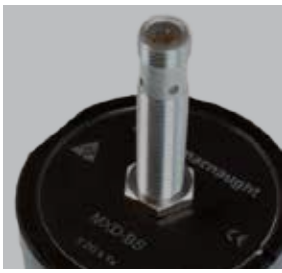
# MX-SERIES FLOW METERS



# MX-SERIES FLOW METERS

## DIGITAL FLOW METERS

The Digital Flow Meter range are the latest innovation from Macnaught. They feature billet construction* offering optimal operational reliability and accuracy. Supplied with an individual Test Report, these meters are also marked with the actual K factor from calibration testing for an accuracy of +/- 0.5%. Their construction is modular allowing for simple in situ maintenance and system changes.

## EXPLODED DIAGRAM

**Output**
Macnaught offer a range of digital output and display options that will suit most applications. Choose between display based on application needs

**Port connection**
Based on desired pipe connection

**Materials of construction**
Choose material based on pressure and fluid type

**Meter size**
Choose meter size based on flow rate desired

**Rotor type**
Select rotor type based on the viscosity of the fluid and fluid type

*Billet construction across the MX meters up to 2"

## PRODUCT IDENTIFICATION SYSTEM

# MX06P-1SE

**MX06**

| MX PORT SIZE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 06 | 09 | 12 | 19 | 25 | 40 | 50 | 75 | 100 |
| 1/4" | 1/4" | 1/2" | 3/4" | 1" | 1½" | 2" | 3" | 4" |

**P**

| | MATERIALS OF CONSTRUCTION | |
|---|---|---|
| | CATEGORY (METER/ROTOR/SEAL) | MODELS |
| F | AL/PPS/FKM | MX06-50 |
| | AL/AL/FKM | MX75-100 |
| P | SS/PPS/FEP | MX06-50 |
| S | AL/SS/FEP | MX06-25 |
| | AL/AL/FEP | MX40-100 |

**1**

| | PORT CONNECTION | MODEL |
|---|---|---|
| 1 | G | All Models |
| 2 | NPT | |
| 3 | ANSI 150 | MX25-100 |
| 4 | JIS 10K | |
| 5 | DIN PN16 | |

**S**

| | ROTOR TYPE | MODELS |
|---|---|---|
| S | Standard | As per category |
| T | High Temperature | MX06P - MX50P |
| V | High Viscosity | S and P category |

**E**

| | OUTPUT TYPE | MODELS |
|---|---|---|
| X | No Output | All Models |
| A | Standard Pulse | All Models |
| B | Ex approved (Ex ia) | Consult Macnaught Technical regarding availability |
| D | PR (LCD 12mm display) | All Models |
| E | PRA (LCD 12mm display) | All Models |
| F | ER (LCD 17mm display) | All Models* |
| G | ERA (LCD 17mm display) | All Models* |
| H | ERB (LCD 17mm display) | All Models* |
| N | Ex Approved (Ex ia namur) | Consult Macnaught Technical regarding availability |
| T | High Temperature | All Models |
| I | Reed/Reed | Consult Macnaught Technical regarding availability |
| J | Hall/Hall | |
| K | High Resolution (omnipolar) | |

# MX06 – ¼" DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 0.5-100L/HR**

**MX06P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX06 ¼" Digital Flow Meters are suitable for flows between 0.5-100L/hr. The ¼" Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX06F | MX06S | MX06P |
|---|---|---|---|
| **Materials of Construction** | | | |
| Meter Body | Aluminium (6061) | Aluminium (6061) | Stainless Steel (316) |
| Rotor | PPS | Stainless Steel (316) | PPS<br>Stainless Steel (316) |
| Seals | Fluorocarbon (FKM) | PTFE Encapsulated (FEP) | PTFE Encapsulated (FEP) |
| **Design Specifications** | | | |
| Process Connections | ¼" G<br>¼" NPT | ¼" G<br>¼ " NPT | ¼" G<br>¼" NPT |
| **Technical Specifications** | | | |
| Flow rate | **<5cP** 2-100L/hr 0.5-26USG/hr<br>**>5cP** 0.5-100L/hr 0.13-26USG/hr | **<5cP** 2-100L/hr 0.5-26USG/hr<br>**>5cP** 0.5-100L/hr 0.13-26USG/hr | **<5cP** 2-100L/hr 0.5-26USG/hr<br>**>5cP** 0.5-100L/hr 0.13-26USG/hr |
| Non-lubricating fluids | 6-100L/hr<br>1.58-26USG/hr | 6-100L/hr<br>1.58-26USG/hr | 6-100L/hr<br>1.58-26USG/hr |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | -40 - 120°C<br>-40 - 248°F | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) |
| Max. Operating Pressure | 1000psi<br>69bar | 1000psi<br>69bar | 1000psi<br>69bar |
| Accuracy | +/- 0.5% | +/- 0.5% | +/- 0.5% |
| Repeatability | +/- 0.03% | +/- 0.03% | +/- 0.03% |
| Nominal K-Factor | 1000 Pulses/L | 1000 Pulses/L | 1000 Pulses/L |

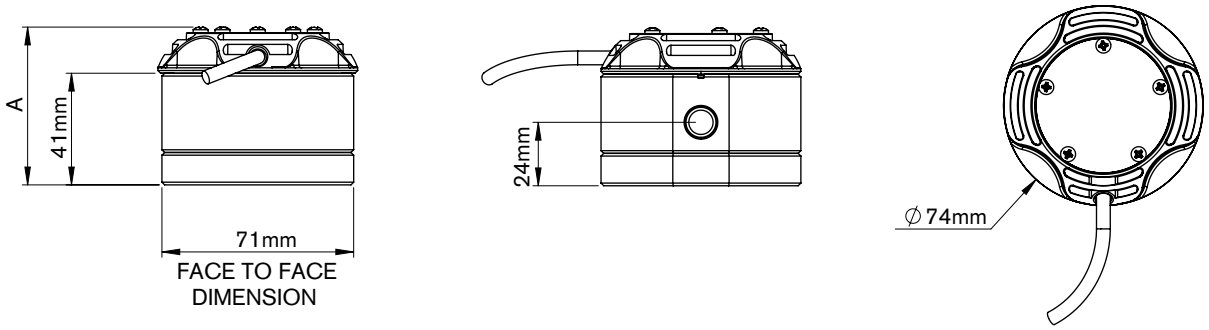
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations

## OUTPUTS TYPES

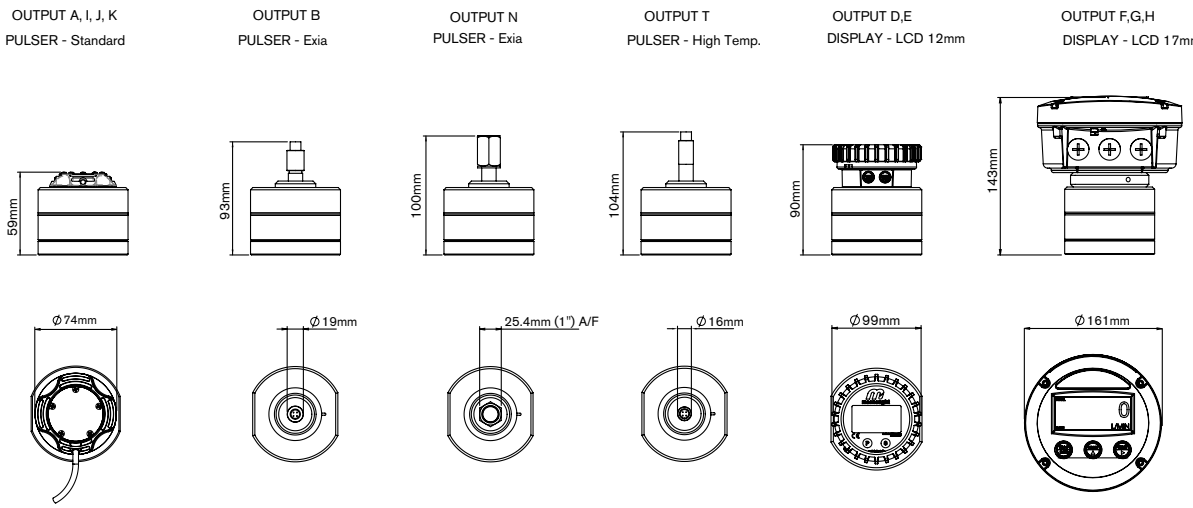
| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX06F | MX06S | MX06P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A



# MX09 – ¼" DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 15-500L/HR**

**MX09P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX09 ¼" Digital Flow Meters are suitable for flows between 15-500L/hr. The ¼" Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX09F | MX09S | MX09P |
|---|---|---|---|
| **Materials of Construction** Meter Body | Aluminium (6061) | Aluminium (6061) | Stainless Steel (316) |
| Rotor | PPS | Stainless Steel (316) | PPS<br>Stainless Steel (316) |
| Seals | Fluorocarbon (FKM) | PTFE encapsulated (FEP) | PTFE encapsulated (FEP) |
| **Design Specifications** Process Connections | **Threaded**<br>¼" G<br>¼" NPT | **Threaded**<br>¼" G<br>¼" NPT | **Threaded**<br>¼" G<br>¼" NPT |
| **Technical Specifications** Flow rate | **<5cP** 25-500L/hr 6.6-132USG/hr<br>**>5cP** 15-500L/hr 4-132USG/hr | **<5cP** 25-500L/hr 6.6-132USG/hr<br>**>5cP** 15-500L/hr 4-132USG/hr | **<5cP** 25-500L/hr 6.6-132USG/hr<br>**>5cP** 15-500L/hr 4-132USG/hr |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | -40 - 120°C<br>-40 - 248°F | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) |
| Max. Operating Pressure | 1000psi<br>69bar | 1000psi<br>69bar | 1000psi<br>69bar |
| Accuracy | +/- 0.5% | +/- 0.5% | +/- 0.5% |
| Repeatability | +/- 0.03% | +/- 0.03% | +/- 0.03% |
| Nominal K-Factor | 400 Pulses/L | 400 Pulses/L | 400 Pulses/L |

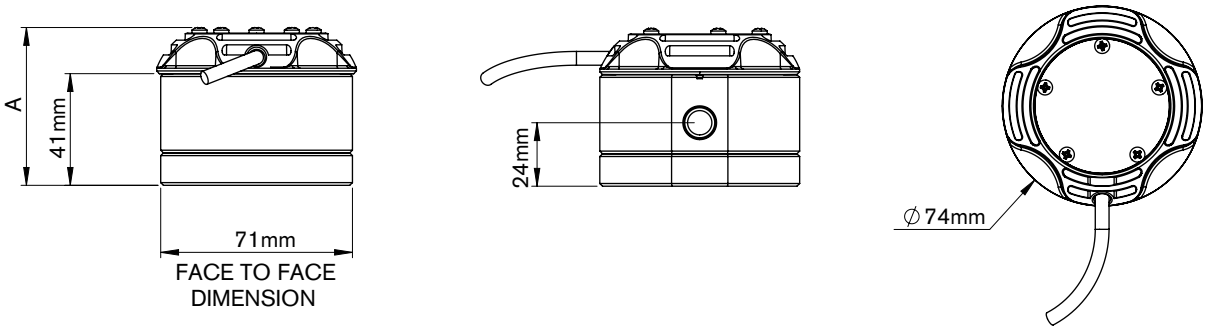
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations

## OUTPUTS TYPES

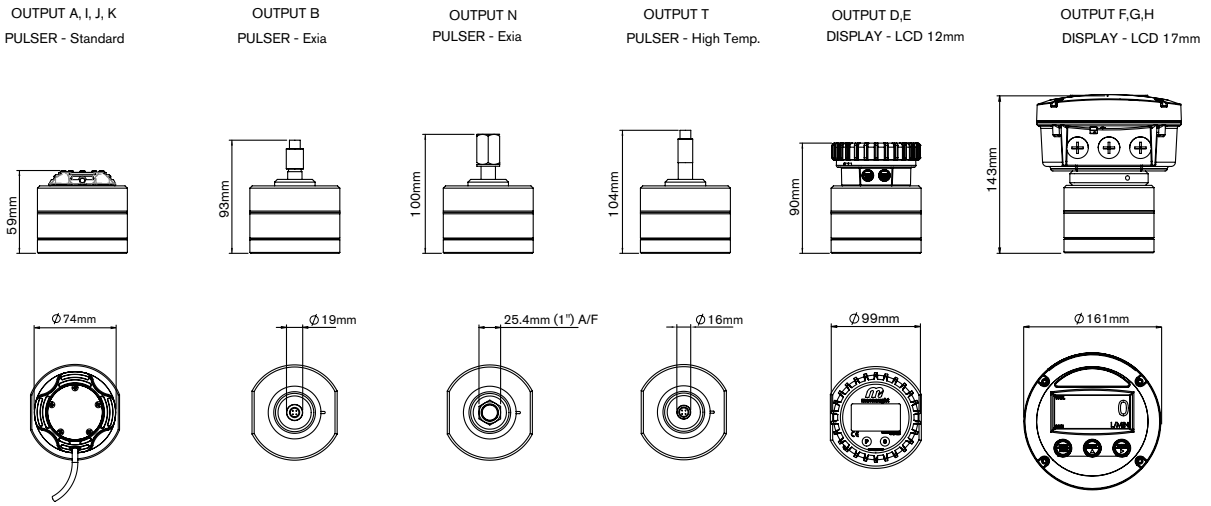
| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX09F | MX09S | MX09P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available S Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A



# MX12 – ½" DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 2-30L/MIN**

**MX12P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX12 ½" Digital Flow Meters are suitable for flows between 2-30L/min. The ½" Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX12F | MX12S | MX12P |
|---|---|---|---|
| **Materials of Construction** Meter Body | Aluminium (6061) | Aluminium (6061) | Stainless Steel (316) |
| Rotor | PPS | Stainless Steel (316) | PPS<br>Stainless Steel (316) |
| Seals | Fluorocarbon (FKM) | PTFE encapsulated (FEP) | PTFE encapsulated (FEP) |
| **Design Specifications** Process Connections | **Threaded**<br>½" G<br>½" NPT | **Threaded**<br>½" G<br>½" NPT | **Threaded**<br>½" G<br>½" NPT |
| **Technical Specifications** Flow rate | **<5cP** 3-25L/min 0.6-6.6USG/min<br>**>5cP** 2-30L/min 0.5-8USG/min | **<5cP** 3-25L/min 0.6-6.6USG/min<br>**>5cP** 2-30L/min 0.5-8USG/min | **<5cP** 3-25L/min 0.6-6.6USG/min<br>**>5cP** 2-30L/min 0.5-8USG/min |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | -40 - 120°C<br>-40 - 248°F | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) |
| Max. Operating Pressure | 2000 psi<br>138 Bar | 2000 psi<br>138 Bar | 2000 psi<br>138 Bar |
| Accuracy | +/- 0.5% | +/- 0.5% | +/- 0.5% |
| Repeatability | +/- 0.03% | +/- 0.03% | +/- 0.03% |
| Nominal K-Factor | 112 Pulses/L | 112 Pulses/L | 112 Pulses/L |

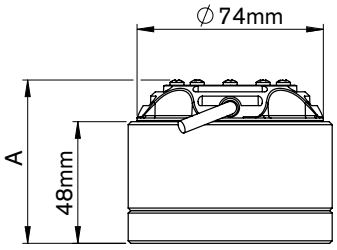
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations

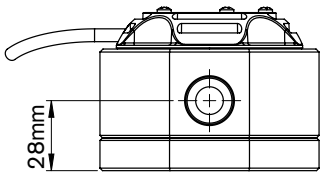
## OUTPUTS TYPES

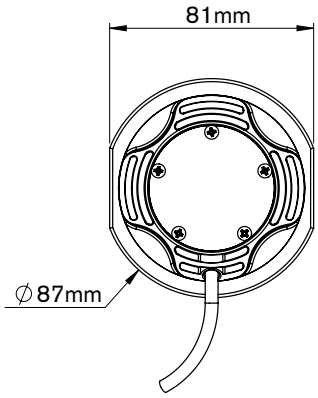
| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX12F | MX12S | MX12P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

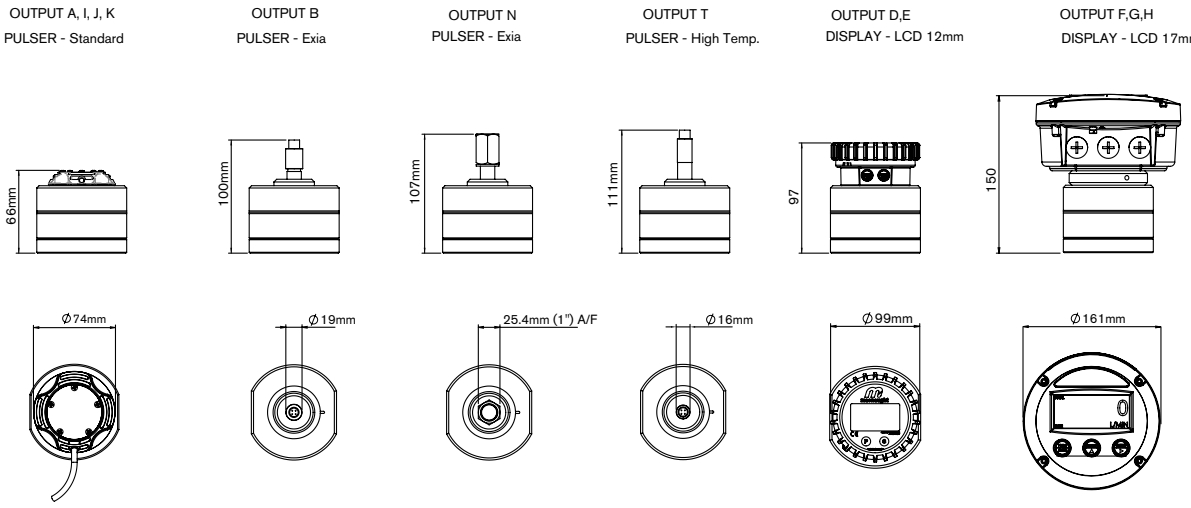
## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A



# MX19 – ¾” DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 3-80L/MIN**

**MX19P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX19 ¾” Digital Flow Meters are suitable for flows between 3-80L/min. The ¾” Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX19F | MX19S | MX19P |
|---|---|---|---|
| **Materials of Construction** Meter Body | Aluminium (6061) | Aluminium (6061) | Stainless Steel (316) |
| Rotor | PPS | Stainless Steel (316) | PPS<br>Stainless Steel (316) |
| Seals | Fluorocarbon (FKM) | PTFE encapsulated (FEP) | PTFE encapsulated (FEP) |
| **Design Specifications** Process Connections | **Threaded**<br>¾” G<br>¾” NPT | **Threaded**<br>¾” G<br>¾” NPT | **Threaded**<br>¾” G<br>¾” NPT |
| **Technical Specifications** Flow rate | **<5cP** 8-70L/min 2-18.5USG/min<br>**>5cP** 3-80L/min 0.8-21USG/min | **<5cP** 8-70L/min 2-18.5USG/min<br>**>5cP** 3-80L/min 0.8-21USG/min | **<5cP** 8-70L/min 2-18.5USG/min<br>**>5cP** 3-80L/min 0.8-21USG/min |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | -40 - 120°C<br>-40 - 248°F | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) |
| Max. Operating Pressure | 2000 psi<br>138 Bar | 2000 psi<br>138 Bar | 2000 psi<br>138 Bar |
| Accuracy | +/- 0.5% | +/- 0.5% | +/- 0.5% |
| Repeatability | +/- 0.03% | +/- 0.03% | +/- 0.03% |
| Nominal K-Factor | 52 Pulses/L | 52 Pulses/L | 52 Pulses/L |

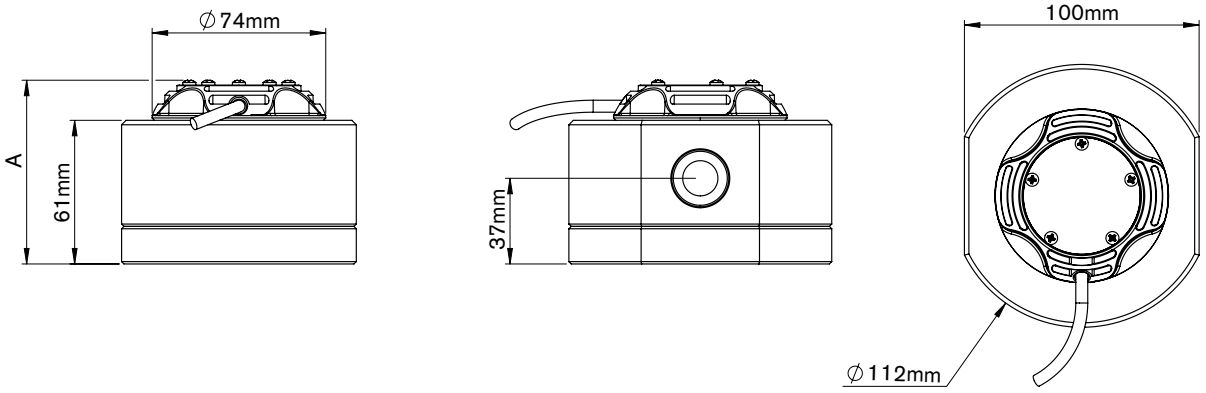
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations

## OUTPUTS TYPES

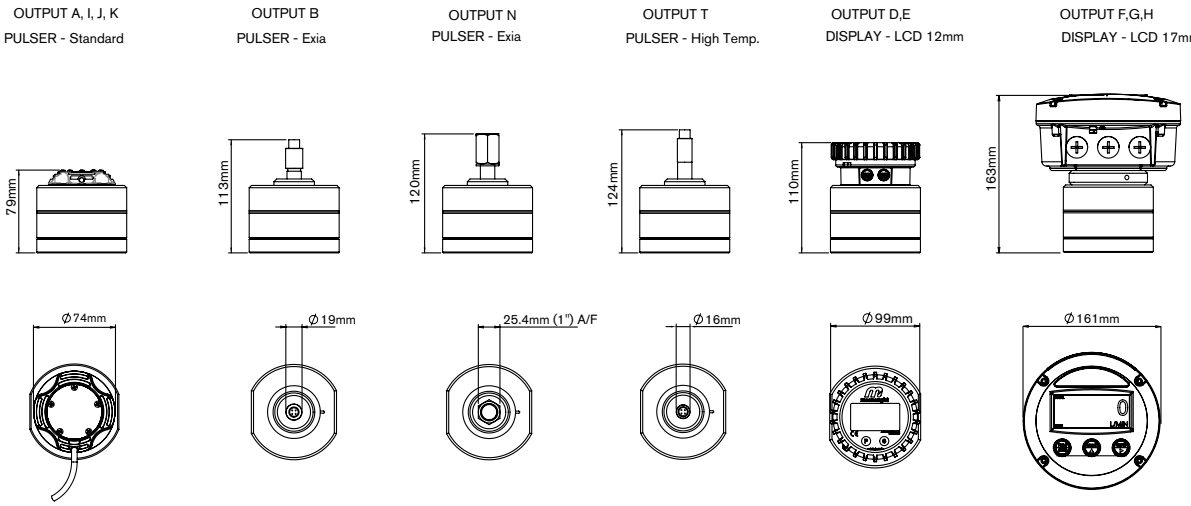
| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX19F | MX19S | MX19P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A



# MX25 – 1" DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 6-120L/MIN**

**MX25P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX25 1" Digital Flow Meters are suitable for flows between 6-120L/min. The 1" Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX25F | | MX25S | | MX25P | |
|---|---|---|---|---|---|---|
| **Materials of Construction** | | | | | | |
| Meter Body | Aluminium (6061) | | Aluminium (6061) | | Stainless Steel (316) | |
| Rotor | PPS | | Stainless Steel (316) | | PPS<br>Stainless Steel (316) | |
| Seals | Fluorocarbon (FKM) | | PTFE encapsulated (FEP) | | PTFE encapsulated (FEP) | |
| **Design Specifications** | **Threaded** | **Flange** | **Threaded** | **Flange** | **Threaded** | **Flange** |
| Process Connections | 1" G<br>1" NPT | ANSI CLASS 150<br>DIN PN16<br>JIS 10k | 1" G<br>1" NPT | ANSI CLASS 150<br>DIN PN16<br>JIS 10k | 1" G<br>1" NPT | ANSI CLASS 150<br>DIN PN16<br>JIS 10k |
| **Technical Specifications** | **<5cP** | **>5cP** | **<5cP** | **>5cP** | **<5cP** | **>5cP** |
| Flow rate | 10-100L/min<br>2.6-26USG/min | 6-120L/min<br>1.6-32USG/min | 10-100L/min<br>2.6-26USG/min | 6-120L/min<br>1.6-32USG/min | 10-100L/min<br>2.6-26USG/min | 6-120L/min<br>1.6-32USG/min |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | | -40 - 120°C<br>-40 - 248°F | | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) | |
| Max. Operating Pressure** | 2000 psi<br>138 Bar | | 2000 psi<br>138 Bar | | 2000 psi<br>138 Bar | |
| Accuracy | +/- 0.5% | | +/- 0.5% | | +/- 0.5% | |
| Repeatability | +/- 0.03% | | +/- 0.03% | | +/- 0.03% | |
| Nominal K-Factor | 36 Pulses/L | | 36 Pulses/L | | 36 Pulses/L | |

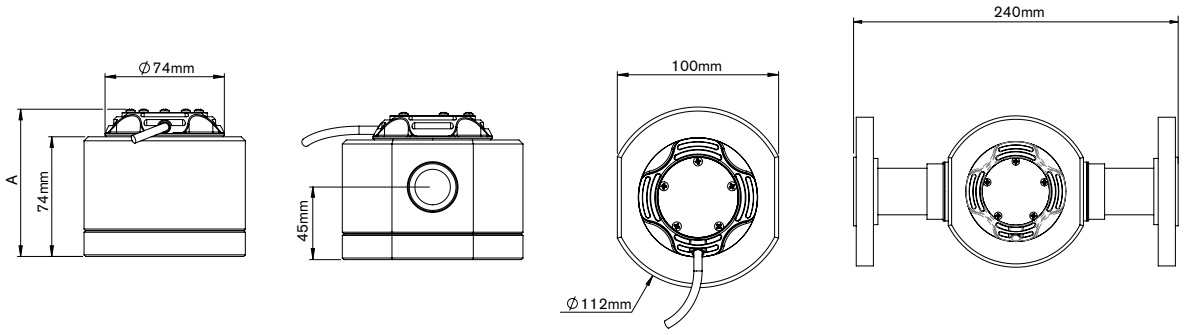
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations
** Pressure rating subject to change as per flange rating

## OUTPUTS TYPES

| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX25F | MX25S | MX25P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSAR AND DISPLAY HEIGHT - A

OUTPUT A, I, J, K
PULSER - Standard

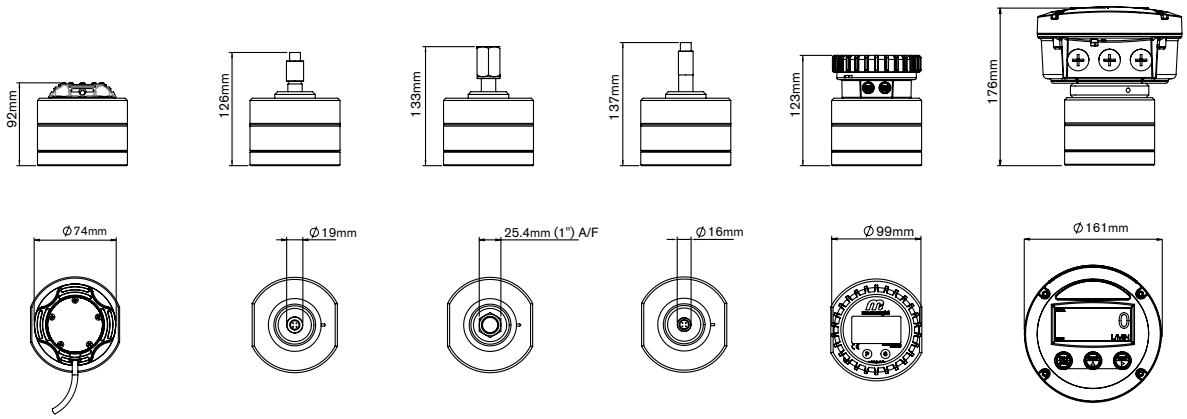
OUTPUT B
PULSER - Exia

OUTPUT N
PULSER - Exia

OUTPUT T
PULSER - High Temp.

OUTPUT D,E
DISPLAY - LCD 12mm

OUTPUT F,G,H
DISPLAY - LCD 17mm



# MX40 – 1½" DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 10-250L/MIN**

**MX40P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX40 1½" Digital Flow Meters are suitable for flows between 10-250L/min. The 1½" Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX40F | MX40S | MX40P |
|---|---|---|---|
| **Materials of Construction** | | | |
| Meter Body | Aluminium (6061) | Aluminium (6061) | Stainless Steel (316) |
| Rotor | PPS | Aluminium (6061) | PPS<br>Stainless Steel (316) |
| Seals | Fluorocarbon (FKM) | PTFE encapsulated (FEP) | PTFE encapsulated (FEP) |
| **Design Specifications** | | | |
| Process Connections | **Threaded**<br>1½" G<br>1½" NPT<br>**Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k | **Threaded**<br>1½" G<br>1½" NPT<br>**Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k | **Threaded**<br>1½" G<br>1½" NPT<br>**Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k |
| **Technical Specifications** | | | |
| Flow rate | **<5cP**<br>15-235L/min<br>4-62USG/min<br>**>5cP**<br>10-250L/min<br>2.6-66USG/min | **<5cP**<br>15-235L/min<br>4-62USG/min<br>**>5cP**<br>10-250L/min<br>2.6-66USG/min | **<5cP**<br>15-235L/min<br>4-62USG/min<br>**>5cP**<br>10-250L/min<br>2.6-66USG/min |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | -40 - 120°C<br>-40 - 248°F | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) |
| Max. Operating Pressure** | 1500 psi<br>103 Bar | 1500 psi<br>103 Bar | 1500 psi<br>103 Bar |
| Accuracy | +/- 0.5% | +/- 0.5% | +/- 0.5% |
| Repeatability | +/- 0.03% | +/- 0.03% | +/- 0.03% |
| Nominal K-Factor | 14.5 Pulses/L | 14.5 Pulses/L | 14.5 Pulses/L |

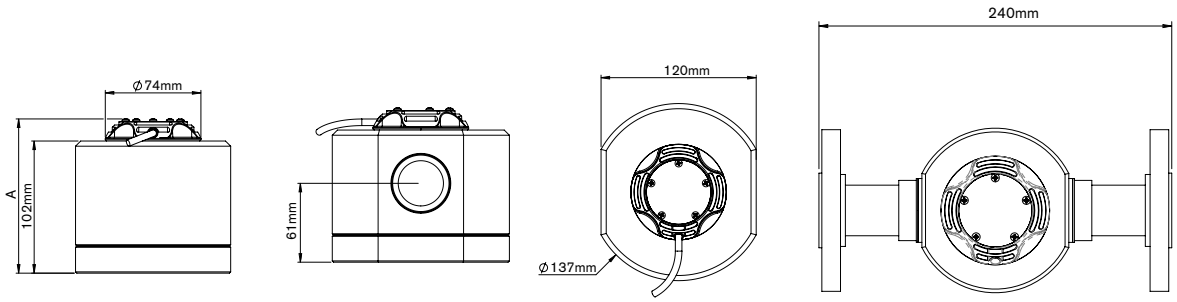
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations
** Pressure rating subject to change as per flange rating

## OUTPUTS TYPES

| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX40F | MX40S | MX40P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A

OUTPUT A, I, J, K
PULSER - Standard

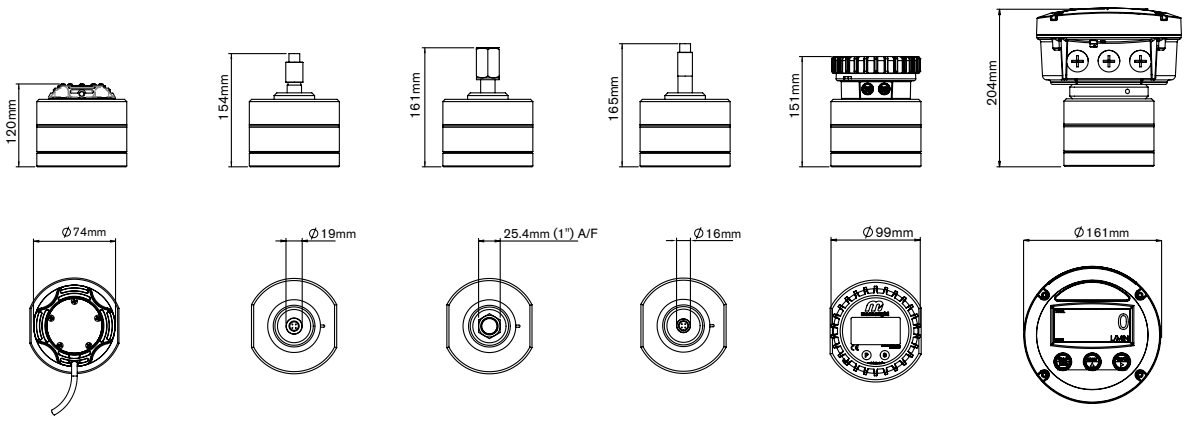
OUTPUT B
PULSER - Exia

OUTPUT N
PULSER - Exia

OUTPUT T
PULSER - High Temp.

OUTPUT D,E
DISPLAY - LCD 12mm

OUTPUT F,G,H
DISPLAY - LCD 17mm



# MX50 – 2” DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 15-500L/MIN**

**MX50P-1SE**
Stainless steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX50 2” Digital Flow Meters are suitable for flows between 15-500L/min. The 2” Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX50F | | MX50S | | MX50P | |
|---|---|---|---|---|---|---|
| **Materials of Construction** Meter Body | Aluminium (6061) | | Aluminium (6061) | | Stainless Steel (316) | |
| Rotor | PPS | | Aluminium (6061) | | PPS<br>Stainless Steel (316) | |
| Seals | Fluorocarbon (FKM) | | PTFE encapsulated (FEP) | | PTFE encapsulated (FEP) | |
| **Design Specifications** Process Connections | **Threaded**<br>2” G<br>2” NPT | **Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k | **Threaded**<br>2” G<br>2” NPT | **Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k | **Threaded**<br>2” G<br>2” NPT | **Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k |
| **Technical Specifications** Flow rate | **<5cP**<br>15-500L/min<br>4-130 USG/min | **>5cP**<br>15-500L/min<br>4-130 USG/min | **<5cP**<br>15-500L/min<br>4-130 USG/min | **>5cP**<br>15-500L/min<br>4-130 USG/min | **<5cP**<br>15-500L/min<br>4-130 USG/min | **>5cP**<br>15-500L/min<br>4-130 USG/min |
| Operating Temperature Range* | -40 - 80°C<br>-40 - 176°F | | -40 - 120°C<br>-40 - 248°F | | -40 - 80°C (150°C with high temp. rotors)<br>-40 - 176°F (302°F with high temp. rotors) | |
| Max. Operating Pressure** | 1200 psi<br>82 Bar | | 1200 psi<br>82 Bar | | 1200 psi<br>82 Bar | |
| Accuracy | +/- 0.5% | | +/- 0.5% | | +/- 0.5% | |
| Repeatability | +/- 0.03% | | +/- 0.03% | | +/- 0.03% | |
| Nominal K-Factor | 6.7 Pulses/L | | 6.7 Pulses/L | | 6.7 Pulses/L | |

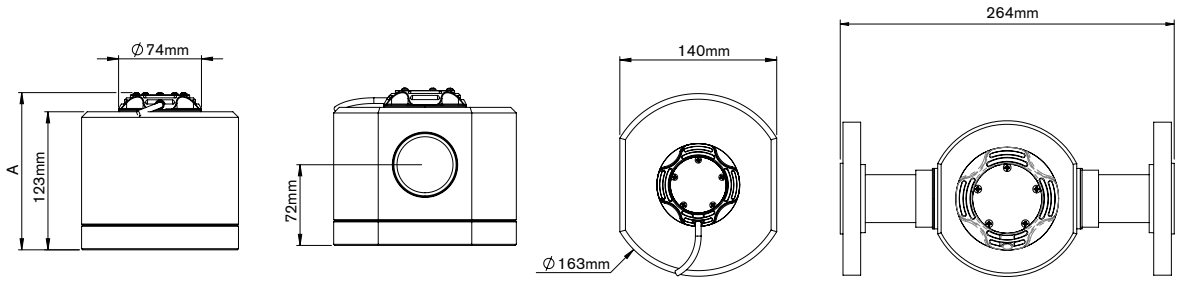
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations
** Pressure rating subject to change as per flange rating

## OUTPUTS TYPES

| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX50F | MX50S | MX50P |
|---|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | S | S |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – | – |

● Available ✖ Not Available S Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A

OUTPUT A, I, J, K
PULSER - Standard

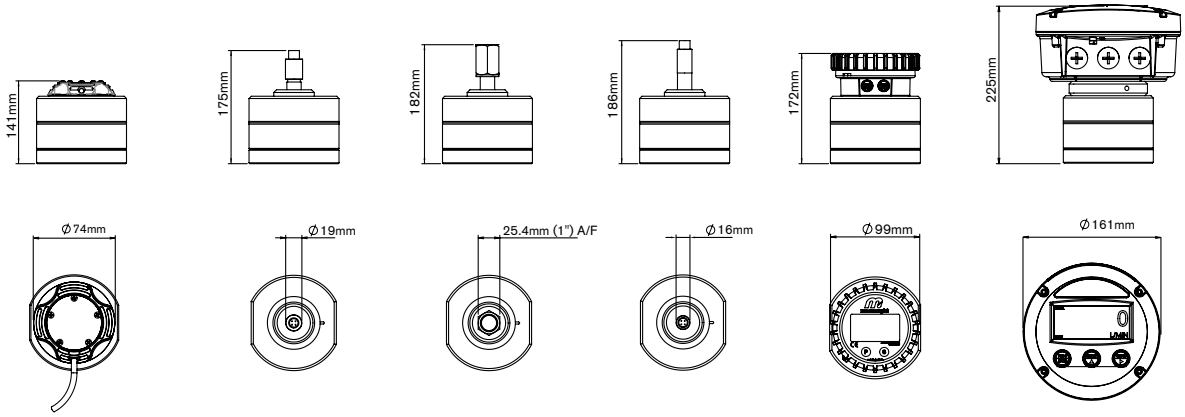
OUTPUT B
PULSER - Exia

OUTPUT N
PULSER - Exia

OUTPUT T
PULSER - High Temp.

OUTPUT D,E
DISPLAY - LCD 12mm

OUTPUT F,G,H
DISPLAY - LCD 17mm



# MX75 – 3” DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 20-733L/MIN**

**MX75F-1SE**
Aluminium body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX75 3” Digital Flow Meters are suitable for flows between 20-733L/min. The 3” Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX75F | | MX75S | |
|---|---|---|---|---|
| **Materials of Construction** Meter Body | Cast Aluminium (6061) | | Cast Aluminium (6061) | |
| Rotor | Aluminium (6061) | | Aluminium (6061) | |
| Seals | Fluorocarbon (FKM) | | PTFE encapsulated (FEP) | |
| **Design Specifications** Process Connections | **Threaded**<br>3” G<br>3” NPT | **Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k | **Threaded**<br>3” G<br>3” NPT | **Flange**<br>ANSI CLASS 150<br>DIN PN16<br>JIS 10k |
| **Technical Specifications** Flow rate | **<5cP**<br>60-600L/min<br>17-170USG/min | **>5cP**<br>20-733L/min<br>5-194USG/min | **<5cP**<br>60-600L/min<br>17-170USG/min | **>5cP**<br>20-733L/min<br>5-194USG/min |
| Operating Temperature Range* | -40 - 120°C<br>-40 - 248°F | | -40 - 120°C<br>-40 - 248°F | |
| Max. Operating Pressure** | 175 psi<br>12 bar | | 175 psi<br>12 bar | |
| Accuracy | +/- 0.5% | | +/- 0.5% | |
| Repeatability | +/- 0.03% | | +/- 0.03% | |
| Nominal K-Factor | 2.58 Pulses/L | | 2.58 Pulses/L | |

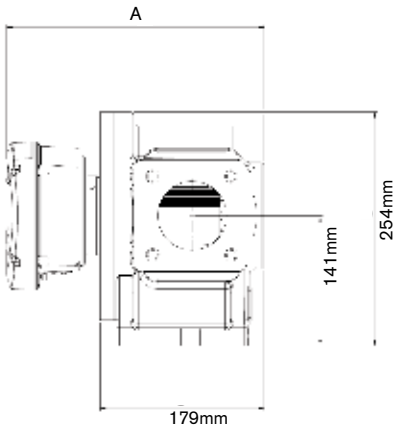
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations
** Pressure rating subject to change as per flange rating

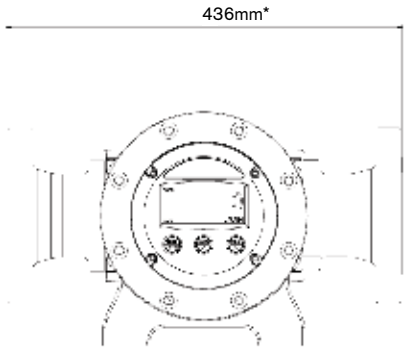
## OUTPUTS TYPS

| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX75F | MX75S |
|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● |
| T | High Temperature | Hall (NPN) | Pulse | × | ● |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – |

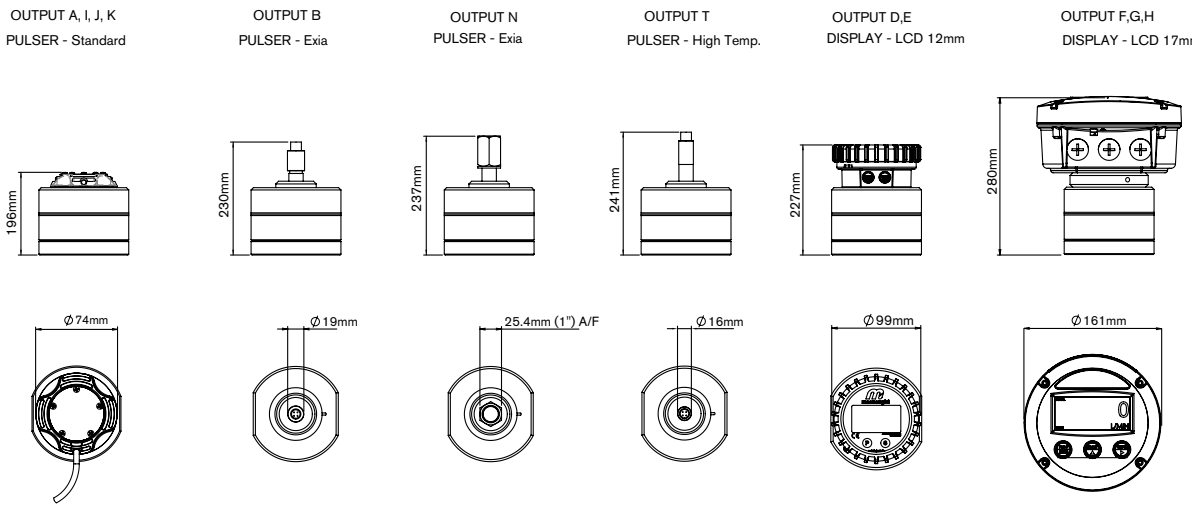
● Available × Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A




*Length subject to change refer to appendix B (pg. 88) for full dimension variations

# MX100 – 4” DIGITAL FLOW METERS

**SUITABLE FOR FLOW RANGE 120-1200L/MIN**

**MX100F-1SE**
Aluminium steel body with LCD register

Output variations:

**B - Ex approved (Ex ia)**
Intrinsically Safe - NPN

**N - Ex approved (Ex ia)**
Intrinsically Safe - NAMUR

**T - High Temperature**
Max temp- 150°C

**F - ER**
LCD Display (17mm)

**G- ERA**
LCD Display (17mm)

**H- ERB**
LCD Display (17mm)
Batch controller

**D - PR**
LCD Display (12mm)

**E - PRA**
LCD Display (12mm)
with outputs

**A - Standard Pulse**
Reel/Hall Effect

**I - Standard Pulse**
Reel/Reed Effect

**J - Standard Pulse**
Hall/Hall Effect

**K - High Resolution**
Hall NPN

The MX100 4” Digital Flow Meter are suitable for flows between 120-1200L/min. The 4” Digital Flow Meters have an accuracy of +/- 0.5% and provides exceptional levels of reliability and durability.

## SPECIFICATIONS

| | MX100F | | MX100S | |
|---|---|---|---|---|
| **Materials of Construction** Meter Body | Cast Aluminium (6061) | | Cast Aluminium (6061) | |
| Rotor | Aluminium (6061) | | Aluminium (6061) | |
| Seals | Fluorocarbon (FKM) | | PTFE encapsulated (FEP) | |
| **Design Specifications** Process Connections | **Threaded** 3” G 3” NPT | **Flange** ANSI CLASS 150 DIN PN16 JIS 10k | **Threaded** 3” G 3” NPT | **Flange** ANSI CLASS 150 DIN PN16 JIS 10k |
| **Technical Specifications** Flow rate | **<5cP** 220-1000L/min 60-250USG/min | **>5cP** 120-1200L/min 31.7-317USG/min | **<5cP** 220-1000L/min 60-250USG/min | **>5cP** 120-1200L/min 31.7-317USG/min |
| Operating Temperature Range* | -40 - 120°C -40 - 248°F | | -40 - 120°C -40 - 248°F | |
| Max. Operating Pressure** | 175 psi 12 bar | | 175 psi 12 bar | |
| Accuracy | +/- 0.5% | | +/- 0.5% | |
| Repeatability | +/- 0.03% | | +/- 0.03% | |
| Nominal K-Factor | 2.3 Pulses/L | | 2.3 Pulses/L | |

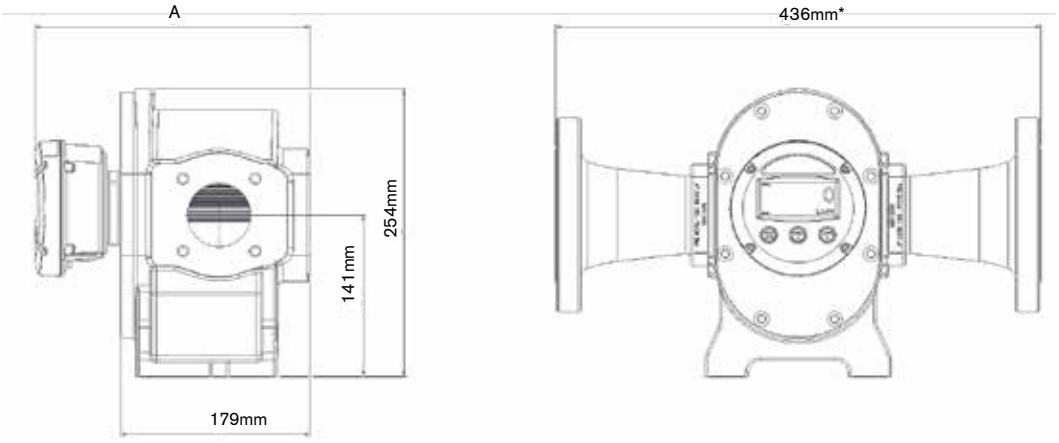
*Temperature based on standard pulse output - subject to change dependant on rotor and output type, contact Macnaught technical support for further investigations
** Pressure rating subject to change as per flange rating

## OUTPUTS TYPS

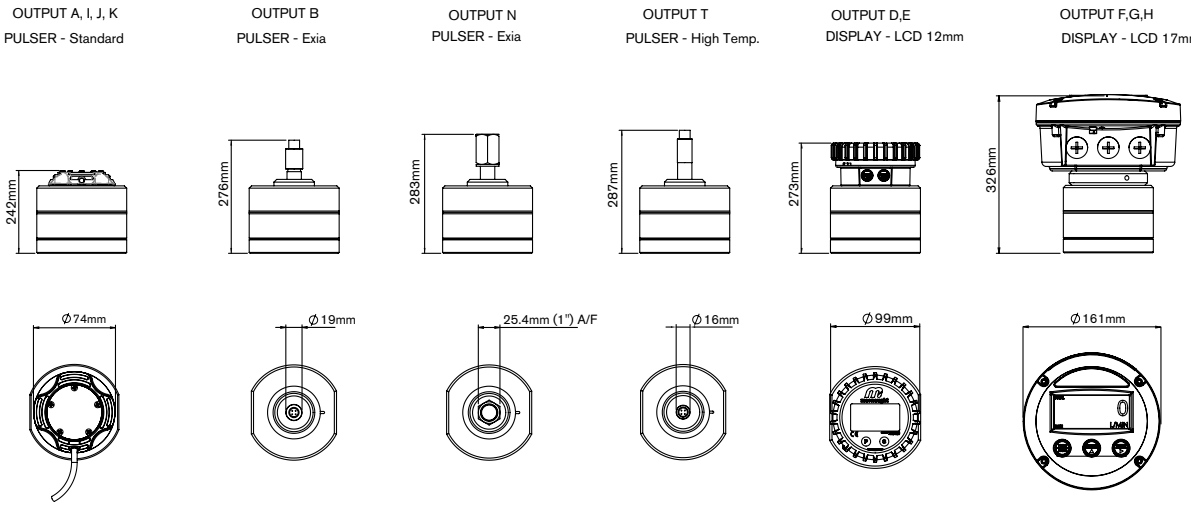
| | DESCRIPTION | SWITCH TYPE | OUTPUT TYPE | MX100F | MX100S |
|---|---|---|---|---|---|
| X | No Output | - | No Output | ● | ● |
| A | Standard Pulse | Reed /Hall (NPN) | Pulse (1m flying lead) | ● | ● |
| B | Ex approved (Ex ia) | Hall (NPN) | Pulse (2m DIN cable) | – | ● |
| D | PR (LCD 12mm display) | - | Display 12mm | ● | ● |
| E | PRA (LCD 12mm display) | - | Display 12mm, 4-20mA output, Pulse | ● | ● |
| F | ER (LCD 17mm display) | - | Display 17mm | ● | ● |
| G | ERA (LCD 17mm display) | - | Display 17mm, 4-20mA output, Pulse | ● | ● |
| H | ERB (LCD 17mm display) | - | Display 17mm + Batch Control | ● | ● |
| N | Ex Approved (Ex ia NAMUR) | NAMUR | Pulse (2m DIN cable) | – | ● |
| T | High Temperature | Hall (NPN) | Pulse | ✖ | ● |
| I | Reed/Reed | Reed/Reed | Pulse (1m flying lead) | – | – |
| J | Hall/Hall | Hall/Hall | Pulse (1m flying lead) | – | – |
| K | High Resolution (omnipolar) | Hall (NPN) | Pulse (1m flying lead) | – | – |

● Available ✖ Not Available **S** Only with stainless steel rotors – Consult Macnaught Technical regarding availability

## DIMENSIONS




PULSER AND DISPLAY HEIGHT - A




*Length subject to change refer to appendix B (pg. 88) for full dimension variations