

## BL20 Motor Starter Modules

BL20 motor starters allow 3-phase motor control to be connected to the same BL20 rack as the standard I/O. BL20 motor starters can be mounted on the same rail as the BL20 gateway, or they can be mounted on another rail to ease placement within panels. The motor starters will be controlled by the gateways via the chosen fieldbus (DeviceNet, PROFIBUS-DP, or CANopen).

### How to order a motor starter



### How to implement the motor starters



Each SWIRE slice can manage up to 16 non-reversing motor starters.

Each gateway can support up to 3 SWIRE modules for a total of 48 non-reversing motor starters on a single gateway. Any reversing motor starter is considered as 2 non-reversing. The motor starters are rated for .06kW to 15kW (0.08hp to 20hp).

By ordering parts of the motor starter separately will allow for fewer parts to be stored within your inventory and will cost less to repair if just one piece of the motor starter fails. Motor starters are hot-swappable as long as the SWIRE-DIL module stays connected to the SWIRE system.

Refer to the user manual for details on installing and configuring the BL20 motor starter system.

## Available Motor Starter Sizes

Part Number	Motor Rating @ 480 VAC		Rated Operational Current @ 480 VAC	Rated Uninterrupted Current @ 480 VAC	Classification Type
	kW	hp			
PKZM0-0.25	0.06	0.08	0.21	0.25	2
PKZM0-0.4	0.09	0.12	0.31	0.4	2
PKZM0-0.63	0.18	0.24	0.6	0.63	2
PKZM0-1	0.25	0.33	0.8	1	2
PKZM0-1.6	0.55	0.74	1.5	1.6	2
PKZM0-2.5	0.75	1	1.9	2.5	1
PKZM0-4	1.5	2	3.6	4	1
PKZM0-6.3	2.2	2.95	5	6.3	1
PKZM0-10	3	4	6.6	10	1
PKZM0-10*	4	5.4	8.5	10	1
PKZM0-12	5.5	7.38	11.3	12	1
PKZM0-16	7.5	10	15.2	16	1
PKZM0-25	11	15	21.7	25	1
PKZM0-32	15	20	29.3	32	1

\*Can be achieved by using DILM9-10(24VDC) instead of the DILM7-10(24VDC)

## Non-Reversing Part Numbers



hp	Motor Contactor Part Number	Wiring Set Part Number	Relay Part Number	SWIRE Communication
0.08	PKZM0-0.25	PKZM0-XDM12	DILM7-10(24 VDC)	BL20-SWIRE-DIL
0.12	PKZM0-0.4			
0.24	PKZM0-0.63			
0.33	PKZM0-1			
0.74	PKZM0-1.6			
1	PKZM0-2.5			
2	PKZM0-4			
2.95	PKZM0-6.3			
4	PKZM0-10			
5.4	PKZM0-10*			
7.38	PKZM0-12	PKZM0-XDM32	DILM9-10(24 VDC)	
10	PKZM0-16		DILM12-10(24 VDC)	
15	PKZM0-25		DILM15-10(24 VDC)	
20	PKZM0-32		DILM25-10(24 VDC)	
			DILM32-10(24 VDC)	

\* To order a motor starter with the rated hp, order one of each part number that appears to the right.

## Reversing Part Numbers

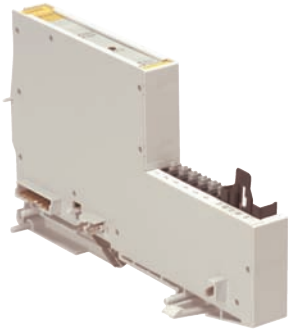


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hp	Part Number	Wiring Set Number	Relay Part Number	Relay Part Number	SWIRE Communication	SWIRE Communication	Mechanical Interlock
0.08	PKZM0-0.25	PKZM0-XRM12	DILM7-10(24 VDC)	DILM7-10(24 VDC)	BL20-SWIRE-DIL	BL20-SWIRE-DIL	DILM12-XMV
0.12	PKZM0-0.4						
0.24	PKZM0-0.63						
0.33	PKZM0-1						
0.74	PKZM0-1.6						
1	PKZM0-2.5						
2	PKZM0-4						
2.95	PKZM0-6.3						
4	PKZM0-10						
5.4	PKZM0-10*						
7.38	PKZM0-12	DILM12-10(24 VDC)	DILM12-10(24 VDC)				
10	PKZM0-16	DILM15-10(24 VDC)	DILM15-10(24 VDC)				
15	PKZM0-25	DILM25-10(24 VDC)	DILM25-10(24 VDC)				
20	PKZM0-32	DILM32-10(24 VDC)	DILM32-10(24 VDC)				

\* To order a motor starter with the rated hp, order one of each part number that appears to the right.

## SWIRE Economy Communication Module



- Modular Motor Starter Control
- IP 20 Protection
- Fieldbus Independent Configuration
- Base and Electronics in One Part

### Electrical

- Operating Current:  $\leq 60$  mA from  $V_{MB}$   
 $< 3$  A from  $V_{IO}$

### Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

### Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

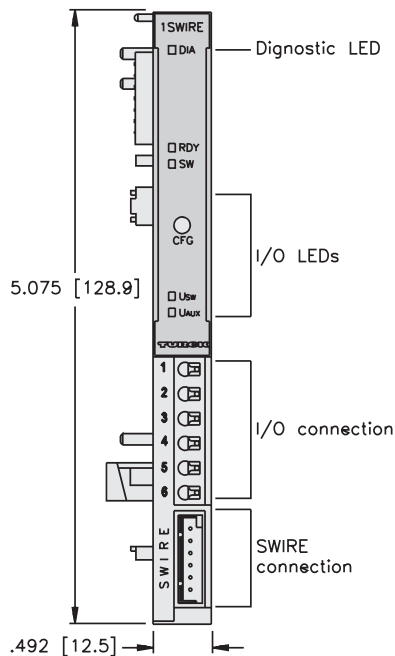
### Diagnostics (Physical)

- LEDs for status and I/O diagnostics

### Supported Gateways

- BL20-GW-DPV1
- BL20-GWBR-CANopen
- BL20-GWBR-DNET

BL20-E-1SWIRE



Part Number	Input Count	Pinout	Current	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL20-E-1SWIRE		1	3 A	X	X		1

Note: This module can only be used with other tension clamp modules unless it is separated using a BL20-PF-24VDC-D and BL20-P4T-SBBC base.

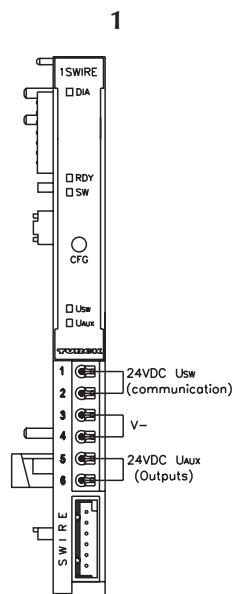
**Mating Cordsets:**

From SWIRE slice to first motor starter: BL20-SWIRE-CAB-XXX.

End cap for last motor starter; BL20-SWIRE-CAB-000

From one motor starter to an adjacent motor starter: BL20-SWIRE-CAB-008

XXX = Cable length in cm, cable lengths available in 25, 50, 100 and 200 cm.



**I/O Data Map 1**

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n-1	(Data from modules to the left)							
n	SWIRE Slave 2				SWIRE Slave 1				
	SD2		PKZ-ST2	SI2	SD1		PKZ-ST1	SI1	
n+1	SWIRE Slave 4				SWIRE Slave 3				
	SD4		PKZ-ST2	SI2	SD3		PKZ-ST3	SI3	
n+2	SWIRE Slave 6				SWIRE Slave 5				
	SD6		PKZ-ST2	SI2	SD5		PKZ-ST5	SI5	
n+3	SWIRE Slave 8				SWIRE Slave 7				
	SD8		PKZ-ST2	SI2	SD7		PKZ-ST7	SI7	
n+4	SWIRE Slave 10				SWIRE Slave 9				
	SD10		PKZ-ST2	SI2	SD9		PKZ-ST9	SI9	
n+5	SWIRE Slave 12				SWIRE Slave 11				
	SD12		PKZ-ST2	SI2	SD11		PKZ-ST11	SI11	
n+6	SWIRE Slave 14				SWIRE Slave 13				
	SD14		PKZ-ST2	SI2	SD13		PKZ-ST13	SI13	
n+7	SWIRE Slave 16				SWIRE Slave 15				
	SD16		PKZ-ST2	SI2	SD15		PKZ-ST15	SI15	
n+8	(Data from modules to the right)								

OUT	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n-1	(Data from modules to the left)							
n	SWIRE Slave 2				SWIRE Slave 1				
				S02				S01	
n+1	SWIRE Slave 4				SWIRE Slave 3				
				S04				S03	
n+2	SWIRE Slave 6				SWIRE Slave 5				
				S06				S05	
n+3	SWIRE Slave 8				SWIRE Slave 7				
				S08				S07	
n+4	SWIRE Slave 10				SWIRE Slave 9				
				S010				S09	
n+5	SWIRE Slave 12				SWIRE Slave 11				
				S012				S011	
n+6	SWIRE Slave 14				SWIRE Slave 13				
				S014				S013	
n+7	SWIRE Slave 16				SWIRE Slave 15				
				S016				S015	
n+8	(Data from modules to the right)								

Slx: Motor Starter is On


PKZ-STx: Motor Starter is OK

SDx: Slave Diagnostics Available

SOx: Turn on Motor Starter


## Motor Overload Contactor

- Protects Motor from Current Overload

Housing	Part Number	Application
	PKZM0-*	<ul style="list-style-type: none"><li>• Available in multiple amperages</li><li>• See table on page C50 for Specs.</li></ul>

## Motor Starter Wiring Set


- Wires Motor Overload Contactor to Relay Module

Housing	Part Number	Application
	PKZM0-X*M*2	<ul style="list-style-type: none"><li>• Different styles for different amperages</li><li>• See tables on C51 &amp; C52 for correct part numbers</li></ul>

## Relay Module


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- Controls whether or not Power is Supplied to Connected Motor

Housing	Part Number	Application
	DILM*	<ul style="list-style-type: none"> <li>• Available in different styles for different amperages</li> <li>• See pages C51 &amp; C52 for correct part numbers</li> <li>• "10" in part number refers to normally open contact</li> <li>• "01" in part number refers to normally closed contact</li> </ul>

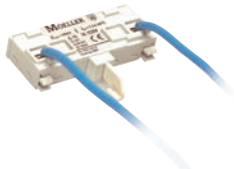
## SWIRE Communication

- Controls SWIRE Communication and Activates the Motor Starter

Housing	Part Number	Application
	BL20-SWIRE-DIL	<ul style="list-style-type: none"> <li>• Use with all DILM* modules</li> <li>• Control motor starter through SWIRE network</li> </ul>


## Trip Indication

- Provide Feedback Status of Motor Starter because of Overcurrent or Short Circuit

Housing	Part Number	Application
	NHI-E-10L-PL20	<ul style="list-style-type: none"> <li>• Monitor motor starter status</li> </ul>

## Bus Commoning Bars


- Easily Connect Multiple Motor Starters without the need for Separate Wiring

Housing	Part Number	Application
	BK25/3-PKZ0 B3.0/2-PKZ0* B3.0/4-PKZ0* B3.0/5-PKZ0*	<ul style="list-style-type: none"> <li>• BK25 is used to land 3 phase wires to beginning of the bus</li> <li>• B3.0/x; x refers to the number of motor starters can be connected to the bar</li> <li>• Max 63A can be carried through a bus bar</li> </ul>

\* If bussing a reverse motor starter, a cover may be necessary for finger safe needs. Order a cap with p/n H-B3-PKZ0.

## Power Feed Module





- Safety Zone Separation

Housing	Part Number	Application
	BL20-SWIRE-PF	<ul style="list-style-type: none"> <li>• Separate motor starter sets into separate safety zones</li> </ul>





**Base Modules for Slice I/O**



BL20

Housing	Part Number	Description
<b>Three Terminal Block</b> 	<b>BL20-S3T-SBB</b>	Tension Clamp Connection
	<b>BL20-S3S-SBB</b>	Screw Terminal Connection
<b>Three Terminal Block with C-Connection</b> 	<b>BL20-S3T-SBC</b>	Tension Clamp Connection
	<b>BL20-S3S-SBC</b>	Screw Terminal Connection
<b>Four Terminals</b> 	<b>BL20-S4T-SBBS</b>	Tension Clamp Connection
	<b>BL20-S4S-SBBS</b>	Screw Terminal Connection
<b>Four Terminals with Cold Junction Compensation for Thermocouples</b> 	<b>BL20-S4T-SBBS-CJ</b>	Tension Clamp Connection
	<b>BL20-S4S-SBBS-CJ</b>	Screw Terminal Connection





**Base Modules for Slice I/O**

Housing	Part Number	Description
<b>Four Terminals with C-Connection</b> 	<b>BL20-S4T-SBBC</b>	Tension Clamp Connection
	<b>BL20-S4S-SBBC</b>	Screw Terminal Connection
<b>Four Terminals with C-Connection, Dual Signal</b> 	<b>BL20-S4T-SBCS</b>	Tension Clamp Connection
	<b>BL20-S4S-SBCS</b>	Screw Terminal Connection
<b>Six Terminals</b> 	<b>BL20-S6T-SBBSBB</b>	Tension Clamp Connection
	<b>BL20-S6S-SBBSBB</b>	Screw Terminal Connection
<b>Six Terminals with C-Connection</b> 	<b>BL20-S6T-SBCSBC</b>	Tension Clamp Connection
	<b>BL20-S6S-SBCSBC</b>	Screw Terminal Connection


**Base Modules for Block I/O**







BL20




Housing	Part Number	Description
<b>Three Terminal Block</b> 	<b>BL20-B3T-SBB</b>	Tension Clamp Connection
	<b>BL20-B3S-SBB</b>	Screw Terminal Connection
<b>Three Terminal Block with C-Connection</b> 	<b>BL20-B3T-SBC</b>	Tension Clamp Connection
	<b>BL20-B3S-SBC</b>	Screw Terminal Connection
<b>Four Terminal Block with C-Connections</b> 	<b>BL20-B4T-SBBC</b>	Tension Clamp Connection
	<b>BL20-B4S-SBBC</b>	Screw Terminal Connection
<b>Six Terminal Block</b> 	<b>BL20-B6T-SBBSBB</b>	Tension Clamp Connection
	<b>BL20-B6S-SBBSBB</b>	Screw Terminal Connection

**Base Modules for Block I/O**

Housing	Part Number	Description
<b>Six Terminal Block with C-Connection</b> 	<b>B6T-SBCSBC</b>	Tension Clamp Connection
	<b>B6S-SBCSBC</b>	Screw Terminal Connection

## Base Modules for Power Input

Housing	Part Number	Description
<b>Three Terminal Power Base</b> 	<b>BL20-P3T-SBB</b>	Tension Clamp Connection
	<b>BL20-P3S-SBB</b>	Screw Terminal Connection
<b>Three Terminal Power Base with Gateway Feed</b> 	<b>BL20-P3T-SBB-B</b>	Tension Clamp Connection
	<b>BL20-P3S-SBB-B</b>	Screw Terminal Connection
<b>Four Terminal Power Base with C-Connection</b> 	<b>BL20-P4T-SBBC</b>	Tension Clamp Connection
	<b>BL20-P4S-SBBC</b>	Screw Terminal Connection
<b>Four Terminal Power Base with C-Connection and Gateway Feed</b> 	<b>BL20-P4T-SBBC-B</b>	Tension Clamp Connection
	<b>BL20-P4S-SBBC-B</b>	Screw Terminal Connection

Housing	Part Number	Description
<p><b>Markers</b> Used for color coding terminals on BL20 base modules</p> 	<p>XN-ANBZ-WS (10/PKG) XN-ANBZ-GN/GE/BED (10/PKG) XN-ANBZ-RT/BL-BED (10/PKG) XN-ANBZ-BR (10/PKG) XN-ANBZ-SW (10/PKG) XN-ANBZ-GN (10/PKG) XN-ANBZ-RT (10/PKG) XN-ANBZ-BL (10/PKG)</p>	<p>White Green/Yellow Red/Blue Brown Black Green Red Blue</p>
<p><b>Jumpers</b> For use with BL20 relay modules</p> 	<p>XN-QV/8 (10/PKG) XN-QV/7 (10/PKG) XN-QV/6 (10/PKG) XN-QV/5 (10/PKG) XN-QV/4 (10/PKG) XN-QV/3 (10/PKG) XN-QV/2 (10/PKG) XN-QV/1 (10/PKG)</p>	<p>8 pair 7 pair 6 pair 5 pair 4 pair 3 pair 2 pair 1 pair</p>
<p><b>Coding Blocks</b> For keying electronic modules to base modules</p> 	<p>XN-KO/17 (10/PKG) XN-KO/16 (10/PKG) XN-KO/14 (10/PKG) XN-KO/13 (10/PKG) XN-KO/12 (10/PKG)  XN-KO/11 (10/PKG) XN-KO/10 (10/PKG) XN-KO/9 (10/PKG) XN-KO/8 (10/PKG) XN-KO/6 (10/PKG) XN-KO/2 (10/PKG)</p>	<p>BL20-PF-120/230VAC-D BL20-PF-24VDC-D BL20-2AO-U(-10/0...+10V) BL20-1AO-I(0/4...20MA) RTD and TC temperature modules, BL20-1AI-U(-10/0...+10V) BL20-1AI-I(0/4...20MA) BL20-2DO-R-CO BL20-2DO-R-NC BL20-2DO-R-NO BL20-*DO-24VDC* BL20-*DI-24VDC*</p>

Housing	Part Number	Description
Labels	FW5/151-200 (10 SETS/PKG) FW5/101-150 (10 SETS/PKG) FW5/51-100 (10 SETS/PKG) FW5/1-50 (10 SETS/PKG)	Numbered 151-200 Numbered 101-150 Numbered 51-100 Numbered 1-50
End Bracket 	XN-WEW-35/2-SW (1/PKG)	
End Plate 	XN-ABPL	
Shield Connection - For use with analog modules 	XN-KLBU/S (10/PKG) XN-KLBU/T (10/PKG)	Screw terminal Tension clamp
Labels - For labeling electronic modules. DIN A5 sheets 	BL20-LABEL/BLOCK (5 SHEETS/PKG) BL20-LABEL/SCHEIBE (5 SHEETS/PKG)	For block modules For slice modules
Tension Clamp Tool - For ease of operating tension clamp connections 	ZBW5-2	
Ferrite Ring - For damping high frequency interference on data and supply lines 	PS416-ZBX-405 (2/PKG)	
Shield Connection - For use with direct wiring gateways 	SCH-1-WINBLOC (1/PKG)	
Programming Cable - For connecting the BL20/BL67 system to the I/O Assistant software 	XN-PS2-CABLE	

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