

PX-I/O

Additional I/O module for
POWERDRIVE, PROXIDRIVE, VARMECA 33/34

Installation and commissioning manual

PX-I/O
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POWERDRIVE, PROXIDRIVE, VARMECA 33/34

NOTE

LEROY-SOMER reserves the right to modify the characteristics of its products at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without notice.



WARNING

For the user's own safety, this variable speed motor must be connected to an approved earth (\perp terminal).

If accidentally starting the installation is likely to cause a risk to personnel or the machines being driven, it is essential to supply the equipment via a circuit-breaking device (power contactor) which can be controlled via an external safety system (emergency stop, detection of errors on the installation).

The variable speed motor is fitted with safety devices which, in the event of a fault, control stopping and thus stop the motor. The motor itself can become jammed for mechanical reasons. Voltage fluctuations, and in particular power cuts, may also cause the motor to stop.

The removal of the causes of the shutdown can lead to restarting, which may be dangerous for certain machines or installations. In such cases, it is essential that the user takes appropriate precautions against the motor restarting after an unscheduled stop.

The variable speed motor is designed to be able to supply a motor and the driven machine above its rated speed. If the motor or the machine are not mechanically designed to withstand such speeds, the user may be exposed to serious danger resulting from their mechanical deterioration. Before programming a high speed, it is important that the user checks that the installation can withstand it.

The variable speed motor which is the subject of this manual is designed to be integrated in an installation or an electrical machine, and can under no circumstances be considered to be a safety device. It is therefore the responsibility of the machine manufacturer, the designer of the installation or the user to take all necessary precautions to ensure that the system complies with current standards, and to provide any devices required to ensure the safety of equipment and personnel.

Using the drive for hoisting: when using this application, it is essential to follow the special instructions in an application-specific manual which is available on request. It is the responsibility of the user to obtain this manual from his usual LEROY-SOMER contact.


LEROY-SOMER declines all responsibility in the event of the above recommendations not being observed.

Manual corresponding to PX-I/O modules mounted on POWERDRIVE drives with software version higher than 3.00 and PROXIDRIVE drives or VARMECA 33-34 variable speed motors with software version higher than 3.10.

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SAFETY AND OPERATING INSTRUCTIONS FOR VARIABLE SPEED MOTORS (In accordance with the low voltage directive 2006/95/EC)

 • Throughout the manual, this symbol warns of consequences which may arise from inappropriate use of the drive, since electrical risks may lead to material or physical damage as well as constituting a fire hazard.

1 - General

Depending on their degree of protection, the variable speed motors may contain unprotected live parts, which may be moving or rotating, as well as hot surfaces, during operation.

Unjustified removal of protection devices, incorrect use, faulty installation or inappropriate operation could represent a serious risk to personnel and equipment. For further information, consult the documentation.

All work relating to transportation, installation, commissioning and maintenance must be performed by experienced, qualified personnel (see IEC 364 or CENELEC HD 384, or DIN VDE 0100 and national specifications for installation and accident prevention).

In these basic safety instructions, qualified personnel means persons competent to install, mount, commission and operate the product and possessing the relevant qualifications.

2 - Use

Variable speed motors are components designed for integration in installations or electrical machines.

When integrated in a machine, commissioning must not take place until it has been verified that the machine conforms with directive 2006/42/EC (Machinery Directive). It is also necessary to comply with standard EN 60204, which stipulates in particular that electrical actuators (which include variable speed motors) cannot be considered as circuit-breaking devices and certainly not as isolating switches.

Commissioning can take place only if the requirements of the Electromagnetic Compatibility Directive (EMC 2004/108/EC) are met.

The variable speed motors meet the requirements of the Low Voltage Directive 2006/95/EC. The harmonised standards of the DIN VDE 0160 series in connection with standard VDE 0660, part 500 and EN 60146/VDE 0558 are also applicable. The technical characteristics and instructions concerning the connection conditions specified on the nameplate and in the documentation provided must be observed without fail.

3 - Transportation, storage

All instructions concerning transportation, storage and correct handling must be observed.

The climatic conditions specified in the technical manual must be observed.

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4 - Installation

The installation and cooling of equipment must comply with the specifications in the documentation supplied with the product.

The variable speed motors must be protected against any excessive stress. In particular, there must be no damage to parts and/or modification of the clearance between components during transportation and handling. Avoid touching the electronic components and contact parts.

The variable speed motors contain parts which are sensitive to electrostatic stresses and may be easily damaged if handled incorrectly. Electrical components must not be exposed to mechanical damage or destruction (risks to health!).

5 - Electrical connection

When work is performed on variable speed motors which are powered up, the national accident prevention regulations must be respected.

The electrical installation must comply with the relevant specifications (for example conductor cross-sections, protection via fused circuit-breaker, connection of protective conductor). More detailed information is given in the documentation. Instructions for an installation which meets the requirements for electromagnetic compatibility, such as screening, earthing, presence of filters and correct insertion of cables and conductors, are given in the documentation supplied with the variable speed motors. These instructions must be followed in all cases, even if the variable speed motor carries the CE mark. Adherence to the limits given in the EMC legislation is the responsibility of the manufacturer of the installation or the machine.

6 - Operation

Installations in which variable speed motors are to be integrated must be fitted with additional protection and monitoring devices as laid down in the current relevant safety regulations, such as the law on technical equipment, accident prevention regulations, etc. Modifications to the variable speed motors using control software are permitted.

Active parts of the device and the live power connections must not be touched immediately after the variable speed motor is powered down, as the capacitors may still be charged. In view of this, the warnings fixed to the variable speed motors must be observed.

During operation, all doors and protective covers must be kept closed.

7 - Servicing and maintenance

Refer to the manufacturer's documentation.

This manual is to be given to the end user.

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1 - GENERAL INFORMATION

1.1 - General

The PX-I/O module is used to increase the number of inputs and outputs of the drives or variable speed motor. This option is fully configurable.

Additional functions:

- 2 analog inputs (including a differential analog input)
- 1 analog output
- 5 digital inputs
- 1 digital output
- 1 assignable relay
- 1 internal clock
- year, month, day, hours, minutes, seconds backup mode

Terminal blocks PL1 (terminals 1 to 12) and PL2 (terminals 21 to 23) are removable.

Note:

- This type of module cannot be mounted on VARMECA 31/32.
- The colour of the option label is yellow.
- Installing the PX-I/O module may restrict use of the drive to high switching frequencies (**05.18**, **05.60** and for the POWERDRIVE **18.27**). The maximum switching frequency value depends on the type of drive and the operating mode. If in doubt, please get in touch with your usual LEROY-SOMER contact.

1.2 - Dimensions

This PX-I/O option can be integrated in the whole POWERDRIVE, PROXIDRIVE and VARMECA 33/34 range, without affecting the overall dimensions of the drive or variable speed motor.

PX-I/O

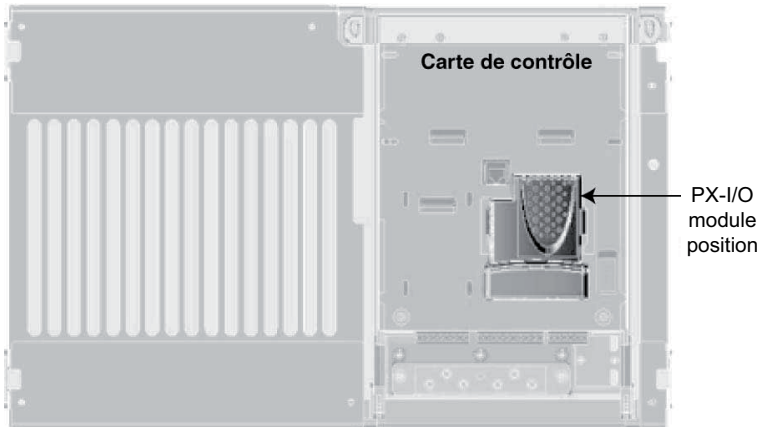
Additional I/O module for POWERDRIVE, PROXIDRIVE, VARMECA 33/34

2 - INSTALLATION

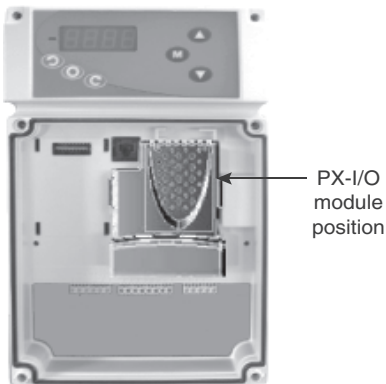
- ▲ **To insert a module, power down the drive and wait for at least 10 minutes (check that the DC bus voltage is below 40 V). Otherwise, the module could be damaged.**
- **Check that the module is in good condition: a damaged module must not be inserted in the drive.**

Offer the module to the purpose-designed slot and the connector, as shown in the diagrams below, then press gently until you hear it click into place.

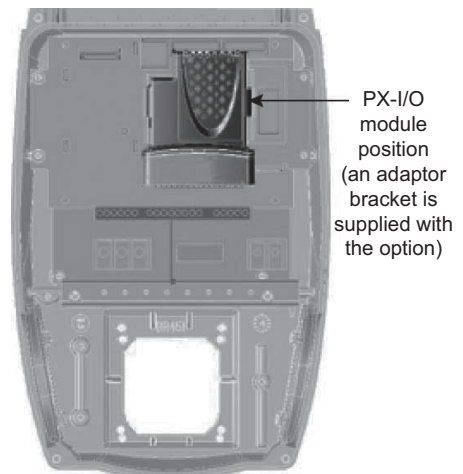
• POWERDRIVE



• PROXIDRIVE



• VARMECA 33/34



Note: To remove the option, press the side tabs and lift out the module.

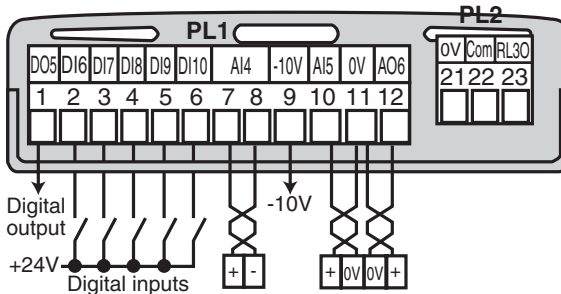
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3 - CONNECTIONS AND CHARACTERISTICS

- ⚠ Check that the DC bus has discharged before any work is carried out (wait at least 10 minutes after powering down). For the safety instructions relating to the drive or variable speed motor, please refer to the manual supplied with the product.
- The control circuits in the drive are isolated from the power circuits by single insulation (IEC 664-1). The installer must ensure that the external control circuits are isolated against any human contact. If the control circuits need to be connected to circuits conforming to SELV safety requirements, additional insulation must be inserted to maintain the SELV classification.

3.1 - Connections



Note: The +24 V voltage source can come from the 24 V internal power supply on terminal 8 or 11 of the PROXIDRIVE or VARMECA 33/34 and terminals 2, 5 or 7 (PX2 terminal block) of the POWERDRIVE.

3.2 - Characteristics

• Terminal block PL1

1	Digital output (DO5)
2	Digital input (DI6)
3	Digital input (DI7)
4	Digital input (DI8)
5	Digital input (DI9)
6	Digital input (DI10)
Control logic	Positive, conforming to standard IEC 61131 (except for DO5, which is negative logic). The relay connected to the output must be connected to 0 V.
Isolation	Not isolated from the control electronics
Input	
Voltage range	0 to 24 V
Absolute maximum voltage	0 to 35 V
Sampling/refreshing	POWERDRIVE: 2 ms PROXIDRIVE and VARMECA: 32 ms
Impedance	15 kΩ at no load/6 kΩ on load
Thresholds	0: < 5 V 1: > 10 V
Output	
Maximum output current	15 mA
Overload current	50 mA

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7	Differential analog input + (AI4+)
8	Differential analog input - (AI4-)
Characteristic	Voltage bipolar differential inputs (common mode operation: connect terminals 8 and 11)
Resolution	12 bits
Sampling	POWERDRIVE: 2 ms PROXIDRIVE and VARMECA: 32 ms
Full-scale voltage range	$\pm 10 \text{ V} \pm 2\%$
Maximum common mode voltage	$20 \text{ V} \pm 1\%$
Absolute maximum voltage	33 V
Input impedance	57 k Ω , $\pm 1\%$
9	-10 V internal analog supply
Voltage tolerance	$\pm 1\%$
Maximum output current	5 mA
Protection	Threshold at -15 V
10	Analog input (AI5)
Characteristics	Bipolar analog voltage
Resolution	10 bits
Sampling	POWERDRIVE: 2 ms PROXIDRIVE and VARMECA: 32 ms
Full-scale rated voltage	$\pm 10 \text{ V}$
Absolute maximum voltage	33 V
Input impedance	20 k Ω
11	Logic circuit common 0 V
12	Analog output (AO6)
Characteristics	0 to 10 V analog voltage or 4-20 mA current
Sampling	POWERDRIVE: 2 ms PROXIDRIVE and VARMECA: 32 ms
Resolution	13 bits
Voltage output	
Voltage range	0 to 10 V
Load resistance	2 k Ω
Protection	Short-circuit (40 mA max)
Current output	
Current range	4 to 20 mA
Maximum voltage	10 V
Load resistance	500 Ω

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• Terminal block PL2

21	Logic circuit common 0 V
22	Common
23	RL30
Contact voltage	250 V AC
Maximum contact current	2 A, resistive load
	1 A, inductive load



- Provide a fuse or overcurrent protection in the relay circuit.

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4 - COMMISSIONING



- The drives use software which is adjusted by parameters.
- The performance levels obtained depend on the parameter settings.
 - Inappropriate settings may have serious consequences for personnel and machinery.
- The drive parameters should only be set by appropriately qualified and experienced personnel.

4.1 - General

To set the PX-I/O module parameters, the corresponding menu is menu 15.

Note: Installing the PX-I/O module may restrict use of the drive to high switching frequencies (**05.18, 05.60** and for the POWERDRIVE **18.27**). The maximum switching frequency value depends on the type of drive and the operating mode. If in doubt, please get in touch with your usual LEROY-SOMER contact.

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4.2 - List of parameters

Parameter	Description	Type	Adjustment range	Factory setting
15.01	Option ID code	RO	0 to 999	-
15.02	Option software version	RO	0 to 99.99	-
15.03	Digital output 5 state	RO	Inactive (0) or Active (1)	-
15.04	Digital input 6 state	RO	Inactive (0) or Active (1)	-
15.05	Digital input 7 state	RO	Inactive (0) or Active (1)	-
15.06	Digital input 8 state	RO	Inactive (0) or Active (1)	-
15.07	Digital input 9 state	RO	Inactive (0) or Active (1)	-
15.08	Digital input 10 state	RO	Inactive (0) or Active (1)	-
15.09	Relay output 3 state	RO	RL3 open (0) or RL3 closed (1)	-
15.10	Not used			
15.11	Digital output 5 invert	R-W	NO (0) or YES (1)	NO (0)
15.12	Digital input 6 invert	R-W	NO (0) or YES (1)	NO (0)
15.13	Digital input 7 invert	R-W	NO (0) or YES (1)	NO (0)
15.14	Digital input 8 invert	R-W	NO (0) or YES (1)	NO (0)
15.15	Digital input 9 invert	R-W	NO (0) or YES (1)	NO (0)
15.16	Digital input 10 invert	R-W	NO (0) or YES (1)	NO (0)
15.17	Relay output 3 invert	R-W	NO (0) or YES (1)	NO (0)
15.18 to 15.20	Not used			
15.21	Digital output 5 source	R-W	0.00 to 21.51	0.00
15.22	Digital input 6 destination	R-W	0.00 to 21.51	0.00
15.23	Digital input 7 destination	R-W	0.00 to 21.51	0.00
15.24	Digital input 8 destination	R-W	0.00 to 21.51	0.00
15.25	Digital input 9 destination	R-W	0.00 to 21.51	0.00
15.26	Digital input 10 destination	R-W	0.00 to 21.51	0.00
15.27	Relay output 3 source	R-W	0.00 to 21.51	0.00
15.28 and 15.29	Not used			
15.30	Clock configuration	R-W	Read time (0), prepare to set time (1), set time (2)	Read time (0)
15.31 to 15.33	Not used			
15.34	Clock: minute, second	R-W	0 to 59.59	00.00
15.35	Clock: day of week, hour	R-W	1.00 to 7.23	1.00
15.36	Clock: day of month, month	R-W	01.01 to 31.12	01.01
15.37	Clock: year	R-W	2004 to 3000	2004
15.38	Clock fine tuning	R-W	-163 to 327 s/month	000
15.39	Not used			

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Parameter	Description	Type	Adjustment range	Factory setting
15.40	Analog input 4 level	RO	±100.00%	-
15.41	Analog input 4 scaling	R-W	Powerdrive: 0 to 2.50 Proxidrive/Varmeca: 0 to 4.00	1.00
15.42	Analog input 4 invert	R-W	NO (0) or YES (1)	NO (0)
15.43	Analog input 4 destination	R-W	0.00 to 21.51	0.00
15.44	Analog input 5 level	RO	±100.0%	-
15.45	Analog input 5 scaling	R-W	Powerdrive: 0 to 2.50 Proxidrive/Varmeca: 0 to 4.00	1.00
15.46	Analog input 5 invert	R-W	NO (0) or YES (1)	NO (0)
15.47	Analog input 5 destination	R-W	0.00 to 21.51	0.00
15.48	Analog output 6 source	R-W	0.00 to 21.51	0.00
15.49	Not used			
15.50	Analog output 6 scaling	R-W	0 to 4.00	1.00
15.51	Analog output 6 level	RO	±100.0%	-
15.52	Analog output 6 signal type	R-W	0/10 V (0) or 4/20 mA (1)	0/10 V (0)
15.53 and 15.54	Not used			
15.55	Trigger circuit 1 destination	R-W	0.00 to 21.51	0.00
15.56	Trigger circuit 2 destination	R-W	0.00 to 21.51	0.00
15.57 to 15.60	Not used			
15.61	Trigger circuit 1 state	RO	Inactive (0) or Active (1)	-
15.62	Trigger circuit 2 state	RO	Inactive (0) or Active (1)	-
15.63 to 15.70	Not used			
15.71	Trigger circuit 1: minute, second	R-W	00.00 to 59.59	00.00
15.72	Trigger circuit 1: day of month, hour	R-W	1.00 to 31.23	1.00
15.73	Trigger circuit 1: month, year	R-W	01.04 to 12.99	01.04
15.74	Trigger circuit 1 mode	R-W	Rst/None (0), At date (1), Hourly cyclic (2), Daily cyclic (3), Monthly cyclic (4)	Rst/None (0)
15.75	Trigger circuit 1 hold time	R-W	0 to 59	00
15.76	Trigger circuit 1 hold time unit	R-W	Second (0), minute (1), hour (2)	Second (0)
15.77 to 15.80	Not used			
15.81	Trigger circuit 2: minute, second	R-W	00.00 to 59.59	00.00

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Parameter	Description	Type	Adjustment range	Factory setting
15.82	Trigger circuit 2: day of month, hour	R-W	1.00 to 31.23	1.00
15.83	Trigger circuit 2: month, year	R-W	01.04 to 12.99	01.04
15.84	Trigger circuit 2 mode	R-W	Rst/None (0), At date (1), Hourly cyclic (2), Daily cyclic (3), Monthly cyclic (4)	Rst/None (0)
15.85	Trigger circuit 2 hold time	R-W	0 to 59	00
15.86	Trigger circuit 2 hold time unit	R-W	Second (0), minute (1), hour (2)	Second (0)
15.87 to 15.89	Not used			
15.90	Event 1: minute, second	RO	00.00 to 59.59	-
15.91	Event 1: day of month, hour	RO	01.00 to 31.23	-
15.92	Event 1: month, year	RO	01.04 to 12.99	-
15.93	Event 1 source	R-W	0.00 to 21.51	0.00
15.94	Event 1 state	RO	Inactive (0) or Active (1)	-
15.95	Event 2: minute, second	RO	00.00 to 59.59	-
15.96	Event 2: day of month, hour	RO	01.00 to 31.23	-
15.97	Event 2: month, year	RO	01.04 to 12.99	-
15.98	Event 2 source	R-W	0.00 to 21.51	0.00
15.99	Event 2 state	RO	Inactive (0) or Active (1)	-

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4.3 - Diagrams

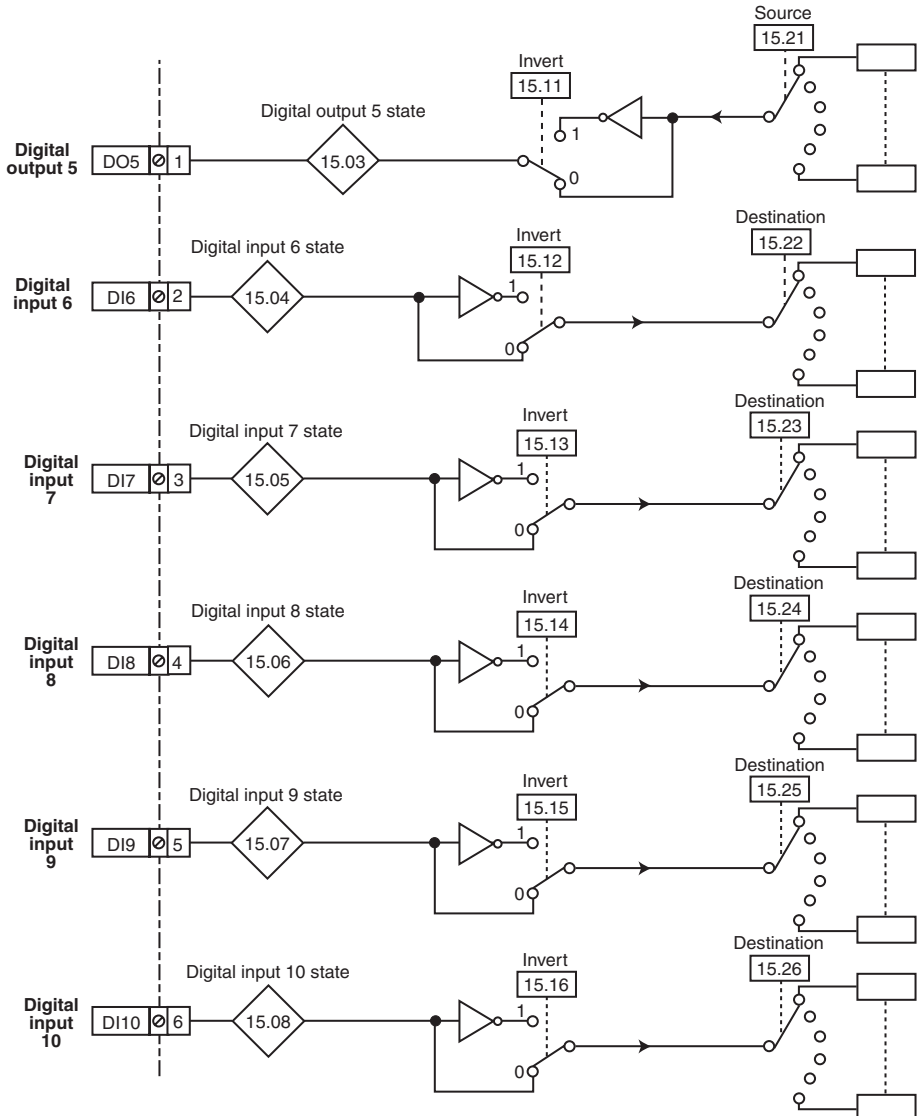


Option ID code



Option software version

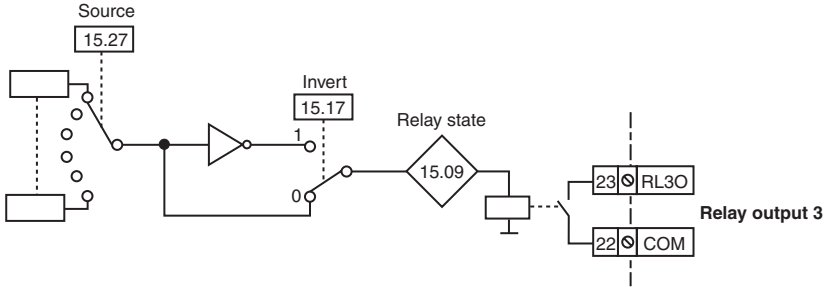
• Digital inputs and output



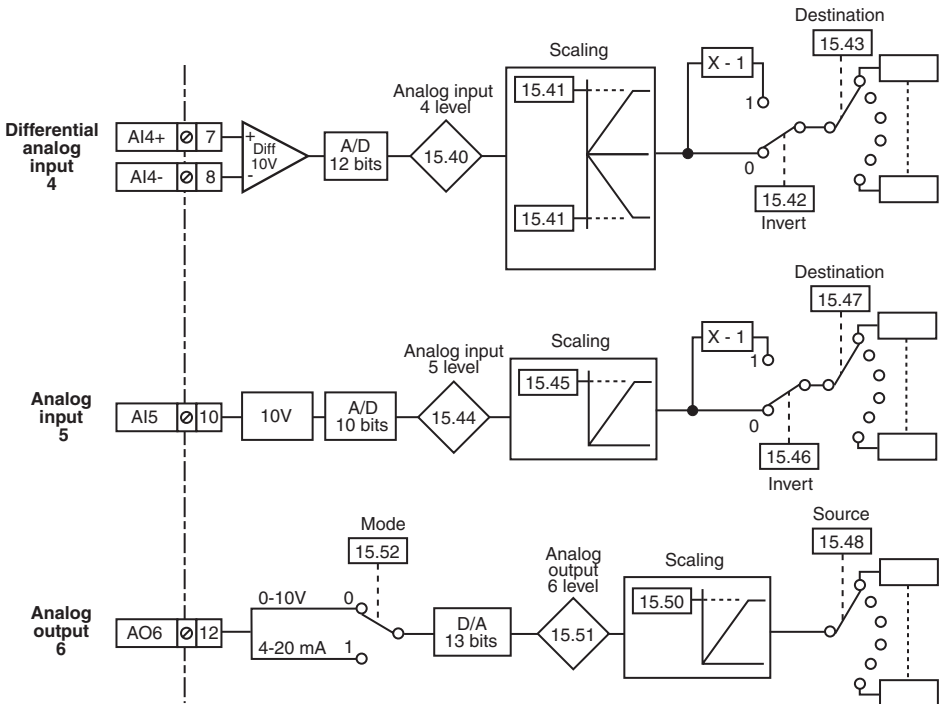
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• Relay output



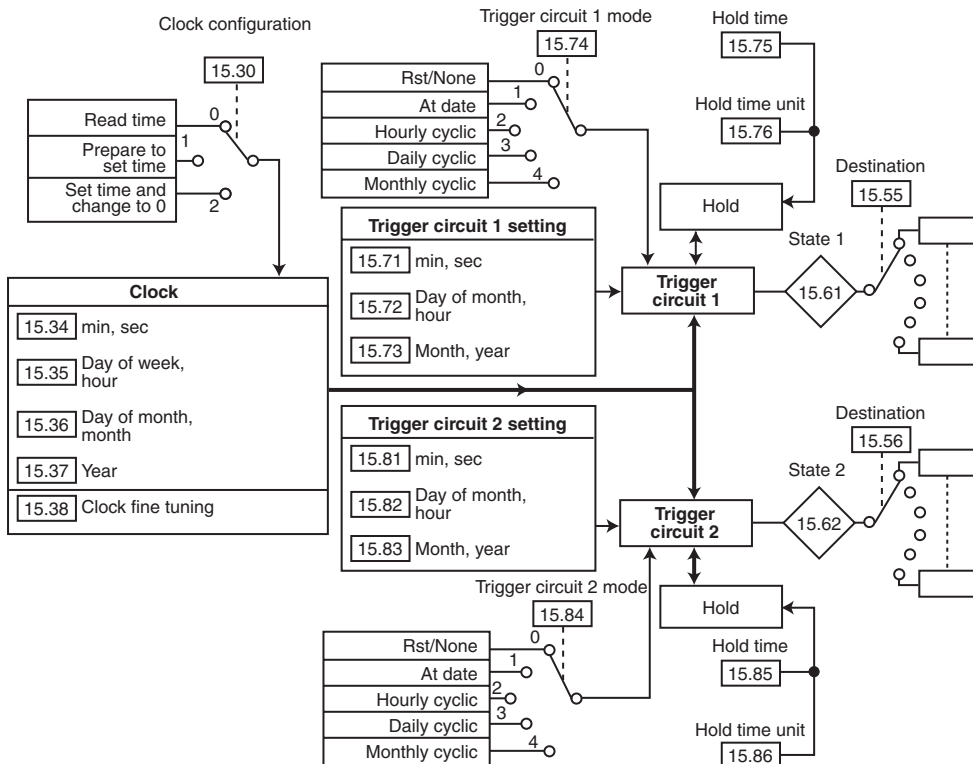
• Analog inputs and output



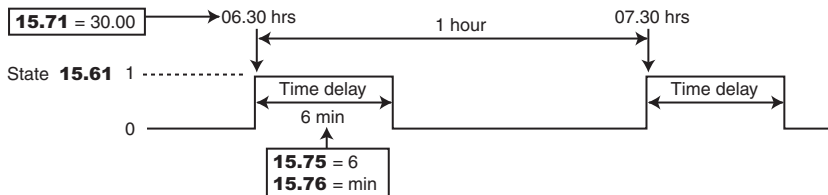
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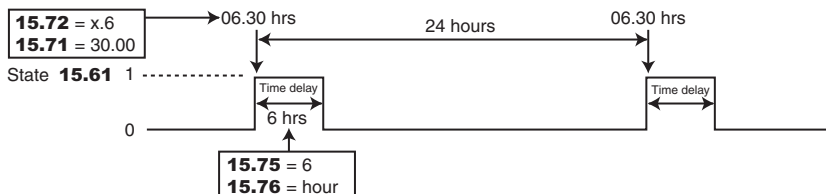
• Clock and trips



Example of hourly cyclic trip (15.74 = 2)



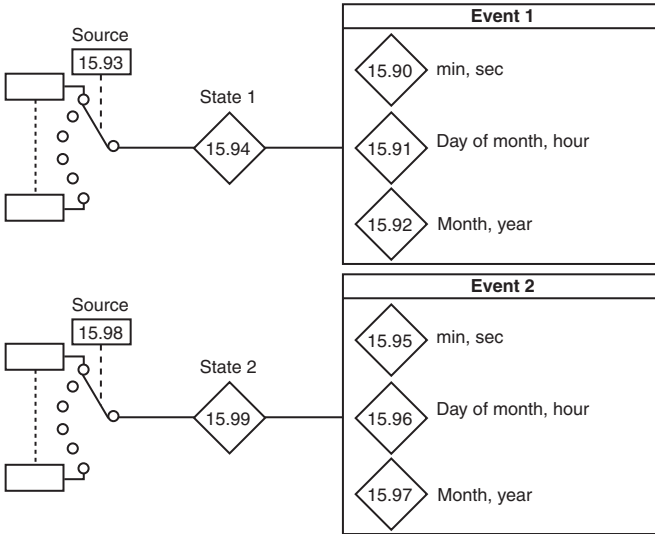
Example of daily cyclic trip (15.74 = 3)



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• Events



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4.4 - Explanation of parameters

15.01 : Option ID code

Adjustment range : 0 to 999

15.01	Option module correspondence
0	No module
1 to 250	Reserved
251	PX-I/O
252 to 351	Reserved
352	PX-MODBUS
353 to 402	Reserved
403	SM-PROFIBUS DP
404	SM-INTERBUS
405 and 406	Reserved
407	SM-DeviceNet
408	SM-CANopen
409	Reserved
410	SM-Ethernet
411 to 999	Reserved

15.02 : Option software version

Adjustment range : 0 to 999
 Indicates the option software version, defined by 3 digits.

15.03 : Digital output 5 state

Adjustment range : Inactive (0) or Active (1)
 This parameter indicates the state of the output.

15.04 : Digital input 6 state

15.05 : Digital input 7 state

15.06 : Digital input 8 state

15.07 : Digital input 9 state

15.08 : Digital input 10 state

Adjustment range : Inactive (0) or Active (1)

These parameters indicate the state of the corresponding input.

15.09 : Relay output 3 state

Adjustment range : RL3 open (0) or RL3 closed (1)

This parameter indicates the state of the output relay.

15.10 : Not used

15.11 : Digital output 5 invert

Adjustment range : NO (0) or YES (1)
 Factory setting : NO (0)
 This parameter is used to invert the state of the digital output.

NO (0) : not inverted.

YES (1):inverted.

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15.12 : Digital input 6
invert

15.13 : Digital input 7
invert

15.14 : Digital input 8
invert

15.15 : Digital input 9
invert

15.16 : Digital input 10
invert

Adjustment range : NO (0) or YES (1)

Factory setting : NO (0)

These parameters are used to invert the state of the corresponding digital input.

NO (0) : not inverted.

YES (1):inverted.

15.17 : Relay output 3
invert

Adjustment range : NO (0) or YES (1)

Factory setting : NO (0)

This parameter is used to invert the state of the relay.

NO (0) : not inverted.

YES (1):inverted.

15.18 to **15.20** : Not used

15.21 : Digital output 5 source

Adjustment range : **00.00** to **21.51**

Factory setting : **00.00**

This parameter is used to select the source for the digital output.

Any "bit" type parameter can be assigned.

If an unsuitable parameter is addressed, no assignment is taken into account.

15.22 : Digital input 6
destination

15.23 : Digital input 7
destination

15.24 : Digital input 8
destination

15.25 : Digital input 9
destination

15.26 : Digital input 10
destination

Adjustment range : **00.00** to **21.51**

Factory setting : **00.00**

These parameters are used to select the destination for the corresponding digital input.

Any "bit" type parameter can be assigned. If an unsuitable parameter is addressed, no assignment is taken into account.

15.27 : Relay output 3 source

Adjustment range : **00.00** to **21.51**

Factory setting : **00.00**

This parameter is used to select the source for the relay output.

Any "bit" type parameter can be assigned. If an unsuitable parameter is addressed, no assignment is taken into account.

15.28 and **15.29** :Not used

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15.30 : Clock configuration

Adjustment range : Read time (0),
prepare to set
time (1), set
time (2)

Factory setting : Read time (0)

Read time (0): The clock works normally. To read the time, day, month or year, look at parameters 15.34 to 15.37.

Prepare to set time (1): Used to adjust the clock date and time. After configuring **15.30** as Prepare to set time (1), set the year in **15.37** (eg: 2008), the day of the month and the month in **15.36** (eg: 3.02 to indicate 3 February), the day of the week and the time in **15.35** (eg: 7.10 to indicate Sunday 10.00), and finally the minutes and seconds in **15.34** (eg: 33.00 to indicate 33 minutes and 0 seconds). Then, configure **15.30** as Set time (2) to take account of the new settings. **15.30** then automatically changes back to 0.

Set time (2): Used to take account of the values contained in parameters **15.34** to **15.37**. **15.30** then automatically changes back to Read time (0).

WARNING:

The clock is factory-set to French time. Some calibration (15.38) may be necessary after a month's operation.

15.31 to **15.33** : Not used

15.34 : Clock: minute,
second

Adjustment range : 0 to 59.59

Factory setting : 00.00

Used to set or read the minutes and seconds on the clock.

The 2 digits before the decimal point set the minutes, and the 2 digits after the decimal point set the seconds.

15.35 : Clock: day of
week, hour

Adjustment range : 1.00 to 7.23

Factory setting : 1.00

Used to set or read the day of the week and hour on the clock.

The 2 digits before the decimal point set the day of the week (1: Monday, 2: Tuesday, etc, 7: Sunday), and the 2 digits after the decimal point set the hour.

15.36 : Clock: day of month, month

Adjustment range : 01.01 to 31.12

Factory setting : 01.01

Used to set or read the day of the month and month on the clock.

The 2 digits before the decimal point set the day of the month, and the 2 digits after the decimal point set the month.

15.37 : Clock: year

Adjustment range : 2004 to 3000

Factory setting : 2004

Used to set or read the year on the clock.

15.38 : Clock fine tuning

Adjustment range : -163 to 327 seconds/
month

Factory setting : 0

Used to compensate for clock drift in order to increase its accuracy.

After a month, check the minutes and seconds given by parameter **15.34**. If it is incorrect, configure **15.38** with the number of seconds/month (positive if the clock is running fast, negative if it is running slow) corresponding to the clock drift over a month. Then, configure **15.30** as Prepare to set time (1) and set **15.34** correctly. Configure **15.30** as 2 to take account of this new value (**15.30** then automatically changes back to 0).

15.39 : Not used

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15.40 : Analog input 4 level

Adjustment range : $\pm 100.00\%$
Indicates as a percentage the signal level
on the differential analog input.

15.41 : Analog input 4 scaling

Adjustment range : POWERDRIVE:
0 to 2.50
PROXIDRIVE and
VARMECA: 0 to 4.00

Factory setting : 1.00
Used to supply the destination parameter
with a numerical value in proportion with
the input. However, in the majority of cases,
this setting is not necessary since the input
is automatically scaled, meaning that 100%
as an input corresponds to the maximum
value of the destination parameter selected
in **15.43**.

15.42 : Analog input 4 invert

Adjustment range : NO (0) or YES (1)
Factory setting : NO (0)
This parameter is used to change the
polarity of the analog input.

NO (0) : not inverted.

YES (1):inverted.

15.43 : Analog input 4 destination

Adjustment range : **00.00** to **21.51**
Factory setting : **00.00**

This parameter is used to select the
numerical parameter assigned as the
analog input destination.
If an unsuitable parameter is addressed, no
assignment is taken into account.

15.44 : Analog input 5 level

Adjustment range : $\pm 100.00\%$
Indicates as a percentage the signal level
on the analog input.

15.45 : Analog input 5 scaling

Adjustment range : POWERDRIVE:
0 to 2.50
PROXIDRIVE and
VARMECA: 0 to 4.00

Factory setting : 1.00
Used to supply the destination parameter
with a numerical value in proportion with
the input. However, in the majority of cases,
this setting is not necessary since the input
is automatically scaled, meaning that 100%
as an input corresponds to the maximum
value of the destination parameter selected
in **15.47**.

15.46 : Analog input 5 invert

Adjustment range : NO (0) or YES (1)
Factory setting : NO (0)
This parameter is used to change the
polarity of the analog input.

NO (0) : not inverted.

YES (1):inverted.

15.47 : Analog input 5 destination

Adjustment range : **00.00** to **21.51**
Factory setting : **00.00**

This parameter is used to select the
numerical parameter assigned as the
analog input destination.
If an unsuitable parameter is addressed, no
assignment is taken into account.

15.48 : Analog output 6 source

Adjustment range : **00.00** to **21.51**
Factory setting : **00.00**

This parameter is used to select the
numerical parameter assigned as the
analog output source.
If an unsuitable parameter is addressed, no
assignment is taken into account.

15.49 : Not used

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15.50 : Analog output 6 scaling

Adjustment range : 0 to 4.00

Factory setting : 1.00

Used to provide a numerical value in proportion with the source parameter as an output. However, in the majority of cases, this setting is not necessary since the output is automatically scaled, meaning that 100% as an output corresponds to the maximum value of the source parameter selected in **15.48**.

15.51 : Analog output 6 level

Adjustment range : $\pm 100.0\%$

Indicates as a percentage the analog input level, before conversion into a 0-10 V or 4-20 mA signal according to **15.52**.

15.52 : Analog output 6 signal type

Adjustment range : 0/10 V (0), 4/20 mA (1)

Factory setting : 0/10 V (0)

Used to choose the type of output signal.

0/10 V (0): 0 to 10 V voltage output

4/20 mA (1): 4 to 20 mA current output.

15.53 and **15.54** :Not used

15.55 : Trigger circuit 1 destination

15.56 : Trigger circuit 2 destination

Adjustment range : **00.00** to **21.51**

Factory setting : **00.00**

Used to select the "bit" parameter on which trigger circuit 1 or 2 will act when clock downcounting ends.

15.57 to **15.60** :Not used

15.61 : Trigger circuit 1 state

15.62 : Trigger circuit 2 state

Adjustment range : Inactive (0) or
Active (1)

This parameter indicates the state of the output of trigger circuits 1 and 2.

15.63 to **15.70** :Not used

15.71 : Trigger circuit 1: minute, second

Adjustment range : 00.00 to 59.59

Factory setting : 00.00

Used to set the minutes and seconds when the state of trigger circuit 1 (**15.61**) will change to Active (1).

The 2 digits before the decimal point set the minutes, and the 2 digits after the decimal point set the seconds.

15.72 : Trigger circuit 1: day of month, hour

Adjustment range : 1.00 to 31.23

Factory setting : 1.00

Used to set the day of the month and hour when the state of trigger circuit 1 will change to Active (1).

The 2 digits before the decimal point set the day of the month, and the 2 digits after the decimal point set the hour.

15.73 : Trigger circuit 1: month, year

Adjustment range : 01.04 to 12.99

Factory setting : 01.04

Used to set the month and year when the state of trigger circuit 1 will change to Active (1).

The 2 digits before the decimal point set the month, and the 2 digits after the decimal point set the year.

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15.74 : Trigger circuit 1 mode

Adjustment range : Rst/None (0),
 At date (1),
 Hourly cyclic (2),
 Daily cyclic (3),
 Monthly cyclic (4)

Factory setting : Rst/None (0)
 Used to select the frequency of trip 1.

Rst/None (0): trigger circuit 1 is inactive. This setting can also be used to reset parameters 15.71 to 15.73.

At date (1): tripping only at the time programmed by parameters **15.71** to **15.73**.

Hourly cyclic (2): tripping on the hour at fixed minutes and seconds, at the time programmed by parameter **15.71**.

Daily cyclic (3): tripping every day at a fixed time (hour, minute and second) at the time programmed by parameters **15.71** and **15.72**.

Monthly cyclic (4): tripping every month at a fixed date and time (day of month, hour, minute and second) at the time programmed by parameters **15.71** and **15.72**.

Note: For each tripping mode, set **15.71** to **15.73** to determine the start of the cycle. See section 4.3 for operational examples.

15.75 : Trigger circuit 1 hold time

Adjustment range : 00 to 59
 Factory setting : 00
 Used to set how long the trigger circuit 1 output is held in active state (1).
 The unit of time is set by parameter **15.76**.

15.76 : Trigger circuit 1 hold time unit

Adjustment range : second (0),
 minute (1), hour (2)

Factory setting : second (0)
 Used to set the time unit used to determine how long the trigger circuit 1 output is held in active state (1).

second (0): the hold time 15.75 is expressed in seconds.

minute (1): the hold time 15.75 is expressed in minutes.

hour (2): the hold time 15.75 is expressed in hours.

15.77 to 15.80 : Not used

15.81 : Trigger circuit 2: minute, second

Adjustment range : 00.00 to 59.59
 Factory setting : 00.00
 Used to set the minutes and seconds when the state of trigger circuit 2 (**15.62**) will change to Active (1).
 The 2 digits before the decimal point set the minutes, and the 2 digits after the decimal point set the seconds.

15.82 : Trigger circuit 2: day of month, hour

Adjustment range : 1.00 to 31.23
 Factory setting : 1.00
 Used to set the day of the month and hour when the state of trigger circuit 2 will change to Active (1).
 The 2 digits before the decimal point set the day of the month, and the 2 digits after the decimal point set the hour.

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15.83 : Trigger circuit 2: month, year

Adjustment range : 01.04 to 12.99

Factory setting : 01.04

Used to set the month and year when the state of trigger circuit 2 will change to Active (1).

The 2 digits before the decimal point set the month, and the 2 digits after the decimal point set the year.

15.84 : Trigger circuit 2 mode

Adjustment range : Rst/None (0),
At date (1),
Hourly cyclic (2),
Daily cyclic (3),
Monthly cyclic (4)

Factory setting : Rst/None (0)
Used to select the frequency of trip 2.

Rst/None (0): trigger circuit 2 is inactive. This setting can also be used to reset parameters 15.81 to 15.83.

At date (1): tripping only at the time programmed by parameters **15.81** to **15.83**.

Hourly cyclic (2): tripping on the hour at fixed minutes and seconds, at the time programmed by parameter **15.81**.

Daily cyclic (3): tripping every day at a fixed time (hour, minute and second) at the time programmed by parameters **15.81** and **15.82**.

Monthly cyclic (4): tripping every month at a fixed date and time (day of month, hour, minute and second) at the time programmed by parameters **15.81** and **15.82**.

Note: For each tripping mode, set **15.81** to **15.83** to determine the start of the cycle. See section 4.3 for operational examples.

15.85 : Trigger circuit 2 hold time

Adjustment range : 00 to 59

Factory setting : 00

Used to set how long the trigger circuit 2 output is held in active state (1).

The unit of time is set by parameter **15.86**.

15.86 : Trigger circuit 2 hold time unit

Adjustment range : second (0),
minute (1), hour (2)

Factory setting : second (0)

Used to set the time unit used to determine how long the trigger circuit 2 output is held in active state (1).

second (0): the hold time 15.85 is expressed in seconds.

minute (1): the hold time **15.85** is expressed in minutes.

hour (2): the hold time **15.85** is expressed in hours.

Note: The hour value (2) cannot be selected if an hourly cycle has been chosen (**15.84** = hourly cyclic (2)).

15.87 to **15.89** : Not used

15.90 : Event 1: minute, second

Adjustment range : 00.00 to 59.59

Used to display the time when **15.94** changes to Active (1) state, corresponding to event 1, in minutes and seconds (the last event is the one taken into account).

The 2 digits before the decimal point correspond to the minutes, and the 2 digits after the decimal point to the seconds.

15.91 : Event 1: day of month, hour

Adjustment range : 01.00 to 31.23

Used to display the time when **15.94** changes to Active (1) state, corresponding to event 1, in date (day of the month) and hours (the last event is the one taken into account).

The 2 digits before the decimal point correspond to the day of the month, and the 2 digits after the decimal point to the hour.

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15.92 : Event 1: month, year

Adjustment range : 01.04 to 12.99
Used to display the time when **15.94** changes to Active (1) state, corresponding to event 1, in month and year (the last event is the one taken into account).
The 2 digits before the decimal point correspond to the month, and the 2 digits after the decimal point to the year.

15.93 : Event 1 source

Adjustment range : **00.00** to **21.51**
Factory setting : **00.00**
This parameter is used to select the "bit" parameter assigned to the event 1 function source.
If an unsuitable parameter is addressed, no assignment is taken into account.

15.94 : Event 1 state

Adjustment range : Inactive (0) or
Active (1)
This parameter indicates the state of the event 1 input.
If the source **15.93** is assigned to a logic input, it is the rising edge of the signal which will cause parameter **15.94** to change to 1.

15.95 : Event 2: minute, second

Adjustment range : 00.00 to 59.59
Used to display the time when **15.99** changes to Active (1) state, corresponding to event 2, in minutes and seconds (the last event is the one taken into account).
The 2 digits before the decimal point correspond to the minutes, and the 2 digits after the decimal point to the seconds.

15.96 : Event 2: day of month hour

Adjustment range : 01.00 to 31.23
Used to display the time when **15.99** changes to Active (1) state, corresponding to event 2, as a date (day of the month) and in hours (the last event is the one taken into account).
The 2 digits before the decimal point correspond to the day of the month, and the 2 digits after the decimal point to the hours.

15.97 : Event 2: month, year

Adjustment range : 01.04 to 12.99
Used to display the time when **15.99** changes to Active (1) state, corresponding to event 2, in months and year (the last event is the one taken into account).
The 2 digits before the decimal point correspond to the month, and the 2 digits after the decimal point to the year.

15.98 : Event 2 source

Adjustment range : **00.00** to **21.51**
Factory setting : **00.00**
This parameter is used to select the "bit" parameter assigned as the event 2 function source.
If an unsuitable parameter is addressed, no assignment is taken into account.

15.99 : Event 2 state

Adjustment range : Inactive (0) or
Active (1)
This parameter indicates the state of the event 2 input.
If the source **15.98** is assigned to a logic input, it is the rising edge of the signal which will cause parameter **15.99** to change to 1.

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5 - DIAGNOSTICS

No.	Code	Cause	Remedies
51	PXIOEEPROM	Problem on PX-I/O EEPROM	Power down and then power up again. Return to factory settings.
52	PXIOSUPPLY	Overload on the PX-I/O power supply	Loss of 24 V detected by the option. - Check the current consumption - Make sure there has not been a temporary overload on the 24 V.
53	PXIO CLOCK	Problem on PX-I/O clock	Power down and then power up again. Set the time again.
54	PXIOCOMM	Communication problem between the drive and the PX-I/O	- Power down the drive, then check that the option is correctly positioned.

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6 - MAINTENANCE

The PX-I/O module incorporates a 3 V, Ø 16 mm lithium battery to power the clock. It will last for around 8 years.

To change the battery, proceed as follows. For other maintenance operations, refer to the installation manual for the drive or variable speed motor.

Note: Make sure you remove the battery before recycling the module.

Procedure for changing the battery:

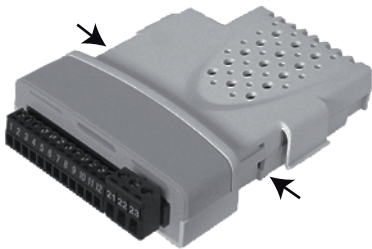
Power down the drive (ensure that the drive DC bus voltage is below 40 V).

Disconnect the PX-I/O module (if necessary, see section 2).

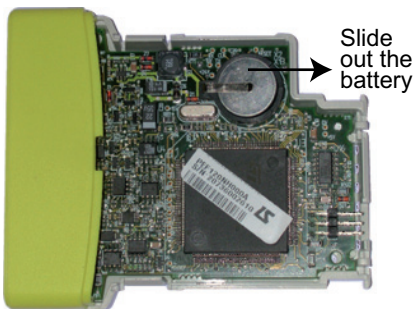
Remove the module top cover, by pressing the tabs on each side of the option module simultaneously.

Replace the module cover (first position the cover on the pins at the back of the module, then fold it forwards and press to click into place).

At the end of this procedure, the option parameter settings will need to be reviewed, since the parameters will have reverted to their default value, and the clock time will need to be reset (refer to section 4).



Take out the battery, and replace it with the new one (recycle the old battery).



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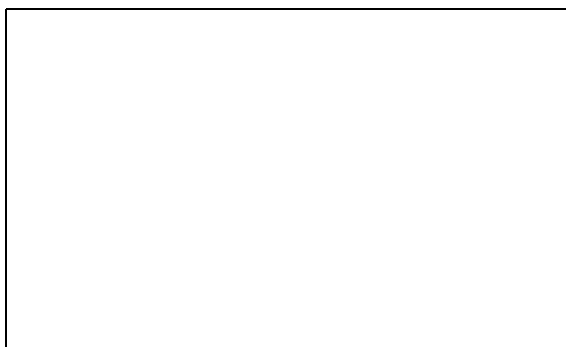
Notes

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Notes



IMP210NO108



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