Euro gauge
Inductive contact type diaphragm pressure gauge
Model: P501, P502 series

Spec. sheet no. PD05-02

Service intended
P501 and P502 seriese are designed for a local reading of measured pressure and equipped with the inductive contact block which allows all the combinations of contact to be used. The contact block is mounted on the dial. The windows is fitted with a knob for external adjustment of the setpoints.

Nominal diameter
100 and 160 mm

Accuracy
±1.0 % of full scale

Scale range (MPa, kPa, bar)
0 ~ 1 kPa to 0 ~ 40 kPa (Flange 150 mm)
0 ~ 50 kPa to 0 ~ 2.5 MPa (Flange 100 mm)

Working pressure
Steady : Full scale value
Fluctuating : 90 % of full scale value

Working temperature
Ambient : -20 ~ 65 °C
Fluid : Max. 100 °C

Degree of protection
EN60529/IEC529/IP67

Temperature effect
Accuracy at temperature above and below the reference temperature (20 ℃) will be effected by approximately ±0.4 % per 10 ℃ of full scale

Standard features

Pressure connection and under flange
Material : 304SS, 316SS and 316L SS

Upper flange (Gauge side)
Material : 304SS, 316SS

Diaphragm material
≤40 kPa Stainless steel (316Ti SS)
>40 kPa Duratherm 600

Case
Stainless steel (304SS)

Cover
Stainless steel (304SS)
Bayonet type

Window
Safety glass : Only available with diameter 100 mm
Polycarbonate : 100 and 160 mm

Movement
Stainless steel

Dial
White aluminium with black graduations

Pointer
Black painted aluminium alloy

Conduit connection
M20 x 1.5

Certificates
NEPSI Ex ia IIC T6 Ga
Tamb = -25 ~ 56 ºC

Option
External zero adjustable

1. Base model

P501 Screwed process connection
P502 "I" type flange process connection

2. Nominal diameter and window material

4 100 mm and safety glass
5 100 mm and polycarbonate window
6 160 mm and polycarbonate window

3. Type of mounting

A Bottom entry

4. Contact function

1 High alarm, normal open contact
2 High and low alarm
3 Low alarm, normal close contact
4 Two high alarm
5 Two low alarm
6 Failsafe high and low alarm

5. Process connection

XX Refer to connection type table

6. Under flange material (Wetted parts)

BX 304SS
CX 316SS
EX 316L SS

7. Unit

H bar
I MPa
J kPa
S mbar

8. Range

XXX Refer to pressure unit and range table

9. Liquid filling

0 None

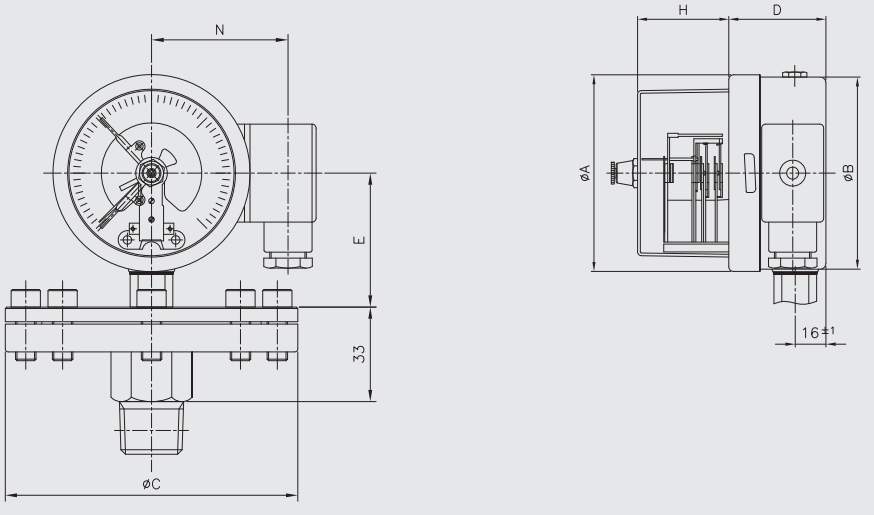
10. Option

0 None
1 Amplifier (AC 230 V)

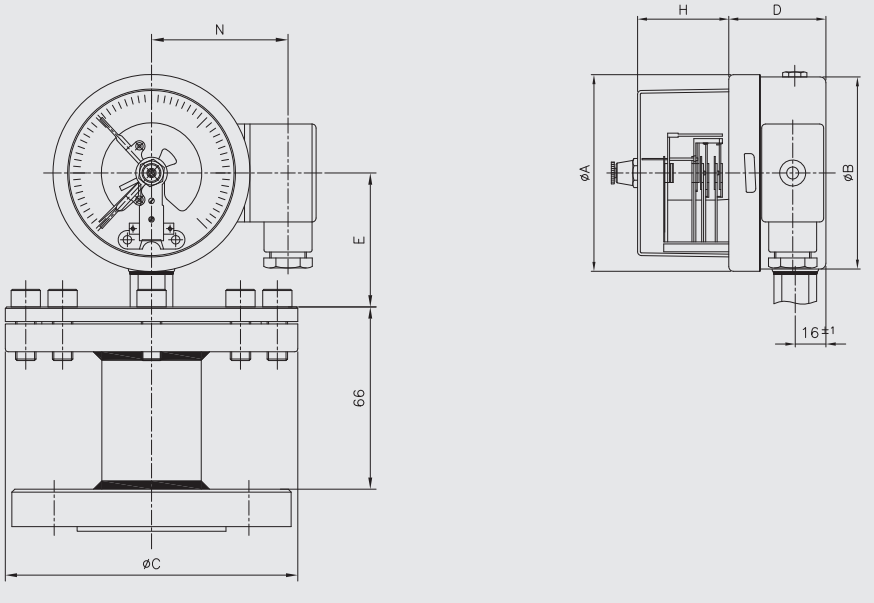
1	2	3	4	5	6	7	8	9	10	
P501	**4**	**A**	**3**	**XX**	**BX**	**H**	**XXX**	**0**	**0**	**Sample ordering code**

P501, P502 : Type of mounting (Polycarbonate window 1/2)

P501



P502

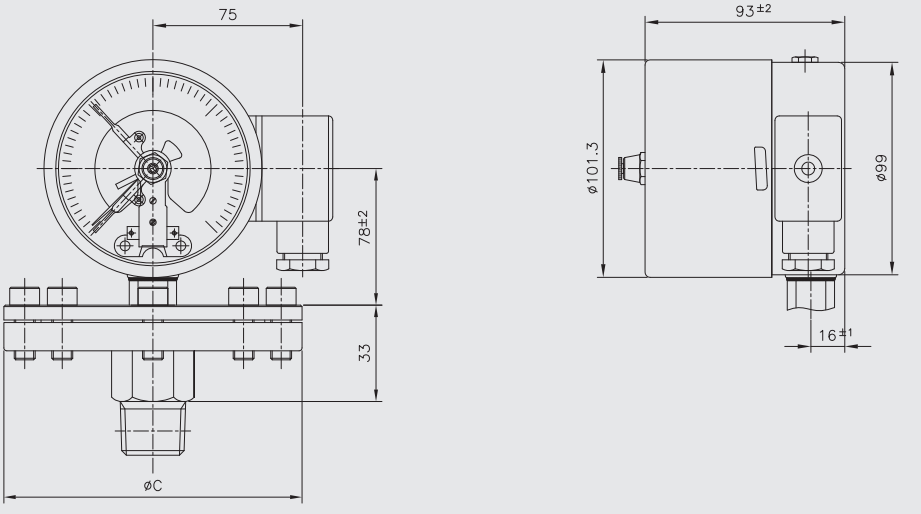


Dimensions (mm)

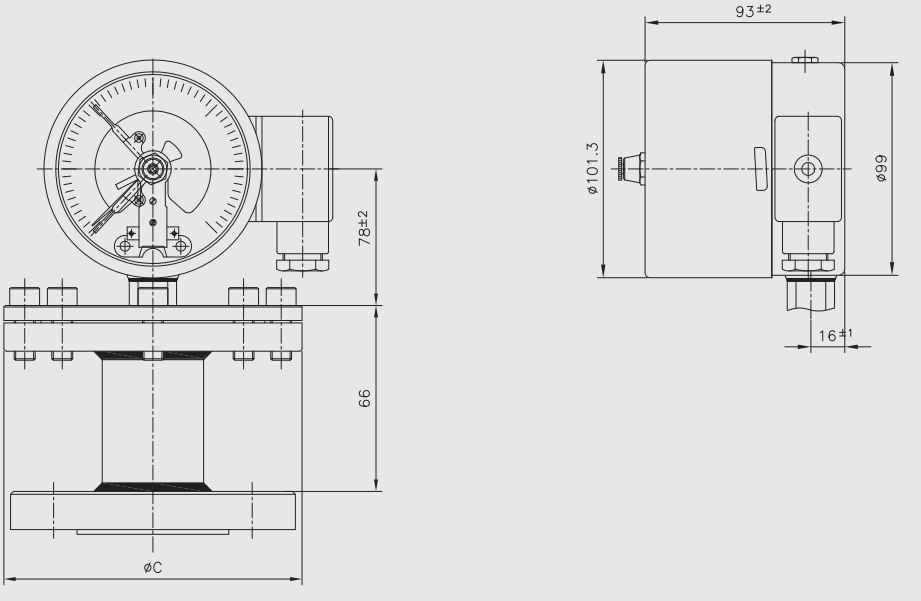
Dial size	A	B	D±2	E±2	H	N	C	
							≤ 40kPa	> 40kPa
100	101.3	99	50	78	34.5	75	150	100
160	160.6	159	52.5	108	34	105		

P501, P502 : Type of mounting (Safety glass window 2/2)

P501



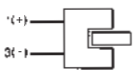
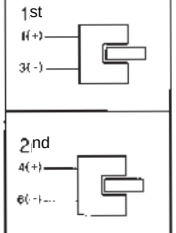
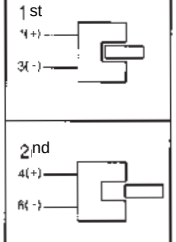
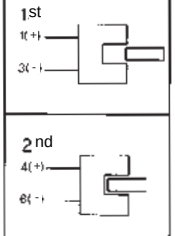
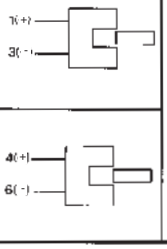
P502



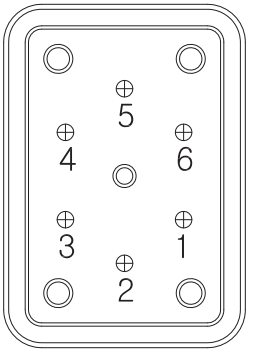
Dimensions (mm)

Dial size	C	
	≤ 40kPa	> 40kPa
100	150	100

Contact funtion table

Code	Wiring scheme		Contact function		Wiebrock code no.	Slot sensor
			1st contact	2nd contact		
Single contact						
1	Control vane inside the slot sensor - Contact make (Normal open)				I-1	SJ2N for 100 mm SJ3.5N for 160 mm
3	Control vane out of the slot sensor - Contact break (Normal colse)				I-2	SJ2N for 100 mm SJ3.5N for 160 mm
Double contact						
4	1st and 2nd Control vane inside the slot sensor - 1st and 2nd Contact make				I-11	SJ2N for 100 mm SJ3.5N for 160 mm
6	1st Control vane inside and 2nd control vane out of the slot sensor - 1st Contact make 2nd Contact break				I-12	SJ2N for 100 mm SJ3.5N for 160 mm Failsafe contact
2	1st Control vane out of the vane and 2nd control vain inside of the vane - 1st Contact break 2nd Contact make				I-21	SJ2N for 100 mm SJ3.5N for 160 mm
5	1st and 2nd Control vane out of the slot sensor - 1st and 2nd Contact break				I-22	SJ2N for 100 mm SJ3.5N for 160 mm

Terminal block arrangement



1. High alarm (I-1)

① Normal open (+)
③ Common (-)
⑤ Ground

2. High and low alarm (I-21)

Low alarm

① Normal close (+)
③ Common (-)
⑤ Ground

High alarm

④ Normal open (+)
⑥ Common (-)

3. Low alarm (I-2)

① Normal close (+)
③ Common (-)
⑤ Ground

4. Two high alarm (I-11)

No.1 High alarm

① Normal open (+)
③ Common (-)
⑤ Ground

No.2 High alarm

④ Normal open (+)
⑥ Common (-)

5. Two low alarm (I-22)

No.2 Low alarm

① Normal close (+)
③ Common (-)
⑤ Ground

No.1 Low alarm

④ Normal close (+)
⑥ Common (-)

6. Failsafe high and low alarm (I-12)

High alarm

① Normal open (+)
③ Common (-)
⑤ Ground

Low alarm

④ Normal close (+)
⑥ Common (-)

Inductive alarm sensor model P500 series

Service intended

WISE inductive contacts are certified for use in hazardous areas of zone 0.
power supply must be made by means of a power source certified intrinsically safe such as pepper and fucus model KFA6-SR2-Ex1.W

Inductive contact are also recommended for critical non-hazardous applications where an utmost of failsafe heavy duty operation is required.

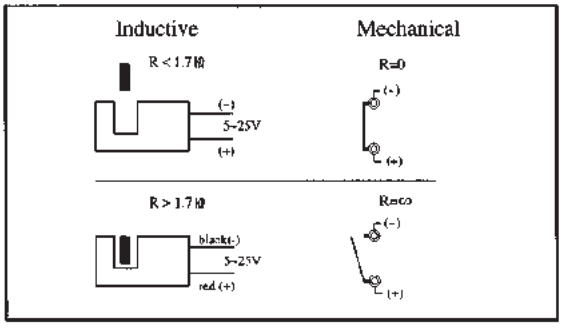
In combination with liquid filled instruments these contacts are particularly suited for process control circuits in the chemical and petroleum industry.

Operating principle

At the heart of the WISE inductive contact system is a non-contact sensor attached to an pressure gauge.
Both sensor and gauge are adjustable over the full length of the scale. Contact actuation is achieved by means of a Control vane linked to the pointer of the gauge.

The control vane affects the electric field of the sensor when the instruments pointer overlaps with the contacts indicator.
Contact actuation is made without any mechanical force that would affect accuracy of the gauge.

The scheme below reflects the operating principle in comparison with conventional mechanical contacts :



Dimensions of the basic instrument and provisions for contacts adjustment are indentical to contacts of model P500.
Operating temperature: -25 °C... +70 °C
Used sensor (slot-type initiator) :
Type SJ of the company Pepper and Fuchs,
EC-type-examination certificate PTB 99 ATEX 2219 X

Advantage of the WISE inductive system

- Long service life by means of non-contact sensor
- Very little effect on gauge accuracy
- No reduced rating with liquid filled gauges
- Fully suitable in corrosive or hazardous atmosphere
- Ex-approved for service in hazardous area of zone 1 or 2

Components of the WISE inductive contact system

Operation of the inductive contact system requires an appropriate electronic power supply and control unit.

The Safety Barrier consists of
- Line transformer
- Amplifier circuit
- Relay to switch external circuit

The isolated line transformer provides for power supply whereas the amplifier conditions the signal of the inductive sensor to energise the output relay.

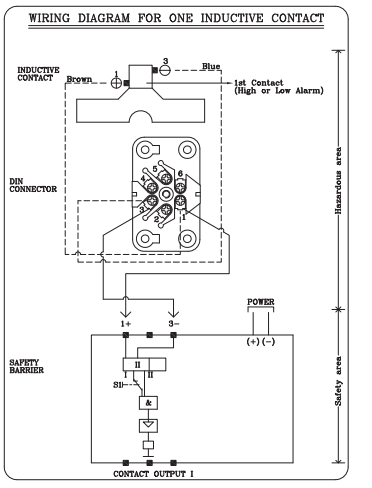
Available are two versions of control units
- Ex-approved intrinsic safety
- Standard for non-intrinsically safe version (optional)

Safety barrier for inductive contacts
Ex-certified versions
Safety barrier model KFA6-SR2-Ex1.W

- Intended for instruments having one inductive contact incorporated
- Alarm circuit certified intrinsically safe [EEx id] IIC to EN 50 227 and NAMUR
- Provides 1 SPDT relay output contact
- LED indicating circuit status (green), relay output (yellow) and lead breakage (red)
- Case surface mounting type Form A

Note

Directions of action adjustable by sliding switch S1 :
Open circuit causes alarm : Switch S1 in position I
Closed circuit causes alarm : Switch S1 in position II



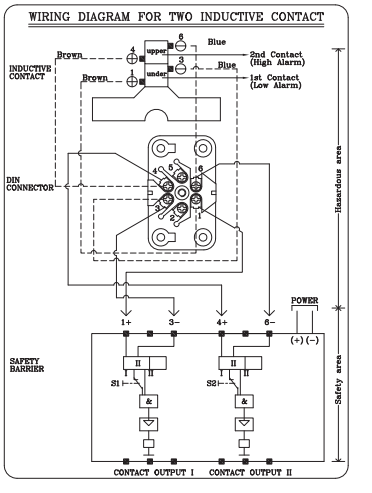
SAFETY BARRIER MODEL	Contact Output I (High or Low Alarm)	POWER
KFA5-SR2-Ex1.W(115V, AC) KFA6-SR2-Ex1.W(230V, AC) KFD2-SR2-Ex1.W(24V,DC)	7(COMMON) 8(OPEN) 9(CLOSE)	14(+) 15(−)

Safety barrier model KFA6-SR2-Ex2.W

- Intended for 1 instrument having two or two instruments having one each contact incorporated
- Alarm circuit certified intrinsically safe [EEx id] IIC to EN 50 227 and NAMUR
- Provides 2 SPDT relay output contacts
- LED indicating circuit status (green), 2 x relay output (yellow) and 2 x lead breakage (red)
- Case surface mounting type Form B

Note

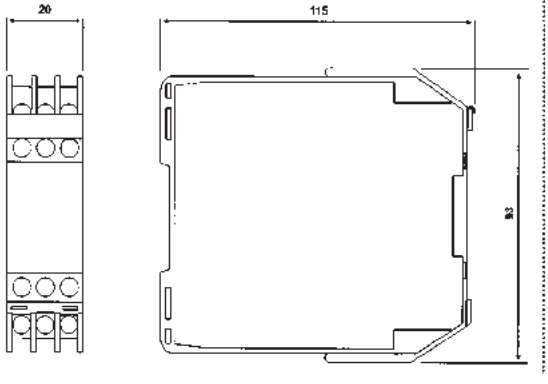
Directions of action adjustable by sliding switch S1 and S2 :
Open circuit causes alarm : switch S1 and S2 in position I
Closed circuit causes alarm : switch S1 and S2 in position II



SAFETY BARRIER MODEL	Contact Output I (Low Alarm)	Contact Output II (High Alarm)	POWER
KFA5-SR2-Ex2.W(115V, AC) KFA6-SR2-Ex2.W(230V, AC) KFD2-SR2-Ex2.W(24V,DC)	7(COMMON) 8(OPEN) 9(CLOSE)	10(COMMON) 11(OPEN) 12(CLOSE)	14(+) 15(−)

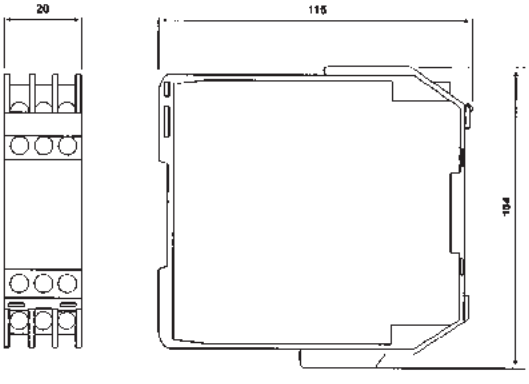
Dimensions of safety barrier for inductive contact

Model : KFA6-SR2-Ex1.W



Form A

Model : KFA6-SR2-Ex2.W



Form B

Specifications for safety barrier	Model KFA6-SR2-Ex1.W	Model KFA6-SR2-Ex2.W
Power supply		
Line voltage 1)	AC 230 V ±0 %, 45...65 Hz	AC 230 V±0 %, 45...65 Hz
Consumption	1 VA	1.3 VA
Input		
No.of contacts	1	2
Voltage (reactive)	DC 8 V	DC 8 V
Maximum current	8 mA	8 mA
Contact actuation	1.2 mA ≤ Is ≤ 2.1 mA	1.2 mA ≤ Is ≤ 2.1 mA
Contact hysteresis	ca. 0.2 mA	ca. 0.2 mA
Control line impedance	100 Ω	100 Ω
Ex-IS data (as PTB-certified)	PTB 00 ATEX 2081	PTB 00 ATEX 2081
Voltage	Uo ≤ DC 10.6 V	Uo ≤ DC 10.6 V
Current	Io ≤ 19.1 mA	Io ≤ 19.1 mA
Power rating	Po ≤ 51 mW	Po ≤ 51 mW
IS-classification	[EEx ia] IIC	[EEx ia] IIC
Ext. capacitance	2.9 µF	2.9 µF
Ext. inductance	100 mH	100 mH
Output		
Relay contacts	1 SPDT	1 ea. SPDT
Contact rating AC	253 V, 2 A, 500 VA, cosØ > 0.7	253 V, 2 A, 500 VA, cosØ > 0.7
Contact rating DC	4 V, 2 A, ohmic	4 V, 2 A, ohmic
Delay making circuit	Approx. 20 ms	Approx. 20 ms
Delay breaking circuit	Approx. 20 ms	Approx. 20 ms
Max. on-off frequency	10 Hz	10 Hz
Operating conditions		
Min. temperature	-20 °C	-20 °C
Max. temperature	+60 °C	+60 °C
Max. humidity	Max. 75 %	Max. 75 %
Ingress protection	IP 20 (EN 60 529 / IEC529)	IP 20 (EN 60 529 / IEC529)
Enclosure		
Style	Surface mounting	Surface mounting
Dimensions per drawing	Form A	Form B
Mounting	Snap-fit on 35 mm X 7.5 mm (EN 50 022) rail. direct mounting feasible	
Weight	Approx. 0.15 kg	Approx. 0.15 kg

Pressure unit and range table

Range and code	Unit and code				
	J : kPa	S : mbar	H : bar	I : MPa	Diaphragm material
797	0 ~ 1	0 ~ 10	X	X	316Ti (130Ø)
817	0 ~ 2.5	0 ~ 25	X	X	
826	0 ~ 4	0 ~ 40	X	X	
828	0 ~ 5	0 ~ 50	X	X	
830	0 ~ 6	0 ~ 60	X	X	
792	0 ~ 10	0 ~ 100	X	X	
810	0 ~ 16	0 ~ 160	X	X	
793	0 ~ 20	0 ~ 200	X	X	
818	0 ~ 25	0 ~ 250	X	X	
820	0 ~ 30	0 ~ 300	X	X	
130	0 ~ 40	0 ~ 400	0 ~ 0.4	X	
040	0 ~ 50	0 ~ 500	0 ~ 0.5	X	Duratherm 600 (75Ø)
131	0 ~ 60	0 ~ 600	0 ~ 0.6	X	
041	X	X	0 ~ 1	0 ~ 0.1	
042	X	X	0 ~ 2	0 ~ 0.2	
134	X	X	0 ~ 2.5	0 ~ 0.25	
043	X	X	0 ~ 3	0 ~ 0.3	
045	X	X	0 ~ 6	0 ~ 0.6	
143	X	X	0 ~ 16	0 ~ 1.6	
052	X	X	0 ~ 25	0 ~ 2.5	

O : Available X : Not available

Process connection type table

8th character		9th, 10th character			
		For model P501		For model P502	
Code	Connection size	Code	Connection type	Code	Flange rating
C *	¼" (8A)	PF	PF	AC	B16.5 Class 150 RF
D *	⅜" (10A)	AB	PT	AE	B16.5 Class 150 FF
E	½" (15A)	AA	NPT	AD	B16.5 Class 150 RFSF
F	¾" (20A)	FF	BSPT	A8	B16.5 Class 150 RTJ
G	1" (25A)	GG	BSPF	AF	B16.5 Class 300 RF
H	1¼" (32A)	HH	NPS	AH	B16.5 Class 300 FF
J	1½" (40A)	JJ	M	AG	B16.5 Class 300 RFSF
K	2" (50A)			A9	B16.5 Class 300 RTJ
L	2½" (65A)			AJ	B16.5 Class 600 RF
M	3" (80A)			AL	B16.5 Class 600 FF
N	4" (100A)			AK	B16.5 Class 600 RFSF
Z	Other			AV	B16.5 Class 600 RTJ
				AS	B16.5 Class 900 RF
				KA	JIS 5K RF
				KT	JIS 5K FF
				KL	JIS 10K RF
				KN	JIS 10K FF
				KM	JIS 10K RFSF
				KP	JIS 20K RF
				KR	JIS 20K FF
				KQ	JIS 20K RFSF
				KC	JIS 30K RF
				KU	JIS 30K FF
				KJ	JIS 30K RFSF
				KD	JIS 40K RF
				KV	JIS 40K FF
				ZZ	Other

* Code C and D, only available with model P501