

# MicroFlex e190 Wall chart

ABB Servo System Products

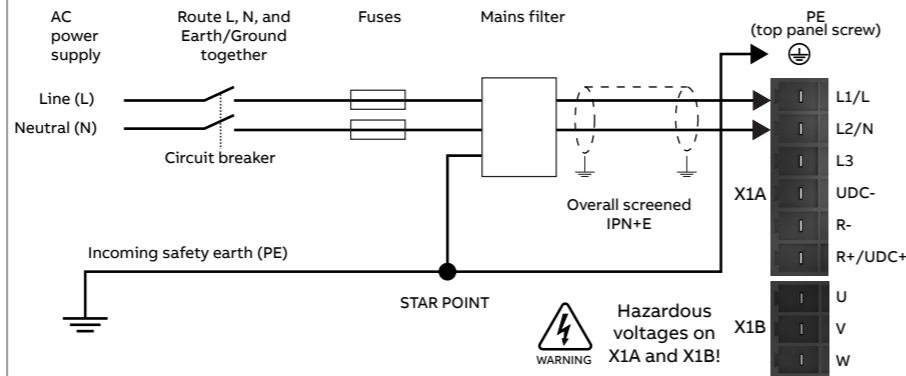
## Part numbers

MFE190 - 04UD - 03A0 - 2

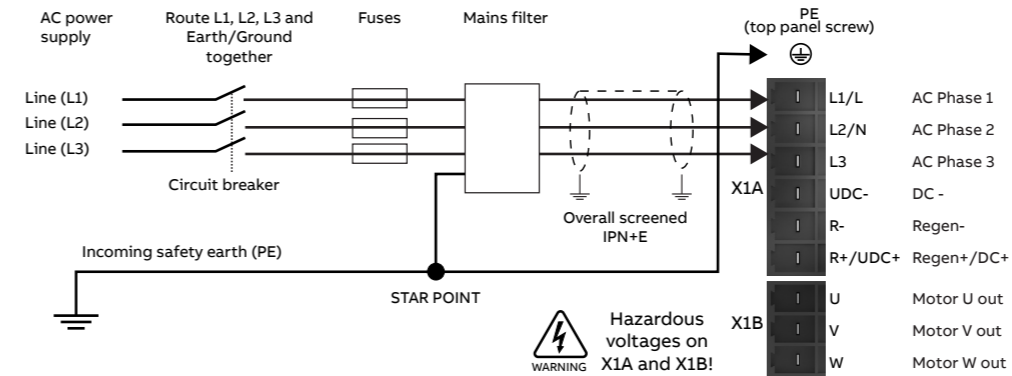
MFE190	MicroFlex e190
04	04 = Construction / frame size
UD	U = Universal encoder, slave / CN, D = Dual port PROFINET, programmable*
03A0	Rated amps: 03A0 = 3 A, 06A0 = 6 A, 09A0 = 9 A
2	Input voltage rating: 2 = 200...240 VAC ±10%

\* Motion programming is enabled by fitting memory unit MFE190-MU-OCU.

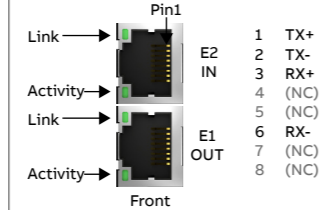
## X1A - Single phase 200...240 V AC ±10% input / X1B - Motor power out



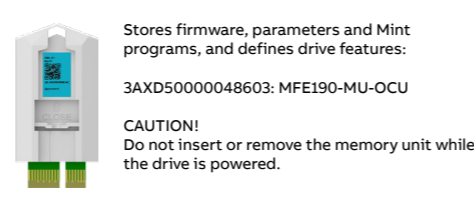
## X1A - Three phase 200...240 V AC ±10% input / X1B - Motor power out



## E1 & E2 - Ethernet fieldbus



## Memory unit



## Recommended power filters

Drive continuous current rating	1Ø AC power ABB catalog number	3Ø AC power ABB catalog number	IMPORTANT! Compliant with EN61000-6-3 (Class B). Foot-mount filter OFI-01 is designed for use with any single-phase MicroFlex e190.
3 A	OFI-01 / OFI-02	OFI-03	
6 A	OFI-01	JFI-02	
9 A	OFI-01	JFI-02	

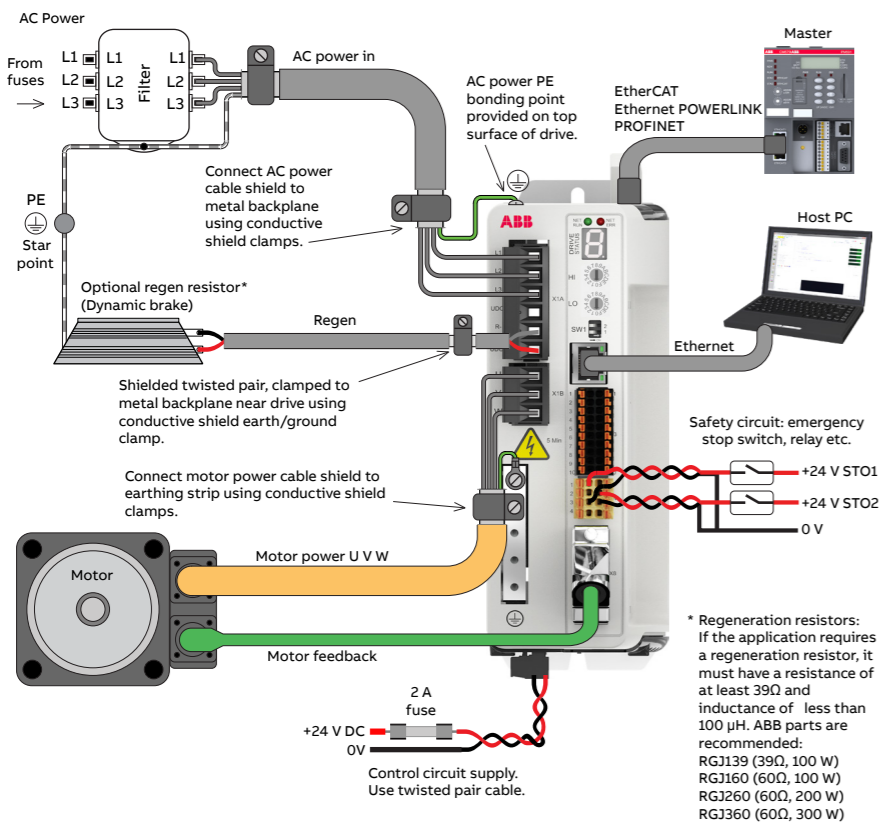
## Drive status LED

The drive status display indicates general MicroFlex e190 status information. When an error occurs, the drive displays a sequence starting with the symbol E, followed by the five digit error code. If the initial symbol is b, call technical support.

The decimal point to the right of the number illuminates to indicate that STO is activated (no torque). For a complete list of error codes open Mint WorkBench, press F1, and locate the error handling topics.

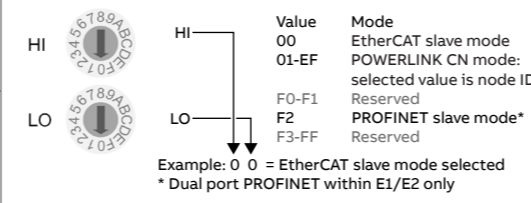
- Drive disabled, and one or both STO inputs are not powered
- Drive disabled
- Initialization error (check memory unit insertion) or recovery mode.
- Suspend active
- Firmware loading
- Hold To Analog (HTA) mode
- Drive enabled, but idle
- Cam move
- Dwell
- Flying shear
- Follow move
- Homing
- Incremental move
- Jog move
- Offset move
- Position move
- Torque move
- Stop input active
- Velocity reference move
- Spline move

## Recommended system wiring



\* Regeneration resistors: If the application requires a regeneration resistor, it must have a resistance of at least 39Ω and inductance of less than 100 μH. ABB parts are recommended:  
RGJ139 (39Ω, 100 W)  
RGJ160 (60Ω, 100 W)  
RGJ260 (60Ω, 200 W)  
RGJ360 (60Ω, 300 W)

## Ethernet fieldbus port configuration

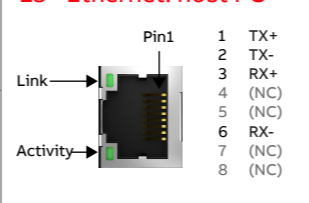


## Mating connectors

	mm <sup>2</sup> / AWG	N-m / lbf-in
X1A Dinkle EC762V-B3253206P-BK	0.2-6.0 / 30*-10	0.7 / 6.2
X1B Dinkle EC762V-B3253203P-BK	0.2-6.0 / 30*-10	0.7 / 6.2
X2 Phoenix MVSTBR 2.5HC / 2-ST-5,08	0.2-2.5 / 24-12	0.6 / 5.3
X3 Weidmüller B2L 3.50/20/180	0.2-1.0 / 28-16	- / -
X4 Weidmüller B2L 3.50/8/180	0.2-1.0 / 28-16	- / -

\* Minimum size for UL installations is 14 AWG.

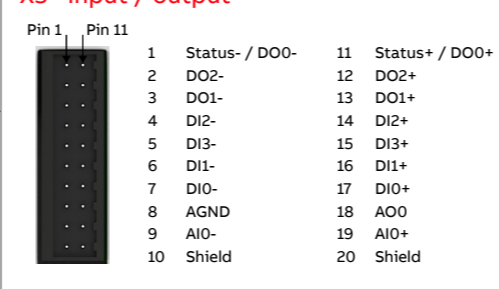
## E3 - Ethernet: host PC



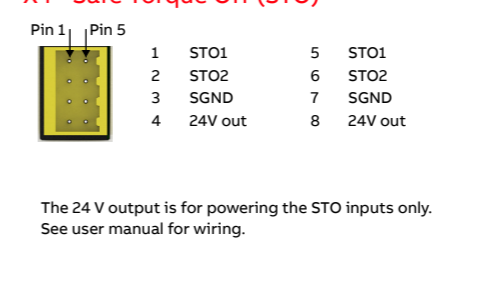
## SW1 - DIP switches

Switch	Purpose	OFF	ON
2	Firmware recovery mode	Normal operation	Recovery mode
1	Fix IP address for host port	Normal IP configuration	Fixed IP address 192.168.0.1

## X3 - Input / output



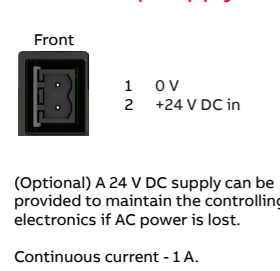
## X4 - Safe Torque Off (STO)



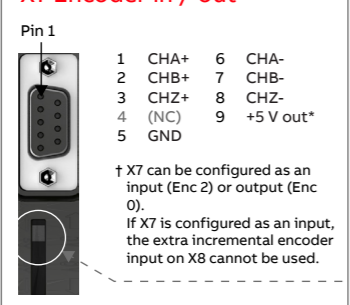
## Fieldbus status LEDs

NET RUN	EtherCAT®	POWERLINK®
Off:	INITIALISATION state (or not powered)	NOT ACTIVE state (or not powered)
Blinking: 1 flash:	PRE-OPERATIONAL state	STOPPED state
2 flashes:	SAFE-OPERATIONAL state	PRE-OP1 state
3 flashes:	-	PRE-OP2 state
Flickering:	Device identification	READY TO OPERATE state
-	-	BASIC ETHERNET state
Continuous:	OPERATIONAL state.	OPERATIONAL state
NET ERR	EtherCAT®	POWERLINK®
Off:	No errors or not powered.	No errors or not powered.
Blinking: 1 flash:	Invalid configuration Unhandled error. See manual 3AXD5000037326 for details.	-
2 flashes:	Sync manager watchdog.	-
Continuous:	OPERATIONAL state.	An error has occurred.

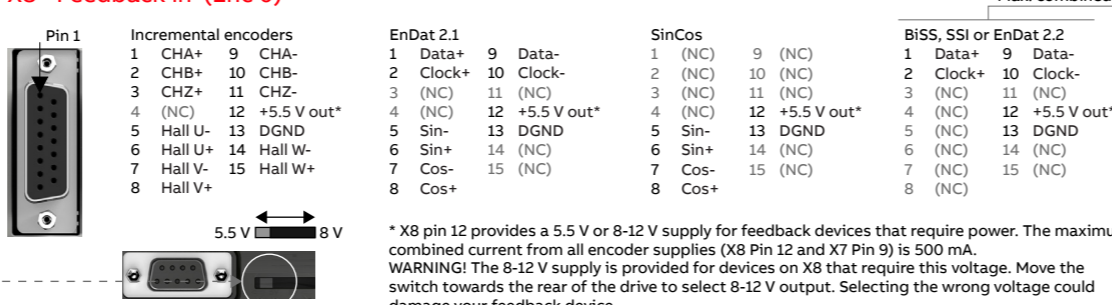
## X2 - 24 V control circuit backup supply



## X7 Encoder in / out†



## X8 - Feedback in (Enc 0)



\* Max. combined current from X8 pin 12 and X7 pin 9 is 500 mA

Smart Abs				Extra incremental encoder				Hiperface			
1	Data+	9	Data-	1	(NC)	9	(NC)	1	Data+	9	Data-
2	(NC)	10	(NC)	2	(NC)	10	(NC)	2	(NC)	10	(NC)
3	(NC)	11	(NC)	3	(NC)	11	(NC)	3	(NC)	11	(NC)
4	(NC)	12	+5.5 V out*	4	(NC)	12	+5.5 V out*	4	(NC)	12	+8 V out*
5	(NC)	13	DGND	5	(NC)	13	DGND	5	Sin-	13	DGND
6	(NC)	14	(NC)	6	CHA+	14	CHZ-	6	Sin+	14	(NC)
7	(NC)	15	(NC)	7	CHB-	15	CHZ+	7	Cos-	15	(NC)
8	(NC)			8	CHB+			8	Cos+		

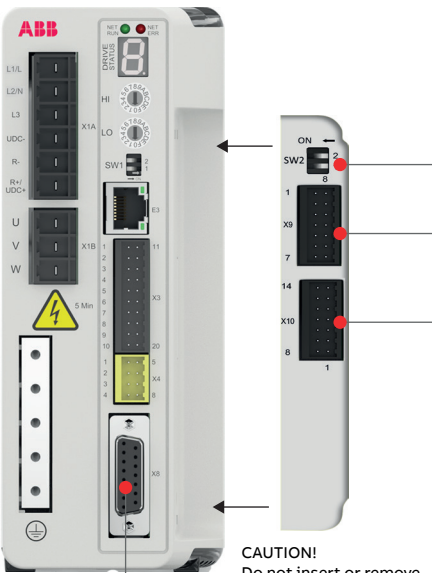
An extra incremental encoder can be connected simultaneously with BiSS, SSI, EnDat 2.2, or Smart Abs. Use OPT-MF-200 Encoder Breakout for easy connection of both inputs. Use OPT-MF-200 in conjunction with OPT-MF-201 Resolver Adapter to allow simultaneous connection of a resolver (Enc 0) and an incremental encoder (Enc 2). † See note for X7.

3AXD5000037323  
REV D (EN)  
1/2

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## OPT-SIO-1 Option Card



**CAUTION!**  
Do not insert or remove the option card while the drive is powered.

### SW2 - DIP switches



Switch	Purpose	ON	OFF
2	RS422 RX terminator	120Ω	No
1	RS422 TX terminator or RS485 terminator	120Ω	No

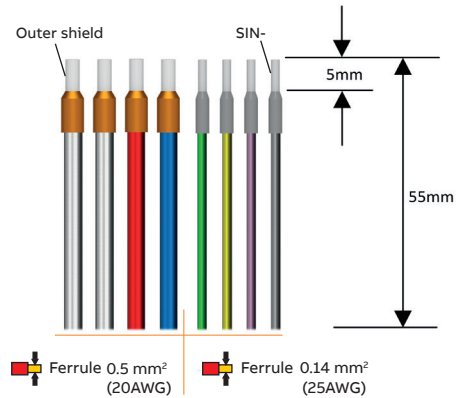
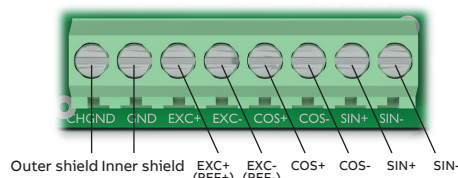
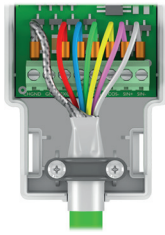
### X9 - Communication and Analog Input

Pin 1	Pin 8
1 A/ TX+	8 A/ TX+
2 B/ TX-	9 B/ TX-
3 Shield	10 Shield
4 RX+	11 RX+
5 RX-	12 RX-
6 Shield	13 Shield
7 AIN1-	14 AIN1+

### X10 - Digital Input and Output

Pin 14	Pin 7
14 Shield	7 DIN4
13 CREF1	6 DIN5
12 DIN8	5 DIN6
11 DIN9	4 DIN7
10 USRV+	3 CREFO
9 DOUT5	2 DOUT3
8 DOUT6	1 DOUT4

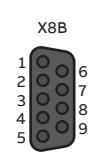
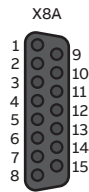
### X8 - OPT-MF-201 Resolver adapter



### X8 - OPT-MF-200 Encoder breakout



X8A → Motor feedback  
X8B → Incremental encoder



	Incremental	BiSS-B/SSI/ EnDat 2.2	Smart Abs		Incremental	Halls
1	CHA+	Data+	Data+		1	CHA+
2	CHB+	Clock+	(NC)		2	CHB+
3	CHZ+	(NC)	(NC)		3	CHZ+
4	(NC)	(NC)	(NC)		4	(NC)
5	(NC)	(NC)	(NC)		5	DGND
6	(NC)	(NC)	(NC)		6	CHA-
7	(NC)	(NC)	(NC)		7	CHB-
8	(NC)	(NC)	(NC)		8	CHZ-
9	CHA-	Data-	Data-		9	+5 V out
10	CHB-	Clock-	(NC)		Shell	Shield
11	CHZ-	(NC)	(NC)			
12	+5 V out	+5 V out	+5 V out			
13	DGND	DGND	DGND			
14	(NC)	(NC)	(NC)			
15	(NC)	(NC)	(NC)			
Shell	Shield	Shield	Shield			

X8A and X8B can be used together to connect a single motor that has separate cables for encoder and Halls (e.g. a linear motor). Use X8A for the encoder and X8B for the Halls.

### Mating connectors



mm<sup>2</sup> / AWG

X9 X10 Weidmüller B2L 3.50/14/180  
ANYTEK vw-3.50mm 14p 0.2-1.0 / 28-16  
0.2-1.0 / 28-16

\* Minimum size for UL installations is 14 AWG.

### Order Code

OPT-SIO-1 Option card 3AXD50000297450  
OPT-MF-200 Encoder breakout 3AXD50000032891  
OPT-MF-201 Resolver adapter 3AXD50000032892

Recommended power filters Recommended regen resistors  
OFI-01 3AXD50000046328 RGJ139 3AXD50000032899  
OFI-02 3AXD50000046327 RGJ160 3AXD50000032900  
OFI-03 3AXD50000032910 RGJ260 3AXD50000032901  
JFI-02 3ABD68711321 RGJ360 3AXD50000032902

3AXD50000037323  
REV D (EN)  
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### CAUTION

Electrical components can be damaged by static electricity. Before touching the card, be sure to discharge static electricity from your body and clothing by touching a grounded metal surface. Alternatively, wear an earth strap while handling the card. Never work on the drive, motor cable or motor when input power is applied. To prevent equipment damage, be certain that input and output signals are powered and referenced correctly. Do not remove the screw locks while the device is powered. See manual MicroFlex e190 for details.