SDCU-20

Smart Diagnostic and Control Unit

DVG AUTOMATION

GIVA GROUP

SDCU-20

SDCU-20: **S**mart **D**iagnostic and **C**ontrol **U**nit is suitable to test and control any kind of **hydraulic** and **pneumatic** piston type actuator equipped with **S**olenoid **O**perated **V**alves (**SOV's**).

Its advanced diagnostic functions make it particularly appropriate in applications with valves used in **safety functions**.

It does not interfere with **E**mergency **S**hut-**D**own **(ESD)** operation of the actuator.

It increases reliability, efficiency and safety of plant operation.

The setting options and accessories allow easy adaptation to control systems with different characteristics and user needs.

It is suitable to work in harsh environment.

It has **no "steady state" air / gas / oil consumption**.

General features:

- Die-cast aluminium or stainless steel SS 316L (CF3M) enclosure
- Beacon indicator: standard: red and green, low profile, plastic dome
  - Optional beacon colour: yellow-black
- Non-intrusive, magnetic drive of beacon indicator
- Captive bolts in the lid
- Stainless steel drive shaft
- ATEX, IECEx, IP, SIL certification
- Push-button actuated, push-in, spring loaded, terminal strips
- On board contactless Hall effect valve position sensor
- Suitable for pneumatic and hydraulic piston actuators, single and double acting, quarter turn and linear, high and low operating pressure
- 4 cable entries, ¾ NPT, ½ NPT, M20x1.5
- Actuator remote control:
  - By 4-20mA input and HART® communication. Hart DD available.
  - By hardwired signals
- Actuator local control by optional LCP (Local Control Panel)
- Optional Ex-e junction box
- Optional in the SDCU-20 main unit:
  - Local Partial Stroking Test pushbutton (PST)
  - Local diagnostic display
  - Pressure transmitter
  - SDCU-20-LS: kit with 2 position limit switches. Toolless quick setting cams
  - I/O Extension card
  - Hardware **spurious trip protection**
- Operating temperature range from -40°C to +85°C
- Nominal voltage 24VDC

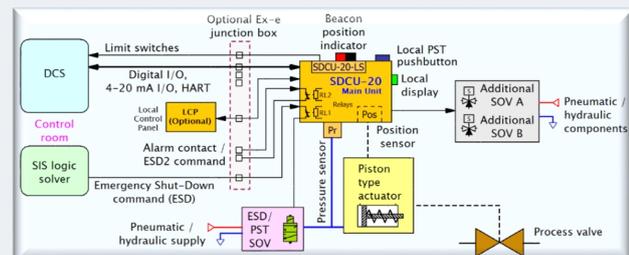**Quarter turn actuator with SDCU-20, local PST pushbutton and control panel**

Block diagram with SDCU-20 and accessories

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Main functions:

- PST, Partial Stroke Testing. Remote start through Hart command or remote switch. Local start by means of local pushbutton
- FST, Full Stroke testing. Remote start through Hart command
- TSOV, Test of Solenoid Operated Valve, available only with pressure transmitter option
- Memorization of PST graph "Position versus time"
- Memorization of PST graph "Pressure versus time" only with pressure transmitter option
- Comparison of PST graph with the PST signature, previously memorized, and generation of test reports
- Easy setting of electronic travel limits and zero/span calibration function
- Position signal linearization: for linear actuator, if mechanical coupling is not linear, to adjust the linear to rotary conversion of signal
- HART DD
- Export of graphs, statistics and general data.
- Alarm history and logger.
- Actuator remote control by Hart and hardwired signals. Actuator local control by optional LCP (Local Control Panel)
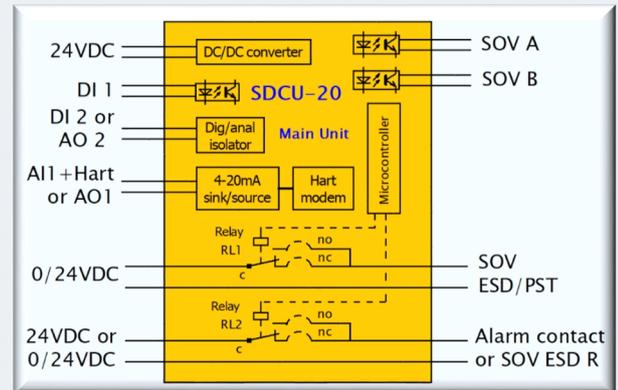
I/O's and Electrical data:

- 0/24 VDC from SIS logic solver or equal to power the ESD SOV (max 15W) by a normally closed (N.C.) contact of relay RL1 on board of the electronic main card for SOV command type DETT (De-Energize To Trip)
  - *RL1 can be configured by jumpers with contact N.C. (standard) or N.O. (for SOV command type ETT, Energize To Trip)*
- +24 VDC main power to supply:
  - up to 2 x SOVs, SOV A and SOV B (max 15W each SOV)
  - electronics, with on board isolated DC/DC converter (< 2.5W)
  - not requested in case of 2-wires control
- 4-20 mA channel configurable as "AI1" or "AO1".
  - AI1: 4-20mA input (min 18VDC, max 21 mA, min 3.2 mA) and **HART communication** over the same signal (HART actuator type). Point to point and multidrop operation. HART can be deactivated.
  - AO1: 24VDC/4-20mA actuator position feedback output, min 18VDC, min 3.2 mA, HART not available.
- 1 Generic I/O channel configurable as "AO2" or "DI2".
  - AO2: 24VDC/4-20 mA output: position feedback or pressure retransmission (pressure retransmission if pressure sensor is present), isolated, reverse polarity protection, max load 750 ohm, min 18VDC
  - DI2: 0-24VDC/5mA opto-coupled digital input (min 18VDC). Configurable as Remote PST command or Open / Close commands or Local PST pushbutton
- DI1: 0-24VDC/5mA opto-coupled digital input (min 18VDC). Configurable as Remote PST command or Open / Close commands or Local PST pushbutton
- 1 N.C. or N.O. voltage free contact of relay RL2, settable by jumpers. Configuration options:
  - Alarm to signal malfunction by opening the contact, 24VDC/2A, 230VAC/0.5A
  - Contact in series to ESD command in case of redundant ESD SOV (max 15W), reverse polarity protection
- On board contactless Hall effect sensor to measure the analogue actuator position
- 2 x output opto-relays to drive SOV A and SOV B
- On board temperature and humidity sensors

1) The tolerance of 24VDC depends on the voltage variations admitted by the coil of the SOV(s), (in general it is +-10%) whilst the electronics works with larger voltage variations, 18-30VDC).
2) The 24VDC from SIS and main power are isolated, but they can be linked in a single power supply by the on-board configuration options.
3) The 24VDC main power and the 24VDC of 4-20mA channel are isolated, but they can be linked in one single power supply by the on-board configuration options.

Terminal strips:

- Type: push-in spring loaded, push-button
- Temperature stability: from -60 to 105°
- Conductor size: from 0.25 to 2.5 mm2
- Rating: IEC/EN 250V / 24A
- Contact: electrolytic copper, tin-plated
- Pin spacing: 5 mm

Position sensor:

- Resolution: <0.05%
- Linearity: <0.5%
- Hysteresis: <0,05%
- Thermal drift: 0.1%/10°C

SDCU-20 setting:

- By Hart (non-intrusive)
- By components on board of Main Unit (rotary and dip switches)

The SDCU-20 is factory set according to wiring diagram based on user requirements. Only a few parameters need to be set on site.

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SDCU-20 (Smart Diagnostic Control Unit):

Main unit:
- **SDCU-20 main card** and **position sensor**

Main unit options:
- **Local PST** pushbutton
- **Local diagnostic display**
- **SDCU-20-LS:** kit with components for position switches
- **Pressure transmitter**
- **I/O interface card:** to increase number of I/O and terminals. Available in 3 versions: Filter, AI, DIG.
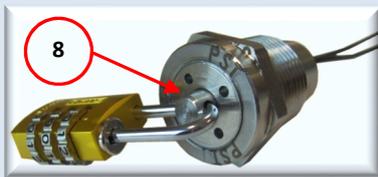
SDCU-20-LS:

The kit includes:
- 2 x mechanical or magnetic or Namur position switches suitable for printed circuit board mounting
- Cam and pin probes: to operate the switches
- Electronic card with terminals and position switches

Local PST pushbutton
- Lockable
- Screwed into a cable entry
- Magnetically operated reed relay
- Material SS 316L
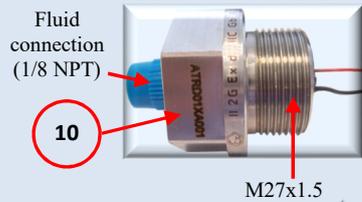

Local diagnostic display:
- Screwed into a cable entry (M27x1.5)
- Material SS 316L
- Automatic scrolling and visualization of SDCU-20 status and variables
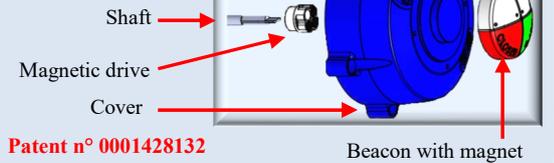- High visibility OLED display
- Detailed alarm and warning list

SDCU OK	Position %
Humidity %	Position Set %
Warning list	

Pressure bar   Temperature °C
Test result   Alarm list

Pressure transmitter:
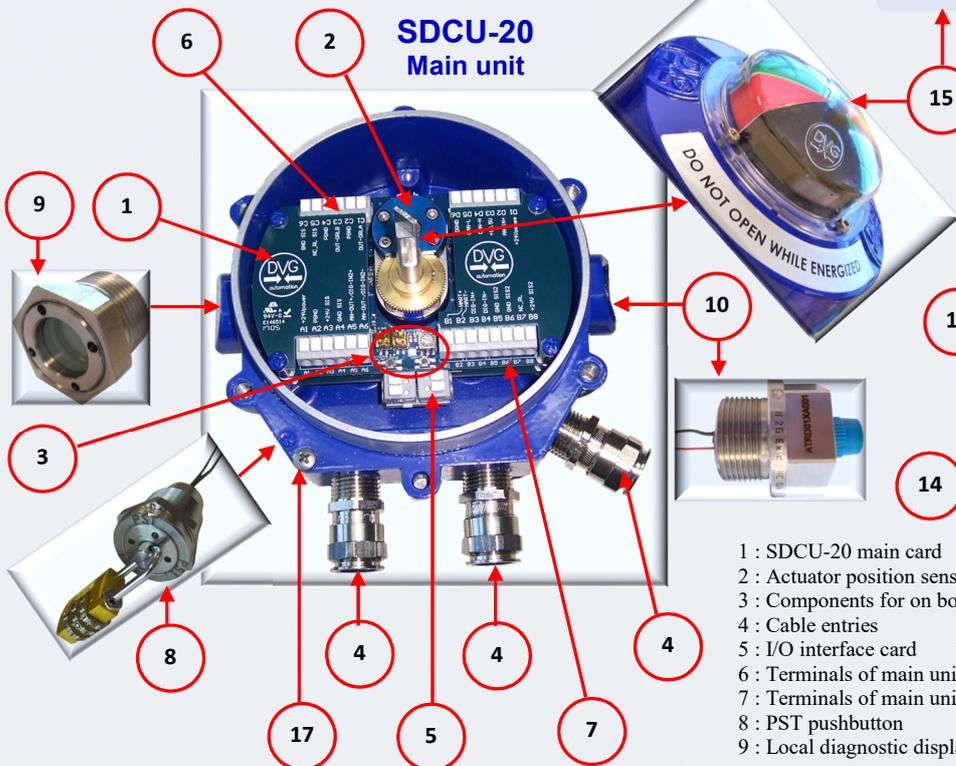- Material SS 316L
- Screwed into a cable entry
- Pressure ranges:
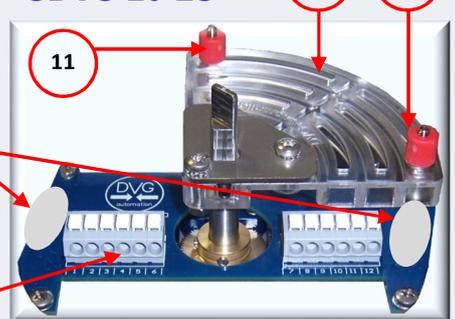 - 0-16 bar, 0-250 bar, 0-400 bar
- Fluid: Air, Oil

Fluid connection (1/8 NPT)

M27x1.5

Magnetic drive of beacon

Shaft
Magnetic drive
Cover

Patent n° 0001428132

Beacon with magnet

Cover and position indicator

SDCU-20 Main unit

DO NOT OPEN WHILE ENERGIZED

SDCU-20-LS

1 : SDCU-20 main card
2 : Actuator position sensor
3 : Components for on board setting
4 : Cable entries
5 : I/O interface card
6 : Terminals of main unit
7 : Terminals of main unit
8 : PST pushbutton
9 : Local diagnostic display
10 : Pressure transmitter
11 : Screw to set the pin probe position
12 : Slide guide to move the pin probe
13 : Pin probe with / without magnet
14 : Terminals of SDCU-20-LS
15 : Cover with position indicator
16 : Position switches, magnetic or mechanical or Namur
17: Earth connection

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SDCU-20-LS with magnetic reed switches
- Contacts type 1A: 1+1 SPDT   2+2 SPDT
- Contacts type 3A: 1+1 SPDT
- Type 1A: BMSD-21-30   BMSD-22-30
- Type 3A: BMSD-21-100-S
- Hysteresis 1A type: 2° typical   5° typical (2SPDT)
- Hysteresis 3A type: 2° typical
- Angle between cams: adjustable from 65° to 145°
- Hermetically sealed
- Operating temperature: -40°C +85°C

Switch features:	1A type	3A type
Max working voltage:	125 VDC/90 VAC	125 VDC / 90 VAC
Max switching current:	1A	3A
Power limits	max 30VA	min 3W, max 100W/VA
Max continuous current:	1A	3A
Temperature range:	-40 /+125 °C	-40/+125°C
Max initial contact resistance:	0.5 Ω	0.5 Ω
Max activation time:	2 ms	4 ms
Max de-activation time:	2 ms	4 ms
Max switching frequency:	1 KHz	50 Hz
Resonant frequency:	3000 Hz	2000Hz
Contact material:	Gold plated	Gold-plated copper alloy
Housing material:	Plastic PA6	Plastic ABS
Vibration:	10-500 Hz: 10g	10-2000 Hz: 15g
• Shock:	1/2 sin 1ms: 100g	1/2 sin 11ms: 10g

SDCU-20-LS with mechanical miniature switches
- Contacts: 1+1 SPDT / 2+2 SPDT / 1+1 DPDT
- Angle between cams: adjustable from 65° to 145°
- Hysteresis: 1° typical
- Model: ITW switches 19N series
- Operating temperature: -40°C +85°C

Switch features:
Type: mechanical, miniature micro-switches, SI
AC electrical ratings:
- 250 VAC   5 A resistive load
- 250 VAC   1 A inductive load (0,6 PF)

DC electrical ratings:
- 28 VDC   3 A resistive load
- 28 VDC   1 A inductive load (0,6 PF)

Min current: 10 mA 5VDC resistive load
Output circuit: SPDT
Operating temperature: from -40 °C to +125 °C
Life (full load): 100 000 cycles
Dielectric strength: 1000VAC
Insulation resistance: 1 GΩ
Contact resistance (initial): max 20 mΩ
Contact bounce: 5 ms (max, 1 ms per individual pulse)
Button material: polyester
Body material: Nylon 46
Degree of protection: IP67 (sealed button)
Contacts: silver nickel alloy
Terminals: tin plated brass
Approvals: BEAB

SDCU-20 equipped with SDCU-20 LS and PST pushbutton

SDCU-20-LS with inductive Namur sensors
- Output: 1+1 Namur sensor
- Angle between cams: adjustable from 65° to 145°
- Hysteresis: 1° typical
- Namur sensors series IB1000
- Hermetically sealed
- Operating temperature: -40°C +85°C

Sensor features:
Type: inductive NAMUR sensor
Working voltage: from 7 to 30Vdc
Operating voltage, according to NAMUR: from 7.7 to 9Vdc
Max ripple: 10% Current consumption at 8.2V and Rx=1KΩ
- With metal: < 1mA
- Without metal: > 3mA

Temperature range: from -40 to +85 °C
Max thermal drift of Sr: ± 10%
Nominal sensing distance (Sr): 2 mm
Repeat accuracy (R): 2% Sn
Switching frequency max: 1 KHz
Degree of protection: IP67
Housing material: Plastic
According to EN60947-5-6
Electromagnetic Compatibility according to EN60947-5-2
Shock and vibration resistance according to IEC 68-2-27 and IEC 68-2-6

I/O interface card type Filter
- electronic filters of "24VDC power"
- reverse voltage protection in case of redundant ESD

I/O interface card type DIG
- electronic filters of "24VDC power"
- reverse voltage protection in case of redundant ESD
- 3x optocoupled digital inputs (DI+ and DI-), max input current 5mA
- 5x optocoupled digital output
- COM 0VDC for the digital output
- 24VDC out, max 48 mA
- Terminals for connection to Local Control Panel (LCP) by means of Ex-e junction box.

I/O interface card type AI
- electronic filters of "24VDC power" of the SDCU-20
- reverse voltage protection in case of redundant ESD
- 2x AI, 4-20 mA Analogue Inputs
- 3x DI, optocoupled digital inputs
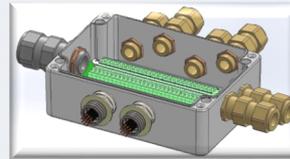- 3x DO, optocoupled digital outputs

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LCP: Local Control Panel
- 3 lamps (green-red-yellow)
- 3 push-buttons (open-close-PST)
- On-Off switch (Option)

Ex-e
Junction box

Cable entries for connection
to **Ex-e junction box**

Optional modules (in separated enclosure):
- **Ex-e junction box:** to increase cable entry capability. Aluminium material.
- **LCP**: **L**ocal **C**ontrol **P**anel with lamps and pushbuttons

SDCU-20 materials:
- Enclosure, body and cover: Aluminium ENAB44300 or Stainless steel ASTM A351 CF3M
- High visibility indicator: Polycarbonate, red and green colour (on request yellow and black), script white

**SDCU-20
Stainless steel
enclosure**

**SDCU-20
Aluminium
enclosure**

Electrical connections:
- In the terminal strips of the SDCU-20
- In the terminals of the optional Ex-e junction box

Cable entries:
- Max 4 cable entries, ¾ NPT, ½ NPT, M20x1.5
- The number of available cable entries is lower if the SDCU-20 is equipped with local PST push button, pressure transmitter and local display. Each of above options occupies a cable entry. In this case the use of the optional junction box is suggested.

Classification and Certification
ATEX certificate: EPT17 ATEX 2622X
IECEx certificate: IECEx EUT 17.0009X
IP 66/68 – EN 60529
Resistance to Vibration – IEC 60068-2-6
Seismic test – IEC 60068-2-27
SIL: certificate n° 17-SIL-0010009-04-TIC
- Reference standards IEC 61508 Parts 1-7:2010
- **Intended application:** The product is designed to be used in Safety Instrumented Systems (SIS) of any SIL rating for use in low demand applications for Partial Stroke Diagnostic Testing of Valve Systems (Emergency Shut-Down Valves) with no negative impact on the safety function performed by the SIS itself. It does not adversely affect the execution of the safety function and does not contribute to the PFDavg, when connected according to the Instruction for use.
Optional PST pushbutton:
- ATEX: EPT 17 ATEX 2611 X
- IECEx: certificate IECEx EUT 17.0005 X
Pressure transmitter:
- ATEX: EPT 18 ATEX 3039 U
- IECEx: IECEx EUT 18.0030 U

Emergency Shut-Down, Testing and Valve Control functions:
The actuator with SDCU-20 carries out the **E**mergency **S**hut-**D**own safety function (**ESD**) by a **0-24VDC** command signal coming from **logic solver** or equal of the **S**afety **I**nstrumented **S**ystem (**SIS**) or equal. The ESD signal should be type **DETT**, **D**e-**E**nergize **T**o **T**rip and it is isolated from the other electric signals of the SDCU-20. It passes through the terminals of the normally closed contact of the relay on the **main unit** to operate directly the **ESD SOV(s)** and drive the actuator to its safe position. The SDCU-20 electronics **does not affect** the ESD signal or the actuator operation or the **SIL rating**. SDCU-20 collects the data relevant to **ESD event**.

Whereas, **Testing** and **Valve Control** functions, like **PST** (**P**artial **S**troke **T**esting), **FST** (**F**ull **S**troke **T**esting), **TSOV** (**T**est of **SOV**) and **Valve opening** and **closing**, are performed through the SDCU-20 electronics. It operates the relays in the **main unit** which drive the SOV(s), collects the data of position, pressure (where foreseen) and time and provides the relevant reports. The tests allow continuous monitoring of the "Valve-Actuator-SOV's" assembly while it is **in operation**, to intervene before a failure interrupts the process.

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PST function

The function **PST** (**P**artial **S**troke **T**est) allows the user to check the correct functionality of the shut-down valve whilst it is **in operation** without having to fully stroke the valve. The test consists in partially closing the valve (PST on fail open valves are rare) and then returning it to its initial position. The travel range is configurable from 3 to 32%. The SDCU-20 collects the values of position, pressure (only where pressure sensor is foreseen) and time and then compares them with a reference **signature** previously memorized.

The SDCU-20 memory can contain the last PST curves and 1 PST signature.

The position to reach during the PST is configurable. The PST command can be manual, by a local or remote hardwired signal, or automatic, at the end of a predetermined period of time. The execution of PST test extends the FST interval and decreases the **PFDavg**, as shown in the curve PFD vs. time.
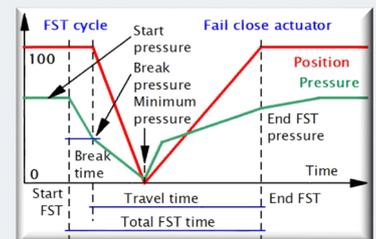

Example of PST cycle
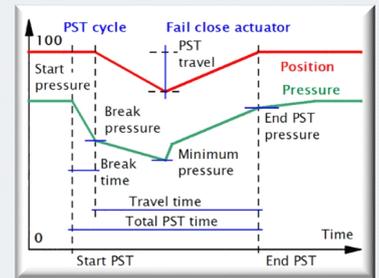
FST function

The function **FST** (**F**ull **S**troke **T**est) consists in driving the shut-down valve to its closed position (FST of fail open valves is rare) and then returning it to its initial position. It checks the valve operation over a complete close/open cycle (Proof test). The SDCU-20 collects the values of position, pressure (only where pressure sensor is foreseen) and time and then compares them with a reference **signature** previously memorized. The SDCU-20 memory can contain the last FST curve and 1 FST signature.
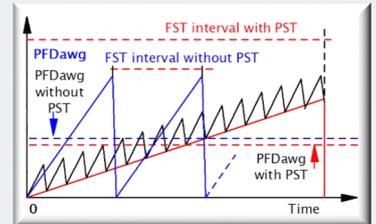
TSOV function

The function **TSOV** (**T**est of **S**olenoid **O**perated **V**alves) is available only if the SDCU-20 is equipped with pressure transmitter to measure the pressure inside the cylinder. It consists in (de)energizing the SOV for a few milliseconds insufficient to move the valve and but sufficient to collect the pressure data to compare it with reference values previously memorized.

Example of FST cycle

The table below shows the faults relevant to SOV, actuator, valve, supply and electronics that can be detected by means of the diagnostic program. By the analysis of the recorded data and subsequent comparison with the reference data, preventive maintenance plans can be implemented to improve process control and extend shut-down interval.

	Alarm list:		Warning list:
1	CRC CAN message error	1	Position sensor out of range
2	Software error	2	Pressure sensor fault
3	External test SOVs	3	FST–PST failed
4	SOV ESDR test failed	4	FST–PST failed: time too long
5	SOV A–B test failed	5	FST–PST failed: start time too long
6	SOV ESD test failed	6	FST–PST calibration failed
7	Slow operation	7	FST–PST or test SOV don't start
8	Fast operation	8	Temperature out of range
9	Failure to close	9	Humidity out of range
10	Failure to open	10	Pressure work under or over
11	Blocked valve	11	Waiting 3 minutes
12	Valve damage	12	Pressure drop
13	No valve connected	13	Configuration error
14	Position sensor fault	14	Limit switch calibration not allowed
15	No 24V pressure sensor	15	Incorrect direction
16	Slow pressure loss		
17	FST–PST failed (Time > 5*calibration time)		
18	HART current loop fault		
19	Fault hardware relay ESD		
20	No 24V SOV ESD		
21	Interfaces don't answer		
22	Hardware failure		

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Coding table:

	Code:	ADC	x	x	x	x	x	x	x	x	x	x	x	X	X	X

SDCU-20 device: ADC

SDCU-20-LS (Limit Switches kit):

without limit switches kit	0
with mechanical sw, 1+1 SPDT	1
with mechanical sw, 2+2 SPDT	2
with mechanical sw, 1+1 DPDT	3
with magnetic reed sw, 2+2 SPDT	4
with Namur inductive sw, 1+1	5
spare	6
spare	7
spare	8
with magnetic reed sw, 1+1 SPDT, 3A	9

Enclosure:

Die-cast Aluminium – NBR Elastomers	A
Die-cast Aluminium – Fluorosilicone Elastomers	C
Stainless Steel – NBR Elastomers	X
Stainless Steel – Fluorosilicone Elastomers	Y

Cable entries:

No. 2 ISO M20x1.5	2	No. 5 ¾" NPT + 1 ISO M27x1.5	F
No. 3 ISO M20x1.5	3	No. 4 ¾" NPT + 2 ISO M27x1.5	G
No. 4 ISO M20x1.5	4	No. 2 ¾" NPT	V
No. 5 ISO M20x1.5	5	No. 3 ¾" NPT	W
No. 6 ISO M20x1.5	6	No. 4 ¾" NPT	X
No. 2 ½" NPT	A	No. 5 ¾" NPT	Y
No. 3 ½" NPT	B	No. 6 ¾" NPT	Z
No. 4 ½" NPT	C		
No. 5 ½" NPT	D		
No. 6 ½" NPT	E		

4-20 mA I/O + Hart com. channel:

not used	0
24VDC / 4-20 mA position feedback	1
24VDC / 4-20 mA position feedback + Hart com.	2
4-20 mA input	3
4-20 mA input + Hart com.	4

Digital input DI1:

not used	0
open cmd	1
close cmd	2
PST cmd	3
local PST pushbutton	4

General I/O:

not used	0
if configured : 4-20 mA out:	
pressure retransmission	1
position retransmission	2
if configured: digital input DI2:	
open cmd	3
close cmd	4
PST cmd	5

Output relay / Pressure transmitter / Local display:

out. relay = not used	pressure transm. = not present	local display = not present	0
out. relay = not used	pressure transm. = present	local display = not present	1
out. relay = alarm contact	pressure transm. = not present	local display = not present	2
out. relay = alarm contact	pressure transm. = present	local display = not present	3
out. relay = redundant SIS	pressure transm. = not present	local display = not present	4
out. relay = redundant SIS	pressure transm. = present	local display = not present	5
out. relay = not used	pressure transm. = not present	local display = present	6
out. relay = not used	pressure transm. = present	local display = present	7
out. relay = alarm contact	pressure transm. = not present	local display = present	8
out. relay = alarm contact	pressure transm. = present	local display = present	9
out. relay = redundant SIS	pressure transm. = not present	local display = present	A
out. relay = redundant SIS	pressure transm. = present	local display = present	B

Outputs to drive SOV's A and B and motor of pump:

without SOV A and SOV B and motor	0
with SOV A to open/close, without SOV B / motor	1
with SOV B to open/close, without SOV A / motor	2
with SOV A and SOV B, SOV A opens SOV B closes	3
with SOV A and SOV B, SOV A closes SOV B opens	4
with motor connected to out. A	5
with motor connected to out. B	6

PST cmd:

PST cmd disabled	0
PST cmd operates ESD SOV	1
PST cmd operates SOV A	2
PST cmd operates SOV B	3
PST cmd operates SOV A and SOV B	4

24 VDC power:

without 24VDC power	0
with 24VDC power	1
with 24VDC power, same of 24VDC Hart	2
with 24VDC power, same of 24VDC SIS	3
with 24VDC power, same of 24VDC Hart and 24VDC SIS	4

Options:

without any option	0	with SDCU-20-LOI / Beacon Yellow-Black	A
with SDCU-20-LOI	1	with NFC adapter / Beacon Yellow-Black	B
with NFC adapter	2	with SDCU-20-LOI and NFC adapter / Beacon Yellow-Black	C
with SDCU-20-LOI and NFC adapter	3	compact electro-hydraulic actuator / Beacon Yellow-Black	D
compact electro-hydraulic actuator	4	with LCP type A / Beacon Yellow-Black	E
with LCP type A	5	with LCP type B / Beacon Yellow-Black	F
with LCP type B	6	with LCP type A and NFC adapter / Beacon Yellow-Black	G
with LCP type A and NFC adapter	7	with LCP type B and NFC adapter / Beacon Yellow_Black	H
with LCP type B and NFC adapter	8	spare	I
spare	9	spare	L

Wiring diagram: X X X

CODING TABLE

The code to identify the SDCU-20 and relevant options is 17 characters long, each character from 0 to 9 and from A to Z: **ADC**XXXXXXXXXXXWWW.
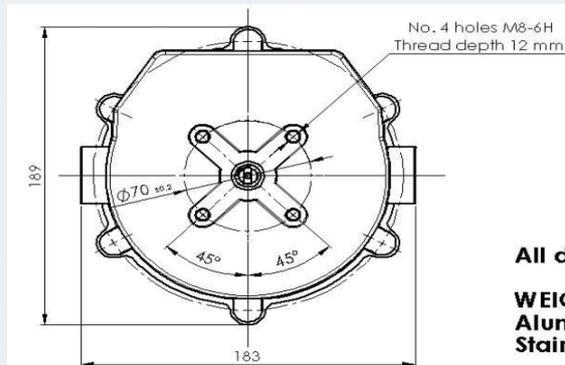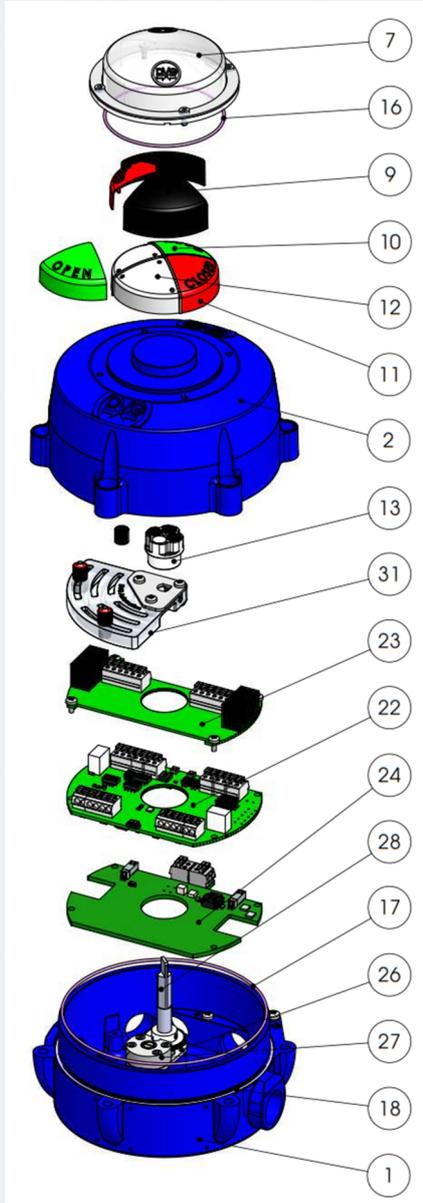
- ADC identifies the SDCU-20 device.
- Characters 4-14: to select the characteristics of device.
- Characters 15-17: wiring diagram number.

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Dimensions

Weight

Main parts

No. 4 holes M8-6H
Thread depth 12 mm

∅70 ±0.2

45° 45°

189

183

All dimensions are in mm

WEIGHT
Aluminium version: 3 kg ±5%
Stainless steel version: 8 kg ±5%

157

1.5

32.9

24.9

4

Port Size:
See SPECIFICATIONS

8

4

∅4

(190)
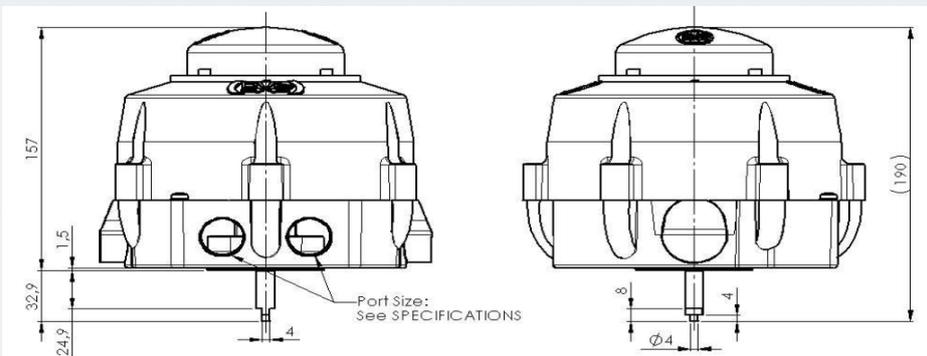
| Pos.	Code	Description	Q.ty
1	See coding table	Body of SDCU-20 enclosure	1
2	See coding table	Cover of SDCU-20 enclosure	1
6	DSBE0X07010	Thrust ring of plastic dome of position indicator	1
7	DSBE0P05210	Transparent plastic dome of position indicator	1
9	DSBE0P05310	Black dimmer of green/red sector	1
10	DSBE0P05111	Green sector (Open) of beacon position indicator	2
11	DSBE0P05112	Red sector (Close) of beacon position indicator	2
12	MSBE0V06012	Plastic dome with magnets for beacon drive (outer side)	1
13	MSBE0V06011	Magnetic drive assembly of beacon indicator (inner side)	1
16	COR0A02325C0	OR 2325 W=1.78 Di=82.27-FLR 70 Shore	1
17	COR0A02562C0	OR 2562 W=1.78 Di=142.11-FLR 70 Shore	1
18	COR0ADIS09C0	OR glued W=1.78 Di=150-FLR 70 Shore	1
22	MSBI0R0PC0001	SDCU-20 main card	1
23	MSBE0R0....	Limit switch card (code depends on type of limit switches)	1
24	DLSBPC0....	I/O interface card (see coding table)	1
26	DSBEFOR0001	Fork to support position sensor assembly	1
27	MSBE0P06000	Position sensor assembly	1
28	MSBE0P04091	SDCU-20 stem assembly	1
31	MSBE0P0....	Cam assembly (code depends on type of limit switches)	1

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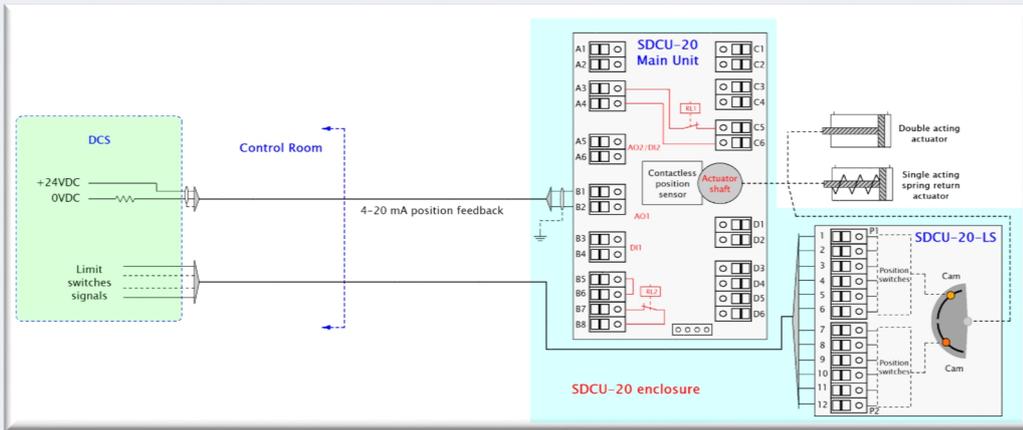
SDCU-20: 4-20 mA actuator position feedback transmitter
- 24V/4-20 mA output: actuator position feedback
- Single acting spring return or double acting piston actuator
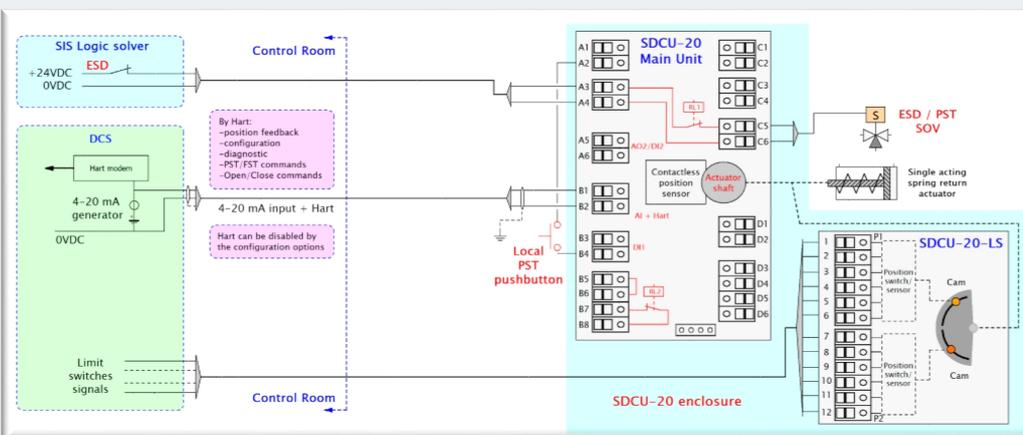- SDCU-20-LS kit as option
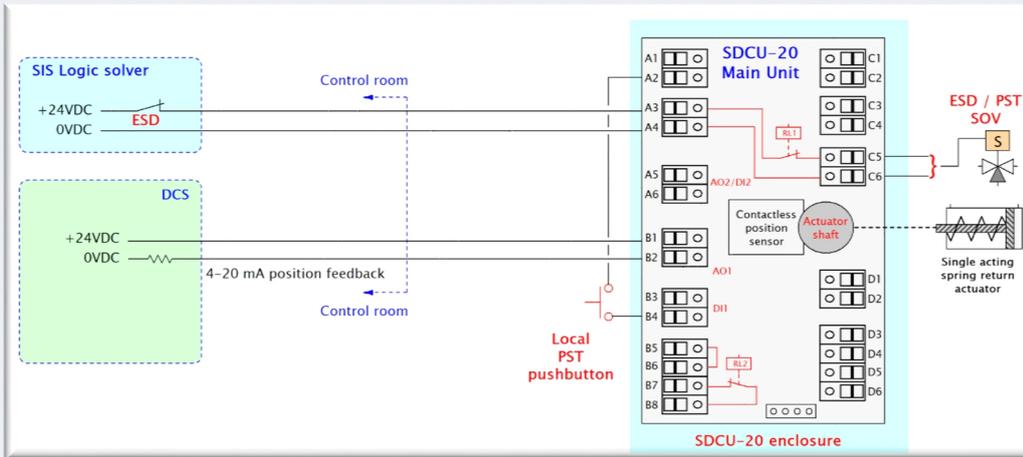
SDCU-20: Partial Stroke Test device (PST)
- 0/24VDC from SIS Logic Solver. DETT (De-Energize To Trip) action
- Single acting spring return piston actuator
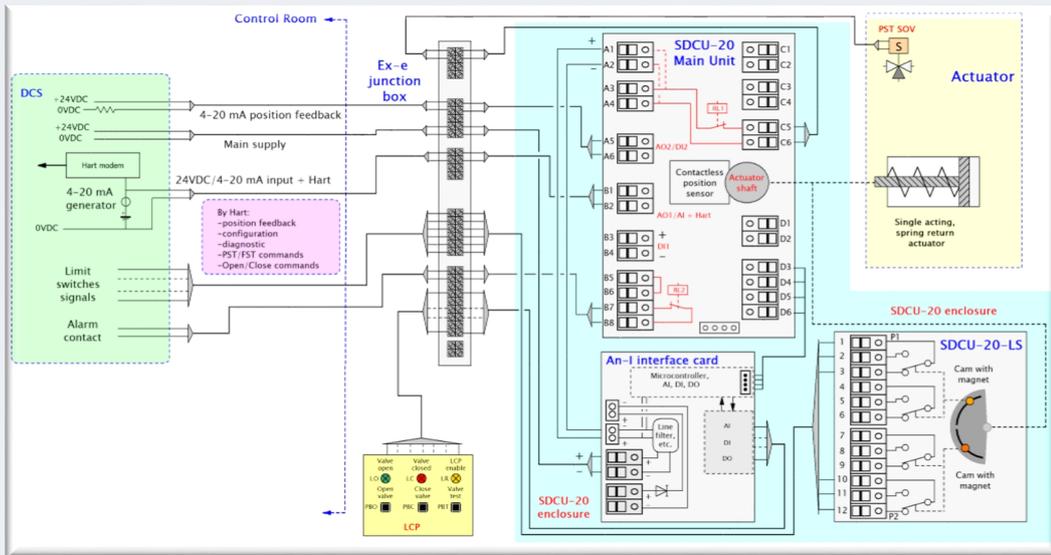- 24V/4-20 mA output: actuator position feedback
- Local PST pushbutton
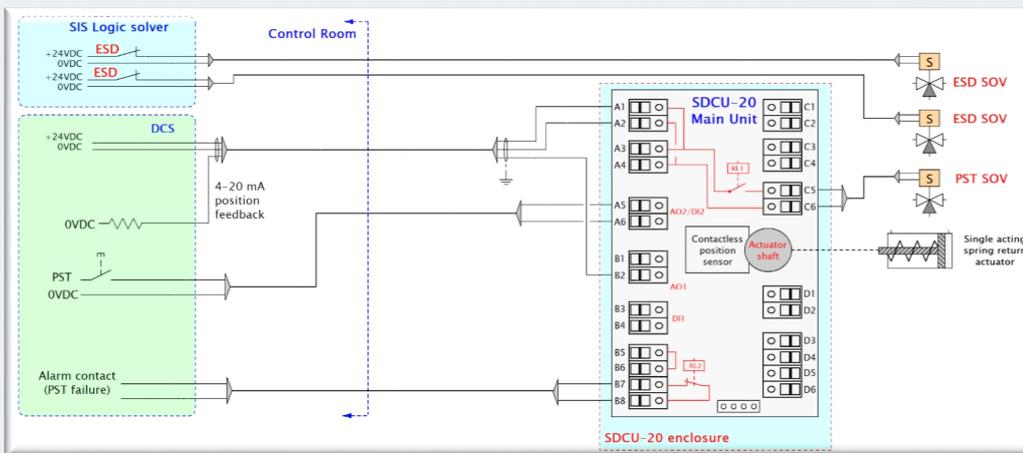
SDCU-20: Partial Stroke Test device (PST)
- ESD SOV's not controlled by SDCU-20
- Single acting spring return piston actuator
- 24V to supply the PST SOV and the SDCU-20
- 4-20 mA output: actuator position feedback
- Remote PST command
- PST SOV controlled by SDCU-20, normally de-energized
- RL1 normally open contact
- Alarm contact (RL2)

SDCU-20 : 4-20mA input and Hart, Partial Stroke Test device (PST)
- 0/24VDC from SIS Logic Solver. DETT (De-Energize To Trip) action
- Single acting spring return piston actuator
- 4-20 mA input signal + Hart communication
- Local PST pushbutton
- SDCU-20-LS kit as option
- Open/Close commands by 4-20mA or by Hart

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SDCU-20 and PST SOV

Single acting spring return piston actuator
1 SOV for PST
24V/4-20mA input and Hart communication
24V/4-20ma output position feedback
Ex-e junction box
Local Control panel (LCP)
LCP enable by Hart
SDCU-20-LS kit (version with magnetic switches)
Alarm contact
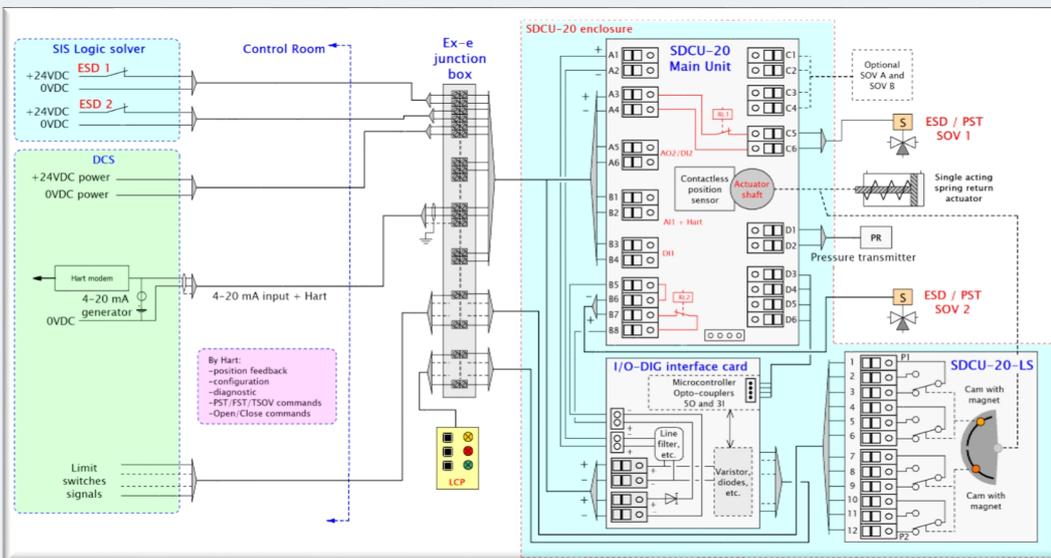
SDCU-20 in a redundant ESD system

- Single acting spring return piston actuator
- 2 SOV's for ESD and PST (DETT action)
- 0/24VDC of ESD1 / ESD2 from Logic Solver or equal
- 4-20 mA input and Hart communication
- Pressure transmitter
- Ex-e junction box
- Local Control panel (LCP)
- SDCU-20-LS kit (version with magnetic switches)
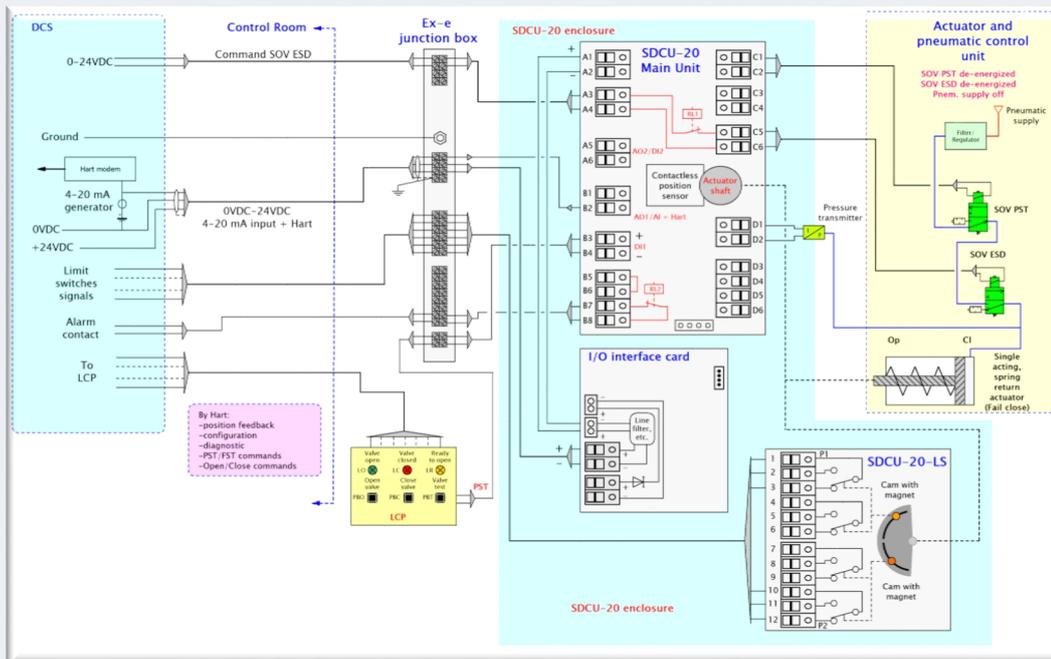
SDCU-20 with separated SOV's for PST and ESD:

- single acting spring return actuator
- 0/24VDC to supply the SOV's for ESD (DETT action)
- 1 pressure transmitters
- 24VDC/4-20mA input current generator and Hart
- SDCU-20-LS kit (optional)
- Ex-e junction box
- Local Control Panel (LCP)
- Local PST by LCP
- External control of LCP

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HART communication

- It is available only if the 4-20mA channel of terminals B1/B2 of SDCU-20 main card is set as "4-20 mA input + Hart".
- The SDCU-20 is managed by the Hart Master as a Slave device, type actuator.
- The Hart communication does not affect the SDCU-20 functions to control the actuator.
- Universal, Common Practice and Device Specific commands are implemented.
- DD (Device Description): All Device Variables, Dynamic and Configuration Variables and Commands have been described in the DD: type, range, measure unit, family, classification, etc.

"HOME" page of the HART master
SDC625 (FieldComm Group)

Page: View/Device
Setup/Settings

Pages "HISTORY"
and Alarm detail

Page "Settings / PST"

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