required externally	yes: thermal	required externally	yes: thermal	required externally	yes: thermal
- Surge voltage protection	-	required externally	yes: by surge voltage suppressors	required externally	yes: by surge voltage suppressors	required externally	yes: by surge voltage suppressors
- Output diagnosis	-	-	Overload and short-circuit	-	Overload and short-circuit	-	Overload and short-circuit
- Cable lengths:							
unshielded	-	150 m	150 m	150 m	150 m	150 m	150 m
shielded	-	500 m	500 m	500 m	500 m	500 m	500 m

1) NO = normally open
2) NC = normally closed

3.4 Cabling the digital central extensions

The extensions are powered with 5 V by the basic unit or the remote unit. The connection between the extension and the basic unit is effectuated with the cable situated on the left side of the extension.

Warning: The extensions must be connected or disconnected without power supply.

Extension XI 16 E1 (see figure 3-17)

The 24 V DC power supply used for the sensors should be linked to the 0 V and 24 V terminals situated on the top or bottom terminal blocks. These terminals are linked internally, therefore it just requires linking one 0 V and one 24 V DC terminals.

Extension XO 08 R1 (see figure 3-21)

The connection terminals named C1 and C2 are independent.

Extension XC 08 L1 (see figure 3-19)

An external 24 V DC power supply has to be used if the total current exceeds the capacity of the 24 V DC power supply of the basic unit. In this case, it is necessary to connect together the 0 V and 24 V DC of the external power supply and basic unit.
If the external power supply is not connected, the supply led (green) is blinking.

Warning: In the case of the terminal 0 V is disconnected and in the same time the 24 V DC is connected, the leakage current on output is 16 mA.

Extension XO 16 N1 (see figure 3-18)

The 24 V DC power supply used for the loads should be linked to the 0 V or 24 V DC terminals situated on the top or bottom terminal blocks. These terminals are linked internally, therefore it just requires linking one 0 V and one 24 V DC terminals

Warning: In the case of the terminal 0 V is disconnected and in the same time the 24 V DC is connected, the leakage current on output is 16 mA.

Extension XK 08 F1 (see figure 3-20)

The common C of inputs has to be linked to the 0 V or 24 V d.c. according to the sensor type.

Extension XO 08 Y1 (see figure 3-22)

The 24 V DC power supply used for the loads should be linked to the 0 V or 24 V DC terminals situated on the top or bottom terminal blocks. These terminals are linked internally, therefore it just requires linking one 0 V and one 24 V DC terminals

Warning: In the case of the terminal 0 V is disconnected and in the same time the 24 V DC is connected, the leakage current on output is 16 mA.

Extension XO 08 R2 (see figure 3-23)

Extension with 4 relay NO and 4 relay NO/NC
The connection terminals named C0, C1, C2, C3, C4, C5, C6, and C7 are independent.

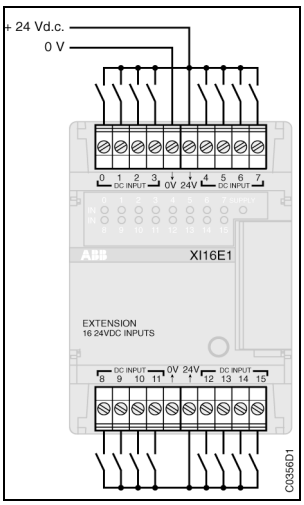


Figure 3-17: Extension XI 16 E1

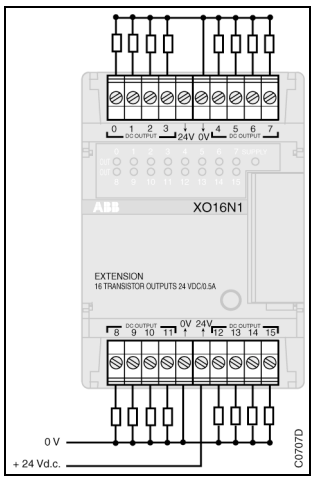


Figure 3-18: Extension XO 16 N1

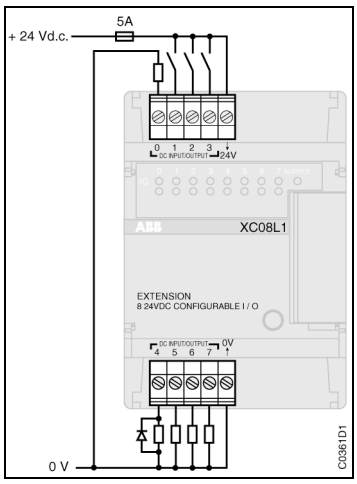


Figure 3-19: Extension XC 08 L1

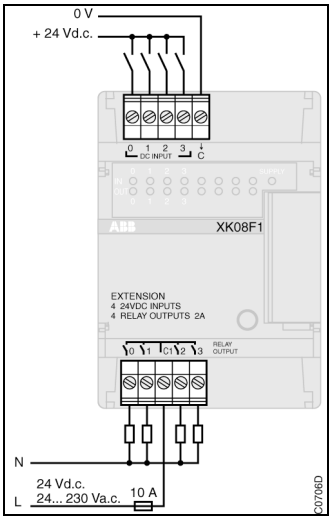


Figure 3-20: Extension XK 08 F1

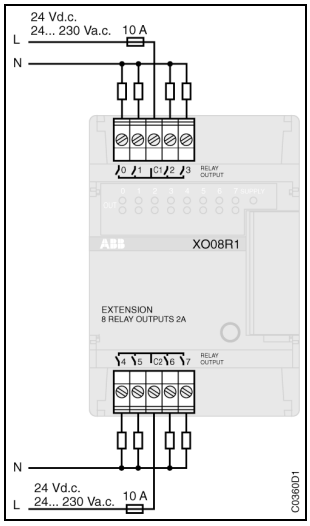


Figure 3-21: Extension XO 08 R1

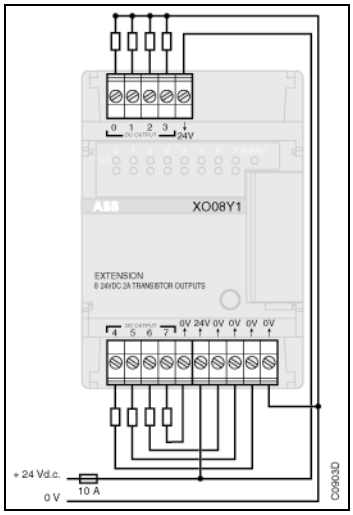


Figure 3-22: Extension XO 08 Y1

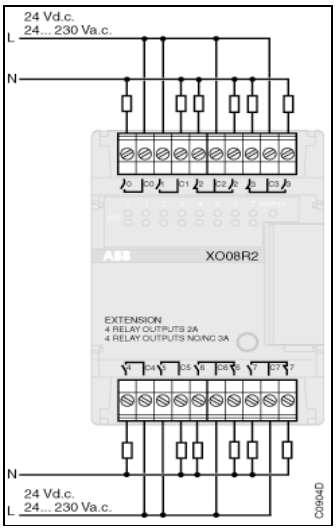


Figure 3-23: Extension XO 08 R2