**37941B**

# WOODWARD

# DTSC-200A
# ATS Controller - Operation



# Operation

## Release 1.0 - 4

Document ID: 37941, Revision B

## WARNING

**Read this entire manual and all other publications pertaining to the work to be performed before in-stalling, operating, or servicing this equipment. Practice all plant and safety instructions and precau-tions. Failure to follow instructions can cause personal injury and/or property damage.**

**The engine, turbine, or other type of prime mover should be equipped with an overspeed (overtempera-ture, or overpressure, where applicable) shutdown device(s), that operates totally independently of the prime mover control device(s) to protect against runaway or damage to the engine, turbine, or other type of prime mover with possible personal injury or loss of life should the mechanical-hydraulic gov-ernor(s) or electric control(s), the actuator(s), fuel control(s), the driving mechanism(s), the linkage(s), or the controlled device(s) fail.**

**Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.**

## CAUTION

**To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.**

**Electronic controls contain static-sensitive parts. Observe the following precautions to prevent dam-age to these parts.**

- **Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).**
- **Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.**
- **Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.**

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## Important definitions

## WARNING

**Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.**

## CAUTION

**Indicates a potentially hazardous situation that, if not avoided, could result in damage to equipment.**

## NOTE

**Provides other helpful information that does not fall under the warning or caution categories.**

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# Revision History

| Rev. | Date | Editor | Changes |
|------|------|--------|---------|
| B | 2023-30-05 | Koe | 1.0-4 Bug fix release, SW Handoff 53195<br>• Fixed a bug where pressing some keys in the HMI moved the device to a state where it did not open/close breakers anymore<br>• fixed a bug where the device sometimes crashed when accessed via ModbusRS485 with an invalid address<br>• fixed a bug where the device's nonvolatile parameters were incompletely initialized after first startup, at production site<br>• fixed a bug, where display of P/Q/S/I values in the device's HMI was inconsistent between S1 and S2, if current transformers were set to values >=1000A |
| A | 2022-31-03 | Ma | 1.0-0 - Based on DTSC-200 V2.0017 |

# Content

# Illustrations And Tables

## Illustrations

## Tables

# Chapter 1.
# General Information

## Related Documents

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| Type | | English | German |
|---|---|---|---|
| **DTSC-200A** | | | |
| DTSC-200A - Installation | | 37939 | - |
| DTSC-200A - Configuration | | 37940 | - |
| DTSC-200A - Operation | this manual ⇨ | 37941 | - |
| DTSC-200A - Application | | 37942 | - |
| DTSC-200A - Interfaces | | 37943 | - |

Table 1-1: Manual - Overview

**Intended Use** The unit must only be operated for the uses described in this manual. The prerequisite for a proper and safe operation of the product is correct transportation, storage, and installation as well as careful operation and maintenance.

### NOTE

**This manual has been developed for a unit fitted with all available options. Inputs/outputs, functions, configuration screens and other details described, which do not exist on your unit, may be ignored.**

**The present manual has been prepared to enable the installation and commissioning of the unit. On account of the large variety of parameter settings, it is not possible to cover every possible combination. The manual is therefore only a guide. In case of incorrect entries or a total loss of functions, the default settings can be taken from the enclosed list of parameters at the rear of this manual.**

## QR Code



http://wwdmanuals.com/dtsc−200a

**To get access to the complete product documentation, scan this QR code or use the following link:**

➔ **http://wwdmanuals.com/dtsc-200a**

# Chapter 2.
# Navigation / Operation
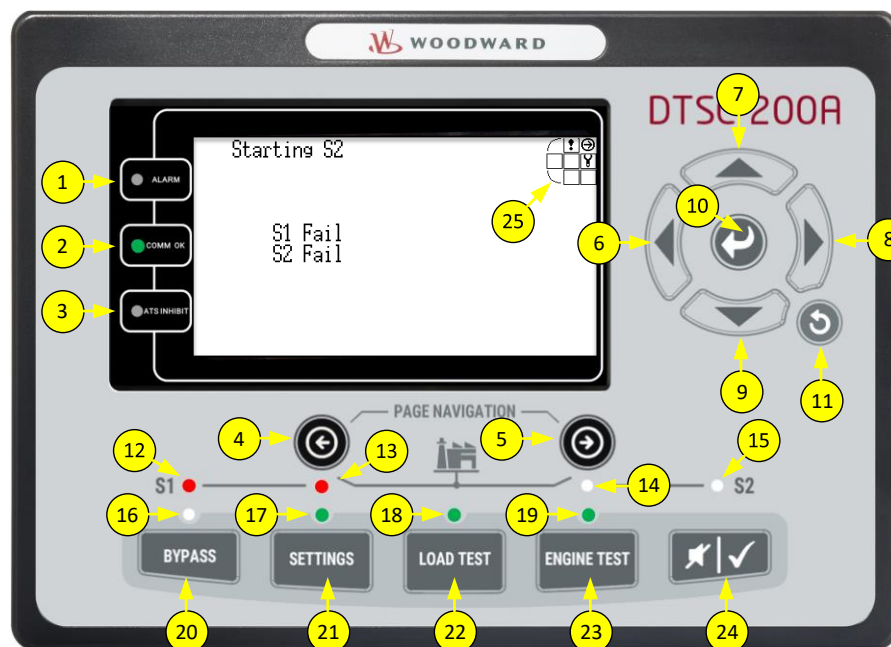
Figure 2-1 illustrates the front panel/display, which includes push buttons, LEDs and the Liquid Crystal display (LC display). A short description of the front panel is given below.

| | |
|---|---|
| **1** | **LED Alarm** |
| | Flashes if a new Alarm is triggered. Not acknowledged yet.<br>Shows that the device has minimal one unacknowledged alarm. |
| **2** | **LED COMM OK** |
| | The LED flashes if any CAN message as RPDO is receipt. |
| **3** | **LED ATS Inhibit** |
| | The LED indicates that the ATS transfer is inhibited. |
| **12** | **LED S1 ok** |
| | The LED indicates that the source S1 is okay according to the configured operating ranges. |
| **13** | **LED S1 breaker closed** |
| | The LED indicates that the load is connected to the S1 source. |
| **14** | **LED S2 breaker closed** |
| | The LED indicates that the load is connected to the S2 source. |

**(15)**

**LED S2 ok**

The LED indicates that the source S2 is okay according to the configured operating ranges.

**(16)**

**LED Bypass possible**

The LED indicates that the current sequence timer is possible to be bypassed. The current sequence timer is indicated on the Home Page View.

**(17)**

**LED Settings mode entered**

The LED indicates that the settings mode is entered. To leave the settings mode you must push the Go-Back **(11)** Button.

**(18)**

**LED LOAD TEST**

The LED indicates that the LOAD TEST is currently manually initiated.

**(19)**

**LED ENGINE TEST**

The LED indicates that the ENGINE TEST is currently manually initiated.

**(20)**

**Push Button BYPASS**

If the LED Bypass possible **(16)** is flashing the operator can push this button to bypass a current timer for example a stable timer.

**(21)**

**Push Button SETTINGS**

This button brings the operator directly into the settings mode. The settings mode is indicated with the flashing LED Settings mode entered **(17)**. From there on the buttons on the right tot he display are used to navigate through the settings menus.

**Push Button LOAD TEST**

With this button the operator can manually initiate the LOAD TEST sequence. Once pushed he must confirm over display whether he want to start the LOAD TEST with all its consequences.

**ℹ NOTE**

**Initiating a LOAD TEST can cause a dead bus during switching the ATS control.**

With confirming over the return button, the manually LOAD TEST is initiated and the LED LOAD TEST [18] will flashing.

If the LED LOAD TEST [18] is flashing the operator can abort the LOAD TEST by pushing the LOAD TEST button again. With doing that he must confirm again to interrupt the LOAD TEST.
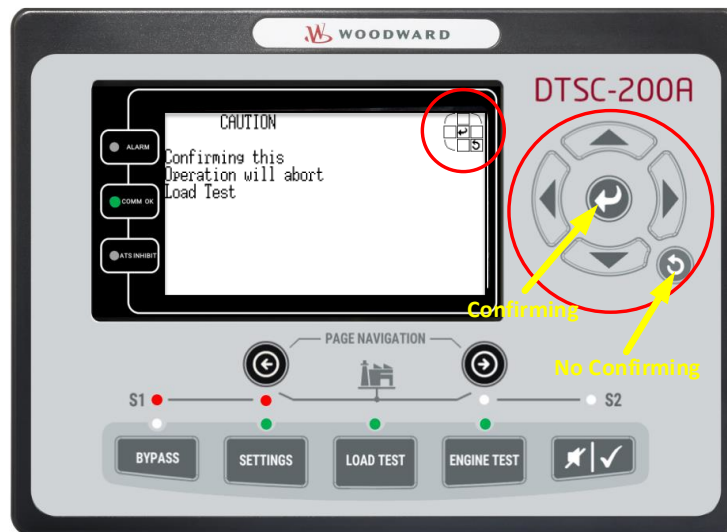
If he confirms the abort of the load test the LED LOAD TEST [18] will be off and the DTSC-200A goes into the normal operation.
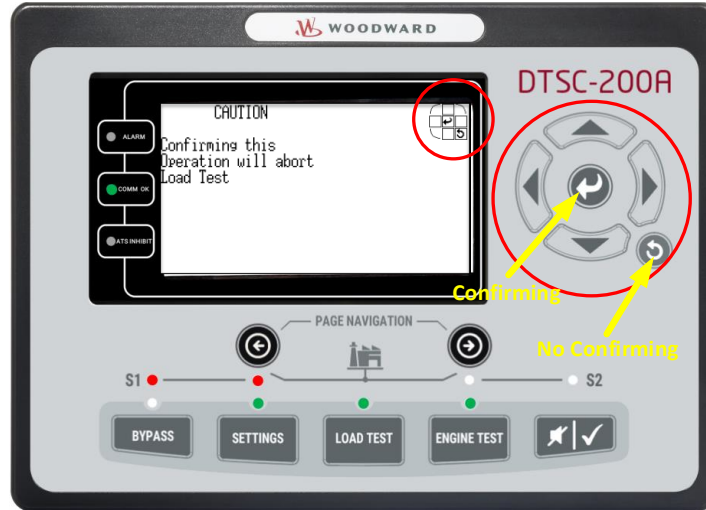
**Push Button ENGINE TEST**

(23) With this button the operator can manually initiate the ENGINE TEST sequence. Once pushed he must confirm over display whether he want to start the ENGINE TEST [No Load Test] with all its consequences.
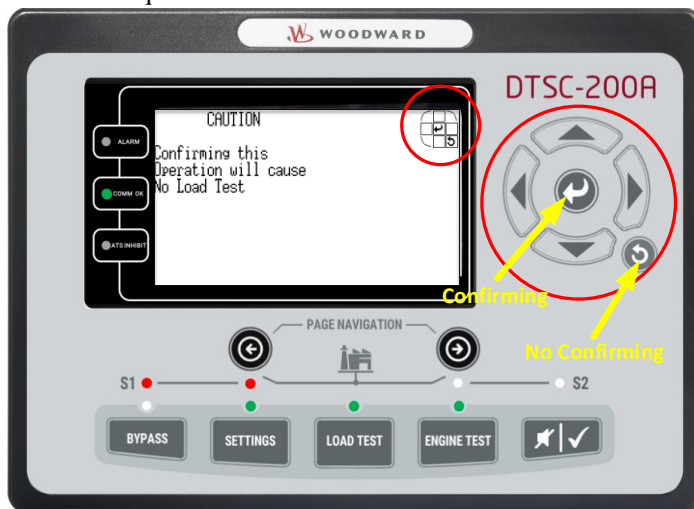


With confirming over the return button, the manually ENGINE TEST is initiated and the LED ENGINE TEST [19] will flashing.

If the LED ENGINE TEST [19] is flashing the operator can abort the ENGINE TEST by pushing the ENGINE TEST button again. With doing that he must confirm again to interrupt the ENGINE TEST [No Load Test].
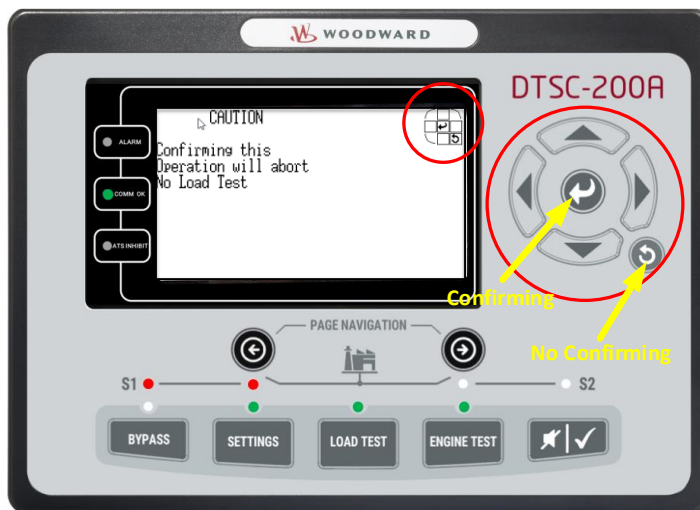


If he confirms the abort of the engine test the LED ENGINE TEST [19] will be off and the DTSC-200A goes into the normal operation.

**Push button Acknowledge**

**24**

The acknowledge button has two functions:

1.  If the Horn or a new alarm occurs the flashing LED Alarm [1] is disabled until a next alarm takes place.
2.  The single alarms can be acknowledged as long they are not active anymore.

**Navigate to the Alarm list:**
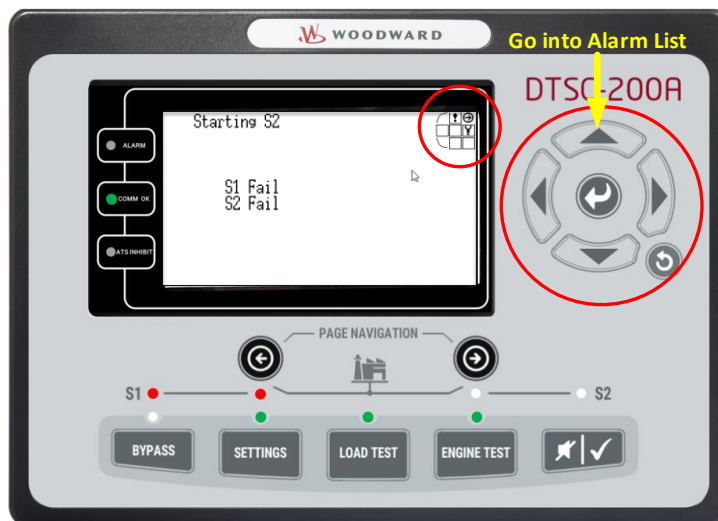


**Acknowledge an Alarm:**
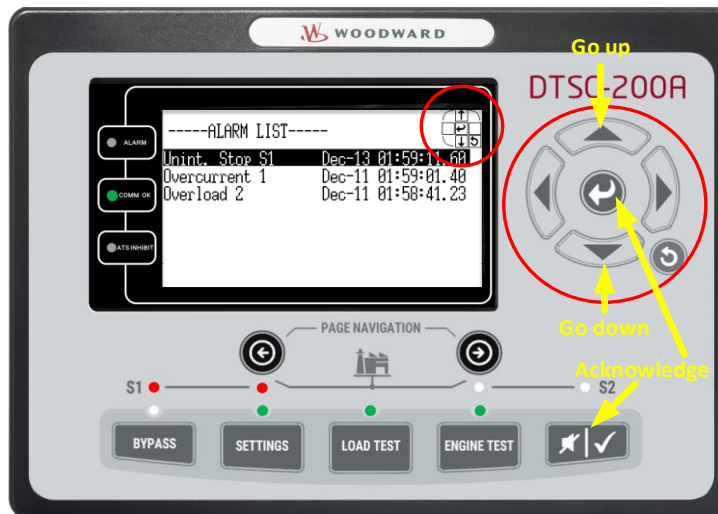
**Navigation Button Overview**

**25** The display contains on the top right corner a field which tells the operator which navigation buttons right to the display are currently active.

Explanation:

| | |
|---|---|
| !  | Requestion mark – Go into alarm list |
| Y  | Tool – Go into configuration menu |
| ↵  | Return – Acknowledge |
| ↺  | Leave current screen – ("Escape" / "ESC") |
| ↓  | Cursor down – Go in the list one line down |
| ←  | Cursor left – Go with the cursor one step left |
| →  | Cursor right – Go with the cursor one step right |
| ↑  | Cursor up – Go in the list one line up |
| ☼  | Display Brightness – The plus/minus buttons determine display brightness |
| –  | Minus – One step less |
| +  | Plus – One step more |
| ⊕→ | Next Visualization Screen – Go to the next visualization screen. |
| ⊕← | One Visualization Screen back – Go one visualization screen back. |
| →│ | Select parameter – Go to the next parameter element in the screen |
| →‖ | Select next parameter group – Especially for navigating in LogicsManager screens it realizes group jumps of LogicsManager Command Variables. |

# Navigation

**========================**

Individual display screens are listed in the following text. All instruments, which are available in the individual screens, are described with their function.

**Screen "Automatic operation" / "Start screen"**                                    **[all application modes]**
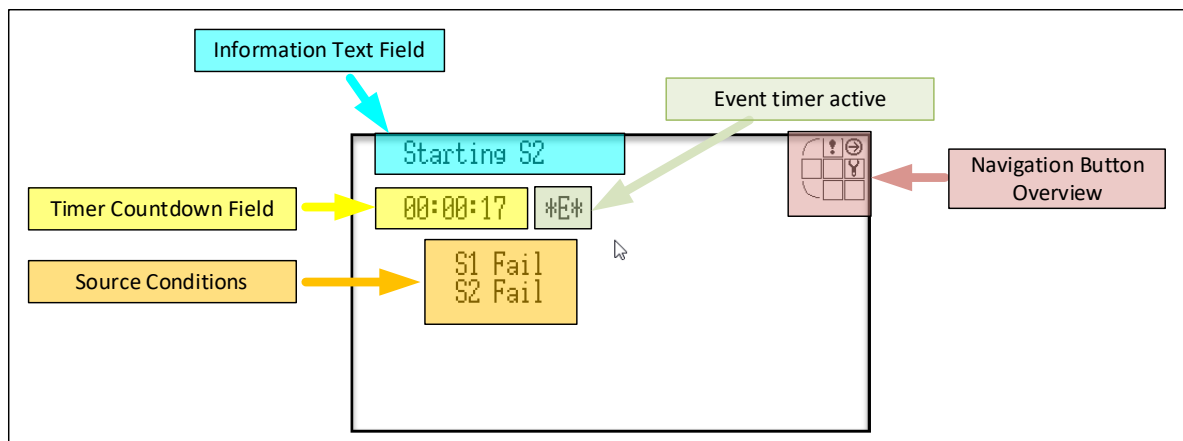


| Information Text Field |

**Information Text Field**
> The field indicates the current action.

| Timer Countdown Field |

**Timer Countdown Field**
> On this place appears the countdown timer of the different states. Some timers are allowed to be bypassed through the BYPASS button if the BYPASS button over the LED is flashing.

| Source Conditions |

**Source Conditions Field**
> The condition of the source S1 and source S2 can be observed here.

| Event timer active |

**Event Timer Active**
> It appears an *E* on this place if any exercise timer is activated.

| Navigation Button Overview |

**Navigation Button Overview**
> There is on the top right in nearly all screens the navigation button overview (25) indicated. For better navigation it tells the operator which function is laying on which button ( (6) , (7) , (8) , (9) , (10) , (11) ) at the moment. For more details refer to Navigation Button Overview explanation above.

---

| **Screen "Source 1 values - Details"** | **[all application modes]** |
| --- | --- |

```
      SOURCE 1
¹  231V    130A
²  230V    131A
³  229V    132A
¹²  401V    091kW
²³  399V    006kvar
³¹  400V    Lg0.98
   50.00Hz
```

**1 / 2 / 3**.......Source 1 voltages/currents $V/A_{L1N}$ / $V/A_{L2N}$ / $V/A_{L3N}$
**12 / 23 / 31**.Source 1 voltages $V_{L12}$ / $V_{L23}$ / $V_{L31}$
**00.0V** .........Source 1 voltage
**00.00Hz** .....Source 1 frequency
**00.0A** .........Source 1 current
**000kW** .......Source 1 real power
**000kvar** .....Source 1 reactive power
1.00 ...........Source 1 power factor = 1
Lg0.00........Source 1 power factor (lagging)
Ld0.00........Source 1 power factor (leading)
............Phase rotation clockwise ↻
.............Phase rotation counterclockwise ↺

---

| **Screen "Source 2 values - Details"** | **[all application modes]** |
| --- | --- |

```
      SOURCE 2
¹  231V    127A
²  230V    128A
³  229V    129A
¹²  402V    089kW
²³  400V    -005kvar
³¹  400V    Ld0.97
   50.05Hz
```

**1 / 2 / 3**.......Source 2 voltages/currents $V/A_{L1N}$ / $V/A_{L2N}$ / $V/A_{L3N}$
**12 / 23 / 31**.Source 2 voltages $V_{L12}$ / $V_{L23}$ / $V_{L31}$
**00.0V** .........Source 2 voltage
**00.00Hz** .....Source 2 frequency
**00.0A** .........Source 2 current
**000kW** .......Source 2 real power
**000kvar** .....Source 2 reactive power
1.00 ...........Source 2 power factor = 1
Lg0.00........Source 2 power factor (lagging)
Ld0.00........Source 2 power factor (leading)
............Phase rotation clockwise ↻
          Phase rotation counterclockwise ↺

---

| **Screen "S1 Load Current"** | **[all application modes]** |
| --- | --- |

```
  S1 Load Current
¹  130A   →¹ 150A
²  131A   →¹ 151A
³  132A   →¹ 152A
```

This screen shows the current phase currents if the load is connected to source 1. Additionally, it provides a maximum slave pointer.

With pushing the slave pointer reset button ▣ the slave pointers will be reset.

**1 / 2 / 3**.......Load current $I_{L1}$ / $I_{L2}$ / $I_{L3}$

---
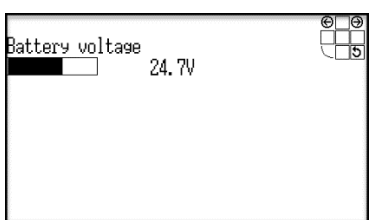
| **Screen "S2 Load Current"** | **[all application modes]** |
| --- | --- |
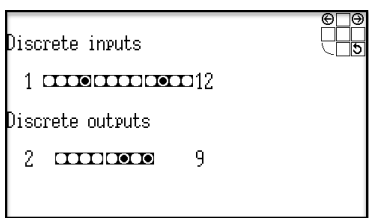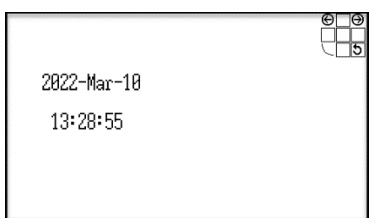
```
  S2 Load Current
¹  127A   →¹ 147A
²  128A   →¹ 148A
³  129A   →¹ 149A
```

This screen shows the current phase currents if the load is connected to source 2. Additionally, it provides a maximum slave pointer.

With pushing the slave pointer reset button ▣ the slave pointers will be reset.

**1 / 2 / 3**.......Load current $I_{L1}$ / $I_{L2}$ / $I_{L3}$

---

| | |
|---|---|
| **Screen "Battery voltage value - Details"** | **[all application modes]** |

| | |
|---|---|
| Battery voltage<br>         24.7V | This screen shows the DC supply voltage of the device. Usually it is the battery voltage of the power panel. The measured battery voltage value is displayed graphically and numerically. |

| | |
|---|---|
| **Screen "Discrete inputs / discrete (relay) outputs – Status display"** | **[all application modes]** |

| | |
|---|---|
| Discrete inputs<br><br>  1 □□□◙□□□□□□◙□12<br>Discrete outputs<br><br>  2 □□□□◙□◙□   9 | This screen shows the discrete input and discrete output status on the device connected.<br><br>Status display of the discrete inputs and discrete outputs.<br>(Note: The configured logic for the discrete input "N.O./N.C." will determine how the DTSC-200A reacts to the state ◙ of the discrete input. If the respective DI is configured to N.O, the unit reacts on the energized state ( ◙ ); if it is configured to N.C., it reacts on the de-energized state □.)<br>Discrete input:    ◙  energized<br>                          □  de-energized<br>Discrete output:  ◙  relay activated<br>                          □  relay de-activated |

| | |
|---|---|
| **Screen "Time / Date"** | **[all application modes]** |

| | |
|---|---|
| 2022-Mar-10<br><br>  13:28:55 | This screen shows time and date of the internal clock.<br><br>**0000-XXX-00** – Date<br>                 0000 = Year<br>                 XXX = Month<br>                 00 = Day<br>**00:00:00** – Time<br>                 00 = Hour<br>                 00 = Minute<br>                 00 = Second |

| **Screen "LogicsManager Conditions"** | **[all application modes]** |
|---|---|
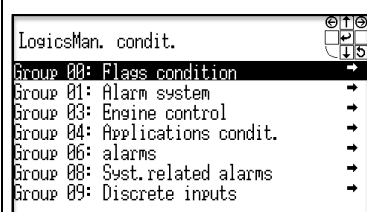
This screen shows in list form the LogicsManager groups. From there the operator can navigate to the according group of interest.
Navigate to the *LogicsManager* conditions screens

Group00: Flags condition
Group01: Alarm system
Group03: Engine control
Group04: Application
Group06: Alarms
Group08: Syst.related alarms
Group09: Discrete inputs
Group11: Clock and timer
Group12: External Dis
Group13: Discrete outputs
Group14: External DOs
Group19: ATS Status flags
Group20: ATS status flags 2
Group21: ATS alarms
Group98: LM outputs

| **Screen "Counters"** | **[all application modes]** |
|---|---|
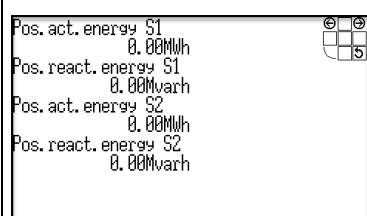
The first screen show energy counters allocated to source S1 and S2.
The second screen shows the last overlap time duration, the current phase angle between source 1 and source 2 and the amount of load transfers since the last reset.

**Energy 0.00 kWh** - Generator real energy
        **0.00MWh** = Total generator real energy
**Pos. reactive energy 0.00 Mvar** - Generator reactive energy
        **0.00Mvarh** = Total generator reactive energy
**Overlap time counter 00 ms** - Overlap time
        **00ms** = Overlap time of the last transfer
**Phase angle S1-S2 000.0°** - Phase angle
        **0000.0°** = Ph. angle between source 1 and source 2
**Transfers to S1** - Counter transfer to source 1
        **00000** = Number of S1 transfers
**Transfers to S2** - Counter transfer to source 2
        **00000** = Number of S2 transfers

| **Screen "Alarm list"** | **[all application modes]** |
|---|---|
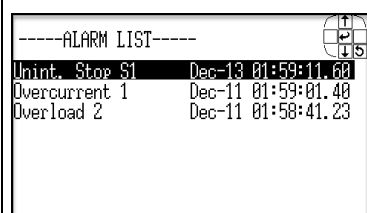
With pushing the [ ] button the operator come into the active alarm screen All alarm messages, which have not been acknowledged and cleared, are displayed. Each alarm is displayed in one line as alarm text, the date and time stamp. The symbol ● indicates that this alarm condition is still present.

# Operation

**═══════════════════════**

The display is partitioned into different areas to give an overview of the displayed data.
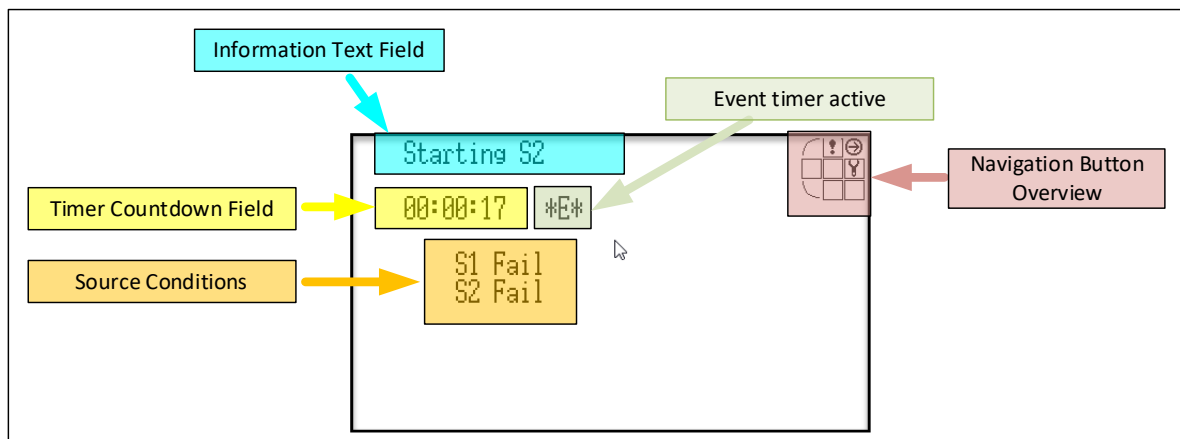


Figure 2-2: Home Page explanation

## Operation Display

**"Operation" display**
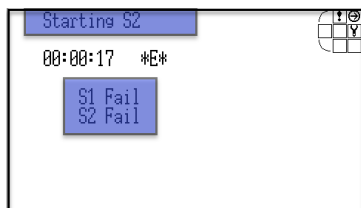


The current operation state of the unit and the condition of the sources are displayed during normal operation.

**Operation state**

The current operation state of the unit is indicated in the "Messages" section of the screen. Refer to Appendix A: Messages on page 34 for a list of the possible operation states.

**Source condition**

The current source condition is indicated in the "Operation" section of the screen. The following source conditions are possible:

S1/2 Ok
Source 1/2 is considered as "OK", i.e., the voltage and frequency of Source 1/2 are within the restore limits (refer to the Configuration Manual 37939 for more information).

S1/2 Fail
Source 1/2 is considered as "not OK", i.e., the voltage or frequency of Source 1/2 are not within the restore limits (refer to the Configuration Manual 37939 for more information).

S1/2 Restore
Source 1/2 is considered as "OK", but the stable timer for the respective source has not yet expired (refer to the Configuration Manual 37939 for more information).

## Timer Display

**"Timer" display**
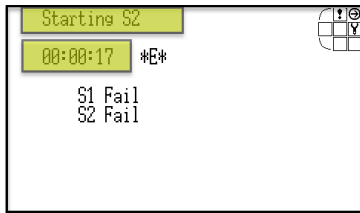
If a timer is active, it is indicated in the "Messages" section of the screen and a numerical indication in the "Timer" section counts down the remaining time before the timer expires.

**Bypass timer**

If a timer is currently active, it may be bypassed with the "Bypass" button. **Note:** The Bypass feature is only possible if the LED over the Bypass button is flashing.
This means with pushing the indicated timer expires immediately and the unit proceeds with the next operation. Refer to Appendix A: Messages on page 34 for a list of the possible timers.

## *LogicsManager*

Some parameters of the DTSC-200A are configured via the *LogicsManager* (refer to Configuration Manual 37940). A typical *LogicsManager* screen is shown in the following. You may configure a logical operation using various command variables, signs, and logical operators to achieve the desired logical output.

**_LogicsManager_ Screen**
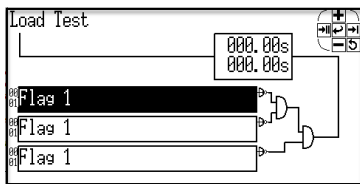
For configuration of the *LogicsManager* use the softkeys displayed in the navigation button overview.
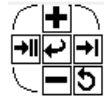
**Leave current screen ("Escape" / "ESC")**

By pressing this softkey character you exit and go to the previous screen. If the Escape softkey is used to leave a *LogicsManager* configuration screen, any unconfirmed changes made will not be stored.

**Change option**

By pressing these softkey characters plus and minus you may change the option of the selected *LogicsManager* parameter upwards or downwards.

**Confirm selection**

By pressing this softkey character you confirm the configured option of the selected *LogicsManager* parameter.

**Select parameter**

By pressing this softkey character you may select the *LogicsManager* parameter to be configured. Each time this softkey character is pressed, the parameter will be advanced.

**Select group of parameters**

By pressing this softkey character you may select the next group of *LogicsManager* parameter if you are on an LMCV parameter. Each time this softkey character is pressed, the next parameter group will be taken. With the last group it begins with the smallest group again.

# Chapter 3.
# Functional Description

## General ATS Functionality

The following flowchart shows the typical ATS functionality:
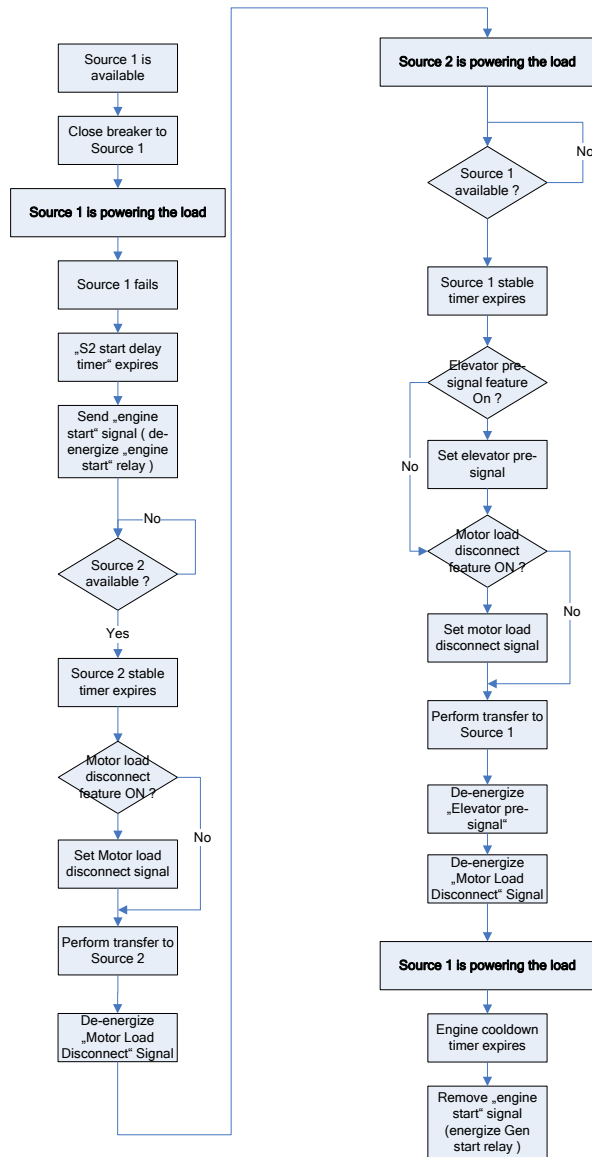
Figure 3-1: General ATS functionality - flowchart

# Application Modes

**☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰☰**

The application mode may be configured in the unit (refer to the Configuration Manual 37940 for more information). This is only possible in code level 2. The most important features and differences of the three application modes are illustrated in the following section. A description of the functions that are possible during each application mode can be found in the configuration manual (manual 37940).

## Util-Util Application Mode
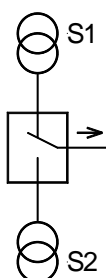
This application mode has the following characteristics:
- The ATS controller monitors two mains sources and transfers the load to the secondary source in case the primary source fails
- The ATS controller operates as Master controller

## Util-Gen Application Mode
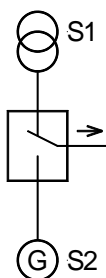
This application mode has the following characteristics:
- The ATS controller monitors a mains sources and a generator source and transfers the load to the generator source in case the mains source fails
- The ATS controller operates as Master controller

## Gen-Gen Application Mode
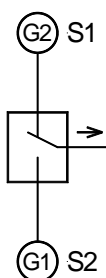
This application mode has the following characteristics:
- The ATS controller monitors two generator sources and transfers the load to the other source in case the regular source fails
- The ATS controller operates as Slave controller
- This application is not a stand-alone application and always combined with another ATS controller in Util-Gen application mode, which operates as Master controller (refer to the Application Manual 37942 for more information)

## Engine operation special cases

In Util-Gen application mode and Gen-Gen application mode the ATS starts and stops an engine. Starting and stopping is controlled by the state machine described above. However, in some rare situations the start/stop is affected by the breaker state. These are
- If a breaker cannot be closed to a generator source (indicated by a corresponding alarm), then the engine shall not run, it shall either not start or do a stop after cooldown
- If a breaker is connected to a generator source and cannot be opened (indicated by a corresponding alarm), the engine shall continue to run.
- If a breaker closing to a generator source is inhibited, and the breaker is not already closed, the engine shall not run or do a stop after cooldown.

# Blocking Transfer Operations

====================

There are four cases that are able blocking ATS' transfer operations:

1. LogicsManager function 'Inhibit ATS' LM 98.01 (see below)
2. LogicsManager function 'Inhibit XFR to S1' LM 98.02
3. LogicsManager function 'Inhibit XFR to S2' LM 98.03
4. Mechanical Failure LM 21.11; monitored as Limit Switch Failure (see chapter Limit Switch Monitoring (Mechanical Failure, LM 21.11) on page 24).

## *LogicsManager* function "Inhibit ATS"

If the *LogicsManager* function "Inhibit ATS" (parameter 12600) is TRUE, all transfers are blocked! This means that the *LogicsManager* flags

- 20.07 "Close to S1"
- 20.09 "Close to S2"
- 20.08 "Open from S1"
- 20.10 "Open from S2"

are **not** enabled anymore. This block all transfer operations!
Refer to the Configuration Manual 37940 for a description of these parameters.

## Switch Failures

Depending on the configured "Transfer switch type" (parameter 3424), all transfers are blocked if specific switch failures occur. Refer to the Configuration Manual 37940 for a description of this parameter.

### Transfer Switch Type "Standard"

If one of the following failure conditions is present, all transfer operations are blocked and the respective failure must be acknowledged before a new transfer is possible:

- Fail to close S1 is present
- Fail to close S2 is present

### Transfer Switch Type "Delayed"

If one of the following failure conditions is present, all transfer operations are blocked and the respective failure(s) must be acknowledged before a new transfer is possible:

- Fail to open S1 is present
- Fail to open S2 is present

- The transfer switch is in NEUTRAL position AND
    o Fail to close S1 is present AND
    o Fail to close S2 is present

### Transfer Switch Type "Closed"

If one of the following failure conditions is present, all transfer operations are blocked and the respective failure(s) must be acknowledged before a new transfer is possible:

- Fail to close S1 is present
- Fail to close S2 is present
- Shunt trip enable flag (20.12) is enabled

- The transfer switch is in S1 or S2 position AND
  o Fail to open S1 is present OR
  o Fail to open S2 is present

## Limit Switch Monitoring (Mechanical Failure, LM 21.11)

### Functional Description

If the "Limit switch monitoring" function (parameter 3430, refer to the Configuration Manual 37940 for more information about the parameter) is enabled, it is always active, if no transfer command (C2, C1, C2O, C1O) is currently being issued by the ATS controller. The DTSC-200A evaluates the currently present and with use limit switch open replies (parameter 3434) pre-selected replies from the ATS limit switch together with the currently available source to determine which reply signals are currently expected to be able to supply the load.
The plausibility of the ATS limit switch replies will be monitored if a plausibility conflict (see Truth Tables on page 25) is detected, After the 'Limit switch failure delay time' (parameter 3463) the ATS controller blocks all further automatic transfers and displays the "Limit switch fail" message together with the actual and expected replies. LM 21.11 'Mechanical Fail' becomes true.
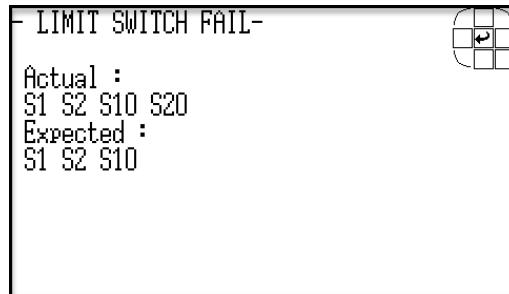


Figure 3-2: Limit switch monitoring - failure message

"Actual" indicates the reply messages, which are currently detected by the ATS limit switch.
"Expected" indicates the reply messages, which are expected to be detected by the ATS limit switch.

A continued automatic operation of the ATS controller is only possible after the "Actual" state matches the "Expected" state again. A "Reset" can be performed with the Return-button if this is the case. The button must be pressed by the operator (or LogicsManager parameter 12891 „Reset limit switch failure" must become TRUE) to acknowledge the detection and the removal of the failure.

### Signal and Command Abbreviations

- S1        Signal: breaker in source 1 position
- S2        Signal: breaker in source 2 position
- S1O       Signal: breaker in source 1 OPEN position
- S2O       Signal: breaker in source 2 OPEN position
- C1        Command: close to source 1
- C2        Command: close to source 2
- C1O       Command: open from source 1
- C2O       Command: open from source 2

---

## Truth Tables

The truth tables indicate all possible reply signal combination conditions and the respective reactions of the ATS controller depending on the configuration of the parameters 3424 "Transfer switch type" and 3434 "Use limit sw. OPEN replies" after 3463 'Limit switch Failure delay' is gone. All conditions, which are OK according to the table columns Actual and(!) Expected do not result a "Limit switch fail" message and have a grey background that stands for 'Not displayed' but they are relevant for enabling the 'Reset' button for manual acknowledge.

Table 3-1 is valid for the following settings:
- Parameter 3424 "Transfer switch type" is configured to "Standard"
- Parameter 3434 "Use limit sw. OPEN replies" is configured to "NO"

| S1 preferred 98.11 LM: S1 Priority | S1 source OK LM 19.01 | S2 source OK LM 19.11 | S1 closed signal | S2 closed signal | Actual | Expected |
|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | ----- | S2 |
| 0 | 0 | 0 | 0 | 1 | OK | OK |
| 0 | 0 | 0 | 1 | 0 | OK | OK |
| 0 | 0 | 0 | 1 | 1 | S1 S2 | S2 |
| 0 | 0 | 1 | 0 | 0 | ----- | S2 |
| 0 | 0 | 1 | 0 | 1 | OK | OK |
| 0 | 0 | 1 | 1 | 0 | OK | OK |
| 0 | 0 | 1 | 1 | 1 | S1 S2 | S2 |
| 0 | 1 | 0 | 0 | 0 | ----- | S1 |
| 0 | 1 | 0 | 0 | 1 | OK | OK |
| 0 | 1 | 0 | 1 | 0 | OK | OK |
| 0 | 1 | 0 | 1 | 1 | S1 S2 | S1 |
| 0 | 1 | 1 | 0 | 0 | ----- | S2 |
| 0 | 1 | 1 | 0 | 1 | OK | OK |
| 0 | 1 | 1 | 1 | 0 | OK | OK |
| 0 | 1 | 1 | 1 | 1 | S1 S2 | S1 |
| 1 | 0 | 0 | 0 | 0 | ----- | S1 |
| 1 | 0 | 0 | 0 | 1 | OK | OK |
| 1 | 0 | 0 | 1 | 0 | OK | OK |
| 1 | 0 | 0 | 1 | 1 | S1 S2 | S1 |
| 1 | 0 | 1 | 0 | 0 | ----- | S2 |
| 1 | 0 | 1 | 0 | 1 | OK | OK |
| 1 | 0 | 1 | 1 | 0 | OK | OK |
| 1 | 0 | 1 | 1 | 1 | S1 S2 | S2 |
| 1 | 1 | 0 | 0 | 0 | ----- | S1 |
| 1 | 1 | 0 | 0 | 1 | OK | OK |
| 1 | 1 | 0 | 1 | 0 | OK | OK |
| 1 | 1 | 0 | 1 | 1 | S1 S2 | S1 |
| 1 | 1 | 1 | 0 | 0 | S1 S2 | S1 |
| 1 | 1 | 1 | 0 | 1 | OK | OK |
| 1 | 1 | 1 | 1 | 0 | OK | OK |
| 1 | 1 | 1 | 1 | 1 | S1 S2 | S1 |

Table 3-1: Limit switch monitoring - truth table for "Standard" limit switch w/o "Open" replies

Table 3-2 is valid for the following settings:
- Parameter 3424 "Transfer switch type" is configured to "Delayed"
- Parameter 3434 "Use limit sw. OPEN replies" is configured to "NO"

| S1 preferred 98.11 LM: S1 Priority | S1 source OK LM 19.01 | S2 source OK LM 19.11 | S1 closed signal | S2 closed signal | Actual | Expected |
|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | OK | OK |
| 0 | 0 | 0 | 0 | 1 | OK | OK |
| 0 | 0 | 0 | 1 | 0 | OK | OK |
| 0 | 0 | 0 | 1 | 1 | S1 S2 | S2 |
| 0 | 0 | 1 | 0 | 0 | OK | OK |
| 0 | 0 | 1 | 0 | 1 | OK | OK |
| 0 | 0 | 1 | 1 | 0 | OK | OK |
| 0 | 0 | 1 | 1 | 1 | S1 S2 | S2 |
| 0 | 1 | 0 | 0 | 0 | OK | OK |
| 0 | 1 | 0 | 0 | 1 | OK | OK |
| 0 | 1 | 0 | 1 | 0 | OK | OK |
| 0 | 1 | 0 | 1 | 1 | S1 S2 | S1 |
| 0 | 1 | 1 | 0 | 0 | OK | OK |
| 0 | 1 | 1 | 0 | 1 | OK | OK |
| 0 | 1 | 1 | 1 | 0 | OK | OK |
| 0 | 1 | 1 | 1 | 1 | S1 S2 | S2 |
| 1 | 0 | 0 | 0 | 0 | OK | OK |
| 1 | 0 | 0 | 0 | 1 | OK | OK |
| 1 | 0 | 0 | 1 | 0 | OK | OK |
| 1 | 0 | 0 | 1 | 1 | S1 S2 | S1 |
| 1 | 0 | 1 | 0 | 0 | OK | OK |
| 1 | 0 | 1 | 0 | 1 | OK | OK |
| 1 | 0 | 1 | 1 | 0 | OK | OK |
| 1 | 0 | 1 | 1 | 1 | S1 S2 | S2 |
| 1 | 1 | 0 | 0 | 0 | OK | OK |
| 1 | 1 | 0 | 0 | 1 | OK | OK |
| 1 | 1 | 0 | 1 | 0 | OK | OK |
| 1 | 1 | 0 | 1 | 1 | S1 S2 | S1 |
| 1 | 1 | 1 | 0 | 0 | OK | OK |
| 1 | 1 | 1 | 0 | 1 | OK | OK |
| 1 | 1 | 1 | 1 | 0 | OK | OK |
| 1 | 1 | 1 | 1 | 1 | S1 S2 | S1 |

Table 3-2: Limit switch monitoring - truth table for "Delayed" limit switch w/o "Open" replies

Limit switch monitoring is disabled for the following settings:
- Parameter 3424 "Transfer switch type" is configured to "Standard"
- Parameter 3434 "Use limit sw. OPEN replies" is configured to "NO"

Table 3-3 is valid for the following settings:
- Parameter 3424 "Transfer switch type" is configured to "Delayed" Parameter 3434 "Use limit sw. OPEN replies" is configured to "YES"

| S1 preferred 98.11 LM: S1 Priority | S1 source OK LM 19.01 | S2 source OK LM 19.11 | S1 closed signal | S2 closed signal | S1 open signal | S2 open signal | Actual | Expected |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | ----- | S2 S1O |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | S2O | S2 S1O |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | S1O | S2 S1O |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | OK | OK |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | S2 | S2 S1O |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | S2 S2O | S2 S1O |
| 0 | 0 | 0 | 0 | 1 | 1 | 0 | OK | OK |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | S2 S1O S2O | S2 S1O |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | S1 | S2 S1O |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | OK | OK |

| S1 preferred 98.11 LM: S1 Priority | S1 source OK LM 19.01 | S2 source OK LM 19.11 | S1 closed signal | S2 closed signal | S1 open signal | S2 open signal | Actual | Expected |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 0 | 1 | 0 | S1 | S2 S1O |
| 0 | 0 | 0 | 1 | 0 | 1 | 1 | S1 S1O S2O | S2 S1O |
| 0 | 0 | 0 | 1 | 1 | 0 | 0 | S1 S2 | S2 S1O |
| 0 | 0 | 0 | 1 | 1 | 0 | 1 | S1 S2 S2O | S2 S1O |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | S1 S2 S1O | S2 S1O |
| 0 | 0 | 0 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S2 S1O |
| 0 | 0 | 1 | 0 | 0 | 0 | 0 | ----- | S2 S1O |
| 0 | 0 | 1 | 0 | 0 | 0 | 1 | S2O | S2 S1O |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | S1O | S2 S1O |
| 0 | 0 | 1 | 0 | 0 | 1 | 1 | OK | OK |
| 0 | 0 | 1 | 0 | 1 | 0 | 0 | S2 | S2 S1O |
| 0 | 0 | 1 | 0 | 1 | 0 | 1 | S2 S2O | S2 S1O |
| 0 | 0 | 1 | 0 | 1 | 1 | 0 | OK | OK |
| 0 | 0 | 1 | 0 | 1 | 1 | 1 | S2 S1O S2O | S2 S1O |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | S1 | S2 S1O |
| 0 | 0 | 1 | 1 | 0 | 0 | 1 | OK | OK |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 | S1 S1O | S2 S1O |
| 0 | 0 | 1 | 1 | 0 | 1 | 1 | S1 S1O S2O | S2 S1O |
| 0 | 0 | 1 | 1 | 1 | 0 | 0 | S1 S2 | S2 S1O |
| 0 | 0 | 1 | 1 | 1 | 0 | 1 | S1 S2 S2O | S2 S1O |
| 0 | 0 | 1 | 1 | 1 | 1 | 0 | S1 S2 S1O | S2 S1O |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S2 S1O |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | ----- | S1 S2O |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | S2O | S1 S2O |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | S1O | S1 S2O |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | OK | OK |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | S2 | S1 S2O |
| 0 | 1 | 0 | 0 | 1 | 0 | 1 | S2 S2O | S1 S2O |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 | OK | OK |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | S2 S1O S2O | S1 S2O |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | S1 | S1 S2O |
| 0 | 1 | 0 | 1 | 0 | 0 | 1 | OK | OK |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | S1 S1O | S1 S2O |
| 0 | 1 | 0 | 1 | 0 | 1 | 1 | S1 S1O S2O | S1 S2O |
| 0 | 1 | 0 | 1 | 1 | 0 | 0 | S1 S2 | S1 S2O |
| 0 | 1 | 0 | 1 | 1 | 0 | 1 | S1 S2 S2O | S1 S2O |
| 0 | 1 | 0 | 1 | 1 | 1 | 0 | S1 S2 S1O | S1 S2O |
| 0 | 1 | 0 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S1 S2O |
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | ----- | S2 S1O |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 | S2O | S2 S1O |
| 0 | 1 | 1 | 0 | 0 | 1 | 0 | S1O | S2 S1O |
| 0 | 1 | 1 | 0 | 0 | 1 | 1 | OK | OK |
| 0 | 1 | 1 | 0 | 1 | 0 | 0 | S2 | S2 S1O |
| 0 | 1 | 1 | 0 | 1 | 0 | 1 | S2 S2O | S2 S1O |
| 0 | 1 | 1 | 0 | 1 | 1 | 0 | OK | OK |
| 0 | 1 | 1 | 0 | 1 | 1 | 1 | S2 S1O S2O | S2 S1O |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | S1 | S2 S1O |
| 0 | 1 | 1 | 1 | 0 | 0 | 1 | OK | OK |
| 0 | 1 | 1 | 1 | 0 | 1 | 0 | S1 S1O | S2 S1O |
| 0 | 1 | 1 | 1 | 0 | 1 | 1 | S1 S1O S2O | S2 S1O |
| 0 | 1 | 1 | 1 | 1 | 0 | 0 | S1 S2 | S2 S1O |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 | S1 S2 S2O | S2 S1O |
| 0 | 1 | 1 | 1 | 1 | 1 | 0 | S1 S2 S1O | S2 S1O |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S2 S1O |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | ----- | S1 S2O |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | S2O | S1 S2O |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | S1O | S1 S2O |
| 1 | 0 | 0 | 0 | 0 | 1 | 1 | OK | OK |
| 1 | 0 | 0 | 0 | 1 | 0 | 0 | S2 | S1 S2O |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | S2 S2O | S1 S2O |
| 1 | 0 | 0 | 0 | 1 | 1 | 0 | OK | OK |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | S2 S1O S2O | S1 S2O |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | S1 | S1 S2O |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | OK | OK |
| 1 | 0 | 0 | 1 | 0 | 1 | 0 | S1 S1O | S1 S2O |

| S1 preferred 98.11 LM: S1 Priority | S1 source OK LM 19.01 | S2 source OK LM 19.11 | S1 closed signal | S2 closed signal | S1 open signal | S2 open signal | Actual | Expected |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 1 | 0 | 1 | 1 | S1 S1O S2O | S1 S2O |
| 1 | 0 | 0 | 1 | 1 | 0 | 0 | S1 S2 | S1 S2O |
| 1 | 0 | 0 | 1 | 1 | 0 | 1 | S1 S2 S2O | S1 S2O |
| 1 | 0 | 0 | 1 | 1 | 1 | 0 | S1 S2 S1O | S1 S2O |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S1 S2O |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | ----- | S2 S1O |
| 1 | 0 | 1 | 0 | 0 | 0 | 1 | S2O | S2 S1O |
| 1 | 0 | 1 | 0 | 0 | 1 | 0 | S1O | S2 S1O |
| 1 | 0 | 1 | 0 | 0 | 1 | 1 | OK | OK |
| 1 | 0 | 1 | 0 | 1 | 0 | 0 | S2 | S2 S1O |
| 1 | 0 | 1 | 0 | 1 | 0 | 1 | S2 S2O | S2 S1O |
| 1 | 0 | 1 | 0 | 1 | 1 | 0 | OK | OK |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | S2 S1O S2O | S2 S1O |
| 1 | 0 | 1 | 1 | 0 | 0 | 0 | S1 | S2 S1O |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | OK | OK |
| 1 | 0 | 1 | 1 | 0 | 1 | 0 | S1 S1O | S2 S1O |
| 1 | 0 | 1 | 1 | 0 | 1 | 1 | S1 S1O S2O | S2 S1O |
| 1 | 0 | 1 | 1 | 1 | 0 | 0 | S1 S2 | S2 S1O |
| 1 | 0 | 1 | 1 | 1 | 0 | 1 | S1 S2 S2O | S2 S1O |
| 1 | 0 | 1 | 1 | 1 | 1 | 0 | S1 S2 S1O | S2 S1O |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S2 S1O |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | ----- | S1 S2O |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | S2O | S1 S2O |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | S1O | S1 S2O |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | OK | OK |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | S2 | S1 S2O |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | S2 S2O | S1 S2O |
| 1 | 1 | 0 | 0 | 1 | 1 | 0 | OK | OK |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | S2 S1O S2O | S1 S2O |
| 1 | 1 | 0 | 1 | 0 | 0 | 0 | S1 | S1 S2O |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | OK | OK |
| 1 | 1 | 0 | 1 | 0 | 1 | 0 | S1 S1O | S1 S2O |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | S1 S1O S2O | S1 S2O |
| 1 | 1 | 0 | 1 | 1 | 0 | 0 | S1 S2 | S1 S2O |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | S1 S2 S2O | S1 S2O |
| 1 | 1 | 0 | 1 | 1 | 1 | 0 | S1 S2 S1O | S1 S2O |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S1 S2O |
| 1 | 1 | 1 | 0 | 0 | 0 | 0 | ----- | S1 S2O |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | S2O | S1 S2O |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | S1O | S1 S2O |
| 1 | 1 | 1 | 0 | 0 | 1 | 1 | OK | OK |
| 1 | 1 | 1 | 0 | 1 | 0 | 0 | S2 | S1 S2O |
| 1 | 1 | 1 | 0 | 1 | 0 | 1 | S2 S2O | S1 S2O |
| 1 | 1 | 1 | 0 | 1 | 1 | 0 | OK | OK |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | S2 S1O S2O | S1 S2O |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | S1 | S1 S2O |
| 1 | 1 | 1 | 1 | 0 | 0 | 1 | OK | OK |
| 1 | 1 | 1 | 1 | 0 | 1 | 0 | S1 S1O | S1 S2O |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | S1 S1O S2O | S1 S2O |
| 1 | 1 | 1 | 1 | 1 | 0 | 0 | S1 S2 | S1 S2O |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | S1 S2 S2O | S1 S2O |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | S1 S2 S1O | S1 S2O |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | S1 S2 S1O S2O | S1 S2O |

Table 3-3: Limit switch monitoring - truth table for "Open" limit switch with "Open" replies

# Chapter 4.
# Configuration

This chapter provides information "how to configure the unit via the LC display" as well as the description of all parameters that may be changed without a password. If you have the correct passwords to access all code levels in order configure the unit, refer to manual 37940 for a description of all parameters, their setting range, and their influence to the operation of the unit.

## Structure of the Parameters

The parameters, which may be accessed in code level 0 (no access restrictions) are structured as follows (refer to the Parameters section on page 31 for a more detailed description):

Main Menu

- ► Language
    - ► English
    - ► Español
    - ► Polski
    - ► German

- ► Password

- ► Change display contrast

- ► Configure monitoring
    - ► Time until horn reset

- ► System parameter
    - ► Password system
        - ► Code level display
        - ► Code level CAN port
        - ► Code level serial port / DPC
        - ► Password
        - ► Password CAN
        - ► Password DPC
        - ► Factory settings

    - ► Set clock
        - ► Hour
        - ► Minute
        - ► Second
        - ► Day
        - ► Month
        - ► Year

    - ► Version

**Access configuration menus**

By pressing the SETTING button, the main menu of the configuration will be displayed. A flashing LED over the button additionally signals that the controller screen is in a settings screen.

To leave the configuration mode generally you can push the escape 🔄 button to any time.
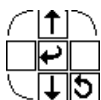
**Softkeys "Configuration - select parameter"**

```
-----MAIN MENU------
Language              English
Password display      0000
Configure display          →
Event History              →
Operation mode MAN         →
Configure measurement      →
Configure application      →
```

Navigation through the parameters is carried out using the navigation buttons located on the right side of the display.

**Return to the Main Screen/exit parameter without saving changes ("Escape")**

**Navigate**.......Pressing the softkey will return the operator to the main display screen that shows monitored parameters. If the operator is configuring the control unit, this will return the user to the previous screen displayed.

**Edit** ..............If it is desired to exit a parameter without saving changes made there, press the softkey and the user will be returned to the previous screen.

**Next parameter**

**Navigate**.......This softkey permits the user to navigate down through the parameters. Only the parameters assigned by the active password will be displayed. The parameters that may be viewed without a password are described later in this manual.

**Previous parameter/increase/change function**

**Navigate**.......This softkey permits the user to navigate upwards through the parameters.

**Edit** ..............If the desired parameter has been selected by pressing the ↵ softkey, and the cursor has been moved to the appropriate position via the → softkey, the value of the digit may be increased by one using the 🔄 softkey. If the digit has reached the highest numeral permitted for the placeholder, the unit will return to the lowest digit by pressing the softkey again.

**Select parameter/input confirmation ("Enter")**

**Navigate**.......A highlighted parameter may be configured by pressing the ↵ softkey. This permits the changing of the configured value within the parameter.

**Edit** ..............Any value that has been changed within a parameter is changed and stored in the unit memory by pressing the ↵ softkey.

**Next digit of the selected parameter**

If the parameter has a numeric value (i.e. the password) that is to be changed, the digits must be changed individually. The → softkey permits navigation to each cursor position of the number to be changed. See the softkey symbols ↑ for an explanation of how to change the digit.

# Parameters

========================

**NOTE**

**Descriptions of all parameters, which may be edited/configured via the display, are described in manual 37940.**

## Language

| EN | Language | **Change language** | **{Language}** |
| DE | Language | | |

**{Language}**..The selection of a language will affect the following text in the control unit:
- Text in the operating field which are not defined by an input (i.e. discrete inputs may be a user-defined text)
- The alarm list text
- All parameters which may be changed via the unit front panel

## Password

| EN | Password display | **Password for access via the unit front panel** | **0000 to 9999** |
| GR | Passwort Display | | |

A password must be entered to permit configuration of the unit via the unit panel. If a password is not entered only the displayed parameters may be edited. All other parameters and a description of their functions may be found in the manual 37940.

## Display Contrast

| EN | Change display contrast | **Change display contrast** | **+ / -** |
| GR | Displaykontrast ändern | | |

In parameter "Change display contrast" the display contrast may be increased or decreased using these softkey characters.

⊞ .................Increase the display contrast.
⊟ .................Decrease the display contrast.
▨ .................Performs a lamp test.

## Deactivate Horn

| EN | Time until horn reset | **Self acknowledgement of the horn signal** | **0 to 1.000 s** |
| GR | Zeit Hupenreset | | |

A horn signal is issued and the alarm LED flashes when a fault condition occurs. This signal will be disabled when the configured time expires. This is the maximum time, for which a horn signal is active (it will also be deactivated if it is acknowledged before). If this parameter is configured to 0, the horn will remain active until acknowledged.

## Code Levels

| | | | |
|---|---|---|---|
| EN | Code level display | **Code level via display** | **Info** |
| GR | Codeebene Display | | |

This value displays the code level that is currently active for access via the front panel.

| | | | |
|---|---|---|---|
| EN | Code level CAN port | **Password CAN-Bus** | **Info** |
| GR | Codeebene CAN Schnittstel. | | |

This value displays the code level that is currently active for access via the CAN bus.

| | | | |
|---|---|---|---|
| EN | Code level serial port / DPC | **Code level USB** | **Info** |
| GR | Codebene serielle Schnittstel | | |

This value displays the code level that is currently active for access via the USB interface.

## Password

| | | | |
|---|---|---|---|
| EN | Password | **Password for access via the unit front panel** | **0000 to 9999** |
| GR | Passwort | | |

A password must be entered to permit configuration of the unit via the unit front panel. If a password is not entered only the displayed parameters may be edited. All other parameters and a description of their functions may be found in the manual 37940.

| | | | |
|---|---|---|---|
| EN | Password CAN | **Password for access via CAN** | **0000 to 9999** |
| GR | Passwort CAN | | |

A password must be entered to permit configuration of the unit via the CAN bus. If a password is not entered only the displayed parameters may be edited. All other parameters and a description of their functions may be found in the manual 37940.

| | | | |
|---|---|---|---|
| EN | Password DPC | **Password for access via USB** | **0000 to 9999** |
| GR | Passwort RS232 | | |

A password must be entered to permit configuration of the unit via USB interface. If a password is not entered only the displayed parameters may be edited. All other parameters and a description of their functions may be found in the manual 37940.

## Factory (Default) Values

| | | | |
|---|---|---|---|
| EN | Factory settings | **Factory setting** | **YES/NO** |
| GR | Werkseinstellung | | |

The factory settings (default values) may be loaded. Select YES to enable the following screen to be displayed. It is possible to load the factory settings (default values) for all displayed parameters.

| | | | |
|---|---|---|---|
| EN | Set default values | **Set default values** | **YES/NO** |
| GR | Standardwerte | | |

Entering YES overwrites the current configured values with the default values. Only those parameters will be reset, which are permitted to change in the selected code level.

## Real-Time Clock - Time

| EN | Hour | **Adjust clock time: hour** | **0 to 23** |
| GR | Stunden | | |

The hour of the current time is set here. Example:
**0**....................0th hour of the day.
**23**.................23rd hour of the day.

| EN | Minute | **Adjust clock time: minute** | **0 to 59** |
| GR | Minuten | | |

The minute of the current time is set here. Example:
**0**....................0th minute of the hour.
**59**.................59th minute of the hour.

| EN | Second | **Adjust clock time: second** | **0 to 59** |
| GR | Sekunden | | |

The second of the current time is set here. Example:
**0**....................0th second of the minute.
**59**.................59th second of the minute.

## Real-Time Clock - Date

| EN | Day | **Adjust date: day** | **1 to 31** |
| GR | Tag | | |

The day of the current date is set here. Example:
**1**....................1st day of the month.
**31**.................31st day of the month.

| EN | Month | **Adjust date: month** | **1 to 12** |
| GR | Monat | | |

The month of the current date is set here. Example:
**1**....................1st month of the year.
**12**.................12th month of the year.

| EN | Year | **Adjust date: year** | **0 to 99** |
| GR | Jahr | | |

The year of the current date is set here. Example:
**0**....................Year 2000.
**99**.................Year 2099.

## Version

| EN | Version | **Displays system information** | **Info** |
| GR | Version | | |

System information, like serial number of the unit and software version is displayed.

# Appendix A.
# Messages

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## Timer / Operation States

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The following table indicates the display messages of the various timers and operations states:

| Display text | Description | Corresponding timer parameter | Note |
|---|---|---|---|
| S1 Start delay | Source 2 has failed, and now the S1 start delay timer is running. | "S1 start delay time" (parameter 4149) | Gen-Gen mode only |
| S2 Start delay | Source 1 has failed, and now the S2 start delay timer is running. | "S2 start delay time" (parameter 3330) | Util-Gen and Gen-Gen mode only |
| S1 Stable timer | The transfer from Source 2 to Source 1 is delayed, to permit stabilization of Source 1 before a re-transfer is made. If Source2 fails during timing, a re-transfer to Source 1 will be performed immediately. | "S1 Source Stable time" (parameter 3333) | |
| S2 Stable timer | The transfer from Source 1 to Source 2 is delayed, to permit stabilization of Source 2 before a transfer is made. | "S2 Source Stable time" (parameter 3332) | |
| S1 Cooldown | Engine runs unloaded, after a retransfer to Source 2 has been made. This is to ensure that engine 1 has enough time to cool down. | "S1 cooldown time" (parameter 3343) | Only for Gen-Gen applications |
| S2 Cooldown | Engine runs unloaded, after a retransfer to Source 1 has been made. This is to ensure that engine 2 has enough time to cool down. | "S2 cooldown time" (parameter 3344) | Util-Gen and Gen-Gen mode only |
| Load on S1 | Source 1 is connected to the load. | - | |
| Starting S2 | Engine 2 is being started. | "S2 Start fail delay time" (parameter 3331) | |
| Load on S2 | Source 1 has failed, and Source 2 is connected to the load. | - | |
| Load test | The control is in "Load Test" mode. A Source 1 failure is simulated (duplicates operation of Source 1 failure). | Load test activation either via "Load test" Button or via "Load Test - LogicsManager" (parameter 12640) | |
| No load test | The ATS system is in "No load Test" mode. This means, that the engine runs unloaded, and no transfers will take place. This test mode is used to ensure proper operation of the engine. | No load test activation either via "Engine test" Button or via "No Load Test – LogicsManager" (parameter 12650) | |
| Elevator signal | The Elevator pre-signal timer is running. This message only occurs, if the "Elevator pre-signal" feature is activated and BOTH sources are available. If only one source is available (like in an emergency case) the elevator pre-signal timer will automatically be bypassed. | "Elevator pre-signal duration" (parameter 4491) | |
| Starting S1 | Engine 1 is being started. | "S1 Start fail delay time" (parameter 3341) | Only for Gen-Gen applications |
| Wait S1 to open | A command is issued by the ATS Controller to open the ATS switch from Source 1 position | "Limit switch reply timeout" (parameter 3428) | |
| Wait S2 to open | A command is issued by the ATS Controller to open the ATS switch from Source 2 position | "Limit switch reply timeout" (parameter 3428) | |
| Wait S1 to close | A command is issued by the ATS Controller to close the ATS switch into Source 1 position | "Limit switch reply timeout" (parameter 3428) | |
| Wait S2 to close | A command is issued by the ATS Controller to close the ATS switch into Source 2 position | "Limit switch reply timeout" (parameter 3428) | |
| Rem. peak shave | "Remote peak shave" mode is active | Remote peak shave activation via "Remote peak shave - LogicsManager" (parameter 12630) | |
| Motor Load Disc. | The Motor Load Disconnect timer is running. This message only occurs, if the "Motor load disconnect" feature is activated. | "Disconnect time S1→S2" (parameter 4551) and/or "Disconnect time S2→S1" (parameter 4552) | |
| Inhib. XFR to S1 | A transfer to Source 1 is inhibited although Source 1 is available. In the case of a Source 2 failure, a transfer to Source 1 takes place, even the transfer is inhibited | "Inhibit transfer to Source 1" activation via "Inhib. XFR to Source 1 - LogicsManager" (parameter 12610) | |

| Display text | Description | Corresponding timer parameter | Note |
|---|---|---|---|
| Inhib. XFR to S2 | A transfer to Source 2 is inhibited although Source 2 is available. In the case of a Source 1 failure, a transfer to Source 2 takes place, even the transfer is inhibited. | "Inhibit transfer to Source 2" activation via "Inhib. XFR to Source 2 - LogicsManager" (parameter 12620) | |
| Load Shed active | Load shed is active | Load shed active via LogicsManager parameter 12870 | |
| Pwr. rate. prov. | "Interruptible power rate provisions" mode is active | "Interruptible power rate provisions" activation via "Int. Power Rates - LogicsManager" (parameter 12660) | |
| ATS inhibit | The ATS Controller is in "Inhibit mode". No transfers take place if the ATS controller is set into this mode. | "ATS inhibit" activation via "Inhibit ATS - LogicsManager" (parameter 12600) | |
| Neutral S1$\rightarrow$S2 | The ATS controller delays the transfer from NEUTRAL position to Source 2 position. | Neutral time S1$\rightarrow$S2 (parameter 3425) | Only available if Transition mode "Delayed" or "Closed" is selected. |
| Neutral S2$\rightarrow$S1 | The ATS controller delays the transfer from NEUTRAL position to Source 1 position. | Neutral time S2$\rightarrow$S1 (parameter 3426) | Only available if Transition mode "Delayed" or "Closed" is selected. |
| In-Phase Check | The ATS controller performs an In-Phase check before a transfer is made. This message only occurs, if the "Inphase monitor" feature is activated. | Parameter 4570 | |
| Transfer pause | The ATS controller delays the next transfer attempt. | "Wait time until next XFR attempt" (parameter 3429) | |
| XFR delay S1$\rightarrow$S2 | The "Transfer delay timer S1$\rightarrow$S2" is used to add an additional delay to the transfer, even if the "S2 stable timer" has already expired. | Transfer delay timer S1$\rightarrow$S2 (parameter 4496) | If the transfer delay timer is configured to 0 seconds this display text is not shown. |
| XFR delay S2$\rightarrow$S1 | The "Transfer delay timer S2$\rightarrow$S1" is used to add an additional delay to the transfer, even if the "S1 stable timer" has already expired. | Transfer delay timer S2$\rightarrow$S1 (parameter 4497) | If the transfer delay timer is configured to 0 seconds this display text is not shown. |
| Limit switch fail | The limit switch monitoring function run into a plausibility check mismatch and displays Actual and Expected replies and sources. | Limit switch failure delay (parameter 3463) | If the limit switch failure delay is configured to 0 seconds limit switch fail would be released permanently. |
| Service disconn. | The control is in "Service Disconnect Mode".  Both sources are disconnected. | "Service disconnect" activation via "Service disconnect - LogicsManager" (parameter 12890) | Only available if Transition mode "Delayed" or "Closed" is selected. |

Table 4-1: Timer / operation states - display

# Alarm Messages

**========================**

| Message in ToolKit<br>                Message in the display | Meaning |
|---|---|

| | |
|---|---|
| **Batt.overvolt. Lev.1**<br>        **Batt.overvolt.1** | **Battery overvoltage, limit value 1**<br>The battery voltage has exceeded the limit value 1 for battery overvoltage for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Batt.overvolt. Lev.2**<br>        **Batt.overvolt.2** | **Battery overvoltage, limit value 2**<br>The battery voltage has exceeded the limit value 2 for battery overvoltage for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Batt.undervolt. Lev.1**<br>        **Batt.undervolt.1** | **Battery undervoltage, limit value 1**<br>The battery voltage has fallen below the limit value 1 for battery undervoltage for at least the configured time and has not exceeded the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Batt.undervolt. Lev.2**<br>        **Batt.undervolt.2** | **Battery undervoltage, limit value 2**<br>The battery voltage has fallen below the limit value 2 for battery undervoltage for at least the configured time and has not exceeded the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **CAN Open Fault**<br>        **CAN Open Fault** | **Interface alarm CAN Open**<br>The communication with external expansion boards via the CAN Open interface has been interrupted and no data can be transmitted or received over the bus. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Fail to close S1** | **Switch failed to close to source 1**<br>The ATS controller has issued a "close" command to close the transfer switch to source 1 position, but did not receive any feedback from the limit switch reply "SN" at DI 1 (terminal 51) within the configured time. |
| **Fail to close S2** | **Switch failed to close to source 2**<br>The ATS controller has issued a "close" command to close the transfer switch to source 2 position, but did not receive any feedback from the limit switch reply "SE" at DI 2 (terminal 52) within the configured time. |
| **Fail to open S1** | **Switch failed to open from source 1**<br>The ATS controller has issued an "open" command to open the transfer switch from source 1 position, but did not receive any feedback from the limit switch reply "SNO" at DI 5 (terminal 55) within the configured time. |
| **Fail to open S2** | **Switch failed to open from source 2**<br>The ATS controller has issued an "open" command to open the transfer switch from source 2 position, but did not receive any feedback from the limit switch reply "SNE" at DI 4 (terminal 54) within the configured time. |
| **Overcurrent Lev.1** | **Overcurrent, limit value 1**<br>The load current has exceeded the limit value 1 for the load overcurrent for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Overcurrent Lev.2** | **Overcurrent, limit value 2**<br>The load current has exceeded the limit value 2 for the load overcurrent for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Overcurrent Lev.3** | **Overcurrent, limit value 3**<br>The load current has exceeded the limit value 3 for the load overcurrent for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Overload Lev.1** | **Overload, limit value 1**<br>The load power has exceeded the limit value 1 for load overload for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |
| **Overload Lev.2** | **Overload, limit value 2**<br>The load power has exceeded the limit value 2 for load overload for at least the configured time and did not fall below the value of the hysteresis. Additionally, the alarm has not been acknowledged (unless the "Self acknowledgement" is configured YES). |

| Message in ToolKit<br>                    Message in the display | Meaning |
|---|---|

| | |
|---|---|
| `In-phase timeout` | **Inphase timer has expired**<br>If inphase monitoring is enabled and the unit was not able to detect synchronism between source 1 and source 2 within the configured time, this message will be displayed. |
| `Mechanical fail` | **Mechanical failure occurred (Limit switch failure)**<br>The limit switch reply evaluation system has recognized an irregular state of the limit switches from the transfer switch. The limit switch fail screen gives detailed information about the ACTUAL reply signals, and the EXPECTED reply signals. Once the Actual reply signals meet the same state as the expected ones, the mechanical failure will present a Reset button on the limit switch fail screen for manual (qualified personnel) acknowledgement and records an entry in the event history. |
| `Overlap timeout` | **Switch was unable to open from overlap position**<br>The limit switch reply evaluation system has recognized an irregular state of the limit switches from the transfer switch. It was not possible to open the transfer switch from either source. |
| `S1 phase rot.mis.` | **Source 1 phase rotation miswired**<br>If source 1 phase rotation monitoring is enabled and a miswired phase rotation has been detected, this message will be displayed. |
| `S2 phase rot.mis.` | **Source 2 phase rotation miswired**<br>If source 2 phase rotation monitoring is enabled and a miswired phase rotation has been detected, this message will be displayed. |
| `Start fail S1` | **Source 1 could not be started**<br>Genset 1 could not be started. This is only valid if the application mode is configured to "Gen-Gen". |
| `Start fail S2` | **Source 2 could not be started**<br>Genset 2 could not be started. |
| `Unint. Open S1` | **Unintended Open S1**<br>The breaker to S1 was opened externally without the ATS having issued an "Open" command |
| `Unint. Open S2` | **Unintended Open S2**<br>The breaker to S2 was opened externally without the ATS having issued an "Open" command |
| `Unint. stop S1` | **Genset 1 has stopped unintentionally**<br>An unintended stop of genset 1 has occurred (possibly due to a fuel shortage or a general problem with the engine). This is only valid if the application mode is configured to "Gen-Gen". |
| `Unint. stop S2` | **Genset 2 has stopped unintentionally**<br>An unintended stop of genset 2 has occurred (possibly due to a fuel shortage or a general problem with the engine). |

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