

### digital single point **SPF5-DUAL** 4086D

Digital single point load cell designed for high speed filling and check weighing applications. Serial Interface with an optional dual logical input and four logical output enables direct connection to the PLC. The stainless steel load cell is hermetically sealed and is ideal for use in heavy washdown applications.



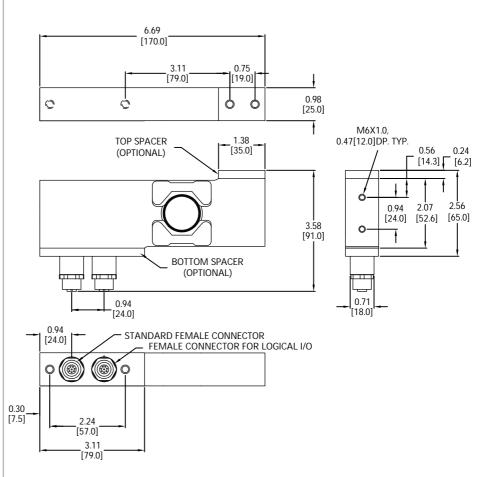
#### **FEATURES**

- · Capacities from 10 to 50 kg.
- · Stainless steel construction.
- · Environmental Protection IP69k with complete hermetic sealing.
- · AD conversion rate up to 1200 upd./sec.
- The current drive per channel is ≤1A.
- · Over voltage, over current, EMC protection.
- The total constant current through all channels is 3Amps (Power<0.66W).
- Any two output channels can be paralleled to drive 2A(The load cell itself can virtually be a (simple) PLC with outputs of 2 x 2Amps or 1 x  $2Amps + 2 \times 1 Amp etc).$
- Free professional software for setting up the digital load cell.
- · Maximum platform size up to 450 x 450 mm.

### **APPLICATIONS**

 Bench scales, conveyor scales, check weighers, filling plants, packaging machines and industrial process control.

#### **OUTLINE DIMENSIONS**



NOTE: M12, 8 PIN MATING CONNECTOR WITH CABLE IS PROVIDED WITH LOAD CELL



**Group Four Transducers** 22 Deer Park Drive

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# digital single point SPF5-DUAL

## 4086D

### **SPECIFICATIONS**

Capacities (Emax)         kg         10         20         50           Recommended min. external division         g         1         2         5           PERFORMANCES           Accuracy class according to the OIML R60         Capacities (Emax/ Tomoso)           Maximum load cell verification interval/(Vmin)         Emax/ Tomoso           Combined cerror         %FS         ≤±0.017           Creep @ 30min         ½FS         ≤±0.017           Zero balance, raw counts         increment         256000         512000           Internal AD conversion rate         Lupd/Sec         ±2000           Output resolution at full load, raw counts         increment         256000         512000         512000           Internal AD conversion rate         Hy         18 (Supress 501/ra and 601/r influence)           Adjustable, adjutal low pass IR filter Adjustable, adjutal low pass IR filter <b< th=""><th>SPECIFICATIONS</th><th></th><th colspan="4"></th></b<>	SPECIFICATIONS						
Recommended min_external division         g         1         2         5           PERFORMANCES           Accuracy class according to the OIML R60         GS           Maximum load cell verification interval(Wrinin)         CBM Security Testing	Model		1		T		
PERFORMANCES           Accuracy class according to the OIML R60         C3           Maximum load cell verification interval(Vmin)         Emax/10000           Combined error         %FS         ≤±0.017           Creep ® 30min         %FS         ≤±0.017           Zero balance, raw counts         increment         ±26000         512000         512000           Internal AD conversion rate         upd/sec         1200         512000	Capacities (Emax)	kg	10	20	50		
Accuracy class according to the OIML R600         C3           Maximum load cell verification interval(Vmin)         Email of the OIML R600           Combined error         %FS         \$\pm\$ ±0.017           Creep @ 30min         %FS         \$\pm\$ ±0.017           Zero balance, raw counts         increment         \$\pm\$ ±0.000         \$\pm\$ ±0.000 <th <="" colspan="2" td=""><td>Recommended min. external division</td><td>g</td><td>1</td><td>2</td><td>5</td></th>	<td>Recommended min. external division</td> <td>g</td> <td>1</td> <td>2</td> <td>5</td>		Recommended min. external division	g	1	2	5
Maximum load cell verification interval(Vmin)         Emal/Loop           Combined error         %FS         ≤±0.017           Creep @ 30min         %FS         ≤±0.017           Zero balance, raw counts         increment         256000         \$12000         \$12000           Output resolution at full load, raw counts         increment         256000         \$12000         \$12000           Internal AD conversion rate         upd/sec         18 (Supress SOHz and 60Hz Influence)         \$12000           Adjustable, digital low pass IR filter         Hz         18 (Supress SOHz and 60Hz Influence)         \$12000           Adjustable, digital low pass IR filter         Hz         18 (Supress SOHz and 60Hz Influence)         \$12000           Adjustable, digital low pass IR filter         Hz         18 (Supress SOHz) and 60Hz Influence)         \$12000           Adjustable, digital low pass IR filter         Hz         18 (Supress SOHz) and 60Hz Influence)         \$12000           Adjustable, digital low pass IR filter         Hz         18 (Supress SOHz) and 60Hz Influence)         \$12000           Adjustable, digital low pass IR filter         Hz         18 (Supress SOHz) and 60Hz Influence)         \$12000         \$12000         \$12000         \$12000         \$12000         \$12000         \$12000         \$12000         \$12000	PERFORMANCES						
Combined error         %FS         ≤±0.017           Ceroep @ 30min         %FS         ≤±0.017           Zero balance, raw counts         increment         ±2000           Output resolution at full load, raw counts         increment         256000         512000         512000           Internal AD conversion rate         upd/sec         1200         512000         512000           Fix, digital low pass IIR filter, default         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter, default         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter, default	Accuracy class according to the OIML R60		(	23			
Creep @ 30min         %FS         ≤±0.017           Zero balance, raw counts         increment         ±2000           Output resolution at full load, raw counts         increment         256000         512000         512000           Internal AD conversion rate         upd/sec         1200         Fix, digital low pass IIR filter Adjustable, digital low pass IIR filter Adjustable, digital low pass IIR filter Adjustable, digital low pass IR filter         Hz         18 (Supress 50Hz and 60Hz influence)           Adjustable, digital low pass IIR filter Adjustable, digital low pass IIR filter Adjustable, digital low pass IIR filter         Hz         18 -0.25 Selectable in 8 steps           Adjustable, external output update rate         upd/sec         1200-9: Selectable in 8 steps           GENERAL I/O's           Hardware interface, RS version         CAN and RS232           RS485 and RS422 (Both four wire)           Data transmission rates CAN         kb         9 (5) 12 (38 457 67152 (230 4460 8           Data transmission rates CAN         kb         9 (5) 12 (38 457 67152 (230 4460 8           CAN Open Protocol CAN         PS (19 2) 38 (457 67152 (230 4460 8         RS485 and RS422 (Both four wire)           Data transmission rates CAN         Protocol CAN         PS (20 2) 40 (20 2) 40 (20 2) 40 (20 2)         RS485 and RS422 (Both four wire)			Emax/10000				
Zero balance, raw counts         increment         ±2000           Output resolution at full load, raw counts         increment         256000         \$12000         \$12000           Fix, digital low pass IIR filter, default         Hz         18 (Supress 50Hz and 60Hz influence)         Adjustable, digital low pass IIR filter Adjustable, digital low pass IIR filter         Hz         18 -0.25 Selectable in 8 steps         Adjustable, digital low pass IIR filter Adjustable, external output update rate         upd./sec         1200-9; Selectable in 8 steps           Adjustable, external output update rate         upd./sec         1200-9; Selectable in 8 steps           CENERAL IV/Os           CAN and RS232 RS485 and RS422 (Both four wire)           Hardware interface, CAN version         CAN and RS232 RS485 and RS422 (Both four wire)           Data transmission rates CAN         kb         125,550,500,1000           Data transmission rates CAN         RS485 fix8422/RS232         RS485 and RS422 (Both four wire)           Protocol CAN         CAN Open         ASCII or Modbus RTU           Logical input, programmable         Trigger Level 2-30Vdc, <3mA, Ref to Gnd.	Combined error	%FS		≤±0.017			
Output resolution at full load, raw counts         increment         256000         512000         512000           Internal AD conversion rate         upd./sec         1200	Creep @ 30min	%FS		≤±0.017			
Internal AD conversion rate         upd/sec         1200           Fix, digital low pass IIR filter, default         Hz         18 (Supress 50Hz and 60Hz influence)           Adjustable, digital low pass IIR filter Adjustable, digital low pass FIR filter         Hz         18-0.25; Selectable in 8 steps           Adjustable, digital low pass FIR filter         Hz         18-0.25; Selectable in 8 steps           Adjustable, external output update rate         upd/sec         1200-9; Selectable in 8 steps           GENERAL I/Os         CAN and RS232           Hardware interface, CAN version         RS485 and RS422 (Both four wire)           Hardware interface, RS version         RS485 and RS422 (Both four wire)           Data transmission rates CAN part interface, RS version         RS485 and RS422 (Both four wire)           Data transmission rates CAN part interface, RS version         RS485 and RS422 (Both four wire)           Protocol CAN part interface, CAN part interfa	Zero balance, raw counts	increment		±2000			
Fix, digital low pass IR filter, default  Adjustable , digital low pass IR filter Adjustable , digital low pass IR filter Adjustable , digital low pass Fix filter Adjustable , digital pass fix filter Adjustable, externa	Output resolution at full load, raw counts	increment	256000	512000	512000		
Adjustable , digital low pass IIR filter Adjustable , digital low pass FIR filter  Adjustable , external output update rate  upd/sec  EXEMERAL I/O'S  Hardware interface, CAN version Hardware interface, CAN version Paradyare interface, CAN version Pata transmission rates CAN Data Trigger Level 2-30Vdc, ¬amA, Ref to Gnd.  Data Trigger Level 2-30Vdc, ¬amA, Ref to GnD.  Data Trigger Level 2-30Vdc, ¬amA, Ref to	Internal AD conversion rate	upd./sec		1200			
Adjustable , digital low pass FIR filter       HZ       40-5; Selectable in 8 steps         Adjustable, external output update rate       upd/sec       1200-9; Selectable in 8 steps         GENERAL I/O's         CAN and RS232 RS485 and RS422 (Both four wire)         Hardware interface, RS version       CAN and RS232 RS485 and RS422 (Both four wire)         Data transmission rates CAN Data transmission rates CAN Data transm. rates RS485/RS422/RS232       kb       125:250:500:1000 9.6:19.2:38.4:57.6:115.2:230.4:460.8         Protocol CAN Perrore Tool CAR S485/ RS422/ RS232       CAN Open ASCII or Modbus RTU       CAN Open ASCII or Modbus RTU         Logical input, programmable       Trigger Level 2-30Vdc, <3mA,Ref to Gnd.         Power supply       VDC       10-30 ≤ 0.4 Watt         Connections         Logical input, programmable         Two (2) with common GND         Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic output data       ON: Current ≤ 1.0 Amp. Res 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Dual paralleled channel output data	Fix, digital low pass IIR filter, default	Hz	18 (Supress 50Hz and 60Hz influence)				
GENERAL I/O's           Hardware interface, CAN version         CAN and RS232 (Both four wire)           Data transmission rates CAN (Data transmission rates CAN) and transm. rates RS485/RS422/RS232         kb         125:250:500:1000 (Modbus RTU)           Protocol CAN (Protocol CAN) (Protocol RS485/ RS422/RS232)         CAN Open (ASCII or Modbus RTU)           Logical input, programmable (Data input, programmable)         Trigger Level 2-30Vdc, <3mA, Ref to Gnd.		Hz					
Hardware interface, CAN version         CAN and RS232 RS485 and RS422 (Both four wire)           Data transmission rates CAN Data transmission rates CAN Data transmission rates RS485/RS422/RS232         kb         1152:250.500.1000 96.19.2;38.4;57.6;115.2;230.4;460.8           Protocol CAN Protocol CAN Protocol RS485/ RS422/ RS232         CAN Open ASCII or Modbus RTU           Logical input, programmable         Trigger Level 2-30Vdc,<3mA,Ref to Gnd.	Adjustable, external output update rate	upd./sec	1200-9; Selectable in 8 steps		eps		
Hardware interface, RS version       RS485 and RS422 (Both four wire)         Data transmission rates CAN Data transm. rates RS485/RS422/RS232       kb       125:250:500:1000 9.6:115:2:230.4;460.8         Protocol CAN Protocol CAN Protocol RS485/ RS422/ RS232       CAN Open ASCII or Modbus RTU         Logical input, programmable       Trigger Level 2-30Vdc, 3mA, Ref to Gnd.         Power supply       VDC       10-30 ≤ 0.4 Watt         Connections       Standard 8 pin, female M12MF 0008         LOGICAL I/O's         Number of logic inputs       Two (2) with common GND         Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND	GENERAL I/O's	<b>'</b>					
Data transm. rates RS485/RS422/RS232         RD         9.6:19.2;38.4;57.6;115.2;230.4;460.8           Protocol CAN Protocol RS485/ RS422/ RS232         CAN Open ASCII or Modbus RTU           Logical input, programmable         Trigger Level 2-30Vdc, <3mA,Ref to Gnd.							
Protocol RS485/ RS422/ RS232       ASCII or Modbus RTU         Logical input, programmable       Trigger Level 2-30Vdc, <3mA,Ref to Gnd.         Power supply       VDC       10-30 ≤ 0.4 Watt         Connections       Standard 8 pin, female M12MF 0008         LOGICAL I/O'S         Number of logic inputs       Two (2) with common GND         Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON: Current ≤ 1.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Dual paralleled channel output data       ON: Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Four channel total constant       ON: Current ≤ 3.0 Amp and 660mW         Four channel total constant       Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Protection measures of all channels       Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Bower supply       VDC       9-40		kb			1;460.8		
Power supply       VDC       10-30 ≤ 0.4 Watt         Connections       Standard 8 pin, female M12MF 0008         LOGICAL I/O's         Number of logic inputs       Two (2) with common GND         Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.055Ω         Dual paralleled channel output data       ON : Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         ON: Current ≤ 3.0 Amp and 660mW         Four channel total constant         OFF: ≤ 40Vdc         Protection measures of all channels       Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40							
Connections       Standard 8 pin, female M12MF 0008         LOGICAL I/O's         Number of logic inputs       Two (2) with common GND         Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.025Ω         Poual paralleled channel output data       ON : Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         ON: Current ≤ 3.0 Amp and 660mW         Four channel total constant         OFF: ≤ 40Vdc         Protection measures of all channels       Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	Logical input, programmable	Trigger Level 2-30Vdc,<3mA,Ref to Gnd.					
LOGICAL I/O's         Number of logic inputs       Two (2) with common GND         Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.055Ω         Dual paralleled channel output data       ON: Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Four channel total constant         Four channel total constant         Protection measures of all channels         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	Power supply	VDC	VDC 10-30 ≤ 0.4 Watt				
Number of logic inputs       Two (2) with common GND         Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.055Ω         Dual paralleled channel output data       ON: Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Four channel total constant         ON: Current ≤ 3.0 Amp and 660mW         Fortection measures of all channels         Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	Connections		Standard 8 pin, female M12MF 0008				
Programmable Logic input data       Trigger level 2-30Vdc, <3mA, Ref to GND         Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.055Ω         Dual paralleled channel output data       ON : Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Four channel total constant       ON: Current ≤ 3.0 Amp and 660mW         OFF: ≤ 40Vdc         Protection measures of all channels       Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	LOGICAL I/O's	•					
Number of logic outputs       Four (4) channels with common High drive.         Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.055Ω         Dual paralleled channel output data       ON : Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         Four channel total constant       ON: Current ≤ 3.0 Amp and 660mW         OFF: ≤ 40Vdc         Protection measures of all channels       Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	Number of logic inputs	Two (2) with common GND					
Single channel logic output data       ON : Current ≤ 1.0 Amp. Rds 0.055Ω         Dual paralleled channel output data       ON : Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         ON: Current ≤ 3.0 Amp and 660mW         Four channel total constant         OFF: ≤ 40Vdc         Protection measures of all channels         Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	Programmable Logic input data	Trigger level 2-30Vdc, <3mA, Ref to GND					
Dual paralleled channel output data       ON : Current ≤ 2.0 Amp. Rds 0.028Ω (Paralleled wiring and programmed for synchronous switching)         ON: Current ≤ 3.0 Amp and 660mW         Four channel total constant       OF: ≤ 40Vdc         Protection measures of all channels       Short circuit protection; Over temperature shut down; Over voltage protection ; ESD protection         Isolation body/ Electronics at 500VDC       GΩ       ≥1         Power supply       VDC       9-40	Number of logic outputs	Four (4) channels with common High drive.					
Dual paralleled channel output data     programmed for synchronous switching)       Four channel total constant     ON: Current ≤ 3.0 Amp and 660mW       Protection measures of all channels     Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection       Isolation body/ Electronics at 500VDC     GΩ     ≥1       Power supply     VDC     9-40	Single channel logic output data	ON : Current ≤ 1.0 Amp. Rds 0.055Ω					
Four channel total constant	Dual paralleled channel output data						
OFF: ≤ 40Vdc       Protection measures of all channels     Short circuit protection; Over temperature shut down; protection     Over voltage protection; ESD protection       Isolation body/ Electronics at 500VDC     GΩ     ≥1       Power supply     VDC     9-40		ON: Current ≤ 3.0 Amp and 660mW					
Protection measures of all channels     Short circuit protection; Over temperature shut down; Over voltage protection; ESD protection       Isolation body/ Electronics at 500VDC     GΩ     ≥1       Power supply     VDC     9-40	Four channel total constant						
Isolation body/ Electronics at 500VDC $GΩ$ ≥1       Power supply     VDC     9-40	Protection measures of all channels	Short circuit protect					
Power supply VDC 9-40	Isolation body/ Electronics at 500VDC	GΩ	·				
	,	VDC 9-40					
	Connection	Separate 8 pin, female M12MF 0008					

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### **SPECIFICATIONS**

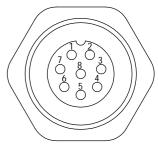
SPECIFICATIONS					
INFLUENCES					
Safe load limit	%* Emax	300	150	150	
Ultimate load	%* Emax	600	300	300	
Eccentric loading error acc. to OIML R76	%FS	±0.0233			
Max platform size	mm x mm	450 x 450			
Temperature effect on zero	%FS/°C	0.001			
Temperature effect on span	%FS/°C	0.001			
Temperature range	°C		erating: -10/- orage: -40/+		
EMC performance	MID Class E2 (Industrial locations)				
I/O protection, all pins	Reversed polarity; Excess voltage and surge				
Isolation body/ Electronics at 500VDC	GΩ ≥1				
Vibration	2.5G operational; 5G non-operational				
Environmental Protection	Body IP69k; Connectors IP68				
Corrosion resistance	All stainless steel				

### **WIRING**

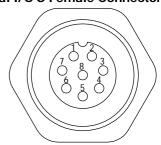
St	Standard Female Connector Signal Electronics M12AF0008		
Pin No.	RS-232+CAN	RS-485+RS-422	
1	GND1	GND1	
2	PROGRAM	PROGRAM	
3	CANH	Rx+	
4	TRIGGER INPUT	TRIGGER INPUT	
5	CANL	Rx-	
6	RxD	Tx-	
7	TxD	Tx+	
8	PWR+	PWR+	

Logical I/O'S Female Connector Signal Electronics M12AF0008		
Pin No.	Connection	
1	OUT 1	
2	OUT 2	
3	OUT 3	
4	OUT 4	
5	UB2	
6	GND2	
7	IN1	
8	IN2	

### **PIN Configuration Standard Female Connector**



### **PIN Configuration** Logical I/O'S Female Connector



### **PART NUMBERS**

Capacity(kg)	RS232+CAN	RS485+RS422
10	4086D-000-02	4086D-000-03
20	4086D-001-02	4086D-001-03
50	4086D-002-02	4086D-002-03



Pioneering Measured Solutions

Dimensions and specifications subject to change without notice