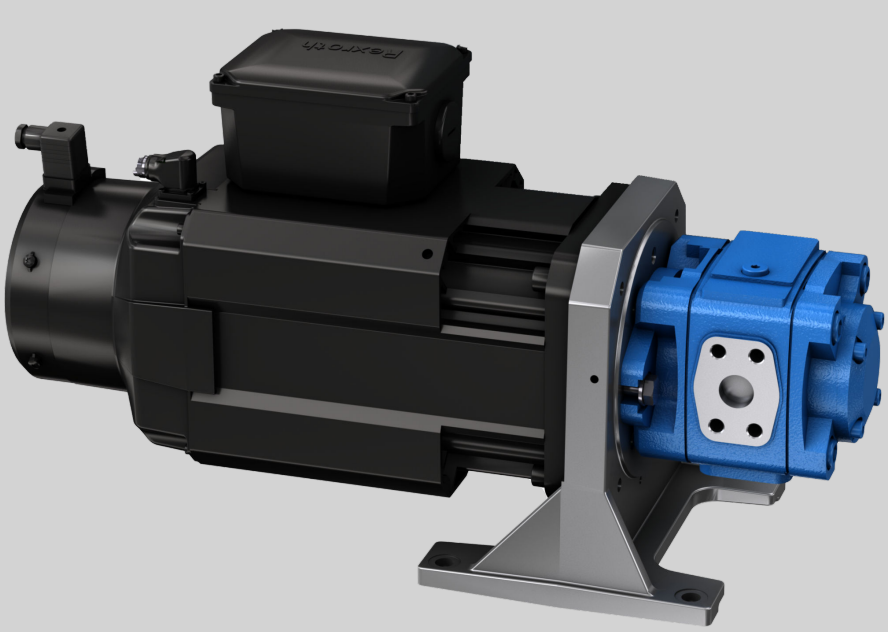
rexroth
A Bosch Company

Sytronix

SvP 7030 IMC
Variable-speed pump drives

Release Notes
RE 62312-RN/08.2022

Edition 01



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1 General information

1.1 Releases

Software/parameter file name	Release date	Change of version
CP-FWS-XD1-APP-SVP_IMC_AX03-NN-**V-1002**-NN	08/22/2022	10V02

Tab. 1-1: Record of revisions of software/parameter file FWS-CXDxx-IMC

1.2 Scope of functions of SvP7030 IMC10VRS

System characteristics

The following system characteristics with rotary coupling between motor and pump are supported:

1. Hydraulic system:
   - Direction of flow via pump
2. Motor:
   - Without encoder
   - With encoder
3. Pump:
   - 2-quadrant operation; only positive pressure differential allowed
4. Pump volume:
   - Fixed displacement pump
5. Sensors:
   - Pressure sensor for system pressure

The sizing of components and the hydraulic design are limiting elements of the operating points and the dynamics of the motor-pump unit.

Supported functions

The following functions are available:

1. Communication interface and I/Os
   - Evaluation of pressure sensors via analog input
     - Freely scalable analog input scaling (bar/V, ...)
     - Signal filtering using PF1 filter
   - Easy Control state control
   - Fixed command value input for operating points (p_{cmd} and Q_{cmd})
     - Four operating points
     - Can be switched over at runtime
   - Leakage compensation
   - Cyclic transmission of command values (p_{cmd} and Q_{cmd}) via field bus or analog input
     - Command value filtering for ascent/descent (separate), PT1 filter
     - Command value limitation and soft start function
2. Pressure and flow control
   - Pressure control with $T_{controller}$ = 1 ms (pressure controller clock cycle)

- Alternation of pressure controller output and speed command value (p/Q alternation) by means of minimum value comparator
- Pressure-dependent switching of integral action time at pressure controller
- Switching over of up to four controller parameter sets
- Unipolar controller output limitation (n_{pos}, n_{neg})
- Power limitation
- Protection against cavitation
- Freely definable ramp for limiting changes in the controller output (acceleration and deceleration limit value)

3. Master/slave operation
4. Protective functions
   - Pump pressure monitoring
   - Model-based temperature monitoring of the pump
   - Monitoring for inadmissible operating points
   - Active operation mode

Functions that are not supported

The following functions are not or not yet available:

- Swivel angle control
- Double pump control/2-point control
- Automatic controller parameter set switchover
- Automatic injection function

1.3 Software/parameter file version

These software/parameter file Release Notes relate to the following software/parameter file variant:

Rexroth Sytronix
Software/parameter file for drive controllers
CP-FWS-XD1-APP-SVP_IMC_AX03-NN-V-1002-NN
SvP 7030 IMC

Tab. 1-2: Software/parameter file variant

Material no.	Software/parameter file	Comment
R901551793	CP-FWS-XD1-APP-SVP_IMC_AX03-NN-V-1002-NN	-

CP-FWS-XD1	Additional firmware component for product CP-FWS-XD1
APP	FWS type technology function
SVP	SYTRONIX technology function package
IMC	Injection Molding Control technology function
AX03	Firmware version FWA-XD1-AXS-V-03VRS-NN
NN	Axis assignment
V	Technology function character (here, full version)
10	Technology function version
02	Technology function release
NN	No other design

Tab. 1-3: Type code of the supported software/parameter file

1.4 System overview

1.4.1 Requirements

The following components and requirements are needed for Ethernet communication with the drive controller:

- Drive ctrlX DRIVE PLUS
- Firmware version AXS03V08.1 or higher
- Standard Ethernet cable
- Unassigned Ethernet interface at PC or notebook
- Engineering tool IndraWorks Ds 15V16 or higher

1.4.2 Electrical system characteristics

Electrical system characteristics

Combinations of firmware, control section, master communication

According to the application, the characteristics of control section options and master communication used have an influence on the firmware and the available operation modes. The tables below show the supported combinations:

ctrlX DRIVE

Product	Power section	Control section						Firmware Runtime									Communication	Motor encoder (Motor control)	Closed-loop control
XCS2, XMS2	Wxxxx ARN	02	N	ET	T0	EC	NN	S	03	RS	N	2	TF1	P	0	NN	Multi-Ethernet	Closed-loop recommended, open-loop possible (restricted dynamics)	p/Q
XCS2, XMS2	Wxxxx ARN	02	N	ET	T0	EC	DA *	S	03	RS	N	2	TF1	P	0	NN	Multi-Ethernet / analog		

*	DA option card available on request
Product	
XCS2	ctrlX DRIVE, feeding converter, single axis, generation 2
XMS2	ctrlX DRIVE, inverter, single axis, generation 2
Power section	
W	Cooling type: air, internal
xxxx	Maximum current in Ampere
A	Protection class of input voltage IP20, 750 V DC
R or B	R = integrated braking transistor/braking resistor (XCS ≤ W0070) B = braking transistor (XCS ≥ W0100)
N	Without motor connector set
Control section	
02	ctrlX DRIVE^{PLUS}
N	Without panel
ET	Multi-Ethernet communication with RJ45
T0	Hardware option 1 - Safe Torque Off (STO)
EC	Hardware option 2 - multi-encoder interface
NN	Hardware option 3 - not equipped
DA	Hardware option 3 - I/O extension digital/analog
Firmware/runtime	
S03RS	Standard runtime, version 03, latest release
N	N = export license required: no (maximum output frequency < 599 Hz)
2	Protocol - communication, EtherCAT (SoE), for further protocols, see Project Planning Manual
TF1	Uploading technology apps (XCS2)
P	DRIVE runtime productivity
0	Scope of functions, SafeMotion not selected
NN	No other design

Tab. 1-4: IMC device configuration

1.5 Required and supplementary documentations

Please see the following documents for comprehensive information on the product, system overview, commissioning manual, etc.:

Title	Type of documentation	Documentation type[1)]	Material number
Sytronix Variable-speed pump drives	Product Catalog	R999000332	R999000332
Rexroth Sytronix SvP 70xx Motor-Pump Unit MPA01	Operating Instructions	DOK-SYTROX-MPA01******-ITxx-xx-P	R911339824
Rexroth Sytronix SvP 70xx Motor-Pump Unit MPA02	Operating Instructions	DOK-SYTROX-MPA02******-ITRS-EN-P	R911387041
Rexroth Sytronix SvP 7030 IMC Variable-Speed Pump Drives	Operating Instructions	DOK-SYTROX-SVP7030-I*C-ITxx-EN-P	RE 62312-B
Rexroth Sytronix SvP 7030 IMC Variable-Speed Pump Drives	Functional Description	DOK-SYTROX-SVP7030-I*C-CO	RE 62312-FK
Rexroth Sytronix SvP 7020 PFC Variable-Speed Positioning of Hydraulic Axes	Operating Instructions	DOK-SYTROX-SVP7020-PF*-ITxx-EN-P	RE 62314-B
Rexroth Sytronix SvP 7020 PFC 03 Variable-Speed Positioning of Hydraulic Axes	Functional Description	DOK-SYTROX-SVP7020-PF*-CO03	RE 62314-FK

1) In the document type codes, "xx" is a placeholder for the current edition of the documentation (e.g.: IT01 is the first edition of Operating Instructions)

Tab. 1-5: Supplementary documentations

2 Loading the technology function

To be able to use the technology function, the software/parameter file has to be loaded first. In the condition as supplied, the software/parameter file has already been installed. In the case of updates, the technology function can be re-loaded in the form of a parameter file (loadable Technology Function Project).

No PLC programming knowledge is required, because the complete technology function can be operated via the dialogs in IndraWorks Ds.

To do this, the following steps have to be executed:

1. For displaying the active technology function and its status, select "PLC settings" under the node "Technology Function" in IndraWorks Ds.
2. Here, you can check, whether the IMC software is installed, and if so, with which release status. In addition, you see whether the software is actively running (RUN state).
3. If necessary, a new program can be loaded (as a software/parameter file) via “Load project....”

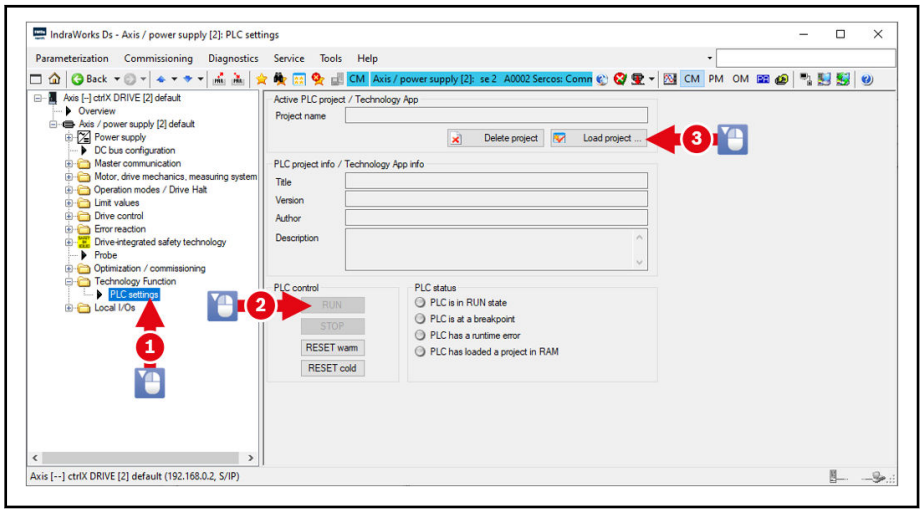

Fig. 2-1: PLC settings

3 CP-FWS-XD1-APP-SVP_IMC_AX03-NN-V-1002-NN.02

3.1 Bug fixing

3.1.1 Easy Control only works properly, if P-0-4028 is visible

ADS-ID: 511480

Severity: K4 malfunction (workaround exists)

Description: The Easy Control functionality only works, if parameter P-0-4028 is displayed online either in the parameter editor or in the parameter group. Otherwise, the drive switches automatically switches from AF back to Ab via an internal watchdog after about 2 seconds. For safety reasons the firmware resets parameter P-0-4028, as soon as it has not been read or written for longer than 2 seconds.

Bug fixing Parameter P-0-4028 is cyclically read by the software every 1.5 seconds as soon as the drive has been enabled via the Easy Control function.

3.2 Functional enhancements

No functional enhancement.

3.3 Product modifications

None function modification.

4 CP-FWS-XD1-APP-SVP_IMC_AX03-NN-V-1002-NN.01

4.1 Fixed bugs

No fixed bugs.

4.2 Functional enhancements

No functional enhancement.

4.3 Function modifications

No function modification, project info adapted

5 CP-FWS-XD1-APP-SVP_IMC_AX03-NN-V-1002-NN

5.1 Fixed bugs

The technology function IMC10V02 is the first version on the target ctrlX DRIVE.

5.2 Functional enhancements

The technology function IMC10V02 is the first version on the target ctrlX DRIVE.

5.3 Function modifications

The technology function IMC10V02 on the ctrlX DRIVE is the successor version for IMC02V14 on the IndraDrive C. Since both versions are compiled for different target systems, they are not compatible. The differences in the supported functions are listed below.

Functions	IMC02 V14	IMC10 V02
Scaling settings	-	x
Easy Control state control	-	x
Fixed command value input	-	x
Pressure command value filter	x	x
Leakage compensation	x	x
Command value limitation	x	x
Alternating closed-loop pressure/flow control	x	x
Parameter set switching	x	x
Power-related parameter set switching (speed, pressure)	x	-
Speed limitation	x	x
Protection against cavitation	x	x
Power limitation	x	x
Acceleration limitation	x	x
Master/slave operation	x	x
Double pump/2-point control	x	-
Automatic internal injection function	x	-
Pump pressure monitoring	x	x
Thermal load monitoring	x	x
Monitoring for inadmissible operating points	x	x
Monitoring for correct selection of the firmware functional packages	-	x
Diagnostics incl. logbook	x	x

x Available
- Not available

Tab. 5-1: Overview of functions for IMC technology function

Severity description

Defect class severity

This term refers to the "severity" of a defect, i.e. it describes how critical the defect can be (e.g., danger to life and limb, breakdown of machinery, ...). There are the following defect classes:

K1

Safety relevant function (danger to life and limb)

Accidental axis motion or malfunction in the safety technology which causes the drive to be unsafe and thereby **endangers persons**

K2

Serious malfunction (danger to mechanical system)

Accidental axis motion can cause **breakdown of machinery** because the command value processing does not work correctly, for example

K3

Malfunction (no workaround)

Malfunction of the drive for which there is **no** workaround

K4

Malfunction (workaround exists)

Malfunction of the drive for which there is **a** workaround

K5

Non critical problem

"Non critical problem" that does not affect the function of the drive

K6

Functional enhancement

Requirement for existing version or generation; can be implemented as a **downward compatible functional enhancement** in the current series

K7

Product idea

Requirement for next version or generation; cannot be implemented in the current series

K8

Product modification

Modifications of existing functions based on field know-how or new requirements

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