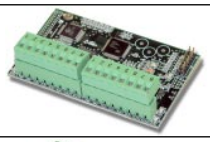
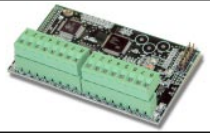
## Application

Various SmartLink Interface boards are available to allow a plant computer system or PLC (Programmable Logic Controller) to communicate directly with the K-Tron Control Module (KCM) via various communication protocols. All connectivity electronics mount inside the KCM allowing all control functions. No external converters are used. The modules provide an extremely powerful and flexible interface that can be configured for basic start/stop and data monitoring operations as well as complex applications requiring changes and multiple feedback values.

## Configuration

Communication settings as well as data register organization and machine control functions are configured using a Windows based PC program (SmartConfig). The resulting configuration file (*.kgr) is then uploaded to the KCM.
The KCM comes with standard “built-in” configuration kgr files with basic register mapping to allow quick access to system parameters and control functions. *(see other side)*

*All boards conform to the following standards:*
*UL/UR (US), CSA (Canada), CE (Europe)*

| Interface Boards | Device Interface | Max. Transfer Rate | No. of Nodes | Connection |
|---|---|---|---|---|
|  **Allen Bradley DF1 (CIF)** Slave | RS485 2-/4-wire (Multidrop) or RS232 (point-to-point) | 19,200 bit/s | 31 | screw terminals |
|  **Modbus RTU** Slave | RS485 2-/4-wire (Multidrop) or RS232 (point-to-point) | 38,400 bit/s | 31<br>1 | screw terminals |
| **Modbus+** Slave | RS485 2 wire | 1 Mbit/s | 31 | D-Sub 9 pin female |
| **Modbus/TCP** Server | Ethernet | 100 Mbit/s | depends on network configuration | RJ-45 |
| **Ethernet/IP** (Industrial Protocol) Server | Ethernet | 100 Mbit/s | depends on network configuration | RJ-45 |
| **Profibus DP** Slave | RS485 2 wire | 12 Mbit/s | 126 | D-Sub 9 pin female |
| **DeviceNet** Slave | RS485 2 wire | 500 kB/s | 64 | screw terminals |
| **Profinet-IO** Server | Ethernet | 100 Mbit/s | depends on network configuration | RJ-45 |

## Quick-Start Configuration

The KCM configuration can be extracted as a KGR file and modified as required. The built-in configuration is shown below.
The network address number is the same as the feeder number (only valid for serial protocols).
For more details please refer to the KCM Protocol Manual.

| Byte # | Register # | LWF | WBF | PID | SFM | LWB | WBB | VOL |
|---|---|---|---|---|---|---|---|---|
| Read Area | | | | | | | | |
| 0 | 40001 | Maximum Flow | Maximum Flow | Maximum Flow | Maximum Flow | MaxBatSize | MaxBatSize | MaximumFlow |
| 4 | 40003 | Setpoint | Setpoint | Setpoint | Setpoint | BatSize | BatSize | Setpoint |
| 8 | 40005 | Totalizer | Totalizer | Totalizer | Totalizer | Totalizer | Totalizer | Totalizer |
| 12 | 40007 | Massflow | Massflow | Massflow | Massflow | BatCompMass | BatCompMass | Massflow |
| 16 | 40009 | DriveCommand | DriveCommand | DriveCommand | DriveCommand | DriveCommand | DriveCommand | DriveCommand |
| 20 | 40011 | MotorSpeed | MotorSpeed | MotorSpeed | MotorSpeed | MotorSpeed | MotorSpeed | MotorSpeed |
| 24 | 40013 | AveFeedFactor | NominalBeltLoad | AveFeedFactor | ChuteNetWeight | AveFeedFactor | NominalBeltLoad | FeedFactor |
| 28 | 40015 | NetWeight | BeltLoad | PropContribFreq | DivertNetWeight | Netweight | BeltLoad | SetpointRatio |
| 32 | 40017 | RefillLevelMax | BeltSpeed | IntegContribFreq | ChuteGross Weight | RefillLevelMax | BeltSpeed | |
| 36 | 40019 | RefillLevelMin | BeltSlipValue | DerivContribFreq | DivertGross Weight | RefillLevelMin | BeltSlipValue | |
| 40 | 40021 | | | ProcessVariable | | BatTime | BatTime | |
| 44 | 40023 | | | | | FastDC | FastDC | |
| 48 | 40025 | | | | | DribDC | DribDC | |
| 52 | 40027 | CondensedProc Status | CondensedProc Status | CondensedProc Status | CondensedProc Status | CondensedProc Status | CondensedProc Status | CondensedProc Status |
| 56 | 40029 | CondensedAlrm Status | CondensedAlrm Status | CondensedAlrm Status | CondensedAlrm Status | CondensedAlrm Status | CondensedAlrm Status | CondensedAlrm Status |
| 60 | 40031 | Heartbeat | Heartbeat | Heartbeat | Heartbeat | Heartbeat | Heartbeat | Heartbeat |
| Write Area | | | | | | | | |
| 0 | 41025 | RefillEnaDisa | | | BypassValve | RefillEnaDisa | | |
| 2 | 41026 | Command bits | Command bits | Command bits | Command bits | Command bits | Command bits | Command bits |
| 4 | 41027 | MaximumFlow | MaximumFlow | MaximumFlow | MaximumFlow | MaxBatSize | MaxBatSize | Maximum Flow |
| 8 | 41029 | SetPoint | SetPoint | SetPoint | SetPoint | BatSize | BatSize | Setpoint |
| 12 | 41031 | InitFeedFactor | NominalBeltLoad | InitFeedFactor | BypassInterval | InitFeedFactor | NominalBeltLoad | FeedFactor |
| 16 | 41033 | RefillLevelMax | PrefeedDCSpan | OverallSpan | OverallSpan | RefillLevelMax | PrefeedDCSpan | |
| 20 | 41035 | RefillLevelMin | BeltSlipAlrmLim | PropGain | ChuteWeight Span | RefillLevelMin | BeltSlipAlrmLim | |
| 24 | 41037 | ScaleSpan | ScaleSpan | DerivTime | DivertWeight Span | ScaleSpan | ScaleSpan | |
| 28 | 41039 | | | ProcessVariable | | BatTime | BatTime | |
| 32 | 41041 | | | | | FastDC | FastDC | |
| 36 | 41043 | | | | | DribDC | DribDC | |

*All bit commands are rising edge triggered.*

Read Area
- Bytes 0 – 48 = Read Float
- Bytes 52 - 56 = Read 2 Words Integer
- Bytes 60 = Read 1 Word Integer

Write Area
- Bytes 0 - 2 = Write 1 Word Integer
- Bytes 4 - 36 = Write Float

| Bit Nr. | Mnemonic | Feeder Types | Function |
|---|---|---|---|
| 0 | CALA | All | Acknowledge Alarm(s) |
| 1 | CALC | All | Clear Alarm(s) |
| 2 | CSPA | All | Stop and preserve Alarm(s) |
| 3 | CSPC | All | Stop and clear Alarm(s) |
| 4 | CSTC | All | Start and clears Alarm(s) |
| 5 | CTOC | All | Clear Totalizer |
| 6 | CMAM | All | Gravimetric Mode |
| 7 | CVOM | All | Volumetric Mode |
| 8 | CTAR | LWF,WBF,SFM,LWB,WBB,SFB | Tare Feeder |
| 9 | CTR2 | WBF,WBB | Dynamic Tare Feeder |
| 10 | CCFF | LWF,LWB,PID,SFM,SFB,VOL | Calibrate Feeder |
| 11 | *Unused* | | |
| 12 | *Unused* | | |
| 13 | CPAS | LWB,WBB,SFB | Batch Pause |
| 14 | CTON | PID | Enable Totalizer |
| 15 | CTOF | PID | Disable Totalizer |



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