

Control systems Insight Control Panel

MCP, MEP



Original User manual
EN USER MANUAL

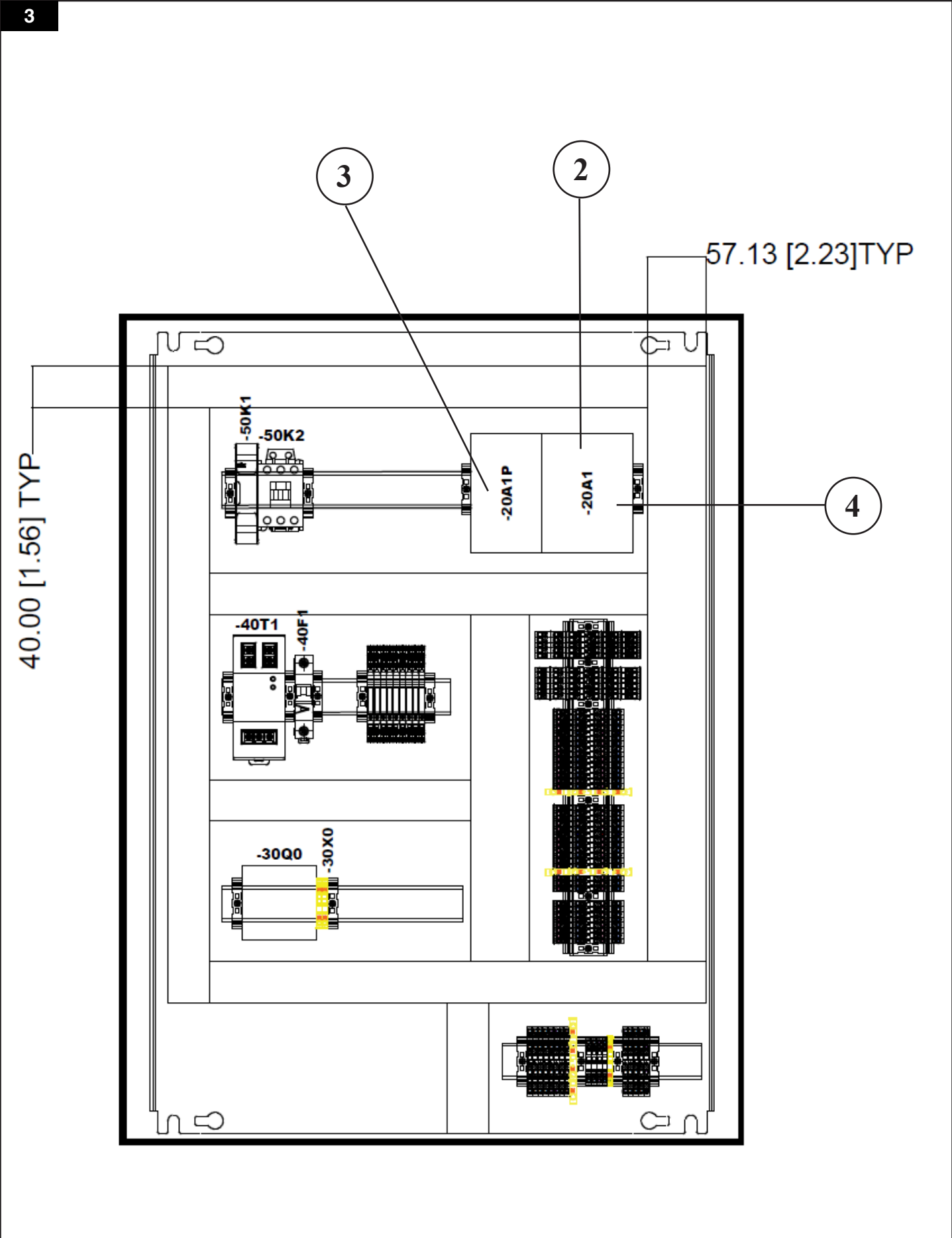
Translation of original User manual
US USER MANUAL



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English (US).....15

Figures





4

System is running 09:51 26.02.2021

0 in.wg. DUCT PRESSURE
70 % POWER

0 in.wg. PRESSURE DROP
IntelliPULSE CLEANING MODE

OK CONTAINER LEVEL

Running ROTARY VALVE

Stop at 16:14 SCHEDULE

START STOP OVERTIME WARNING

2986 h TO NEXT SERVICE

13 h IN OPERATION

4A

System alarm 10:06 26.02.2021

DUCT PRESSURE
0 % POWER

PRESSURE DROP
Off CLEANING MODE

OK CONTAINER LEVEL

Ready ROTARY VALVE

Stopped by alarm SCHEDULE

START/STANDBY STOP OVERTIME ALARM RESET E-STOP

2986 h TO NEXT SERVICE

13 h IN OPERATION

5

Alarm Log

System alarm 16:46 21.04.2020

Id	State	Date	Description
102	Alarm	16:45:59 21.04.2020	Explosion/Fire alarm
101	Alarm	16:45:26 21.04.2020	Low pressure on pressure vessel
501	Warning	16:45:09 21.04.2020	Container dust level high
111	Warning	16:41:42 21.04.2020	Lime feeder not ready

0 in.wg. DUCT PRESSURE
70 % POWER

intempULSE CLEANING MODE

START STOP OVERTIME WARNING

2986 h TO NEXT SERVICE
13 h IN OPERATION

Event log

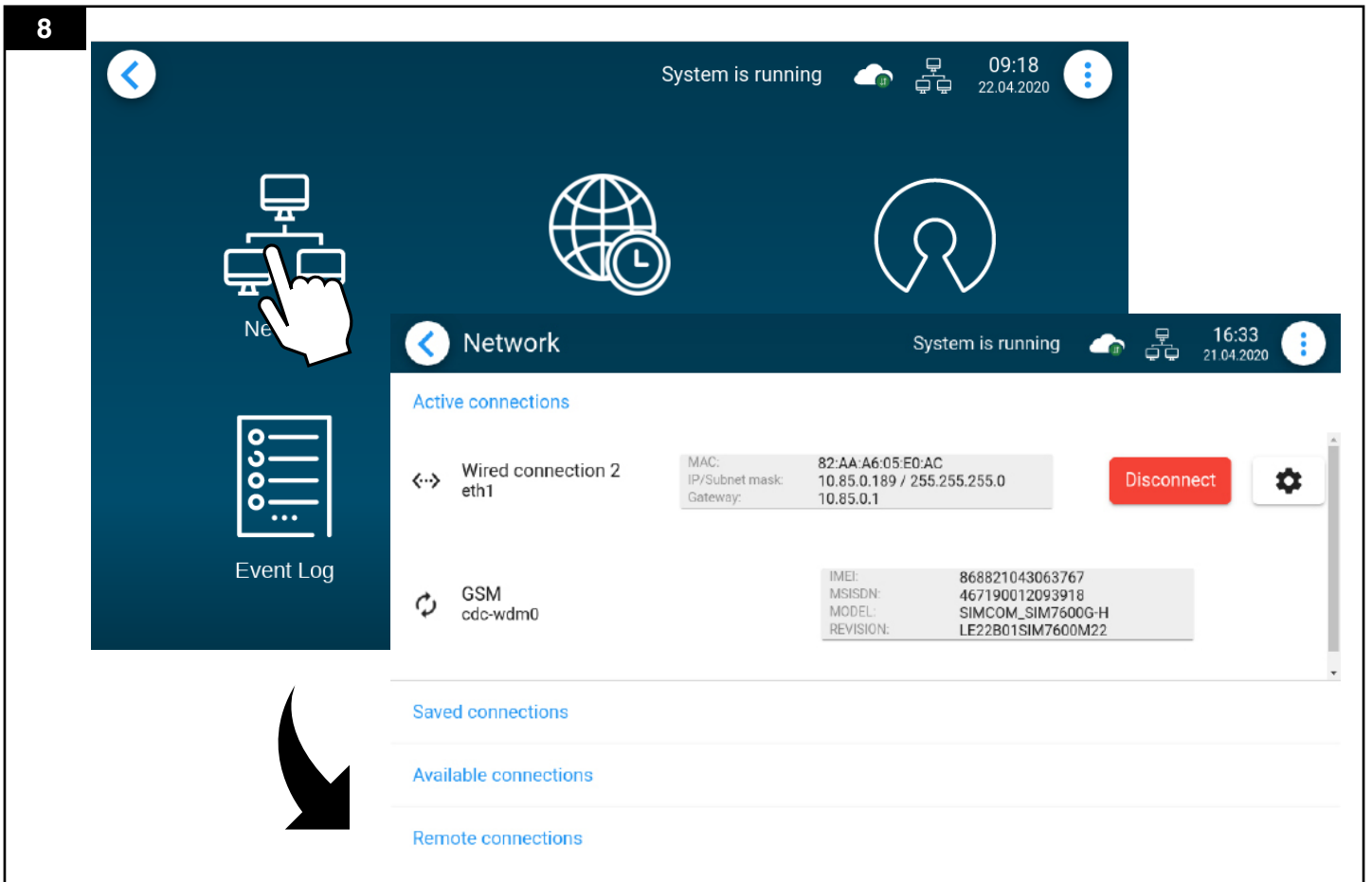
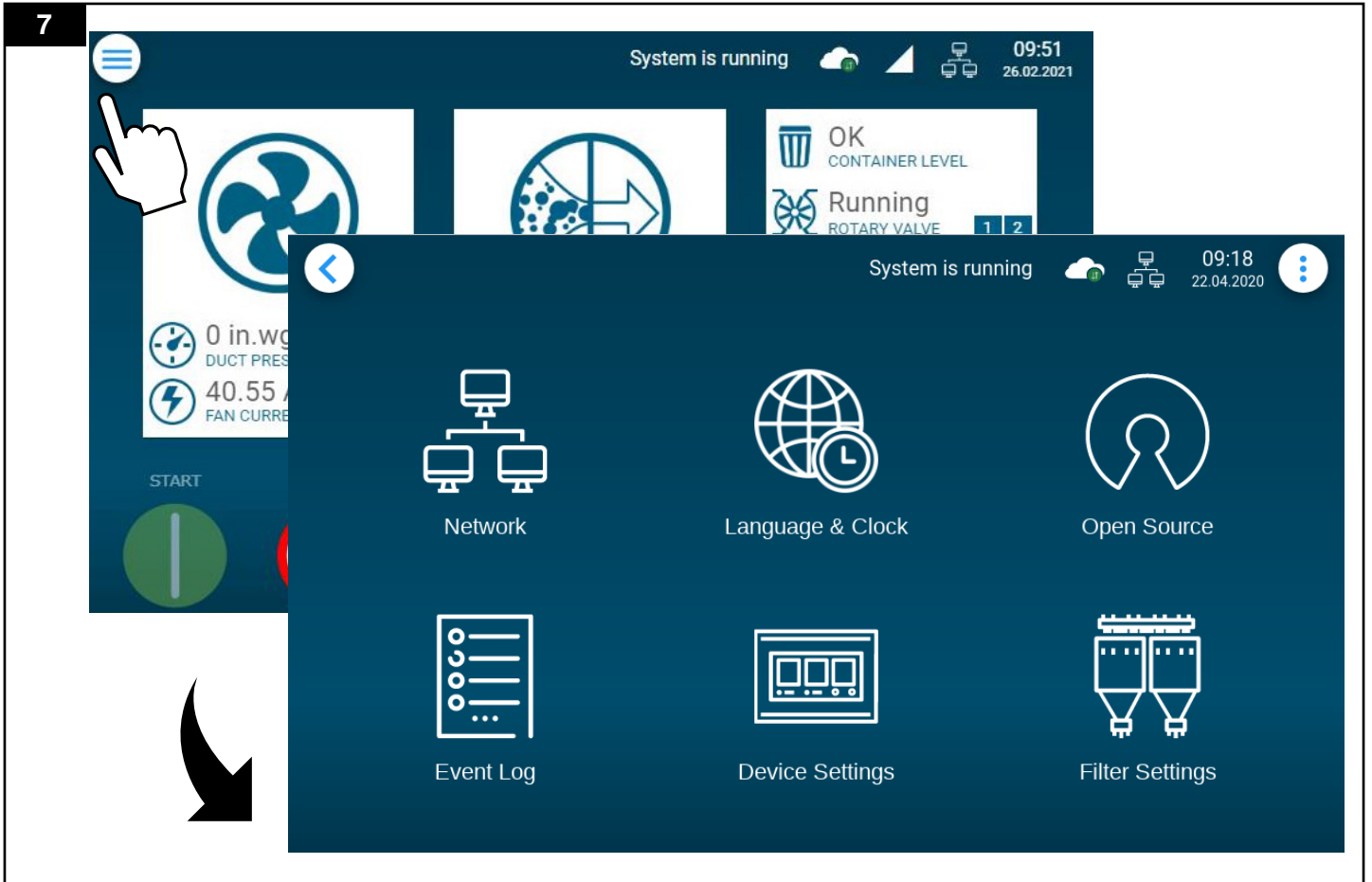
6

System ready for operation

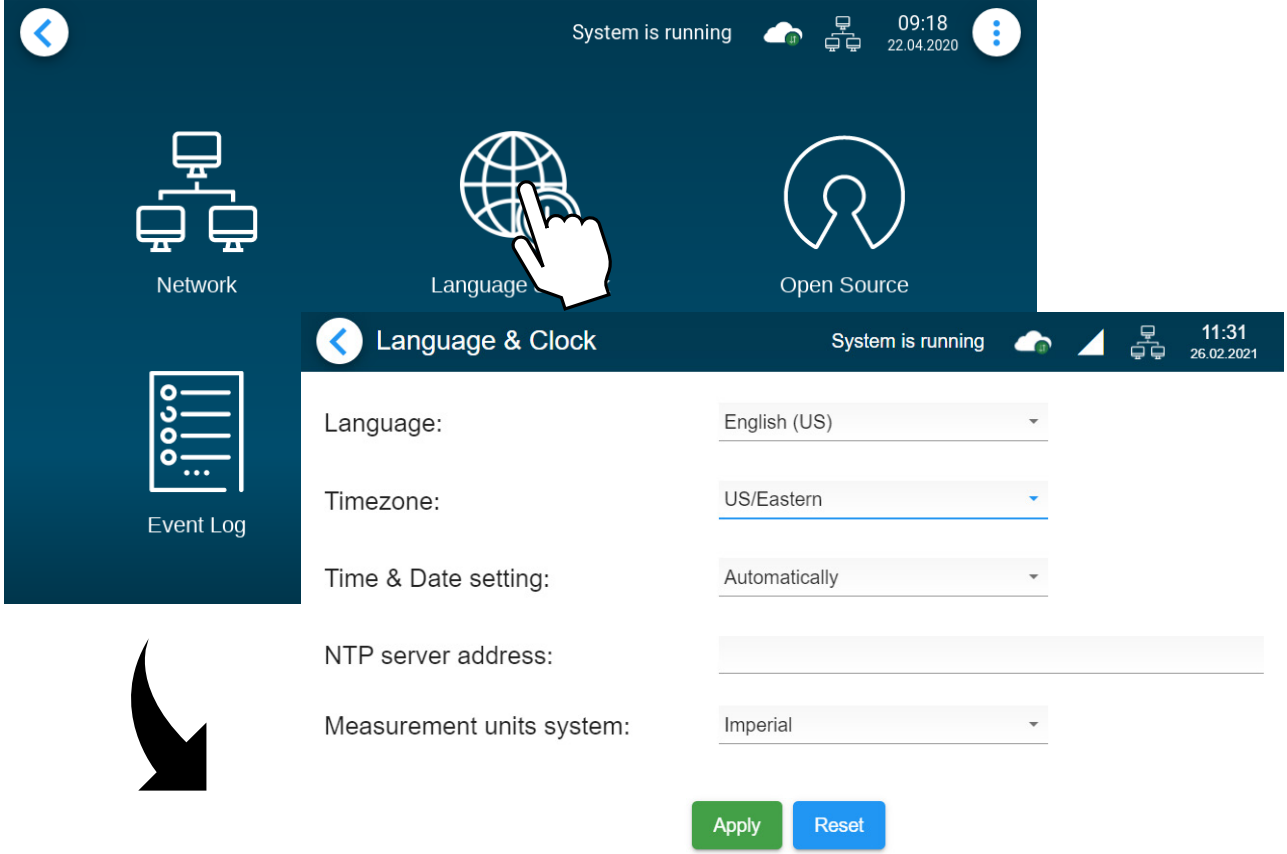
OK CONTAINER
Ready ROTARY V

BRIGHTNESS
SCREEN CLEANING
SYSTEM VIEW
Zero dps
ZERO DPS
field_config
REBOOT DEVICE

START/STANDBY STOP



9



System is running 09:18 22.04.2020

Network Language Open Source

Event Log

Language & Clock

System is running 11:31 26.02.2021

Language: English (US)

Timezone: US/Eastern

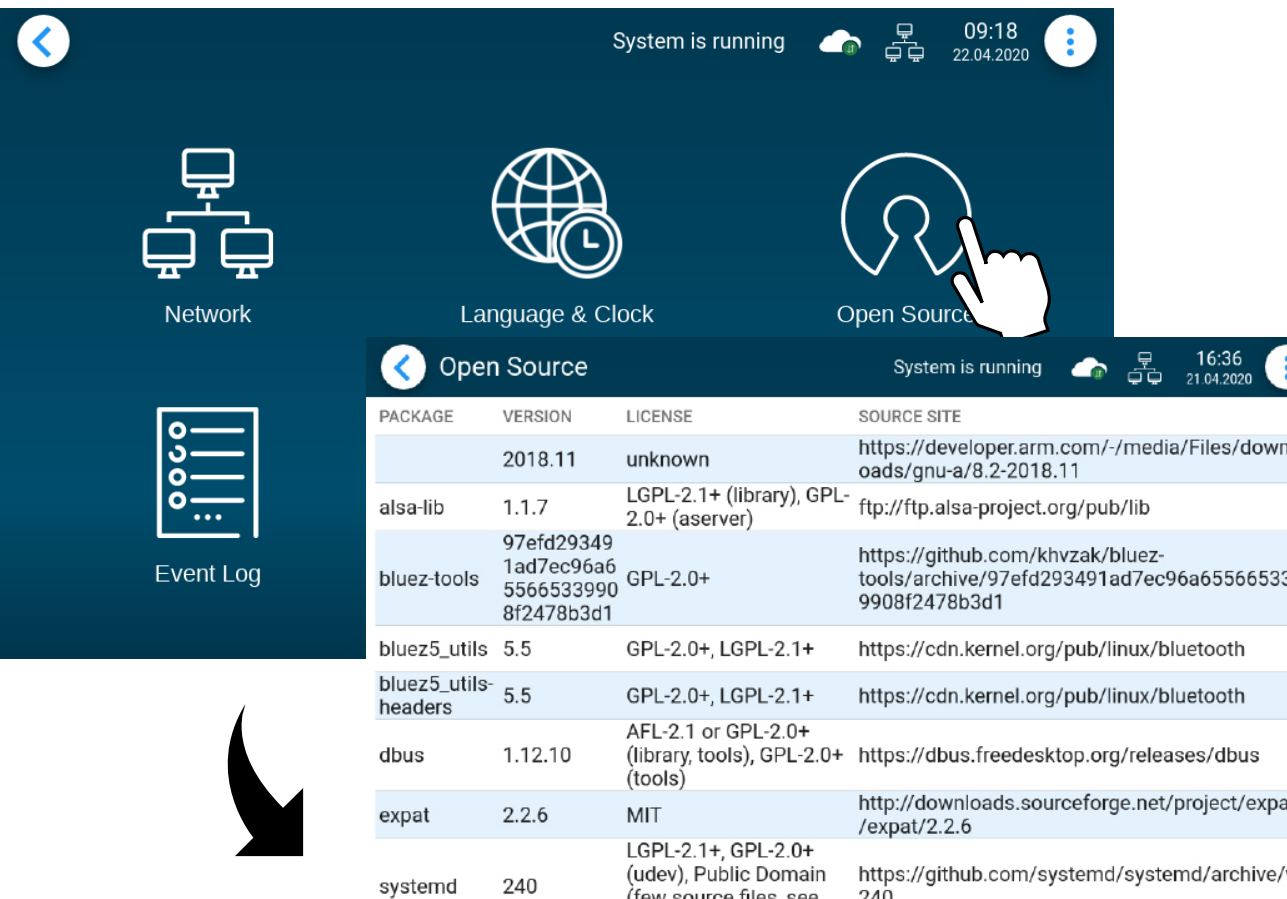
Time & Date setting: Automatically

NTP server address:

Measurement units system: Imperial

Apply Reset

10



System is running 09:18 22.04.2020

Network Language & Clock Open Source

Event Log

Open Source

System is running 16:36 21.04.2020

PACKAGE	VERSION	LICENSE	SOURCE SITE
	2018.11	unknown	https://developer.arm.com/-/media/Files/downloads/gnu-a/8.2-2018.11
alsa-lib	1.1.7	LGPL-2.1+ (library), GPL-2.0+ (aserver)	ftp://ftp.alsa-project.org/pub/lib
bluez-tools	97efd293491ad7ec96a655665339908f2478b3d1	GPL-2.0+	https://github.com/khvzak/bluez-tools/archive/97efd293491ad7ec96a655665339908f2478b3d1
bluez5_utils	5.5	GPL-2.0+, LGPL-2.1+	https://cdn.kernel.org/pub/linux/bluetooth
bluez5_utils-headers	5.5	GPL-2.0+, LGPL-2.1+	https://cdn.kernel.org/pub/linux/bluetooth
dbus	1.12.10	AFL-2.1 or GPL-2.0+ (library, tools), GPL-2.0+ (tools)	https://dbus.freedesktop.org/releases/dbus
expat	2.2.6	MIT	http://downloads.sourceforge.net/project/expat/expat/2.2.6
systemd	240	LGPL-2.1+, GPL-2.0+ (udev), Public Domain (few source files see	https://github.com/systemd/systemd/archive/v240

11

System is running 09:18 22.04.2020

Network Language & Clock Open Source

Event Log

Event Log

System alarm 16:48 21.04.2020

Id	Date	State	Description
111	16:47:02 21.04.2020	Off	Lime feeder not ready
101	16:46:50 21.04.2020	Alarm	Low pressure on pressure vessel
501	16:46:49 21.04.2020	Off	Container dust level high
102	16:46:48 21.04.2020	Alarm	Explosion/Fire alarm
102	16:45:59 21.04.2020	Alarm	Explosion/Fire alarm
101	16:45:26 21.04.2020	Alarm	Low pressure on pressure vessel
501	16:45:09 21.04.2020	Warning	Container dust level high
102	16:44:41 21.04.2020	Alarm	Explosion/Fire alarm
204	16:41:03 21.04.2020	Off	Low duct pressure
102	16:41:03 21.04.2020	Alarm	Explosion/Fire alarm

Alarm log

12

System is running 16:37 21.04.2020

Ext_board1

Ext_board1

Ext_board2

RTD settings

RTD1 sensor type PT1000

RTD2 sensor type PT1000

AI settings

AI1 measurement type Current 4-20 mA

AI2 measurement type Current 0-20 mA

AI3 measurement type Current 0-20 mA

AI4 measurement type Current 0-20 mA

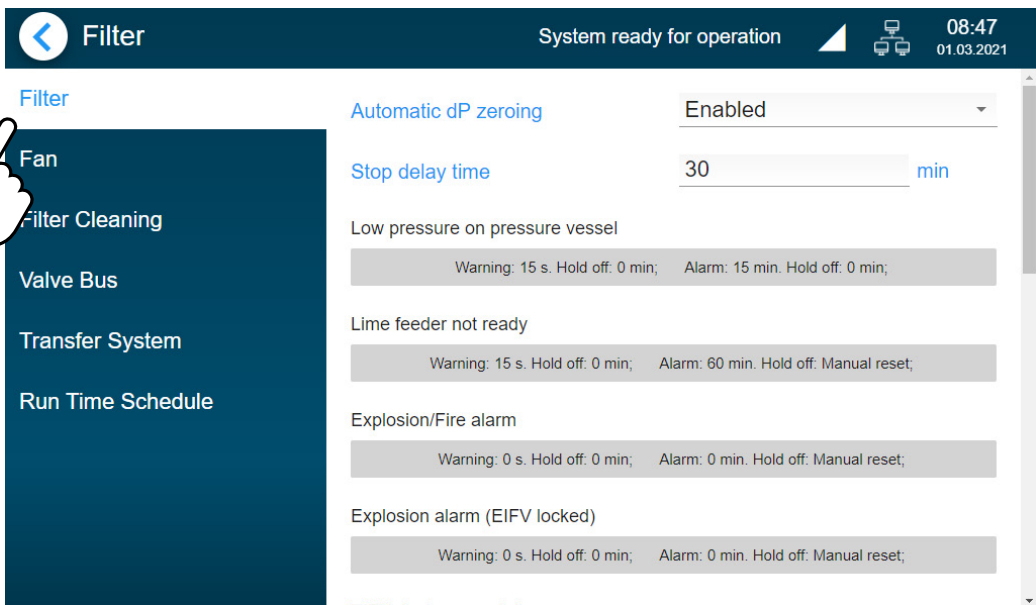
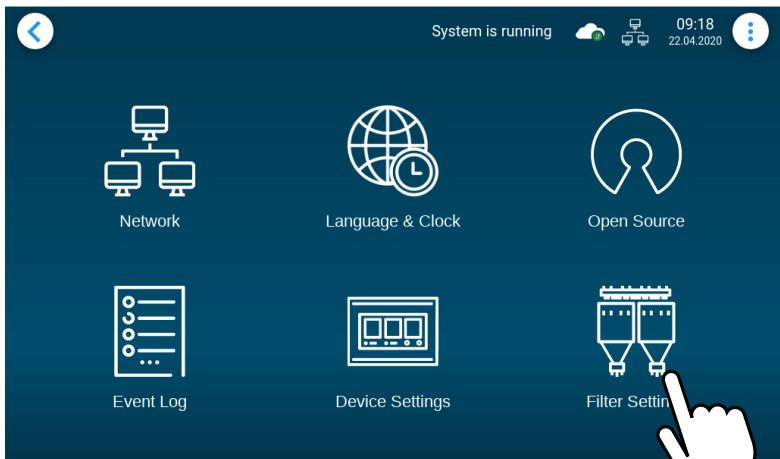
DI settings

DI1 invert

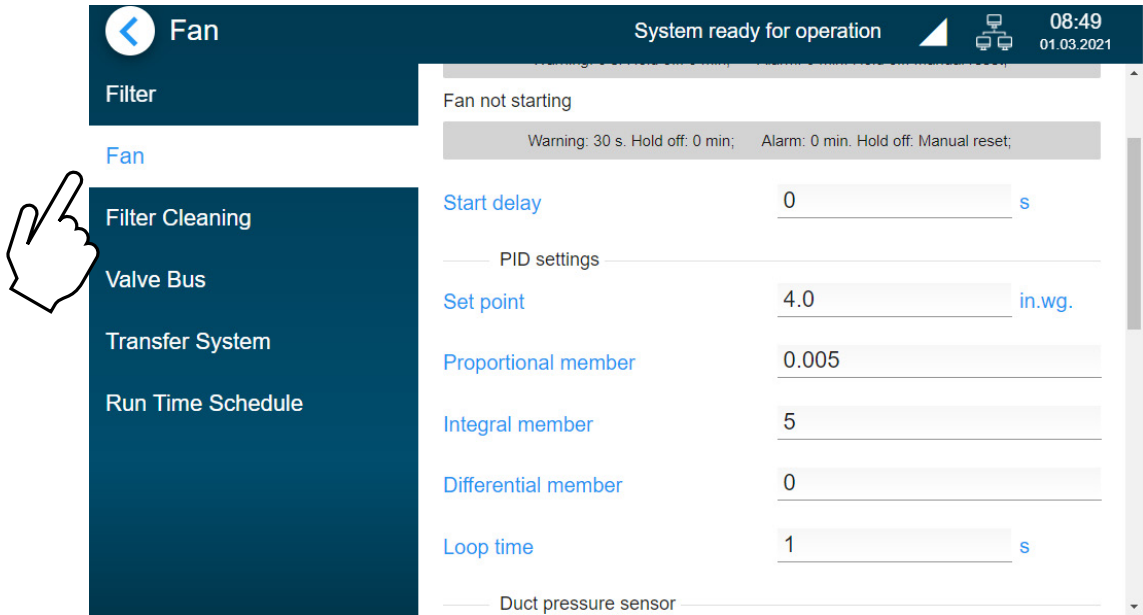
Network Language & Clock Open Source

Event Log Device Filter Settings

13



13A



13B

Filter Cleaning System ready for operation 08:50
01.03.2021

Filter

Fan

Filter Cleaning

Valve Bus

Transfer System

Run Time Schedule

Cleaning mode IntelliPULSE

Pulse on time 60 ms

Forced cleaning

Forced cleaning Enabled

Forced cleaning time 4 h


IntelliPULSE settings

IP hold pressure 4.8 in.wg.

IP min off time Enabled

IP min off time 6 s

IP max off time Disabled



13C

Valve Bus System ready for operation 08:51
01.03.2021

Filter

Fan

Filter Cleaning

Valve Bus

Transfer System


Run Time Schedule

Monitor bus voltages Enabled

Air usage per cleaning pulse 16 gal

Valve bus error

Warning: 0 s. Hold off: 0 min; Alarm: 0 min. Hold off: Manual reset;



13D

Transfer System System ready for operation 08:52
01.03.2021

Filter

Fan

Filter Cleaning

Valve Bus

Transfer System

Run Time Schedule

Container dust level high

Warning: 60 s. Hold off: 0 min; Alarm: 15 min. Hold off: Manual reset;

Transfer system motor 1

Transfer system motor 1 not ready

Warning: 0 s. Hold off: 0 min; Alarm: 0 min. Hold off: 0 min;

Stop delay 5 s


Transfer system motor 2

Transfer system motor 2 not ready

Warning: 0 s. Hold off: 0 min; Alarm: 0 min. Hold off: Manual reset;

Start delay 0 s

Stop delay 0 s



13E



14

Id	Date	State	Description
111	16:47:02 21.04.2020	Off	Lime feeder not ready
101	16:46:50 21.04.2020	Alarm	Low pressure on pressure vessel
501	16:46:49 21.04.2020	Off	Container dust level high
102	16:46:48 21.04.2020	Alarm	Explosion/Fire alarm
102	16:45:59 21.04.2020	Alarm	Explosion/Fire alarm
101	16:45:26 21.04.2020	Alarm	Low pressure on pressure vessel
501	16:45:09 21.04.2020	Warning	Container dust level high
102	16:44:41 21.04.2020	Alarm	Explosion/Fire alarm
204	16:41:03 21.04.2020	Off	Low duct pressure
102	16:41:03 21.04.2020	Alarm	Explosion/Fire alarm

15



Alarm Log

System alarm



16:42
21.04.2020



Id	State	Date	Description
102	Alarm	16:41:42 21.04.2020	Explosion/Fire alarm Ⓜ
111	Warning	16:41:42 21.04.2020	Lime feeder not ready



Event log

16

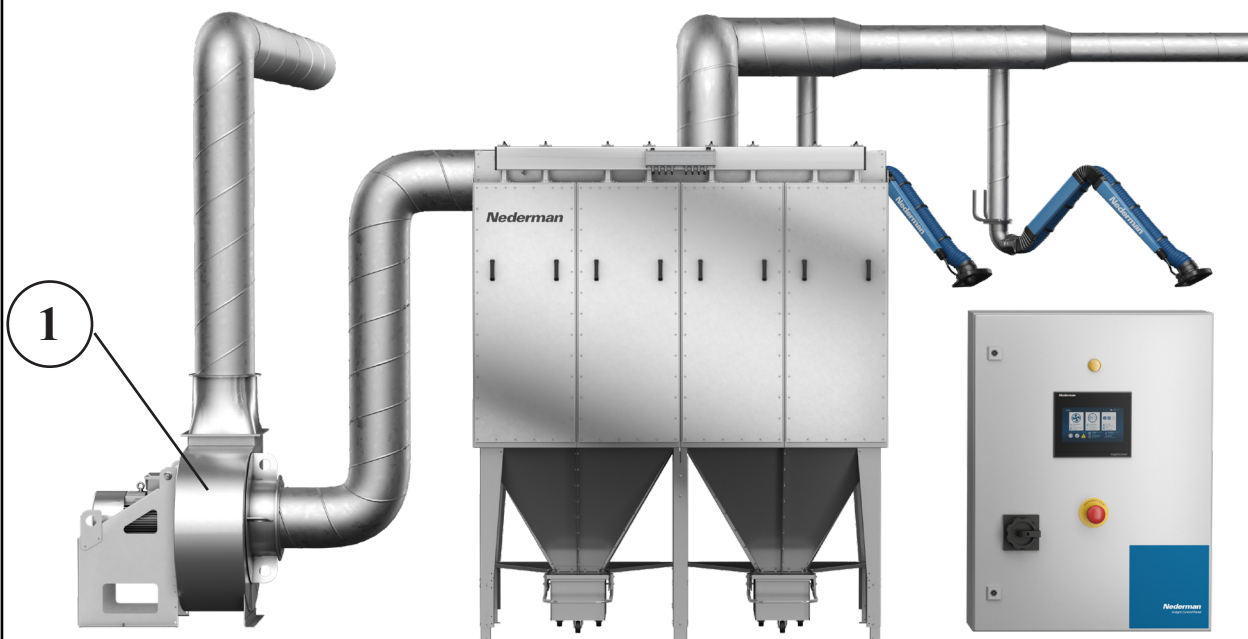


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1 Declaration of conformity

The formal declaration of conformity for your specific product is supplied separately.

2 Preface



Read this manual carefully before installation, use and service of this product. Replace the manual immediately if lost. Nederman reserves the right, without previous notice, to modify and improve its products including documentation.

This product is designed to meet the requirements of relevant EC directives. To maintain this status, all installation, maintenance and repair is to be done by qualified personnel using only Nederman original spare parts and accessories. Contact the nearest authorized distributor or Nederman for advice on technical service and obtaining spare parts. If there are any damaged or missing parts when the product is delivered, notify the carrier and the local Nederman representative immediately.

Your Insight Control Panel has been produced by:

Nederman Manufacturing & Logistics LLC

4500 Chesapeake Drive, Charlotte, NC 28216

USA

Phone: 1-800-533-5286

www.nederman.com

3 Safety

This document contains important information that is presented either as a warning, caution or note. See the following examples:



WARNING! Type of injury

Warnings indicate a potential hazard to the health and safety of personnel, and how that hazard may be avoided.



CAUTION! Type of risk

Cautions indicate a potential hazard to the product but not to personnel, and how that hazard may be avoided.



NOTE! Notes contain other information that is important for personnel.

3.1 General



WARNING! Risk of electric shock

Even when the main switch is turned off to the product, there is still electricity in the cabinet. There may also be control signals with external supply.

i **NOTE!** Insight control panels are designed to fulfill safety Performance Level (PL) requirement as follows:



- Panels designed for non-ATEX systems (not NFPA compliant) – PL=a
- Panels designed for ATEX systems (NFPA compliant) – PL=c

All external components (for example sensors) used for safety circuit must be well-tried components according to EN ISO 13849-1. The final risk analysis for the entire system must be performed by the installer. It should be documented and additional preventive measures have been taken, if any.

Moreover:

- It is necessary to have a permanent access to switches, controllers, electric current distribution boards, monitoring system, fire protection equipment, extinguishing media.
- Perform periodic inspections based on: checking the technical condition of the system and the environmental protection devices, checking the power supply system and the lightning protection system with regard to effective operation of the connections, fixtures, devices for protection against electric shock, resistance of conductor insulation and grounding of systems and apparatuses.
- Make sure that the safety signs are legible.

Table 3-1: Explanation of signs placed on the Insight Control Panel

Sign	Description	Sign	Description
	General warning sign		Electricity warning

3.2 Prohibited activities

It is prohibited to:

- Start-up the system while all valves (dampers) are closed.
- Perform any mechanical, electrical repairs during operation of the machinery and change the set values in regulation and protective devices.
- Arbitrary change of set values of programmable controllers without consultation with the product supplier or manufacturer.
- Performance of works with devices located outdoors during atmospheric discharges or rainfall/snowfall.
- Installing of temporary power connections and performance of repairs of the power supply systems by persons, who are not adequately qualified.

3.3 Personnel qualification requirements

All installations, repair and maintenance work must be carried out by qualified personnel using only original spare parts.

Electrical installation must be done by electrician having the appropriate qualifications and permissions.

3.4 Maintenance and repair

- The power supply should be turned off and the main switch should be locked for any kind of operation - included every type of energy and media (electricity, compressed air).

3.5 Emergency situations

In the case of a fire, explosion, electric shock or any other emergency or accident:

- Control system may stop the system, thanks to the installed sensors, or stop the system using the emergency switch.
- Proceed strictly in accordance with the related plant procedure.

Prior to restart the system:

- Check the alarm signals in the control cabinet (if applicable).

4 Description

4.1 Intended use

Insight Control Panel is intended for the control and supervision of a Nederman Pulse-Jet cleaned SmartFilter system.

4.2 Function

The function of the Insight Control Panel (Fig. 1) is to control a Nederman SmartFilter system. It controls main fan, filter cleaning, and if applicable dust outfeeding. In addition several sensors can be connected to the Insight Control Panel for supervision of the system.

It starts the main fan (example: Fig. 16, pos.1) using variable frequency start method (VFD) in order to reduce starting motor current. It is also possible to control the fan using direct online start method (DOL).

There are three control modes:

- Off: System is powered, but not in operation.
- Standby: System is in Standby, waiting for a pilot signal to operate (mode can be disabled).
- Running: Main system parts are in operation.

The Insight Control Panel can be operated on a weekly schedule (Run time schedule and an Overtime/Timer function, Fig. 13E).

A pilot signal (PS) is used in installations with automatic start/stop controlled by microswitches on work sites, e.g. by automatic dampers.

After the Insight Control Panel is powered, the control is in Off mode and can be set to Standby mode either by pressing the START/STOP button on HMI screen or remotely.

The Insight Control Panel enters Standby mode and waits for a pilot signal. When the pilot signal becomes active, the control panel goes into Running mode, the fan and outfeeding devices are started.

When the pilot signal becomes deactivated, a stop delay time begins to count down until the fan stops and the Control Panel goes into Standby mode.

If the Standby mode is disabled, the START/STOP button on HMI toggle between Off and Running modes.

Down Time Cleaning (DTC) is carried out after fan is stopped and if conditions are met during operation. During Down Time Cleaning also the outfeeding devices are operating.

4.2.1 Insight Ready

The Nederman Insight Control Panel is Insight ready and prepared for the communication with Nederman Insight. The gateway in the Insight Control can collect data from the system and send it to Nederman Insight.

4.2.2 Main parts

NEDERMAN continuously improves the products and their efficiency through the introduction of design modifications. We reserve the right to do this without introducing these improvements on previously supplied products. We also reserve the right, without previous notice, to modify data and equipment, as well as operating and maintenance instructions.

Table 4-1: Main components of the Insight Control Panel

Fig. 1	Component	Function
1	Warning lamp.	Warning and alarm signalization
2	Insight Control main unit with HMI.	Main operating panel
3	Emergency stop button.	Used to stop the system in case there is an emergency.
4	Main switch.	Turn on power to the Insight Control Panel cabinet.

4.3 Technical data

Table 4-2: Insight Control Panel parameters

Parameters	Description
Short circuit current ratings	10 kA
Control Voltage	24V DC
Ambient temperature range	Min 32°F - Max 104°F. Indoor use only.*
Protection category	NEMA 4

* Outdoor is only possible with UV and rain protection, mentioned temperature range etc.

Table 4-3: Insight Control Panel technical data

Motor size (HP)	Supply voltage (V)	Fan nominal current (A)	Nominal frequency (Hz)
3	208/230/480/600	10.6/9.6/4.8/3.9	60
5	208/230/480/600	16.7/15.2/7.6/6.1	60
7,5	208/230/480/600	24.2/22/11/9	60
10	208/230/480/600	30.8/28/14/11	60
15	208/230/480/600	46.2/42/21/17	60
20	208/230/480/600	59.4/54/27/22	60
25	208/230/480/600	74.8/68/34/27	60
30	208/230/480/600	88/80/40/32	60
40	208/230/480/600	114/104/52/41	60

Motor size (HP)	Supply voltage (V)	Fan nominal current (A)	Nominal frequency (Hz)
50	208/230/480/600	143/130/65/52	60
60	208/230/480/600	169/154/77/62	60
75	208/230/480/600	211/192/96/77	60

4.4 Insight Control Panel naming

NEDERMAN Insight Control Panel is named according to the following system:

Table 4-4: Coding system

Electrical cabinet	Insight Control	Panel type	Starter type	Fans Qty*	RAL Qty	Screw Qty	Motor Size**	ATEX (NFPA compliant)	Region	Voltage***
ELC	MCP	X	X	X	X	X	XXX	XX	X	X
		S-Standard	D - Direct online (DOL)	0	0	0	000	00-No ATEX	N=NAM	1
		P-Premium	F - Variable frequency drive (VFD)	1	1	1	030	Ex-ATEX		2
				2	2	2	050			5
							075			6
							100			
							150			
							200			
							250			
							300			
							400			
							500			
							600			
							750			

* Insight Control software currently capable of supporting one fan. For VFD versions, this is not applicable.

** 000 = Any, 030 = 3HP, 050 = 5HP, 075 = 7.5HP, 100 = 10HP, 150 = 15HP, 200 = 20HP, 250 = 25HP, 300 = 30HP, 400 = 40HP, 500 = 50HP, 600 = 60HP, 750 = 75HP.

*** 1= 115 V / 1 PH / 60 Hz, 2= 208-230 V / 3 PH / 60 Hz, 5= 460 V / 3 PH / 60 Hz, 6= 575V / 3 PH / 60 Hz.

for example: ELC - MCP - SD110 - 030 - Ex - N1

ELC - Electrical cabinet.

MCP - SmartFilter

S - Standard.

D - Direct online.

1 - 1 fan.

1 - 1 rotary valve.

0 - no screw conveyor.

030 - motor size up to 3 HP.

Ex - The Insight Control Panel is prepared for connecting sensors operating in an explosion hazard zone, in accordance with Directive 2014/34/EU (NFPA compliant). The Insight Control Panel must be installed outside the explosion hazard zone

N - NAM

1 - 115 V / 1 PH / 60 Hz.

4.5 Insight Control Panel types

The Insight Control Panel is available in two versions: Standard and Premium EX.

4.5.1 Standard

Standard version applies with VFD starter. It has safety relay, control voltage power supply 115 V / 1 PH / 60 Hz.

Table 4-5: Standard Insight Control Panel type for VFD starter

Standard type	Fan motor sizes (HP)	Main switch (A)	Internal wire cross-section (AWG)
ELC-MCP-SF000-000-00-N1	Any*	16	16

* Motor size range: 3 - 75HP

4.5.2 Premium EX

Premium EX version applies to 2 rotary valve with VFD starter. It has safety relay, control voltage power supply 460 V / 3 PH / 60 Hz or 575V / 3 PH / 60 Hz.

Table 4-6: Premium EX Insight Control Panel types for VFD starter

Premium EX type	Fan motor sizes (HP)	Main switch (A)	Internal wire cross-section (AWG)
ELC-MCP-PF020-000-Ex-N5	Any*	16	16
ELC-MCP-PF020-000-Ex-N6	Any*	16	16

* Motor size range: 3 - 75HP

4.6 Dimensions

Table 4-7: Insight Control Panel dimensions

Insight Control Panel type	Width (inch)	Height (inch)	Depth (inch)	Volume (ft³)	Weight (Lbs)
ELC-MCP-SF000-000-00-N1	24	32	9.84	4.24	175
ELC-MCP-PF020-000-Ex-N5	32	40	11.84	8.77	225
ELC-MCP-PF020-000-Ex-N6	32	40	11.84	8.77	225

5 Installation



NOTE! See the Installation and Service Manual.


6 Operation


The instruction in the following chapters assumes that the installation is complete and the filter unit and associated equipment have been commissioned and are ready for normal operation.





WARNING! Risk of personal injury


Only properly trained personnel are allowed to install, use and service this product.

 **WARNING! Risk of personal injury**
 If there is emergency stop or if the system loses power, any connected pneumatic solenoid valve can unexpectedly cause a part of the system, for example a valve, to move.

 **WARNING! Risk of personal injury**
 The functions pilot signal, remote start/stop or Run time schedule do allow automatic or external control of the system.
 When using one of these functions, the risks for each machine / plant must be determined and the personnel needs to be trained accordingly to be aware of the risks.

 **NOTE!** If there is an emergency stop, do not restart the product until the problem that caused the alarm is corrected and the alarm reset. See the section 4.7. *Alarms* and the Installation and Service Manual. If the emergency stop button was used, it needs to be reset before the alarm can be reset.

 **NOTE!** If there is a loss of power, the product needs to be restarted either by pushing the start button, via remote, or by the Run time schedule. The Run time schedule can either be set to start or not start automatically at a power-on during an active period.

 **NOTE!** Other external warning lamps may have also been installed.

6.1 Display navigation

The Insight Control main unit has a capacitive display for navigation. It is possible to navigate around the various main and sub screens by touch.

See Fig. 4.

For a description of the screens, see the following sections.

6.2 Start screen

After the Insight Control Panel is powered there is a start screen shown until the system has booted.

6.3 Main screen

The operator has an overview of the system and system status on the main screen, see Fig. 4, pos 1-17.

Table 6-1: Main screen

Fig. 4	Description
Pos. 1	START/STANDBY Button
Pos. 2	STOP Button
Pos. 3	Overtime/Timer button
Pos. 4	Alarm log button
Pos. 5 (Fig. 4A)	Emergency stop reset button
Pos. 6	Menu button
Pos. 7	Quick access button

Fig. 4	Description
Pos. 8	Current System status
Pos. 9	Cloud communication status (Insight Analytics)
Pos. 10	Connection (GSM, WiFi or LAN)
Pos. 11	Time and Date
Pos. 12	Filtration
Pos. 13	Extraction
Pos. 14	Transfer system
Pos. 15	Scheduled START/STOP
Pos. 16	Service counter
Pos. 17	Total hours in operation counter

START/STANDBY Button (Fig. 4, pos. 1)

Click button to put the product into Standby mode to wait for pilot signal (pilot signal enabled).

START Button (Fig. 4, pos. 1)

Click button to start the system (pilot signal disabled).

STOP Button (Fig. 4, pos. 2)

Click button to stop the system if running and put the product into Off mode.

Overtime/Timer (Fig. 4, pos. 3):

Button to request Overtime or Timer. Overtime or Timer adds extra time to operate the system. It can also be activated by remote control. Button is only displayed if Overtime/Timer is enabled.

With enabled Overtime/Timer:

Overtime

If Run time schedule is enabled the Overtime/Timer button is displayed as Overtime button. When the Run time schedule is in active interval and Overtime button is pushed, Overtime is added at the end of the active Run time schedule interval. If Run time schedule is in non-active interval a push on the Overtime button operates the system for the set period of time.

Timer

If Run time schedule is disabled, the Overtime/Timer button is displayed as Timer button.

When the Timer button is pushed, the system operates for the set period of time.

See “Installation and service manual” for more details.

Warning/Alarm (Fig. 4, pos. 4)

Warnings or alarms are highlighted by a flashing button:

- Warning: flashing yellow colored symbol (Fig. 4, pos. 4).
- Alarm: flashing red colored symbol (Fig. 4A, pos. 18).
- E stop alarm: flashing red colored symbol and red flashing screen (Fig. 4A).

Only displayed if active warnings or active/resettable alarms are present.

Click on symbol opens Alarm log.

Emergency stop reset button (Fig. 4A, pos. 5)

Button to reset emergency stop.

Menu button (Fig. 4, pos. 6)

Click to reach the main menu for Network settings, Language & Clock settings, Open Source, Event log, Device settings and Filter settings.

Quick access button (Fig. 4, pos. 7)

Click to open side bar (Fig. 6) for quick access to adjust screen brightness, main screen cleaning, get to system view, make zero dPs, make user login/logout and reboot device. The software version is displayed at the bottom of the side bar.




Current system status (Fig. 4, pos. 8)

Table 6-2: The current status of the system is displayed

Control mode Off:	Description
System ready for operation	System is ready for operation (no active alarms) and is not started
System is not ready for operation	Transfer system or fan motors are not ready. It is not possible to start the system
Control mode Standby:	Description
Standby, waiting for pilot signal	System is in Standby, waiting for pilot signal to start
Control mode Running:	Description
System is starting	Fan is started and transfer system devices are started after delayed start time
System is running	System is running with no active alarms
System running in stop delay period	Pilot signal becomes deactivated and system continues running until stop delay time has expired
Control mode Off:	Description
Inhibit by remote	If remote control is enabled and on low signal the system is inhibit by remote and can only be started by remote control
System alarm	One of the operational preconditions is not satisfied or the emergency stop / safety relay is active. Operation is stopped completely and system is in alarm.

Cloud communication status (Insight Analytics) (Fig. 4, pos. 9)

Table 6-3: The status of the cloud communication is displayed

Cloud graphic	Description
	Subscribed and communication is working.
	No subscription made. For setting, see Installation and Service manual.
	Subscribed, but communication is not working.

Connection (GSM, WiFi or LAN) (Fig. 4, pos. 10)

The current connection and its status is displayed (red cross if connection error). GSM, Network or Wireless (WiFi) connection is possible.

Time and Date (Fig. 4, pos. 11)

The current time and date are shown according to Language & Clock settings.

Filtration (Fig. 4, pos. 12)

Control block displaying status of filtration.

- Pressure drop: Pressure drop over main filters.
- Cleaning mode: Current set cleaning mode and DTC.

Click on control block opens related settings.

Extraction (Fig. 4, pos. 13)

Control block displaying status of extraction.

- Duct pressure: Pressure in the upstream duct.
- Capacity (only if VFD controlled).
- Fan current (only if DOL).

Fan symbol turning while fan in operation. Click on control block opens related settings.

Transfer system (Fig. 4, pos. 14)

Control block displaying status of transfer system.

- Container level: level of dust in the container (FULL or OK).
- Rotary valve status: shows condition of rotary valve(s).

Click on control block opens related settings. Only displayed if supervision of Transfer system.

Schedule (Fig. 4, pos. 15)

Control block for scheduled START/STOP by Run time schedule and/or Overtime/Timer. Displays the next start or stop time of the system. Only displayed if Run time schedule is enabled or Overtime/Timer is enabled and active.

Run time schedule is used to set the Insight Control Panel to run the system on a regular weekly schedule. Overtime or Timer adds extra time to operate the system.

If in non-active Run time schedule interval the next start time or day of the system is displayed. If in active Run time schedule interval the next stop time is displayed. If Overtime is added within active Run time schedule also the added Overtime is displayed behind the next stop time. If Overtime is added within non-active Run time schedule or Timer is pushed, the stop of the system is displayed when Overtime/Timer will expire. See installation and service manual for more details.

Click on control block opens related settings.

Service Counter / Total hours in operation counter (Fig. 4, pos. 16 and 17)

Counter displays left time until next service and total hours in operation. Click on symbol opens related settings.

6.4 Settings

General basic settings and functions can be done at the user level 'Any' without password. Pushing the quick access button in the upper right corner opens the side bar with the settings and functions (Fig. 6).

Brightness

The screen brightness can be set to a value between 0% and 100%.

Screen cleaning

This locks the touch on the HMI for 20 s (countdown is shown) in order to clean the screen.

System view

This gives an detailed overview of system status and condition, as well as showing in-/output readings and calculated values.

Reboot device

This reboots the Insight Control device.

Pushing any area beside the side bar closes the side bar.

A password is required to configure system parameters and settings. See section 6.5 User login and Installation and Service manual for more details. Functions like user login and zero dPs are in the side bar for quick access.

All system settings can be viewed from the main menu. The main menu is entered by clicking the menu button on the main screen (see Fig. 7). Pushing on a symbol opens the corresponding screen for different system settings and/or information. Pushing the arrow button returns to the main screen.

Specific settings can be opened quickly by clicking on the related control block on the main screen.

6.4.1 Network settings

In Network settings active, saved, available and remote connections are displayed (see Fig. 8). Pushing the arrow button returns to the main menu.

6.4.2 Language & clock settings

In Language & Clock settings related settings to language and time are displayed (see Fig. 9). Pushing the arrow button returns to the main menu.

6.4.3 Open source

Open Source information is displayed (see Fig. 10). Pushing the arrow button returns to the main menu.

6.4.4 Event log

In Event Log all historical warnings and alarms are displayed (see Fig. 11). A click on the Alarm log button opens the Alarm log for current active warnings and active/resettable alarms. Pushing the arrow button returns to the main menu.

6.4.5 Device settings

In Device Settings settings of the Insight Control are displayed (see Fig. 12). Pushing the arrow button returns to the main menu.

6.4.6 Filter settings

In Filter Settings all related settings to the filter system (filter, fan, transfer system, filter cleaning and sensors) are displayed (see Fig. 13-13E). Pushing the arrow button returns to the main menu.

6.5 User login

To be able to configure most parameters and settings, a password is required. There are different user levels, each with its own password.

The side bar shows who is logged in to the control panel. Automatic logout after five minutes of inactivity.

6.6 Alarms

This alarm log shows a list of warnings and alarms and when they were triggered (Fig. 5). It is indicated by a state whether it is a Warning or Alarm. Each Warning and alarm have an ID, Date and Description.

Alarms can be reset with the Reset button (see Fig. 15). Some alarms can be set to automatic reset in the filter settings. A password is needed to configure or reset alarms.



NOTE! To be able to reset alarms you need to be logged in.

For more information, see the Installation and Service manual. Press the Event log button to go to the Event log which shows Warning and Alarm history (see Fig. 11).

6.6.1 Event log

Alarm history lists alarms and warnings in the order in which they occurred and when the problem was corrected (see Fig. 11). (The same message but at a later time stamp).

For quick navigation there is a button in the lower right corner for quick navigation between Alarm log and Event log.

6.6.2 Alarm list

Table 6-4: Alarm list

ID	Description
Filter Control	
101	Low pressure on pressure vessel
102	Explosion/Fire alarm
103	Explosion alarm (EIFV locked)
104	EIFV dust accumulation
105	Alarm Safety relay/Emergency stop
106	Extension board 1 communication error
107	Extension board 2 communication error
111	Lime feeder not ready
113	Filter temperature high

ID	Description
114	Filter temperature increase high
Fan Control	
201	Fan error
202	Fan not ready
203	Fan Modbus communication error
204	Low duct pressure
205	Fan not starting
206	Fan vibration high
207	Service counter expired
208	Senor error (dP Sensor board T1): Duct pressure
Filter cleaning	
301	Sensor error (dP Sensor board T1): Main filter
302	Pressure drop over main filters high
303	Sensor error (dP Sensor board T1): Secondary filter
304	Pressure drop over secondary filter high
Valve bus driver	
401	Valve bus error
Transfer system	
501	Container dust level high
504	Transfer system motor 1 not rotating
505	Transfer system motor 1 not ready
506	Transfer system motor 2 not rotating
507	Transfer system motor 2 not ready

7 Maintenance



WARNING! Risk of electric shock

- Work on electric equipment is to be carried out by a qualified electrician.
- Cut off the power supply by switching the main switch of the dedusting system to position 0 - „OFF” and lock it in this position in order to avoid accidentally turning on the equipment before starting any work.
- Provide a sign “Service – do not turn on!” on the switch.



CAUTION! Risk of equipment damage

Use only Nederman original spare parts and accessories.



NOTE! During the warranty period, NEDERMAN must be notified of all abnormalities in functioning of the device.

7.1 Routine inspection and service

In addition to routine maintenance, Nederman also recommends that a standard service is performed by authorized Nederman technician. Standard service helps to prevent unexpected downtime, increase the life of the product, and ensure greater quality and efficiency. Contact your nearest authorized distributor or Nederman for more information.

Table 7-1: Maintenance

Description	Interval
Electrical connection	Annually
Settings of protections	Annually
Cables and wires condition	Annually
Remove dust and dirt from electrical panel	Annually

7.2 Re-start after repair

Launch in accordance with the normal start-up procedure, paying particular attention to the process. Control the proper functioning of the components of the installation, which have been fixed or regulated. In case if the defect is still observed, shut down the installation immediately.

7.3 Spare parts



CAUTION! Risk of equipment damage

Use only Nederman original spare parts and accessories.

Contact your nearest authorized distributor or NEDERMAN for advice on technical service or if you require help with spare parts. See also:

www.nederman.com

Ordering spare parts

When ordering spare parts always state the following:

- Part number and control number (see the product identification plate).
- Position number and name of the spare parts (see www.nederman.com)
- Quantity of the parts required.

Other optional items

Please contact NEDERMAN Service Dept. for details related to nonstandard items.

Table 7-2: Spare part list

Figure	Description
Fig. 2, pos. 1	Main unit
Fig. 3, pos. 3	Power Board NG
Fig. 3, pos. 4	Extension Board T1
Fig. 3, pos. 2	dp Sensor Board T1

8 Recycling

The product has been designed for component materials to be recycled. Its different material types must be handled according to relevant local regulations. Contact the distributor or Nederman if uncertainties arise when scrapping the product at the end of its service life.

9 Troubleshooting

i **NOTE!** All troubleshooting and fault remedying activities may be performed by skilled competent staff only, with knowledge of the plant function and build-up.

If there is an alarm or warning in the Insight Control Panel, the first step is to make sure that the system has been properly configured and that the installation settings made in the sections above are correct.

Table 9-1: Troubleshooting for alarm list

ID	Description	Possible cause	Recommended solution
Filter Control			
101	Low pressure on pressure vessel	Low pressure on pressure vessel.	Check pressure on pressure vessel (should be over 3 bar).
		No compressed air supply.	Check pressure on pressure vessel (should be over 3 bar).
		Compressed air sensor (CAS) has been connected wrong.	Check wiring diagram. A compressed air sensor is connected to DI5 on the first extension board. High signal (active LED lamp on extension board) indicates correct pressure in pressure vessel. Signal DI5 is inverted on Insight Control Device settings.
		Compressed air sensor is broken.	Replace compressed air sensor (CAS).
102	Explosion/Fire alarm	Explosion or fire.	Take immediate actions to act according local plant regulations in case of explosion or fire.
		Explosion/fire sensor has been connected wrong.	Check wiring diagram. Explosion/fire sensor is connected to DI3 on the first extension board. In control cabinet type: <ul style="list-style-type: none"> STANDARD High signal (active LED lamp on extension board) indicates no explosion/fire. Signal DI3 is not inverted on Insight Control Device settings. PREMIUM EX Low signal (not active LED lamp on extension board) indicates no explosion/fire. Signal DI3 is not inverted on Insight Control Device settings.
		Explosion sensor is broken.	Replace broken explosion sensor.
103	Explosion alarm (EIFV locked)	Explosion	Take immediate actions to act according local plant regulations in case of explosion.
		EIFV is in locked position.	Adjust flap valve according to the instruction manual of explosion isolation flap valve. Signal DI3 is not inverted on Insight Control Device settings.
		EIFV locked sensor has been connected wrong.	Check wiring diagram. Explosion isolation flap sensor is connected to DI3 on second extension board. High signal (active LED lamp on extension board) indicates correct position of flap.
		EIFV locked sensor is broken.	Replace broken EIFV locked sensor.

ID	Description	Possible cause	Recommended solution
104	EIFV dust accumulation	Dust is accumulated inside EIFV.	Check if dust accumulation sensor is mounted correctly, according to "Assembly of dust build-up sensor" manual.
		EIFV dust sensor has been connected wrong.	Check wiring diagram. EIFV dust sensor is connected to DI8 on second extension board. High signal (active LED lamp on extension board) indicates no dust detected. Signal DI8 on second extension board is inverted on Insight Control Device settings.
		EIFV dust sensor is broken.	Replace broken EIFV dust sensor.
105	Alarm Safety relay/ Emergency stop	Emergency stop button is pushed.	Check if emergency stop button is pushed. Release emergency stop button and push reset e-stop button on HMI.
		Other external emergency push button is pushed or explosion/fire alarm has been activated.	Check position of external push button. Open Insight Control Panel, make sure that safety relay 50K1 is energized and both green LED lamps are active. Push reset e-stop button on HMI.
		Problem with safety relay 50K1.	Open control cabinet and make sure that safety relay 50K1 is energized and both green LED lamps are active. Push reset e-stop button on HMI.
		Safety relay 50K1 is broken.	Replace broken safety relay 50K1
106	Extension board 1 communication error	Wrong connection between HMI and extension board 1.	Check cable connection (RJ45) between HMI and extension board – see wiring diagram.
		Wrong BUS address.	Make sure that BUS address on first extension board is 1.
		Extension board 1 is broken.	Replace broken extension board 1.
107	Extension board 2 communication error	Second extension board has been assembled incorrect.	Make sure both extension board are precisely connected together.
		Wrong BUS address.	Make sure that BUS address on second extension board is 2.
		Incorrect Insight Control Panel type has been set in configuration wizard.	Go to configuration wizard and make sure Insight Control Panel type is selected properly.
		Extension board 2 is broken.	Replace broken extension board 2.
111	Lime feeder not ready	Lime feeder is not ready.	Check lime feeder.
		Lime feeder is not ready.	Signal DI7 is inverted on Insight Control Device settings.
113	Filter temperature high	Fire	Take immediate actions to act according local plant regulations in case of fire.
		High temperature inside the filter.	Make sure temperature inside the filter is less than threshold.
		Temperature sensor has been connected wrong.	Check wiring diagram.
		Temperature sensor type is wrong selected in devices settings.	Go to the devices settings and select correct type of temperature sensor (PT 1000, PT100, PT500, KTY).

ID	Description	Possible cause	Recommended solution
114	Filter temperature increase high	Fire	Take immediate actions to act according local plant regulations in case of fire.
		The differential between inlet and outlet temperature is high.	Make sure differential temperature between inlet and outlet temp is less than threshold.
		One of temperature sensors has been connected wrong.	Check wiring diagram.
		One or both temperature sensors type are wrong selected in devices settings.	Go to the devices settings and select correct type of temperature sensor (PT 1000, PT100, PT500, KTY).
Fan Control			
201	Fan error	Fan is not ready.	Check wiring diagram. Fan ready is indicated as high signal (active LED lamp on extension board) to DI1 on the first extension board.
		Fan is without power supply.	Turn ON 1 F1A – see wiring diagram.
		VFD error.	Reset all active alarms from VFD (see Variable Frequency Drive manual)
202	Fan not ready	Overload relay is switched off.	Check if overload relay (1F1A) is ON position.
		PTC relay active.	Fan PTC relay is active or is connected wrong.
		VFD is not ready.	Reset all active alarms from VFD (see Variable Frequency Drive manual).
203	Fan Modbus communication error	The Modbus communication wires has been connected wrong.	Check wiring diagram – VFD communication wire.
		Wrong VFD modus address.	Check VFD modus address (should be set to 2) – see Variable Frequency Drive manual
204	Low duct pressure	Duct pressure expressed in negative value (Duct pressure should be expressed in positive value).	Check fan rotation direction.
		Fan rotation direction is correct and duct pressure is still expressed in negative value.	The measurement hose has been connected to the wrong gland.
		The duct pressure is lower than the warning threshold.	Check if there is too low airflow in the system. Filter elements can be at end of life or fan capacity too low. Adjust correct warning threshold for duct pressure if set too high. Go to Filter settings / Fan / Low duct pressure alarm threshold (default 800 Pa)
205	Fan not starting	Wrong connection.	Check motor fan wiring according to attached electrical diagram.
		Fan is broken.	See separate manufacturer manual.
206	Fan vibration high	High fan vibration.	Fan vibration is over threshold – check fan motor.
		Fan vibration sensor has been connected wrong.	Check wiring diagram. Fan vibration sensor is connected to Analog Input 2 on first extension board.
		Fan vibration sensor type has been wrong selected.	Go to Devices settings / AI2 measurement type / select correct type (4-20 mA).
		Fan vibration sensor is broken.	Replace broken fan vibration sensor.
207	Service counter expired	Service counter expired.	Time for service – only authorized person can reset counter.

ID	Description	Possible cause	Recommended solution
208	Sensor error (dP Sensor board T1): Duct pressure	Duct pressure sensor has been assembled incorrect.	Make sure that dP 1 sensor has been assembled correctly on extension board.
		Duct pressure sensor is broken.	Replace broken dP sensor.
Filter cleaning			
301	Sensor error (dP Sensor board T1): Main filter	Main filter dP sensor has been assembled incorrect.	Make sure that dP 2 sensor has been assembled correctly on extension board.
		Main filter dP sensor is broken.	Replace broken dP sensor.
302	Pressure drop over main filters high	dP over main filter is too high.	Check compressed air supply for pressure vessel. Check if filter cleaning is working. Check filter cleaning setting. Replace filter elements if they are at end of life.
		dP over main filter expressed in negative value (should be in positive value).	Make sure that hoses have been connected to correct gland.
303	Sensor error (dP Sensor board T1): Secondary filter	Secondary filter dP sensor has been assembled incorrect.	Make sure that dP 3 sensor has been assembled correctly on extension board.
		Secondary filter dP sensor is broken.	Replace broken dP sensor.
304	Pressure drop over secondary filter high	dP over secondary filter is too high.	Check secondary filter. Replace filter elements if they are at end of life.
		dP over secondary filter expressed in negative value (should be in positive value).	Make sure that hoses has been assembled to the proper gland.
Valve bus driver			
401	Valve bus error	Wrong connected Valves module.	Make sure all cleaning valve boxes have been connected correctly to the Insight control panel – see electrical diagram.
		Incorrect number of valves has been set in configuration wizard.	Go to configuration wizard and make sure you have selected correct number of cleaning valves.
		Solenoid valve is broken.	Check if all cleaning valves are pulsed by using cleaning mode Continuous. Check system view for broken valves. Replace pilot valve box, if there are broken solenoid valves.
Transfer system			
501	Container dust level high	Dust bin is full.	Check dust container level and empty dust bin if necessary.
		CLS has been wrong connected.	Check wiring diagram. CLS is connected to DI4 on the first extension board. High signal (active LED lamp on extension board) indicates low dust level in the bin/ container. Signal DI4 is inverted on Insight Control Device settings.
		CLS is broken.	Replace broken CLS.
504	Transfer system motor 1 not rotating	Rotary valve or screw conveyor not ready	Check wiring diagram.
		Rotation sensor has been connected wrong.	Check wiring diagram.
		Rotation sensor is broken.	Replace broken rotation sensor.

ID	Description	Possible cause	Recommended solution
505	Transfer system motor 1 not ready	Rotary valve or screw conveyor not ready	Check wiring diagram. Check motor starter 2Q1.
506	Transfer system motor 2 not rotating	Rotary valve or screw conveyor not ready	Check wiring diagram.
		Rotation sensor has been connected wrong.	Check wiring diagram.
		Rotation sensor is broken.	Replace broken rotation sensor.
507	Transfer system motor 2 not ready	Rotary valve or screw conveyor is not ready	Check wiring diagram. Check motor starter 2Q2.

If this does not solve the problem, contact NEDERMAN.

10 Acronyms

Table 10-1: Acronyms

ID	Definition
HMI	Human Machine Interface, the screen of the Insight Control
UI	User Interface
SmartFilter	Collector insight ready and with Insight Control Panel installed
DOL	Start method Direct Online
VFD	Variable frequency drive
E-stop	Emergency Stop
PS	Pilot signal
EIFV	Explosion Isolation Flap Valve (Flow-Actuated Flap Valve)

