## (EN) HIB4xxM

Remote Transfer Switching Equipment

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(1) Power Section: Changeover switch assembly with inherent mechanical interlock.
(2) Front: Switch number 1 terminals (3 or 4 pole).
(3) Back: Switch number 2 terminals (3 or 4 pole).
(4) Switch position indication window:

- I (On)- O (Off) - II (On).
(5) Top cover.
(6) Back-plate mounting fixing lugs.
(7) Auxiliary power supply: 230VAC (208-277 VAC $\pm 20 \%=166-332 \mathrm{Vac})$.
(8) Motorized Control Unit.
(9) Motor housing.
(10) Green LED Indication: Power (if control voltage input of the product is within specified range).
(11) Auto/Manual mode selector switch.
(12) Emergency manual operation "Direct Handle".
(13) Emergency manual operation shaft location (Accessible only in manual mode).
(14) Red LED Indication: Product Unavailable/Manual Mode/Fault Condition.
(15) Padlocking facility (Up to 3 padlocks of dia. 4-8 mm).
(16) Output contacts $\times 4$ (Position indication I-O-II and product availability outputs).
(17) Handle fixing clip.
(18) Input contacts $\times 5$ : Position order I-O-II,
Remote control enable Override controls and force to Off position
(19) Sliders for Terminal Shields
(20) Fixing holes for terminal Shields


IP2X against direct contact for the motorization control unit.
IP2X against direct contact for the power section with the connections in place and when including suitable,
correctly installed incoming and outgoing terminal shields.
IPO for the bare power section without terminal shields in place.
Storage conditions
$-40^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$
Operating conditions
From -20 to $+40^{\circ} \mathrm{C}$ without derating. From -20 to $+70^{\circ} \mathrm{C}$ when applying a Kt derating correction factor.

| Kt (Correction Factor) | Temperature |
| :---: | :--- |
| 0,9 | $40^{\circ} \mathrm{C}$ to $+50^{\circ} \mathrm{C}$ |
| 0,8 | $50^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |
| 0,7 | $60^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |

## Storage duration period

Maximum storage up to a period of 12 months. Recommendation: To be stored in dry, non corrosive and non saline atmospheric conditions.

| Hygrometry | $80 \%$ to $55^{\circ} \mathrm{C}$ |  |  |
| :---: | :---: | :---: | :---: |
|  |  |  | $95 \%$ to $40^{\circ} \mathrm{C}$ |
| Altitude | Up to 2000 m in altitude without derating. For higher altitude the Ka correction factors below apply. |  |  |
|  | Ka (correction Factor) | 2000 m < A 53000 m | $3000 \mathrm{~m}<\mathrm{A} \leq 4000 \mathrm{~m}$ |
|  | Ue | 0,95 | 0,8 |
|  | le | 0,85 | 0,85 |

## Frame dimensions (125A to 630A)


(1) Padlocking Facility: Locking bracket for up to 3 padlocks of dia. 4-8 mm.
(2) Emergency manual operation: Maximum operating radius with an operating angle of $2 \times 90^{\circ}$.
(3) Connection and disconnection area.


To consider the space required for manual operation and wiring.
(When using the emergency handle)

| Rating (A) | Overall dimensions |  |  | Terminal Shrouds | body |  |  | Switch mounting M | Connection |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | A | C | F | AC | H | J | J1 |  | T | U | V | W | X | Y | Z1 | Z2 | AA | BA | CA |
| 125 | 334 | 244 | 317 | 233 | 151 | 184 | 34 | 150 | 36 | 20 | 25 | 9 | 22 | 3,5 | 38 | 134 | 135 | 115 | 10 |
| 160 | 334 | 244 | 317 | 233 | 151 | 184 | 34 | 150 | 36 | 20 | 25 | 9 | 22 | 3,5 | 38 | 134 | 135 | 115 | 10 |
| 200 | 334 | 244 | 317 | 233 | 151 | 184 | 34 | 150 | 36 | 20 | 25 | 9 | 22 | 3,5 | 38 | 134 | 135 | 115 | 10 |
| 250 | 395 | 244 | 378 | 288 | 152 | 245 | 35 | 210 | 50 | 25 | 30 | 11 | 33 | 3,5 | 39,5 | 133,5 | 160 | 130 | 15 |
| 315 | 395 | 244 | 378 | 288 | 152 | 245 | 35 | 210 | 50 | 25 | 30 | 11 | 33 | 3,5 | 39,5 | 133,5 | 160 | 130 | 15 |
| 400 | 395 | 244 | 378 | 288 | 152 | 245 | 35 | 210 | 50 | 35 | 35 | 11 | 33 | 3,5 | 39,5 | 133,5 | 170 | 140 | 15 |
| 500 | 454 | 321 | 437 | 402 | 221 | 304 | 34 | 270 | 65 | 45 | 50 | 13 | 37,5 | 5 | 53 | 190 | 260 | 220 | 20 |
| 630 | 454 | 321 | 437 | 402 | 221 | 304 | 34 | 270 | 65 | 45 | 50 | 13 | 37,5 | 5 | 53 | 190 | 260 | 220 | 20 |

Frame dimensions (800A to 3200A)

(1) Padlocking Facility: Locking bracket for up to 3 padlocks of dia 4-8 mm.
(2) Emergency manual operation: Maximum operating radius with an operating angle of $2 \times 90^{\circ}$.
(3) Connection and disconnection area.

To consider the space required for manual operation and wiring.
(When using the emergency handle)

| Rating (A) | Overall dimensions B | Terminal Screens <br> AC | body |  | Switch mounting M | Connection |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | F | J |  | T | U | V | X | Y | Z1 | AA |
| 800 | 370 | 461 | 584 | 387 | 335 | 80 | 50 | 60,5 | 47,5 | 7 | 66,5 | 321 |
| 1000 | 370 | 461 | 584 | 387 | 335 | 80 | 50 | 60,5 | 47,5 | 7 | 66,5 | 321 |
| 1250 | 370 | 461 | 584 | 387 | 335 | 80 | 60 | 65 | 47,5 | 7 | 66,5 | 330 |
| 1600 | 380 | 531 | 716 | 519 | 467 | 120 | 90 | 44 | 53 | 8 | 67,5 | 288 |
| 2000... 3200 |  |  | 716 |  | 467 | 120 |  |  |  |  |  |  |

## Mounting orientation



## Assembly of customer mounted accessories

$\triangle$
Never handle any customer mounted accessories while there may be the risk of voltage being or becoming present.

## Bridging bar installation

## 125A to 630A



800 A to 1600 A


It is possible to mount the bridging bars on either side of the switch.

Recommended tightening torque:
M6: 4,5N.m
M8: 8,3 N.m
M10: 20N.m
M12: 40 N.m

Maximum tightening torque:
M6: 5,4 N.m
M8: 13 N.m
M10: 26 N.m
M12: 45 N.m

## Terminal shrouds available from 125A to 630A

- Upstream, downstream, front or rear mounting.
- When fitted with bridging bars only the front terminal shrouds are to be installed.


Copper bar connection kits (2000 A to 3200 A)
Connection reference numbers and contents
(0)
$x 6$

708 lb-po 80 Nm
HZ173

Terminal screens available from 125 A to 3200 A

included with 3200 A product as standard
HZ170


## HZ172

708 lb-po 80 Nm


Note: Reference numbers and quantity given above and below are for one connection and per pole.
For a full set multiply the quantity indicated by the number of poles (3 or 4 pole) and then multiply by 2 ( $\mathrm{N}^{\circ}$ of switches).

| (1) 0 |  |  |  |
| :---: | :---: | :---: | :---: |
|  |  | Washer MOY. M M12 - NFE 25511 | ((1) H M12 |
| V01 | H M12-35 6,8-x6 | x12 | x6 |
| V02 | H M12-55 6,8-x3 | x 6 | $\times 3$ |
| V03 | H M12-55 6,8-x5 | x10 | $\times 5$ |
|  | (A) H M12-35 6,8-x3 | $\times 3$ | - |
| 04 | (B) H M12-45 6,8-x3 | $\times 3$ | - |
| V05 | H M12-65 6,8-x3 | $\times 6$ | x3 |
| V06 | H M12-65 6,8-x5 | $\times 10$ | $\times 5$ |
| V07 | H M12-55 6,8-x3 | x6 | $\times 3$ |
| V08 | H M12-55 6,8-x5 | $\times 10$ | x5 |
| V09 | H M12-55 6,8-x10 | $\times 20$ | $\times 10$ |
| V10 | H M12-65 6,8-x3 | x6 | x 3 |
| V11 | H M12-65 6,8-x5 | $\times 10$ | $\times 5$ |
| V12 | H M12-65 6,8-x10 | $\times 20$ | $\times 10$ |

1. 

Data for Bolts, Nuls and Washers for Busbar connections.

$\triangle$
Conditions of use of these products may lead to a derating .

Ith $=2000 \mathrm{~A}-2500 \mathrm{~A}$


Ith $=3200 \mathrm{~A}$


## Version 01



Version 04


Versions 02, 03, 05, 06, 09, 12


Versions 07, 08, 10, 11


Incoming copper bar connection kit assembly
2000A-2500A (Minimum Cu bar for Ith 2000 A $3 \times 100 \times 5 \mathrm{~mm}$ and for Ith $2500 \mathrm{~A} 4 \times 100 \times 5 \mathrm{~mm}$ )


Version 01


Version 02


Version 03


Version 06

V2 and V3
Kit:
HZ170x1
HZ171×1
HZ172x1

Connection bar included with 3200A.

V5 and V6
Kit:
HZ171×1
HZ172×1

Outgoing bridge connection assembly
2000A-2500A (Minimum Cu bar section for Ith 2000 A $3 \times 100 \times 5 \mathrm{~mm}$ and for Ith $2500 \mathrm{~A} 4 \times 100 \times 5 \mathrm{~mm}$ )


Version 07


Version 08


Version 09


Version 12

V7 and V8
Kit:
HZ170x2
HZ173x2
HZ171x1 HZ166x1

V9
Kit:
HZ170x2
HZ171x2 HZ172x2

Connection bar included with 3200A.

V10 and 11
Kit:
HZ171x1
HZ166x1
V12
Kit:
HZ171x2
HZ172x2

## Power circuits

## Cable or bar connections




Recommended tightening torque:
M6: 4,5N.m (max. 5,4N.m)
M8: 8,3N.m (max. 13N.m)
M10: 20 N.m (max. 26N.m)
M12: 40N.m (max. 45N.m)

## Power connection terminals



Power connection cross-section

|  | 125A | 160 A | 200 A | 250 A | 315A | 400 A | 500 A | 630 A | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2500 A | 3200 A |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Minimum cables section $\mathrm{Cu}\left(\mathrm{mm}^{2}\right)$, Ith | 35 | 35 | 50 | 95 | 120 | 185 | $2 \times 95$ | 2×120 | $2 \times 185$ | - |  |  |  |  |  |
| Minimum bars section Cu ( $\mathrm{mm}^{2}$ ), Ith | - |  |  |  |  |  | $\begin{gathered} 2 \times 30 \\ \times 5 \end{gathered}$ | $\begin{gathered} 2 \times 40 \\ \times 5 \end{gathered}$ | $\begin{gathered} 2 \times 50 \\ \times 5 \end{gathered}$ | $\begin{gathered} 2 \times 60 \\ \times 5 \end{gathered}$ | $\begin{gathered} 2 \times 60 \\ \times 7 \end{gathered}$ | $\begin{gathered} 2 \times 100 \\ \times 5 \end{gathered}$ | $\begin{gathered} 3 \times 100 \\ \times 5 \end{gathered}$ | $\begin{gathered} 4 \times 100 \\ \times 5 \end{gathered}$ | $\begin{gathered} 3 \times 100 \\ \times 10 \end{gathered}$ |
| Minimum cables section $\mathrm{Cu}\left(\mathrm{mm}^{2}\right)$, Ith | 50 | 95 | 120 | 150 |  |  | $2 \times 185$ | $2 \times 300$ | $2 \times 300$ | $4 \times 185$ | $4 \times 185$ | $6 \times 185$ | - |  |  |
| Maximum bars width $\mathrm{Cu}(\mathrm{mm})$ | 25 |  |  | 32 |  |  | 50 |  | 63 |  |  | 100 |  |  |  |

## Typical wiring



## Power supply terminal and control/command terminals

Remove the top cover to access and connect the terminal-Replace the cover before putting in service.


Ensure that the product is in manual mode


Use cables witn 1,5 to $2,5 \mathrm{~mm}^{2}$ section.
Screw M3-Tightening torque: mini: 0,5Nm - maxi: $0,6 \mathrm{Nm}$.


Do not handle any control or power cables connected to the product when voltage may be present.


| Control enable: | 312 |
| :--- | :--- |
| Override to OFF: | 313 |
| Sw to Pos II I/P: | 314 |
| Sw to Pos I/P: | 315 |
| Sw to Pos O I/P: | 316 |
| Common: | 317 |



| Prod Avail Common: | 63 A |
| :--- | ---: |
| Prod Avail O/P: | 64 A |
| Pos II Aux Contact: | 24 |
| Pos I Aux Contact: | 14 |
| Pos O Aux Contact: | 04 |
| Common: | 13 |


| Denomination | Terminal | Description | Characteristics | Recommended Cable Section |
| :---: | :---: | :---: | :---: | :---: |
| Signalisation Outputs | 13 | Common I-O-II for Aux Contacts. | Dry Contacts 2A AC1/250V | $1,5 \mathrm{~mm}^{2}$ |
|  | 04 | Aux Contact Position O-Normally Open Contact. |  |  |
|  | 14 | Aux Contact position I: Normally Open Contact. |  |  |
|  | 24 | Aux Contact position II: Normally Open Contact. |  |  |
|  | 63A | Product Available : Normally Open Contact. Closed when the product is in Auto mode and motorisation is operational. <br> (No Fault powered and ready to changeover) |  |  |
|  | 64 A |  |  |  |
| Additional Aux Contact <br> Included with 2000 A to 3200 A | 81 | Common for Aux Contacts positions I. | Dry Contacts2A AC1/250V | 1,5-2,5 mm ${ }^{2}$ |
|  | 82 | Aux Contact position I: Normally Closed Contact. |  |  |
|  | 84 | Aux Contact position I: Normally Open Contact. |  |  |
|  | 91 | Common for Aux Contacts positions II. |  |  |
|  | 92 | Aux Contact position II: Normally Closed Contact. |  |  |
|  | 94 | Aux Contact position II: Normally Open Contact. |  |  |
| Power supply Input | 301 | Power supply-L | $\begin{aligned} & 208-277 \text { VAC } \\ & \pm 20 \%: 50 / 60 \mathrm{~Hz} \end{aligned}$ | 1,5 mm² |
|  | 302 | Power supply-N |  |  |
| Control Inputs | 312 | Remote Control Mode Enable when closed with 317. | Do not connect terminals 312 to 317 to any power supply. These order inputs are powered through terminal 317 and external dry contacts ONLY <br> Max cable length 100 m | $1,5 \mathrm{~mm}^{2}$ |
|  | 313 | Position O order if closed with 317 (Priority order input forcing the product to remote control mode and $\mathbf{O}$ position). |  |  |
|  | 314 | Position II order if closed with 317. |  |  |
|  | 315 | Position I order if closed with 317. |  |  |
|  | 316 | Position O order if closed with 317. |  |  |
|  | 317 | Common control terminal for 312-316 ATS (Specific Voltage Supply) |  |  |

## Operating modes

The product includes 3 safe and distinct operating modes through a selector switch located on the front of the product.
The modes of operation are as follows:

- Auto Mode: Remotely operated transfer switching,
- Manual Mode: Local emergency manual operation,
- Locked Mode: Secure locked pa locking facility.


Depending on the state of the product the ATS automation may change the switch position as soon as the mode selector is switched to AUT. This is a normal operation.

## Manual operation

## Emergency manual operation

The product can be manually operated as a "Manual Transfer Switch Equipment - MTSE" whilst retaining the electrical characteristics and performance of the power switching function. This function is usually used in case of emergencies or during maintenance.

- To operate the product manually ensure that no live parts are accessible. Turn the front selector switch into the manual position (1). Insert the handle into the emergency handle shaft location hole provided (2).
- Turn the handle $90^{\circ}$ clockwise or anti-clockwise (depending on the position to be reached) for each consecutive



Ensure to verify the product position and direction of rotation before effecting manual operation. Ensure to remove the handle from the product before changing the selector switch back to AUT position.


As standard, padlocking is only made possible in the "O position", when in manual mode and with the emergency handle not inserted

## Padlocking



The product can only be padlocked in the $\mathbf{O}$ position.

- To padlock the product frist ensure that the mode selector switch is on Manual ${ }^{(A)}$ then ensure that the emergency manual operation handle is not inserted into the location hole (B). (Remove if inserted)
- Pull the padlocking mechanism outwards to reveal the slot for inserting up to $3 x$ dia. 4-8 mm padlocks.
- Padlock the device with approved quality padlocks of minimum diameter 4 mm and maximum diameter of 8 mm . A maximum of $3 \times 8 \mathrm{~mm}$ padlocks may be padlocked onto the product to padlocking mechanism.



## Electrical operation

## Power supply

The product is to be powered between terminals 301 and 302 with a supply within the limits of:

- 208-277 VAc $\pm 20$ \% (166-332 VAc).
- $50 / 60 \mathrm{~Hz} \pm 10 \%$.

Current Input:

- 10 mA (Standby mode).
-15A max (Switching mode).


## Surge Protection:

- Vin_sg: 4/8KV - 1,2/50 $\mu \mathrm{s}$.

Terminal connector:

- Minimum 1,5 mm².
- Maximum 2,5 mm².


## Fixed inputs

## Description

The product includes for 5 off fixed inputs through a 6 pin connector installed on the motorisation module. No additional power supply should be used on these contacts as the
 inputs MUST be used with the common supply taken from terminal 317.
The product Power Supply (301-302) must be available to activate inputs 312 to 317 .
Pulse duration for activation of contact inputs: $\geq 60 \mathrm{~ms}$.

- Pin 312: Remote Control Mode Enable when closed with 317.

This contact must be closed with 317 so as to activate all control inputs except for 313 that takes priority and is active immaterial of the state of input 312. Enabling remote control through 312 activates the remote control inputs whilst inhibiting the ATS module automation.

- Pin 313: Position O or er if closed with 317 when in AUTO. (Force the switch to the OFF Position) This is a "Priority Order Input" meaning that when closed with 317 it takes priority over all other electrical commands. The product will remain in $\mathbf{O}$ position as long as the contact 313-317 remains closed. Once the contact is open the product is ready to receive new orders. This contact order is independent of other inputs and is also enabled without 312 connected to 317 . Impulse duration to activate and start switching to position $\mathbf{O}$ is a minimum of 60 ms . The product state will be unavailable.
- Pin 314: Position II order if closed with 317.

This contact is active with the product in AUT mode with contact 312-317 closed and 313-317 open. Impulse duration to activate and switch to position II is a minimum of 60 ms .

- Pin 315: Position I order if closed with 317

This contact is active with the product in AUT mode with contact 312-317 closed and 313-317 open. Impulse duration to activate and switch to position $I$ is a minimum of 60 ms .

- Pin 316: Position O order if closed with 317

This contact is active with the product in AUT mode with contact 312-317 closed and 313-317 open. Impulse duration to activate and switch to position $\mathbf{O}$ is a minimum of 60 ms . For contactor logic maintain contacts on between terminal 316 and 317 .

- Pin 317: common.

Common supply for inputs 312 to 316.

## Operating modes

## Technical data

|  | Motorisation Module |
| :--- | :--- |
| Input Qty | 5 |
| Direct Current lin | $0,35 \mathrm{to} 0,5 \mathrm{~mA}$ |
| Line resistance | $1 \mathrm{k} \Omega$ |
| Line length | 100 m (Min. wire $\left.1,5 \mathrm{~mm}^{2} \# 16 \mathrm{AWG}\right)$ |
| Pulse duration | 60 ms |
| Power per Input | $0,06 \mathrm{VA}$ |
| Surge protection Vin_sg | $4,8 \mathrm{kV}(1,2 / 50 \mu \mathrm{~s}$ surge $)$ |
| ESD withstand voltage (Contact/air) | $2 / 4 \mathrm{kV}$ |
| Insulation (Common mode) | $4,8 \mathrm{kVAC}$ (Between I/P and all common parts) |
| Terminal connector | $1,5 \mathrm{~mm}^{2}$ minimum $/ 2,5 \mathrm{~mm}^{2} \mathrm{max}$ |

## Remote control logic

Remote switching operation can be driven in AUT mode by external volt free contacts as described above using input contacts 312 to 317 .
Depending on the wiring confguration there are two types of logic that may be applied to the product:

- Impulse logic or
- Contactor logic.

In remote control, the product inputs give priority to orders I and II over $\mathbf{O}$; therefore contactor logic can be implemented by simply bridging terminals 316 and 317.
Nota: 312-317 closed/Force product to OFF Position, takes priority over all other orders no matter of the control logic used.

## Impulse logic:

The product is driven to a stable position (l-O-II) after receiving and impulse order.

- A switching command of at least 60 ms is necessary to initiate the switching operation.
- Orders I and II have priority over order $\mathbf{O}$.

Nota: The logic diagrams exclude the transfer times.

## Contactor Logic:

The product is driven to a specific position (I or II) for as long as the order is maintained.

- Order O is maintained. (Bridge 316-317).
- Orders I and II have priority over order $\mathbf{O}$.
- Orders I and II have equal priority. ( $1^{\text {st }}$ order received is held until no longer maintained.)
- If order I or II disappears, the device returns to zero position. (With the power supply available).



## Fixed outputs - Dry contacts

The product is equipped with four fixed outputs located on the motorisation module

| Technical characteristics | 4 |
| :--- | :--- |
| Auxiliary Contact Quantity | NO |
| Configuration | 100000 cycles |
| Mechanica Endurance | $5-10 \mathrm{~ms}$ |
| Response Time | 200 ms |
| Startup duration | 250 VAc |
| Rated Voltage/Switching Voltage | 2 A |
| Rated Current | $4,8 \mathrm{kV}(1,2 / 50 \mu \mathrm{ss} \mathrm{surge)}$ |
| Surge protection Vin_sg | $2 / 4 \mathrm{kV}$ |
| ESD withstand voltage (Contact/air) | $4,8 \mathrm{kVAC}$ (Reinforced Insulation) |
| Dielectric Strength contact/parts | $4,8 \mathrm{kVAC}$ |
| Insulation | $1,5 \mathrm{~mm}^{2}$ minimum $/ 2,5 \mathrm{~mm}^{2} \mathrm{max}$ |
| Output Terminal |  |



## Position auxiliary contact

Product is equipped with integrated position (I-O-II) auxiliary contact outputs through 3 off micro switches.

- Pins 13, 04, 14, 24 : Normally Open contacts with pin 13 as common.


## Product available output (motorisation)

- Pin 63A-64A: Normally Open contact that is hed closed when the motorisation is available.

This contact gives constant fee back about the product's availability and it s capacity to transfer from the main supply to the alternative. The feedback given is relative to the motorisation module excluding the controller that may be monitored separately.
The product performs a self diagnostics test on the motorisation module at startup, when put from Manual $\Rightarrow$ Auto and then every 5 minutes. This test ensures that the product is operational in terms of control inputs. Should one of the tests fail, a second test is performed to reconfirm the error state. Should the product motorisation module become unavailable, contact $63 \mathrm{~A}-64 \mathrm{~A}$ are opened, the power/ready LED's are switched off, and the fault LED is activated. The fault LED will remain active for as long as sufficient power is available and the fault condition is not reset. The fault is reset when the product is switched from AUT $\Rightarrow$ Manual $\Rightarrow$ AUT.
Product Available/Unavailable Watchdog relay will open for any of the following reasons below: For added security,
"Product Availability" is informative and does not necessarily inhibit motor operation.

| Product Unavailable + Warning LED Condition: | Inhibition |
| :--- | :--- |
| Product in manual mode | Yes |
| Motor not detected (Autotest) | No |
| Control voltage out of range | Yes |
| Operating factor fault active (No of operations/min) | Yes |
| Powerfail active | Yes |
| Customer input autotest failed | No |
| Invalid product customisation | No |
| Abnormal switching when not in manuel mode | Yes |
| Requested position not reached | Yes |
| Locked mode active when not in manual mode | Yes |
| External Fault $\boldsymbol{m}$ User input | No |
| Unexpected current fowing through the motor when idle | Yes |

Sampling rate for the above is every 10 ms
Exception: motor detection sampling rate is every 5 min

It is recommended to verify the tightening torque of all connections and to operate the product in a full operating cycle (I-O-II-O-I: Auto or Manuel) at least once a year.
Note: Maintenance should be planned carefully and carried out by qualifed and authorised personnel. Consideration of the critical level and application where the product is installed should form an essential and integral part of the maintenance plan. Good engineering practice is imperative whilst all necessary precautions must be taken to ensure that the intervention (whether directly or indirectly) remains safe in all aspects.

## Trouble shooting guide

| The product does not <br> operate electrically. | - Verify the power supply on terminals $301-302: 208-277$ VAC $\pm 20 \%$ <br> - Verify that the front selector switch is in position (AUT). <br> - Verify that contacts 313 and 317 are open. <br> - Verify that the power LED (Green) is On whilst the fault LED (RED) is off. <br> - Verify that the product is available with contacts 63 A and 64 A closed. |
| :--- | :--- |
| It is not possible to <br> manually operate <br> the switch. | - Verify that the front selector switch position is on the Manual position. <br> - Make sure that the product is not padlocke. <br> - Verify the rotation direction of the handle. <br> - Apply a sufficient progressive action in the direction as indicated on <br> the handle. |
| Electrical operation does not <br> correspond to external order I, O, II. | - Verify the selected control logic wiring (impulse or contactor). <br> - Verify the connector connections. |
| The fault/manuel LED is ON. | - The FAULT/MANUAL LED is on when in manual mode (this is normal) <br> and in AUT Mode when there is an internal fault in the product. To reset <br> a fault condition switch the product from AUT to Manu and back to <br> AUT. Should the fault LED remain on you will need to localize and clear <br> the fault prior to reset. |
| - The FAULT/Manual LED will also be on when contact 313 is closed |  |
| with 317. (Force the product to off position). This is a normal condition. |  |
| - Should the Fault LED remain on abnormally, contact hager. |  |

Notes

