INSTRUCTIONS

PUMPING SMART CARD

RIGHT FROM THE START

AuCom
MOTOR CONTROL SPECIALISTS

Contents

Product Compatibility

The Pumping Smart Card is suitable for use with EMX4e and EMX4i soft starters.

This user manual (710-17269-00B) is compatible with EMX4 soft starters using parameter list version 2.x.

To check the versions of software currently installed in the starter, view the Starter Information screen or use Software Versions in the Setup Tools.

Disclaimer

The examples and diagrams in this manual are included solely for illustrative purposes. The information contained in this manual is subject to change at any time and without prior notice. In no event will responsibility or liability be accepted for direct, indirect or consequential damages resulting from the use or application of this equipment.

1. Warnings

WARNING

When the soft starter is connected to mains voltage, the Pumping Smart Card can start or stop the motor without warning. To ensure personnel safety, isolate the soft starter from mains voltage before installing the smart card.

WARNING

Inserting foreign objects or touching the inside of the starter while the expansion port cover is open may endanger personnel, and can damage the starter.

CAUTION

The hydraulic characteristics of pump systems vary considerably. The default parameter settings may not be suitable for every application and care should be taken to configure the starter appropriately.

2. Overview

2.1 Operation

The Pumping Smart Card provides dedicated inputs for pressure, depth, temperature and flow sensors to allow protection, control and monitoring integration in a range of pumping applications.

Monitoring

Data from analog or pulse sensors can be displayed directly on the EMX4's display.

A real-time graph is also available if the optional remote keypad is installed.

Protection

The smart card can stop or trip the soft starter based on user-selected levels for high or low pressure, depth, temperature or flow.

Control

The smart card can automatically start and stop the EMX4 in response to rising or falling pressure, or rising or falling depth.

Smart card control can be used in conjunction with the EMX4i scheduling function to restrict starting or stopping to specified days and times.

3. Setup Procedure Overview

WARNING
For your safety, isolate the soft starter from mains voltage before attaching or removing accessories.

3.1 Setup Procedure Overview

1. Insert the card into the soft starter.
2. Connect sensors to the inputs:
   - Depth protection: B13, B14 or C13, C14
   - Pressure protection: B23, B24 or C33, C34, C43, C44
   - Flow protection: B33, B34 or C23, C24
   - Motor temperature protection: R1, R2, R3
   - Pressure or depth based control: B23, B24
3. Configure the soft starter's auto-reset as required (parameters 6A *Auto-Reset Count*, 6B *Auto-Reset Delay*).
4. Configure flow protection operation if required (refer to *Flow Protection* on page 10).
5. Configure pressure protection operation if required (refer to *Pressure Protection* on page 14).
6. Configure pressure or depth based control if required (refer to *Pressure Control* on page 18).
   NOTE: Protection features will still operate even if control is set to Off.
7. Configure depth protection operation if required (refer to *Depth Protection* on page 22).
8. Configure temperature protection operation if required (refer to *Thermal Protection* on page 25).
9. Select the command source (parameter 1A *Command Source*):
   - For protection and monitoring, use Digital Input, Remote Keypad or Clock.
   - For control, use Smart Card or Smart Card + Clock

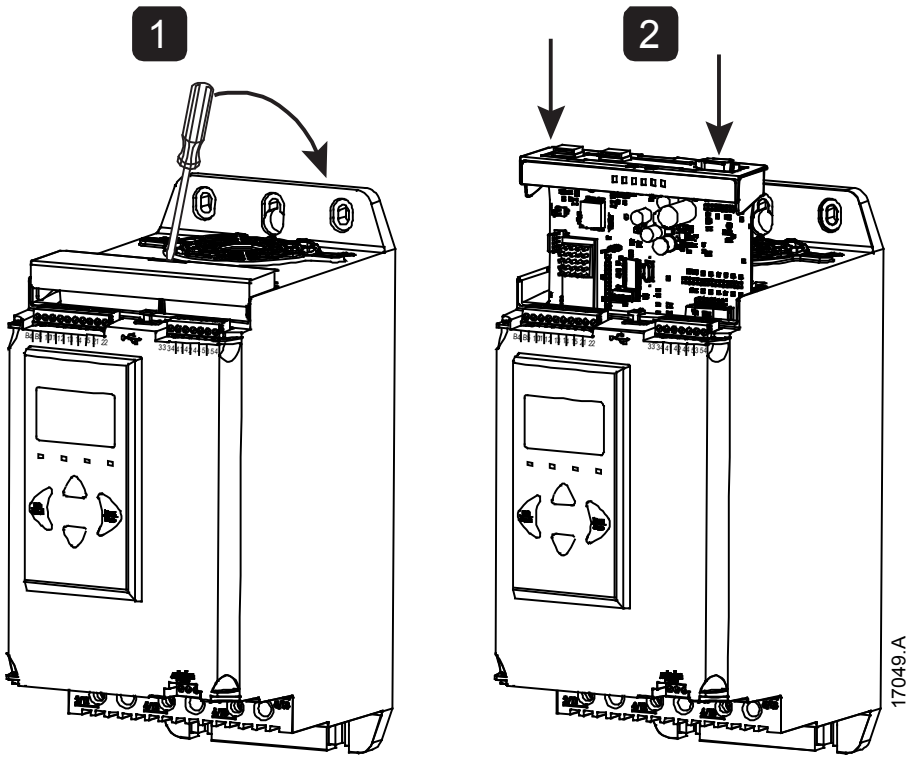
   

   NOTE
   Clock-based control is only available with EMX4i.

4. Installation

4.1 Installing the Expansion Card

1. Push a small flat-bladed screwdriver into the slot in the centre of the expansion port cover, and ease the cover away from the starter.
2. Line up the card with the expansion port. Gently push the card along the guide rails until it clicks into the starter.



4.2 Compatible input devices

The smart card supports the following types of input device:

- analog 4-20 mA active (self-powered) and passive (loop-powered)
- pulse
- digital switch

4.3 Wiring information for analog 4-20 mA sensors

The wiring connections for 4-20 mA sensors vary, depending on how the sensor is powered. This manual describes the wiring connections for passive (loop-powered) sensors, but active (self-powered) sensors can also be used by changing the wiring connections.

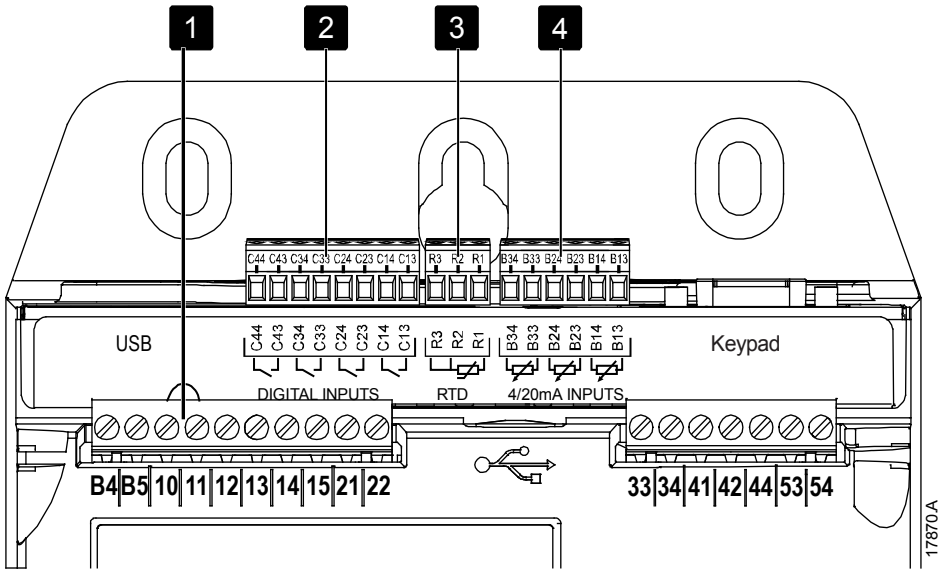
- Passive (loop-powered) sensors are powered from the 4-20 mA terminals of the smart card. For these sensors, use B13-B14, B23-B24, B33-B34.
- Active (self-powered) sensors have either an internal or external power supply. The sensor is not powered from the smart card terminals. For these sensors, connect the 0 V to terminal R1 and connect the active input to B13, B23 or B33 as required.

Active and passive sensors can be used in the same installation.

4.4 Minimising noise

To minimise noise when using the analog 4-20 mA inputs, use twisted pair wiring.

4.5 Input Terminals



1	Reset input	10, 11	If the reset input is active, the starter will not operate. If a reset switch is not required, fit a link across terminals 10, 11 on the soft starter. The reset input is normally closed by default (refer to note).
2	Digital inputs (normally open)	C13, C14	Depth protection
		C23, C24	Flow protection and monitoring
		C33, C34	Low pressure protection
		C43, C44	High pressure protection
3	RTD/PT100 input	R1, R2, R3	Motor temperature protection
4	4-20 mA inputs	B13, B14 [+]	Depth protection and monitoring
		B23, B24 [+]	Pressure protection and monitoring / Pressure or depth based control
		B33, B34 [+]	Flow protection and monitoring

NOTE

The reset input can be configured for normally open or normally closed operation. Use parameter 7I to select the configuration.

NOTE

Flow protection and monitoring:

- When used with a switch sensor, C23, C24 provides flow protection only.
- When used with a pulse sensor, C23, C24 provides flow protection and monitoring.

5. Operation

5.1 Monitoring

Data from analog or pulse sensors can be displayed directly on the EMX4's display.

A real-time graph is also available if the optional remote keypad is installed.

- To scroll to the graph screen, press the ▼ and ▲ buttons.
- To change which data is displayed on the graph, press the ALT button on the remote keypad.

5.2 Protection and monitoring

The smart card can stop or trip the soft starter based on user-selected levels for high or low pressure, depth, temperature or flow.

Smart card protection features are always active while the soft starter is operating. Protection levels are set using parameter groups 31~35.

5.3 Protection, monitoring and control

The smart card can automatically start and stop the EMX4 in response to rising or falling pressure, or rising or falling depth.

To use the Pumping Smart Card to control the soft starter:

- set parameter 1A *Command Source* to 'Smart Card' or 'Smart Card + Clock'
- set parameter 33A *Pressure Control Mode* as required
- to use clock-based scheduling, set parameter 4A *Auto-Start/Stop Mode* to 'Enable'

NOTE

Smart card protection features are always active while the soft starter is operating. Smart card protection is not affected by the command source.

NOTE

To use the smart card to control the soft starter, use sensors connected to B23, B24.

NOTE

If the reset input is active, the starter will not operate. If a reset switch is not required, fit a link across terminals 10, 11 on the soft starter.

6. Configuration

Operating parameters for the Pumping Smart Card are set in and stored in the soft starter. Parameters can be configured via the main menu, or uploaded using the USB Save & Load function.

For details on how to configure the soft starter, refer to the soft starter user manual.

6.1 Off-line configuration

Parameters for smart card functions are only visible in the parameter list if the smart card is installed.

To configure smart card settings in the starter before the card is installed, generate a parameter file in WinMaster and load it into the starter using USB Save & Load.

6.2 Flow Protection

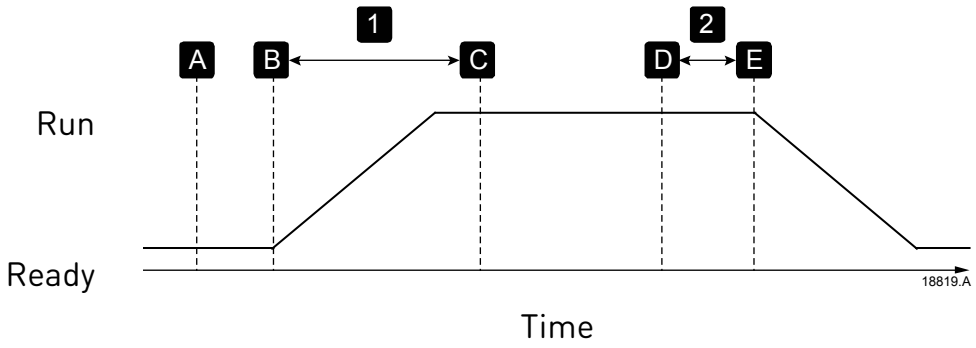
Flow protection uses terminals B33, B34 or C23, C24 on the smart card.

- B33, B34: use an analog 4-20 mA sensor
- C23, C24: use a normally open digital switch sensor for protection only, or use a pulse sensor for protection and monitoring

Flow protection is active when the starter is in start, run or stop mode.

The smart card will trip the starter when flow rate passes through the programmed trip level. If the flow rate is still outside the expected operating range when the trip is reset (including auto-reset), the starter will not trip again.

Operation



A	Off (Ready)
B	Start signal
C	Flow protection active
D	Protection event (parameter 31A *High Flow Trip Level*, 31B *Low Flow Trip Level*)
E	Protection response (parameter 36B *Flow Sensor*, 36F *High Flow*, 36G *Low Flow*, 36H *Flow Switch*)
1	Flow protection start delay (parameter 31C *Flow Start Delay*)
2	Flow protection response delay (parameter 31D *Flow Response Delay*)

To use an analog 4-20 mA sensor (protection and monitoring):

1. Connect the sensor to B33, B34
2. Set parameter 30E to 'Analog'
3. Set parameters 30F, 30G and 30H according to the sensor specification
4. Set parameters 31A ~ 31D and 36B, 36F, 36G as required

To use a switch sensor (protection only):

1. Connect the sensor to C23, C24
2. Set parameter 30E to 'Switch'
3. Set parameters 31C, 31D, 36B and 36H as required.
   Parameters 31A and 31B are not used with a switch sensor.

To use a pulse sensor (protection and monitoring):

1. Connect the sensor to C23, C24
2. Set parameter 30E to 'Pulses per minute' or 'Pulses per unit'
3. Set parameters 30F, 30K, and either 30I or 30J according to the sensor specification
4. Set parameters 31A ~ 31D and 36B, 36F and 36G as required

Parameters

- **30 Pump Input Configuration**

30E – *Flow Sensor Type*

Options:	None (default)	Pulses per minute
	Switch	Pulses per unit
	Analog	
Description:	Selects which type of sensor is associated with the flow sensor input on the smart card.	

30F – *Flow Units*

Options:	litres/second (default)	gallons/second
	litres/minute	gallons/minute
Description:	Selects which units the sensor will use to report the measured flow.	

30G – *Flow at 4 mA*

Range:	0 – 5000	**Default:**	0
Description:	Calibrates the soft starter to the 4 mA (0%) level of the flow sensor input.		

30H – *Flow at 20 mA*

Range:	0 – 5000	**Default:**	0
Description:	Calibrates the soft starter to the 20 mA (100%) level of the flow sensor input.		

30I – *Units per Minute at Max Flow*

Range:	0 – 5000	**Default:**	0
Description:	Calibrates the soft starter to the maximum flow volume of the flow sensor.		

30J – *Pulses per Minute at Max Flow*

Range:	0 – 20000	**Default:**	0
Description:	Calibrates the soft starter to the maximum flow volume of the flow sensor.		

30K – *Units per Pulse*

Range:	0 – 1000	**Default:**	0
Description:	Set to match how many units the flow sensor will measure for each pulse.		

- **31 Flow Protection**

31A – *High Flow Trip Level*

Range:	0 – 5000	**Default:**	10
Description:	Sets the trip point for high flow protection.		

31B – *Low Flow Trip Level*

Range:	1 – 5000	**Default:**	5
Description:	Sets the trip point for low flow protection.		

31C – *Flow Start Delay*

Range:	00:00:50 - 30:00:00 mm:ss:ms	**Default:**	00:00:500 ms
Description:	Sets a delay before a flow protection trip can occur. The delay is counted from the time a start signal is received. The flow level is ignored until the start delay has elapsed.		

31D – *Flow Response Delay*

Range:	00:00:10 - 30:00:00 mm:ss:ms	**Default:**	00:00:500 ms
Description:	Sets a delay between the flow passing the high or low flow trip levels, and the soft starter tripping.		

- **36 Pump Trip Action**

36B – *Flow Sensor*

Options:	Soft Trip and Log (default)	Trip and Reset
	Soft Trip and Reset	Warn and Log
	Trip Starter	Log Only
Description:	Selects the soft starter's response if it detects a fault with the flow sensor.	

36F – *High Flow*

Options:	Soft Trip and Log (default)	Trip and Reset
	Soft Trip and Reset	Warn and Log
	Trip Starter	Log Only
Description:	Selects the soft starter's response if the flow exceeds the high flow trip level (parameter 31A).	

36G – *Low Flow*

Options:	Soft Trip and Log (default)	Trip and Reset
	Soft Trip and Reset	Warn and Log
	Trip Starter	Log Only

Description: Selects the soft starter's response if the flow falls below the low flow trip level (parameter 31B).

36H – *Flow Switch*

Options:	Soft Trip and Log (default)	Trip and Reset
	Soft Trip and Reset	Warn and Log
	Trip Starter	Log Only

Description: Selects the soft starter's response if the flow sensor closes (switch type sensors only).

6.3 Pressure Protection

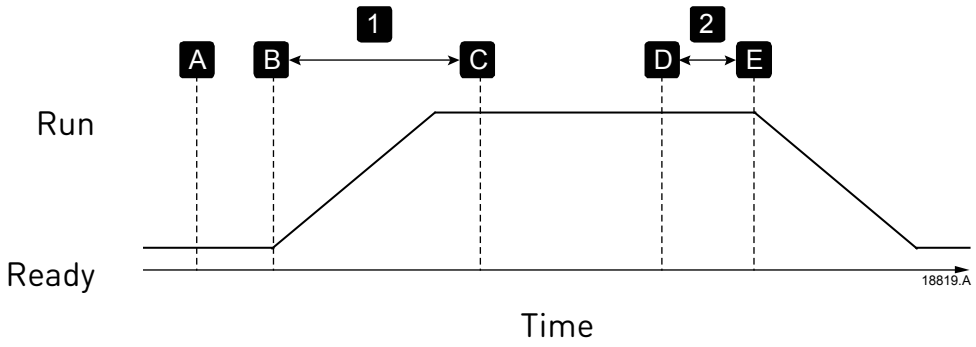
Pressure protection uses terminals B23, B24 or C33, C34, C43, C44 on the smart card.

- B23, B24: use an analog 4-20 mA sensor
- C33, C34 (Low pressure protection): use a normally open digital switch sensor
- C43, C44 (High pressure protection): use a normally open digital switch sensor

Pressure protection is active when the starter is in start, run or stop mode.

The smart card will trip the starter when the pressure level passes through the programmed trip level. If the pressure is still outside the expected operating range when the trip is reset (including auto-reset), the starter will not trip again.

Operation



A	Off (Ready)
B	Start signal
C	Pressure protection active
D	Protection event (parameter 32A *High Pressure Trip Level*, 32D *Low Pressure Trip Level*)
E	Protection response (parameter 36A *Pressure Sensor*, 36D *High Pressure*, 36E *Low Pressure*)
1	Pressure protection start delay (parameter 32B *High Pressure Start Delay*, 32E *Low Pressure Start Delay*)
2	Pressure protection response delay (parameter 32C *High Pressure Response Delay*, 32F *Low Pressure Response Delay*)

To use an analog 4-20 mA sensor (protection and monitoring):

1. Connect the sensor to B23, B24
2. Set parameter 30A to 'Analog'
3. Set parameters 30B, 30C and 30D according to the sensor specification
4. Set parameters 32A ~ 32F and 36A, 36D, 36E as required

To use a switch sensor (protection only):

1. Connect the low pressure sensor to C33, C34 and the high pressure sensor to C43, C44
2. Set parameter 30A to 'Switch'
3. High pressure protection: Set parameters 32B, 32C, 36A and 36D as required.
   Low pressure protection: Set parameters 32E, 32F, 36A and 36E as required.
   Parameters 32A and 32D are not used with a switch sensor.

Parameters

- **30 Pump Input Configuration**

30A – *Pressure Sensor Type*

Options: None (default)
Switch
Analog

Description: Selects which type of sensor is associated with the pressure sensor input on the smart card.

30B – *Pressure Units*

Options: Bar
kPa (default)
Psi

Description: Selects which units the sensor will use to report the measured pressure.

30C – *Pressure at 4 mA*

Range: 0 – 5000 **Default:** 0

Description: Calibrates the soft starter to the 4 mA (0%) level of the pressure sensor input.

30D – *Pressure at 20 mA*

Range: 0 – 5000 **Default:** 0

Description: Calibrates the soft starter to the 20 mA (100%) level of the pressure sensor input.

- **32 Pressure Protection**

32A – *High Pressure Trip Level*

Range: 0 – 5000 **Default:** 10

Description: Sets the trip point for high pressure protection.

32B – *High Pressure Start Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay before a high pressure protection trip can occur. The delay is counted from the time a start signal is received. The pressure is ignored until the start delay has elapsed.

32C – *High Pressure Response Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay between the pressure passing the high pressure trip level, and the soft starter tripping.

32D – *Low Pressure Trip Level*

Range: 0 – 5000 **Default:** 5

Description: Sets the trip point for low pressure protection.

32E – *Low Pressure Start Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay before a low pressure protection trip can occur. The delay is counted from the time a start signal is received. The pressure is ignored until the start delay has elapsed.

32F – *Low Pressure Response Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay between the pressure passing the low pressure trip level, and the soft starter tripping.

- **36 Pump Trip Action**

36A – *Pressure Sensor*

Options:

Soft Trip and Log (default)	Trip and Reset
Soft Trip and Reset	Warn and Log
Trip Starter	Log Only

Description: Selects the soft starter's response if it detects a fault with the pressure sensor.

36D – *High Pressure*

Options:

Soft Trip and Log (default)	Trip and Reset
Soft Trip and Reset	Warn and Log
Trip Starter	Log Only

Description: Selects the soft starter's response if the pressure exceeds the high pressure trip level (parameter 32A) or the high pressure switch sensor closes.

36E – *Low Pressure*

Options:	Soft Trip and Log (default)	Trip and Reset
	Soft Trip and Reset	Warn and Log
	Trip Starter	Log Only

Description: Selects the soft starter's response if the pressure falls below the low pressure trip level (parameter 32D) or the low pressure switch sensor closes.

6.4 Pressure Control

The smart card can start or stop the starter (wake or sleep the pump) according to measured pressure. This can be used for direct pressure-based control, or the pressure measurement can be used to indicate water depth.

Other sensors can also be used to provide protection and monitoring.

Pressure control uses terminals B23, B24 on the smart card. Use an analog 4-20 mA sensor.

Configuration

1. Connect the sensor to B23, B24
2. Set parameter 30A to 'Analog'
3. Set parameters 30B, 30C and 30D according to the sensor specification
4. Set parameters 33A ~ 33E as required
5. Set parameter 1A to 'Smart Card' or 'Smart Card + Clock'.

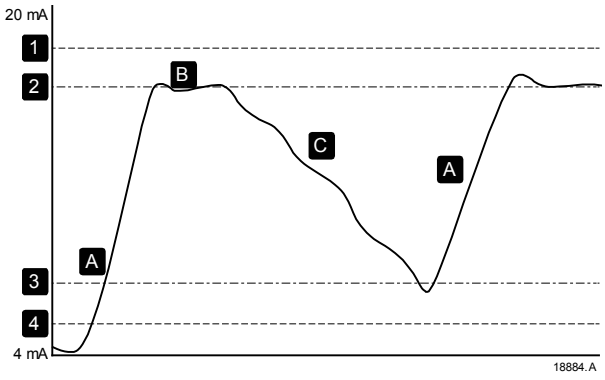
Operation

- **Level control operation**

A pressure sensor can be used to control the pump based on fluid level in a storage tank, on the principle that deeper water exerts higher pressure on the sensor.

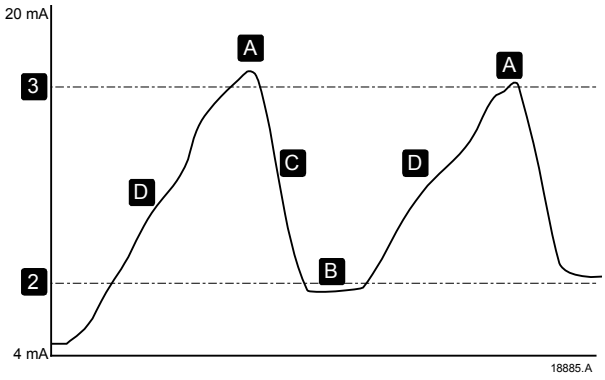
Set parameter 33A *Pressure Control Mode* to 'Falling Pressure Start' to fill the tank, or 'Rising Pressure Start' to empty the tank.

Example 1: Falling pressure (tank fill)



Time

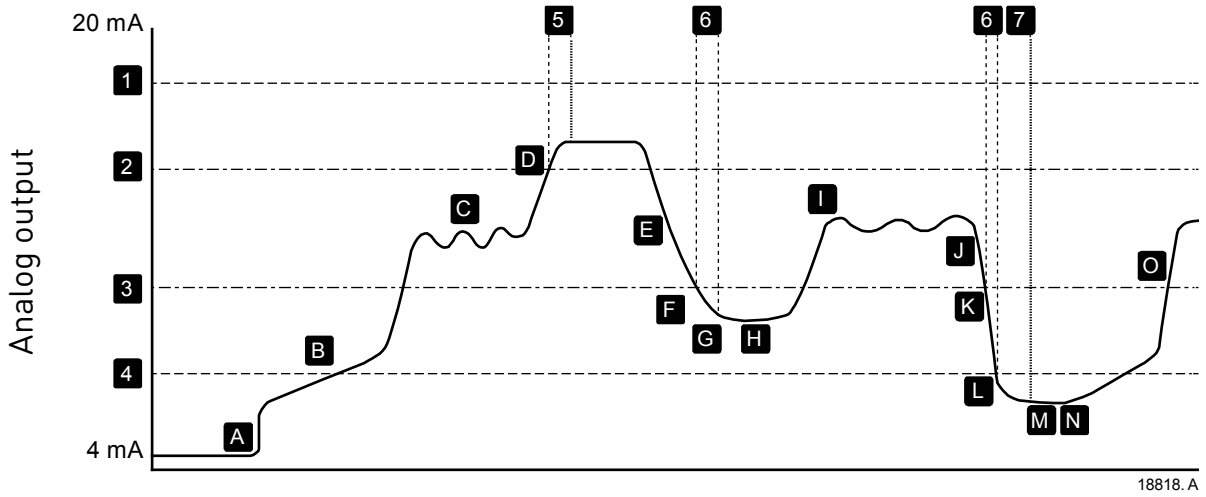
Example 2: Rising pressure (tank empty)



Time

1	*High Pressure Trip Level* (parameter 32A)	A	Pump on (wake)
2	Pump sleep (*Stop Pressure Level* , parameter 33D)	B	Pump off (sleep)
3	Pump wake (*Start Pressure Level*, parameter 33B)	C	Falling fluid level
4	*Low Pressure Trip Level* (parameter 32D)	D	Rising fluid level

- **Pressure based operation**



1	*High Pressure Trip Level* (parameter 32A)
2	Pump sleep (*Stop Pressure Level*, parameter 33D)
3	Pump wake (*Start Pressure Level*, parameter 33B)
4	*Low Pressure Trip Level* (parameter 32D)
5	*Stop Response Delay* (parameter 33E)
6	*Start Response Delay* (parameter 33C)
7	*Auto-Reset Delay* (parameter 6B)

A	Smart card control enabled, pump starts
B	Pipe filling
C	Normal pressure variation
D	Pressure at stop threshold, pump stops (sleep)
E	Falling system pressure
F	Pressure below start threshold, start response delay
G	Pump wakes
H	Pump running
I	Normal pressure variation
J	Falling system pressure
K	Pressure below start threshold, start response delay
L	Low pressure trip level
M	EMX4 auto-reset
N	Pump wakes
O	Normal operation

Parameters

- **30 Pump Input Configuration**

30A – *Pressure Sensor Type*

Options: None (default)
Switch
Analog

Description: Selects which type of sensor is associated with the pressure sensor input on the smart card.

30B – *Pressure Units*

Options: Bar
kPa (default)
Psi

Description: Selects which units the sensor will use to report the measured pressure.

30C – *Pressure at 4 mA*

Range: 0 – 5000 **Default:** 0

Description: Calibrates the soft starter to the 4 mA (0%) level of the pressure sensor input.

30D – *Pressure at 20 mA*

Range: 0 – 5000 **Default:** 0

Description: Calibrates the soft starter to the 20 mA (100%) level of the pressure sensor input.

- **33 Pressure Control**

33A – *Pressure Control Mode*

Options:

Off (default)	The soft starter will not use the pressure sensor to control soft starting.
Falling Pressure Start	The soft starter will start when the pressure drops below the level selected in parameter 33B *Start Pressure Level*.
Rising Pressure Start	The soft starter will start when the pressure rises above the level selected in parameter 33B *Start Pressure Level*.

Description: Selects how the soft starter will use data from the pressure sensor to control the motor.

33B – *Start Pressure Level*

Range: 1 – 5000 **Default:** 5

Description: Sets the pressure level to trigger the soft starter to perform a soft start.

33C – *Start Response Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay between the pressure passing the pressure control start level, and the soft starter performing a soft start.

33D – *Stop Pressure Level*

Range: 0 – 5000 **Default:** 10

Description: Sets the pressure level to trigger the soft starter to stop the motor.

33E – *Stop Response Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay between the pressure passing the pressure control stop level, and the soft starter stopping the motor.

- **36 Pump Trip Action**

36A – *Pressure Sensor*

Options:

Soft Trip and Log (default)	Trip and Reset
Soft Trip and Reset	Warn and Log
Trip Starter	Log Only

Description: Selects the soft starter's response if it detects a fault with the pressure sensor.

6.5 Depth Protection

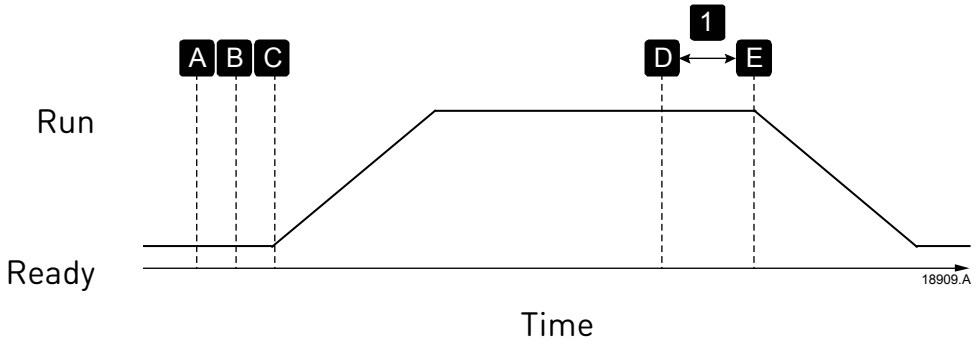
Depth protection uses terminals B13, B14 or C13, C14 on the smart card.

- B13, B14: use an analog 4-20 mA sensor
- C13, C14: use a normally open digital switch sensor

Depth protection is always active (ready, start, run and stop modes).

The smart card will trip the starter when the depth level passes through the programmed trip level. If the depth is still outside the expected operating range when the trip is reset (including auto-reset), the starter will not trip again.

Operation



A	Off (Ready)
B	Depth protection active
C	Start signal
D	Protection event (parameter 34A *Depth Trip Level*)
E	Protection response (parameter 36C *Depth Sensor*, 36I *Well Depth*)
1	Depth protection response delay (parameter 34D *Depth Response Delay*)

To use an analog 4-20 mA sensor (protection and monitoring):

1. Connect the sensor to B13, B14
2. Set parameter 30L to 'Analog'
3. Set parameters 30M, 30N and 30O according to the sensor specification
4. Set parameters 34A ~ 34D, 36C and 36I as required

To use a switch sensor (protection only):

1. Connect the sensor to C13, C14
2. Set parameter 30L to 'Switch'
3. Set parameters 34C, 34D, 36C and 36I as required.
   Parameters 34A and 34B are not used with a switch sensor.

Parameters

- **30 Pump Input Configuration**

30L – *Depth Sensor Type*

Options: None (default)
Switch
Analog

Description: Selects which type of sensor is associated with the depth sensor input on the smart card.

30M – *Depth Units*

Options: metres (default)
feet

Description: Selects which units the sensor will use to report the measured depth.

30N – *Depth at 4 mA*

Range: 0 – 1000 **Default:** 0

Description: Calibrates the soft starter to the 4 mA (0%) level of the depth sensor input.

30O – *Depth at 20 mA*

Range: 0 – 1000 **Default:** 0

Description: Calibrates the soft starter to the 20 mA (100%) level of the depth sensor input.

- **34 Depth Protection**

34A – *Depth Trip Level*

Range: 0 – 1000 **Default:** 5

Description: Sets the trip point for depth protection.

34B – *Depth Reset Level*

Range: 0 – 1000 **Default:** 10

Description: Sets the level for the soft starter to auto-reset a depth trip.

34C – *Depth Start Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 milliseconds

Description: Sets a delay before a depth protection trip can occur. The delay is counted from the time a start signal is received. The depth input is ignored until the start delay has elapsed.

34D – *Depth Response Delay*

Range: 00:00:10 – 30:00:00 mm:ss:ms **Default:** 00:00:500 ms

Description: Sets a delay between the depth passing the depth protection trip level, and the soft starter tripping.

- **36 Pump Trip Action**

36C – *Depth Sensor*

Options:

Soft Trip and Log (default)	Trip and Reset
Soft Trip and Reset	Warn and Log
Trip Starter	Log Only

Description: Selects the soft starter's response if it detects a fault with the depth sensor.

36I – *Well Depth*

Options:

Soft Trip and Log (default)	Trip and Reset
Soft Trip and Reset	Warn and Log
Trip Starter	Log Only

Description: Selects the soft starter's response if the depth falls below the depth trip level (parameter 34A) or the depth switch sensor closes.

6.6 Thermal Protection

Thermal protection uses terminals R1, R2, R3 on the smart card.

Thermal protection is active only when the starter is in run mode.

Parameters

- **35 Thermal Protection**

35A – *Temperature Sensor Type*

Options: None (default)
PT100

Description: Selects which type of sensor is associated with the temperature sensor input on the smart card.

35B – *Temperature Trip Level*

Range: 0° – 240° **Default:** 40°

Description: Sets the trip point for temperature protection. Use parameter 10B *Temperature Scale* to configure the temperature scale.

- **36 Pump Trip Action**

36J – *RTD/PT100 B*

Options:

Soft Trip and Log (default)	Trip and Reset
Soft Trip and Reset	Warn and Log
Trip Starter	Log Only

Description: Selects the soft starter's response to the protection event.

7. Troubleshooting

7.1 Trip Messages

Display	Possible cause/Suggested solution
Depth Sensor	The smart card has detected a fault with the depth sensor. Related parameters: 30L, 36C
Flow Sensor	The smart card has detected a fault with the flow sensor. Related parameters: 30E, 36B
Flow Switch	The flow switch sensor (smart card terminals C23, C24) has closed. Related parameters: 30E, 36H
High Flow	The flow sensor connected to the smart card has activated high flow protection. Related parameters: 30E, 30G, 30H, 31A, 31C, 31D, 36F
High Pressure	The pressure sensor connected to the smart card has activated high pressure protection. Related parameters: 30A, 30C, 30D, 32A, 32B, 32C, 36D
Low Flow	The flow sensor connected to the smart card has activated low flow protection. Related parameters: 30E, 30G, 30H, 31B, 31C, 31D, 36G
Low Pressure	The pressure sensor connected to the smart card has activated low pressure protection. Related parameters: 30A, 30C, 30D, 32D, 32E, 32F, 36E
Low Water	The depth sensor connected to the smart card has activated depth protection. Related parameters: 30L, 30N, 30O, 34A, 34B, 34C, 36I
Pressure Sensor	The smart card has detected a fault with the pressure sensor. Related parameters: 30A, 36A
RTD Circuit	The smart card has detected a fault with the RTD sensor, or the RTD has activated temperature protection. Related parameters: 35B, 36J

8. Specifications

- **Connections**

  External equipment ..... unpluggable connectors (supplied)

  Maximum cable size ..... 2.5 mm^2

- **Certification**

  RCM ..... IEC 60947-4-2

  CE ..... EN 60947-4-2

  RoHS ..... Compliant with EU Directive 2011/65/EU

710-17269-00B