MX350 CONTROLLER

The MX350 controller is specifically designed for low voltage Automatic Transfer Switch (ATS) applications. The flexible control and communications options are ideal for any application. Integrated pushbuttons, graphical controls and LED indicators reduce external components and wiring in addition to providing local control and access to system information. Multiple communication protocols allow simple integration into monitoring and control systems.

FEATURES AND BENEFITS

- Dual Communications
  Built-in RS-485 serial and 10/100 base-T Ethernet
  Open protocols – Modbus RTU and Modbus TCP
- Available to support Open, Closed and Delayed Transition
- Small footprint
- Graphical control panel
- Multiple communication protocols
- ¼ inch VGA color graphical display with embedded HELP menus
- Status LED's indicating:
  ALARM - indicating a problem with the ATS or a user configured alarm condition is active
  TD DELAY – indicating the controller is timing before taking the next control action
  XFER INHIBIT – indicating the controller will not transfer to the other source without operator intervention
  SOURCE 1(S1) AVAILABLE LED – indicating power is present per user setpoints
  SOURCE 2 (S2) AVAILABLE LED – indicating power is present per user setpoints
  SOURCE 1 (S1) STATUS LED – indicating load is connected to S1 power
  SOURCE 2 (S2) STATUS LED – indicating load is connected to S2 power
- User-Configurable setpoints for inputs and Outputs
- Field modification of control features
- Plant exerciser clock for 1 day, 1 week, 14 days, 28 days or 365 days. The time base of 365 days permits up to 24 events to be scheduled and the other time bases permit up to 24 events.
- SYSTEM TESTS
  Fast Test – test with load, no time delays
  Transfer Load – test with load with time delays
  No Transfer – test without load, generator start only
- Controller Power Supply utilizing the Universal Transformer Assembly (UTA) – provides 170Vdc to the controller and 24Vdc ungrounded to the power relays. The UTA also provides line voltages from 120Vac to 600Vac via an internal six position jumper array, 120Vac UPS input and 24Vdc input battery options.
- Dual processor based with dedicated processor for high speed Serial or Ethernet connections
- All signal in / out relays are isolated via DIN Mounted relay / terminal blocks
- Elevator pre-signal contacts
- Power quality metering
- Elevator pre-signal

THE CAT® MX350 CONTROLLER FOR THE CTE SERIES ATS

40-4000 Amps:
- CTE Automatic Transfer Switches
- CTED Delayed Transition Transfer Switches
- CTEM Manual Transfer Switches

100-4000 Amps:
- CTECT Closed Transition Transfer Switches
- CBTE Automatic Transfer/Bypass Switches
- CBTED Delayed Transition Bypass Switches
- CBTECT Closed Transition Bypass Switches

TESTING AND CERTIFICATION
- Tested in accordance with:
  IEC 60068-2-30
  IEC 60068-2-1
  IEC 60068-2-2
  IEC 60255-22-1
  IEC 60255-22-2
  IEC 60255-22-3
  IEC 60255-22-4
  IEC 60255-22-5
  IEC 60255-22-6
  IEC 60255-25
  IEC 60529; IP54 (front), IP20 (back)
  IEC 61000-4-11
- Conforms to EN 60947-1, EN 60947-6-1, EN 60255-26 (EN 50263), EN 5502 / CISPR22 / EN 61000-6-2 / EN 61000-6-4
- Quality System:
  Manufactured under an ISO 9001 Registered Program

Input / Output Capabilities
- 5 to 25 Contact Outputs
- 5 to 32 Contact Inputs

MX350 OPTION PACKAGES

Option A:
- Full function ATS control with full sensing and control capabilities, based on option ordered.
- Expanded diagnostics, high-speed 256-event capture, 365-day exerciser, monitoring software, USB interface for uploading and downloading setup parameters.
- Four (4) programmable inputs and four (4) outputs assignable to additional ATS features.
- Full complement of programmable ATS control switches AUTO / MAN, Preferred Source selector, Commit / No Commit Xfer, Transition Mode Select (for Closed Transition switch models).

Option B (Includes Option A):
- Ten (10) customer programmable digital and ten (10) analog alarms.
- Twenty (20) channel data logger, customer configurable sample period from one (1) cycle to sixty (60) minutes.
- Waveform capture, ten (10) channels, up to 256 cycles each sixteen (16) samples / sec.
- Auto Load Shed with voltage, frequency and kW triggers.

Option C (Includes Option B):
- Four (4) additional inputs and outputs (totaling eight (8) in & eight (8) out)

Option D (Includes Option C):
- Four (4) additional inputs and outputs (totaling twelve (12) in & twelve (12) out)
- Customized user control logic.

Option M:
- Configuration for Manual operation only (Non-Automatic)

User Setpoints

Control Function		MX350 Controller		
		Units	Factory Setting	Range
S1& S2 Line Sensing - Under Voltage	Fail	% of Nominal	80	75-99
	Restore	% of Nominal	90	85-100
S1& S2 Line Sensing - Under Frequency	Fail	Hz	54.0*	45-59.9
	Restore	Hz	57.0*	45.1-59.5
S1 & S2 Line Sensing - Over Voltage	Fail	% of Nominal	110%	105-110
	Restore	% of Nominal	105%	103-108
S1 & S2 Line Sensing - Over Frequency	Fail	Hz	OFF	50.1-63
	Restore	Hz	OFF	50-62.9
Under Frequency	Auto Load Shed	Hz	OFF	45-60
Under Frequency	Auto Load Shed Delay	Min. : Sec.	OFF	0:00-60:00
Under Voltage	Auto Load Shed	% of Nominal	OFF	0-100
Over Power	Auto Load Shed	% of Nominal	OFF	50-110
S1 & S2 Line Sensing - Voltage Imbalance	Fail	% of Nominal	OFF	5-20
	Restore	% of Nominal	8	3-18

*Setpoints for 60Hz applications - For 50Hz Applications Subtract 10.0

Associated Timers	MX350 Controller		
Delay for Generator Start (P Timer)	min min : sec sec	0:03	0:00-259:00
Delay Xfer to Nonpreferred Src (W Timer)	min min : sec sec	0:03	0:00-259:00
Delay Xfer to Preferred Src (WTTimer)	min min : sec sec	30:00	0:00-259:00
Delay Neutral to Nonpreferred (DW Timer)	min min : sec sec	00:05	0:00-10:00
Delay Neutral to Preferred (DT Timer)	min min : sec sec	00:05	0:00-10:00
Delay for Engine Cool-Down (U Timer)	min min : sec sec	05:00	0:00-60:00
Time Delay for Gen Sag	sec sec	Not Set	0-30
Delay for Voltage Imbalance Alarm	sec sec	30	1-60